Autopilot

AUTOMATED STEERING SYSTEM

INSTALLATION INSTRUCTIONS

Ford tractors	▶ 8670, 8770, 8870, 8970
New Holland Tractors	▶ 8670, 8770, 8870, 8970 ▶ 8670A, 8770A, 8870A, 8970A
Buhler-Versatile Tractors	▶ 2145, 2160, 2180, 2210
Versatile Tractors	▶ 190, 225, 250, 280, 305

Version 8.00
Revision A
January, 2020
P/N 54035-1090-E08

Trimble

Legal Notices

Agriculture Business Area

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This is the January 2020 release (Revision A) of the Autopilot Automated Steering System Installation Instructions, part number 54035-1090-E08. It applies to version 8.00 of the Autopilot automated steering system. The following limited warranties give you specific legal rights. You may have others, which vary from state/jurisdiction to state/jurisdiction.

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Class B Statement – Notice to Users. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This

equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

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

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

Notice to Our European Union Customers

For product recycling instructions and more information, please go to:
http://www.trimble.com/Corporate/Environmental_Compliance.aspx
Recycling in Europe: To recycle Trimble WEEE, Call
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Or
Mail a request for recycling instructions to:
Trimble Europe BV
c/o Menlo Worldwide Logistics
Meerheide 45
5521 DZ Eersel, NL



Safety Information

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

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

⚠ **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.

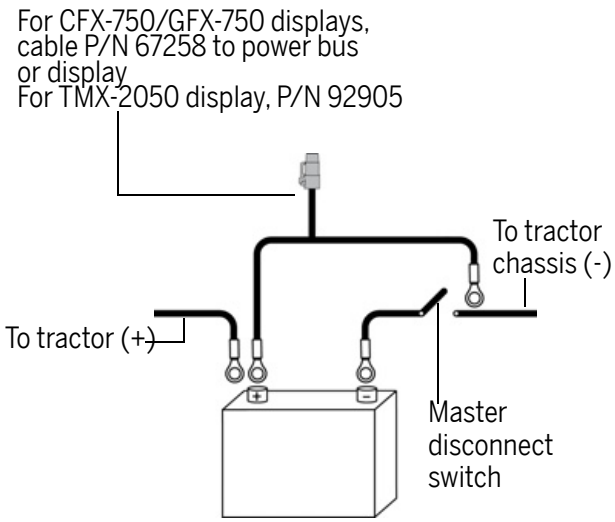
⚠ **CAUTION –** The system installation may bring you into contact with chemical substances, such as oil, which can cause poisoning. Wash your hands thoroughly after you finish working on the system.

⚠ **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 –** If the vehicle has a master electrical disconnect, make sure the basic power cable (P/N 67258 / 92905) is not directly attached to the battery terminal that is disconnected by the master switch - the negative pole in this example.
Attach this terminal side just past the main disconnect so that it is as close as possible to the battery but still gets disconnected when the master disconnect is turned off. Failure to do so can result in damaging the display.



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1

Introduction

- Technical assistance
- Your comments
- Manual system upgrade to Autopilot
- Required components
- Antenna mounting kits
- Autopilot hardware organization: As shipped
- Autopilot hardware organization: As installed
- 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.

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

Displays

Retain
TMX-2050™ integrated display: P/N 96500-xx
CFX-750™ display: P/N 94110-xx
Antenna to receiver cable: P/N 50449
Power cable: P/N 67258 & 66694
GFX-750™/XCN-1050: P/N 121000-XX
Power cable GFX-750/XCN-1050: P/N 110551
Base power cable: P/N 67258
NAV-900 guidance controller: P/N 108993-05
GFX-750 to NAV-900 Comms cable: P/N 110540

Required components

Kits required	Special tools
Platform kit: P/N 54035-1090 Hydraulic hose kit: P/N 62759-1000 or 83158-1000 TMX-2050/CFX -750 installations: P/N 64425-07 GFX-750 Installations: P/N 64425-08	¾" and $1\frac{5}{8}$" hole saw $\frac{5}{16}$" drill bit 5000 psi hydraulic gauge and extension hose Allen wrench set (metric and SAE)

NOTE – New Holland tractors equipped with the mega flow option must also have the power beyond option installed. The power beyond option is available from New Holland.

Antenna mounting kits

Antenna options
Ag15 antenna mounting plate: P/N 62034 Antenna V plate mount and *Ag*GPS 262 receiver magnetic mount: P/N 62388-02 (includes magnets for quick release of the *Ag*GPS 262 receiver – see Chapter 4, Antenna/Receiver Installation). Optional spar mounts (must measure application for proper part number): • P/N 64898: Bracket, GPS Spar 16.5"– 28.5" • P/N 55349: Bracket, GPS Spar 27.5"– 37.5" • P/N 53676: Bracket, GPS Spar 36.5"– 46.5" • P/N 55348: Bracket, GPS Spar 45"– 55" • P/N 66774: Bracket, GPS Spar 54"– 64" **NOTE –** For quick release mounting of the NAV-900 to a Spar mount, use P/N 110308: Bracket, NAV-900, Spar Quick Release Adapter

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 54035-1090)	Hydraulic valve	Chapter 2
	Hydraulic manifold	
	Transducer flow switch	
	Manual override cable	
	Hydraulic brackets and bolt kits	
	Hydraulic valve cable	
	IMD-900 steering device and cabling	Chapter 3
	IMD-900 mounting bracket and hardware	
	Power switch	Chapter 6
	Bolt kit controller	Chapter 8

Hardware	Component	See...
Common parts	Controller (as part of 64425-07 or 64425-08)	Chapter 8
	Controller mounting bracket	
	Cable kit: • Main wiring harness • Auxiliary wiring harness • Sonalert alarm • Power bus/cable and switch	
GPS receiver	GPS receiver	Chapter 4
	GPS antenna	
	GPS receiver mounting bracket	
	GPS receiver power/data cable	
	RTK radio, cable, and radio antenna	
Display	CFX-750 display, GFX-750, TMX-2050 display	Chapter 5
	Display cable	
	Mounting bracket	
Hydraulic hose kit: • P/N 83158-1000 for Versatile 190-305 • P/N 62759-1000 for Ford / New Holland / Buhler-Versatile	Hydraulic hoses	Chapter 2
	Hydraulic adaptors	
Roof bracket kit (P/N 53676)	Roof brackets	Chapter 4
	Bolt kit, roof bracket	

Autopilot hardware organization: As installed

Hardware	Component	See...
Hydraulics	• Hydraulic valve, manifold, pressure transducer, or flow switch • Hydraulic valve cable • Manual override cable • Hydraulic brackets and bolt kits	Chapter 2
IMD-900 steering device	• IMD-900 steering device and cabling • IMD-900 mounting brackets and hardware	Chapter 3
GPS receiver	• GPS receiver • GPS antenna • GPS receiver mounting bracket • GPS receiver power/data cable • Roof brackets	Chapter 4
Display	• CFX-750 display, GFX-750 display, TMX-2050 display • Display cable(s) • Mounting bracket	Chapter 5
Power	• Power cable and switch	Chapter 6
Controller	• Controller • Mounting plate • Bolt kit – controller • Main wiring harness • Aux. wiring harness • Sonalert alarm	Chapter 8

Preparing the vehicle for installation

Step 1

Park the vehicle on a hard, level 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 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.

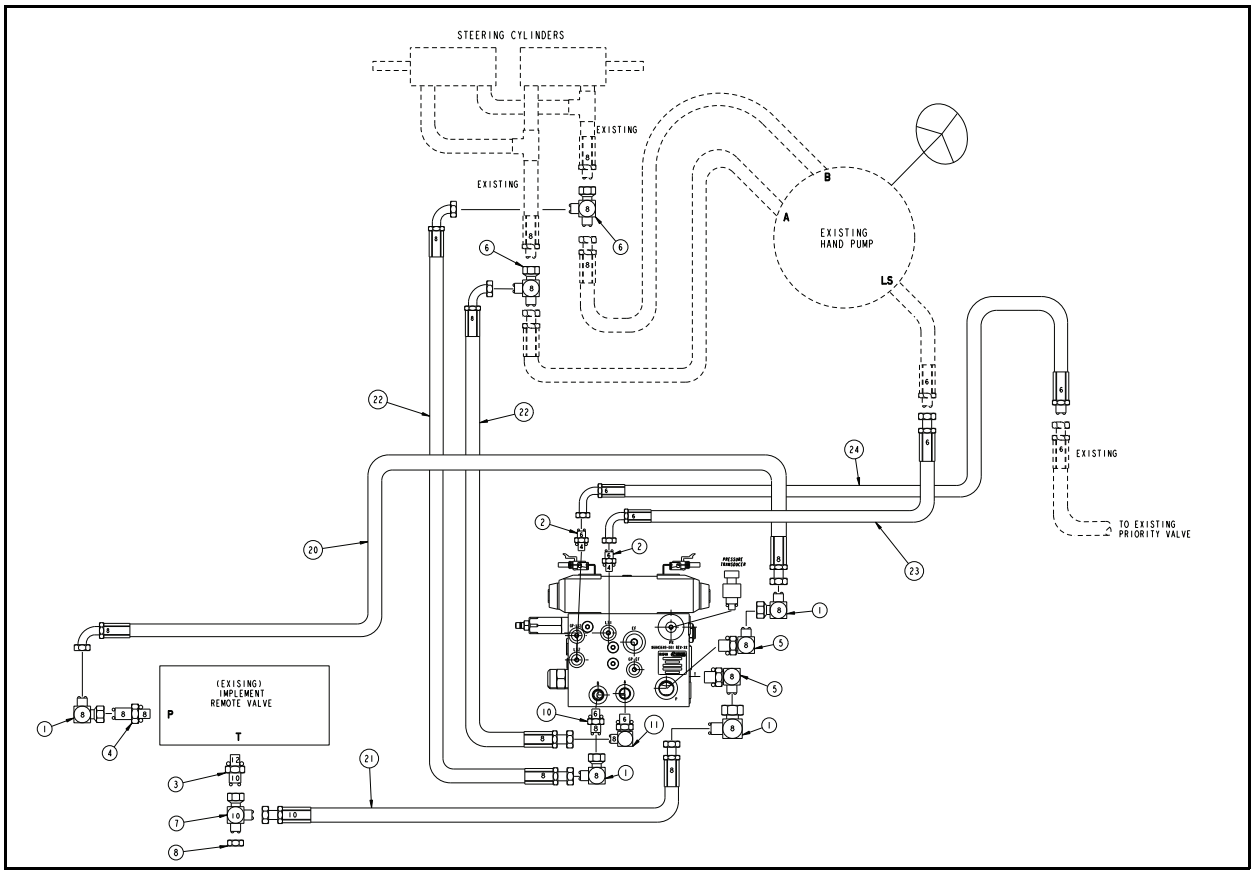
2

Hydraulic Control Valve Installation

- Hydraulic components
- Assembling the hydraulic control valve
- Mounting the hydraulic manifold
- Installing the hydraulic hoses
- Secure the electrical connectors

Hydraulic components

Ford / New Holland / Buhler-Versatile



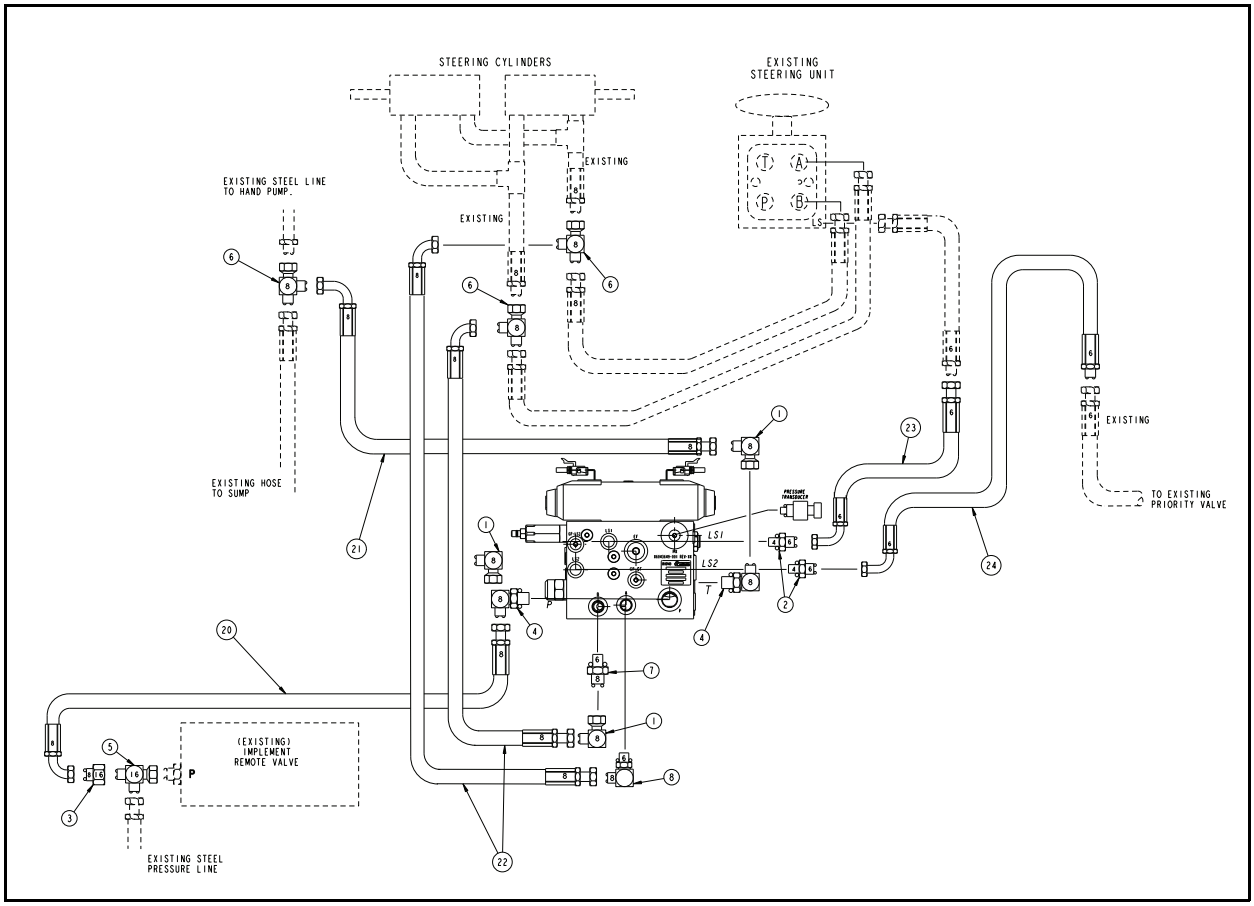
Fittings

Item	Part number	Quantity	Item	Part number	Quantity
1	8C6LO-S	4	**7**	IO R6LO-S	1
2	6-4 F5OLO-S	2	**8**	10-FNL-S	1
3	10-12 F5OLO-S	1	**9**	HP-8-13-RFL	1
4	8 FF5OLO-S	1	**10**	6-8 F5OLO-S	1
5	8 C5OLO-S	2	**11**	6-8 C5OLO-S	1
6	8 R6LO-S	2			

Hose

Item	Length (Inches)	Part number	Line	Quantity
20	50" (127cm)	F45/TCJSJ9-08-08-08-50"	P	1
21	40" (102 cm)	F45/TCJSJS-/0-08-08-40"	T	1
22	85" (215 cm)	F45/TCJSJ9-08-08-08-85"	A / B	2
23	86" (218.44 cm)	F45/TCJSJI-06-06-06-86"	LS1	1
24	65" (l65 cm)	F45ITCJOJI-06-06-06-65"	LS2	1

Versatile 190-305



Fittings

Item	Part number	Quantity	Item	Part number	Quantity
1	8 C6LO-S	4	**6**	8R6LO-S	3
2	6-4 F5OLO-S	2	**7**	8-6 F50LO	1
3	16-8 TRLO-S	1	**8**	8-6 C50LO	1
4	8 C50LO-S	2	**9**	HP-8-13-RFL (not shown)	1
5	16 R6LO-S	1			

Hoses

Item	Length (Inches)	Part number	Line	Quantity
20	50" (127cm)	F45/TCJSJ9-08-08-08-50"	P	1
21	80" (203 cm)	F45ITCJSJ9-08-08-08-80"	T	1
22	85" (216 cm)	F45ITCJSJ9-08-08-08-85"	A / B	2
23	88" (223 cm)	F45I TCJSJI-06-06-06-88"	LS1	1
24	70" (I78 cm)	F45ITCJOJI-06-06-06-70"	LS2	1

NOTE – Part numbers are Parker numbers and are for reference only.

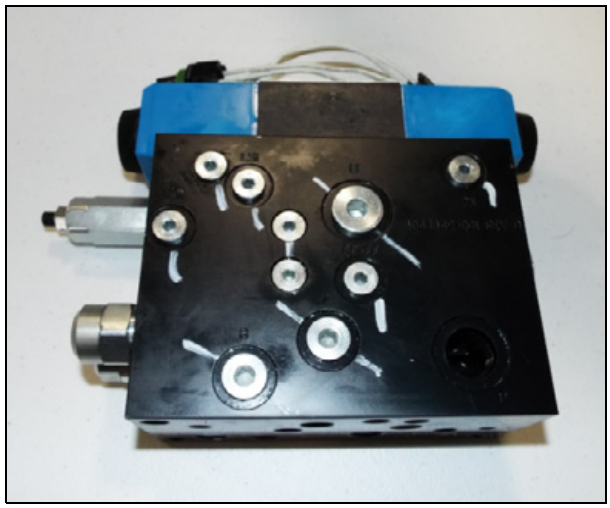
Assembling the hydraulic control valve

⚠ **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.

Preparing the manifold and the hydraulic control valve

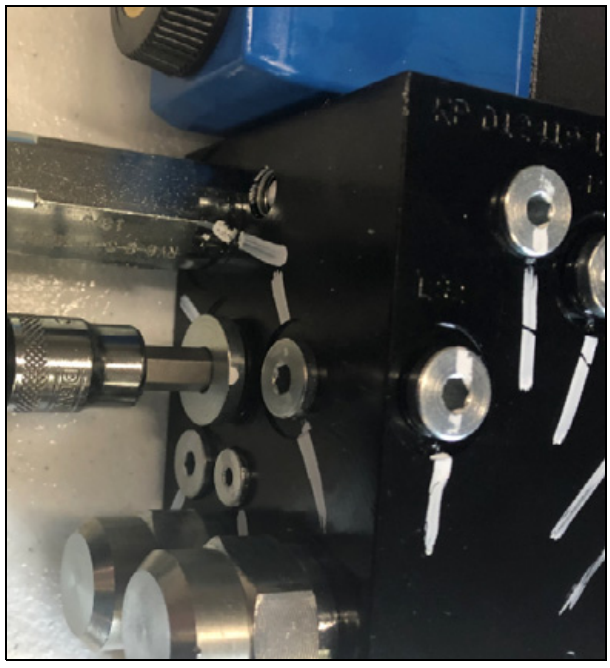
Step 1

Locate the valve and manifold assembly.



Step 2

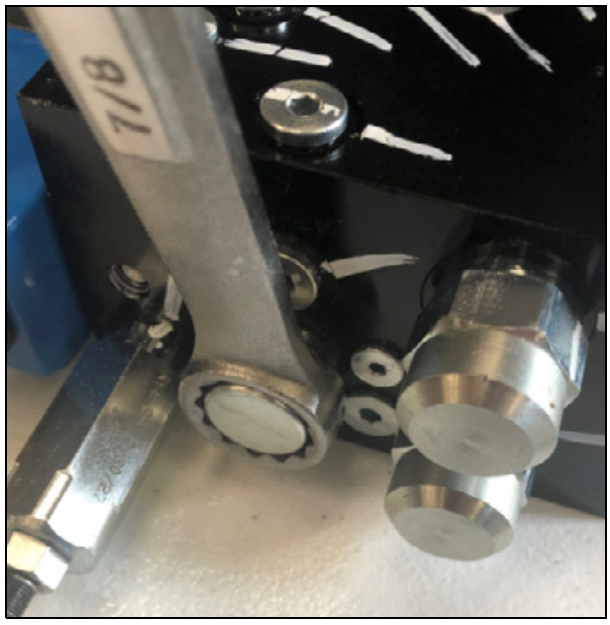
Remove the plug from the DSV2 port on the left side of the manifold.

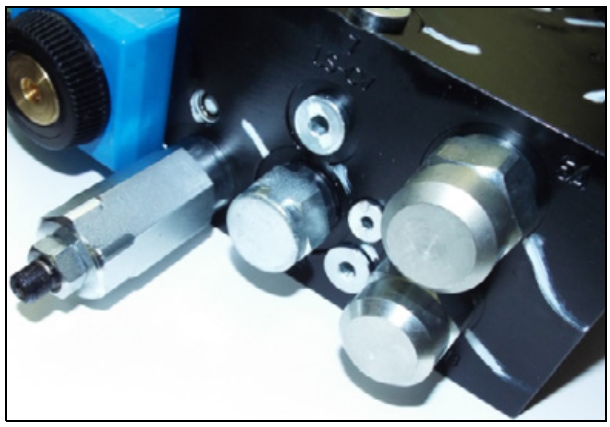


Step 3

Locate the DSV2 cartridge Trimble P/N 114165 and install it in the DSV2 port of the manifold.

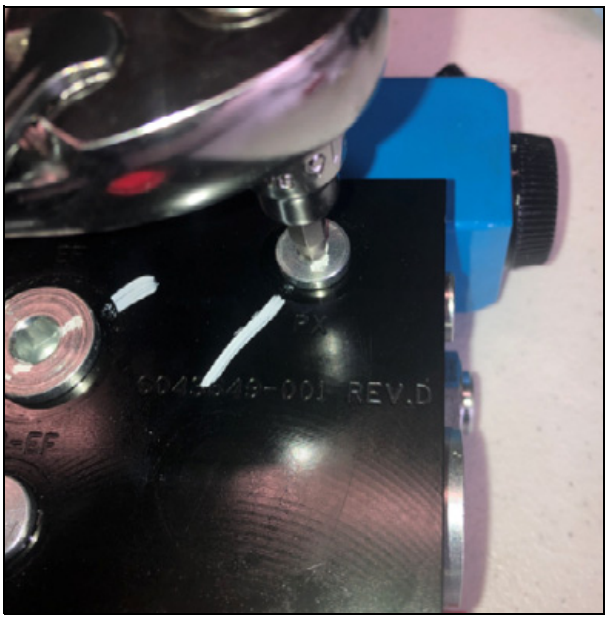






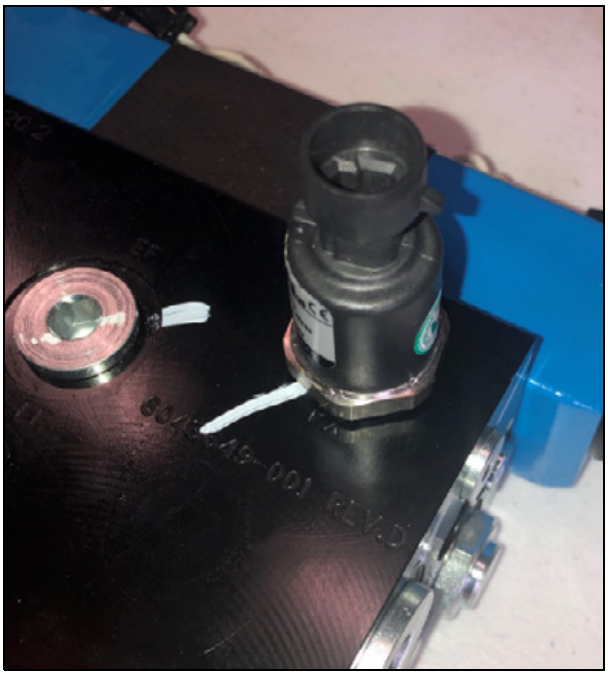
Step 4

Remove the plug from the PX port on the front of the manifold.



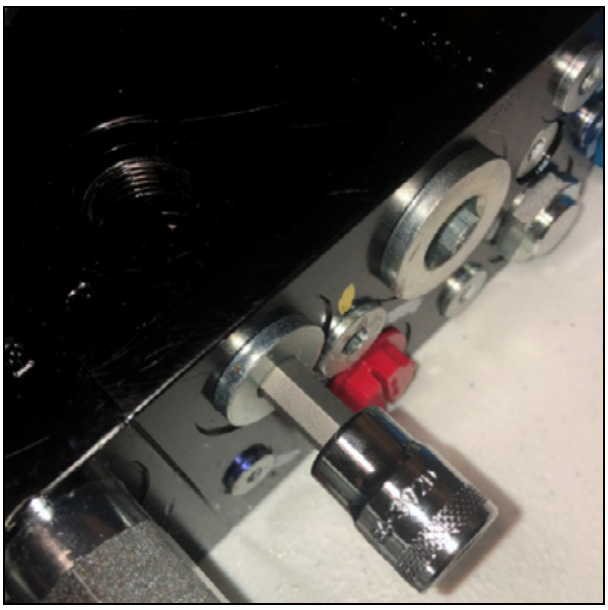
Step 5

Install the supplied pressure transducer in the PX port.



Step 6

Remove the plug from the P port on the right side of the manifold.



Step 7

Install the plug removed in step 6 in the P port on the front of the manifold.



Step 8

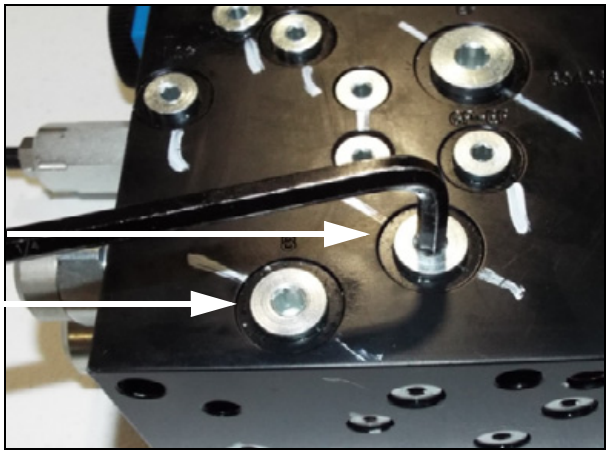
Install the following fitting in the P and T ports on the right side of the manifold.

- 8 ORB by -8 ORFS standard 90° elbow



Step 9

Remove the plugs from the A and B ports on the front of the manifold.



Step 10

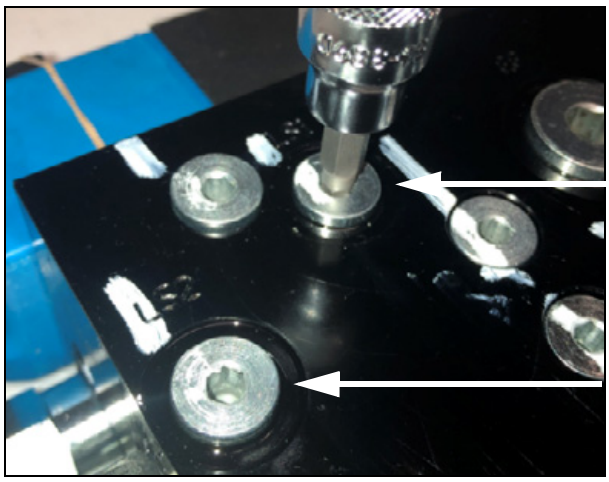
Install the following fitting in the A and B ports on the front of the manifold.

- 6 ORB by -8 ORFS standard 90° elbow in port A
- 6 ORB by -8 ORFS straight in port B



Step 11

Remove the plugs from the LS1 and LS2 ports on the front of the manifold.



Step 12

Install the following fitting in the LS1 and LS2 ports.

- 4 ORB by -6 ORFS straight



Mounting the hydraulic manifold

Step 1

The valve mounting location is on the right rear fender.





Step 2

Drill three 3⁄16 " holes, using the same hole pattern on the back of the manifold. The manifold should be mounted so that the top of the manifold is near the seam where the metal part of the fender meets the fiberglass portion.

NOTE – If the valve is not mounted horizontally and close to level, Autopilot steering performance may be degraded.



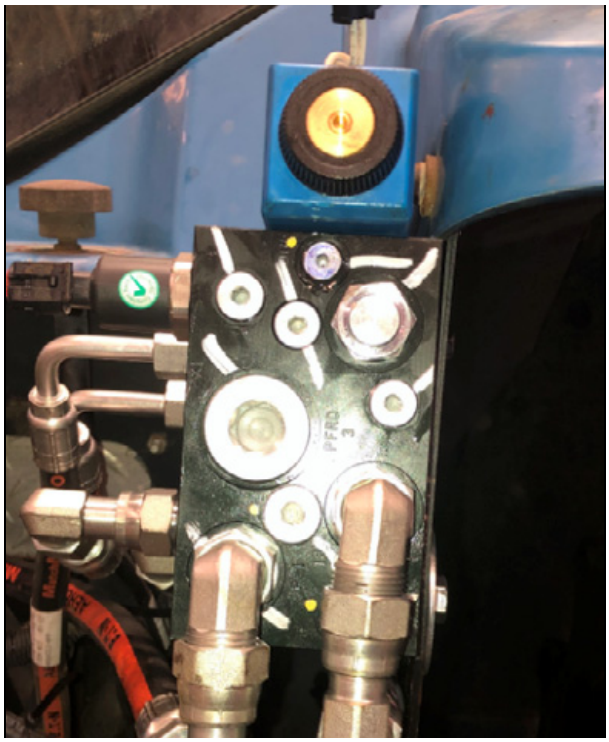
Step 3

Ream the newly drilled holes using a ½" or larger 90° countersink.



Step 4

Attach the manifold/valve assembly to the fender wall using the supplied ⅜" x ¾" bolts and flat washers.



Installing the hydraulic hoses

Step 1

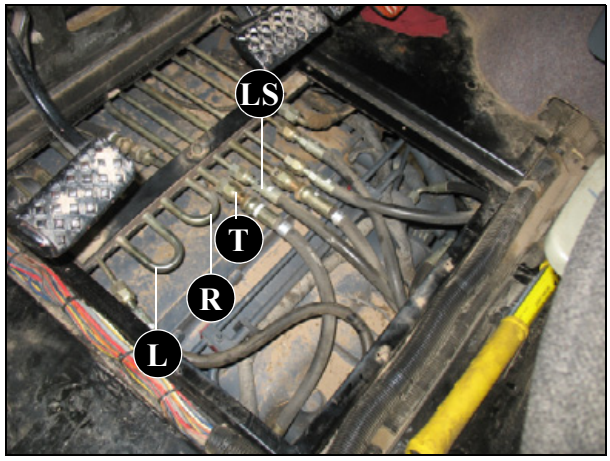
Remove the rubber floor mat. Pull the rear of the mat upwards first.



Step 2

Mark the steel hoses and lines as shown:

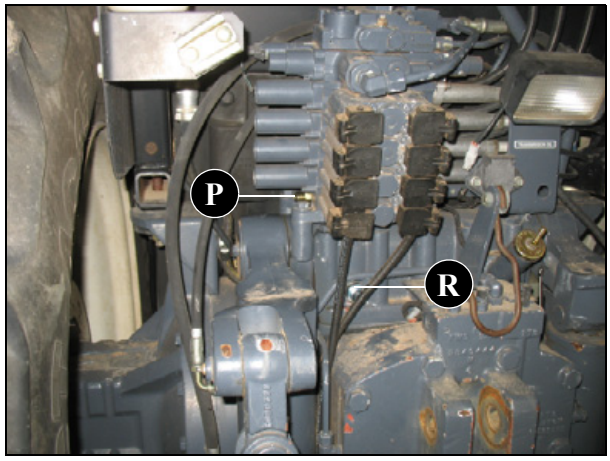
Item	Description
L	Left
R	Right
LS	Load sense
T	Tank (sump)



Step 3

Ford/New Holland/Buhler-Versatile

Locate the pressure (P) and return (R) ports at the bottom of the SCV (selective control valve) stack.



Old-style Ford SCV stack

Versatile 190-305

Locate the pressure (P) port at the bottom left of the SCV (selective control valve) stack.

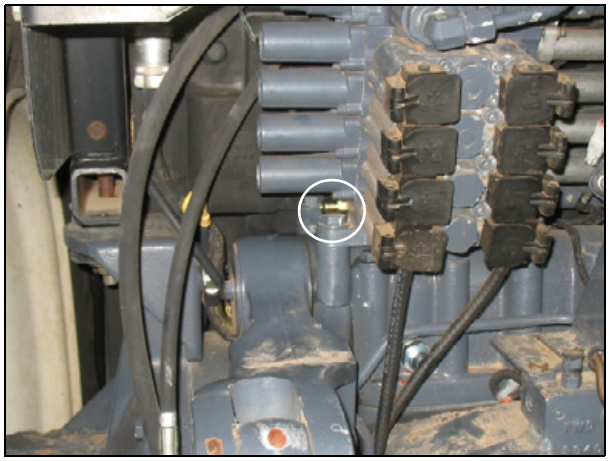


New style Bosch Rexroth SCV stack

Step 4

Ford/New Holland/Buhler-Versatile

Remove the existing plug in the P port and install a -8 ORB x -8 ORFS extension adaptor.



Versatile 190-305

Remove the right angle fitting in the P port.

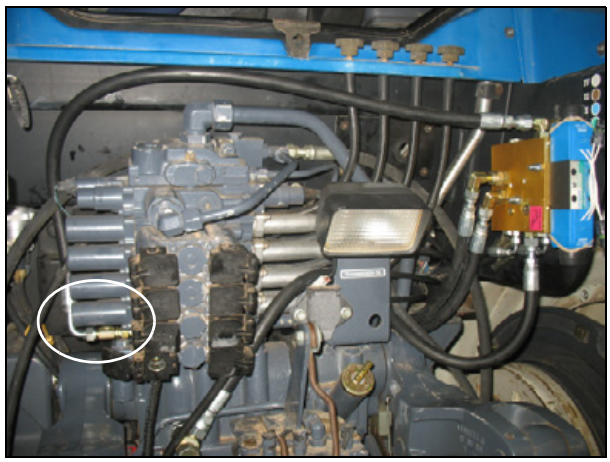
Install the supplied -16 ORFS tee. Fit the supplied -16 x -8 reducer onto the open male port on the run side of the tee.



Step 5

Connect the 90° end of the supplied 50" pressure hose to the tractor pressure port.

NOTE – Disregard the Autopilot manifold mounting position shown in the Ford / New Holland / Buhler-Versatile image.

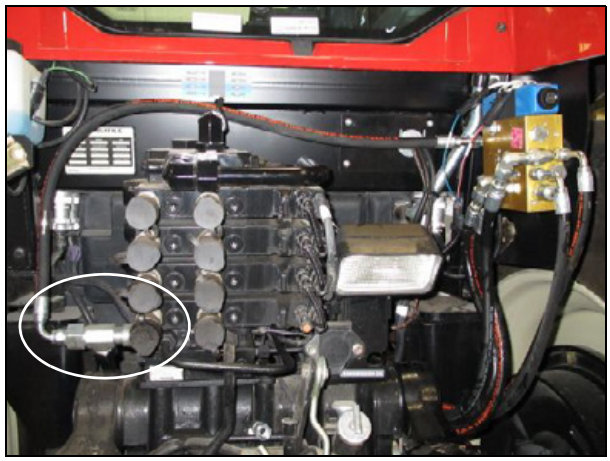


Ford / New Holland / Buhler-Versatile models

Optional: -8 ORFS swivel 90 shown for New Holland installation.



Optional: New Holland installation

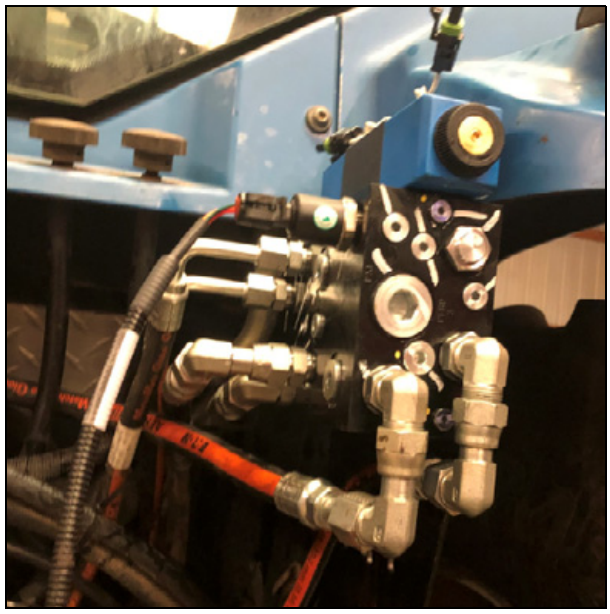


Versatile 190-305 models

Step 6

Route the pressure hose to the Autopilot manifold P port and then attach a -8 ORFS 90° elbow to the P port of the Autopilot manifold.

Connect the opposite end of the tank hose to the manifold P port.



Step 7

Ford/New Holland/Buhler-Versatile

Remove the existing plug in the return port and install a -12 ORB x -10 ORFS adaptor.

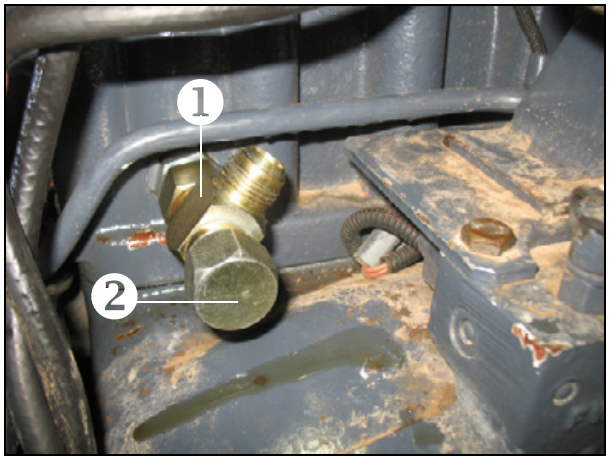


Step 8

Ford/New Holland/Buhler-Versatile

Install a -10 ORFS run tee ❶ with cap ❷.

NOTE – This tee allows continued use of the return port for auxiliary devices.



Step 9

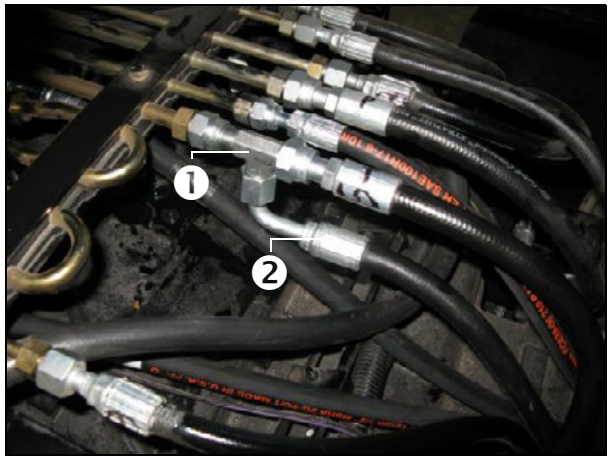
Ford/New Holland/Buhler-Versatile

Connect the -10 straight end of the supplied tank hose to the return port tee.



Versatile 190-305

Install a -8 run tee ❶ and connect the 90° end of the T (tank) hose ❷ to the sump connection.



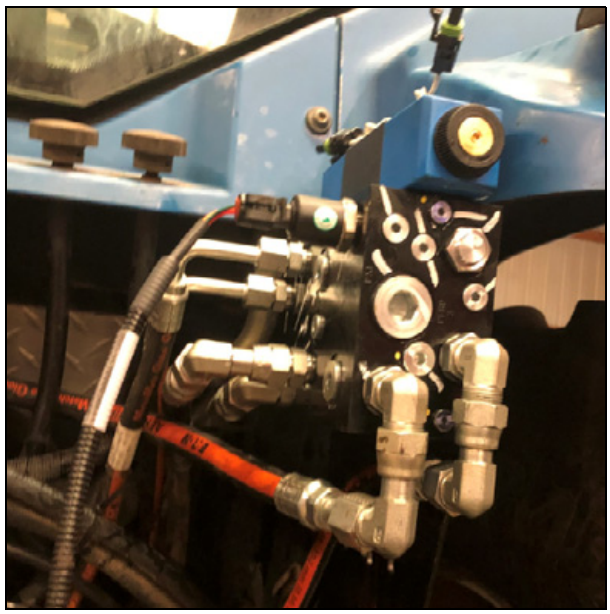
Step 10

Attach a -8 ORFS 90° elbow to the T port of the Autopilot manifold.

Connect the opposite end of the tank hose to the manifold T port.

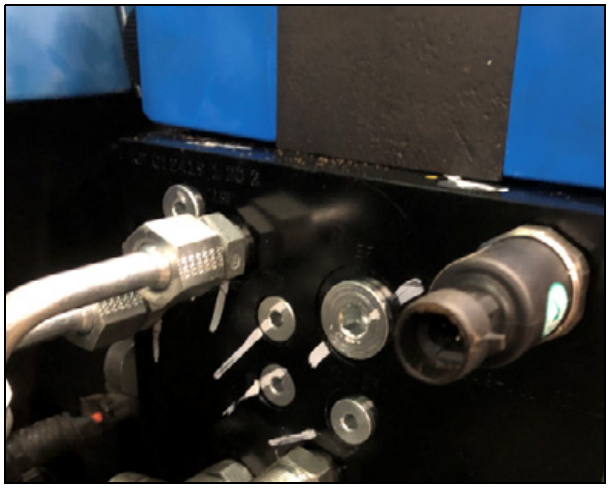
Step 11

Connect the 90° end of the provided 86" LS1 hose to the LS1 port on the Autopilot manifold.



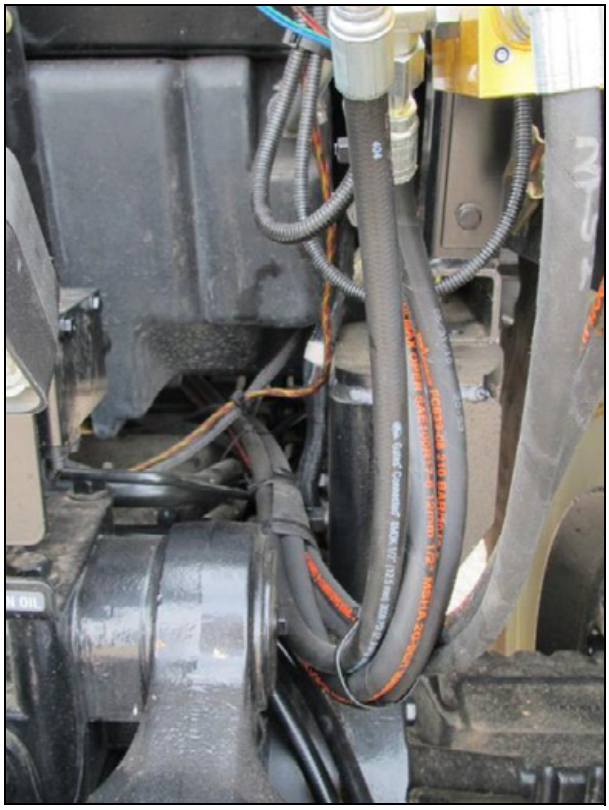
Step 12

Connect the 90° end of the provided 65" LS2 hose to the LS2 port on the Autopilot manifold.



Step 13

Mark the LS1 and LS2 hoses and then route them to the tractor load-sense connections under the cab.



Step 14

Disconnect the hand pump -6 LS line.

Connect the female end of the kit provided LS1 line to the steel line.



Step 15

Connect the male end of the provided LS2 hose to the existing tractor LS hose.



Step 16

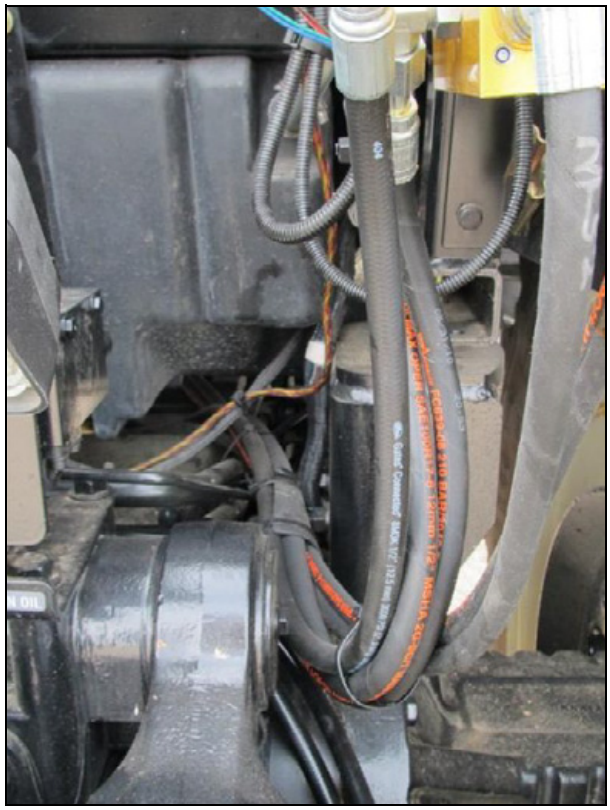
Attach a -8 ORFS 90° elbow to the A port of the Autopilot manifold.

Connect the straight ends of the provided 85" A (left) and B (right) hoses to the manifold.



Step 17

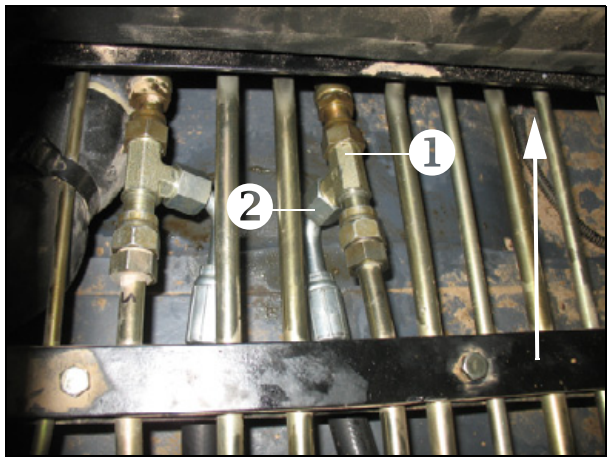
Mark the 90° end of the “A” and “B” hoses and then route them to the left and right steering connections under the cab.



Step 18

Install a -8 run tee ❶ and connect the 90° end of the B (right) hose ❷ to the right steering connection.

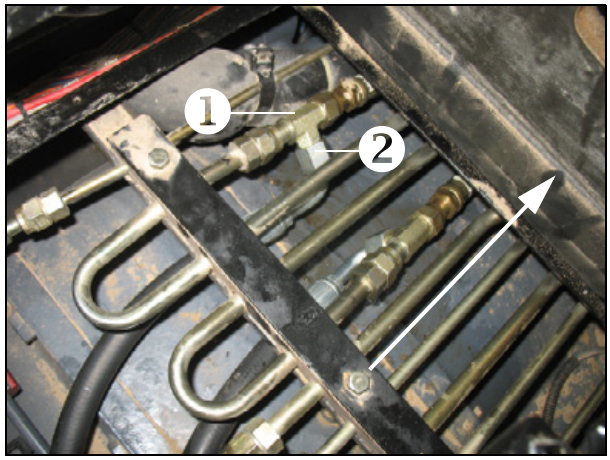
NOTE – The arrow indicates the front of the vehicle.



Step 19

Install a -8 run tee ❶ and connect the 90° end of the A (left) hose ❷ to the left steering connection.

NOTE – The arrow indicates the front of the vehicle.



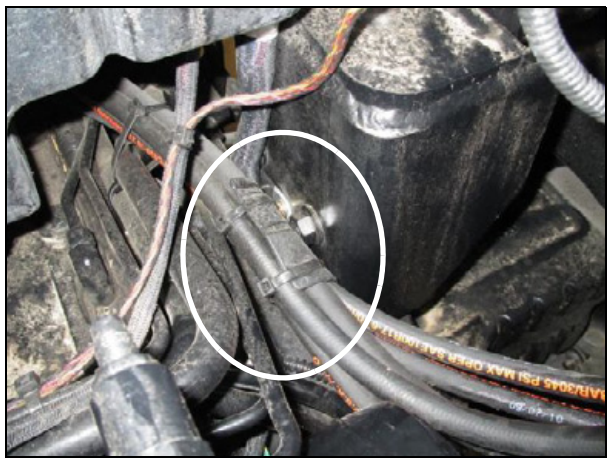
Step 20

Add hose guard where required.

Check and tighten all of the fittings.

Refill the hydraulic reservoir if necessary.

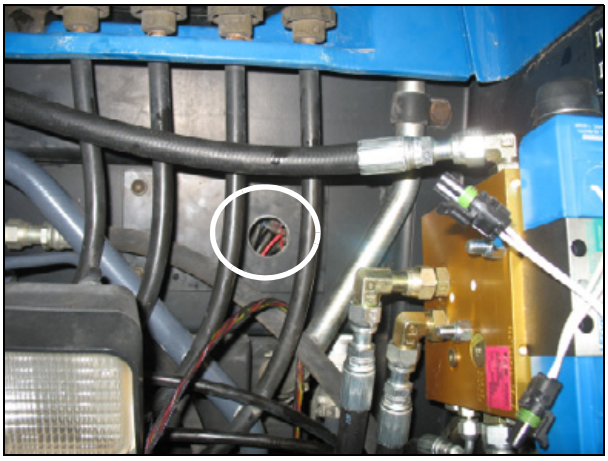
Start the engine and then have an assistant turn the steering from full left lock to full right lock to check for leaks.



Secure the electrical connectors

Step 1

Use a hole saw that is 1-⅝" or larger to create a cable access hole in the designated rear cab panel pass through. Install a rubber grommet, conduit clamp, or equivalent protection.



Versatile 190-305 models

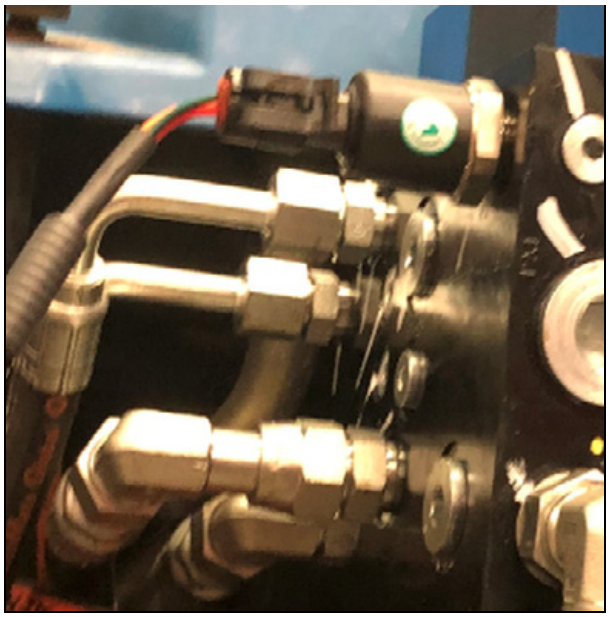
Remove the rear cab wall plate. Drill though the plate using a 2" hole saw.

Install a 1½" conduit clamp or equivalent protection.



Step 2

Connect the P/N 54618 manual override extension cable to the pressure transducer.



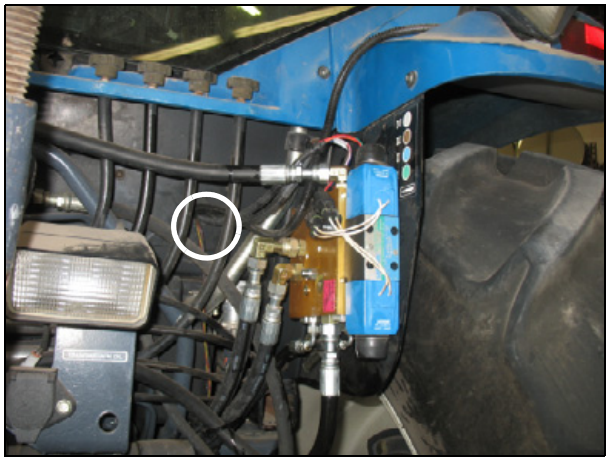
Step 3

Connect the P/N 54617 valve extension cable to the valve coils.

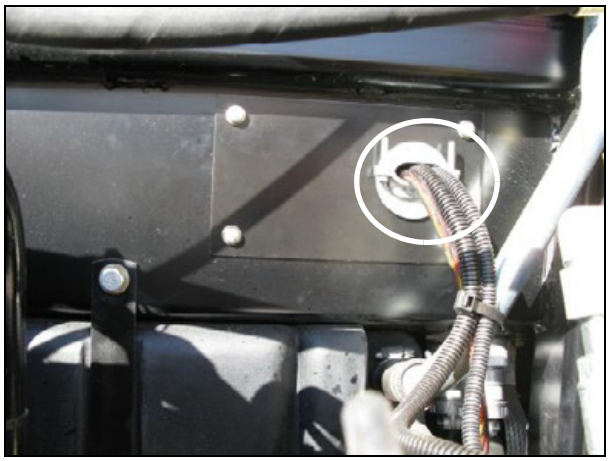


Step 4

Route both cables into the cab towards the Autopilot controller mounting location.



Ford / New Holland / Buhler-Versatile models



Versatile 190-305 models

3

AutoSense Steering Device Installation

- IMD-900 AutoSense steering device components
- Installing the IMD-900/AutoSense steering device
- Connecting the IMD-900 harness to the 54602 harness

This chapter describes how to install the ***Ag***GPS AutoSense™ / IMD-900 steering device.

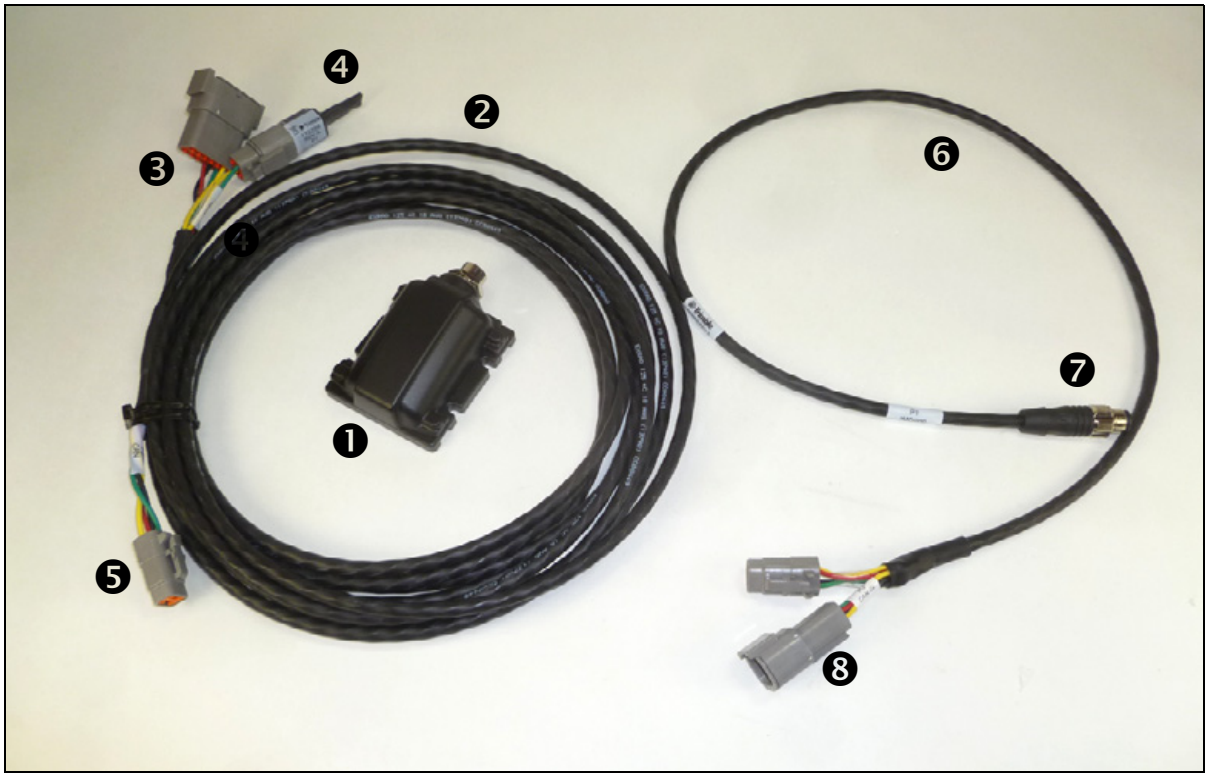
If the described mounting location is not accessible, chose a different place. To ensure proper function, the AutoSense device must be located where it is free of obstructions and can rotate with the wheels when they turn.

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.

IMD-900 AutoSense steering device components



Item	Description
1	IMD-900 steering sensor (P/N 109256-00)
2	Cable (P/N 114675)
3	R1-CAN connector
4	CAN terminal (× 2)
5	P3 CAN connector
6	Cable (P/N 112759)
7	P1-IMD-900
8	P3/R3 CAN out/CAN in

Installing the IMD-900/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.

The new AutoSense steering device is shown on the right. Install it using the following steps.



Step 1

NOTE – An older version is pictured. The new steering sensor will install the same way as the AutoSense sensor shown here.



Step 1

NOTE – An older version is pictured. The new steering sensor will install the same way as the AutoSense sensor shown here.

Identify the location for the AutoSense device at the left front wheel, above the king pin.



Ford / New Holland / Buhler-Versatile models



Versatile 190-305 models

Step 2

Attach the AutoSense device to the P/N 58042 bracket as shown using the #6-32 socket head screws provided.



Step 3

If fenders are installed, loosen the existing bolt.





Versatile 190-305 models

Step 4

Use the existing bolt or those provided in the kit to mount the bracket and AutoSense device with the connector pointed toward the center of the axle.





Versatile 190-305 models

Step 5

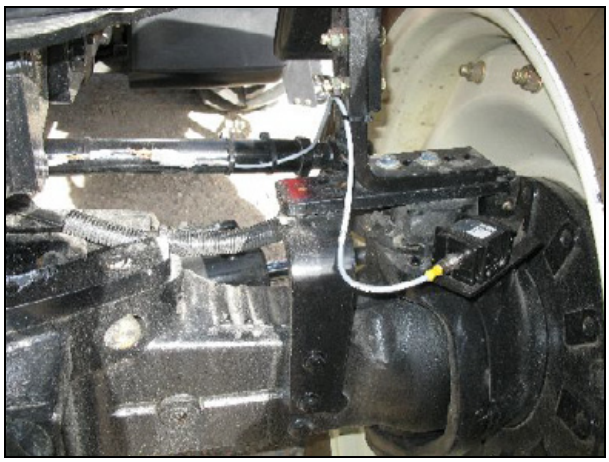
Route the jumper cable (P/N 57560) along the axle tie rod and then connect the AutoSense device.

Leave enough length on the service loop to avoid stretching the cable during full left or right turns.

Connect the steering extension cable (P/N 57885) to the jumper cable (P/N 57560).



Route the steering extension cable to the rear of the tractor. Follow the steering hydraulic hoses and steel hydraulic lines under the cab on left side.

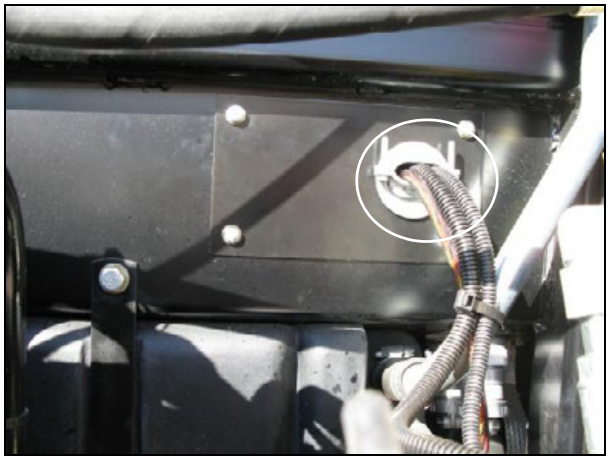


Versatile 190-305 models

Step 6

Route the steering extension cable (P/N 57885) into the cab towards the Autopilot controller mounting location.

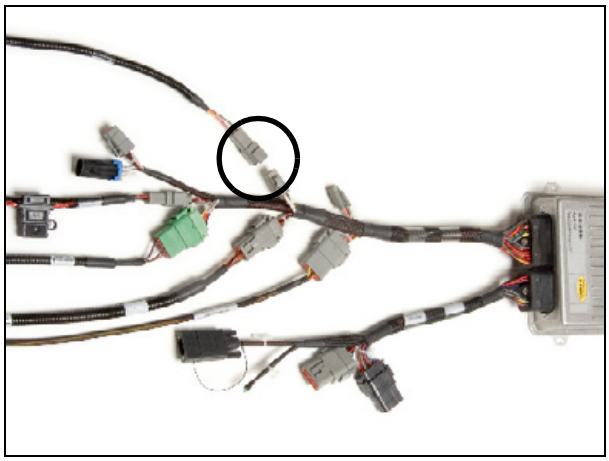




Versatile 190-305 models

Step 7

Connect the AutoSense steering cable (P/N 57885) connection to P6 on the main wiring harness. P6 is labeled **Steering Sensor**.



Step 8

⚠ **CAUTION –** Make sure that the cable is not pinched or pulled as the wheels are steered from full right to full left and that the cabling does not contact any hot or moving components on the machine.

Attach the cabling to the AutoSense device and then route the cable to the NavController harness.

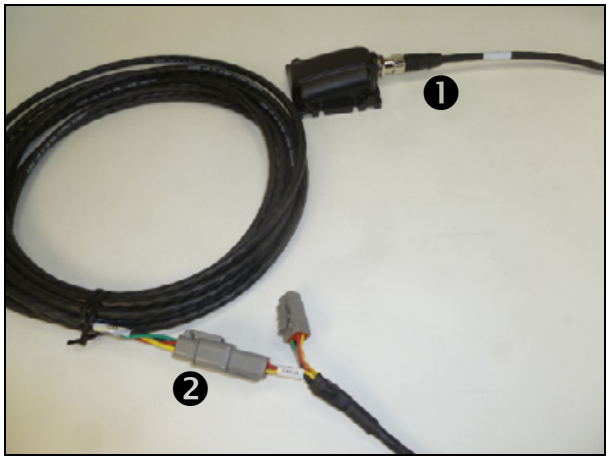


Connecting the IMD-900 harness to the 54602 harness

Step 1

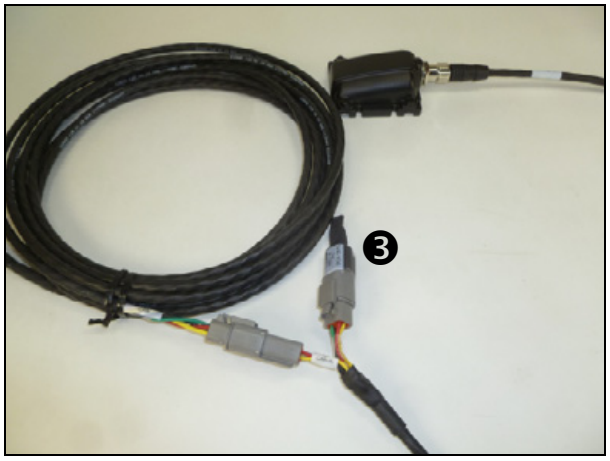
Connect the P1 connector of the 112759 cable to the IMD-900 ❶.

Connect the R3 connector to the 114675 cable ❷.



Step 2

Connect the CAN terminal to the P3 connector of the 112759 cable ❸.



Step 3

With the cable routed to the NavController, the R1 connector will connect to the P12 connector on the 54602 harness on the NavController as shown.



4

Antenna/Receiver Installation

- Antenna and receiver installation options
- Attaching the plate with VHB adhesive
- Installing the NAV-900 guidance receiver using the guidance controller quick adapter plate
- Installing the NAV-900 guidance receiver using a spar mount
- Optional: Using the P/N 110308 for quick release mounting of the NAV-900 from the spar
- NAV-900 guidance receiver: Connecting the cables - both methods
- NAV-900 guidance receiver: Connecting an external radio (as required)

This chapter describes how to install the required receiver and antenna, and radio module (if used). To install the antenna for the display, see Chapter 5, Display Installation.

Antenna and receiver installation options

There are several options for mounting components (the antenna, radio module, or GNSS receiver) on the cab roof depending on the accuracy required and the antenna type:

- **VHB mount** – Attach a P/N 62034 plate or a V plate directly to the roof with VHB (Very High Bond) adhesive for magnetic mounting. See page 46.
- **Magnetic mounting** – Magnetic mounting for quick release is available for both VHB and spar type mounting.

Possible mounting methods

GNSS receiver	VHB mounted plate	VHB V mounted plate
CFX-750 display GFX-750 display TM-200 module	✓	✓
AG-372 receiver	✘	✓
*Ag*GPS® 542 receiver	✓	✓

NOTE – For quick release magnetic mounting with an AG-372 receiver, order the kit listed in Antenna mounting kits, page 10 and use VHB to attach the V plate to the roof.

NOTE – For WAAS, EGNOS, OmniSTAR VBS, Beacon, and DGPS applications, place either of the plates in a firm location using the VHB.

Attaching the plate with VHB adhesive

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

Standard P/N 62034 plates are provided in most kits. You can use the VHB mounting method to attach either a P/N 62034 plate or a V plate.

- **RTK, OmniSTAR, DGPS, GLONASS applications** – To use this method for high accuracy, the surface must be rigid and free of "oil panning". For RTK or OmniSTAR HP corrections, the spar method is recommended. The V plate provides repeatable positioning of the antenna.
- **WAAS, EGNOS, OmniSTAR VBS, Beacon applications** – Use a P/N 62034 plate for simplified installation in applications where high accuracy is not critical.

Step 1

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

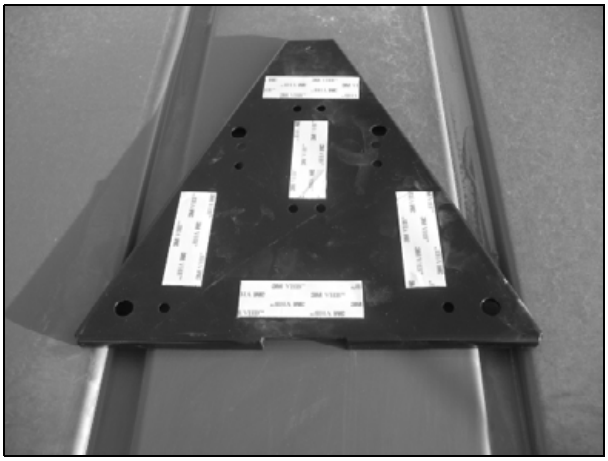


Step 2

V plate only

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

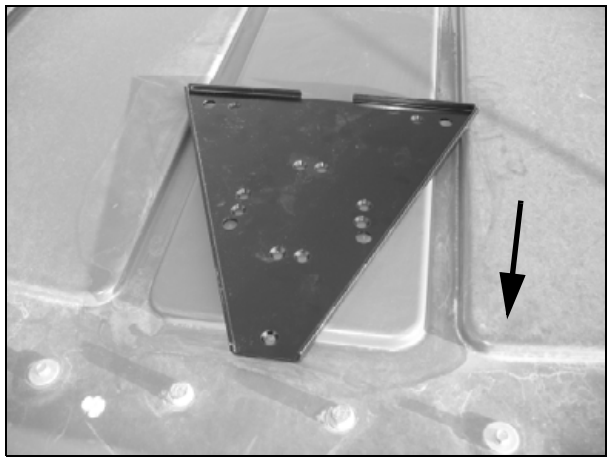
NOTE – The VHB strips are pre-applied to the P/N 62034 plate.



Step 3

Remove the backing from the other side of the VHB strips and then apply the plate to the cab roof. The narrow end of the plate points forward. Ensure that the VHB strips make even contact with the surface. Apply pressure and then leave for approximately 30 minutes to adhere.

NOTE – The arrow points to the front of the vehicle.



V plate

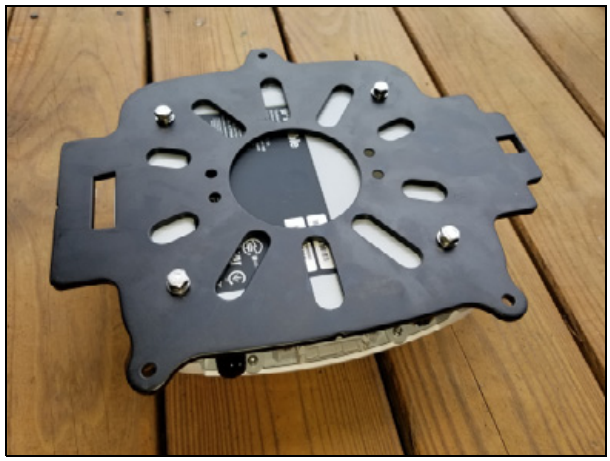


P/N 62034

Installing the NAV-900 guidance receiver using the guidance controller quick adapter plate

Step 1

If the machine is equipped with the CNH receiver mount (P/N 111339), you can mount it onto the NAV-900 controller and lock it into place.







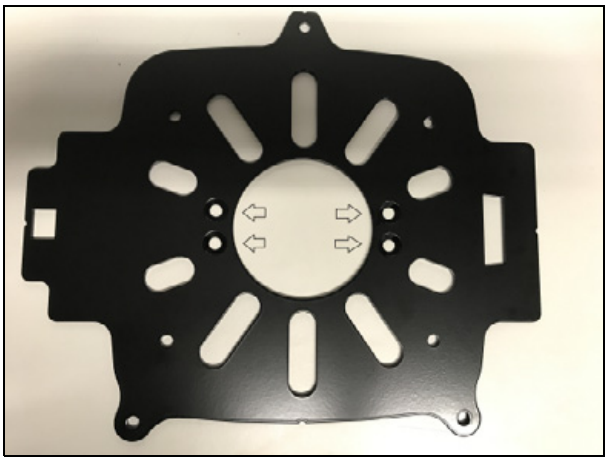
Installing the NAV-900 guidance receiver using a spar mount

For vehicles that do not have factory mounting methods or the factory mounting method is already in use, spar mounts are available to span between rigid bolts on the roof.

Lengths available are:

- P/N 64898: 16.5" – 28.5"
- P/N 55349: 27.5" – 37.5"
- P/N 53676: 36.5" – 46.5"
- P/N 55348: 45" – 55"
- P/N 66774: 54" – 64"

The guidance controller plate has a four-bolt pattern that directly attaches to the spar mounts:



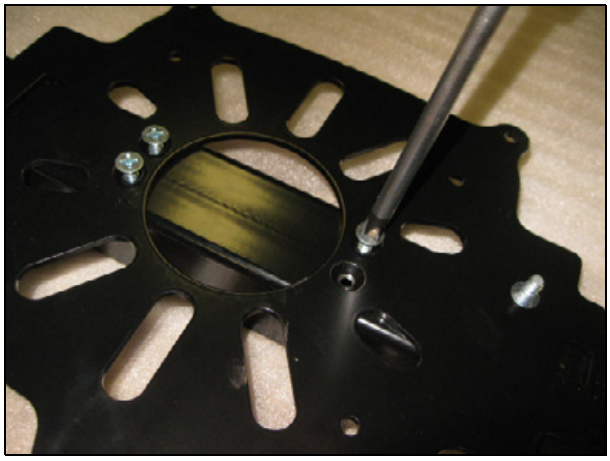
Step 1

Remove the spar from the box and lay out the hardware.



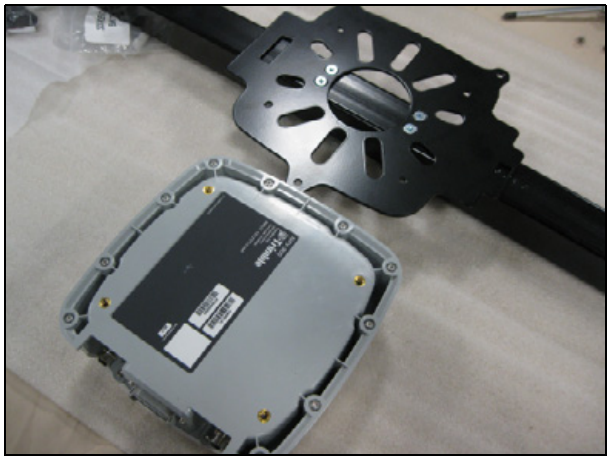
Step 2

Align the four holes on the base mounting plate with the four holes in the spar. Install the supplied ¼-20 × ½" countersunk bolts and tighten appropriately.



Step 3 .

Lay the guidance controller on its top.



Step 4

Lay the mounting plate with spar attached over on top. Attach the plate to the guidance controller with the four 6 mm bolts and lock washers. Tighten the bolts. Take care not to over-tighten the bolts as damage may result.







Step 5

Loosen and remove the large bolts on the cab that are to be used to fasten down the spar.



Step 6

Place the supplied spacer on the cab mounting point. The thickness of the spacer will vary by kit.



Step 7

Locate the provided longer bolts to be use for securing the spar. Put both the original washer and the larger provided washer on the bolt.



Step 8

Place the spar on the space and insert the bolt.



Step 9

Insert the bolt on the other side of the cab. Center the spar on the cab using a measuring tape. Then tighten the bolts.

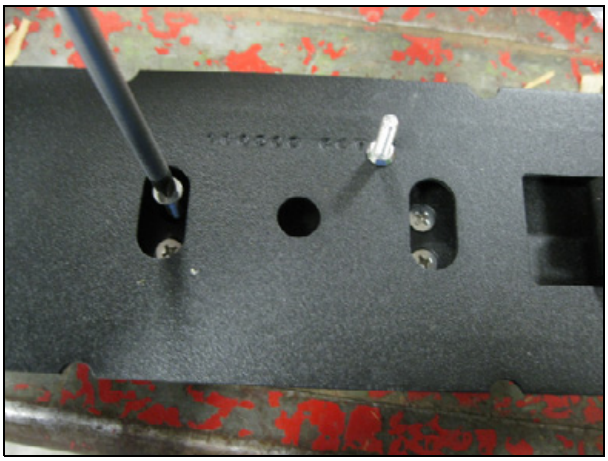




Optional: Using the P/N 110308 for quick release mounting of the NAV-900 from the spar

Step 1

Using the 4 bolts in the GFX-750 display kit, mount the Quick release bracket to the spar.



Step 2

Attach the NAV-900 base plate to the NAV-900 controller.

Step 3

Slip the slot of the base plate over the tang on the bracket and then use the latch to secure the receiver.





NAV-900 guidance receiver: Connecting the cables - both methods

Step 1

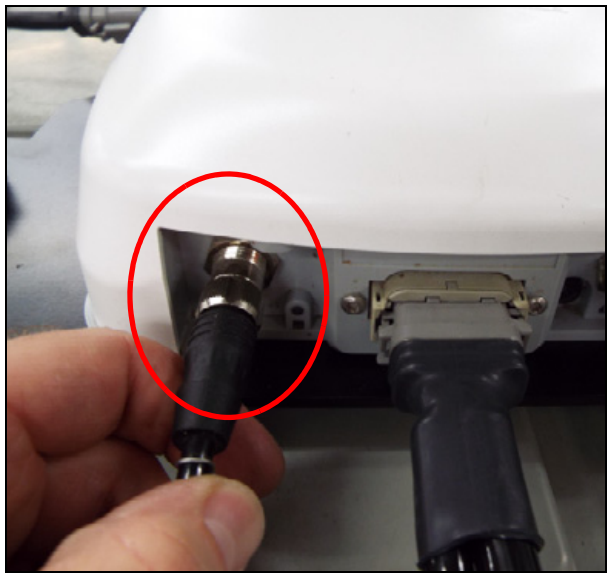
Plug the P1 connector on cable P/N 110547 into the back of the NAV-900 guidance receiver.





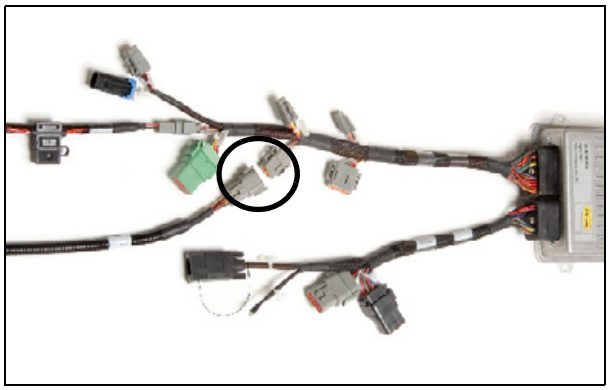
Step 2

Connect P2 of the P/N 110540 cable to the 4-pin M12 connector on the left side of the NAV-900 controller.

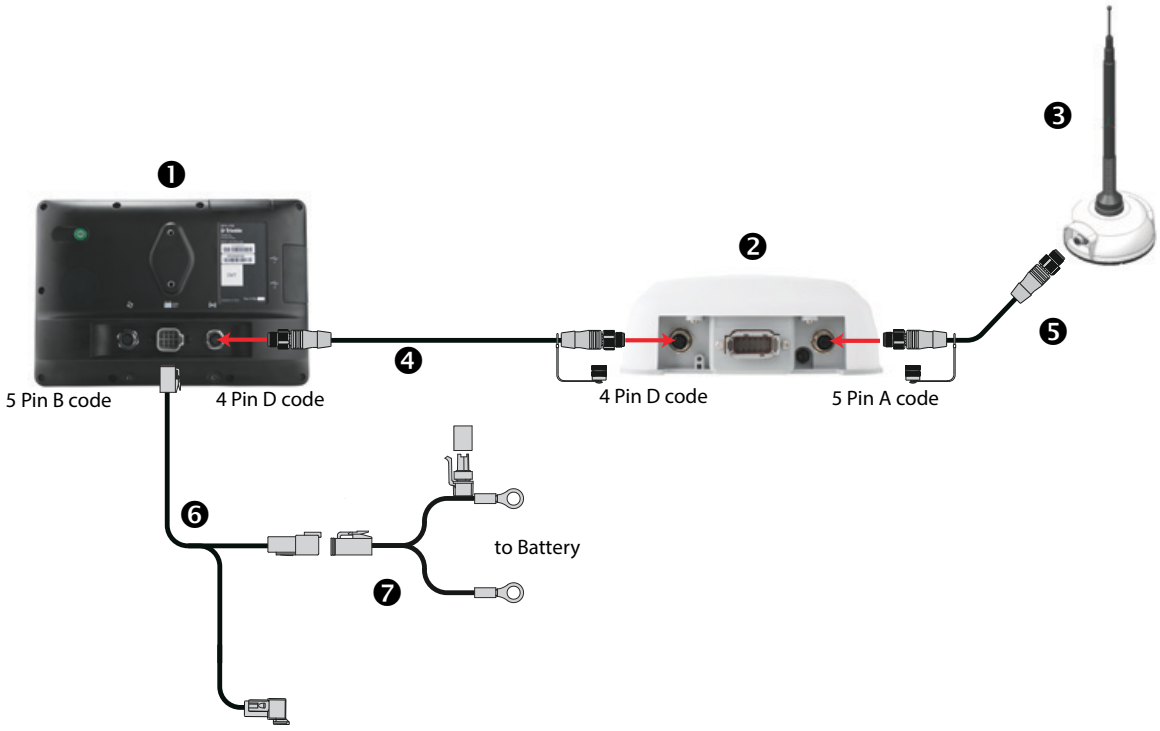


Step 3

Route the other end of the P/N 110547 cable to the P3 connector on the P/N 54601 harness of the NavController II/III.



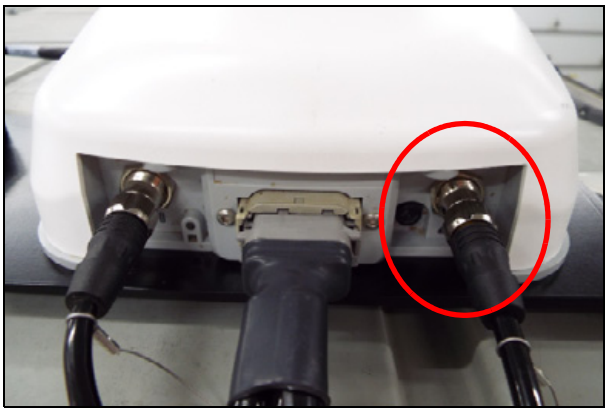
NAV-900 guidance receiver: Connecting an external radio (as required)



Item	Description	Trimble part number
1	GFX-750/XCN-1050 display, with PIQ App	121000-XX
2	NAV-900 Guidance Controller	108993-05
3	Ag-820 radio kit, 430-450 MHz Ag-820 radio kit, 450-470 MHz Ag-820 radio kit, 900 MHz	123500-44 123500-46 123500-90
4	Cable Assy, NAV-900 to in-cab RTK Radio, DTM06, 4.5 m	110540
5	Cable Assy, NAV-900 to Ag-820	113295
6	Cable Assy, GFX-750/XCN-1050, Power to display, CAN, 2.5 m	110551
7	Cable Assy, GFX-750/CFX-750/FM-750/XCN-1050/FmX®/FM-1000 Basic Power, 4 m	67258

Step 1

Connect the radio interface cable (P/N 113295) to the right 5-pin M12 connector on the NAV-900 controller.



Step 2

Attach the radio to the roof or bracket in a secure fashion.

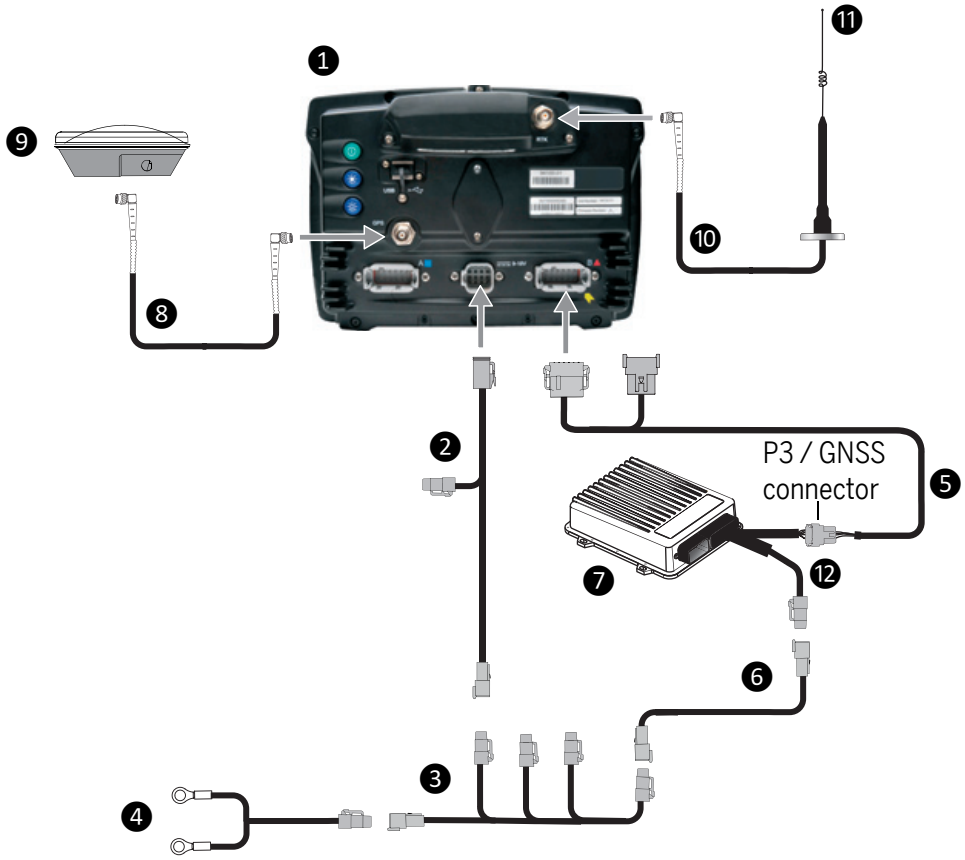


5

Display Installation

- CFX-750 display: Components
- CFX-750 display: Preparation
- CFX-750 display: Installation
- CFX-750 display: Installing the wiring harness
- TMX-2050 display: Components
- TMX-2050 display: Preparation
- TMX-2050 display: Installing the wiring harness
- TMX-2050 display: AG-25 GNSS antenna
- CFX-750 and TMX-2050 displays: Installing the GNSS antenna and plate
- CFX-750 and TMX-2050 displays: Installing the RTK radio antenna
- GFX-750/XCN-1050 display: Components
- GFX-750/XCN-1050 display: Preparation
- GFX-750/XCN-1050 display: Installation
- GFX-750/XCN-1050 display: Installing the wiring harness

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 display, and will void the warranty.

Item	Description	Trimble part number
1	CFX-750 display **NOTE –** RTK password required.	93100-02
2	CFX-750 power cable	66694
3	CFX-750 power cable with relay and switch (power bus)	67259
4	Basic power cable	67258
5	CFX-750 to NavController II cable with port replicator	75741
6	2 pin DTM to 2 pin DT power adaptor	67095
7	NavController II	55563-00
8	8 m GNSS TNC/TNC RT angle cable	50449
9	AG25 GNSS antenna	77038-00
10	NMO to TNC 20ft antenna cable and base	72122
11	900 MHz radio antenna kit	22882-10
12	Main NavController II cable	54601

CFX-750 display: Preparation

Step 1

Locate the CFX-750 display, the RAM mount, and the RAM mount clamp.



Step 2

Use the provided metric hardware to attach the RAM mount to the rear of the display.



Step 3

Attach the RAM mount to the rear of the display.



CFX-750 display: Installation

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

Step 1

Decide where you will mount the display in the vehicle cab and then use the provided bolts to attach the bar mount to the rail.

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

Step 2

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

To connect power to the CFX-750 display, see Chapter 8, Controller Installation.



CFX-750 display: Installing the wiring harness

Step 1

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

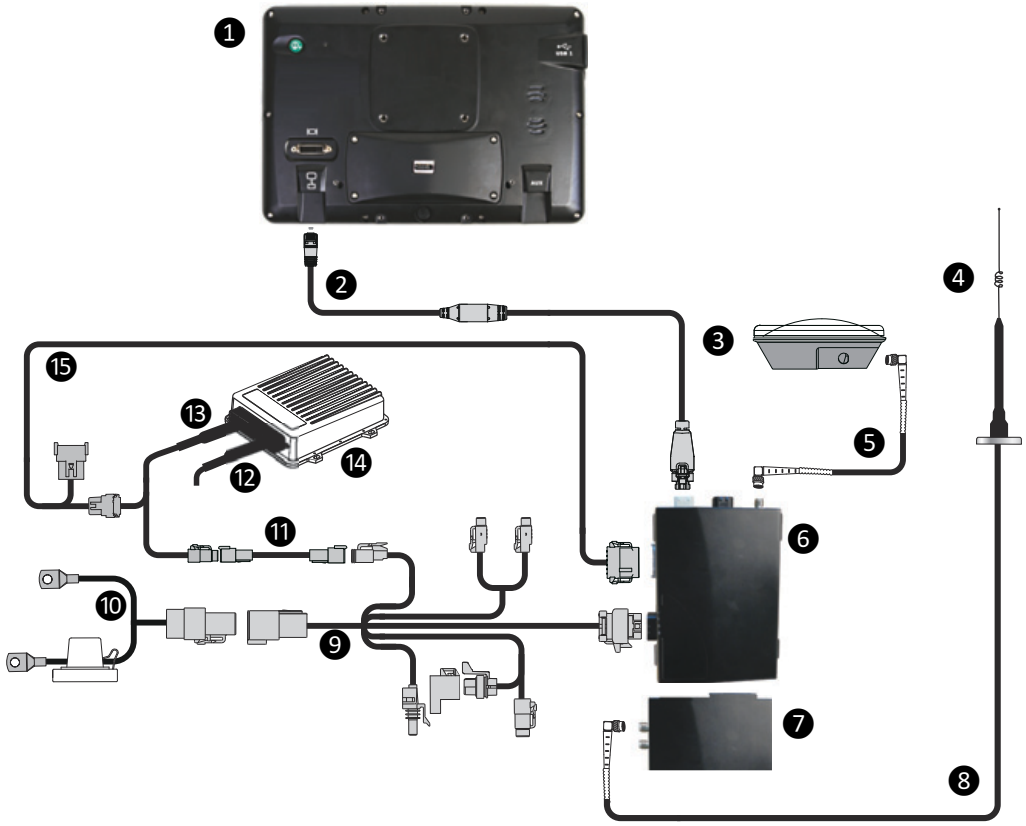
Step 2

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.



TMX-2050 display: Components

This graphic shows how to connect the TM-200 Module and the Autopilot system for after-market installations.



Item	Description	Trimble part number
1	TMX-2050 display	96700-00
2	TM-200 Module to display cable	93843
3	AG-25 GNSS antenna	77038-00
4	900 MHz radio antenna kit	22882-10
5	8 m GNSS TNC/TNC RT angle cable	50449
6	TM-200 Module	95060-00
7	AG-815 radio	
8	NMO-to-TNC 20 ft antenna cable and base	72122
9	TM-200 Module power and I/O cable	92676
10	Cable, battery	92905
11	2-pin DTM to 2-pin DT power adapter cable	67095
12	Cable, NavController diagnostic	54602
13	Main NavController cable	54601
14	NavController	55563-00 55566-00
15	TM-200 Module to NavController cable with port replicator	75741

TMX-2050 display: Preparation

The display mount attaches to a rail in the cab of the vehicle. The TMX-2050 display connects to the display mount.

The TM-200 Module connects to the display with a single cable.

Additional components to install depend on your connection and correction services, and the features you are using.

⚠ **CAUTION –** Make sure the vehicle power is off when you are connecting system components.

Installing the display and mount

Use the mounting hardware supplied in the display kit to mount the display in the vehicle cab.

⚠ **CAUTION –** Make sure the vehicle power is off when you are connecting system components.

Before completing installation steps, select a position in the cab where the bar mount (4) can be attached to a rail. Hold the display in the selected location and make sure that it:

- Is easy to see, but does not block the driver's view.
- Is within the driver's reach so that the USB drive is easy to remove and replace.
- Does not interfere with the driver getting in or out of the cab, or any other activities.

.

Item	Description
1	Mounting plate
2	Zirkona mount
3	Tightening arm
4	Bar mount



Step 1

Locate the TMX-2050 display and the Zircona mount and mounting hardware.



Step 2

Use the provided hardware to attach the Zircona mount to the display as shown





Step 3

Decide where you will mount the display in the vehicle cab and then use the provided bolts to attach the rail mount of the Zircona display mount to the rail of the vehicle.



Step 4

The Zircona mount has a tightening arm ❸. Loosen the arm to let the display move on the mount.

Step 5

Adjust the TMX-2050 display until it is positioned where you want it.

Turn the tightening arm clockwise to tighten the Zircona mount and lock the display in the desired position.

Step 6

Connect the display cable to the display.



Step 7

Route the other end of the display cable to the TM-200 Module and then connect it to the TM-200 Module.



TMX-2050 display: Installing the wiring harness

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

Step 1

Connect the P5 and P2 connectors on the harness, P/N 106111, to the TM-200 Module.

Step 2

On the TM-200 Module locate the display connection point.



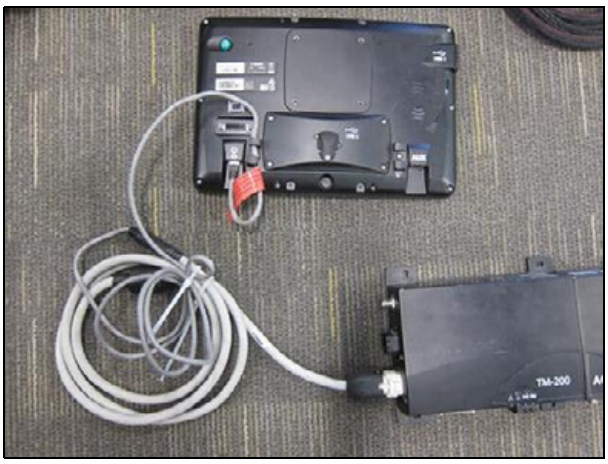
Step 3

Connect the display cable P/N 93843 to the TM-200 Module.



Step 4

Route the cable between the TMX-2050 display and the TM-200 Module.



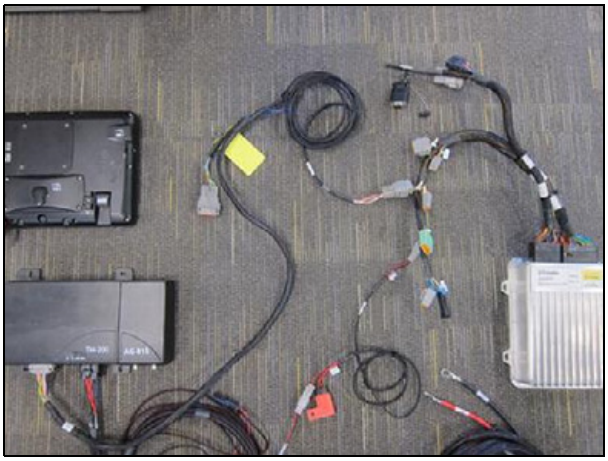
Step 5

Locate the Port labeled **A** on the TM-200 Module and then connect NavController connection cable, P/N 75741.



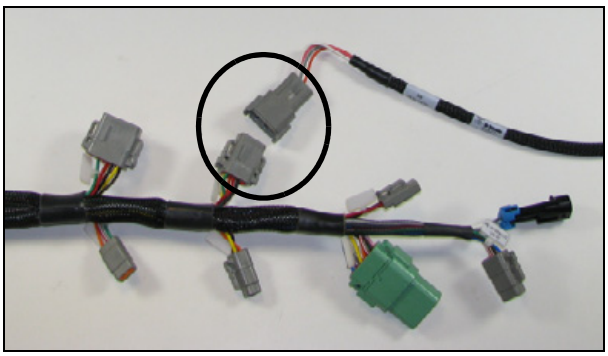
Step 6

Route the other end of the P/N 75741 cable to the plug on the P/N 54601 harness labeled **GPS**.



Step 7

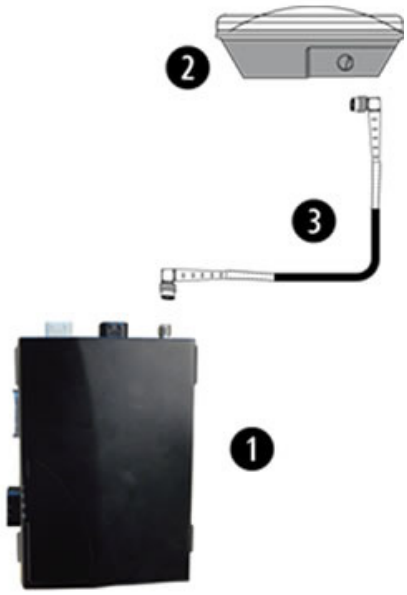
Connect the cable to the P3 connector on the NavController main harness.



TMX-2050 display: AG-25 GNSS antenna

The AG-25 GNSS antenna is required for all correction services. It enables the GNSS receiver in the TM-200 Module to receive GPS / GNSS corrections. The antenna connects to the antenna connector on the TM-200 Module

⚠ **CAUTION –** Wireless cellular radio and GNSS signals can interfere with each other. For best performance, mount antennas at least 1 meter away from each other.



Item	Description
1	TM-200 Module
2	AG-25 GNSS antenna
3	AG-25 antenna to TM-200 Module cable

The AG-25 GNSS antenna has integrated magnets for easy installation. To attach the antenna to a non-metal surface, use the mounting plate.

NOTE – If you are using the AG-25 GNSS antenna with a steering system, refer to the installation instructions for the steering system to determine the correct location for mounting the antenna.

CFX-750 and TMX-2050 displays: Installing the GNSS antenna and plate

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

NOTE – The V plate antenna bracket is available on the Autopilot price list. See Antenna mounting kits, page 10.

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.

Use a ⅝" bolt to attach the AG25 antenna to the spar, as shown.

Measure the length between the bolts on the roof of the vehicle and order the appropriate spar:

- Spar 36.5" - 46.5": P/N 53676
- Spar 54" - 64": P/N 66774



VHB adhesive method

Standard 4" x 6" plates are provided in most kits. You can use Very High Bond (VHB) to attach either a 4" x 6" plate or a V plate.

- **GLONASS, RTK, OmniSTAR, DGPS applications** – To use this method for high accuracy, the surface must be rigid and free of "oil panning". For RTK or OmniSTAR HP corrections, the spar method is recommended. The V plate provides repeatable positioning of the antenna.
- **WAAS, EGNOS, OmniSTAR VBS, Beacon applications** – Use a 4" x 6" plate for simplified installation in applications where high accuracy is not critical.

Step 1

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

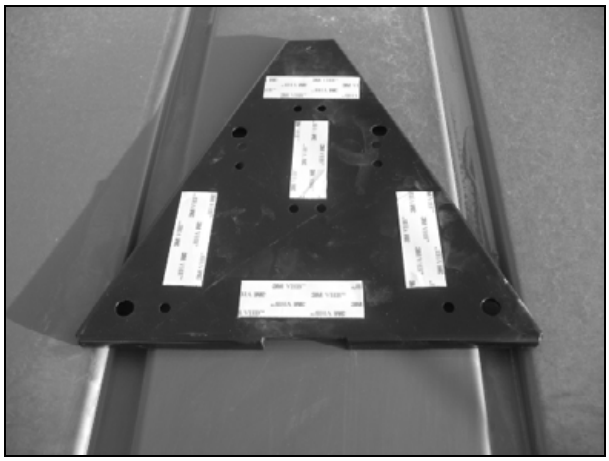


Step 2

V plate only

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

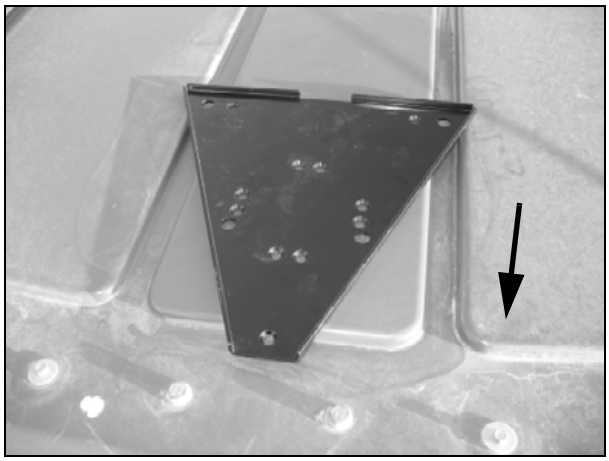
NOTE – The VHB strips are pre-applied to the 4" x 6" plate.



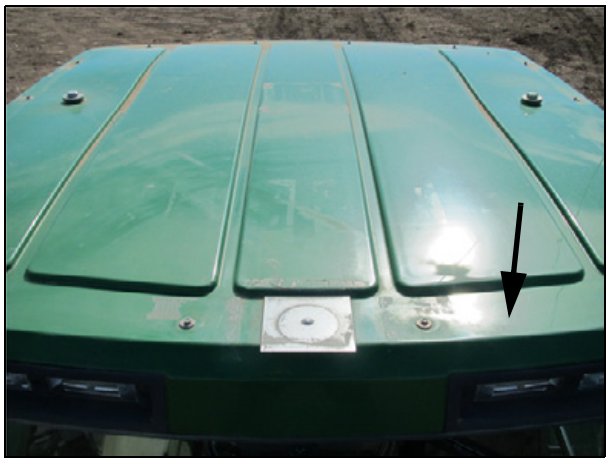
Step 3

Remove the backing from the other side of the VHB strips and then apply the plate to the cab roof. The narrow end points forward. Ensure that the VHB strips make even contact with the surface. Apply pressure and then leave for approximately 30 minutes to adhere.

NOTE – The arrow in this figure points to the front of the vehicle.



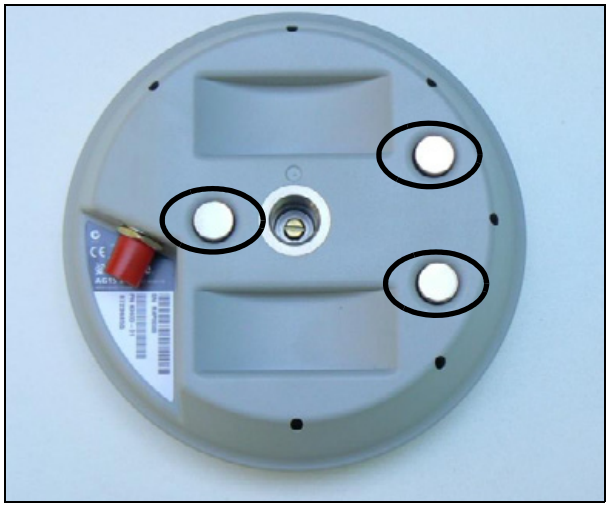
V plate



4" x 6" plate

Step 4

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



Otherwise, attach the large magnet with a ⅝" stud to the GNSS antenna.



Step 5

GLONASS, RTK, OmniSTAR, DGPS, applications

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



WAAS, EGNOS, VBS, Beacon applications

Attach the antenna to the center of the 4" x 6" plate.



Step 6

Both models

Attach the antenna/receiver cable to the antenna and then route the cable into the cab through the rubber grommet at the base of the rear window. Secure the cable along the way.



CFX-750 and TMX-2050 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.

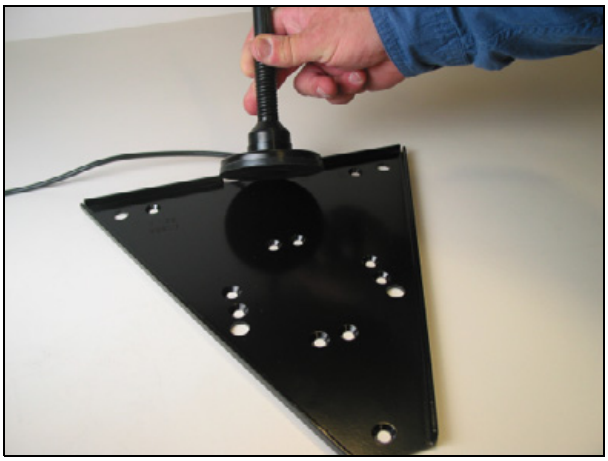
Step 1

Connect the radio antenna to the magnetic antenna base.



Step 2

Attach the magnetic radio antenna base to the rear of the V plate on the roof. If the cable does not reach the V plate, use the 4" x 6" plate with the VHB provided to relocate the antenna.



Step 3

Attach the magnetic radio antenna base to the rear of the V plate on the roof. If the cable does not reach the V plate, use the P/N 62034 plate with the VHB provided to relocate the antenna.

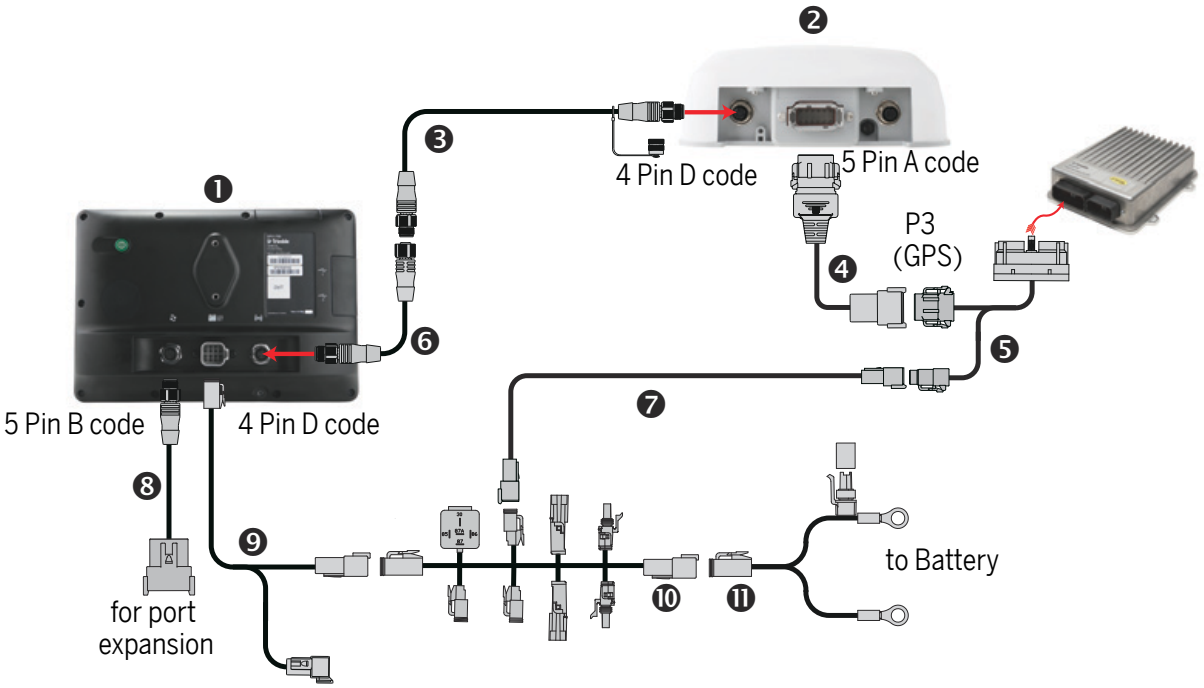
Step 4

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



GFX-750/XCN-1050 display: Components

This graphic shows the Autopilot system using NAV-900 as an external guidance device.



Item	Description	Trimble part number
1	GFX-750/XCN-1050 display, with PIQ App	121000-XX
2	NAV-900 Guidance controller	108993-05
3	Cable Assy, GFX-750/XCN-1050 to NAV-900, Power/Ethernet (BRR), 5 m	110540
4	Cable Assy, NAV-900 to Nav II/III, AutoPilot™	110547
5	Cable, NavController II/III, Main	54601
6	Cable Assy, GFX-750/XCN-1050 to NAV-900, Power/Ethernet (BRR) Extension, 2.5 m. Optional extension for large vehicles	112082
7	Cable Assy, 2 PIN DTM to 2 PIN DT Power Adapter	67095
8	Cable Assy, GFX-750/XCN-1050, Expansion Port Basic, RS-232, Dig I/O, 2.5 m	110545
9	Cable Assy, GFX-750/XCN-1050, Power to display, CAN, 2.5 m	110551
10	Cable Assy, GFX-750/CFX-750/FM-750/XCN-1050/FmX/FM-1000 Power with Relay and Switch (Acc)	67259
11	Cable Assy, GFX-750/CFX-750/FM-750/XCN-1050/FmX/FM-1000 Basic Power, 4 m	67258

GFX-750/XCN-1050 display: Preparation

The GFX-750/XCN-1050 display utilizes the RAM mount system.



Attach the diamond-based ram mount to the back of the display using the provided fasteners.



GFX-750/XCN-1050 display: Installation

Step 1

Use the supplied V bolts or alternate (not supplied) hardware to affix the RAM base mount to the desired location in the cab. Ideally this position should be readily viewable and within easy reach of the operator.



Step 2

Use the supplied RAM clamp to connect the RAM base mount to the RAM ball attached to the display.



Step 3

Position the display as desired and then tighten the clamp.



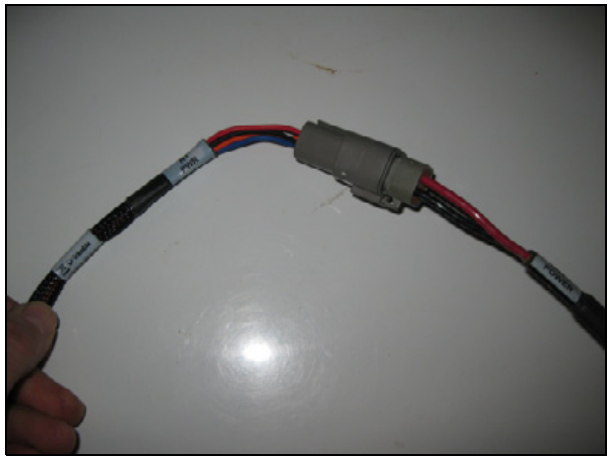
GFX-750/XCN-1050 display: Installing the wiring harness

The GFX-750 display requires a nominal 12 volt power source. The P/N 67258 cable has ring terminal leads for connecting to a battery or other cable mount point.

⚠ **WARNING –** If the machine has a master electrical disconnect, ensure that the display/receiver will be disconnected from the battery when the master disconnect is used. Failure to do so may result in hardware damage and void warranty. Additionally, it is suggested to utilize power terminals located within the cab of the vehicle that ground in the same location as the cab components to avoid ground shifts between the display and any vehicle ECUs.

Step 1

Connect the other 4-pin Deutsch connector of cable P/N 110551 to the P/N 67258 base power cable.



Step 2

Connect the 6-pin DT power/CAN cable P/N 110551 to the middle port of the display.



Step 3

Connect the 4-pin M12 connector to the 4-pin receiver connector. Note the Keying and number of pins.



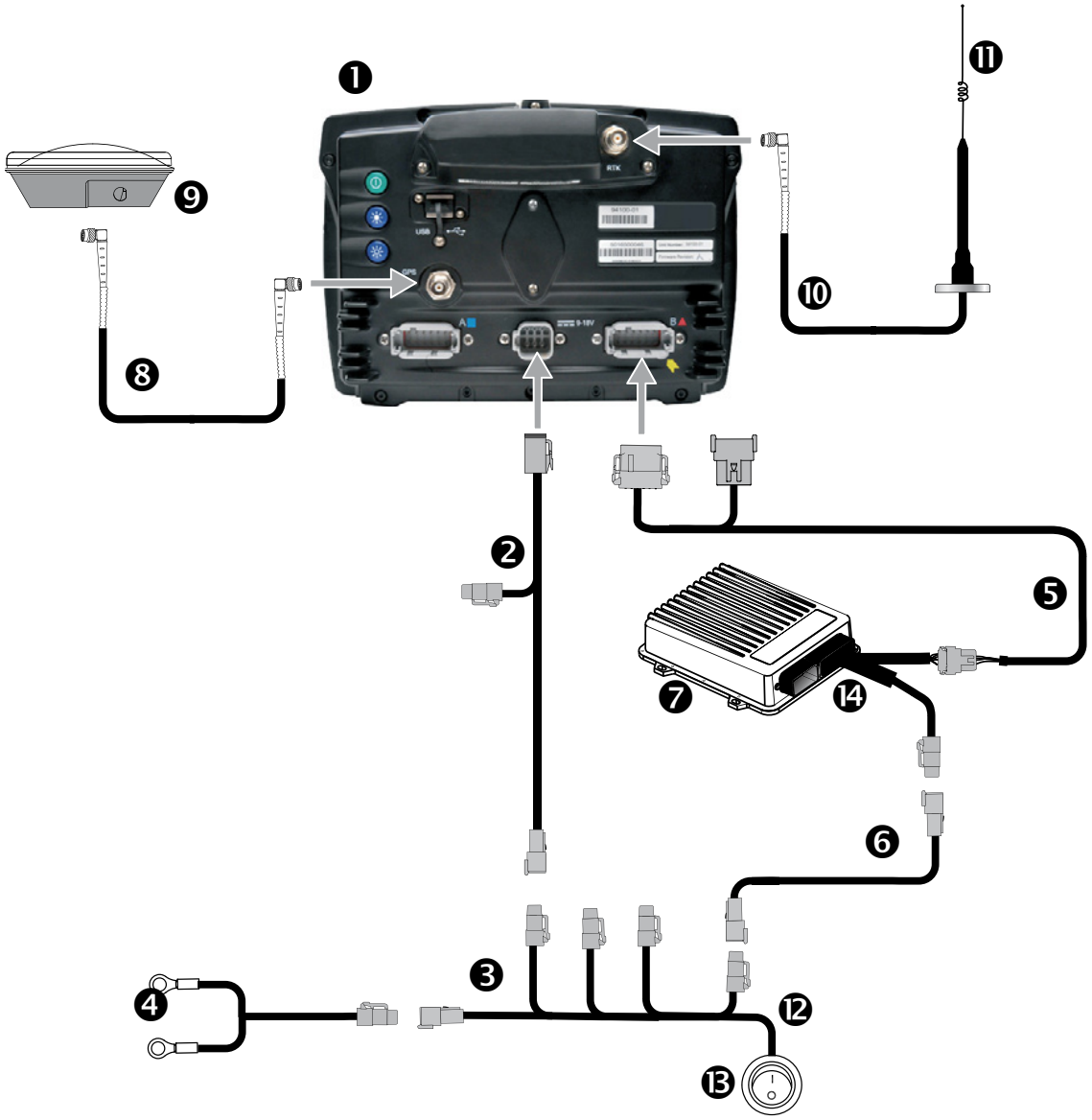


6

Power Harness Installation

- CFX-750 display: Components
- GFX-750/XCN-1050 display: Components
- CFX-750 and GFX-750 displays: Installing the power harness
- CFX-750 and GFX-750 displays: Configuring the power bus options
- TMX-2050 display: Components
- TMX-2050 display: Installing the power harness
- TMX-2050 display: Configuring the power options

CFX-750 display: Components



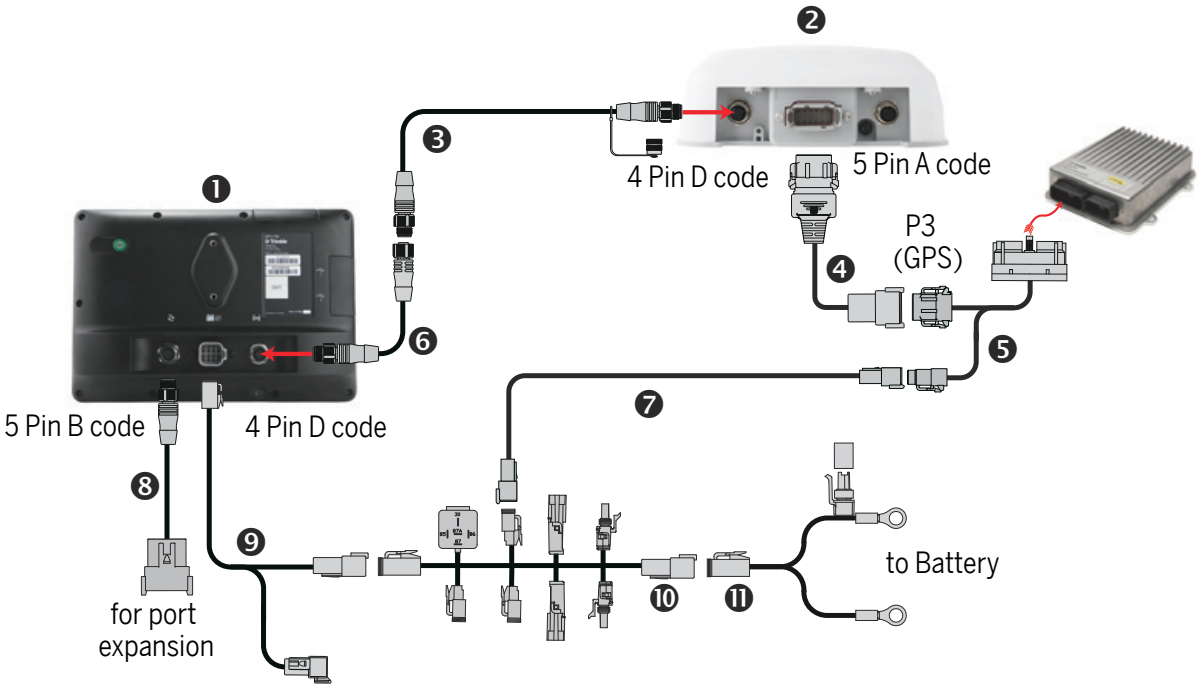
⚠ **CAUTION –** Connecting the Port Replicator on the CFX-750 display to NavController II cable ❺ to the P4 or P12 connector of the NavController II harness ⓮ will result in damage to the CFX-750 display and will void the warranty.

Item	Description	Trimble part number
1	CFX-750 display **NOTE –** RTK password required.	94100-02
2	CFX-750 power cable	77282
3	CFX-750 power cable with relay and switch (power bus)	67259
4	Basic power cable	67258

Item	Description	Trimble part number
5	CFX-750 to NavController II cable with port replicator	75741
6	2 pin DTM to 2 pin DT power adaptor	67095
7	NavController II	55563-00
8	8 m GPS TNC/TNC RT angle cable	50449
9	AG25 GNSS antenna	77038-00
10	NMO to TNC 20ft antenna cable and base	62120
11	900 MHz radio antenna kit	22882-10
12	External switch cable included with kit	Part of P/N 67259
13	External switch included with kit	Part of P/N 67259
14	Main NavController II cable	54601

GFX-750/XCN-1050 display: Components

This graphic shows the Autopilot system using NAV-900 as an external guidance device.



Item	Description	Trimble part number
1	GFX-750/XCN-1050 display, with PIQ App	121000-XX
2	NAV-900 Guidance controller	108993-05
3	Cable Assy, GFX-750/XCN-1050 to NAV-900, Power/Ethernet (BRR), 5 m	110540
4	Cable Assy, NAV-900 to Nav II/III, AutoPilot™	110547
5	Cable, NavController II/III, Main	54601
6	Cable Assy, GFX-750/XCN-1050 to NAV-900, Power/Ethernet (BRR) Extension, 2.5 m. Optional extension for large vehicles	112082
7	Cable Assy, 2 PIN DTM to 2 PIN DT Power Adapter	67095
8	Cable Assy, GFX-750/XCN-1050, Expansion Port Basic, RS-232, Dig I/O, 2.5 m	110545
9	Cable Assy, GFX-750/XCN-1050, Power to display, CAN, 2.5 m	110551
10	Cable Assy, GFX-750/CFX-750/FM-750/XCN-1050/FmX/FM-1000 Power with Relay and Switch (Acc)	67259
11	Cable Assy, GFX-750/CFX-750/FM-750/XCN-1050/FmX/FM-1000 Basic Power, 4 m	67258

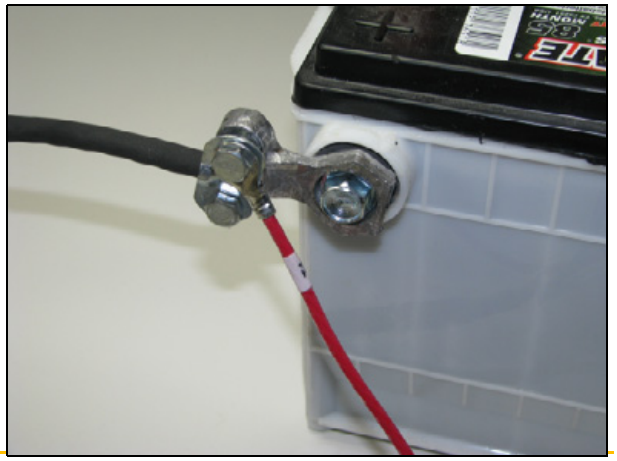
CFX-750 and GFX-750 displays: Installing the power harness

NOTE – Unless otherwise stated, instructions for "the display" refer to either the CFX-750 display or the GFX-750 display.

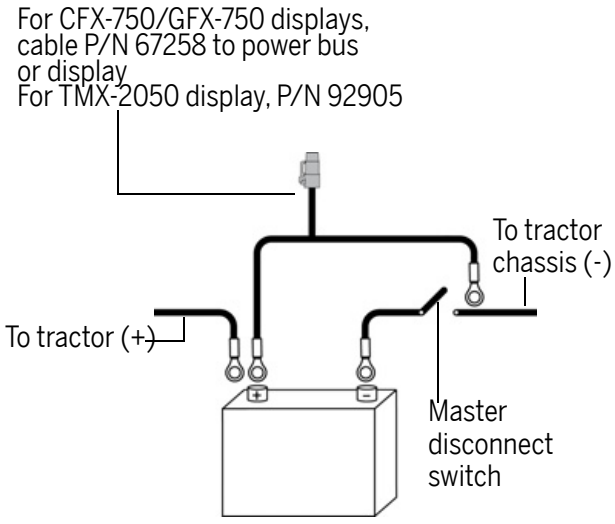
⚠ **WARNING –** To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

Step 1

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

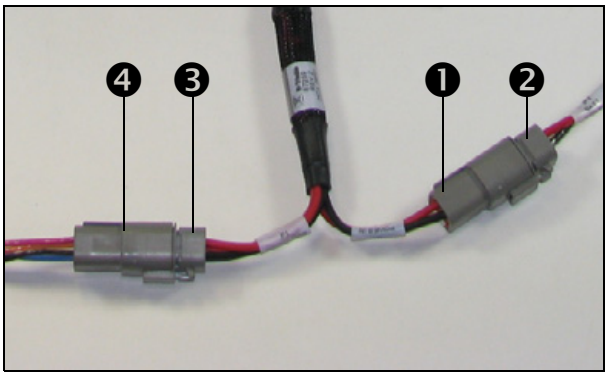


⚠ **CAUTION –** If the vehicle has a master electrical disconnect, make sure the basic power cable (P/N 67258 / 92905) is not directly attached to the battery terminal that is disconnected by the master switch - the negative pole in this example.
Attach this terminal side just past the main disconnect so that it is as close as possible to the battery but still gets disconnected when the master disconnect is turned off. Failure to do so can result in damaging the display.



Step 2

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



Step 3

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



CFX-750 display

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

NOTE – Unless otherwise stated, instructions for "the display" refer to either the CFX-750 display or the GFX-750 display.

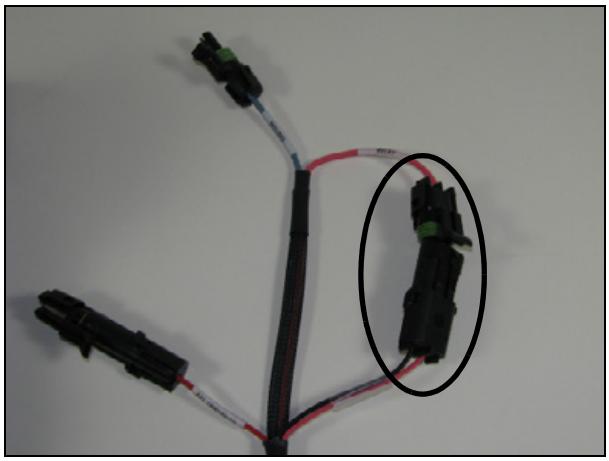
⚠ **WARNING –** To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

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.

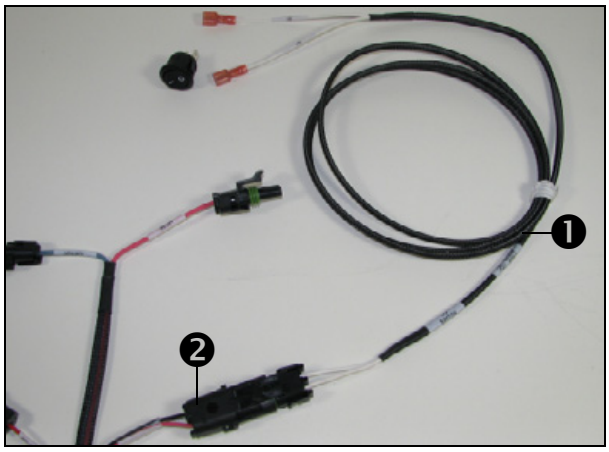


External switch is used to turn on the Autopilot system

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.

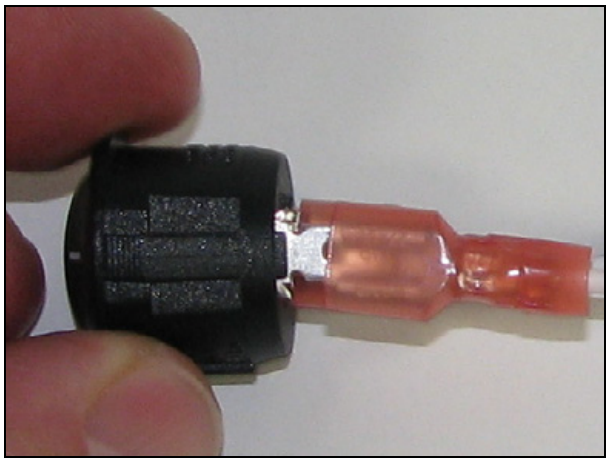
NOTE – To install the switch provided, drill a ¾" hole.



Step 2

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

NOTE – Polarity is not important.

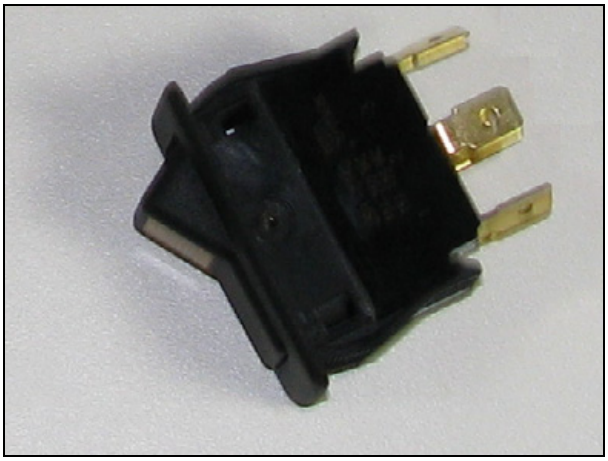


Installing the optional illuminated full or standard Euro switch

Step 1

Find an available knockout location on the vehicle console.

NOTE – An alternative location is required for the switch provided.

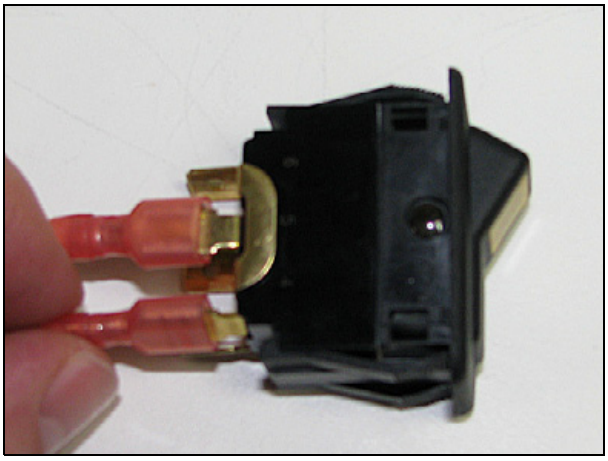


Step 2

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

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

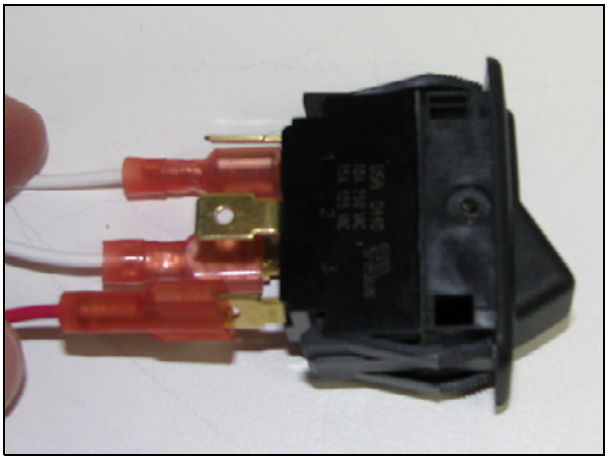
NOTE – Polarity is important.



Step 3

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

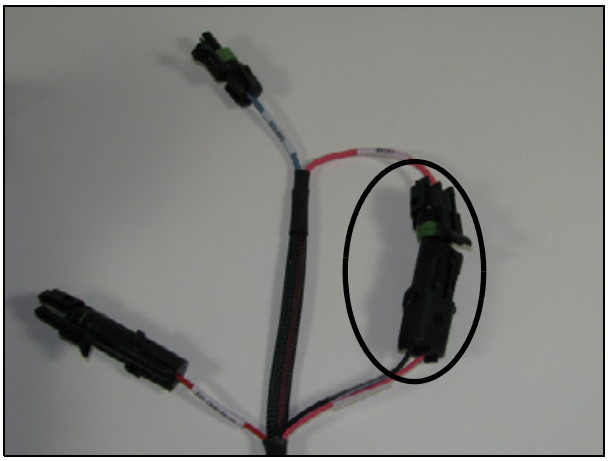
NOTE – This additional wire is required to allow the switch to illuminate.



Ignition is used to turn on the Autopilot system

Step 1

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

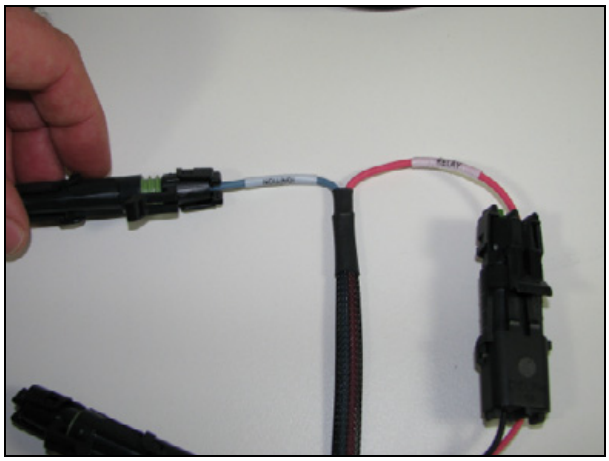


Step 2

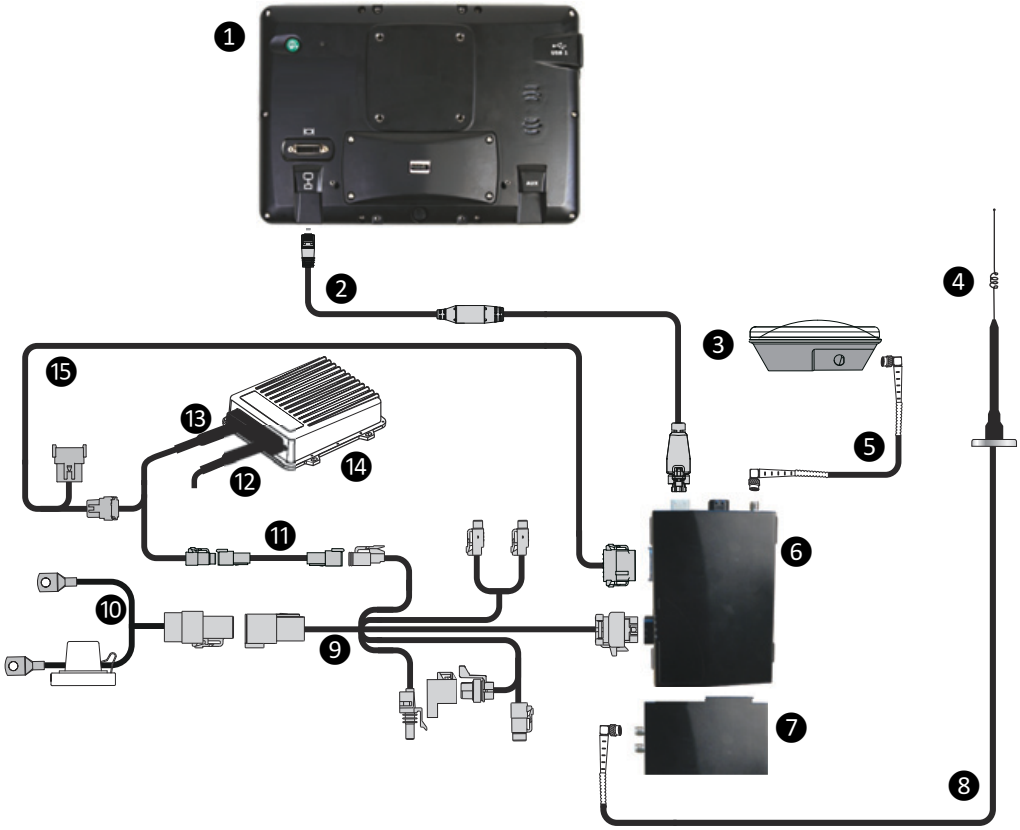
Connect the cable labeled **R8 Ignition** (included with the power bus) to connector **P3 Ignition** on the power bus.

Step 3

Route the cable to the vehicles ignition.



TMX-2050 display: Components



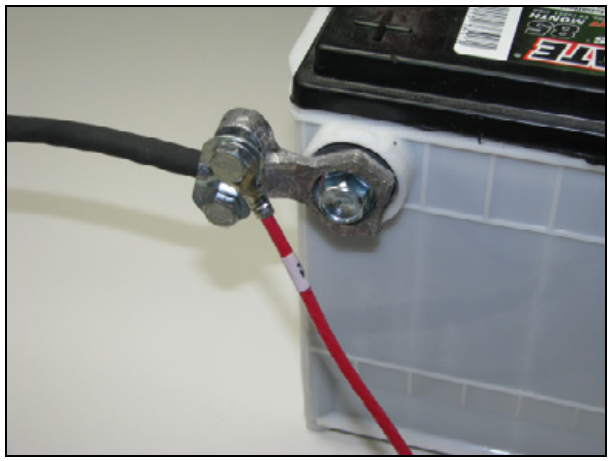
Item	Description	Trimble part number
1	TMX-2050 display	96700-00
2	TM-200 Module to display cable	93843
3	AG-25 GNSS antenna	77038-00
4	900 MHz radio antenna kit	22882-10
5	8 m GNSS TNC/TNC RT angle cable	50449
6	TM-200 Module	95060-00
7	AG-815 radio	
8	NMO-to-TNC 20 ft antenna cable and base	72122
9	TM-200 Module power and I/O cable	92676
10	Cable, battery	92905
11	2-pin DTM to 2-pin DT power adapter cable	67095
12	Cable, NavController diagnostic	54602
13	Main NavController cable	54601
14	NavController	55563-00 55566-00
15	TM-200 Module to NavController cable with port replicator	75741

TMX-2050 display: Installing the power harness

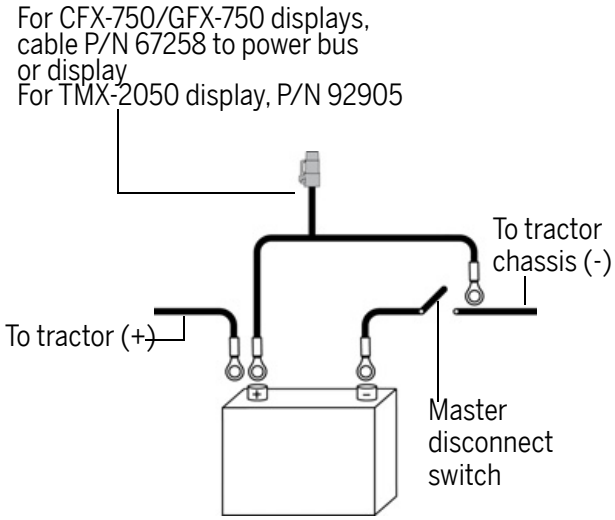
⚠ **WARNING –** To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information.

Step 1

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



⚠ **CAUTION –** If the vehicle has a master electrical disconnect, make sure the basic power cable (P/N 67258 / 92905) is not directly attached to the battery terminal that is disconnected by the master switch - the negative pole in this example.
Attach this terminal side just past the main disconnect so that it is as close as possible to the battery but still gets disconnected when the master disconnect is turned off. Failure to do so can result in damaging the display.



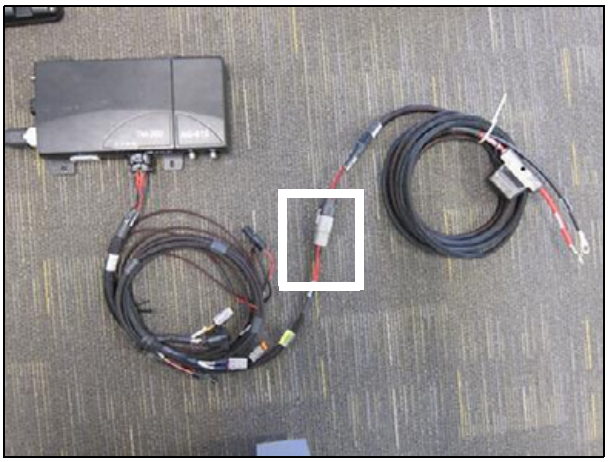
Step 2

Connect the power I/O cable P/N 92676 to the power port on the TM-200 Module.



Step 3

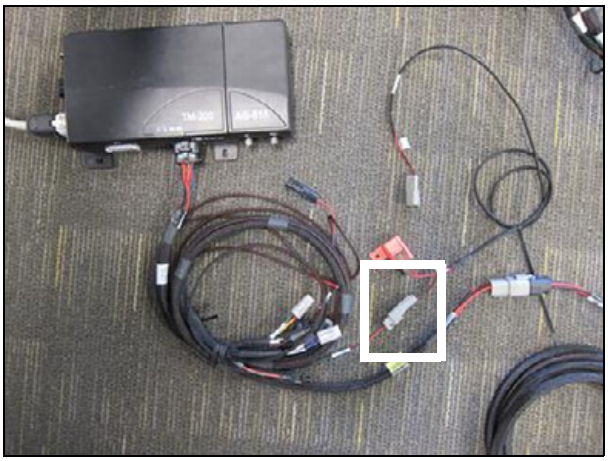
Route the power cable P/N 92905 that you previously connected to the battery and connect it to the R3 power in plug on the P/N 92676 cable.



Step 4

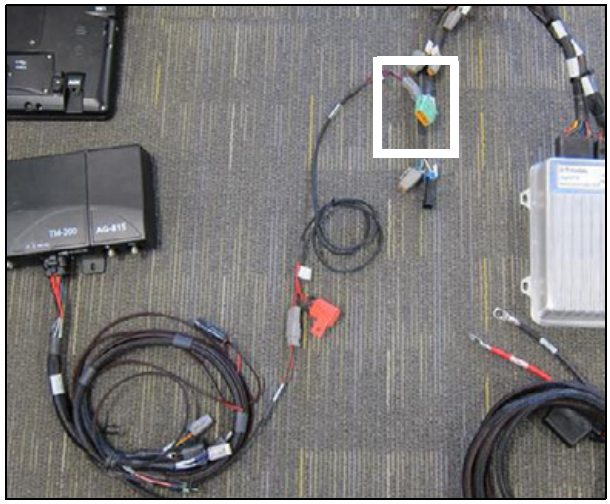
Connect the 2-pin DTM to 2-pin DT power adapter P/N 67095 to the P2 power out connector on the P/N 92676 cable.

Route the other end to the NavController harness P/N 54601.



Step 5

Connect the other end of the P/N 67095 cable to the P2 power plug on the P/N 54601 cable.



TMX-2050 display: Configuring the power options

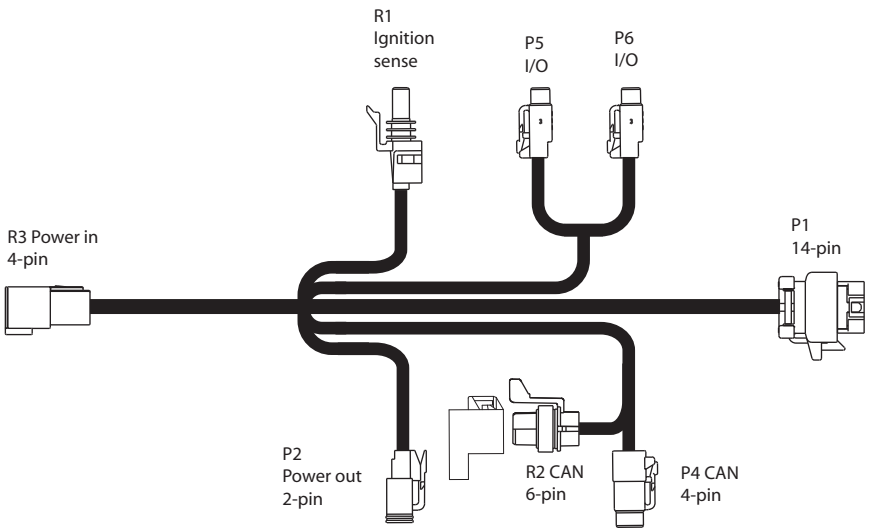
⚠ **WARNING –** To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information.

When you use the power bus cable, use one of the following methods to turn on the Autopilot system on the Trimble TMX-2050 displays:

- The display power button. No further changes need to be made to the power cables.
- Ignition sensing. See below.

Ignition sensing

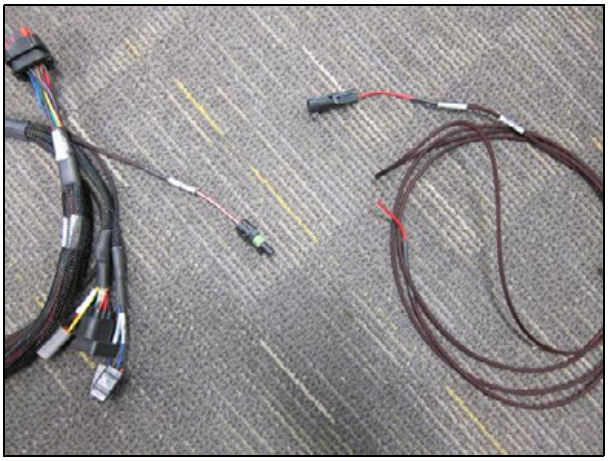
For ignition sensing with the TMX-2050 display, connect the ignition on the power supply to the R1 connector on the harness, P/N 92676.



For more information on how to use the ignition sensing option, refer to the *TMX-2050 Display User Guide*.

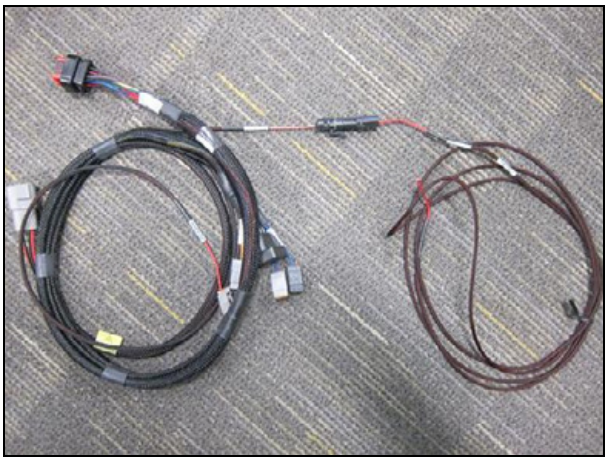
Step 1

Locate the R1 ignition sensing plug on the P/N 92676 cable; also locate the ignition sensing wire provided with the P/N 92676 cable.



Step 2

Connect the red ignition sense wire to the vehicle ignition source then route to the plug on the harness and then connect it.

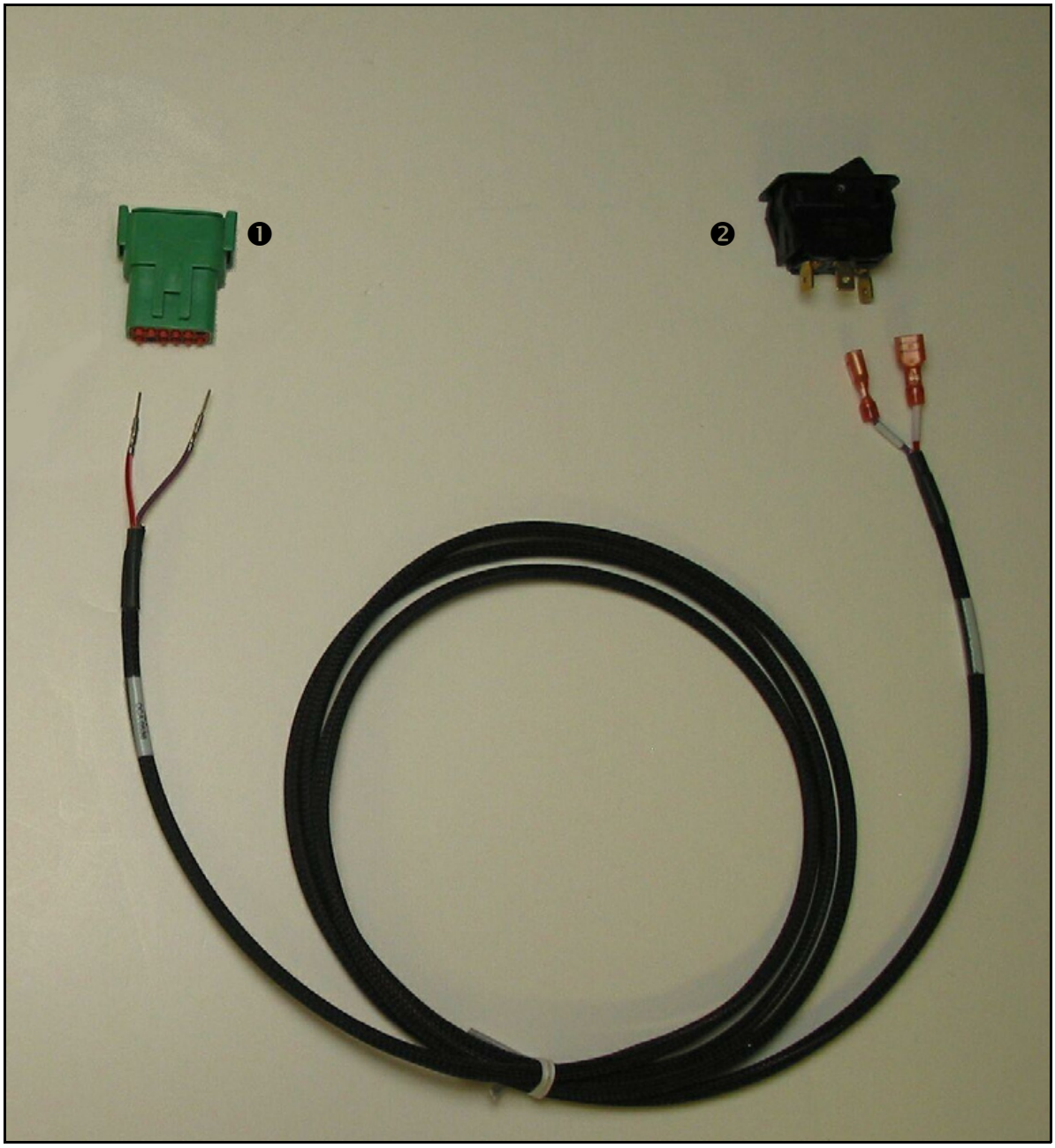


7

Remote Engage Switch Installation

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

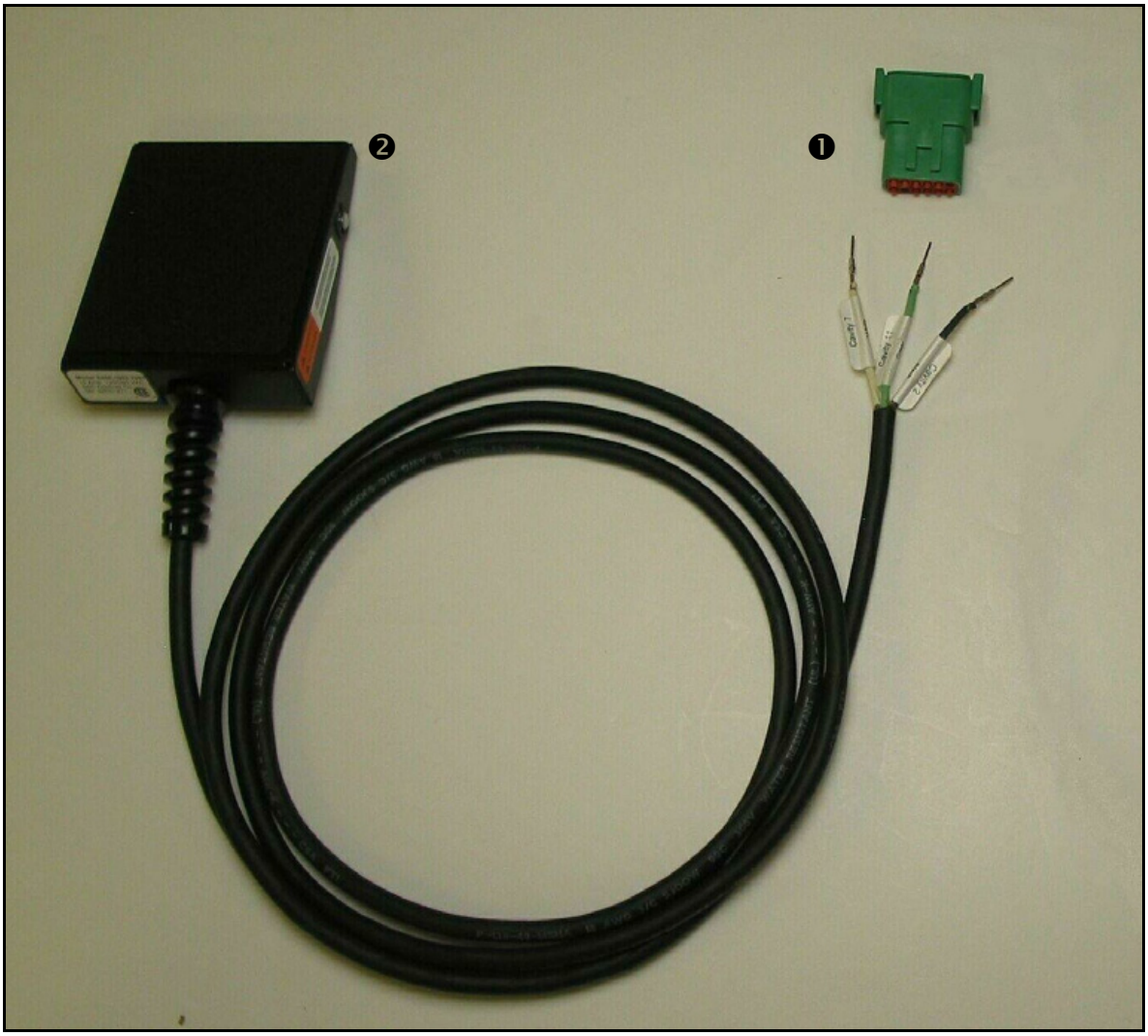
Remote engage switch components: Rocker switch



Item	Description
1	DTM receptacle
2	Remote engage rocker switch

NOTE – This is a Full or Standard Euro switch, depending on the kit ordered.

Remote engage switch components: Foot switch

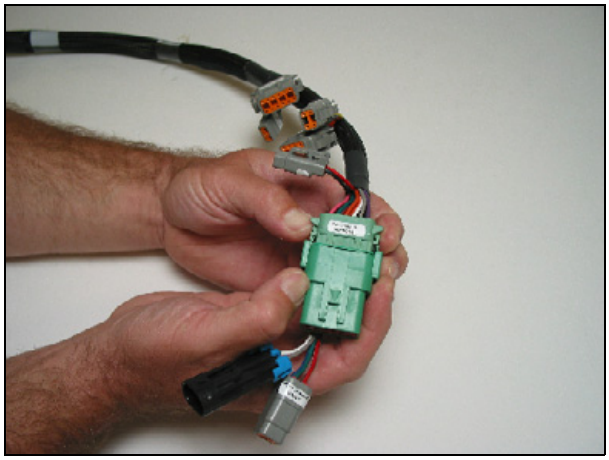


Item	Description
1	DTM receptacle
2	Remote engage foot switch

Preparing the remote engage cable

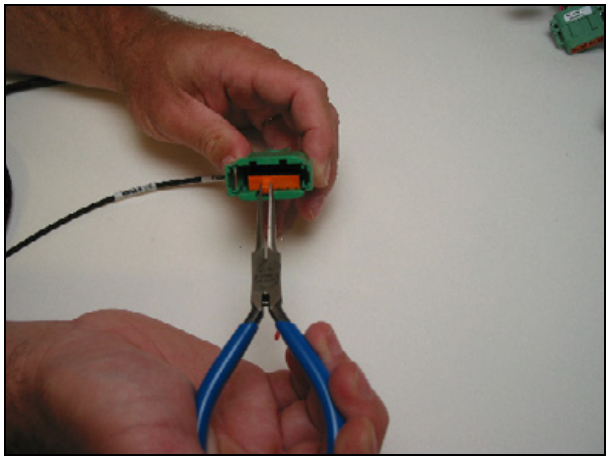
Step 1

Locate the green 12-pin Deutsch receptacle on the P-5 leg of the main controller harness. For more information, see Chapter , Controller connections.



Step 2

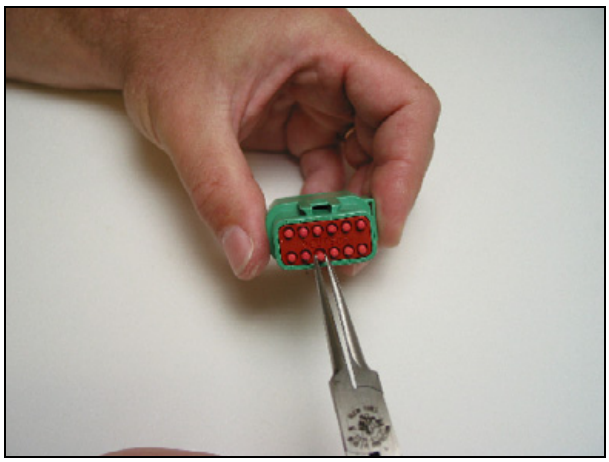
Remove the wedge from the connector.



Step 3

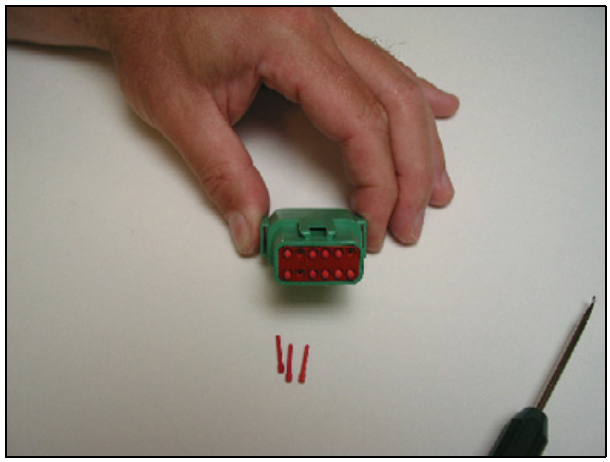
Rocker switch only

Remove the plugs from cavity 2 and cavity 7.



Foot Switch Only

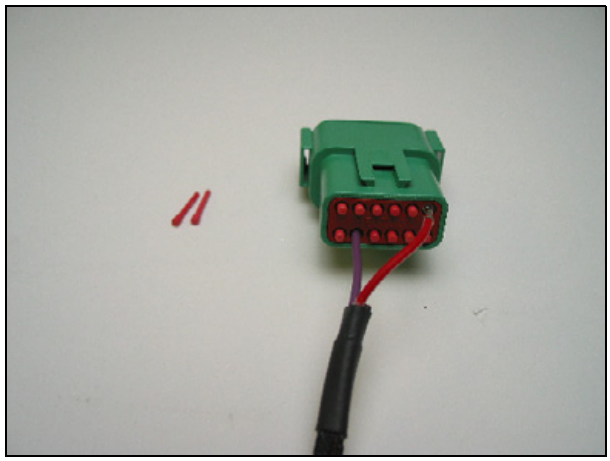
Remove the plugs from cavity 2, cavity 7, and cavity 11.



Step 4

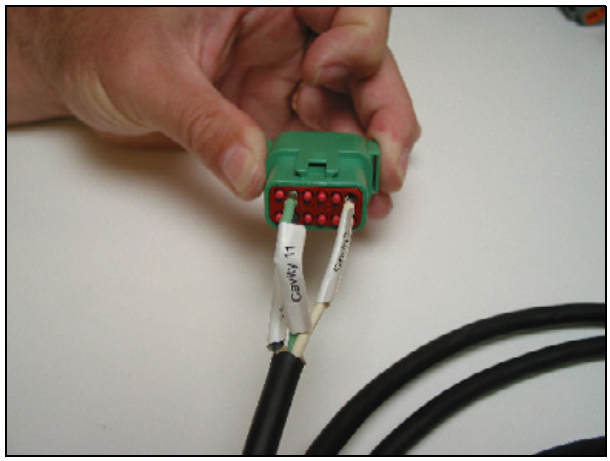
Rocker switch only

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



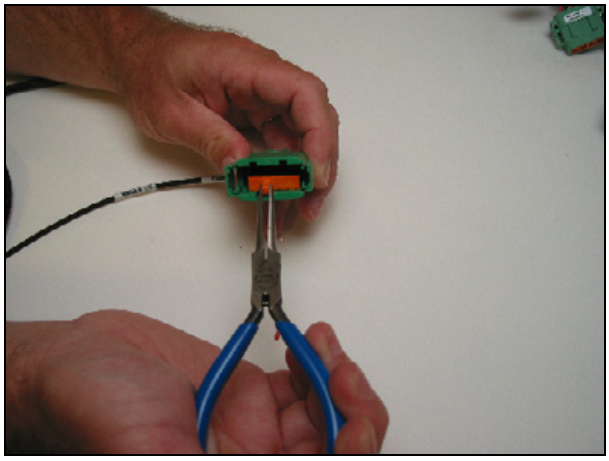
Foot switch only

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



Step 5

Pull on the wires to seat them in place and then 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

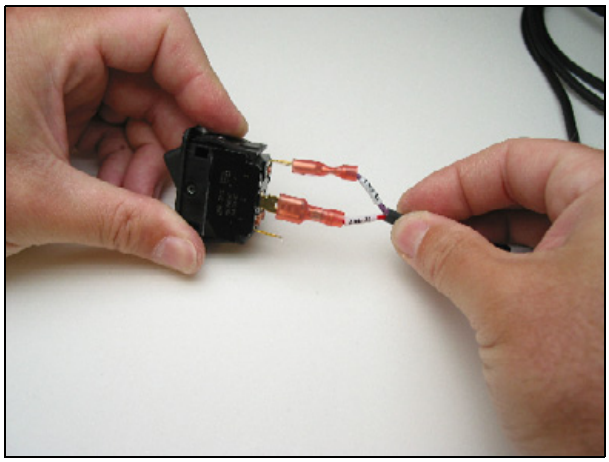
Run the cable to a clear location on the floor board. Use double-sided tape to secure the pedal. Route the cable under the floor mat.



Step 7

Rocker Switch Only

Connect the wires to the switch. Match the print on the switch body with the 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 for less than 0.5 seconds will not engage the system.

Step 2

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

8

Controller Installation

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

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.

Step 1

Identify the controller mounting location to the left of the driver's seat.



Ford / New Holland / Buhler-Versatile models



Versatile 190 - 305 models

Step 2

Remove the screws holding the plastic panels and cowling to the left of the driver's seat.











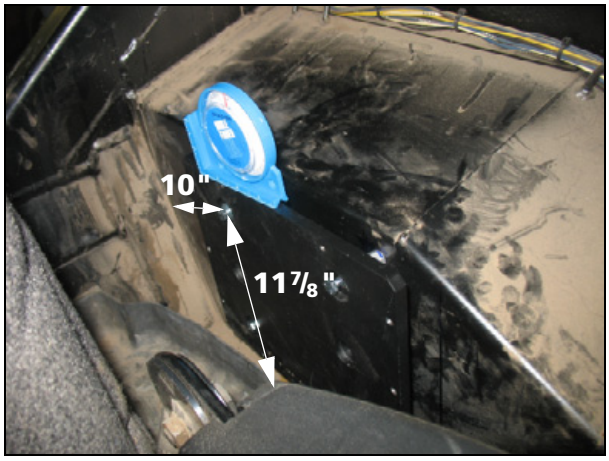
Versatile 190 - 305 models

Step 3

Place the controller mounting plate (P/N 54828) in position.

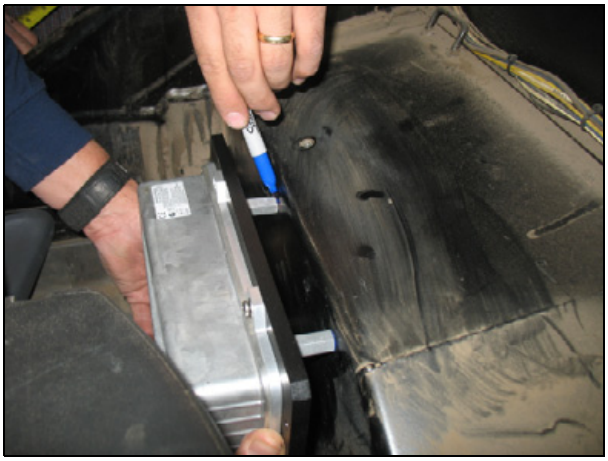
Use a level and the dimensions shown as a guide. The dimensions shown are from the rear wall and *floor of the cab* referencing the top corner mounting plate 3/8 '' hole. See for alternate view.

NOTE – You can move the controller up or down, and left or right, but it must remain level.



Step 4

Drill 4 holes with a 3⁄8" diameter bit. Ream the newly drilled holes with a ½" or larger countersink. Bolt the plate into place using the supplied ¼'' fasteners. Match drill the remaining holes.

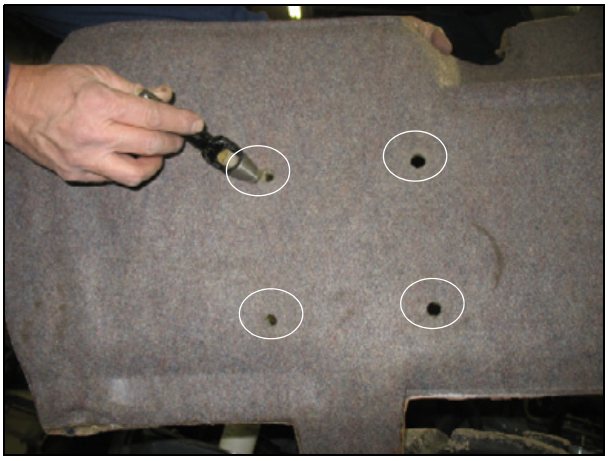


Step 5

Remove the controller plate. Place the cowling over the newly drilled holes and mark the standoff locations.

Use a ½'' arch hold punch to remove material at the standoff locations.

TIP – Use soft plywood or a soft board for a backstop when punching holes. Hit the arch punch hard with a dead blow hammer. Cut through from the backside of the cowling.

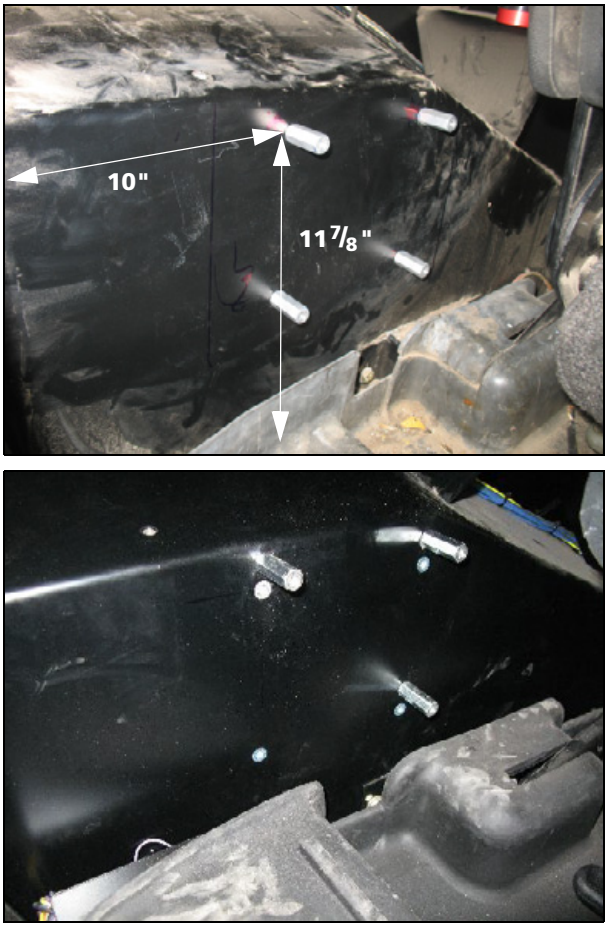


Step 6

Install the four standoffs provided with ¼" hardware.

- *Ford/New Holland/Buhler models*: Install four standoffs provided with ¼" hardware.
- *Versatile 190-305 models*: Install three standoffs provided with ¼" hardware.

TIP – The top left standoff will be:
10" from the rear cab wall;
11 $^{7}/_{8}$" from the cab floor.



Versatile 190 - 305 models

Step 7

Replace the cowling and use ¼" bolts and washers to attach the controller mounting plate to the standoffs.

NOTE – Verify that the mounting plate is level.





Versatile 190 - 305 models

Step 8

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



Step 9

Install the controller using the #10-32 self-locking screws provided.

Step 10

Make all the required cable connections to the Autopilot controller. See Controller connections, page 113.

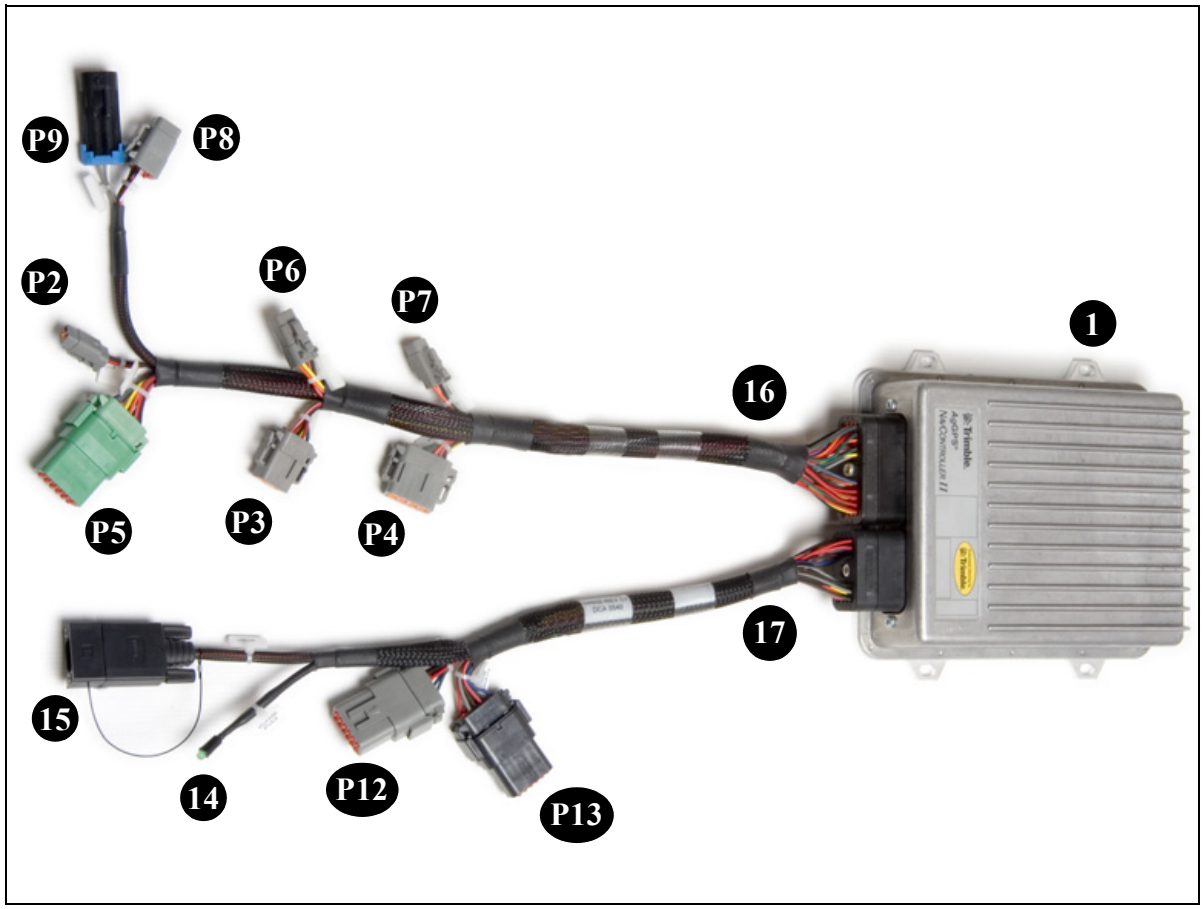


Ford / New Holland / Buhler-Versatile models



Versatile 190 - 305 models

Controller connections



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

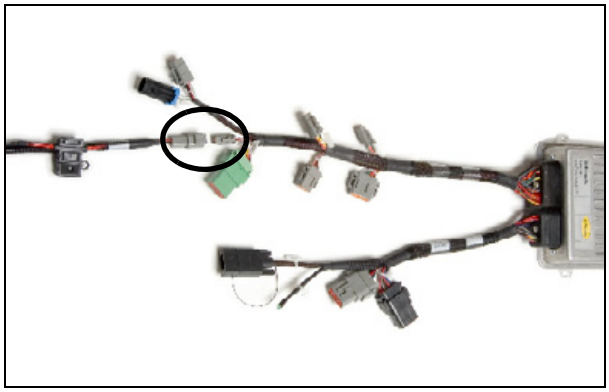
Item	Description
P9	Sonalert connector
P12	Lightbar/spare connector
P13	Spare sensors connector
14	Status indicator
15	Laptop connector
16	Main harness
17	Auxiliary harness

Connecting the cables to the controller

Step 1

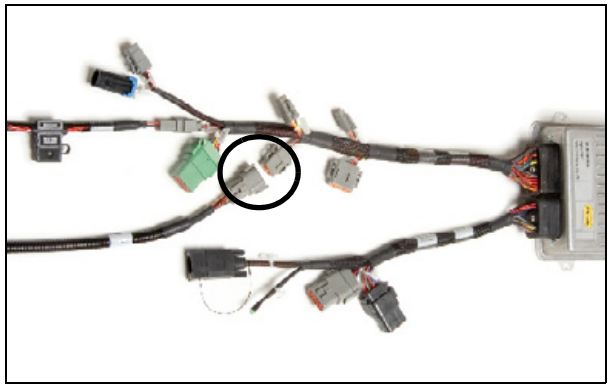
Connect the power cable connection to P2, which is labeled **Power**. P2 is located on the main wiring harness.

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



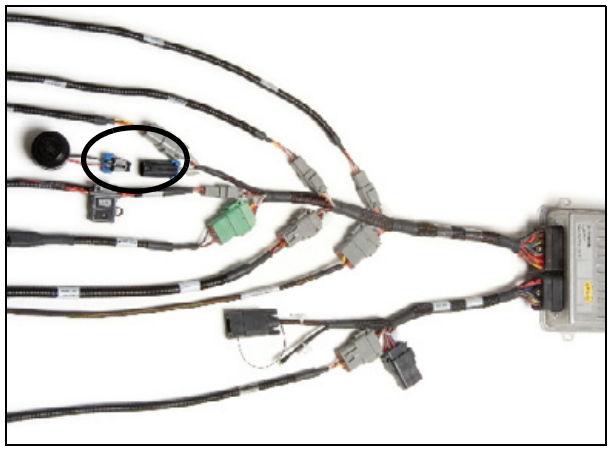
Step 2

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



Step 3

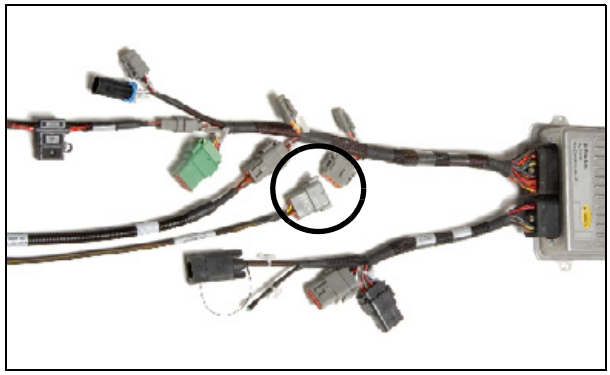
Connect the Sonalert P9 to the 2-pin Delphi connector on the main wiring harness. Route the cable so the Sonalert warning device is in a position that is audible to the operator.



Step 4

Connect the primary display cable connection to P4, which is labeled **Display**. P4 is located on the main wiring harness.

NOTE – Do not connect the cable to the connector labeled **Spare** on the auxiliary harness.



Step 5

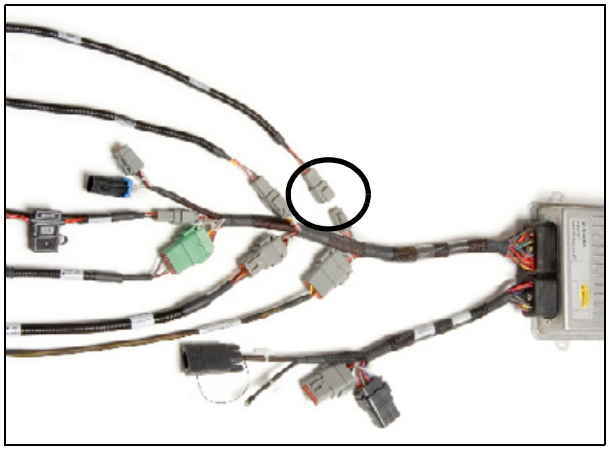
Connect the steering sensor cable connection to P12, which is labeled **Steering Sensor**. P12 is located on the main wiring harness.



Step 6

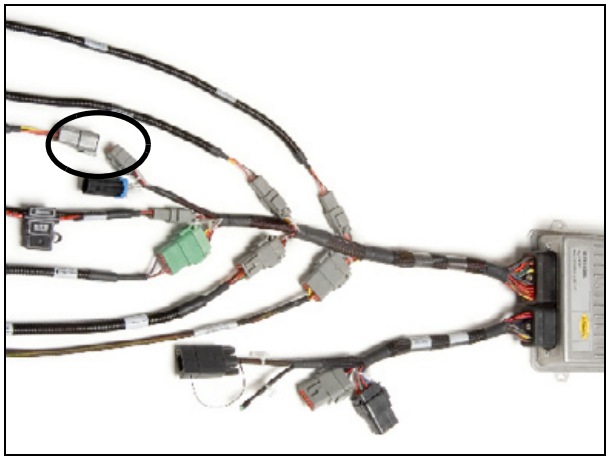
Connect the manual override cable connection to P7, which is labeled **Manual Override**. P7 is located on the main wiring harness.

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



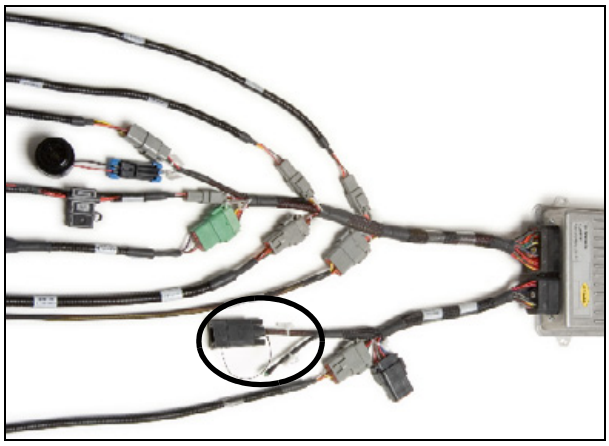
Step 7

Connect the hydraulic steering valve cable connection to P8, which is labeled **Hydraulic Valve**. P8 is located on the main wiring harness.



Step 8

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 9

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.

9

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.

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.