Autopilot

AUTOMATED STEERING SYSTEM

INSTALLATION INSTRUCTIONS

FireFly Automatix ProSlab Sod Harvester ▶ 155
▶ 160

Version 8.00
Revision A
February, 2023
P/N 54038-95-E08

Trimble Agriculture

Legal Notices

Agriculture Business Area

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Release Notice

This is the February 2023 release (Revision A) of the Autopilot Automated Steering System Installation Instructions, part number 54038-95-E08. It applies to version 8.00 of the Autopilot automated steering system.

Notice to Our European Union Customers

For product recycling instructions and more information, please go to:
trimble.com/en/our-commitment/responsible-business/corporate-compliance/environmental-compliance



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

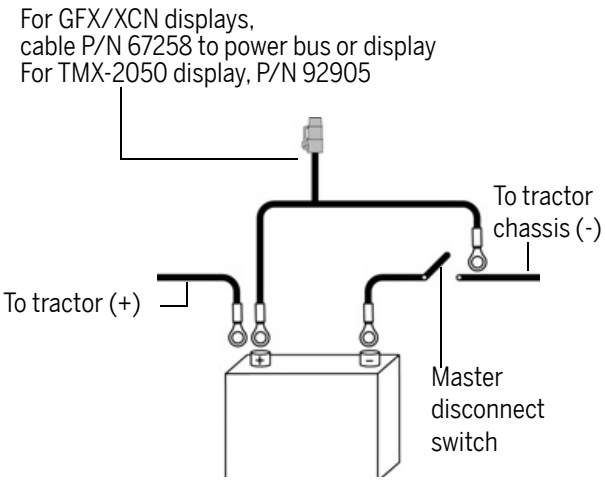


Set the hose pressure as low as practicable, and spray at a 45° to 90° angle. Keep the nozzle of the power washer away from the machine at the distance recommended by the manufacturer.

⚠ **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.

⚠ **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
- Manual system upgrade to Autopilot
- Required components
- 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 (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. Log into agpartners.trimble.com.
2. Click the **Feedback** link at the right of the screen.
3. Complete the form and then click **Submit Feedback**.

Manual system upgrade to Autopilot

Trimble displays

Retain
TMX-2050™/XCN-2050™ display: P/N 96700-00
TM-200 Module: P/N 95060-00
TM-200 Module to display cable: P/N 93843
TM-200 Module power I/O cable: P/N 92676
TM-200 Module battery cable: P/N 92905
GFX/XCN display: 13x000-01
Power cable GFX/XCN: P/N 110551
Base power cable: P/N 67258
NAV-900 guidance controller: P/N 108993-05
GFX/XCN display to NAV-900 Comms cable: P/N 110540

Required components

Kits required	Special tools
Platform kit: P/N 54038-95	Drill
TMX-2050 installations: P/N 64425-07	5/16'' and 7/16'' drill bits
GFX/XCN installations: P/N 64425-08	Allen wrench set (metric and SAE)
	Open ended wrench set (metric and SAE)

Antenna mounting kits

Antenna options
130036 - Bracket, FireFly ProSlab, NAV-900

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

FireFly GPS Ready Kit Component Connections

- Connecting to the FireFly GPS Ready kit
- Installing the steering sensor

Use the following steps to install the Trimble Autopilot on a FireFly GPS Ready machine.

Connecting to the FireFly GPS Ready kit

Manual override

Step 1

Locate the bank of electrical connectors below the cab. These connectors are located on the back side of the cross member, where the NavController III will be installed.

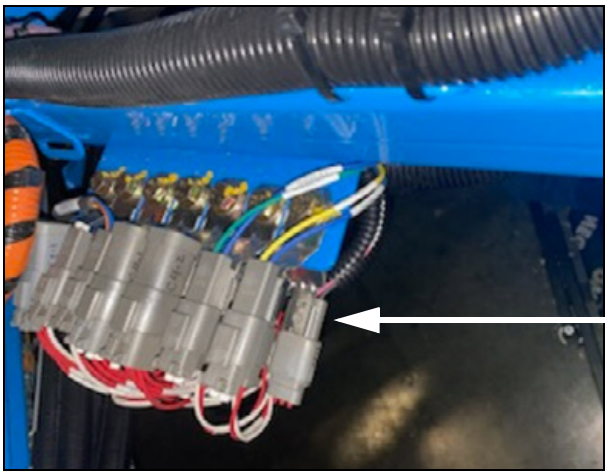


Step 2

Locate the manual override cable P/N 129916.

Locate the FireFly GPS Ready manual override connector.

The 3-pin Deutsch DTM connector is located on the bank of connectors located in the previous step.



Step 3

Disconnect the FireFly cable and connect P1 cable P/N 129916 to the FireFly GPS Ready kit manual override connector.



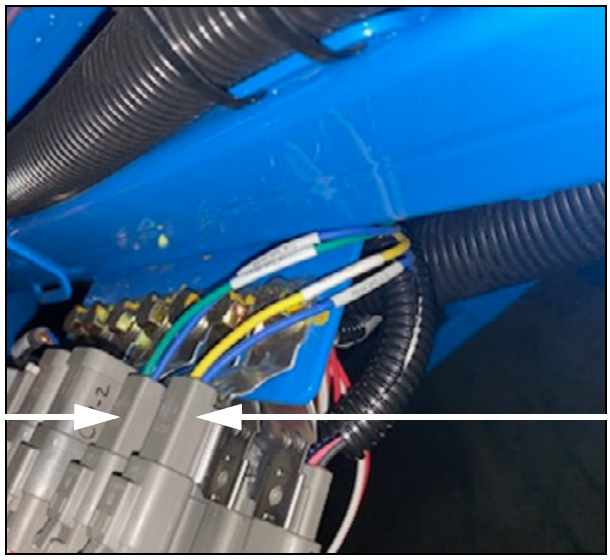
Valve connections

Step 1

Locate the valve adapter cable P/N 129917.

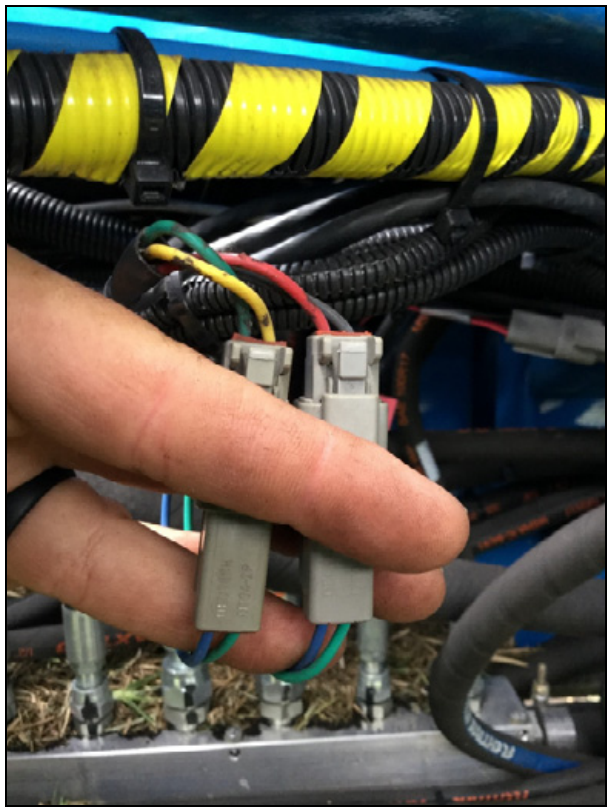
Locate the FireFly GPS Ready kit valve connectors.

The valve connectors are located in the group of connectors located in previous steps.



Step 2

Connect the P1 and P2 connectors on the valve adapter cable P/N 129917 to the FireFly valve left and right connectors.



Steering enable connections

Step 1

Locate the steering enable cable P/N 129918.

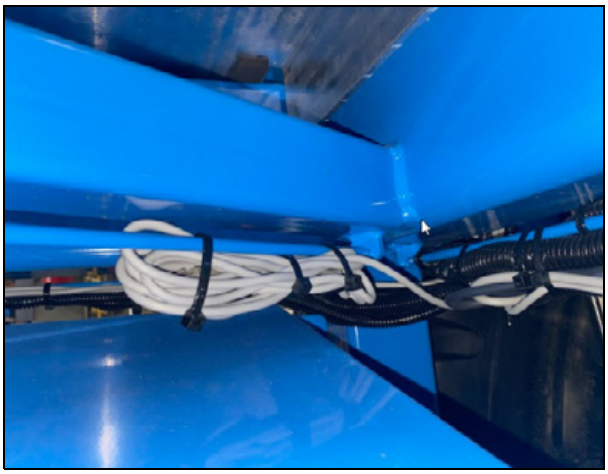
Locate the FireFly GPS Ready kit steering enable connector.

The steer connector is located near the rear of the machine in the general location shown.



Step 2

Locate the 2-pin Deutsch DTM steer enable connector and connect P1 on cable P/N 129918.



NOTE – As per the FireFly service bulletin, inspect the connection for proper installation of the DTM04-2P connector:

a. The Black wire must be installed in position #1.

b. The Brown wire must be installed in position #2.

If the pins are not correct, use the small screwdriver to de-pin the connector and pin them in the proper socket.



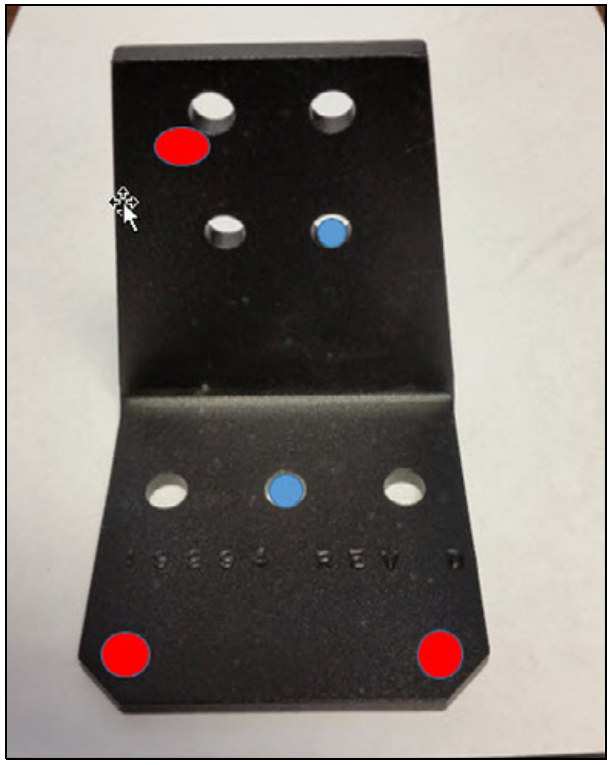
Installing the steering sensor

Step 1

Locate the steering angle sensor bracket included in the P/N 54639-10 steering sensor kit.

The bracket will have to be modified to mount the sensor. The side that has 3 holes will need 2 new holes to be drilled, to match the existing FireFly bracket.

NOTE – Red dots indicate where the new holes are to be located. Blue dots indicate existing holes that will be used.



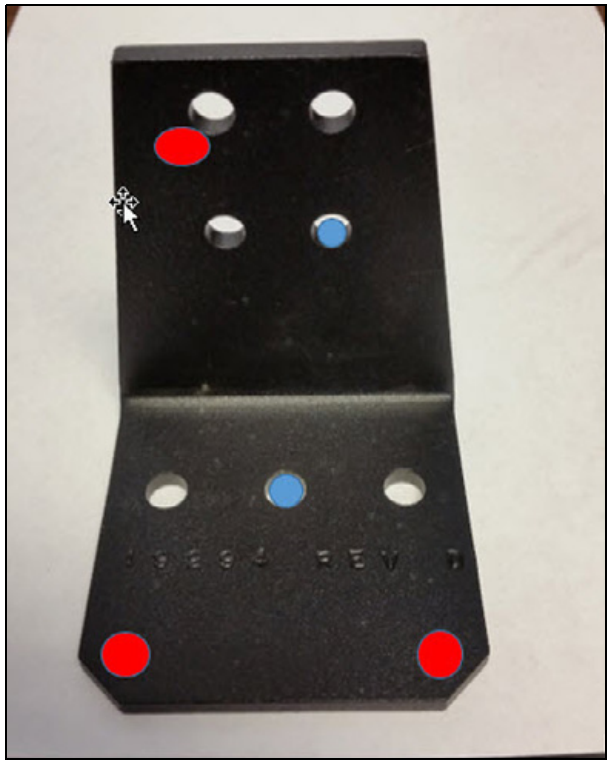
Clamp the bracket in place on the FireFly mounting location and mark the two existing holes in the FireFly bracket (blue dots on picture to the right) onto the Trimble bracket.

Drill two .35 mm holes into the Trimble bracket. Use the provided hardware to attach the bracket to the FireFly harvester.

Use the center existing hole in the bracket (blue dot on picture to the right) to align and to drill a new .35 mm hole in the FireFly bracket.

The sensor mounting holes will also need to be altered. Use the provided hardware to attach the sensor to the bracket where the blue dot is shown.

Level the sensor and then drill a .30 mm hole where top red dot is shown, to allow the second bolt to hold the sensor to the bracket.



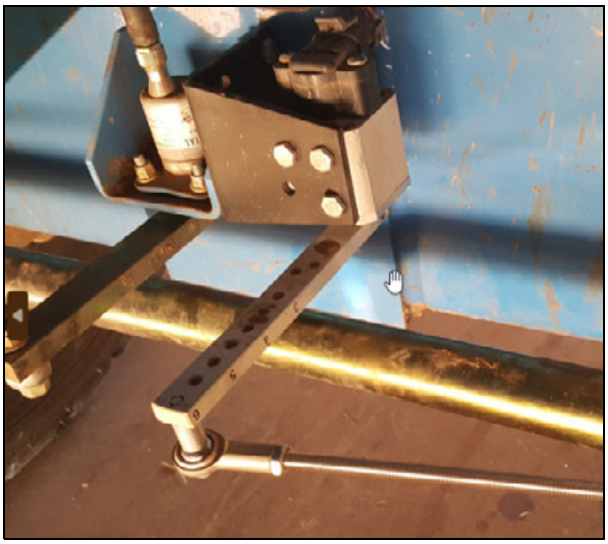


Step 2

Mount the sensor using the hardware that comes in the kit P/N 54639-10.

Cut the 12" flat bar down to 6" as pictured.





Step 3

Locate the steering sensor adapter cable P/N 95192, and connect the P2 connector to the sensor.



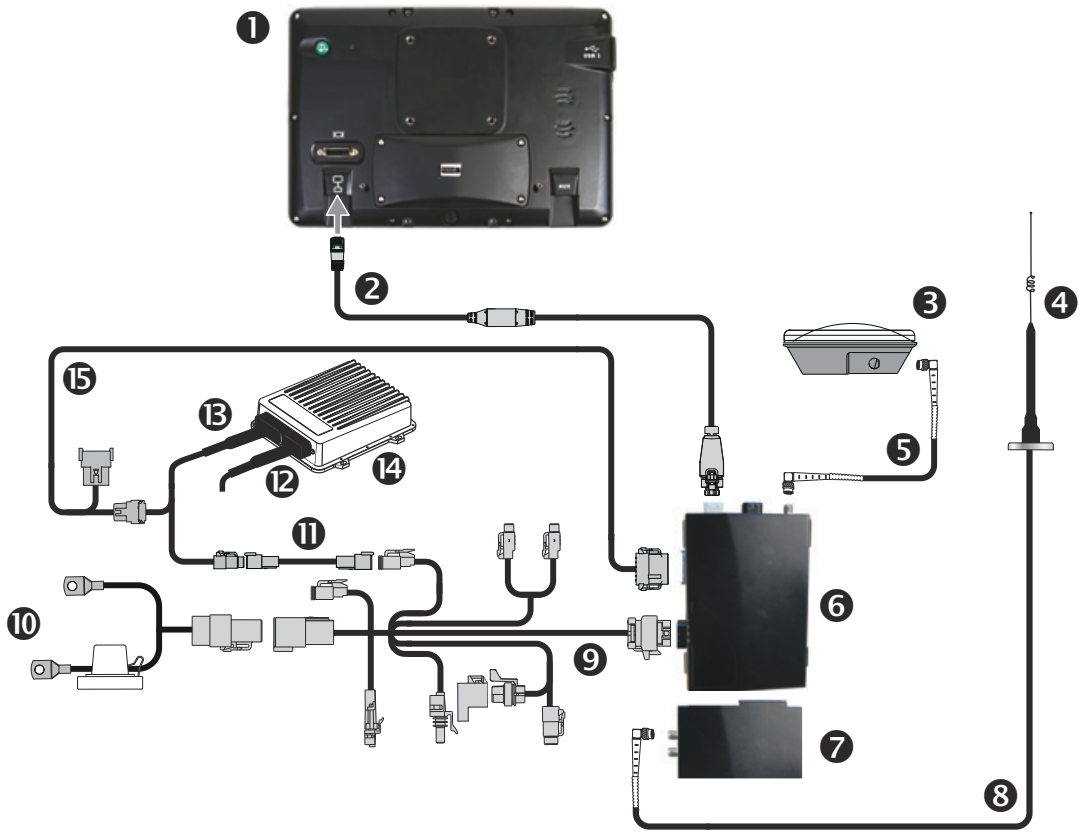
3

Display Installation

- TMX-2050 display: Components
- TMX-2050 display: Preparation
- TMX-2050 display: Installing the wiring harness
- TMX-2050 display: AG-25 GNSS antenna
- TMX-2050 display: Installing the GNSS antenna and plate
- TMX-2050 display: Installing the RTK radio antenna
- GFX/XCN display: Components
- GFX/XCN display: Preparation
- GFX/XCN display: Installing the NAV-900 controller
- GFX/XCN display: Installation
- GFX/XCN display: Installing the wiring harness

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 P/N
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	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.

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.



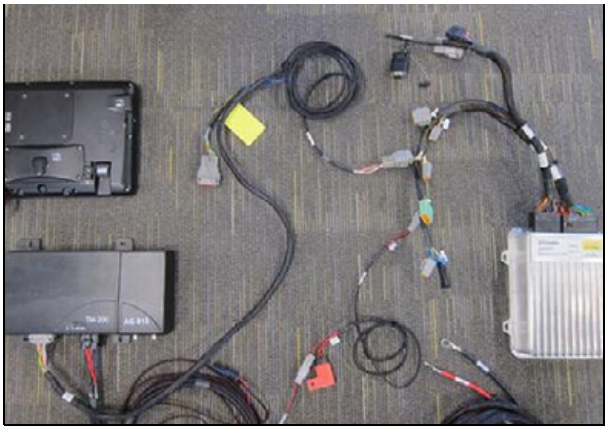
Step 5

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



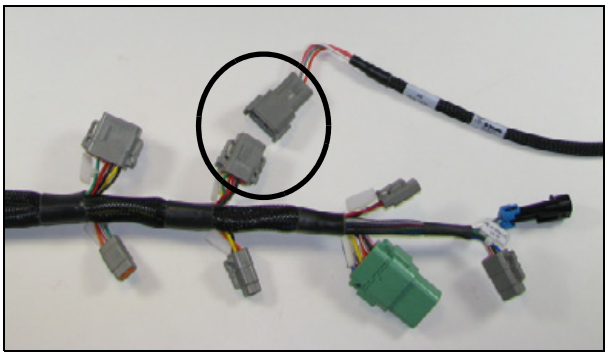
Step 6

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



Step 7

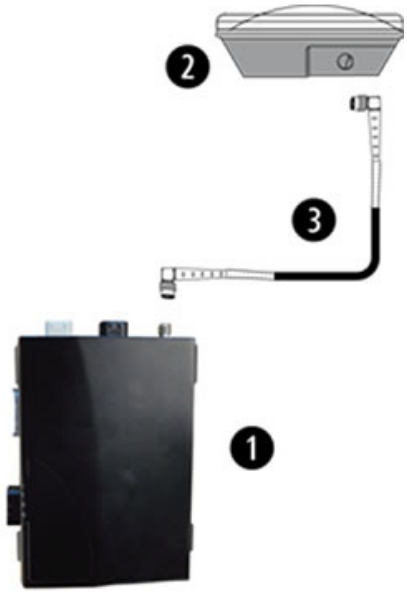
Connect the cable to the P3 connector on the NavController main harness.



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.

TMX-2050 display: 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 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. 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.

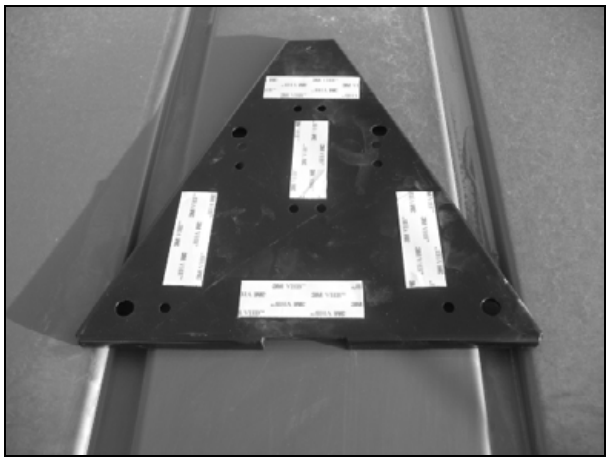


Step 2

V plate only

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

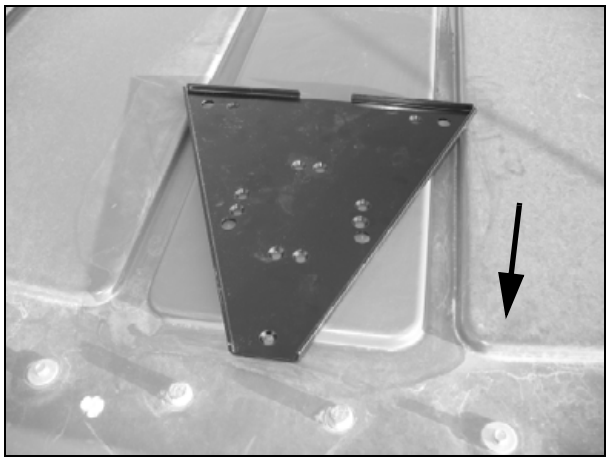
NOTE – The VHB strips are pre-applied to the 4" x 6" plate.



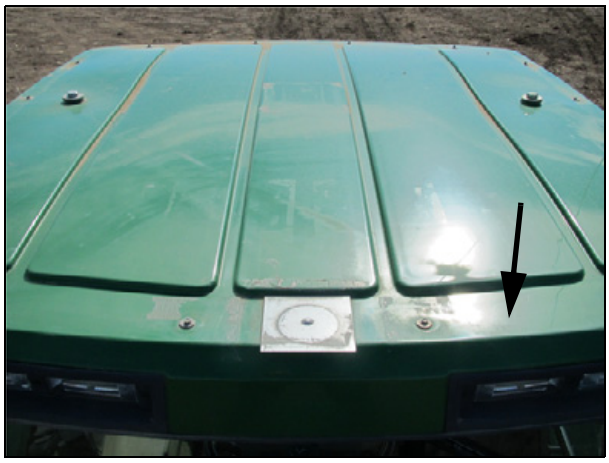
Step 3

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.



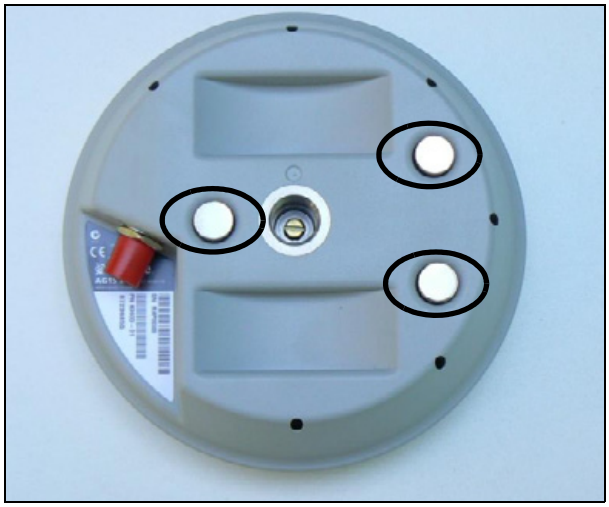
V plate



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.



TMX-2050 display: 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

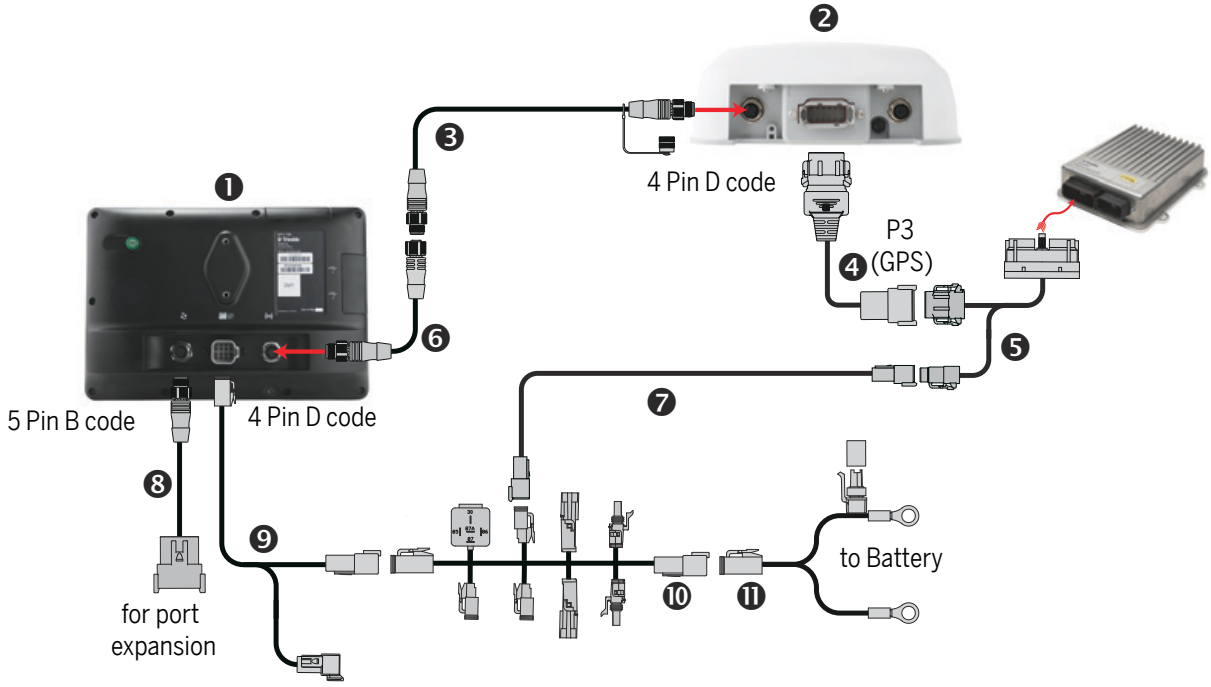
Attach the magnetic radio antenna base to the rear of the V plate on the roof. If the cable does not reach the V plate, use the P/N 62034 plate with the VHB provided to relocate the antenna.

Step 4

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



GFX/XCN display: Components



Item	Description	Trimble P/N
1	GFX/XCN display, with PIQ App	13x000-01
2	NAV-900 Guidance controller	108993-05
3	Cable Assy, GFX/XCN to NAV-500/900, Power/Ethernet (BRR), 5m	110540
4	Cable Assy, NAV-900 to Nav II/III, Autopilot	110547
5	Cable, NavController II/III, Main	54601
6	Cable Assy, GFX/XCN to NAV-500/900, Power/Ethernet (BRR) Extension, 2.5m (optional extension for large vehicles)	112082
7	Cable Assy, 2 PIN DTM to 2 PIN DT Power Adapter	67095
8	Cable Assy, Display, Expansion Port, RS232, Dig I/O, 2.5 m	110545
9	Cable Assy, GFX/XCN, Power to display, CAN, 2.5m	110551
10	Cable Assy, GFX/CFX/FM-750™/XCN/FmX®/FM-1000™ Power with Relay and Switch (Acc)	67259
11	Cable Assy, GFX/CFX/FM-750/XCN/FMX/FM-1000 Basic Power, 4m	67258

GFX/XCN display: Preparation

The GFX/XCN display utilizes the RAM mount system.

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



GFX/XCN display: Installation

Step 1

Use the supplied V bolts or alternate (non-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/XCN display: Installing the NAV-900 controller

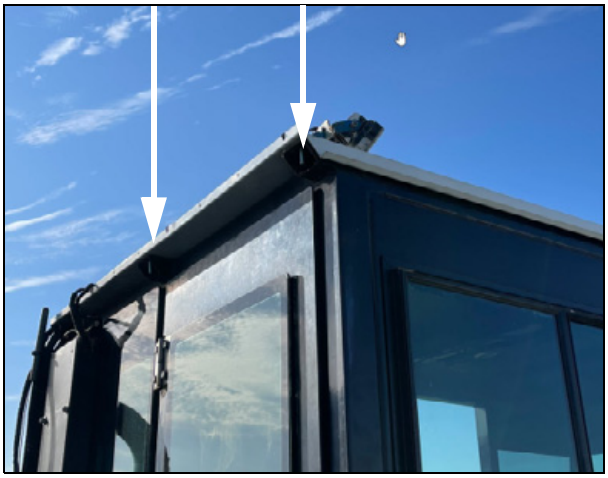
The FireFly ProSlab harvester requires exact placement of the NAV-900 controller using the mounting bracket P/N 130036. Use the following steps to install the bracket and NAV-900.

Step 1

Attach the NAV-900 mounting plate to the bracket P/N 130036 using the provided hardware.

Step 2

Locate the mounting location at the rear of the cab.



Step 3

Mount the bracket and NAV-900 in place.



Step 4

Tighten the two bolts used to secure the bracket in place.





Step 5

Connect the P/N 110547 and 110540 cables to the NAV-900.



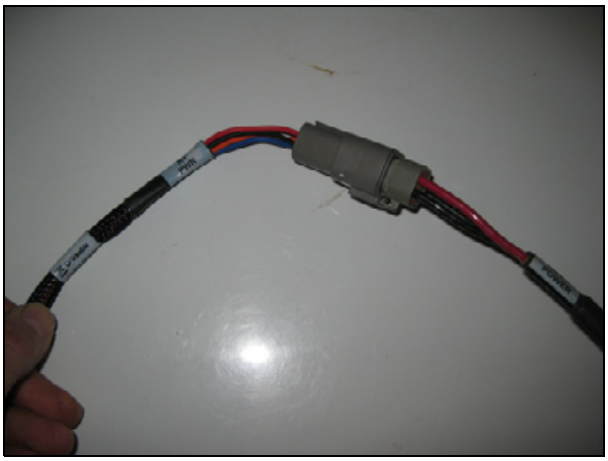
GFX/XCN display: Installing the wiring harness

The GFX/XCN 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.



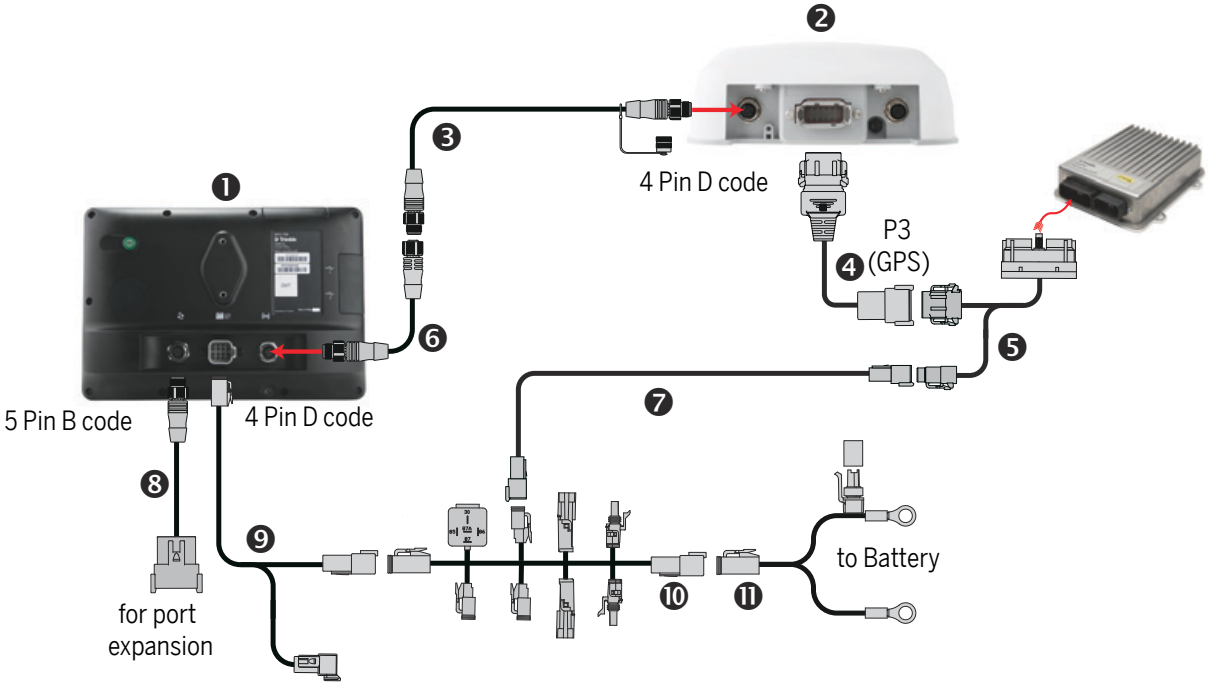


4

Power Harness Installation

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

GFX/XCN displays: Components



Item	Description	Trimble P/N
1	GFX/XCN display, with PIQ App	13x000-01
2	NAV-900 Guidance controller	108993-05
3	Cable Assy, GFX/XCN to NAV-500/900, Power/Ethernet (BRR), 5m	110540
4	Cable Assy, NAV-900 to Nav II/III, Autopilot	110547
5	Cable, NavController II/III, Main	54601
6	Cable Assy, GFX/XCN to NAV-500/900, Power/Ethernet (BRR) Extension, 2.5m (optional extension for large vehicles)	112082
7	Cable Assy, 2 PIN DTM to 2 PIN DT Power Adapter	67095
8	Cable Assy, Display, Expansion Port, RS232, Dig I/O, 2.5 m	110545
9	Cable Assy, GFX/XCN, Power to display, CAN, 2.5m	110551
10	Cable Assy, GFX/CFX/FM-750/XCN/FmX/FM-1000 Power with Relay and Switch (Acc)	67259
11	Cable Assy, GFX/CFX/FM-750/XCN/FMX/FM-1000 Basic Power, 4m	67258

GFX/XCN displays: 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 chapter.

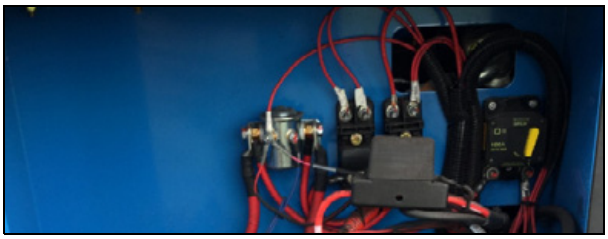
Step 1

The batteries are located on the left side of the machine.



Step 2 —Optional

Inside you will find a solenoid. Connect the ignition switch wire to this if you wish for the Autopilot to turn on when the machine is started.

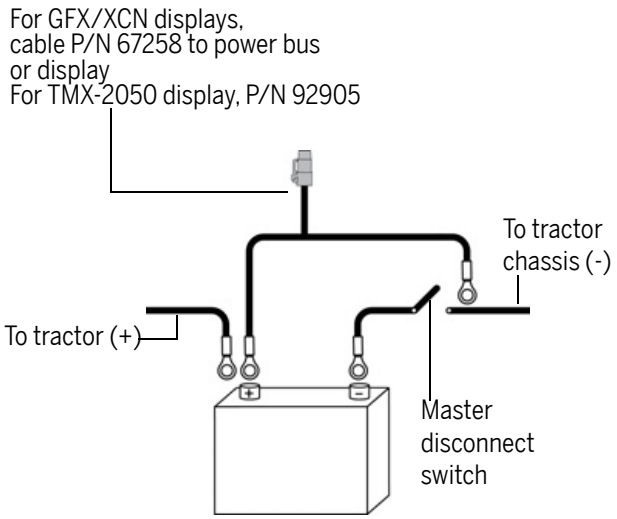


Step 3

Connect to the batteries. Red to the **+** and Black to the **–**.

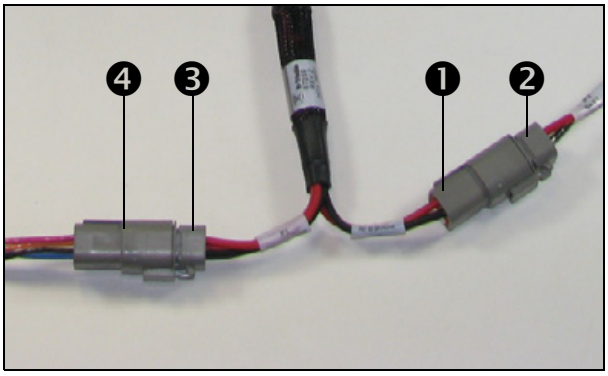


⚠ **CAUTION –** If the vehicle has a master electrical disconnect, make sure the basic power cable (P/N 67258 / 92905) is not directly attached to the battery terminal that is disconnected by the master switch - the negative pole in this example. Attach this terminal side just past the main disconnect 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 4

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 5

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



CFX-750™ display

GFX/XCN displays: Configuring the power bus options

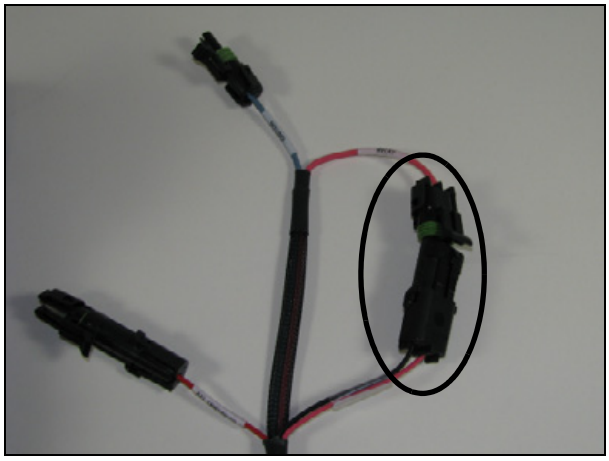
⚠ **WARNING –** To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

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.

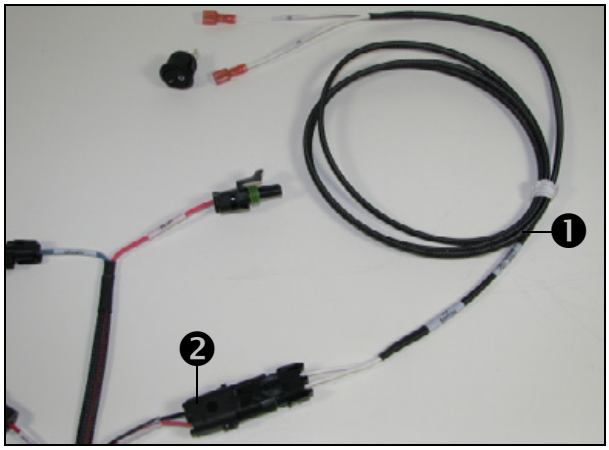


External switch is used to turn on the Autopilot system

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.

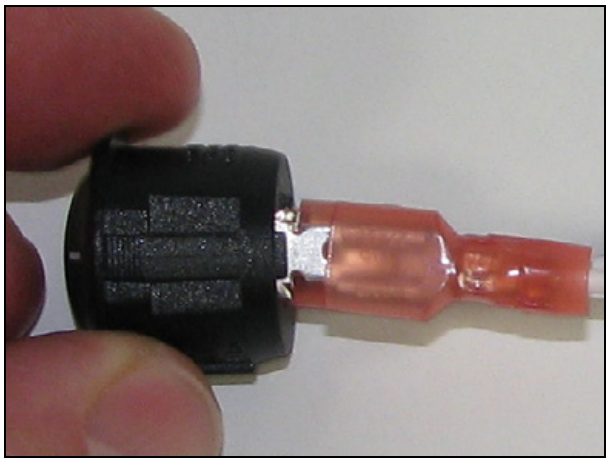
NOTE – To install the switch provided, drill a ¾" hole.



Step 2

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

NOTE – Polarity is not important.

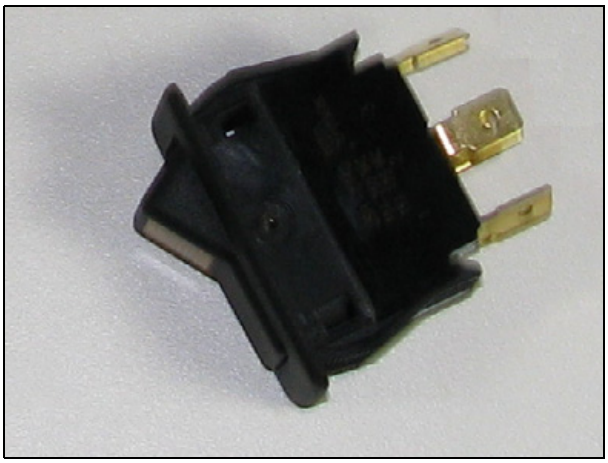


Installing the optional illuminated full or standard Euro switch

Step 1

Find an available knockout location on the vehicle console.

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

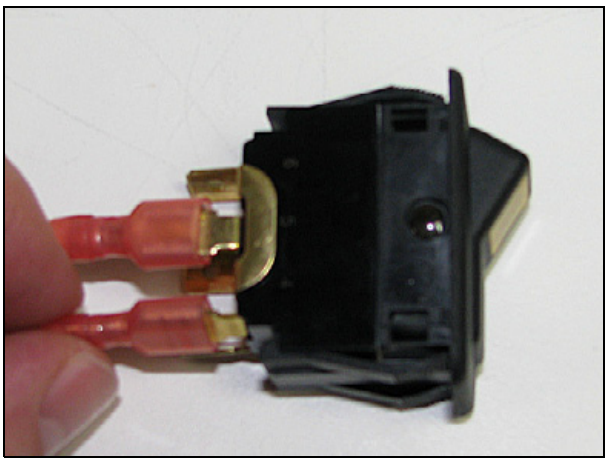


Step 2

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.

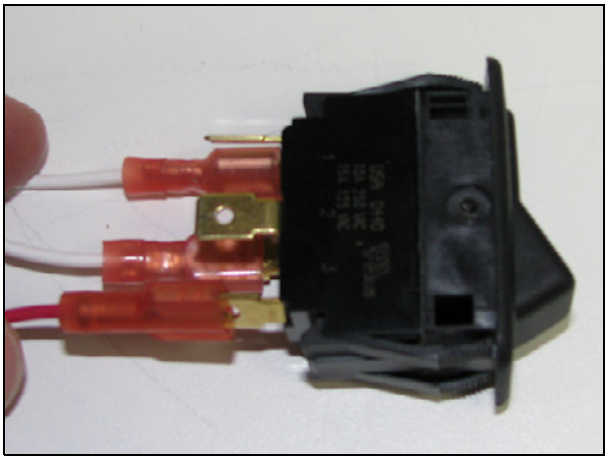
NOTE – Polarity is important.



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.

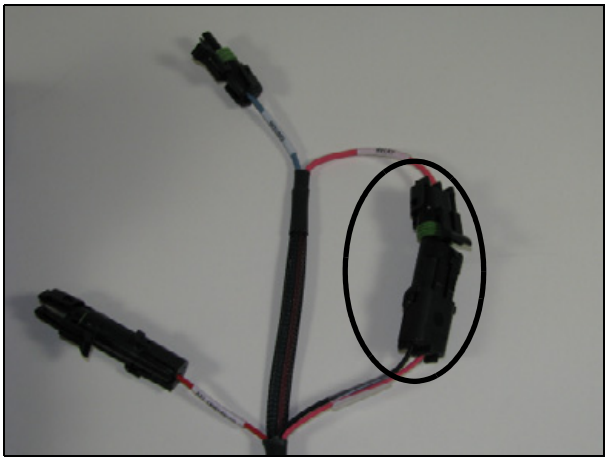
NOTE – This additional wire is required to allow the switch to illuminate.



Ignition is used to turn on the Autopilot system

Step 1

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

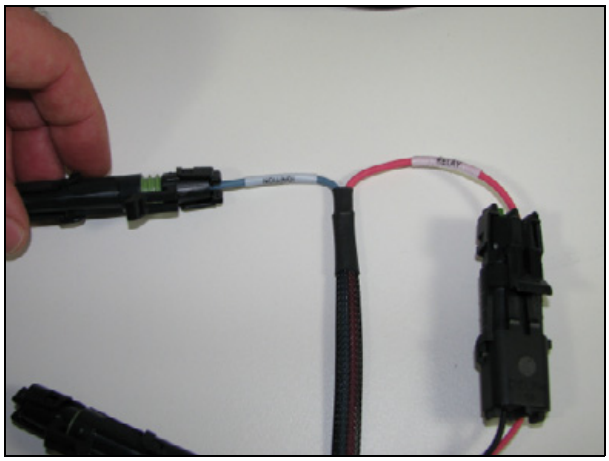


Step 2

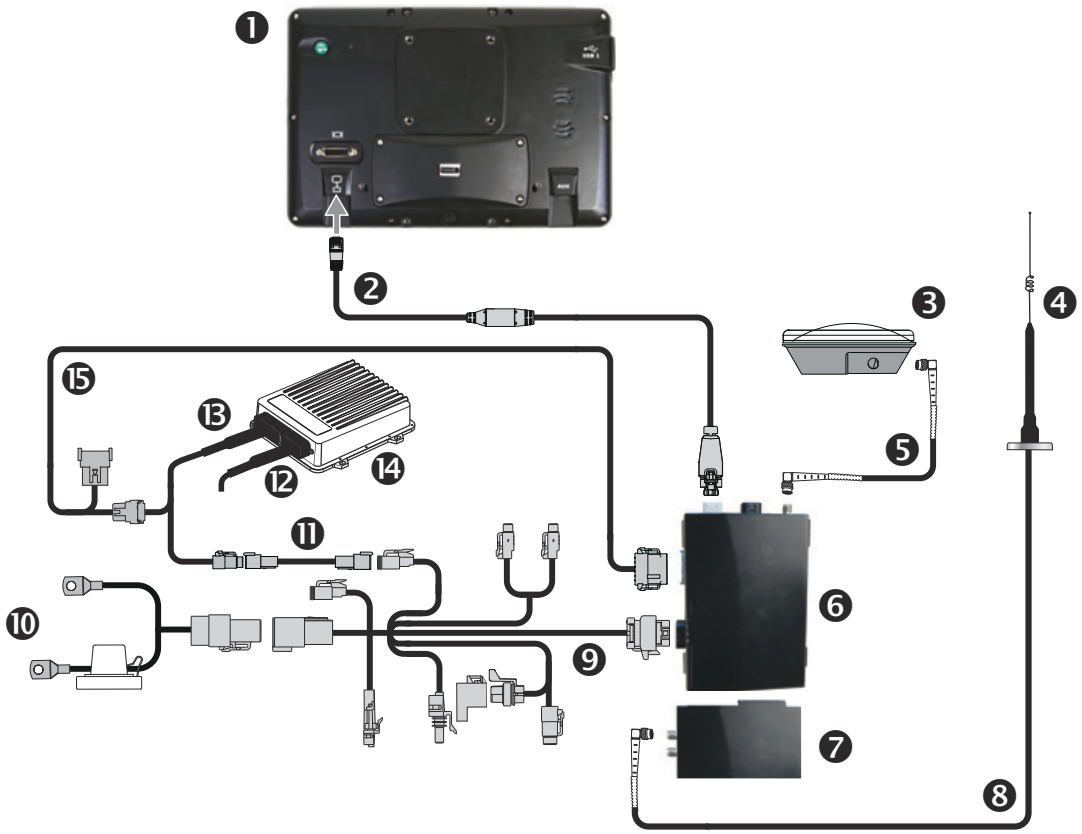
Connect the cable labeled **R8 Ignition** (included with the power bus) to connector **P3 Ignition** on the power bus.

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	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.

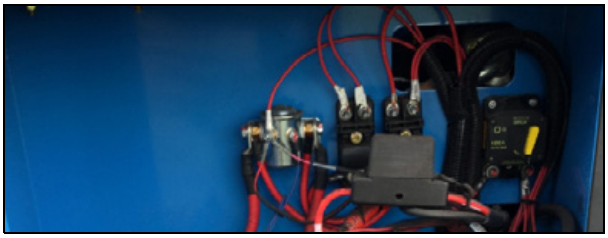
Step 1

The batteries are located on the left side of the machine.



Step 2 —Optional

Inside you will find a solenoid. Connect the ignition switch wire to this if you wish for the Autopilot to turn on when the machine is started.

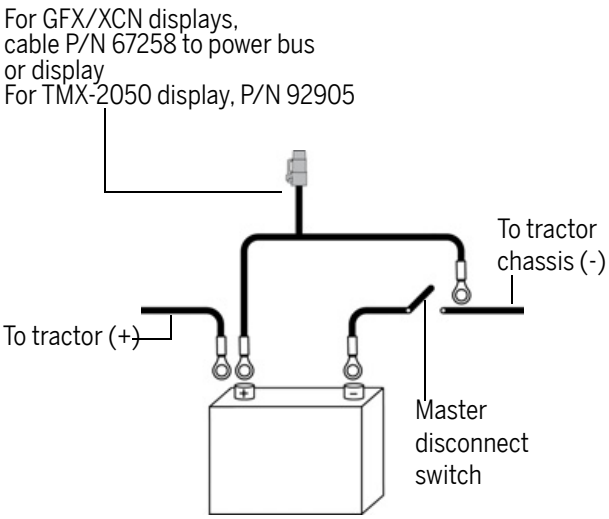


Step 3

Connect to the batteries. Red to the **+** and Black to the **–**.



⚠ **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.



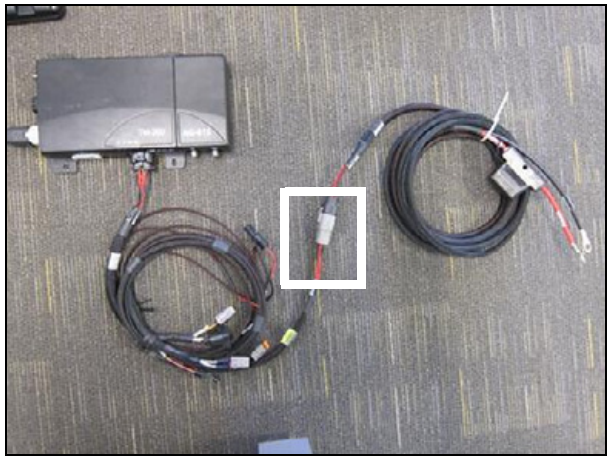
Step 4

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



Step 5

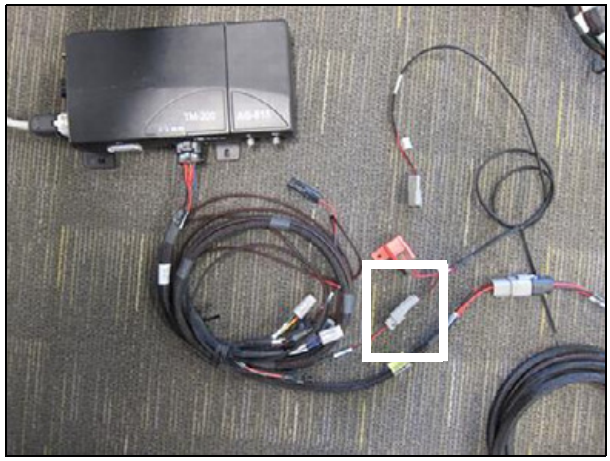
Route the power cable P/N 92905 that you previously connected to the battery and connect it to the R3 power in plug on the P/N 92676 cable.



Step 6

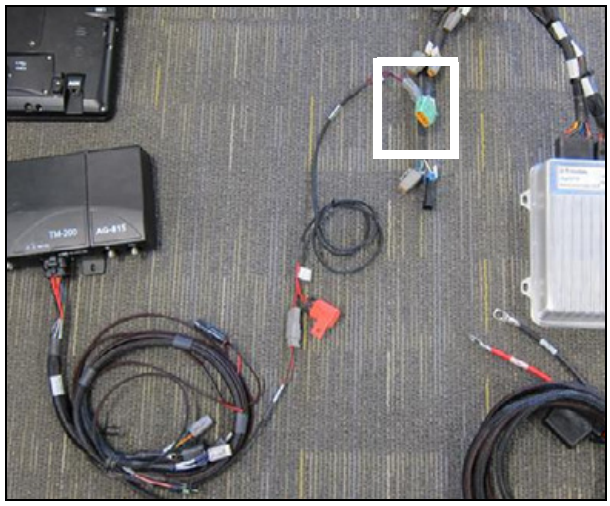
Connect the 2-pin DTM to 2-pin DT power adapter P/N 67095 to the P2 power out connector on the P/N 92676 cable.

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



Step 7

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

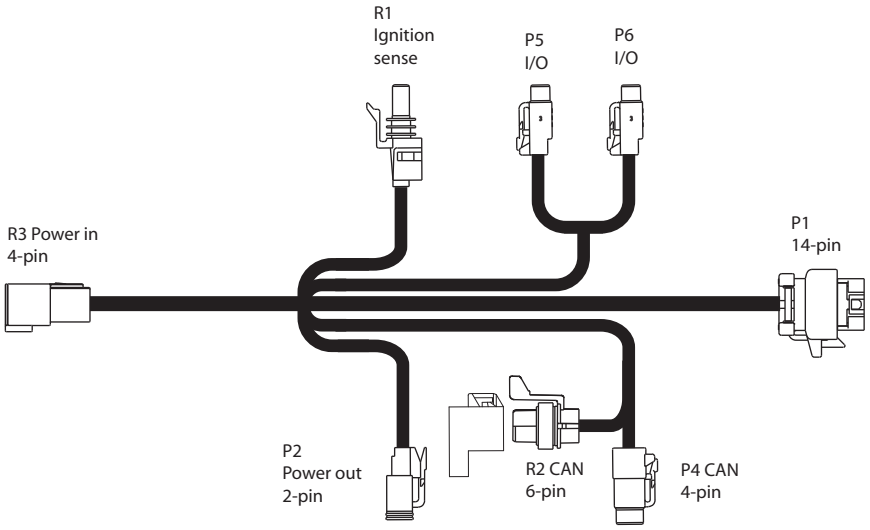
⚠ **WARNING –** To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information.

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

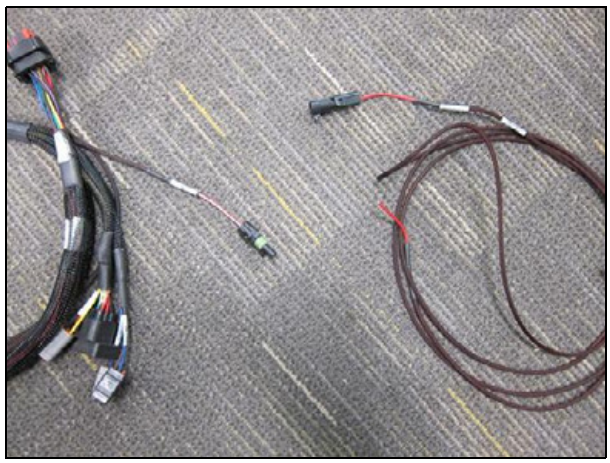
For ignition sensing with the TMX-2050 display, connect the ignition on the power supply to the R1 connector on the harness, P/N 92676.



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

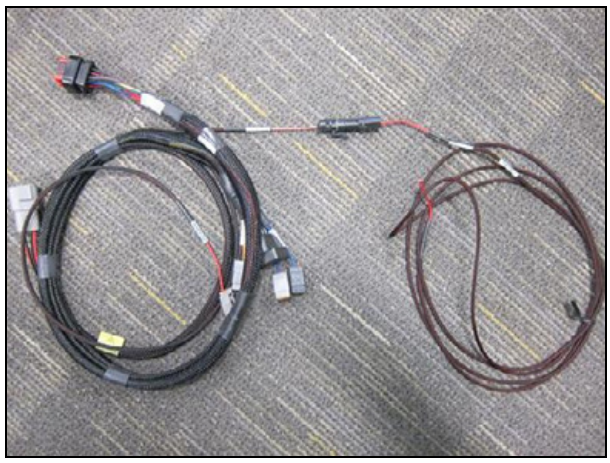
Step 1

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.



5

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

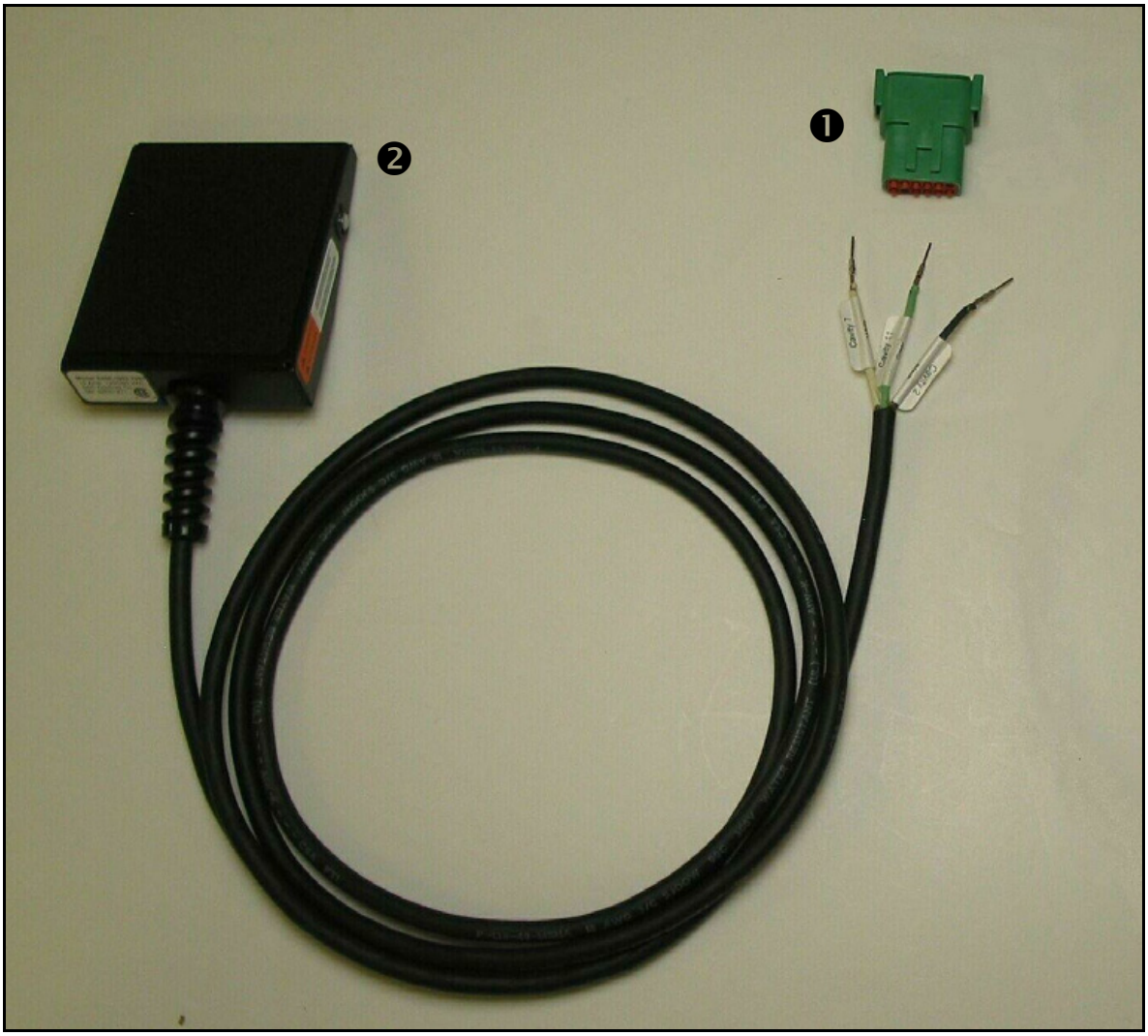
Remote engage switch components: Rocker switch



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

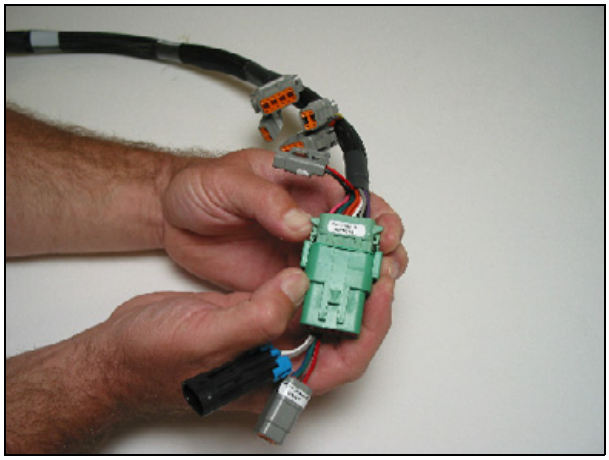


Item	Description
1	DTM receptacle
2	Remote engage foot switch

Preparing the remote engage cable

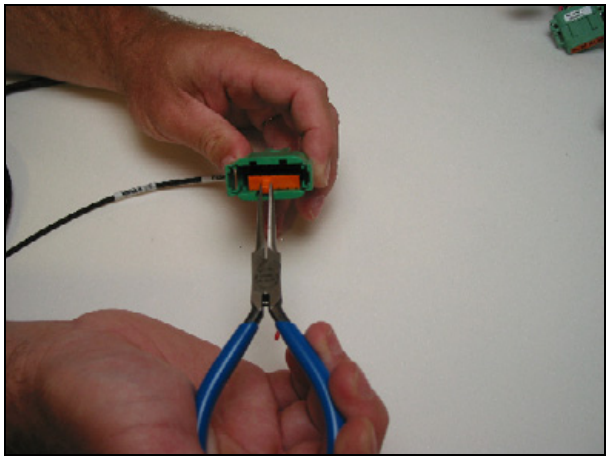
Step 1

Locate the green 12-pin Deutsch receptacle on the P5 leg of the main controller harness. For more information, see Controller connections, page 60.



Step 2

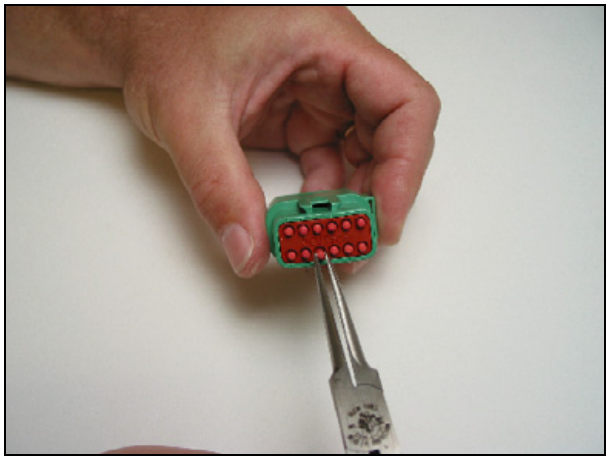
Remove the wedge from the connector.



Step 3

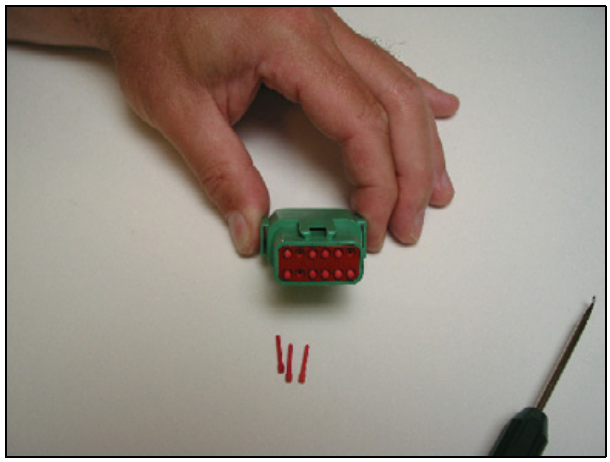
Rocker switch only

Remove the plugs from cavity 2 and cavity 7.



Foot Switch Only

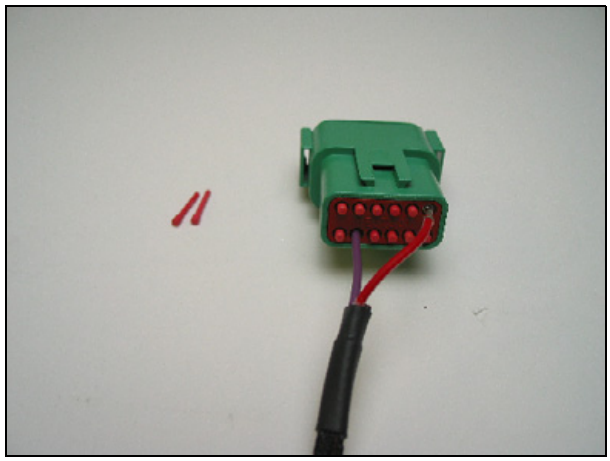
Remove the plugs from cavity 2, cavity 7, and cavity 11.



Step 4

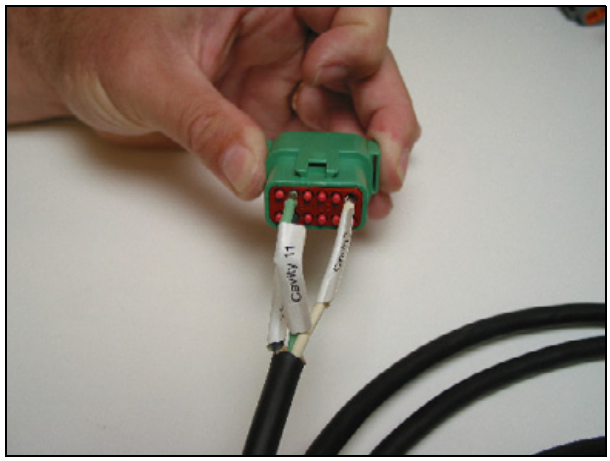
Rocker switch only

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



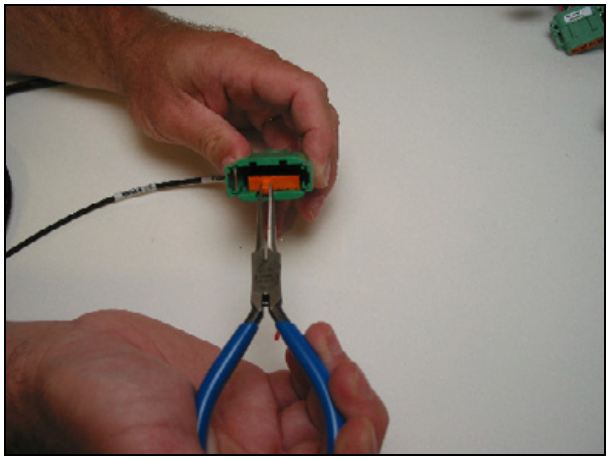
Foot switch only

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 NavController III harness.

Step 7

Rocker switch only

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



Foot switch only

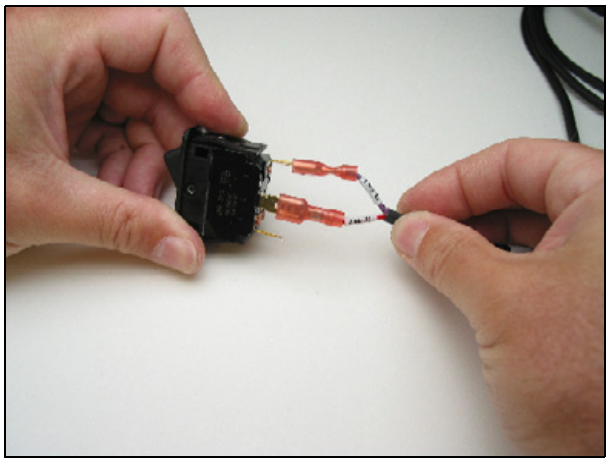
Run the cable to a clear location on the floor board. Use double-sided tape to secure the pedal. Route the cable under the floor mat.



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

To engage a system using NavController III do one of the following:

- Firmware versions 5.20 and earlier: Hold down the remote engage switch for longer than 0.5 seconds and less than 4 seconds.
- Firmware 5.21 and later: Hold the switch down for longer than 0.15 seconds and less than 4 seconds.

The system engages when you release the switch.

6

Controller Installation

- Installing the controller
- Controller connections

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

Locate the NAV-III mounting location on the front cross brace under the machine as shown.



Step 2

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



Step 3

Attache the NAV mounting plate to the cross brace.

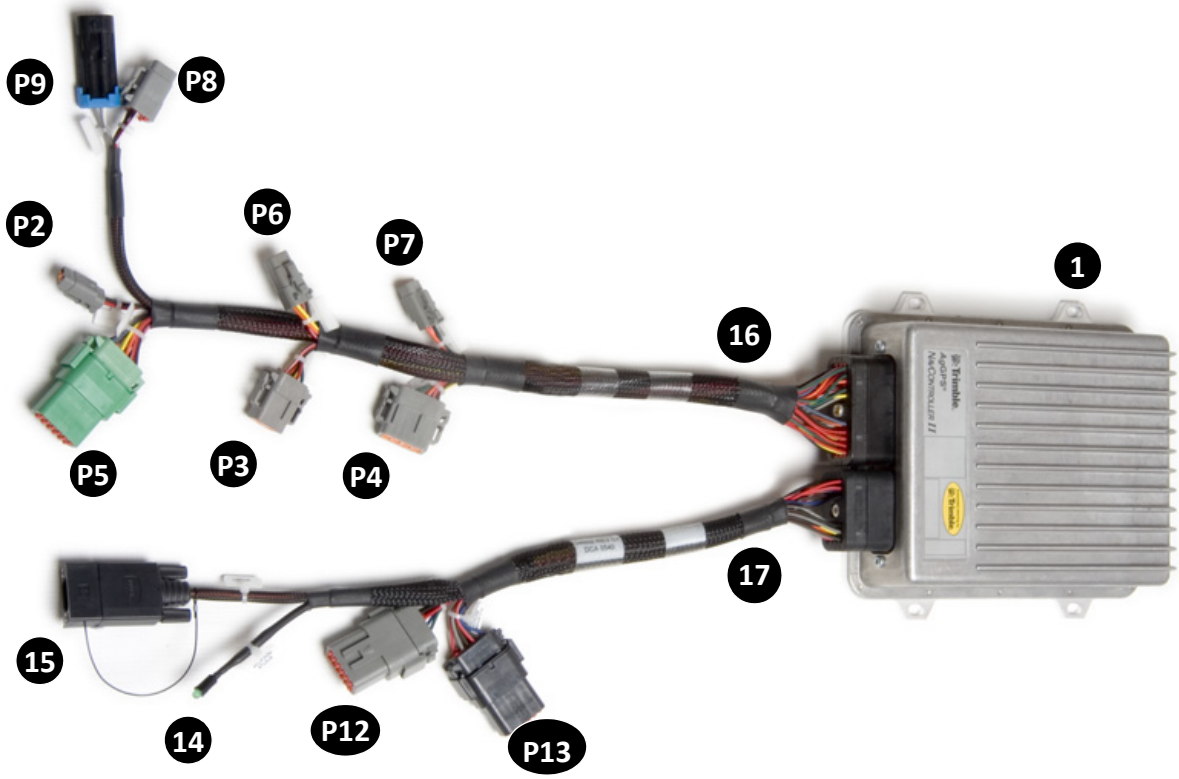


Step 4

Use the four provided 10-32 screws to attach the NavController to the mounting bracket.



Controller connections

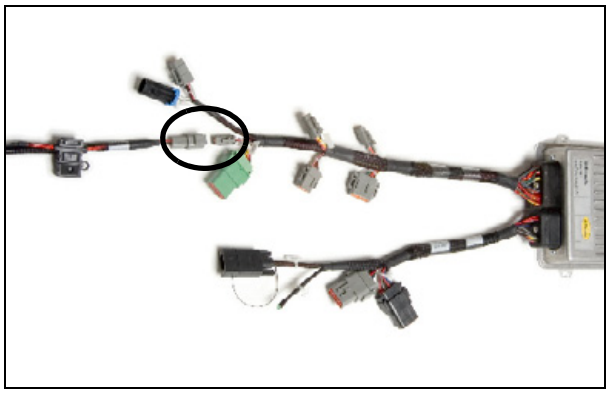


Item	Description	Item	Description
1	NavController III	**P9**	Sonalert connector
P2	Power connector	**P12**	Lightbar/spare connector
P3	GNSS connector	**P13**	Spare sensors connector
P4	Display connector	**14**	Status indicator
P5	Vehicle sensors connector	**15**	Laptop connector
P6	Steering sensor connector	**16**	Main harness
P7	Manual override connector	**17**	Auxiliary harness
P8	Hydraulic valve connector		

Step 1

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

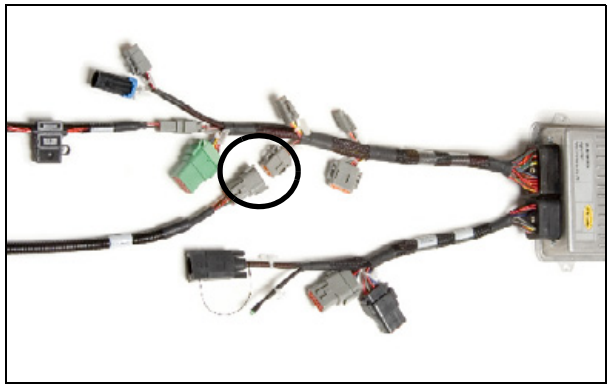
NOTE – The power connection supplies power through the controller to all connected devices, including GNSS and displays.



Step 2

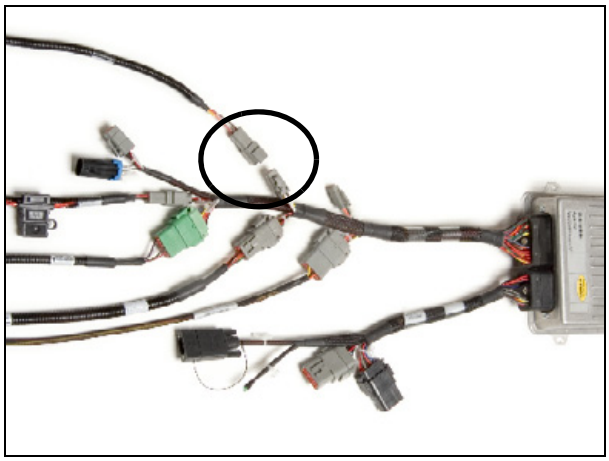
Connect the GNSS cable connection to P3, which is labeled **GPS**. P3 is located on the main wiring harness.

NOTE – If you are installing a GFX/XCN display, plug the display in here.



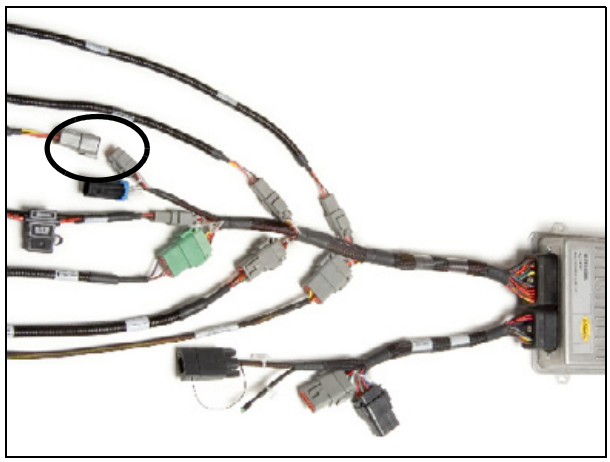
Step 3

Connect the steering sensor cable connection to P6, which is labeled **Steering Sensor**. P6 is located on the main wiring harness.



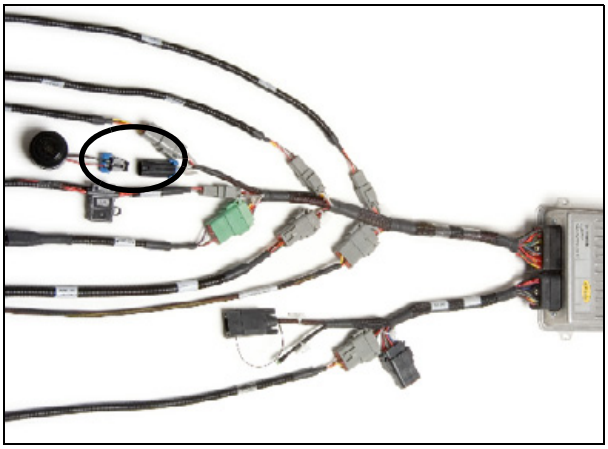
Step 4

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



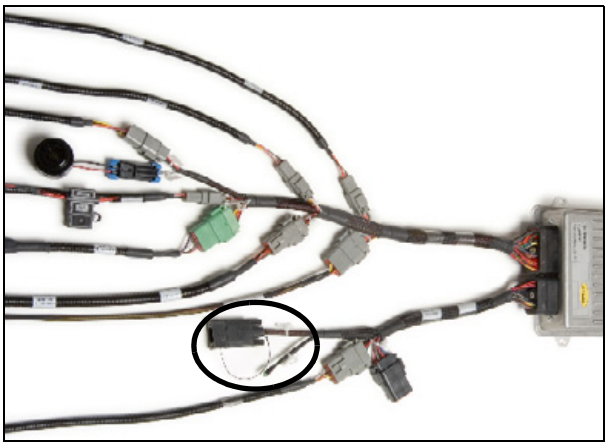
Step 5

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



Step 6

Route the LED and laptop lead, which is located on the auxiliary wiring harness, to a location that allows the operator to determine the controller status. See controller LED status for status determination. Six flashes per second indicates a correctly functioning controller.



Step 7

Use the provided sleeving to secure the harness cables with tie wraps. Cover and route the cable bundle to avoid damage to connectors and strain on wire connections.

7

Final Machine Check

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

1. Update the Trimble display and the Autopilot NavController III to the latest firmware from agpartners.trimble.com.

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

2. Load the correct configuration file into the Autopilot NavController III for the model being used.

   Download the latest set of **External Vehicle Profile** files from agpartners.trimble.com.

   You can use Autopilot Toolbox II software version 4.01 to load the configuration file into the Autopilot controller. You can download the Autopilot Toolbox II software from agpartners.trimble.com.

3. Calibrate the Autopilot system using the Trimble display. Depending on your machine type, the following items must be calibrated before you can use the Autopilot system:
   - NavController III mounting orientation
   - Antenna height/Antenna axle offset, and Roll offset
   - Steering sensor
   - Deadzone
   - P-Gain
4. The FireFly system will not let the Autopilot engage in any gear other than the 1st gear. If you try to engage in the 2nd or 3rd gear, you will get a fault when you start moving.
5. The FireFly system will default to manual override if the cutter head is up. You need to make sure the FireFly screen is in the boom down position before trying to engage.
6. Set up and verify the guidance settings in the FireFly display. See procedure below.

Set up and verify the guidance settings in the FireFly display

Set up the Guidance settings

Step 1

Tap the **Settings** button in the bottom right corner of the FireFly screen.



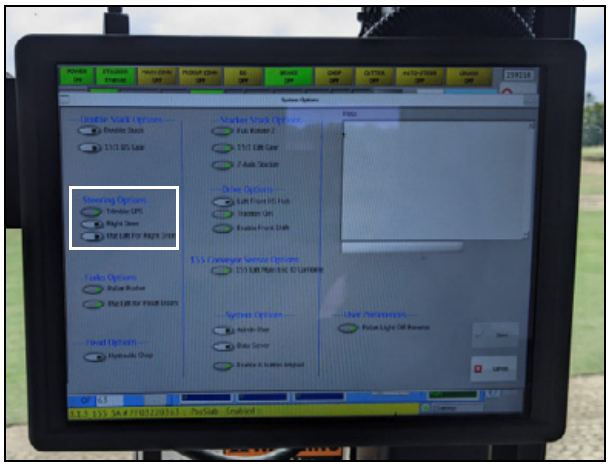
Step 2

Tap **System Options**.



Step 3

Enable the Trimble GPS option in the **Steering Options** section.



Step 4

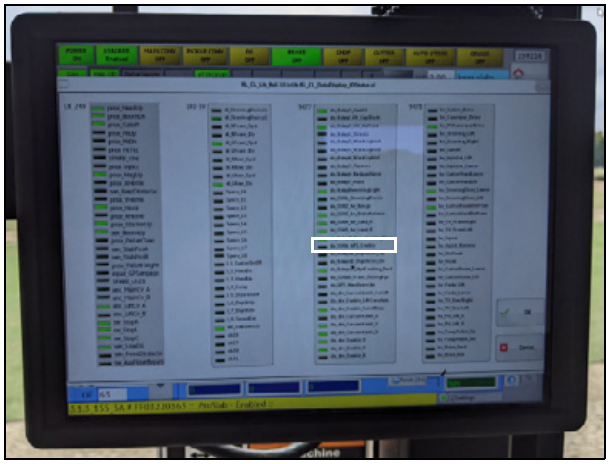
Tap **IO Status** button on the setup screen.



Step 5

Verify the status of the **do_SSR6_GPS_Enable** option.

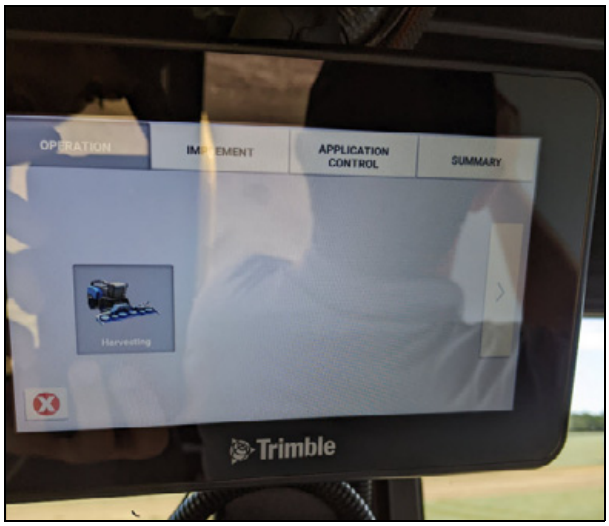
NOTE – The light will come on when engaged and turn off when disengaged.



Configure PIQ

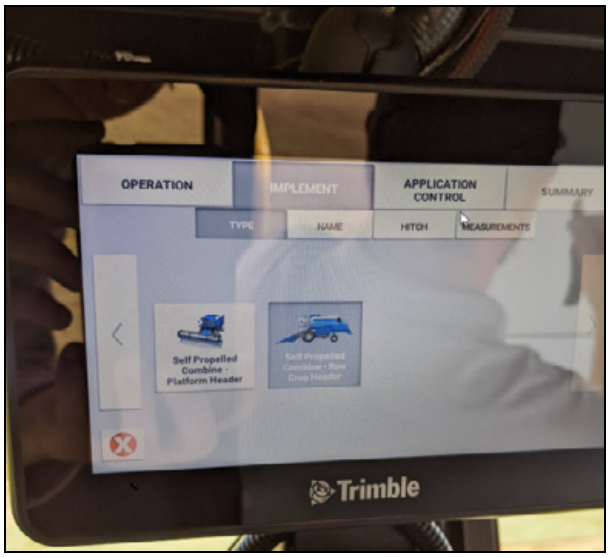
Step 1

In the **Operation** tab of the implement setup, select **Harvesting**.



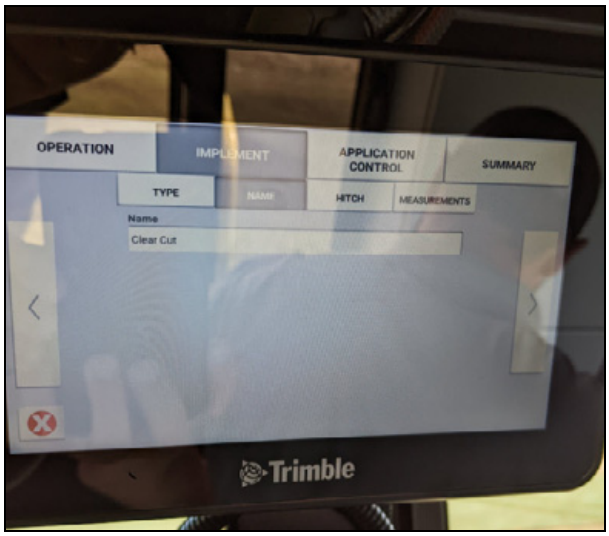
Step 2

From the **Implement** tab, select **Type** tab and then select **Self-Propelled Combine**.



Step 3

Enter a **Name** for the implement.



Step 4

From the **Implement** / **Hitch** tab, enter 4 feet for the implement offset.



Step 5

From the **Implement** / **Measurements** tab, enter the following measurements:

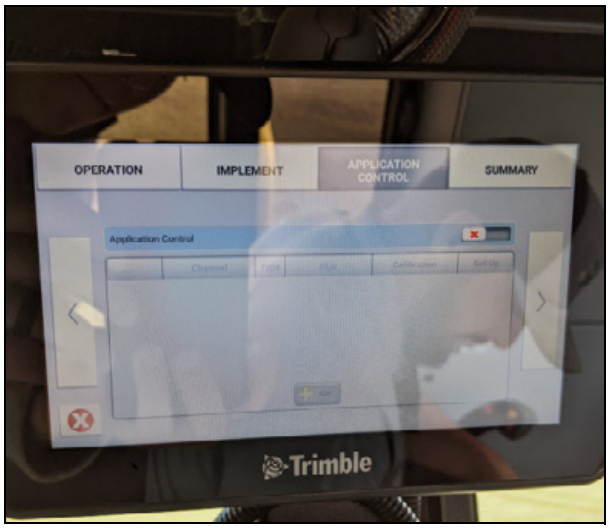
- **Application Width**: 2 feet
- **Rows**: 1
- **Swath Width**: 2 feet .3 inches
- **Overlap/Skip**: .3 inch

NOTE – These measurements are based on the physical cutter width; some machines are set up differently, so measure the cutter before entering measurements, and set your application width to that measurement; then the Swath Width would be equal to the Application Width + Ribbon Width.



Step 6

Tap the right arrow.



Step 7

Tap the green checkmark.

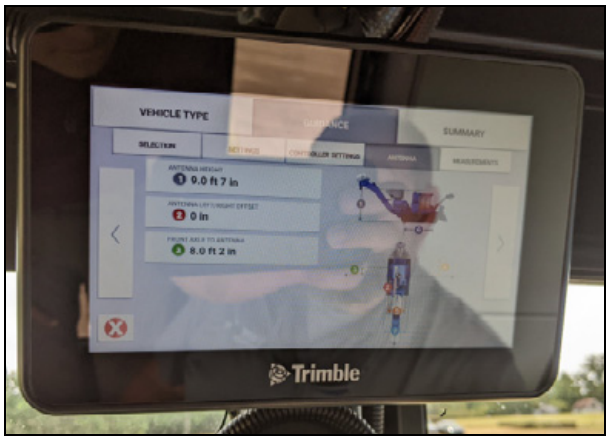


Step 8

Enter the following measurements in the **Antenna** tab of the **Guidance** setup:

- **Antenna Height**: 9 feet 7 inches
- **Front Axle to Antenna**: 8 feet 2 inches

NOTE – These will vary based on where the antenna is installed.



Step 9

The **Third Solenoid Output** needs to be turned on in the Autopilot setup:

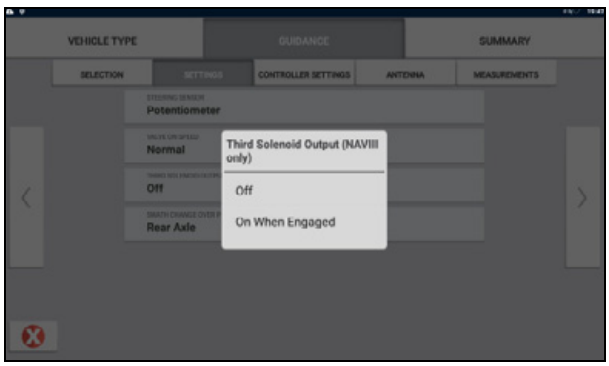
a. On **Guidance** tab, tap **Settings**.

b. Tap the **Third Solenoid Output** button.



Step 10

Tap **On When Engaged** option.



Step 11

Tap the right arrow and continue the remainder of the setup.



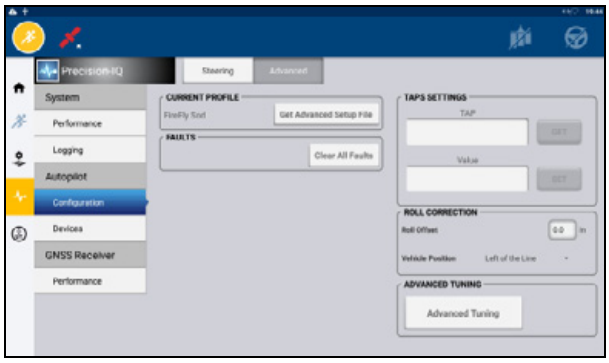
Step 12

The **Third Solenoid Output** has an additional setting that needs verified or configured:

a. Go to the **Diagnostic** screen.

b. Select the **Configuration** option under **Autopilot**.

c. Tap the **Advanced Tunning** tab.



Step 13

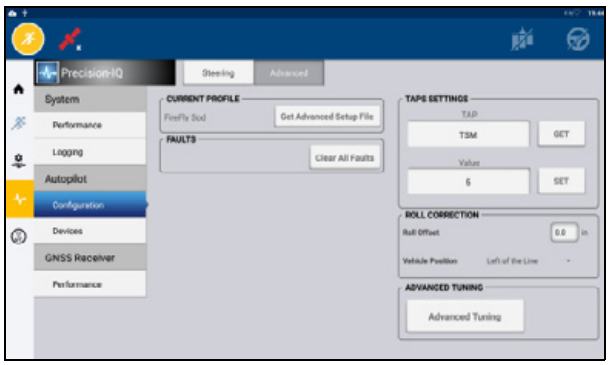
Type **TSM** in the **TAP Configuration** window and then tap the **GET** button.

If the **Value** is 0, proceed to the next step. If the **Value** is 5, then the TSM is set correctly.



Step 14

If the **Value** is 0, tap in the **Value** window and enter 5 then tap the **SET** button.



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