INSTALLATION INSTRUCTIONS

Autopilot™ Automated Steering System

Ag Chem Rogator

- **884 / SS884**
- **900 / RG900**
- **984 / 984H**
- **1074SS**
- **1084 / SSc1084**
- **1100 / RG1100**
- **1184 / 1184H**
- **1286 / 1286C**
- **1300 / RG1300 / 1386**

Version 5.00
Revision A
April 2012
Part Number 54037-58-E05

Trimble®

Agriculture Business Area

Trimble Agriculture Division
10355 Westmoor Drive
Suite #100
Westminster, CO 80021
USA
www.trimble.com

Legal Notices

Copyright and Trademarks

© 1999–2012, Trimble Navigation Limited. All rights reserved.

Trimble, the Globe & Triangle logo, *Ag*GPS, and EZ-Guide are trademarks of Trimble Navigation Limited, registered in the United States and in other countries. Autopilot, AutoSense, and FmX are trademarks of Trimble Navigation Limited.

All other trademarks are the property of their respective owners.

Release Notice

This is the April 2012 release (Revision A) of the *Autopilot Automated Steering System Installation Instructions*, part number 54037-58-E05. It applies to version 5.00 of the *Ag*GPS 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.

Product Limited Warranty

Trimble warrants that this Trimble product and its internal components (the "Product") shall be free from defects in materials and workmanship and will substantially conform to Trimble's applicable published specifications for the Product for a period of one (1) year, starting from the earlier of (i) the date of installation, or (ii) six (6) months from the date of product shipment from Trimble. This warranty applies only to the Product if installed by Trimble or a distributor authorized by Trimble to perform Product installation services.

Software Components and Enhancements

All Product software components (sometimes hereinafter also referred to as "Software") are licensed and not sold. Any Software accompanied by a separate End User License Agreement ("EULA") shall be governed by the terms, conditions, restrictions and limited warranty terms of such EULA notwithstanding the preceding paragraph. During the limited warranty period you will be entitled to receive, at no additional charge, such Fix Updates and Minor Updates to the Product software as Trimble may develop for general release, subject to the procedures for delivery to purchasers of Trimble products generally. If you have purchased the Product from an authorized Trimble distributor rather than from Trimble directly, Trimble may, at its option, forward the software Fix Update or Minor Update to the Trimble distributor for final distribution to you. Major Upgrades, new products, or substantially new software releases, as identified by Trimble are expressly excused from this enhancement process and limited warranty. Receipt of software updates shall not serve to extend the limited warranty period.

For purposes of this warranty the following definitions shall apply: (1) "Fix Update" means an error correction or other update created to fix a previous software version that does not substantially conform to its published specifications; (2) "Minor Update" occurs when enhancements are made to current features in a software program; and (3) "Major Upgrade" occurs when significant new features are added to software, or when a new product containing new features replaces the further development of a current product line. Trimble reserves the right to determine, in its sole discretion, what constitutes a significant new feature and Major Upgrade.

Warranty Remedies

Trimble's sole liability and your exclusive remedy under the warranties set forth above shall be, at Trimble's option, to repair or replace any Product that fails to conform to such warranty ("Nonconforming Product"), and/or issue a cash refund up to the purchase price paid by you for any such Nonconforming Product, excluding costs of installation, upon your return of the Nonconforming Product to Trimble in accordance with Trimble's standard return material authorization process. Such remedy may include reimbursement of the cost of repairs for damage to third-party equipment onto which the Product is installed, if such damage is found to be directly caused by the Product as reasonably determined by Trimble following a root cause analysis.

Warranty Exclusions and Disclaimer

These warranties shall be applied only in the event and to the extent that (i) the Products and Software are properly and correctly installed, configured, interfaced, maintained, stored, and operated in accordance with Trimble's relevant operator's manual and specifications, and; (ii) the Products and Software are not modified or misused. The preceding warranties shall not apply to, and Trimble shall not be responsible for defects or performance problems resulting from (i) the combination or utilization of the Product or Software with hardware or software products, information, data, systems, interfaces or devices not made, supplied or specified by Trimble; (ii) the operation of the Product or Software under any specification other than, or in addition to, Trimble's standard specifications for its products; (iii) the unauthorized, installation, modification, or use of the Product or Software; (iv) damage caused by accident, lightning or other electrical discharge, fresh or salt water immersion or spray; or (v) normal wear and tear on consumable parts (e.g., batteries). Trimble does not warrant or guarantee the results obtained through the use of the Product.

THE WARRANTIES ABOVE STATE TRIMBLE'S ENTIRE LIABILITY, AND YOUR EXCLUSIVE REMEDIES, RELATING TO PERFORMANCE OF THE PRODUCTS AND SOFTWARE. EXCEPT AS OTHERWISE EXPRESSLY PROVIDED HEREIN, THE PRODUCTS, SOFTWARE, AND ACCOMPANYING DOCUMENTATION AND MATERIALS ARE PROVIDED "AS-IS" AND WITHOUT EXPRESS OR IMPLIED WARRANTY OF ANY KIND BY EITHER TRIMBLE NAVIGATION LIMITED OR ANYONE WHO HAS BEEN INVOLVED IN ITS CREATION, PRODUCTION, INSTALLATION, OR DISTRIBUTION INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TITLE, AND NONINFRINGEMENT. THE STATED EXPRESS WARRANTIES ARE IN LIEU OF ALL OBLIGATIONS OR LIABILITIES ON THE PART OF TRIMBLE ARISING OUT OF, OR IN CONNECTION WITH, ANY PRODUCTS OR SOFTWARE. SOME STATES AND JURISDICTIONS DO NOT ALLOW LIMITATIONS ON DURATION OR THE EXCLUSION OF AN IMPLIED WARRANTY, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

TRIMBLE NAVIGATION LIMITED IS NOT RESPONSIBLE FOR THE OPERATION OR FAILURE OF OPERATION OF GPS SATELLITES OR THE AVAILABILITY OF GPS SATELLITE SIGNALS.

Limitation of Liability

TRIMBLE'S ENTIRE LIABILITY UNDER ANY PROVISION HEREIN SHALL BE LIMITED TO THE AMOUNT PAID BY YOU FOR THE PRODUCT OR SOFTWARE LICENSE. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL TRIMBLE OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER UNDER ANY CIRCUMSTANCE OR LEGAL THEORY RELATING IN ANY WAY TO THE PRODUCTS, SOFTWARE AND ACCOMPANYING DOCUMENTATION AND MATERIALS, (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, OR ANY OTHER PECUNIARY LOSS), REGARDLESS WHETHER TRIMBLE HAS BEEN ADVISED OF THE POSSIBILITY OF ANY SUCH LOSS AND REGARDLESS OF THE COURSE OF DEALING WHICH DEVELOPS OR HAS DEVELOPED BETWEEN YOU AND TRIMBLE. BECAUSE SOME STATES AND JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

NOTE: THE ABOVE LIMITED WARRANTY PROVISIONS MAY NOT APPLY TO PRODUCTS OR SOFTWARE PURCHASED IN THE EUROPEAN UNION. PLEASE CONTACT YOUR TRIMBLE DEALER FOR APPLICABLE WARRANTY INFORMATION.

Notices

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

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

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

Notice to Our European Union Customers

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

Recycling in Europe: To recycle Trimble WEEE, Call

+31 497 53 2430, and ask for the "WEEE Associate"

Or

Mail a request for recycling instructions to:

Trimble Europe BV
c/o Menlo Worldwide Logistics

Meerheide 45
5521 DZ Eersel, NL



Safety Information

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

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

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

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

Warnings

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

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

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

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

Cautions

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

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

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

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

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

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



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

CAUTION – To prevent damage to the system, make sure that no wires or hoses interfere with or catch on any mechanical linkages, or contact any machine parts that get hot.

Contents

Safety Information . . . 3

Warnings . . . 3
Cautions . . . 4

1 Introduction . . . 7

Technical assistance . . . 8
Manual system upgrade to Autopilot . . . 8
CFX-750 display and FmX integrated display . . . 8
EZ-Guide 500 . . . 8
Required components . . . 9
Antenna mounting kits . . . 9
Accessory kits . . . 9
Autopilot hardware: As shipped . . . 10
Autopilot hardware: As installed . . . 11
Preparing the vehicle for installation . . . 11

2 Hydraulic Control Valve Installation . . . 13

Hydraulic control valve components – all models, including 2012 or newer RG models, excluding 1074SS . . . 14
Hydraulic components – 1074SS model only . . . 15
Assembling the hydraulic control valve – all models . . . 16
Installing the dual counter balance valve manifold . . . 20
Installing the pressure line – all models . . . 22
Installing the tank line – all models . . . 24
Installing the steering lines – all models . . . 27
Connections at the Steering orbital . . . 31
Connections at the DCBV . . . 32
Completing the electrical connections – all models . . . 33
Checking the hydraulic connections . . . 34

3 AutoSense Device Installation . . . 35

AutoSense device components . . . 36
Installing the AutoSense device . . . 37
Preparing the harness (P/N 54602 Rev C) . . . 41

4 Antenna/Receiver Installation . . . 43

Antenna and receiver installation options . . . 44
Possible mounting methods . . . 44
Mounting an adjustable spar to roof bolts . . . 45
Attaching the plate with VHB adhesive . . . 47

5 Display Installation . . . 49

FmX integrated display components . . . 50

CFX-750 display components . . . 51
EZ-Guide 500 lightbar components . . . 53
With SNB900 radio for RTK corrections (if equipped) . . . 53
Preparing the FmX integrated display . . . 55
Installing the FmX integrated display . . . 56
FmX integrated display: Installing the wiring harness . . . 57
Preparing the CFX-750 display . . . 58
Installing the CFX-750 display . . . 59
CFX-750 display: Installing the wiring harness . . . 60
FmX and CFX-750 displays: Connecting accessory options . . . 61
AgCam . . . 61
Preparing the EZ-Guide 500 lightbar . . . 63
Connecting the EZ-Guide 500 lightbar cables . . . 64
Installing the EZ-Guide 500 lightbar . . . 67
EZ-Guide 500 lightbar, and FmX and CFX-750 displays: Installing the GNSS antenna and plate . . . 68
Spar mount method . . . 68
VHB adhesive method . . . 68
EZ-Guide 500 lightbar, and FmX and CFX-750 displays: Installing the RTK radio antenna . . . 72

6 Power Harness Installation . . . 73

FmX integrated display components . . . 74
CFX-750 display components . . . 75
EZ-Guide 500 lightbar components . . . 77
FmX and CFX-750 displays: Installing the power harness . . . 78
FmX and CFX-750 displays: Configuring the power bus options . . . 80
Display power button is used to turn on the Autopilot system . . . 80
External switch is used to turn on the Autopilot system . . . 80
Ignition is used to turn on the Autopilot system . . . 82
Configuring the power bus options for the EZ-Guide 500 lightbar . . . 84

7 Remote Engage Switch Installation . . . 87

Remote engage switch components: Rocker switch . . . 88
Remote engage switch components: Foot switch . . . 89
Preparing the remote engage cable . . . 90
Using the remote engage switch . . . 93

8 Controller Installation . . . 95

Installing the controller . . . 96
Controller connections . . . 103
Connecting the cables to the controller . . . 104

9 Final Machine Check . . . 107

Performing the final machine check . . . 108

CHAPTER

1

Introduction

In this chapter:

- Technical assistance
- Manual system upgrade to Autopilot
- Required components
- Autopilot hardware: As shipped
- Autopilot hardware: As installed
- Preparing the vehicle for installation

This manual describes how to install the Trimble® Autopilot™ automated steering system.

Even if you have used another GNSS (Global Navigation Satellite System), such as the United States' GPS (Global Positioning System), before, spend some time reading this manual to learn about the special features of this product. If you are not familiar with GNSS, go to the Trimble website (www.trimble.com) for an interactive look at Trimble and GNSS.

Technical assistance

If you have a problem and cannot find the information you need in the product documentation, contact Trimble technical support:

1. Go to the Trimble website (www.trimble.com).
2. Click the **Support & Training** link at the top of the screen, select *Support* and then select *Support A–Z list of products*.
3. Scroll to the bottom of the list.
4. Click the *submit an inquiry* link. A form appears.
5. Complete the form and then click **Send**.

Manual system upgrade to Autopilot

CFX-750 display and FmX integrated display

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

EZ-Guide 500

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

Required components

Kits required	Special tools
Platform kit: P/N 54037-58	¾" and $^{5}/_{8}$" hole saw
Hydraulic hose kit: All models, excluding 1074SS: P/N 88683	$^{5}/_{16}$" drill bit
1074SS model: 67474	Allen wrench set (metric and SAE

Antenna mounting kits

Antenna options
Antenna spar mount: P/N 55348
Antenna V plate mount and *Ag*GPS 262 receiver magnetic mount: P/N 62388-01 (includes magnets for quick release of the *Ag*GPS 262 receiver – see Chapter 4, Antenna/Receiver Installation).

Accessory kits

Accessory options
Remote engage switch assembly – standard Euro: P/N 57227-10
Remote engage switch assembly – full Euro: P/N 57227-20
Remote engage foot pedal: P/N 57259

Autopilot hardware: As shipped

Hardware	Component	See...
Platform kit **(P/N 54037-58)**	Hydraulic valve	Chapter 2
	Hydraulic manifold	
	Transducer flow switch	
	Manual override cable	
	Hydraulic brackets and bolt kits	
	Hydraulic valve cable	
	AutoSense™ steering device and cabling	Chapter 3
	AutoSense mounting bracket and hardware	
	Power cable and switch	Chapter 6
	Bolt kit controller	Chapter 8
Common parts	Controller	Chapter 8
	Controller mounting bracket	
	Cable kit: • Main wiring harness • Auxiliary wiring harness • Sonalert alarm	
GNSS receiver	GNSS receiver	Chapter 4
	GNSS antenna	
	GNSS receiver mounting bracket	
	GNSS receiver power/data cable	
	RTK radio, cable, and radio antenna	
Display	EZ-Guide 500 lightbar	Chapter 5
	FmX integrated display	
	CFX-750 display	
	Display cable	
	Mounting bracket	
Hydraulic hose kit **(P/N 88683 or P/N67474)**	Hydraulic hoses	Chapter 2
	Hydraulic adaptors	
Roof bracket kit **(P/N 55348)**	Roof brackets	Chapter 4
	Bolt kit, roof bracket	

Autopilot hardware: 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
AutoSense steering device	• AutoSense steering device and cabling • AutoSense mounting brackets and hardware	Chapter 3
GNSS receiver	• GNSS receiver • GNSS antenna • GNSS receiver mounting bracket • GNSS receiver power/data cable • Roof brackets	Chapter 4
Display	• *Ag*GPS EZ-Guide 500 lightbar • FmX integrated display • CFX-750 display • Display cable(s) • Mounting bracket	Chapter 5
Power	• Power bus 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.*

CHAPTER

2

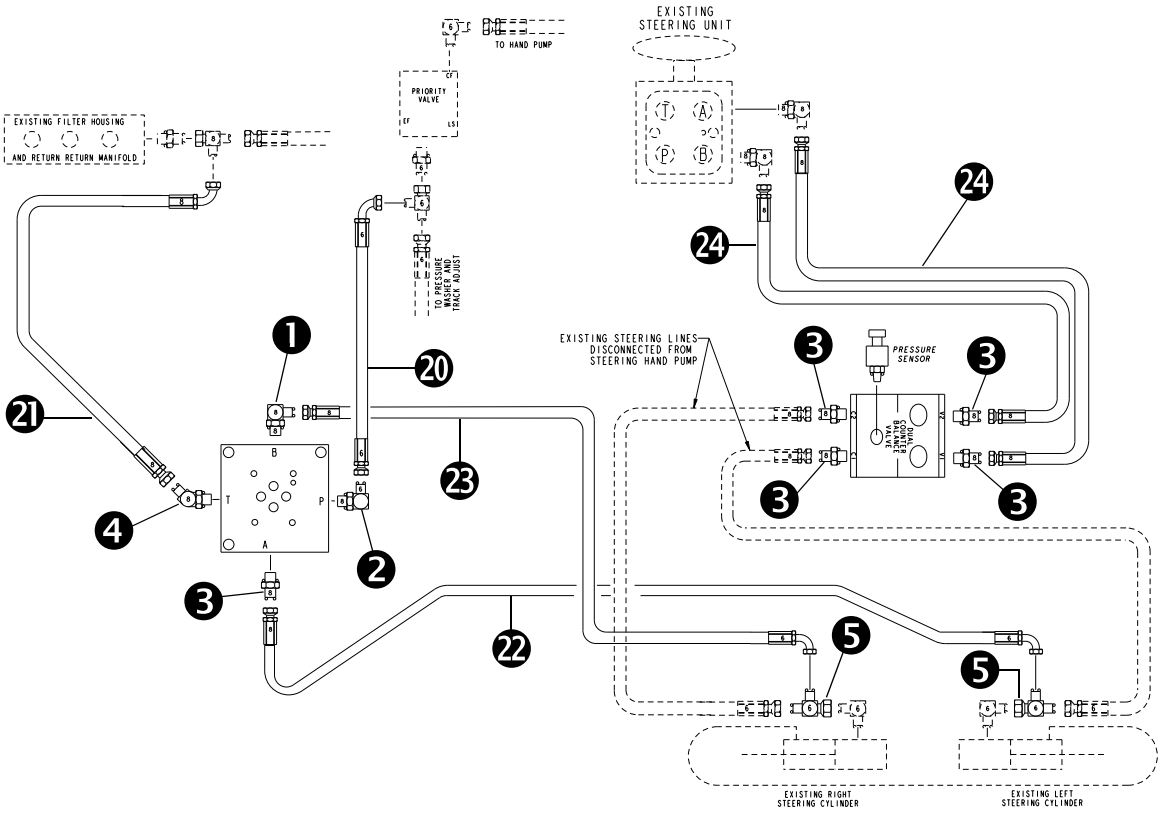
Hydraulic Control Valve Installation

In this chapter:

- Hydraulic control valve components – all models, including 2012 or newer RG models, excluding 1074SS
- Hydraulic components – 1074SS model only
- Assembling the hydraulic control valve – all models
- Installing the dual counter balance valve manifold
- Installing the pressure line – all models
- Installing the tank line – all models
- Installing the steering lines – all models
- Completing the electrical connections – all models
- Checking the hydraulic connections

This chapter describes the configuration and installation of the valve, manifold and hydraulic hose kit.

Hydraulic control valve components – all models, including 2012 or newer RG models, excluding 1074SS

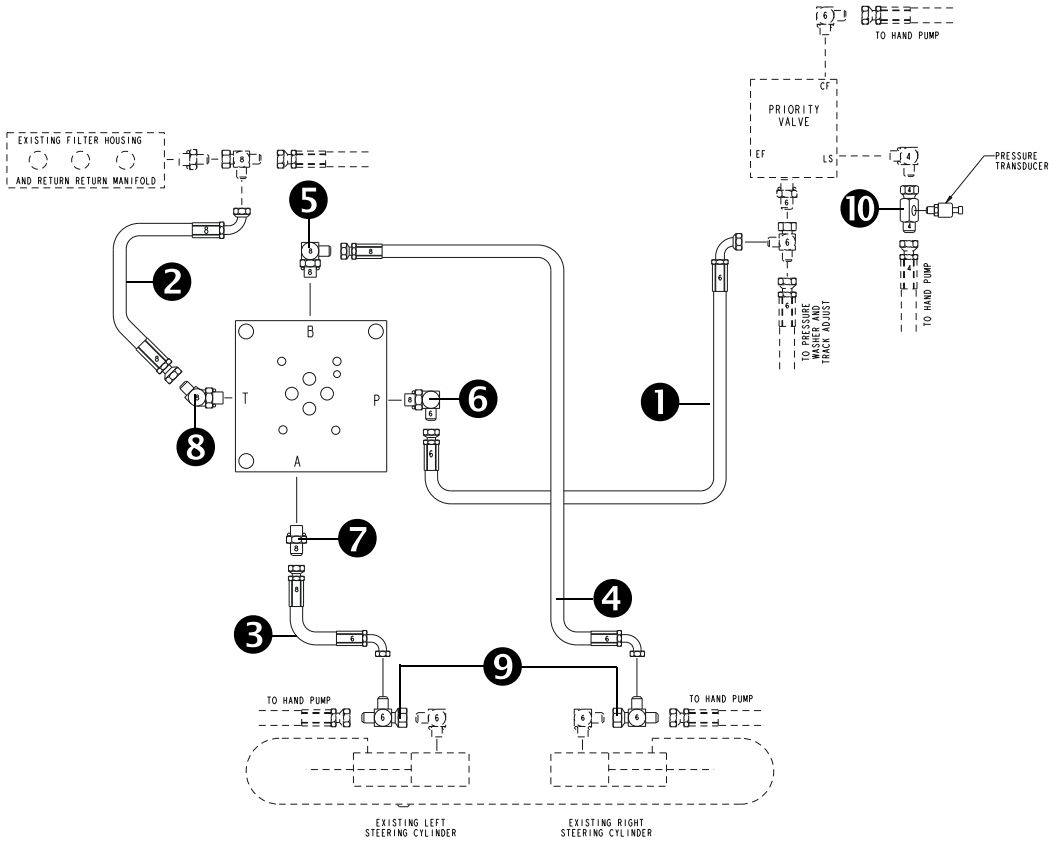


Item	Description	Part number
20	50 inch hose	F451TC JSJ9-6-6-6-50
21	67 inch hose	F451TCJSJ9-08-08-08-67
22	162 inch hose	F451TCJSJ9-08-06-08-162
23	144 inch hose	F451TC JSJ9-08-06-08-144
24	96 inch hose (x2)	F451TCJSJS-08-08-08-96

Item	Description	Part number
1	Fitting	8 C5OLO-S
2	Fitting	6-8 C5OLO-S
3	Fitting (x5)	8 F5OLO-S
4	Fitting	8 V5OLO-S
5	Fitting	6 R6LO-S

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

Hydraulic components – 1074SS model only



Item	Description	Part number
❶	50" hose	F451TC0639-06-06-06-50
❷	67" hose	F451TC0639-08-08-08-67
❸	162" hose	F451TC0639-08-06-08-162
❹	144" hose	F451TC0639-08-06-08-144
❺	Fitting	8 C5OX-S

Item	Description	Part number
❻	Fitting	6 - 8 C5OX-S
❼	Fitting	8 F50X-S
❽	Fitting	8 V5OX-S
❾	Fitting (x2)	6 R6X-S
❿	Fitting	4-4 XHX6G5TP

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

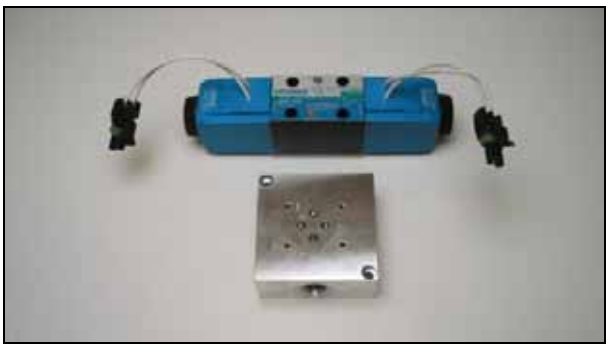
Assembling the hydraulic control valve – all models

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

Note – *Place the hydraulic control valve and manifold on a clean work surface. Ensure the valve and subplate remain very clean. Any small particles introduced into the system can cause obstruction.*

Step 1

Locate the valve and valve subplate.



Step 2

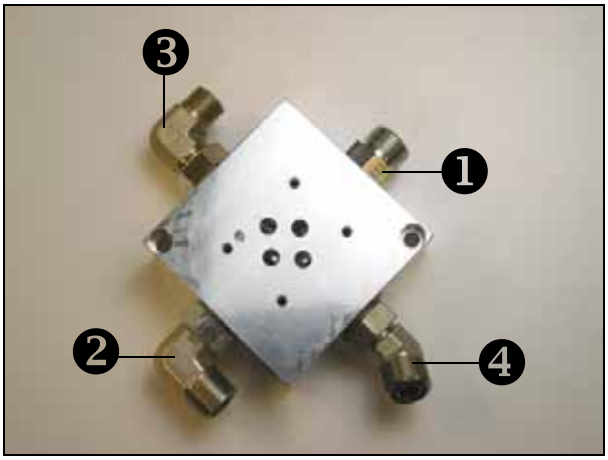
Install the following fittings to the subplate as shown:

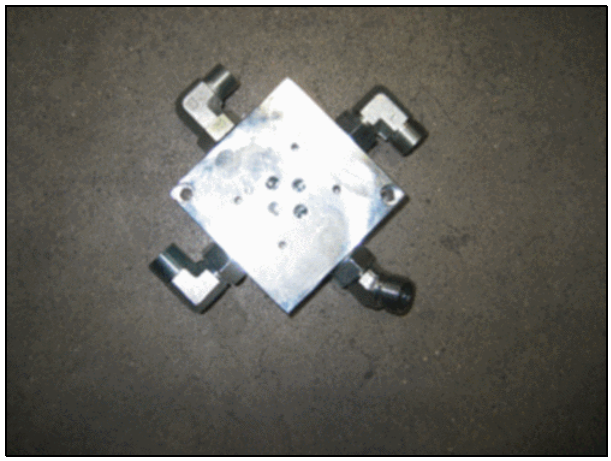
❶ Port A (left): -8 male straight x -8 ORB

❷ Port B (right): -8 male 90° x -8 ORB

❸ Port P (pressure): -6 male 90° x -8 ORB

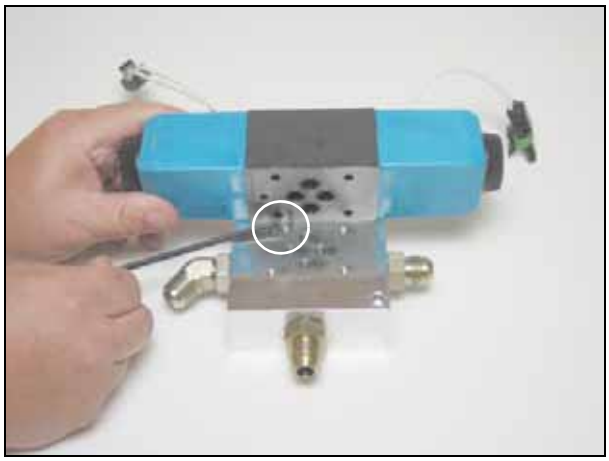
❹ Port T (tank): -8 male 45° x -8 ORB





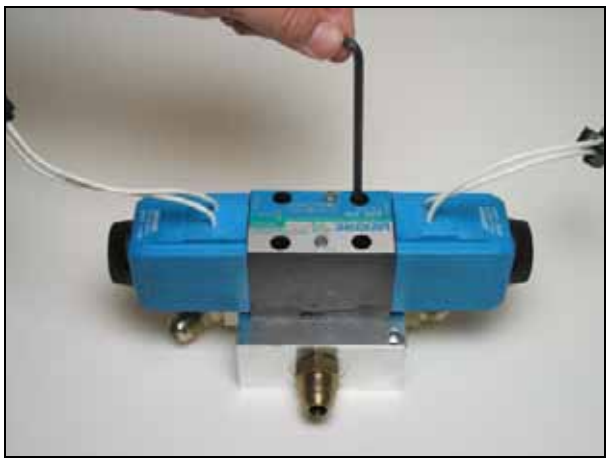
Step 3

Use the pin guide to align the valve to the subplate. Ensure that the four o-rings are seated correctly.



Step 4

Use the four $^{10}/_{24}$ x 1 ¼" socket head screws (provided in the bolt kit) to fasten the valve to the subplate.



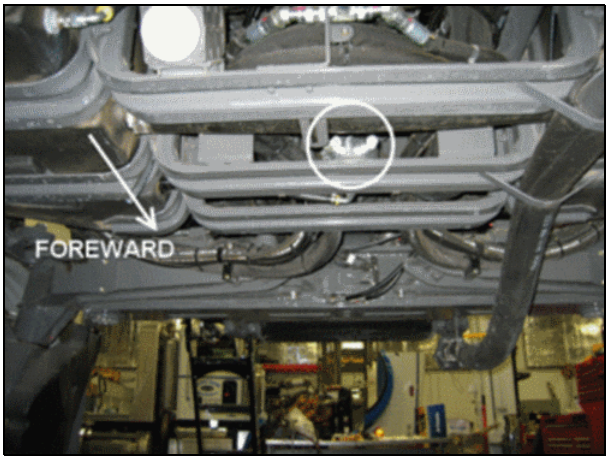
Step 5

Mount the valve on the front U-shaped crossmember under the transmission housing.

Note – *The arrow points to the front of the machine.*



Pre 2012 models



2012 900/110/1300 models

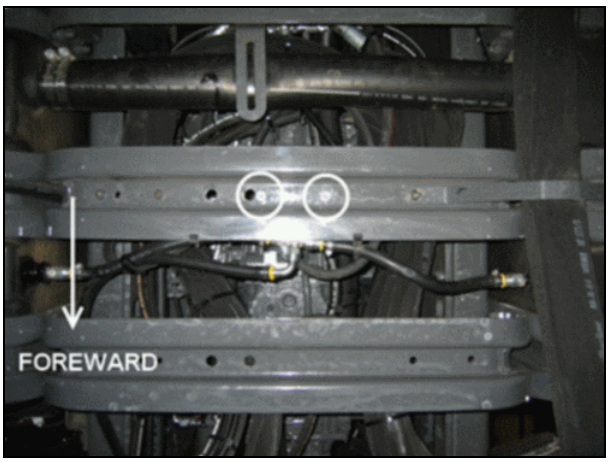
Step 6

For pre-2012 models, use the existing left hole ❶ to measure 108 mm (4 ¼") to the center of the vehicle and then drill a 0.6 mm ($^{5}/_{16}$") hole.



Pre 2012 models

For 2012 models, center the manifold and drill two 0.6 mm ($^{5}/_{16}$") holes 108 mm (4 ¼") apart.



2012 900/110/1300 models

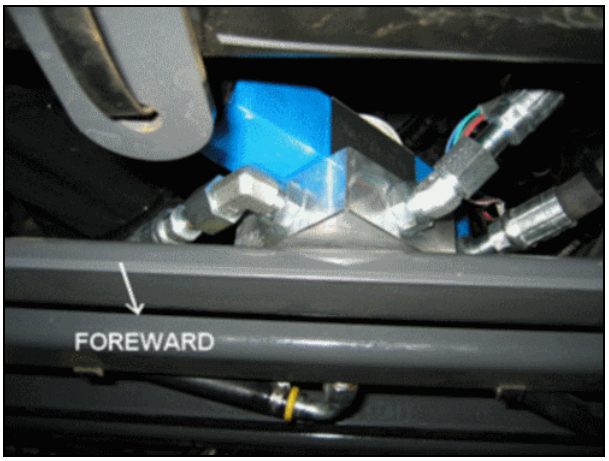
Step 7

Use ¼" x 2" bolts and hardware to attach the subplate and valve to the cross member (as shown).

Mount the valve diagonally, with the A and P ports facing the front of the machine and the B and T ports to the rear.



Pre 2012 models



2012 900/110/1300 models

Installing the dual counter balance valve manifold

Step 1

To prepare the dual counter balance manifold (DCBV), install the provided -8ORB-8ORS straight fittings into the C1 and C2 ports and the V1 and V2 ports.





Step 2

The DCBV is installed on the crossmember that is ***behind*** the one that the Autopilot manifold is installed on, as shown.

The steps below describe the installation process.



Step 3

For mounting the DCBV, drill two $^{5}/_{16}$ " holes 2 " apart.

Locate the holes approximately 12 " toward the right side of the machine from the radar.

Center the holes on the metal channel edge as shown.



Step 4

Use the provided bracket and hardware to attach the DCBV to the machine, in the location shown.

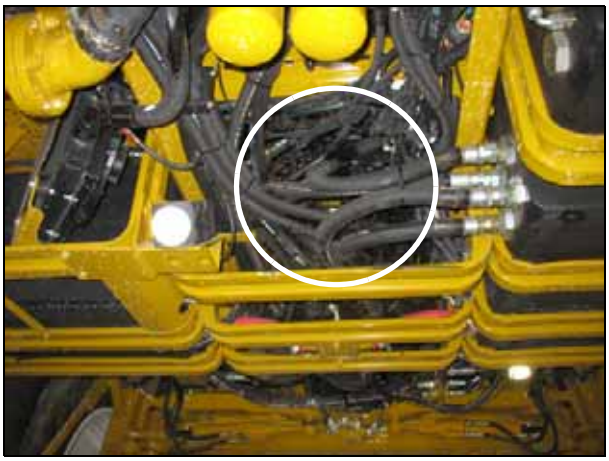




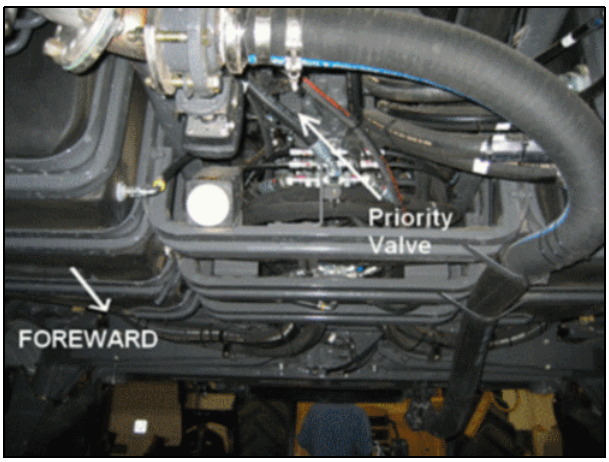
Installing the pressure line – all models

Step 1

Locate the priority valve at the primary hydraulic pump under the cab.



Pre 2012 models



2012 900/110/1300 models

Step 2

984, 1184, and 1386 models

Remove the cap from the existing T-fitting on the line marked “EF” at the priority valve housing and then attach the -6 90° end of the supplied pressure hose.



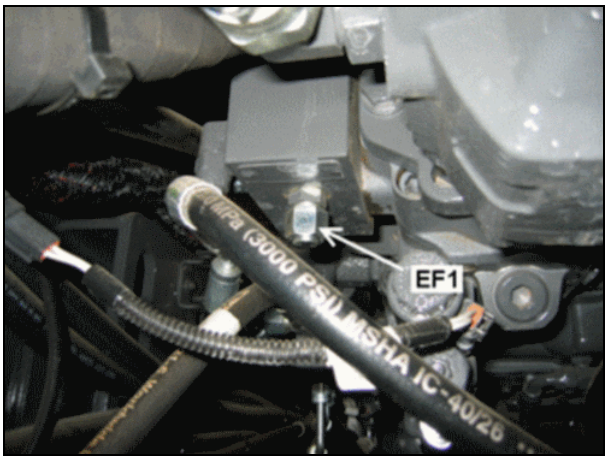
884, SS884, 984H, 1074SS, 1084, SSc1084, 1184H, 1286, and 1286C models

Remove the cap from the existing tee on the line marked "EF" at the priority valve housing.



900/1100/1300 models

Remove the cap from the existing tee on the line marked "EF" at the priority valve housing and then attach the -6 90° end of the supplied pressure hose.



Step 3

Route and connect the straight end of the pressure hose to the P port on the subplate.



Installing the tank line – all models

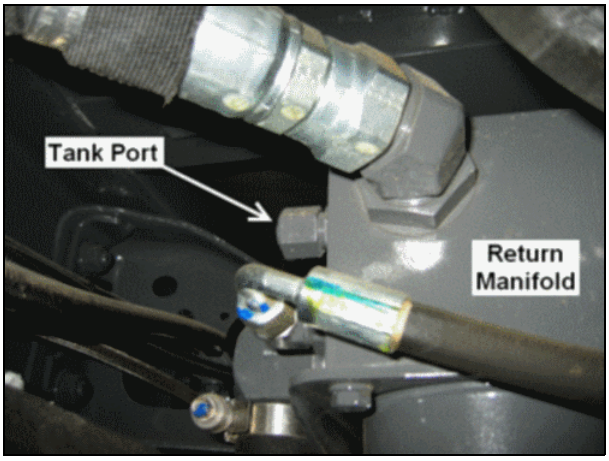
Step 1

Locate the tank manifold at the rear of the machine.

Note – *The arrow points to the front of the machine.*



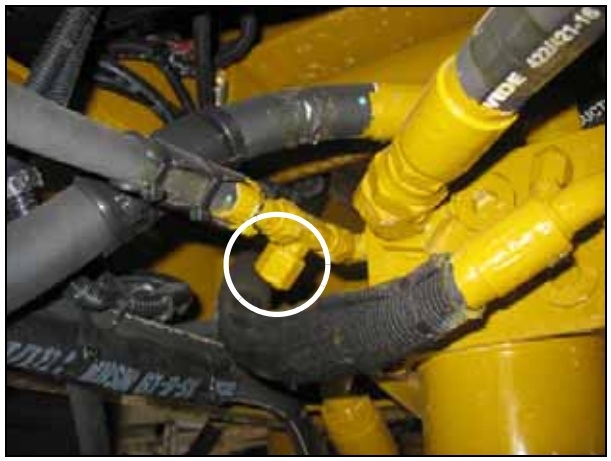
Pre 2012 models



2012 900/110/1300 models

Step 2

Remove the cap from the existing capped return line T-fitting.



Pre 2012 models

On 2012 models, remove the cap on the Tank fitting.



2012 900/110/1300 models

Step 3

Connect the -8 90° end of the tank hose to the tank manifold T-fitting.



Pre 2012 models



2012 900/110/1300 models

Step 4

Connect the -8 straight end of the tank hose to the T port on the subplate.



Installing the steering lines – all models

Step 1

Locate the left front steering cylinder blind end port.



Pre 2012 models



2012 900/110/1300 models

Step 2

Install a -6 ORFS run tee on the blind end port.



Step 3

Connect the -6 90° end of the 162" "A/Left" hose to the left steering cylinder.



Pre 2012 models



2012 900/110/1300 models

Step 4

Attach the -8 straight end of the "A/Left" hose to the A port at the subplate.



Step 5

Locate the right front steering cylinder blind end port.



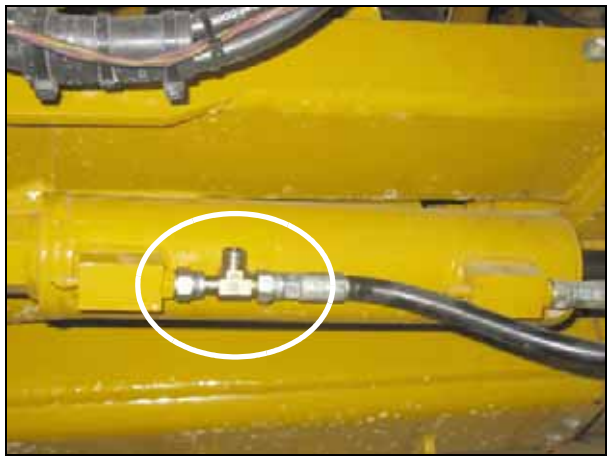
Pre 2012 models



2012 900/110/1300 models

Step 6

Install a -6 ORFS run T-fitting on the blind end port.



Step 7

Connect the -6 90° end of the 144" “B/Right” hose to the right steering cylinder.



Pre 2012 models



2012 900/110/1300 models

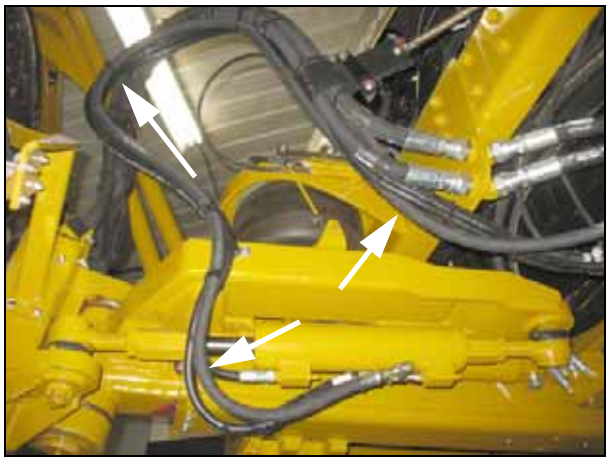
Step 8

Attach the -8 straight end of the "B/Right" hose to the B port at the subplate.



Step 9

Route the new steering line along the existing lines to allow axle width adjustment.



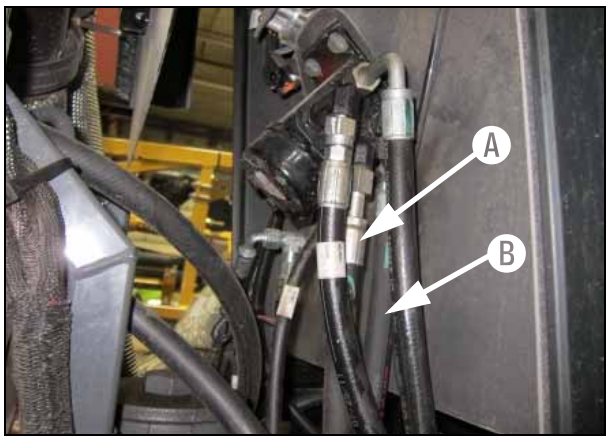
Connections at the Steering orbital

Step 1

Locate the steering lines on the steering hand pump.

Remove the lines from the hand pump and route them to the C1 and C2 ports of the DCBV manifold.

The picture to the right shows the A and B ports of the machine's steering unit.



Step 2

Connect the provided V1 and V2 lines to the A and B ports of the machine's steering unit.

Route the other end of the lines to the V1 and V2 port of the DCBV.

In the picture to the right, Ⓐ is pointing to the V1 line, connected at port A.



Step 3

In this picture, ❽ is pointing to the V2 line, connected at port B.

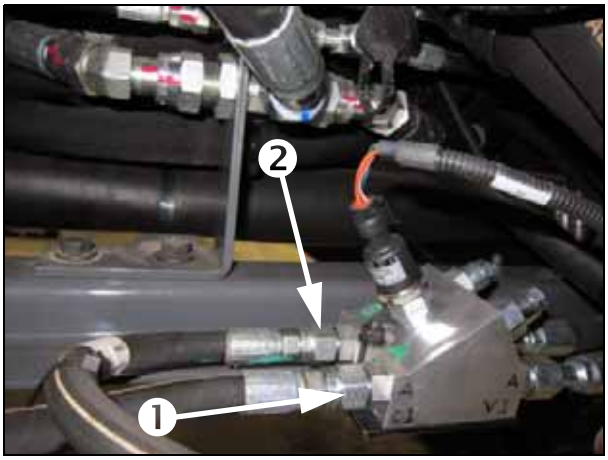


Connections at the DCBV

Step 1

Connect the machine's A and B lines (removed and routed in Step 1, page 31) to the following ports on the DCVB manifold:

- A line to the C1 port (❶)
- B line to the C2 port (❷)



Step 2

Route the V1 and V2 lines installed in Step 2, page 31 to the V1 and V2 ports of the DCBV.

Connect the V1 and V2 lines to the following ports on the DCVB manifold:

- V1 line to the V1 port
- V2 line to the V2 port



Completing the electrical connections – all models

Step 1

Connect the hydraulic valve cable leg "A" to the "A" end of the valve and the "B" end to "B". Route the cables to the cable pass-through at the right rear corner of the cab.



Step 2

Attach the pressure transducer to the center port of the DCVB.

Connect the manual override cabling to the pressure transducer, and then route the cabling to the NavController II.



Checking the hydraulic connections

Ensure all the hydraulic connections are tight:

- Check the oil level in the hydraulic tank and top up if necessary.
- Check for hydraulic leaks by reconnecting the battery and starting the machine.
- Disconnect the battery when the leak check is complete.

CHAPTER

3

AutoSense Device Installation

In this chapter:

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

This chapter describes how to install the AutoSense™ device.

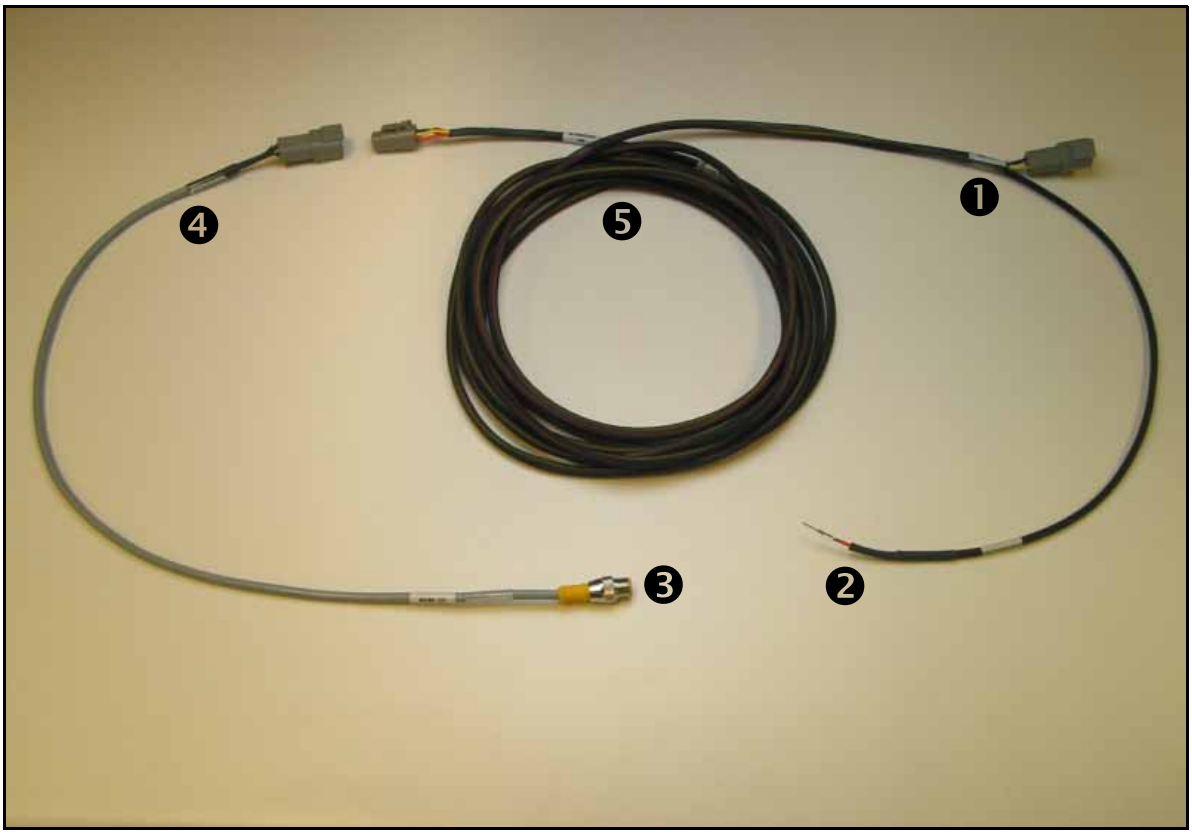
If the required mounting location is not accessible, chose a different place. To ensure proper function, the AutoSense device must be located where it is free of obstructions and can rotate with the wheels when they turn.

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

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

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

AutoSense device components



Item	Description	Trimble part number
❶	P-6 connector	
❷	Power connector	
❸	AutoSense connector	
❹	Jumper cable	57560
❺	AutoSense steering cable	57885

Installing the AutoSense device

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

Step 1

Locate the mounting location on the inclined surface, above the steering knuckle.



Step 2

Use the AutoSense device to estimate the final mounting location.

Note – *The distance from the center of the axle rotation is not critical.*



Pre 2012 models



2012 900/110/1300 models

Step 3

Clean the mounting surface with the supplied alcohol swab or an equally aggressive cleanser to remove all of the dust and oil.



Step 4

Use the four #6 socket head screws to attach the *Ag*GPS AutoSense device to the bracket.



Step 5

Remove the protective plastic from the VHB (Very High Bond) adhesive.

Note – *Dust will rapidly reduce the adhesive strength of the VHB tape. If the adhesive becomes contaminated, apply new tape.*



Step 6

Attach the AutoSense device and bracket to the center of the steering member and then apply firm pressure. The surface must be completely dry. If desired mechanically secure the bracket using the center hole and hardware.

Note – *Once applied, the bracket cannot be reapplied. Allow the VHB several hours to adhere to the surface. If the VHB is contaminated, reapply VHB.*



Step 7

Route the steering cable to the steering device along the existing hoses and connect it to the steering device. Leave adequate length on the service loop to avoid stretching the cable.



Pre 2012 models

Step 7

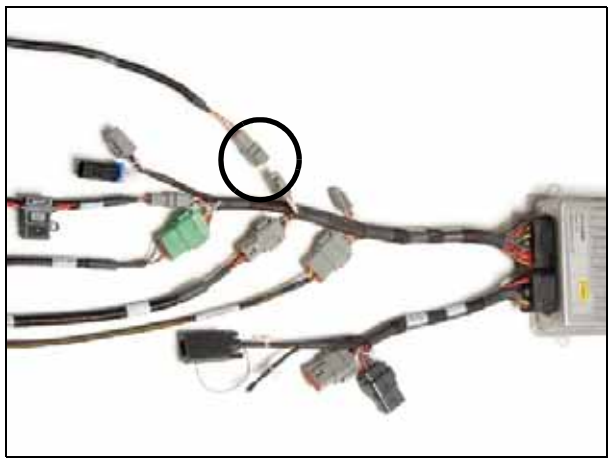
Route the steering cable to the steering device along the existing hoses and connect it to the steering device. Leave adequate length on the service loop to avoid stretching the cable.



2012 900/110/1300 models

Step 4

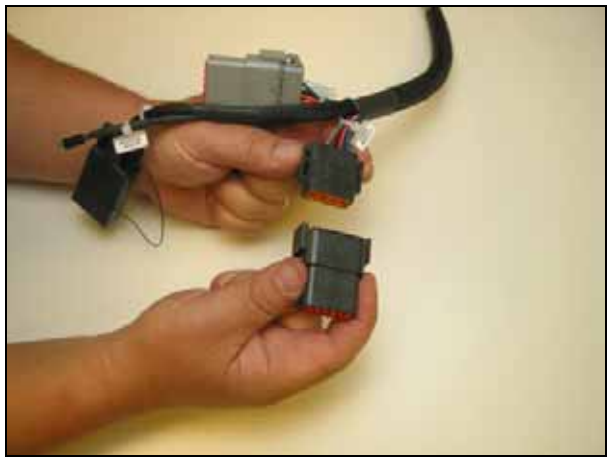
Connect the steering device cable connection to P-6 on the main wiring harness. P-6 is labeled “Steering Sensor”.



Preparing the harness (P/N 54602 Rev C)

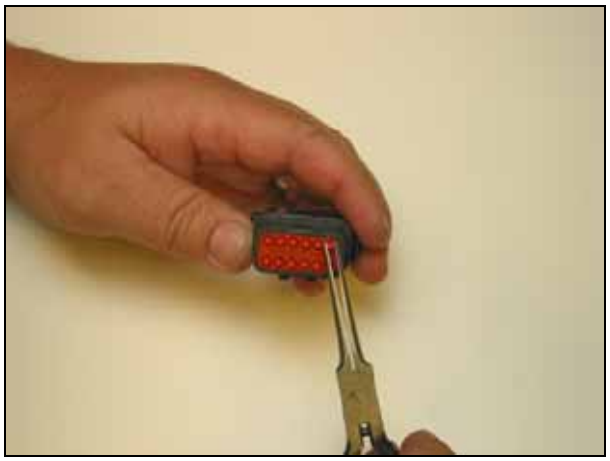
Step 1

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



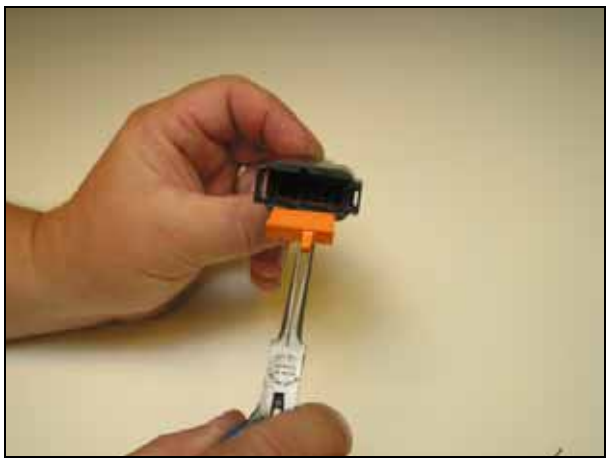
Step 2

Remove the plug from cavity number 1.



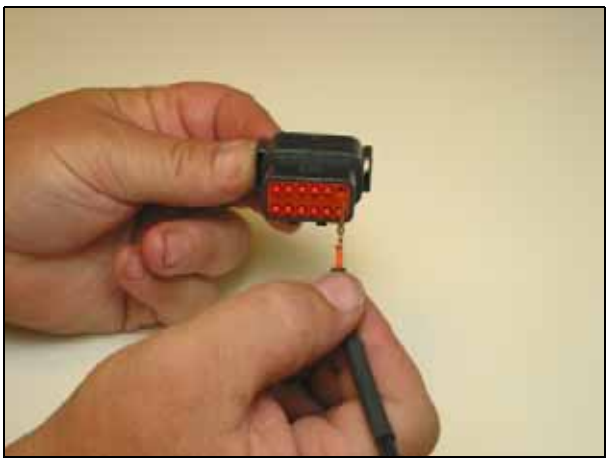
Step 3

Remove the wedge from the connector.



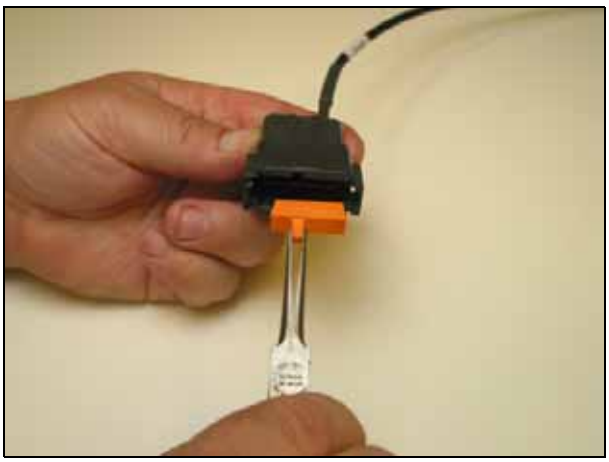
Step 4

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:

- Antenna and receiver installation options
- Mounting an adjustable spar to roof bolts

This chapter describes how to install the following:

- *Ag*GPS 262 receiver and *Ag*GPS radio module
- *Ag*GPS 332 receiver and antenna
- *Ag*GPS 442 receiver and antenna
- *Ag*GPS 542 receiver and antenna
- FmX or CFX-750 display antenna
- EZ-Guide 500 antenna

Antenna and receiver installation options

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

- **Spar mount** – This bracket mounts directly to the roof bolts and is required for all high accuracy applications such as RTK and OmniSTAR. Trimble recommends this method for mounting an *Ag*GPS 262 receiver. Bolt a metal spar to the roof or to a light bracket and then attach either a V plate for magnetic mounting or an *Ag*GPS 262 receiver plate for permanent mounting.
- **VHB mount** – Attach a 4" x 6" plate or a V plate directly to the roof with VHB (Very High Bond) adhesive for magnetic mounting. See page 47.
- **Magnetic mounting** – Magnetic mounting for quick release is available for both VHB and spar type mounting:

Possible mounting methods

GNSS receiver	V plate on spar (removable)	VHB V-plate on roof (removable)	VHB plate on roof (removable)	AG15/AG25/Zephyr bolted to spar mount	Standard *Ag*GPS 262 plate bolted to spar (permanent)
*Ag*GPS 262/372 receiver	✓	✓	x	x	✓
*Ag*GPS 432/442/542 receiver	✓	✓	✓	✓	x
EZ-Guide 500 lightbar	✓	✓	✓	✓	x
FmX integrated display; CFX-750 display	✓	✓	✓	✓	x

Notes:

– *For quick release magnetic mounting with an AgGPS 262 receiver, order the kit listed in Antenna mounting kits, page 9 and bolt the V plate to the spar.*

– *With all other antennas, bolt the V plate to the spar for high accuracy and repeatability.*

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

Mounting an adjustable spar to roof bolts

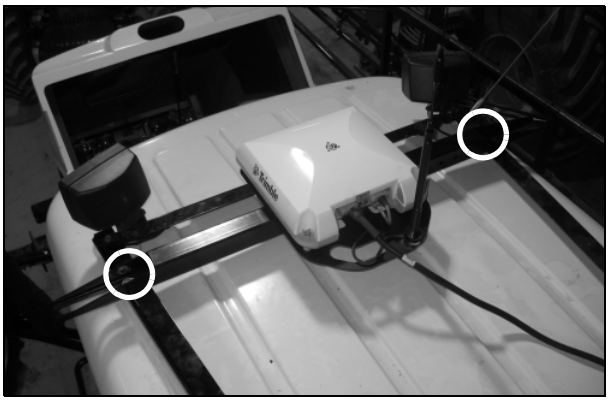
WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

Step 1

Position the cab bolts on the roof of the vehicle.

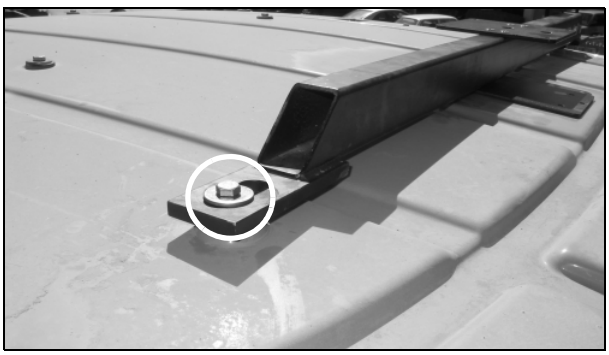


If a light bracket already occupies the roof studs, mount the spar directly onto the light bracket.



Step 2

If required, replace the existing bolts with longer bolts.



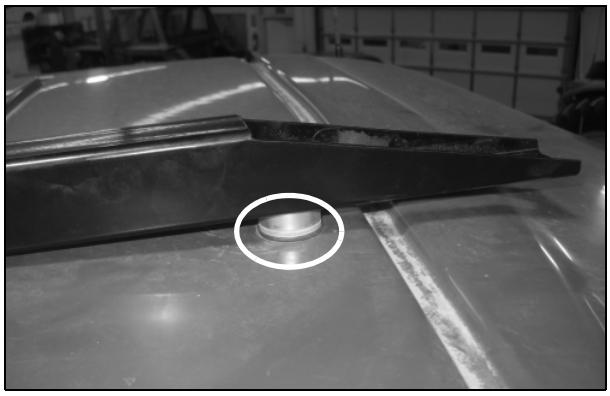
If you use the light bracket, drill two holes to match the spar width.



Step 3

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

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



Step 4

For either of the following applications:

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

Attach a V plate with four ¼" flathead screws.

The narrow end points to the front of the vehicle.



V plate on the spar

Attaching the plate with VHB adhesive

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

Standard 4" x 6" plates are provided in most kits. You can use the VHB mounting method to attach either a 4" x 6" plate or a V plate.

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

Step 1

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

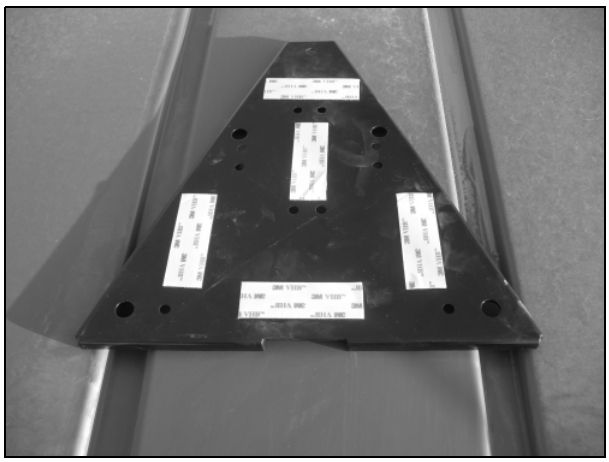


Step 2

V plate only

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

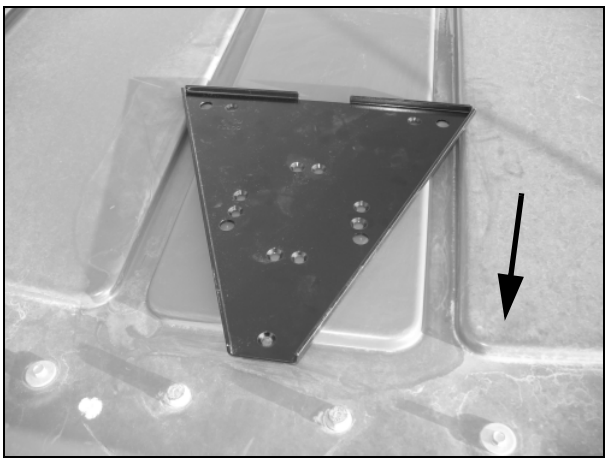
Note – *The VHB strips are pre-applied to the 4" x 6" plate.*



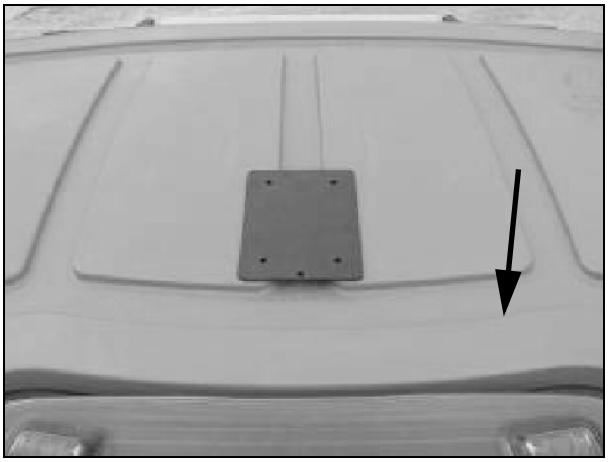
Step 3

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

Note – *The arrow points to the front of the vehicle.*



V plate



4" x 6" plate

CHAPTER

5

Display Installation

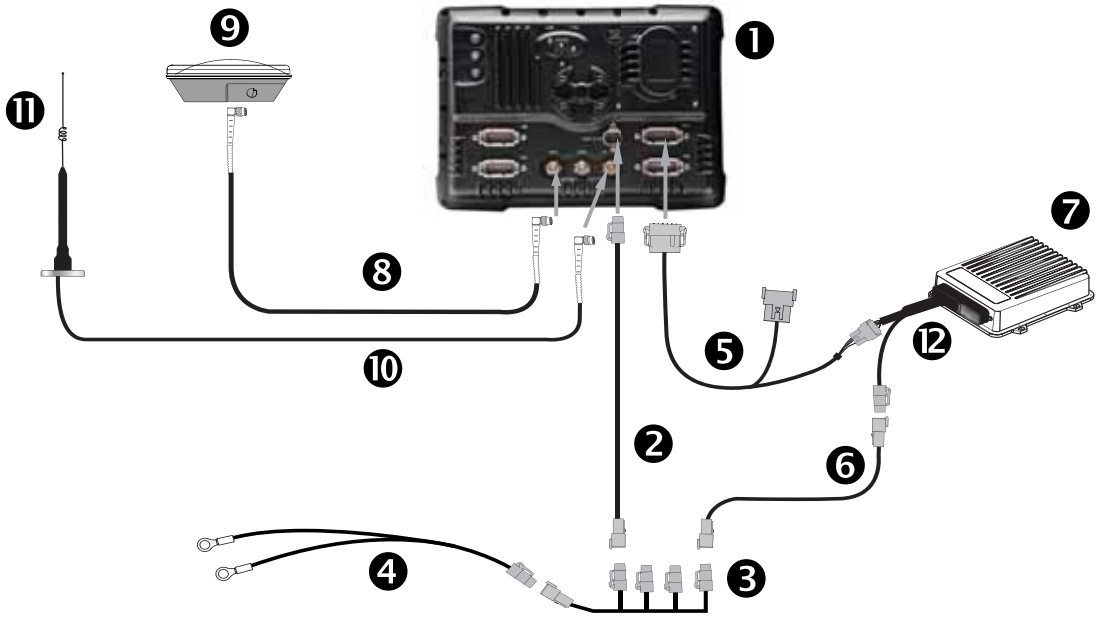
In this chapter:

- FmX integrated display components
- CFX-750 display components
- EZ-Guide 500 lightbar components
- Preparing the FmX integrated display
- Installing the FmX integrated display
- FmX integrated display: Installing the wiring harness
- Preparing the CFX-750 display
- Installing the CFX-750 display
- CFX-750 display: Installing the wiring harness
- FmX and CFX-750 displays: Connecting accessory options
- Preparing the EZ-Guide 500 lightbar
- Connecting the EZ-Guide 500 lightbar cables
- Installing the EZ-Guide 500 lightbar
- EZ-Guide 500 lightbar, and FmX and CFX-750 displays: Installing the GNSS antenna and plate
- EZ-Guide 500 lightbar, and FmX and CFX-750 displays: Installing the RTK radio antenna

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

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

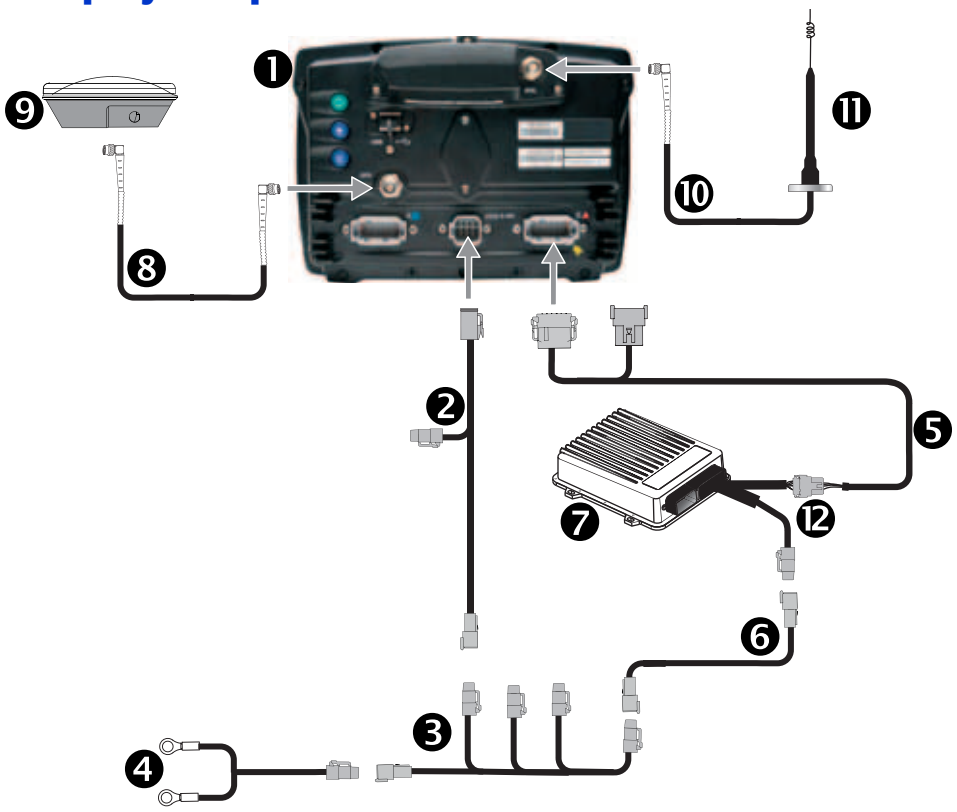
FmX integrated display components



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

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

CFX-750 display components



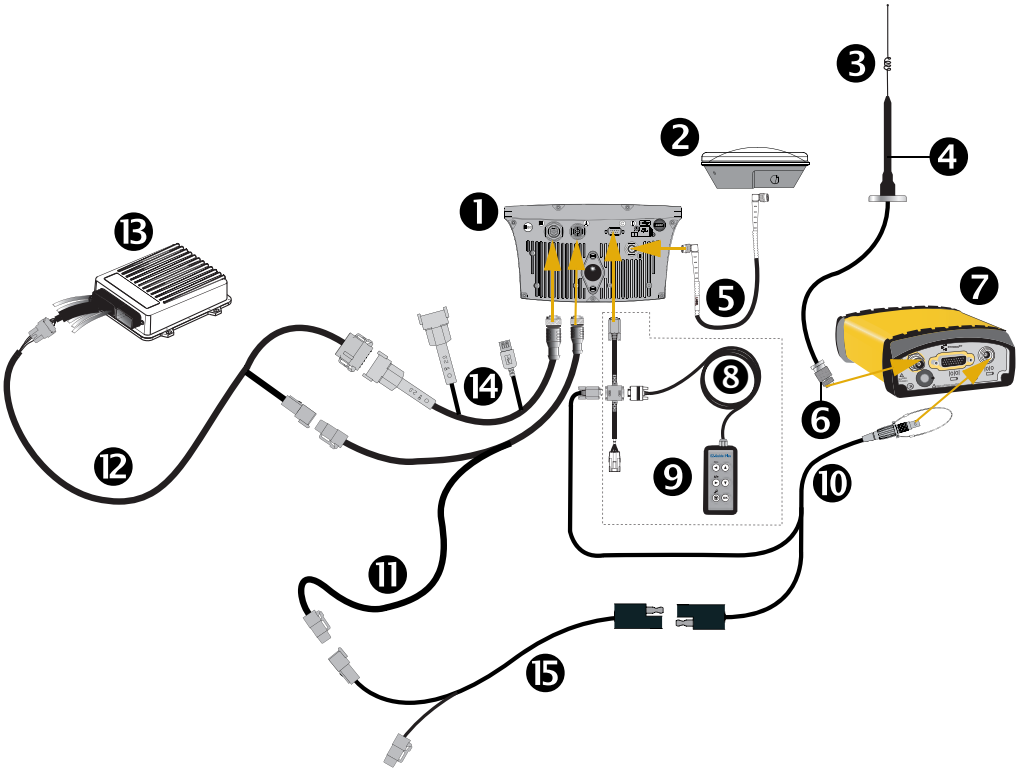
CAUTION – Connecting the Port Replicator on the CFX-750 display to NavController II cable ❺ to the P4 or P12 connector of the NavController II harness ⓬ will result in damage to the CFX-750 display and will void the warranty.

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

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

EZ-Guide 500 lightbar components

With SNB900 radio for RTK corrections (if equipped)



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

Item	Description	Trimble part number
⓮	Port expansion cable	62609
⓯	Power tap to PDL radio	63185

Preparing the FmX integrated display

Step 1

Locate the FmX display, the RAM mount, and the RAM mount clamp.



Step 2

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



Step 3

Attach the RAM mount to the rear of the display.



Installing the FmX integrated display

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

Step 1

Decide where you will mount the display in the vehicle cab and then use the provided bolts to attach the bar mount to the rail. Attach the free end of the RAM mount to the bar mount and then tighten the clamp on the RAM mount so that the display is secure.

Step 2

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

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



FmX integrated display: Installing the wiring harness

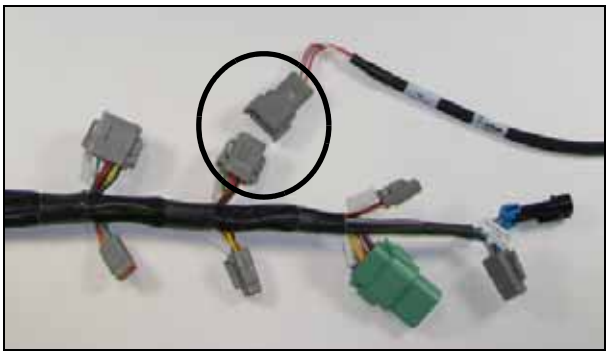
Step 1

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



Step 2

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



Preparing the CFX-750 display

Step 1

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



Step 2

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



Step 3

Attach the RAM mount to the rear of the display.



Installing the CFX-750 display

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

Step 1

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

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

Step 2

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

To connect power to the CFX-750 display, see Chapter 6, Power Harness Installation.



CFX-750 display: Installing the wiring harness

Step 1

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

Step 2

Connect the cable to the P3 connector on the NavController II main harness and then route the cable from the NavController II to the mounting location on the CFX-750 display.



FmX and CFX-750 displays: Connecting accessory options

AgCam

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

Step 1

Locate the AgCam and AgCam cable.

Step 2

Mount the AgCam in a secure location and then route the cable toward the display.



FmX display



CFX-750 display

Step 3

Connect the AgCam cable to the display adaptor cable.



Step 4

Connect the display to AgCam adaptor cable to one of the open 12 pin connectors on the back of the display.



Preparing the EZ-Guide 500 lightbar

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

Step 1

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



Step 2

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



Connecting the EZ-Guide 500 lightbar cables

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

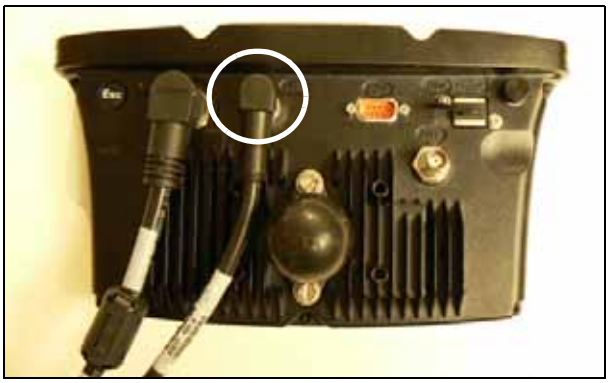
Step 1

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



Step 2

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



Step 3

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

Step 4

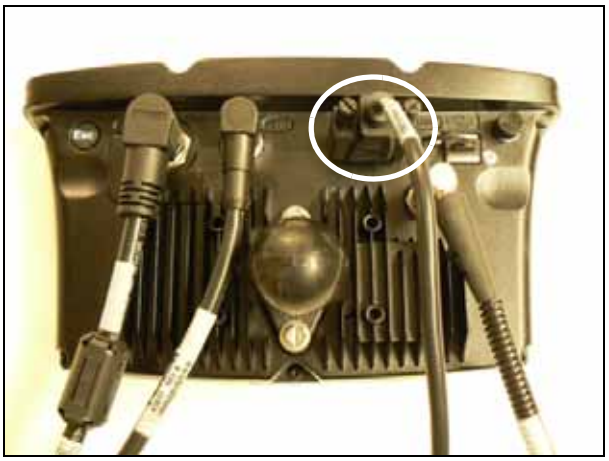
Feed the GPS antenna cable into the cab and then connect it to the antenna port on the back of the lightbar.



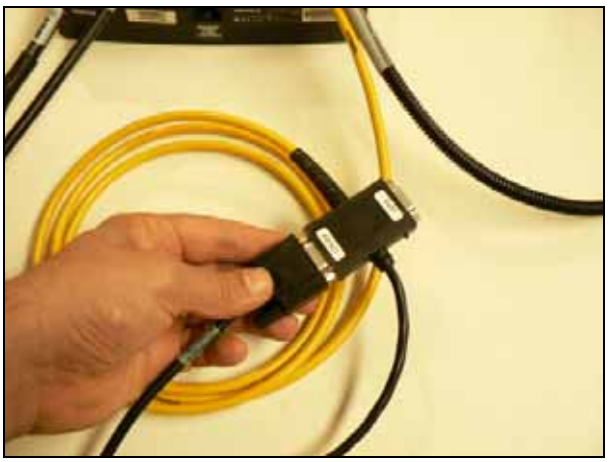
Step 5

With keypad

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

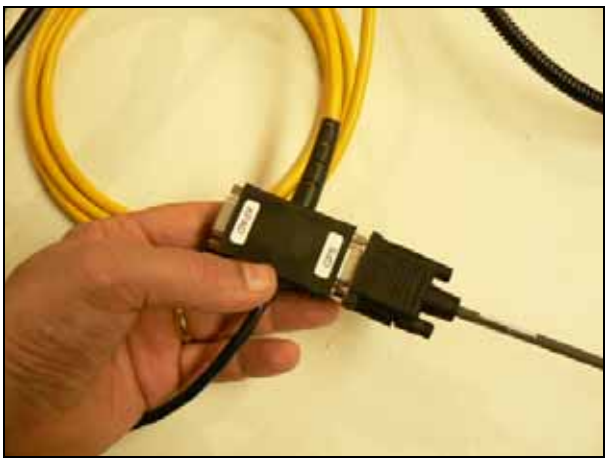


Connect the remote keypad to the KPAD serial port on the external interface cable.



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

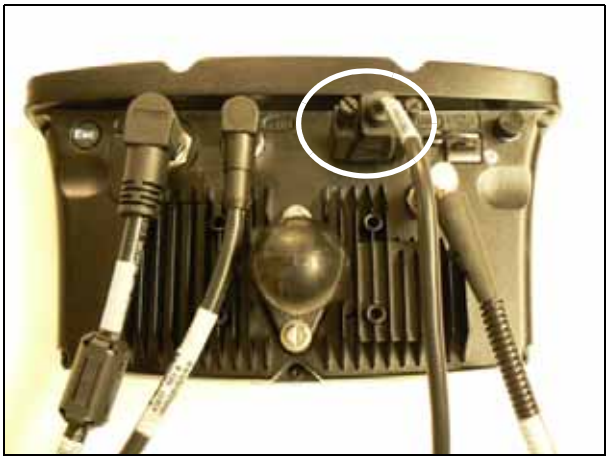
Radio type	Cable to connect
SNB900 radio	EZ-Guide 500-to-radio cable (P/N 61158)
PDL 450 radio	PDL radio power/data cable (P/N 51861-00)



Without keypad

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

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



Step 6

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

Step 7

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

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

Installing the EZ-Guide 500 lightbar

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

Step 1

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

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



Step 2

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



Step 3

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



EZ-Guide 500 lightbar, and FmX and CFX-750 displays: Installing the GNSS antenna and plate

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

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

Use one of the following methods:

- Spar mount
- VHB adhesive

Spar mount method

Trimble recommends that you use this method for RTK and OmniSTAR operations. For more information, see Antenna and receiver installation options, page 44.

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



VHB adhesive method

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

- **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.

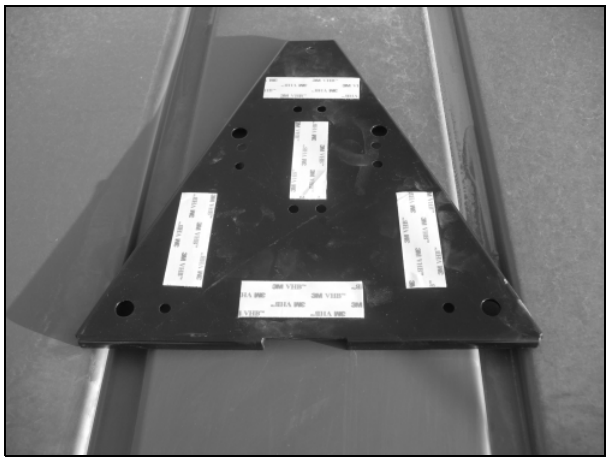


Step 2

V plate only

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

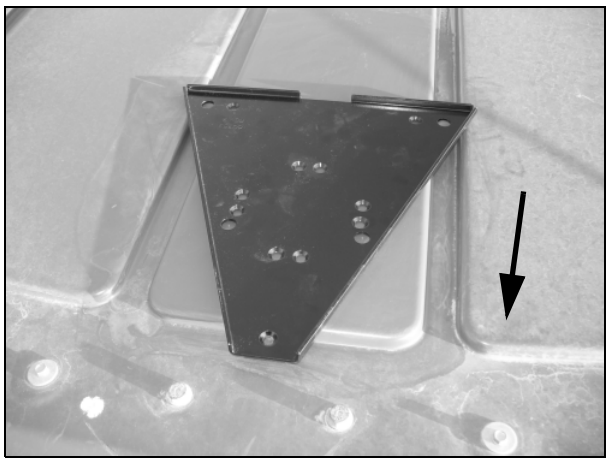
Note – *The VHB strips are pre-applied to the 4" x 6" plate.*



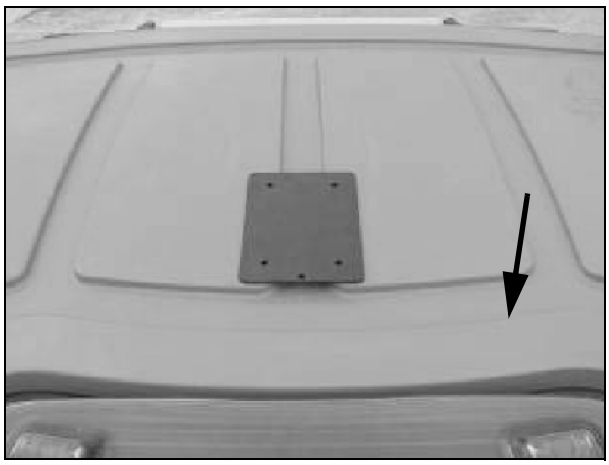
Step 3

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.*



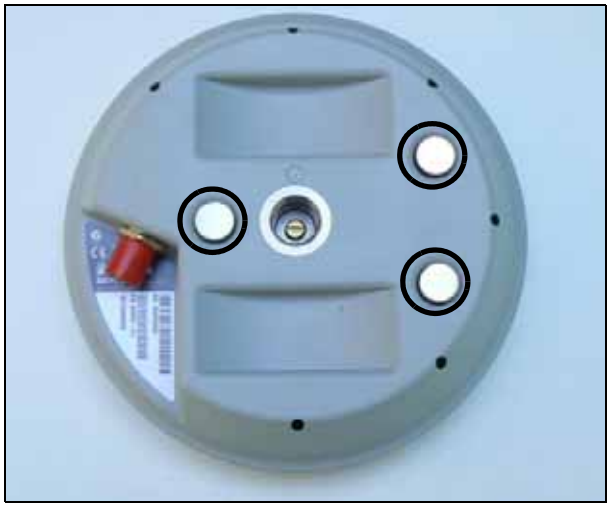
V plate



4" x 6" plate

Step 4

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



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



Step 5

RTK, OmniSTAR, DGPS, GLONASS applications

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



WAAS, EGNOS, VBS, Beacon applications

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



Step 6

Both models

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



EZ-Guide 500 lightbar, and FmX and CFX-750 displays: Installing the RTK radio antenna

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

Step 1

Connect the radio antenna to the magnetic antenna base



Step 2

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



Step 3

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

CHAPTER

6

Power Harness Installation

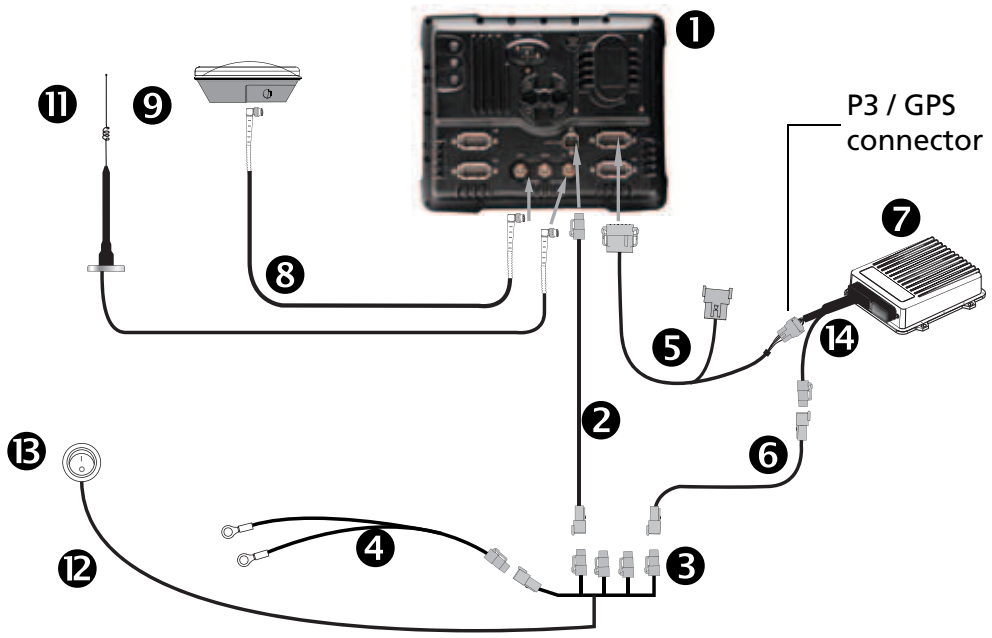
In this chapter:

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

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

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

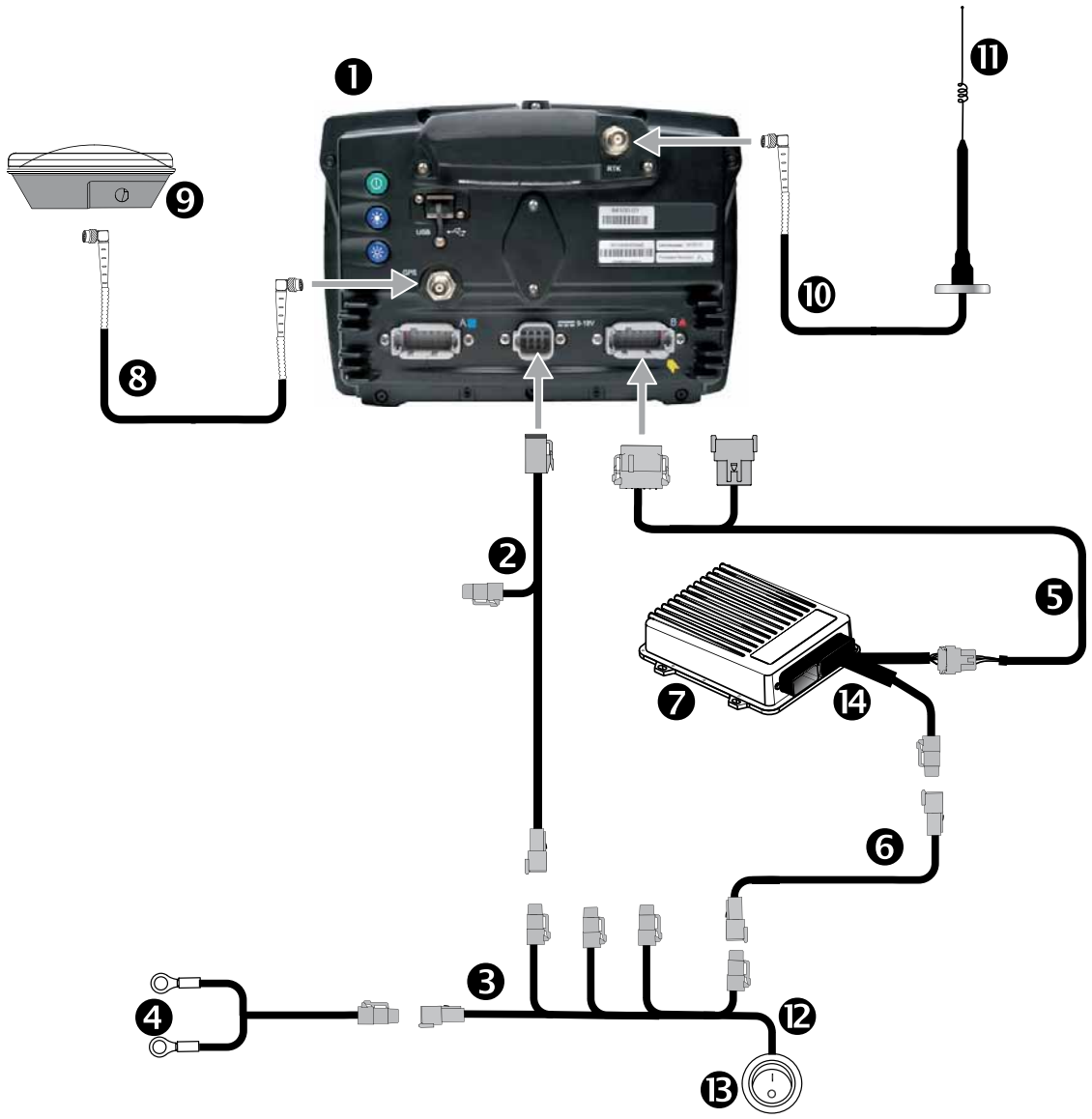
FmX integrated display components



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

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

CFX-750 display components

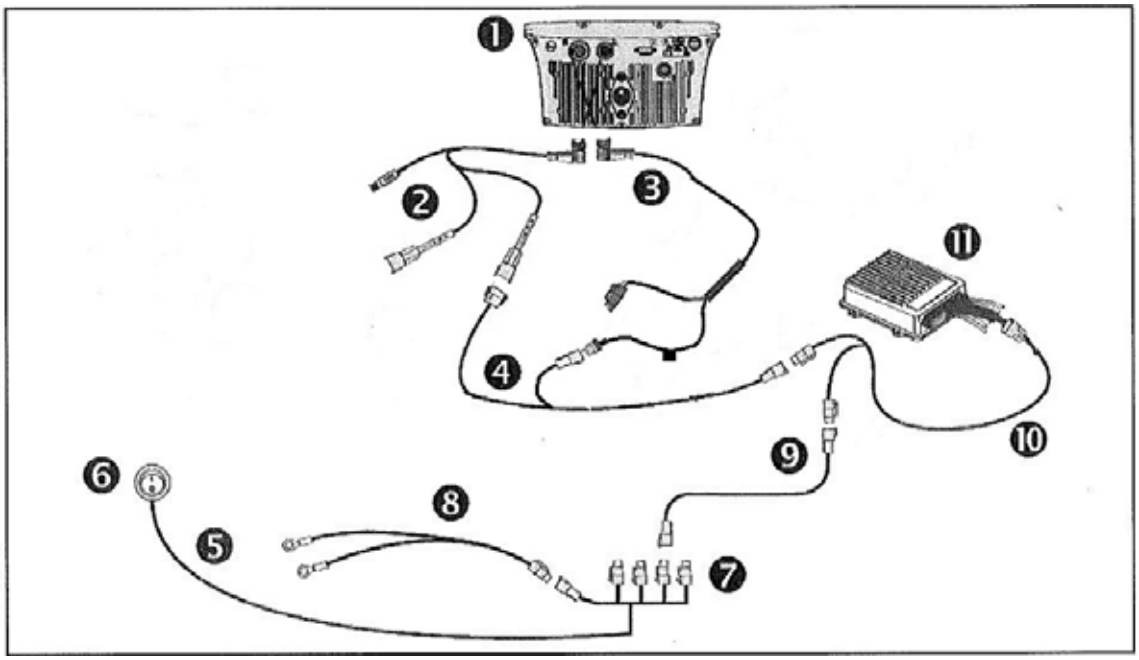


CAUTION – Connecting the Port Replicator on the CFX-750 display to NavController II cable ❺ to the P4 or P12 connector of the NavController II harness ⓮ will result in damage to the CFX-750 display and will void the warranty.

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

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

EZ-Guide 500 lightbar components



Item	Description	Trimble part number
1	EZ-Guide 500 lightbar	
2	EZ-Guide 500 lightbar 19 pin port expansion cable	62069
3	EZ-Guide 500 lightbar/CAN 90° 5 pin connector	62817
4	EZ-Guide 500 lightbar port A to NavController II cable	62754
5	Switch cable	Part of 67259
6	Switch	67095
7	FmX power cable with relay and switch	67259
8	FmX basic power cable	67258
9	2 pin DTM to 2 pin 2 DT power adaptor	67095
10	NavController II main cable	54601
11	NavController II	55563-00

FmX and CFX-750 displays: Installing the power harness

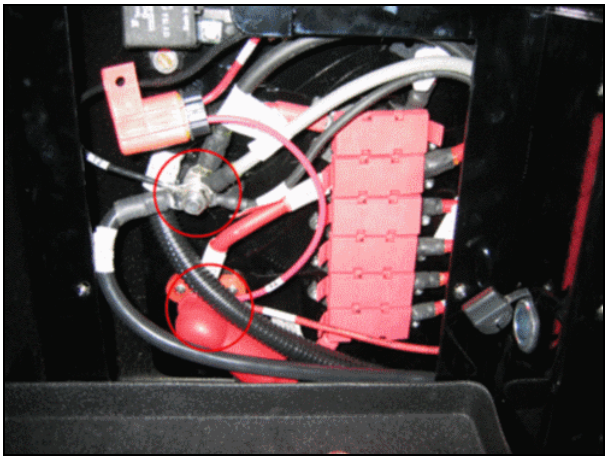
Note – *Unless otherwise stated, instructions for "the display" refer to either the FmX integrated display or the CFX-750 display.*

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

Step 1

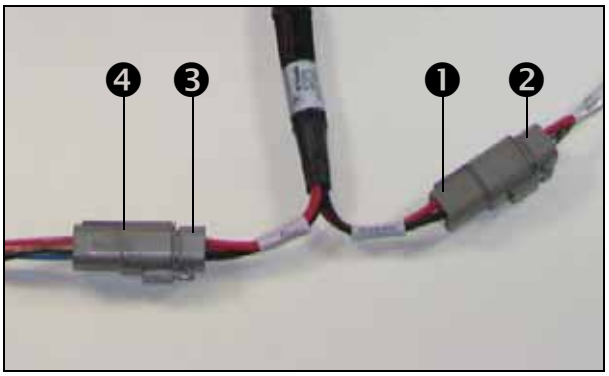
Connect the basic power cable to the vehicle battery and then route the cable into the cab.





Step 2

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



Step 3

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



FmX display



CFX-750 display

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

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

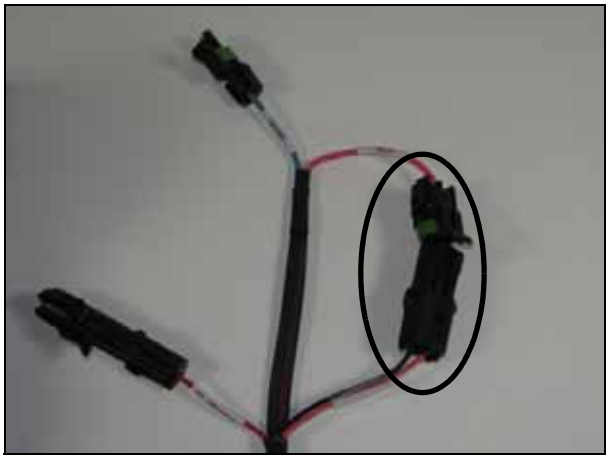
WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

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

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

Display power button is used to turn on the Autopilot system

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



External switch is used to turn on the Autopilot system

Step 1

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

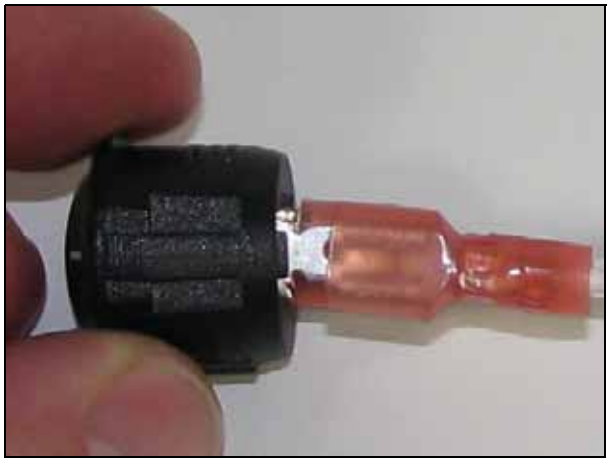
Note – *To install the switch provided, drill a ¾" hole.*



Step 2

Connect the cable labeled R7 to the switch pins.

Note – *Polarity is not important.*



Installing the optional illuminated full or standard Euro switch

Step 1

Find an available knockout location on the vehicle console.

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

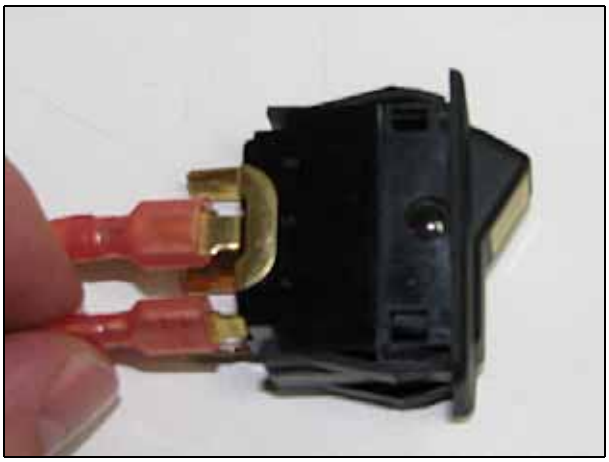


Step 2

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

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

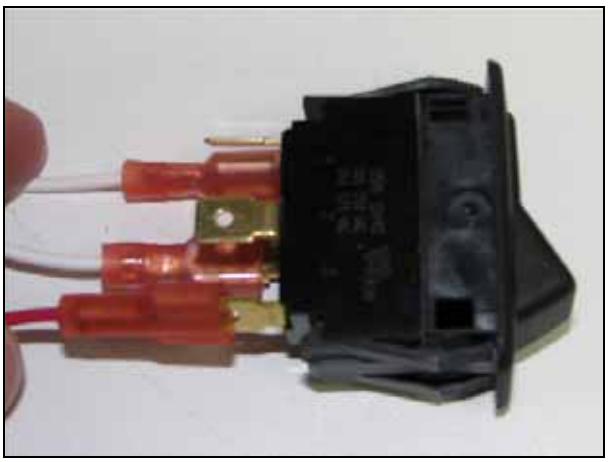
Note – *Polarity is important.*



Step 3

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

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

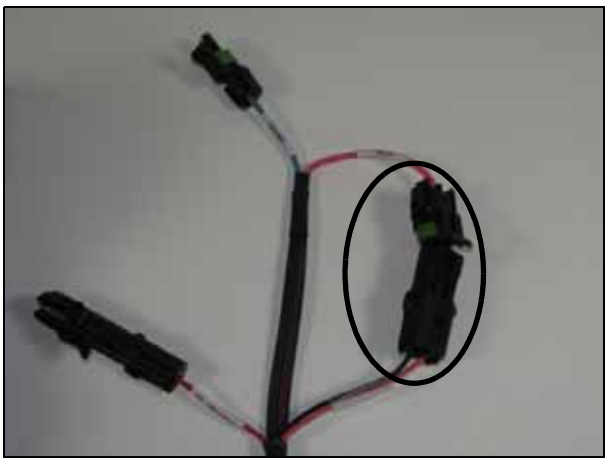


Ignition is used to turn on the Autopilot system

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

Step 1

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

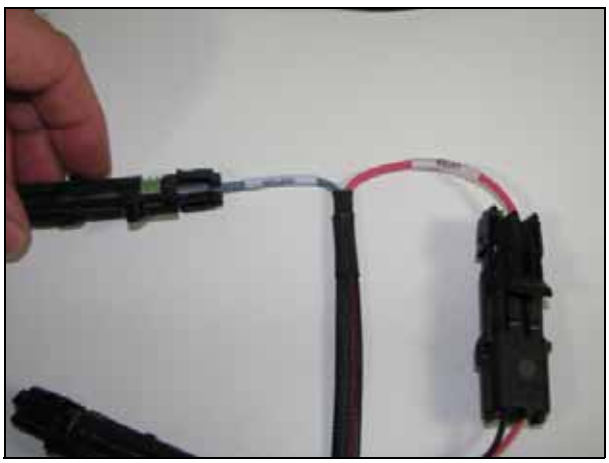


Step 2

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

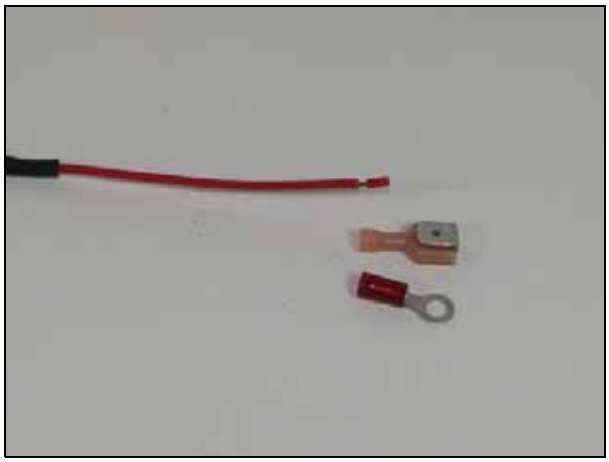
Step 3

Route the cable to the vehicles ignition.



Step 4

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



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

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

Note – *For the EZ-Guide 500 lightbar cable installation instructions see,* *EZ-Guide 500 lightbar components, page 77*.

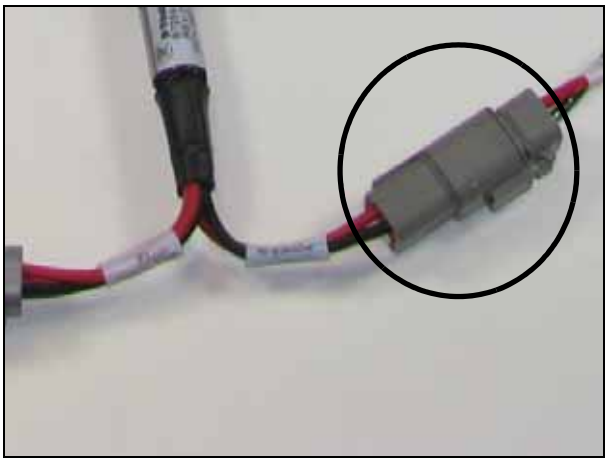
Step 1

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



Step 2

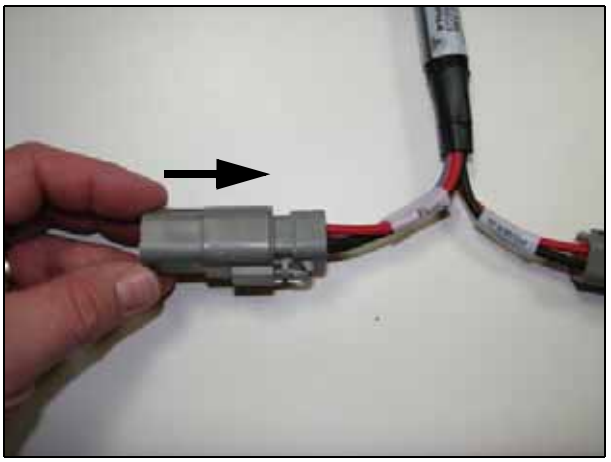
Locate and connect the 4-pin Deutsch DTP receptacle on the power bus to the 4-pin Deutsch DTP plug on the basic power cable.



Step 3

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

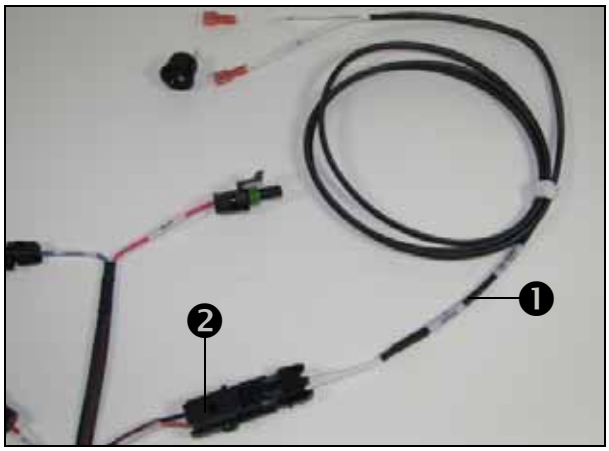
Note – *Damage to the system may result if the protective receptacle is not in place.*



Step 4

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

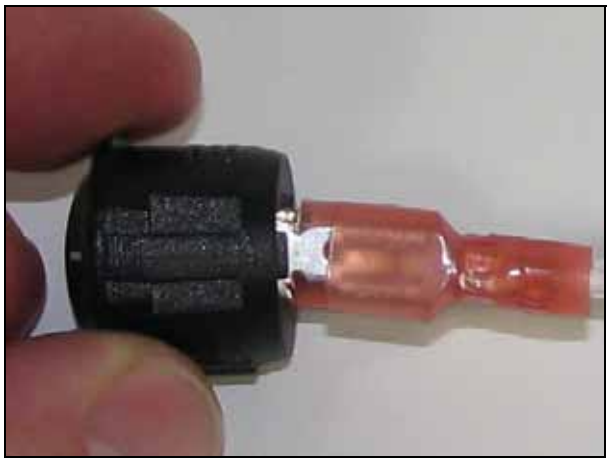
Note – *To install the switch provided, drill a ¾" hole.*



Step 5

Connect cable labeled R7 to the switch pins

Note – *Polarity is not important.*

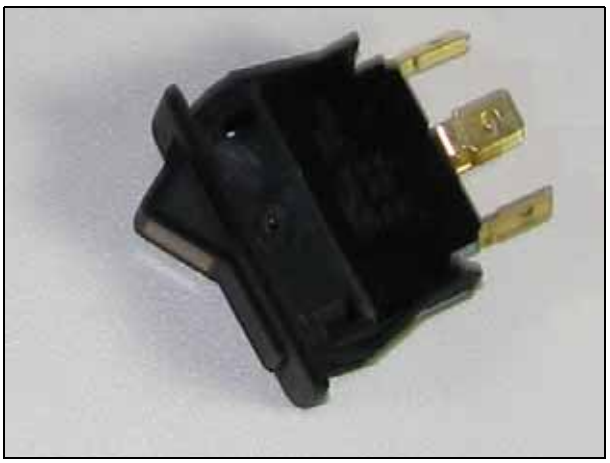


Installing the optional illuminated full or standard Euro switch

Step 1

Find an available knockout location on the vehicle console.

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

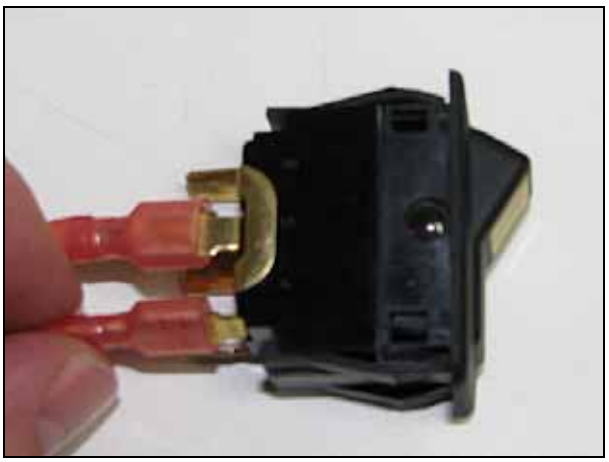


Step 2

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

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

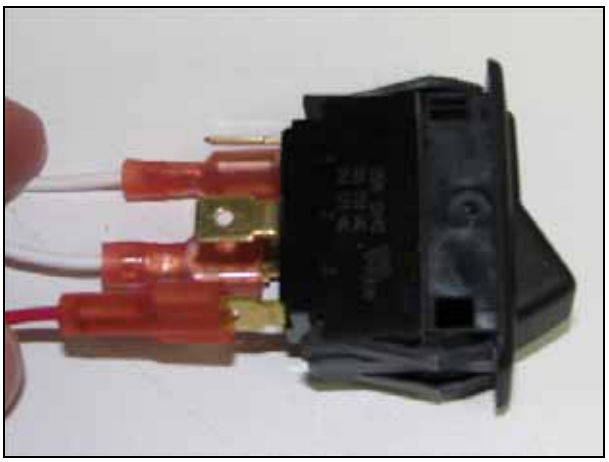
Note – *Polarity is important.*



Step 3

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

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



CHAPTER

7

Remote Engage Switch Installation

In this chapter:

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

This chapter describes how to install the remote engage switch.

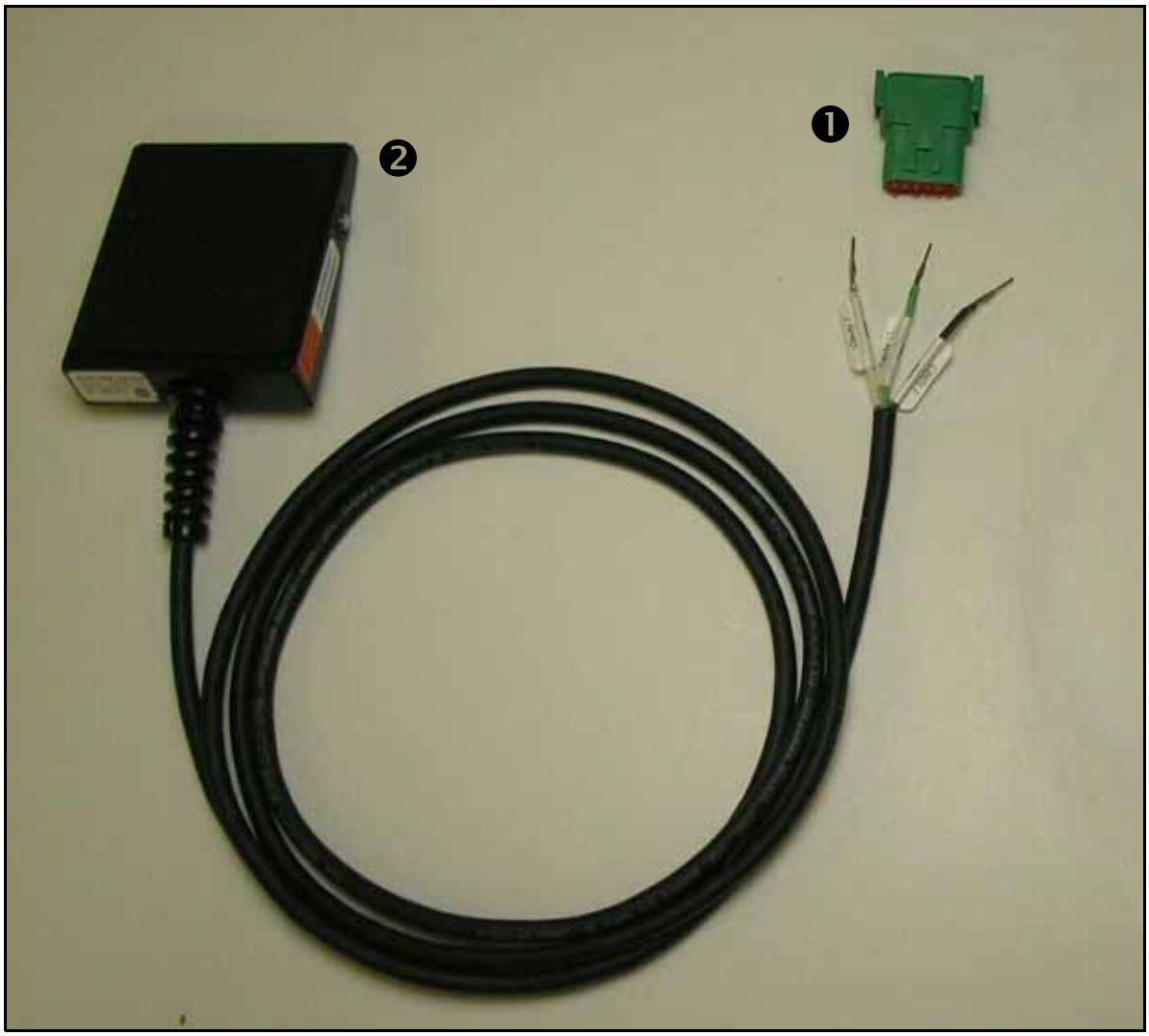
Remote engage switch components: Rocker switch



Item	Description
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

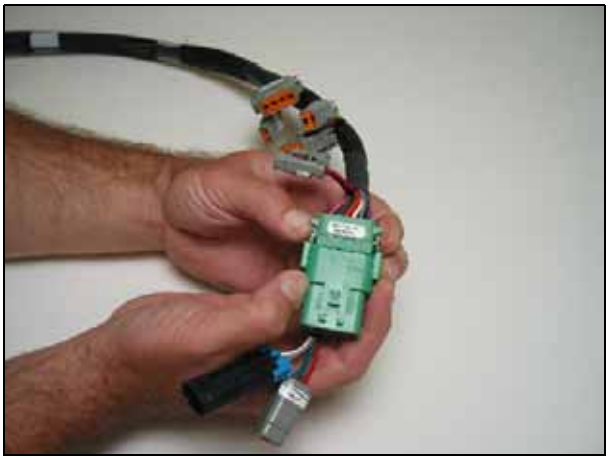


Item	Description
❶	DTM receptacle
❷	Remote engage foot switch

Preparing the remote engage cable

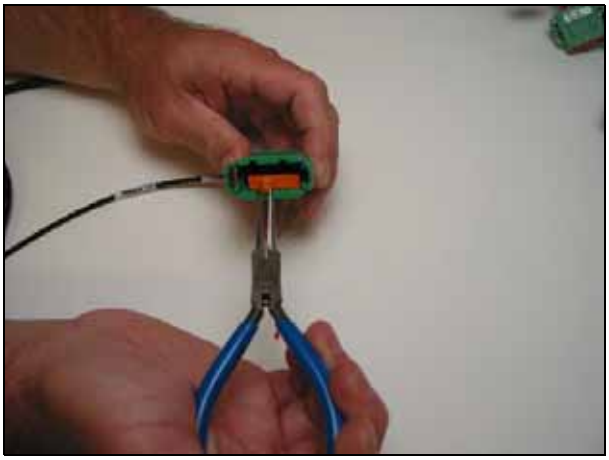
Step 1

Locate the green 12-pin Deutsch receptacle on the P-5 leg of the main controller harness. For more information, see Controller connections, page 103.



Step 2

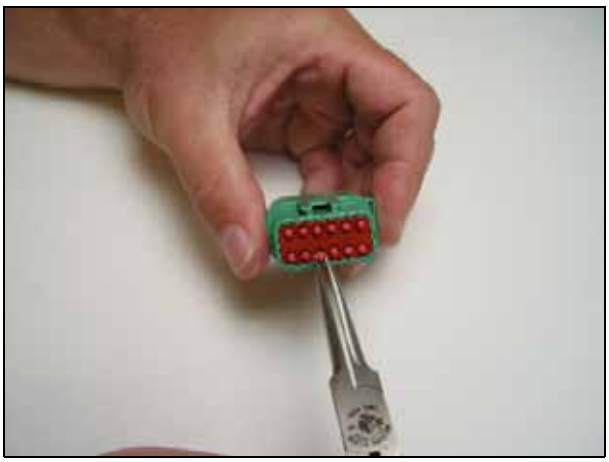
Remove the wedge from the connector.



Step 3

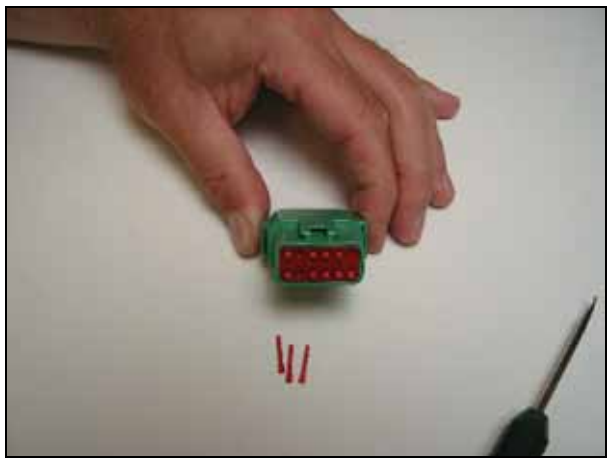
Rocker switch only

Remove the plugs from cavity 2 and cavity 7.



Foot Switch Only

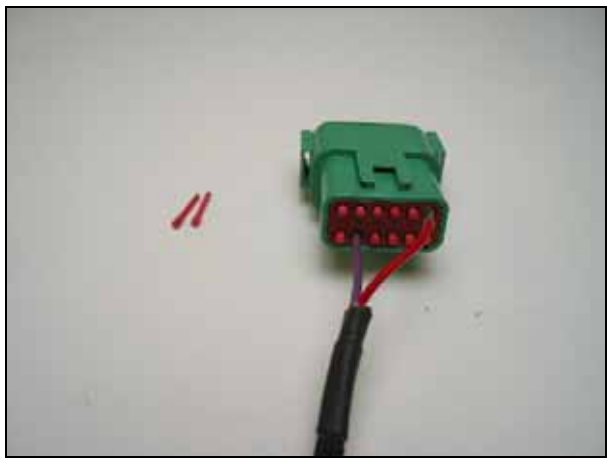
Remove the plugs from cavity 2, cavity 7, and cavity 11.



Step 4

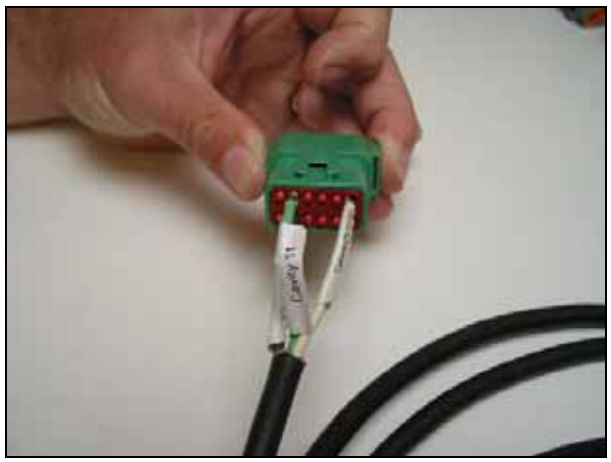
Rocker switch only

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



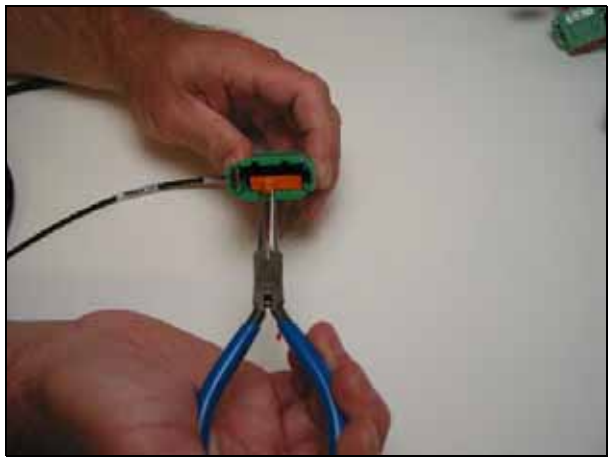
Foot switch only

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

Replace the receptacle on the P5 plug of the Nav II harness.

Step 7

Rocker switch only

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



Foot switch only

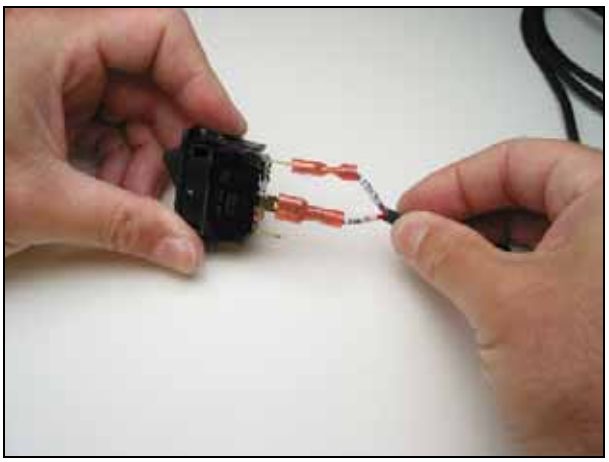
Run the cable to a clear location on the floor board. Use double-sided tape to secure the pedal. Route the cable under the floor mat.



Step 8

Rocker Switch Only

Connect the wires to the switch. Match the print on the switch body with the labels on the wires.



Step 9

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.

CHAPTER

8

Controller Installation

In this chapter:

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

This chapter describes how to install the controller unit.

Installing the controller

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

Step 1

Identify the controller mounting location on the cab floor to the right of the seat.



Pre 2012 models



2012 900/110/1300 models

Step 2

Pull back the floor mat to inspect the area underneath the mat.



Step 3

Remove the floor panel for access below the cab floor.



Step 4

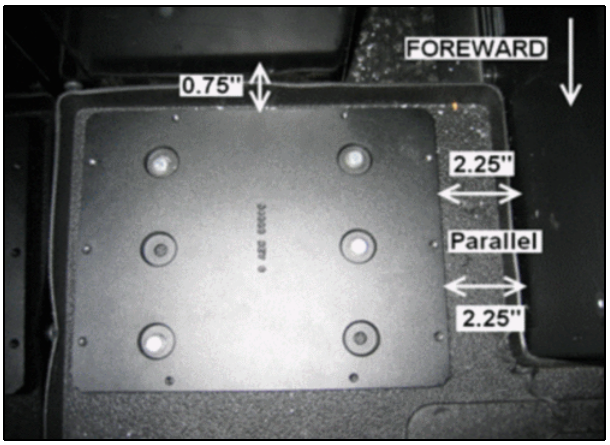
Position the controller mounting plate parallel to the seat base so that the mounting holes can be drilled through the floor behind the removable panel. The connectors on the controller will face the rear of the cab. The plate should also be parallel and approximately 5" from the vertical steel panel shown.

Note – *Use the cab structure and seat base to ensure the controller is parallel to the direction of travel.*



Pre 2012 models

For 900/1100/1300 models orient the plate .75 inches ahead of the consol and 2.25 inches away from the base of the seat.



2012 900/110/1300 models

Step 5

CAUTION – Before you drill the holes, ensure that the area below the floor is clear. Failure to do so may result in damage to the vehicle.

Mark and drill four ¾" or larger holes through the floormat with a hole saw and then 5/16" holes through the floor.



Step 6

Install the standoffs and ¼"-20 bolts (provided in the kit) by reaching through the access panel.



Step 7

Tighten the standoffs into place. Reinstall the access panel.

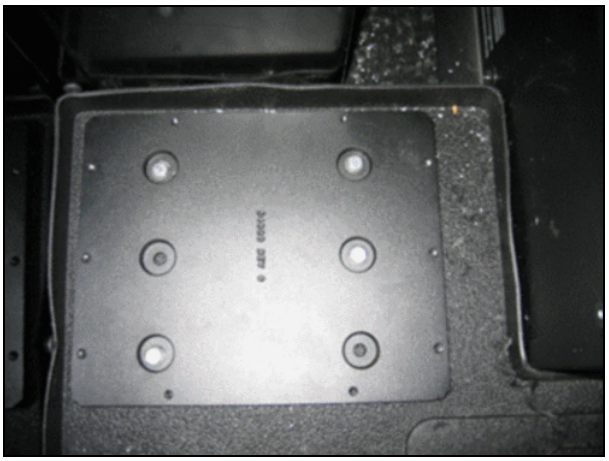


Step 8

Attach the controller mounting plate to the standoffs with ¼" hardware in the controller bolt kit.



Pre 2012 models



2012 900/110/1300 models

Step 9

Attach the main and auxiliary cable harnesses prior to installing the controller. Use an allen wrench to secure the connectors to the controller.



Step 10

Use the four 10/32 screws provided to install the controller with connectors to the back of the cab.



Pre 2012 models



2012 900/110/1300 models

Step 11

Remove the cable pass-through cover at the right rear corner of the cab.



Step 12

Route the cables out of the cab through the right rear corner. If required, use a 1-5/8" hole saw to create a new pass-through.



Pre 2012 models



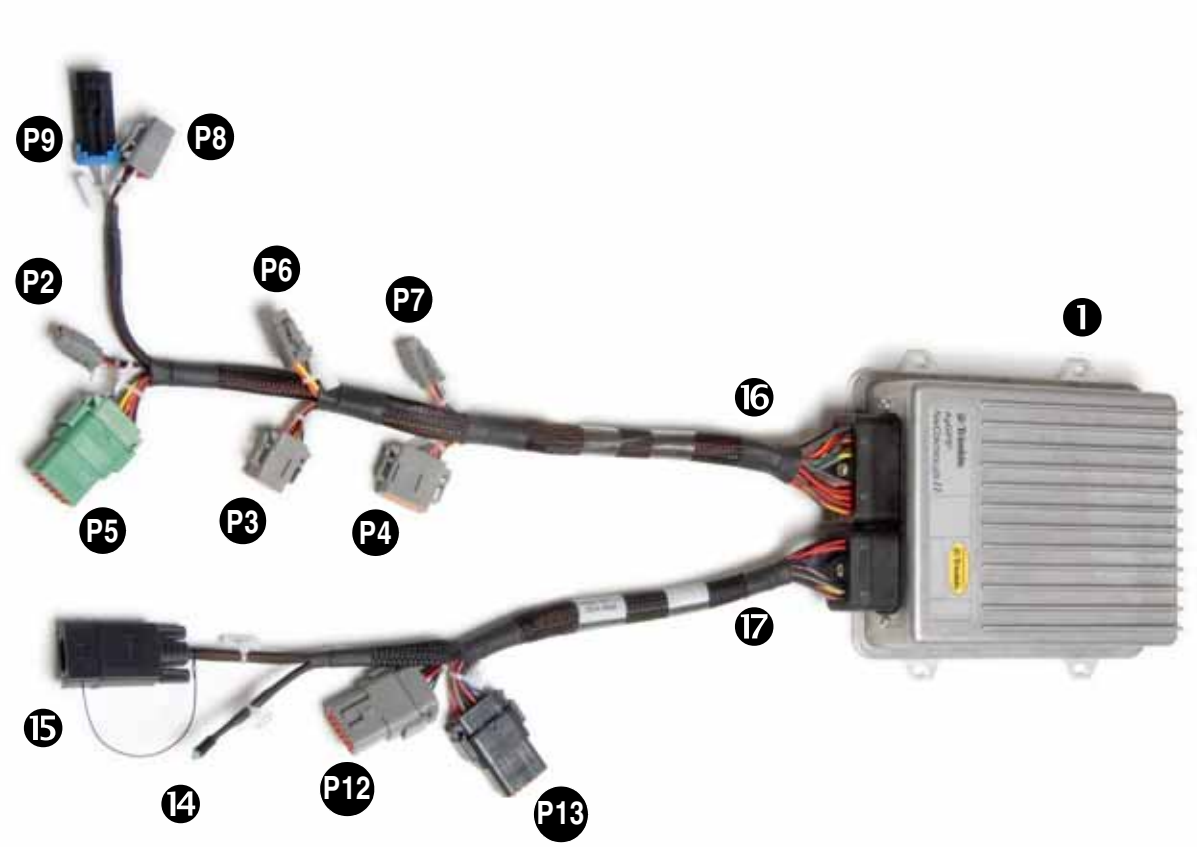
2012 900/110/1300 models

Step 13

Use an existing slot for a cable pass-through.



Controller connections



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

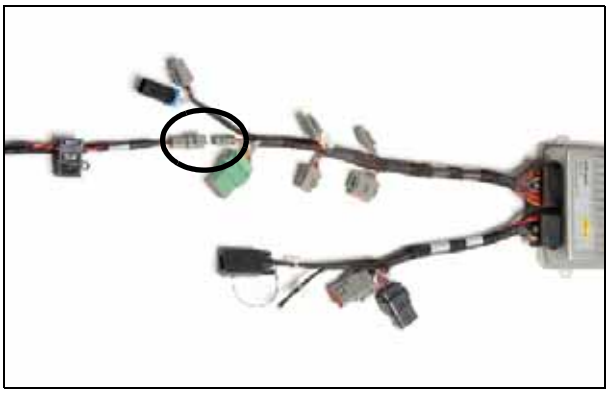
Item	Description
P9	Sonalert connector
P12	Lightbar/spare connector
P13	Spare sensors connector
14	Status indicator
15	Laptop connector
16	Main harness
17	Auxiliary harness

Connecting the cables to the controller

Step 1

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

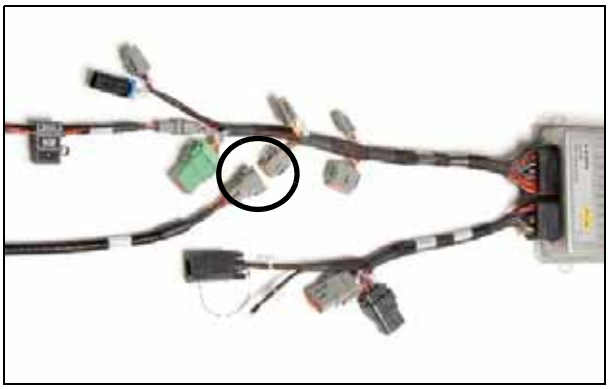
Note – *The power connection supplies power through the controller to all connected devices, including GPS and displays.*



Step 2

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

If you use a CFX-750 or FmX display, plug the display in here.

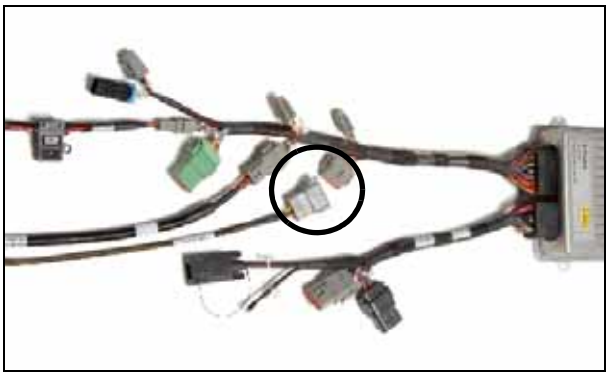


Step 3

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

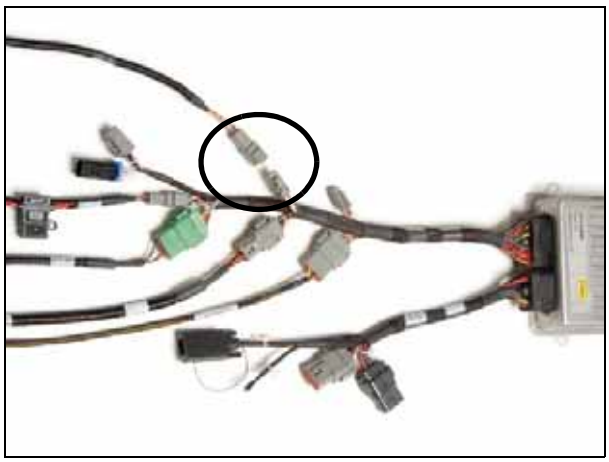
Note – Do not *connect the cable to the connector labeled “Spare” on the auxiliary harness.*

Note – Do not *use this connection for CFX-750 or FmX display installations*



Step 4

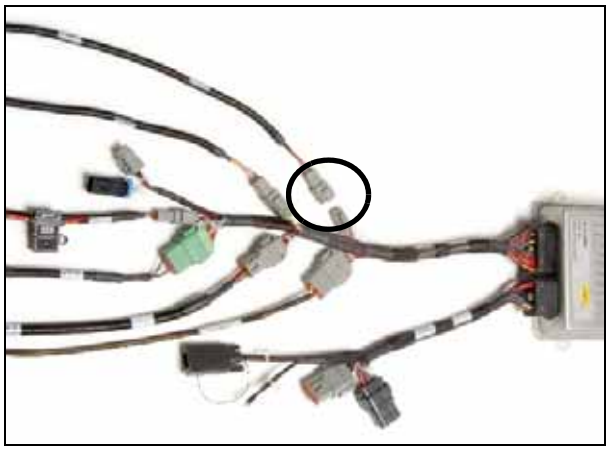
Connect the steering sensor cable connection to P-6, which is labeled “Steering Sensor”. P-6 is located on the main wiring harness.



Step 5

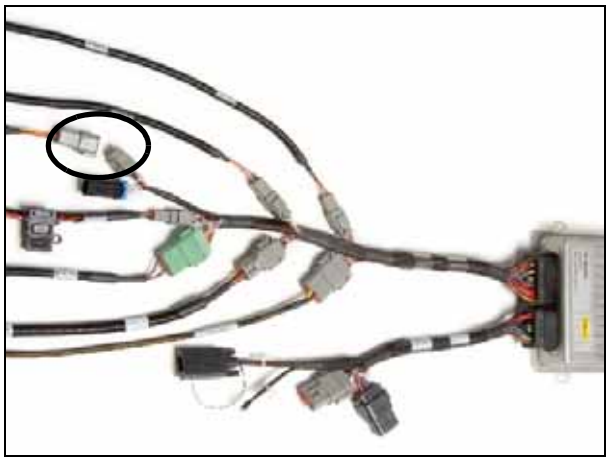
Connect the manual override cable connection to P-7, which is labeled “Manual Override”. P-7 is located on the main wiring harness.

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



Step 6

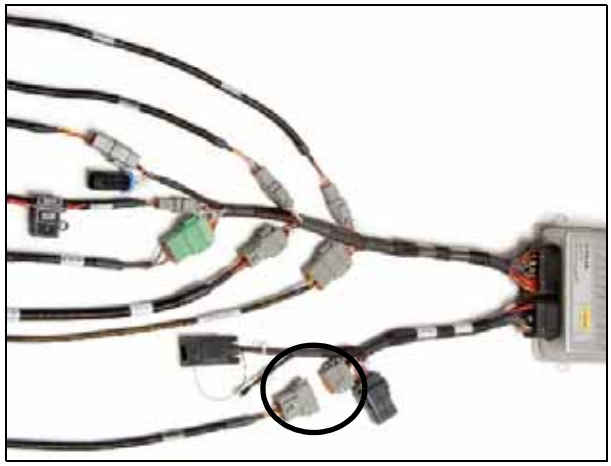
Connect the hydraulic steering valve cable connection to P-8, which is labeled “Hydraulic Valve”. P-8 is located on the main wiring harness.



Step 7

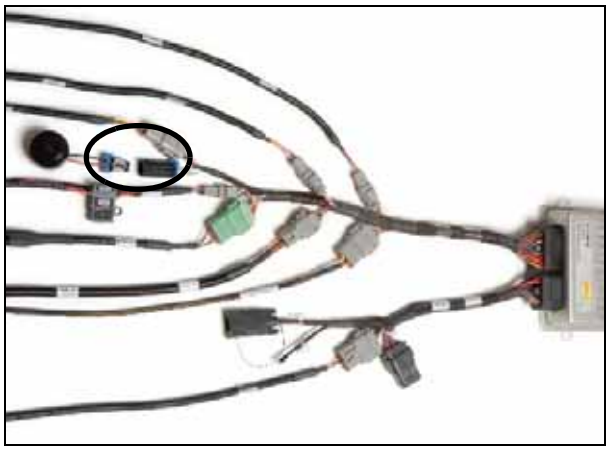
When using a lightbar as a secondary display to an *Ag*GPS 170 field computer, connect the lightbar cable connection to P-12, which is labeled "Lightbar/Spare". P-12 is located on the auxiliary wiring harness.

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



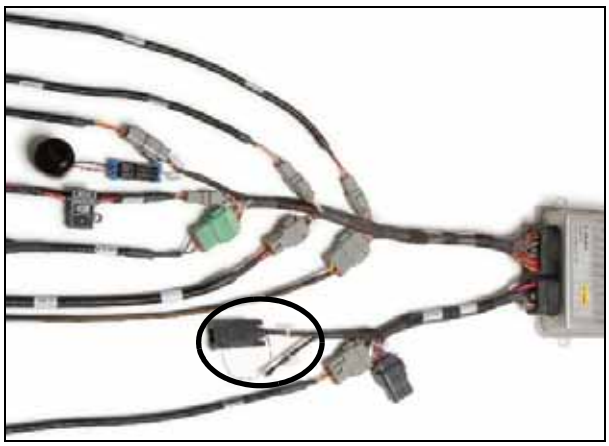
Step 8

Connect the Sonalert P-9 to the 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 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:

- Performing the final machine check

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

Performing the final machine check

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

Step 1

Connect the battery.

Step 2

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

Step 3

Download the latest version of the following from http://www.agpartners.trimble.com:

- Flashloader 200 software
- External Vehicle Profiles
- Autopilot Toolbox II software
- Autopilot NavController II firmware

Step 4

Use the Flashloader 200 software to install the NavController II firmware and then reset the NavController II.

Step 5

Use the Autopilot Toolbox II software or the FmX display to load the proper profile for the vehicle. For more information on vehicle profiles, refer to the supported platforms sheet that is in the External Vehicle Profiles zip file.

Step 6

Perform the appropriate steps to setup and calibrate the Autopilot system.

Step 7

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