*Ag*GPS® Autopilot™ Automated Steering System

Installation Instructions

Case IH

- **SPX 3320 Sprayer**
- **SPX 4260C Sprayer**
- **SPX 4410 Sprayer**
- **SPX 4420 Sprayer**

Version 3.00
Revision B
April 2007
Part Number 54037-11-E03

Trimble®

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

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c/o Menlo Worldwide Logistics
Meerheide 45
5521 DZ Eersel, NL



Safety Information

In this chapter:

- Warnings
- Cautions

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



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



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

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

Warnings



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



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



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

Cautions



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



CAUTION – The system installation may bring you into contact with chemical substances, such as oil. These can cause poisoning. Ensure that you wash you hands thoroughly after you have finished working on the system.



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



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



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



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

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CHAPTER

1

Introduction

This manual describes how to install the *Ag*GPS® Autopilot™ automated steering system from Trimble®.

Even if you have used other Global Positioning System (GPS) products before, Trimble recommends that you spend some time reading this manual to learn about the special features of this product. If you are not familiar with GPS, visit the Trimble website (www.trimble.com) for an interactive look at Trimble and GPS.

Technical Assistance

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

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

Your Comments

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

Manual System Upgrade to Autopilot System

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

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

*Ag*GPS 150 EZ-Guide Plus lightbar

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

Required Components

Kits required	Special tools required
Platform kit: P/N 54037-11 Hydraulic hose kit: P/N 58399 Roof bracket kit: P/N 53676	1/4 inch drill bit 5/16 inch drill bit Open end wrench set (metric and SAE) Allen wrench set (metric and SAE)

Autopilot Hardware Organization – as Shipped

Platform kit (P/N 54037-11)	Common parts	GPS receiver	Display	Hyd. hose kit (P/N 58399)	Roof bracket kit (P/N 53676)
(2) Hydraulic valve (2) Hydraulic manifold (2) Transducer, flow switch (2) Manifold mounting bracket (2) Hydraulic valve cable (2) Manual override cable (2) Bolt kit - hydraulics (3) Steering sensor cable (3) Steering sensor, mounting brackets, and hardware (6) Power cable (8) Bolt kit, controller	(8) Controller (8) Cable kit • Main wiring harness • Auxiliary wiring harness • Sonalert alarm	(4) GPS receiver (4) GPS antenna (4) GPS receiver mounting bracket (4) GPS receiver power/data cable (4) RTK radio, cable and mounting bracket kit (supplied separately)	(5) Lightbar (5) *Ag*GPS 170 (5) *Ag*GPS 170 cable (5) *Ag*GPS 170 mounting bracket (5) *Ag*GPS 50 Lightbar (5) *Ag*GPS 150 Lightbar	(2) Hyd. hoses (2) Hyd. adaptors	(4) Roof brackets (4) Bolt kit, roof bracket

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

Autopilot Hardware Organization – as Installed

The following table shows which components appear in each chapter:

Hydraulics (2)	Steering sensor (3)	GPS receiver (4)	Display (5)	Power (6)	Remote engage (7)	Controller (8)
• Hydraulic valve, manifold, flow switch, manifold mounting bracket • Hydraulic valve cable • Manual override cable	• Steering sensor assembly, mounting brackets, and hardware • Steering sensor cable	• GPS receiver • GPS antenna • GPS receiver mounting bracket • GPS receiver power/data cable • Roof brackets	• Lightbar • *Ag*GPS 170 • Lightbar cable • *Ag*GPS 170 cable • Lightbar mounting bracket • EZ-Guide Plus lightbar	• Power cable	• Remote engage harness • Rocker switch/ Foot switch	• Controller • Bolt kit - controller • Main wiring harness • Aux. wiring harness • Sonalert alarm

Pre-installation Vehicle Preparation

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 *Ag*GPS Autopilot system will be installed.

Step 4

Open all kit boxes and check the contents of the box against the packing list/s. Lay all of the parts out on a clean workbench.

Note – *The left and right sides of the vehicle are referenced while standing behind the unit, facing the normal direction of travel.*

CHAPTER

2

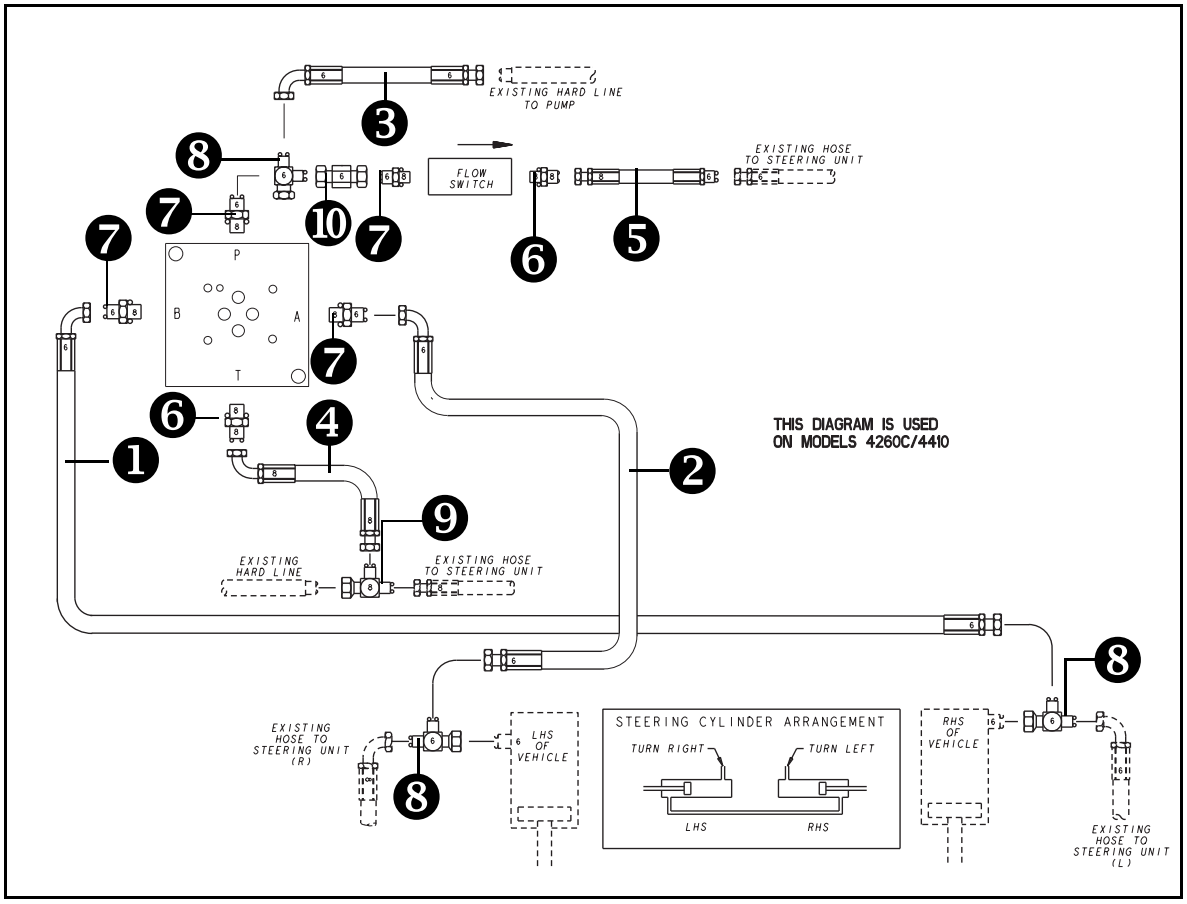
Hydraulic Control Valve Installation

In this chapter:

- Hydraulic Components: SPX 4260C/4410
- Hydraulic Components: SPX 4420
- Hydraulic Components: SPX 3320
- Valve and Subplate Preparation
- Valve and Sub-plate Mounting: SPX 4260C/4410/4420
- Valve and Sub-plate Mounting: SPX 3320
- Flow Switch Installation
- Hydraulic Steering Hose Installation: SPX 4420
- Hydraulic Steering Hose Installation: SPX 4260C/4410
- Hydraulic Steering Hose Installation: SPX 3320
- Pressure Line Installation: SPX 4260C/4410/4420
- Pressure Line Installation: SPX 3320
- Tank Line Installation: SPX 4260C/4410/4420
- Tank Line Installation: SPX 3320
- Electrical Connections

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

Hydraulic Components: SPX 4260C/4410

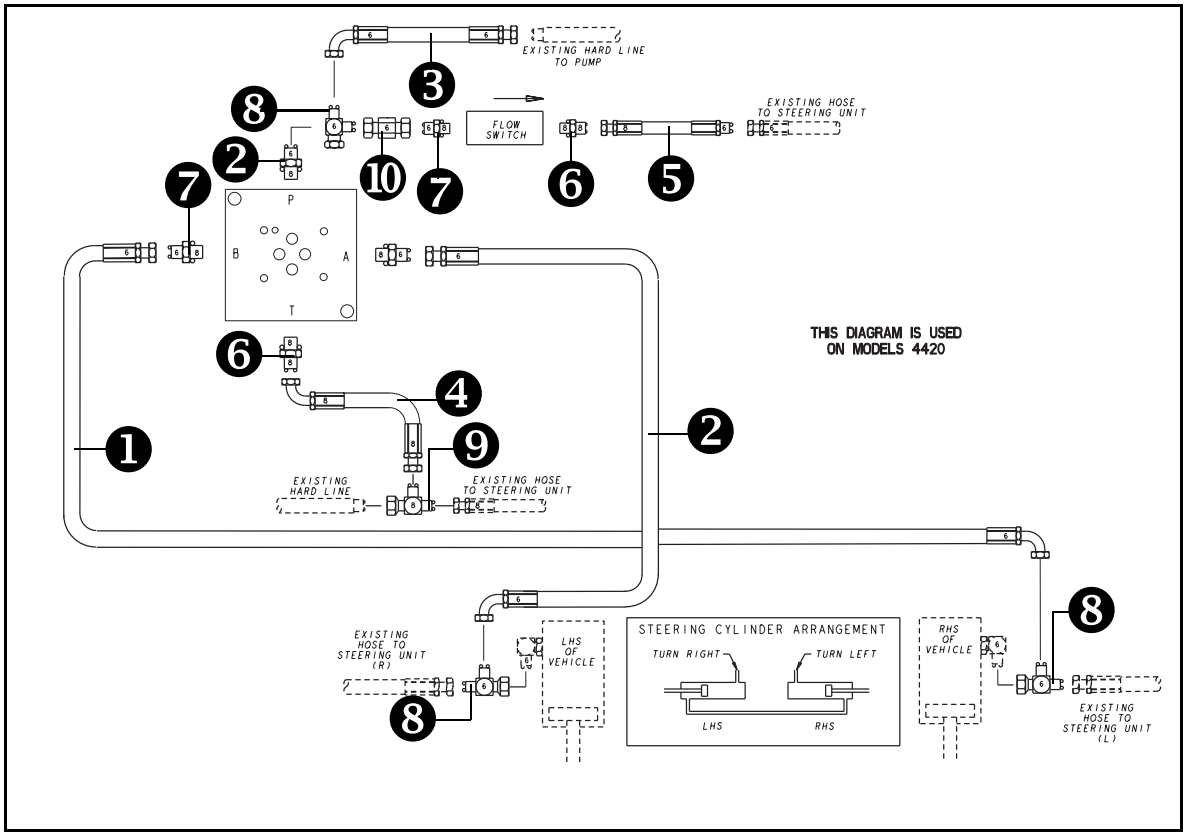


Item	Description	Part number
❶	96 inch hose	F451TCJ9JS-6-6-6-96
❷	82 inch hose	F451TCJ9JS-6-6-6-82
❸	48 inch hose	F451TCJ9JS-6-6-6-48
❹	42 inch hose	F451TCJ9JS-8-8-8-42
❺	24 inch hose	F451TCJSJ0-8-6-6-24

Item	Description	Part number
❻	Fitting (x2)	8F50L0-S
❼	Fitting (x4)	6-8F50L0-S
❽	Fitting (x3)	6R6L0-S
❾	Fitting	8R6L0-S
❿	Fitting	6HL6-S

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

Hydraulic Components: SPX 4420

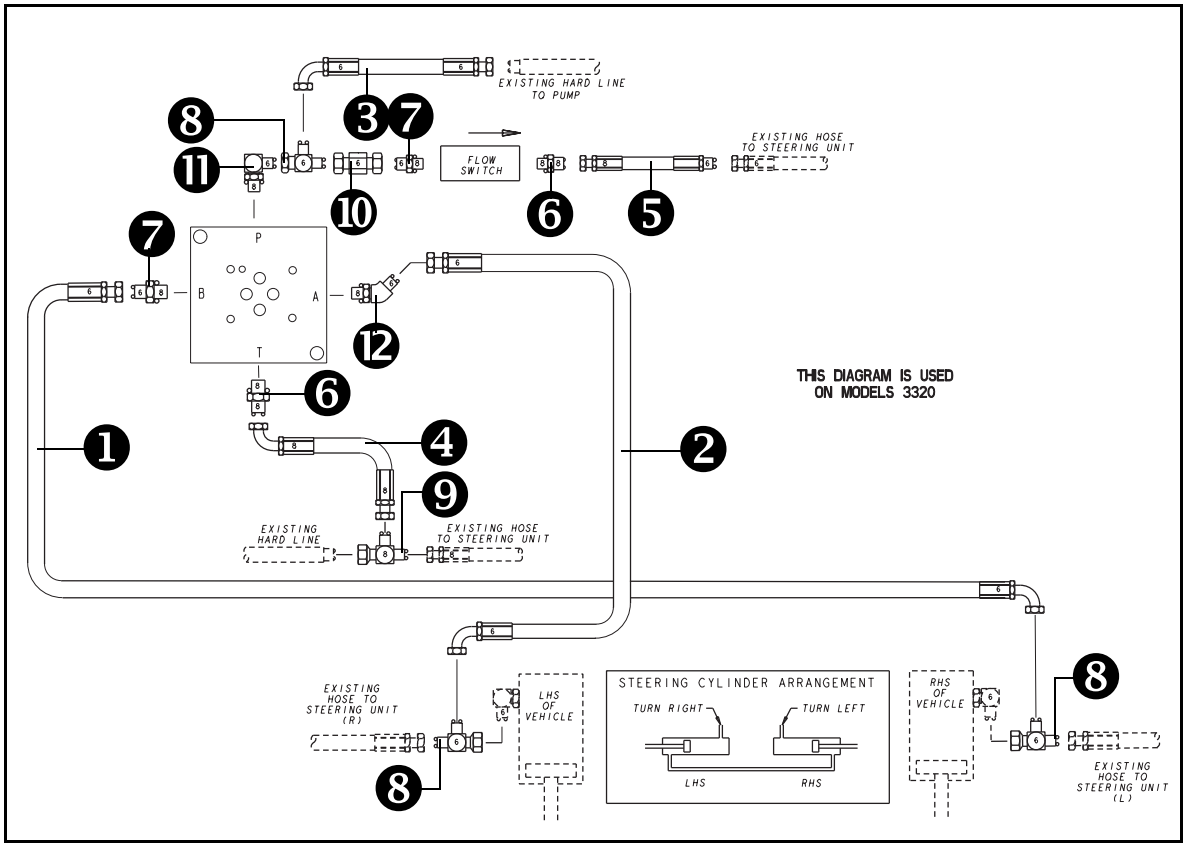


Item	Description	Part number
❶	96 inch hose	F451TCJ9JS-6-6-6-96
❷	82 inch hose	F451TCJ9JS-6-6-6-82
❸	48 inch hose	F451TCJ9JS-6-6-6-48
❹	42 inch hose	F451TCJ9JS-8-8-8-42
❺	24 inch hose	F451TCJSJ0-8-6-6-24

Item	Description	Part number
❻	Fitting (x2)	8F50L0-S
❼	Fitting (x4)	6-8F50L0-S
❽	Fitting (x3)	6R6L0-S
❾	Fitting	8R6L0-S
❿	Fitting	6HL6-S

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

Hydraulic Components: SPX 3320



Item	Description	Part number
❶	96 inch hose	F451TCJ9JS-6-6-6-96
❷	82 inch hose	F451TCJ9JS-6-6-6-82
❸	48 inch hose	F451TCJ9JS-6-6-6-48
❹	42 inch hose	F451TCJ9JS-8-8-8-42
❺	24 inch hose	F451TCJSJ0-8-6-6-24
❻	Fitting (x2)	8F50L0-S

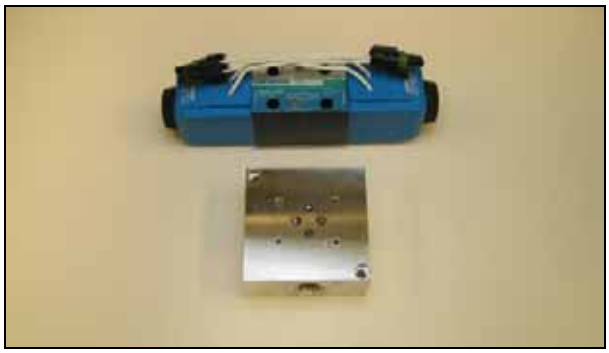
Item	Description	Part number
❼	Fitting (x2)	6-8F50L0-S
❽	Fitting (x3)	6R6L0-S
❾	Fitting	8R6L0-S
❿	Fitting	6HL6-S
⓫	Fitting	6-8C50L0-S
⓬	Fitting	6-8V50L0-S

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

Valve and Subplate Preparation

Step 1

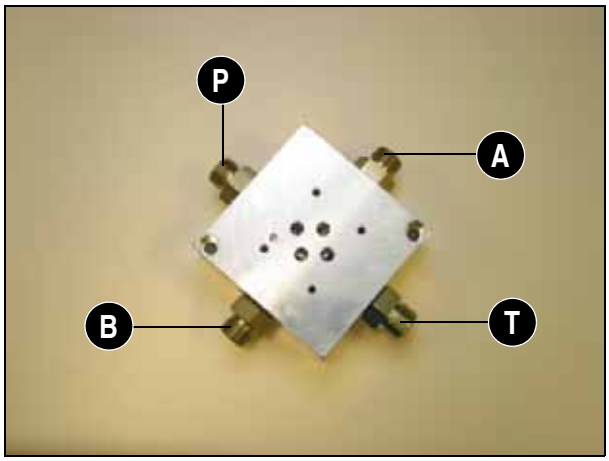
Locate the valve and valve subplate.



Step 2 SPX 4260C/4410/4420

Install the following fittings to the subplate as shown:

- Port A: -6 ORFS Male Straight
- Port B: -6 ORFS Male Straight
- Port P (pressure): -6 ORFS Male Straight
- Port T (tank): -8 ORFS Male Straight

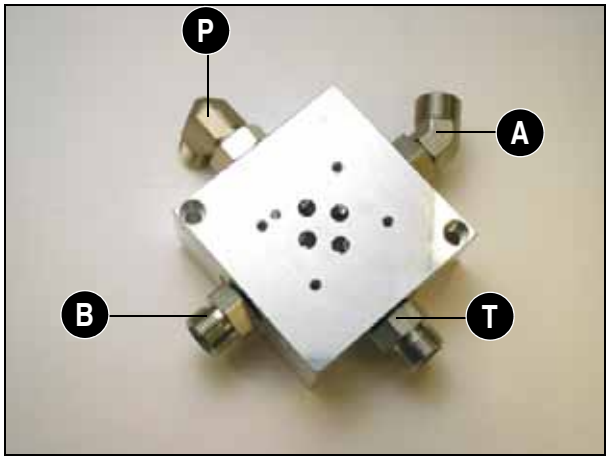


SPX 3320

Install the following fittings to the subplate as shown:

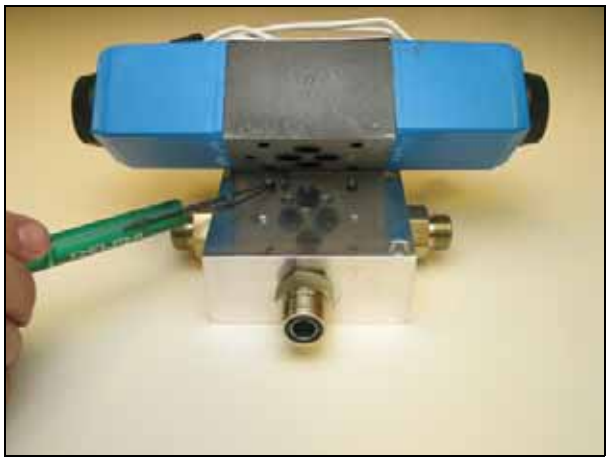
- Port A: -6 ORFS Male 45
- Port B: -6 ORFS Male Straight
- Port P (pressure): -6 ORFS Male 90
- Port T (tank): -8 ORFS Male Straight

Note – *All sub-plate ports are -8 O-ring Boss (ORB).*



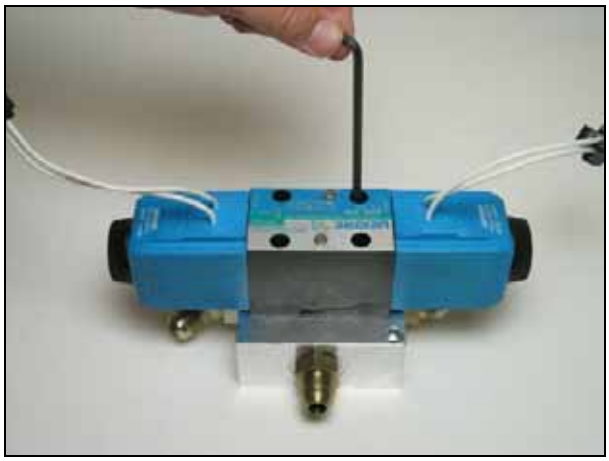
Step 3

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 by 1¼" socket head screws provided in the bolt kit to fasten the valve to the subplate.



Valve and Sub-plate Mounting: SPX 4260C/4410/4420

Step 1

Locate the steel cross-member behind the cab, under the solution tank.

Note – *The arrow points forward.*



Step 2 SPX 4260C

Turn the valve and subplate upside down and then clamp them to the right side of the cross-member.



SPX 4410/4420

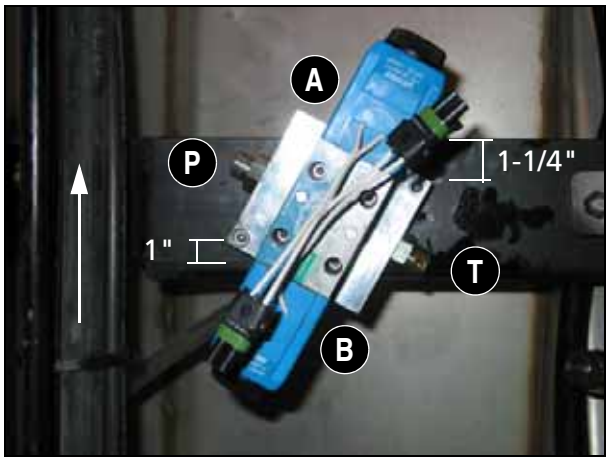
Turn the valve and subplate upside down and then clamp them to the left side of the cross-member.



Step 3

Rotate the valve so the P and A ports face forward and the T and B ports face the rear of the vehicle. Position the valve to allow an open end wrench access to all fittings.

Note – *Dimensions shown are approximate. The arrow points forward.*



SPX 4260C SHOWN

Step 4

Mark the two through holes with a center punch or marker. Drill 5/16" holes.

Note – *Before you mark the holes, ensure that an open end wrench will be able to reach the fittings.*



Step 5

To mount the valve, use the ¼" x 2" long socket head cap screws, ¼" washers, and nylock nuts provided in the bolt kit.



Valve and Sub-plate Mounting: SPX 3320

Step 1

Find the mounting location under the solution tank.



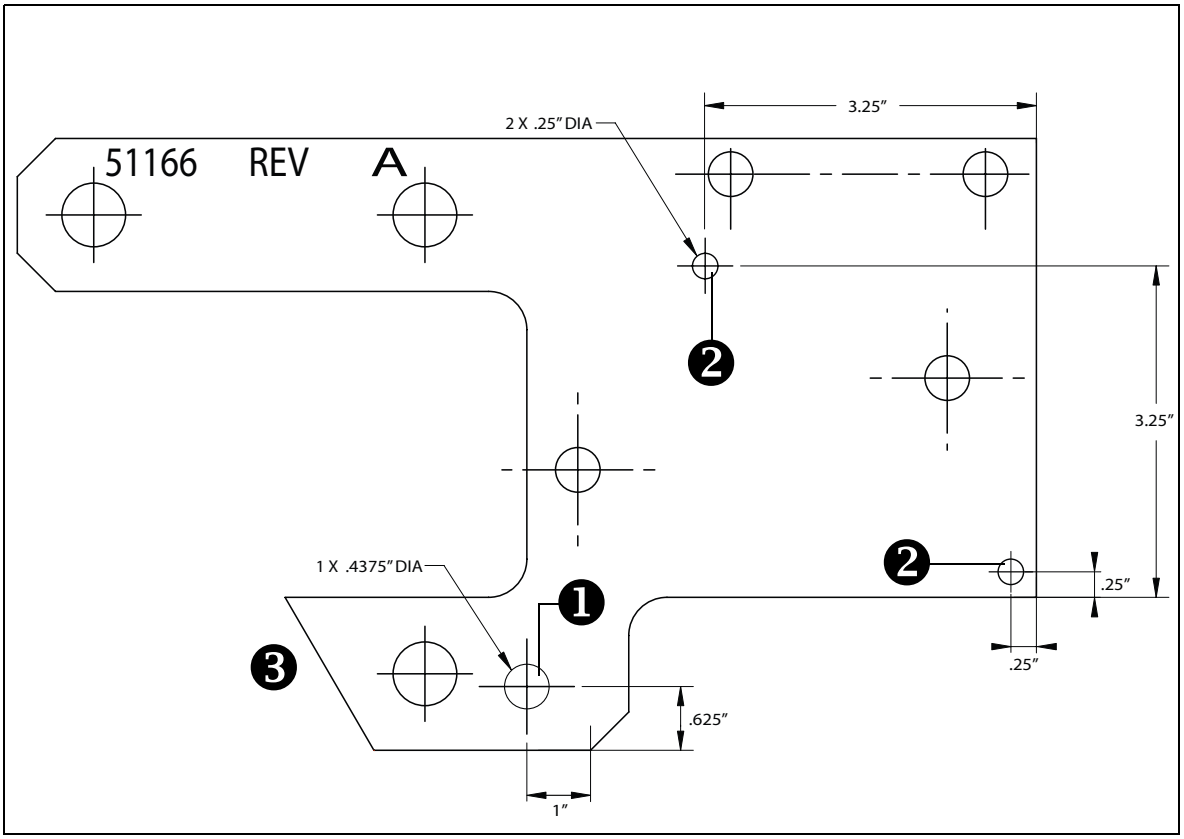
Step 2

Make the following modifications to the provided valve bracket:

❶ Drill a 7/16" hole.

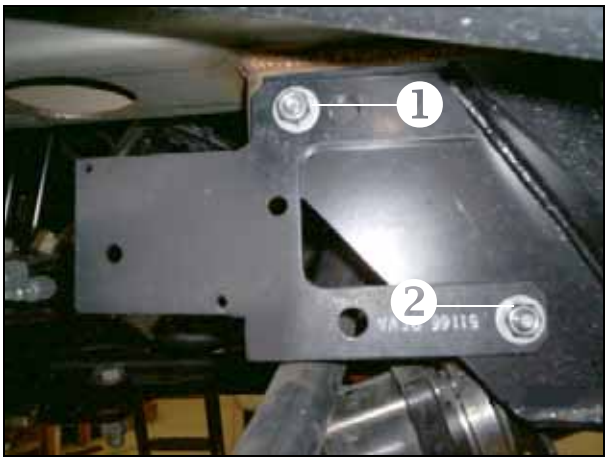
❷ Drill two ¼" holes using the subplate as a template.

❸ Remove the indicated portion.



Step 3

Mount the bracket by replacing the existing bolt with a 3/8" x 1½" long cap screw ❶ (provided in the bolt kit). Drill a 7/16" hole in the existing sprayer bracket as shown ❷.



Step 4

Bolt the bracket to the sprayer using the drilled hole and the 3/8" hardware provided.



Step 5

Mount the valve and subplate to the bracket with the P port facing up and the valve to the rear of the machine. Use the ¼"-20 socket head cap screws provided.



Flow Switch Installation

Step 1

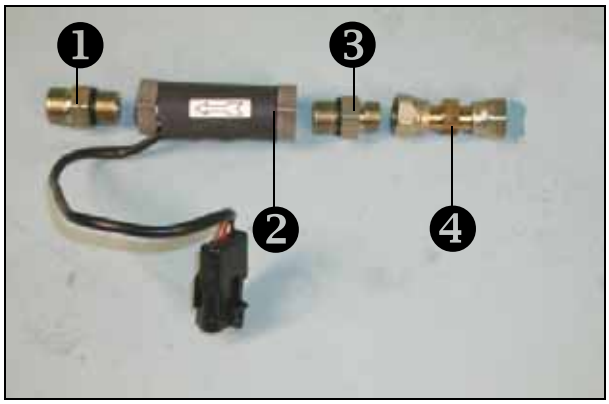
Assemble the following:

❶ -8 ORFS male by -8 ORB male fitting

❷ Flow switch

❸ -6 ORFS male by -8 ORB male fitting

❹ -6 ORFS female union fitting



Step 2

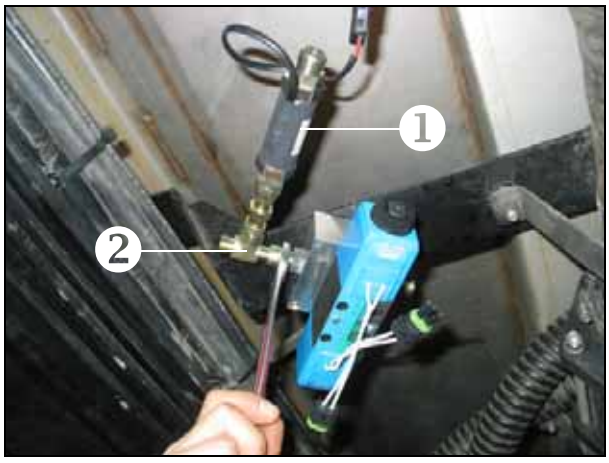
Verify that the arrow on the flow switch points away from the union.

Note – *Do not substitute a -8 ORB to -6 ORFS fitting on the downstream end of the flow switch. The plunger can become lodged inside a -6 fitting.*

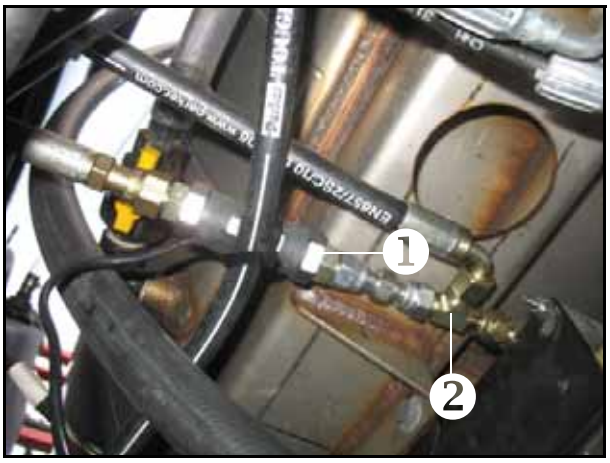


Step 3

Install the flow switch assembly ❶ and -6 ORFS run tee ❷ to the P port on the manifold. Point the flow switch to the front of the vehicle.



SPX 4260C/4410/4420



SPX 3320

Hydraulic Steering Hose Installation: SPX 4420

Step 1

Install the straight end of the 82 inch long hydraulic hose ❶ to the A port on the manifold. The opposite end of the hose will be connected to the left steering cylinder.

Route the hose end up over the left side frame, following the existing steering hose.



Step 2

Disconnect the hose connection at the head end of the left steering cylinder.



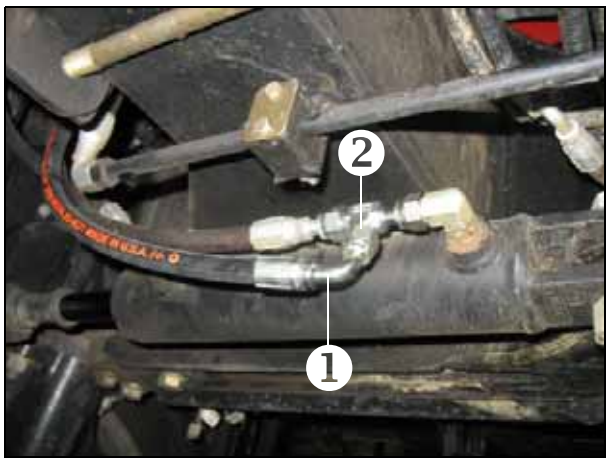
Step 3

Install a swivel tee onto the head end fitting. Reconnect the existing steering hose to the tee.



Step 4

Connect the 90 degree swivel end of the 82 inch hose ❶ to the tee ❷.



Step 5

Install the straight end of the 96 inch long hydraulic hose ❶ to the B port on the valve block. The opposite end of the hose will be connected to the right steering cylinder.

Route the hose end up over the right side frame, and then follow the existing line to the right steering cylinder.



Step 6

Disconnect the right steering cylinder head end hose connection.



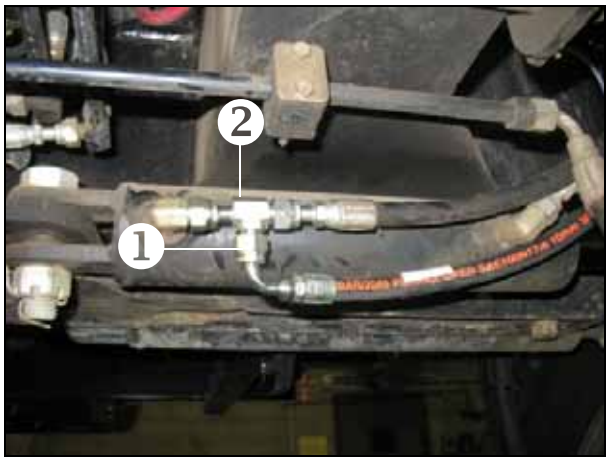
Step 7

Install a swivel tee onto the head end fitting. Reconnect the existing steering hose to the tee.



Step 8

Connect the 90 degree swivel end ❶ of the 96 inch hose to the tee ❷. Tighten the 90 degree end of the hose before tightening the opposite end.

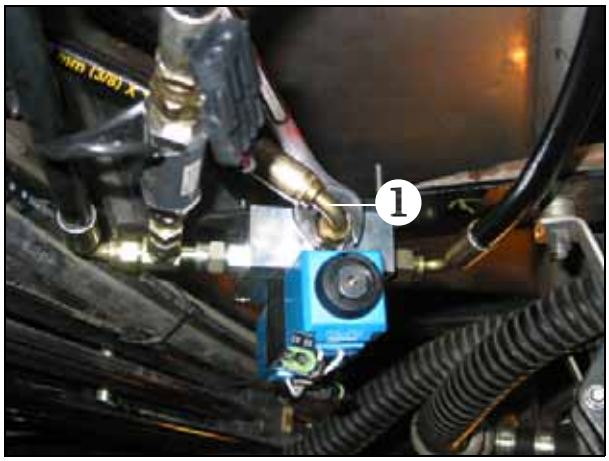


Hydraulic Steering Hose Installation: SPX 4260C/4410

Step 1

Install the 90 degree end of the 82 inch long hydraulic hose ❶ to the A port on the manifold. The opposite end of the hose will be connected to the left steering cylinder.

Route the hose end up over the left side frame, following the existing steering hose.



Step 2

Disconnect the hose connection at the head end of the left steering cylinder.

Note – *Remove the 90 degree fitting, if it is equipped.*



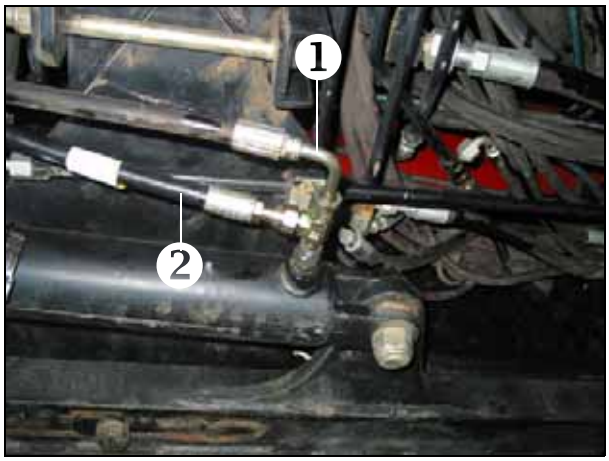
Step 3

Install a swivel tee onto the head end fitting. Turn the tee so that the connector points to the rod end of the cylinder.



Step 4

Connect the 90 degree end of the existing steering hose to the end port on the tee ❶. Connect the straight swivel end of the 82 inch hose to the tee ❷. Tighten the 90 degree fitting before you tighten the straight fitting.



Step 5

Install the 90 degree end of the 96 inch long hydraulic hose ❶ to the "B" port on the valve block. The opposite end of the hose will be connected to the right steering cylinder.

Route the hose end up over the right side frame and then follow the existing line to the right steering cylinder.



Step 6

Disconnect the right steering cylinder head end hose connection.



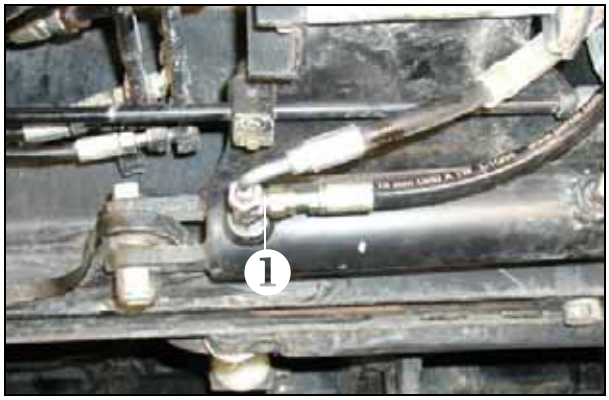
Step 7

Install a swivel tee onto the head end fitting. Turn the tee so that the connector is pointing to the rod end of the cylinder. Connect the existing steering hose with the 90 degree tube end to the end port on the tee ❶. Tighten all the fittings.



Step 8

Connect the straight swivel end ❶ of the 96 inch hose to the tee. Tighten all the fittings.

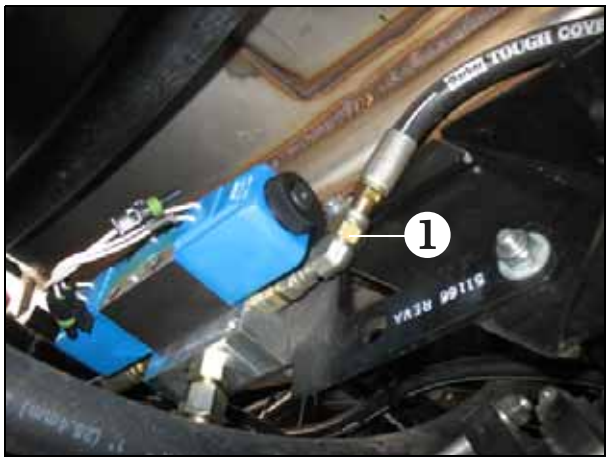


Hydraulic Steering Hose Installation: SPX 3320

Step 1

Install the straight end of the 82 inch long hydraulic hose ❶ to the A port on the manifold. The opposite end of the hose will be connected to the left steering cylinder.

Route the hose end up over the left side frame, following the existing steering hose.



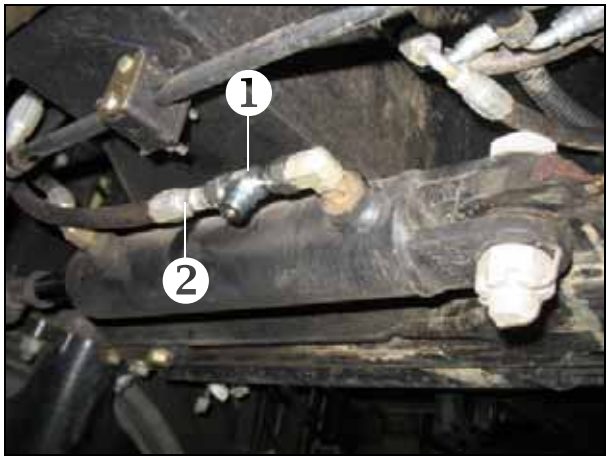
Step 2

Disconnect the hose connection at the head end of the left steering cylinder.



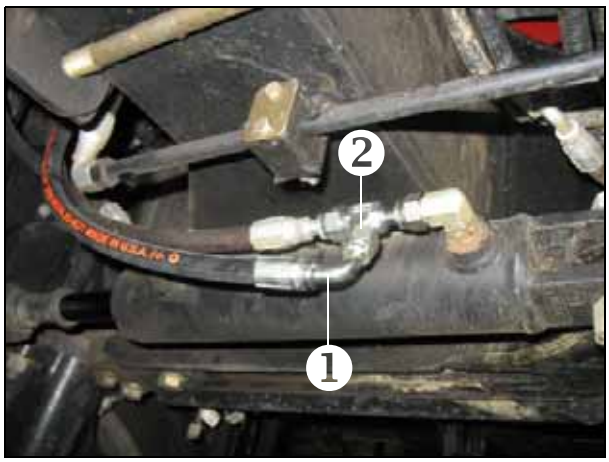
Step 3

Install a swivel tee ❶ onto the head end fitting. Reconnect the existing steering hose ❷ to the tee.



Step 4

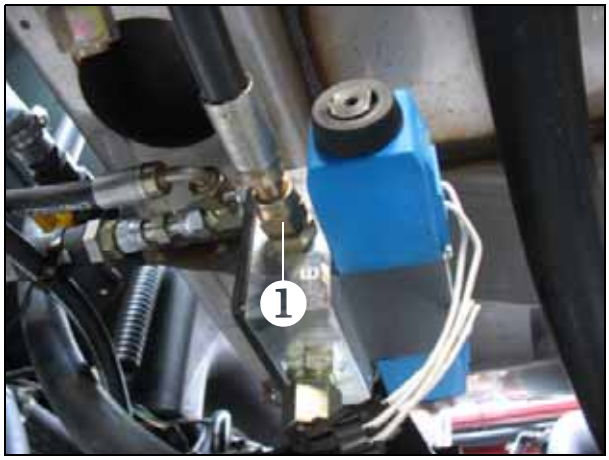
Connect the 90 degree swivel end of the 82 inch hose ❶ to the tee ❷. Tighten the end of the hose with the 90 degree fitting and then tighten the opposite end of the hose.



Step 5

Install the straight end of the 96 inch long hydraulic hose ❶ to the B port on the valve block. The opposite end of the hose will be connected to the right steering cylinder.

Route the hose end up over the right side frame and then follow the existing line to the right steering cylinder.



Step 6

Disconnect the right steering cylinder head end hose connection.



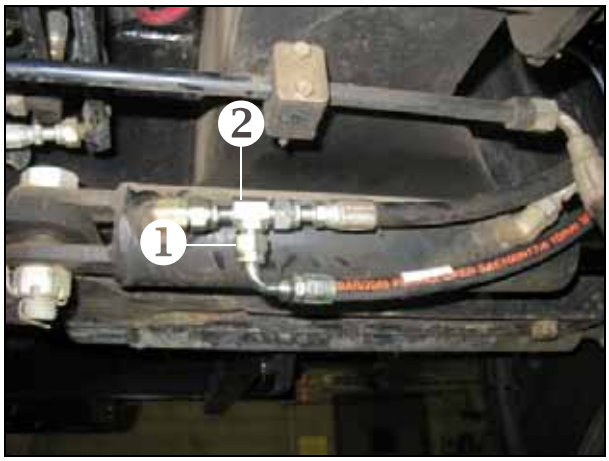
Step 7

Install a swivel tee onto the head end fitting. Reconnect the existing steering hose to the tee.



Step 8

Connect the 90 degree swivel end ❶ of the 96 inch hose to the tee ❷. Tighten the 90 degree end of the hose and then tighten the opposite end.



Pressure Line Installation: SPX 4260C/4410/4420

Step 1

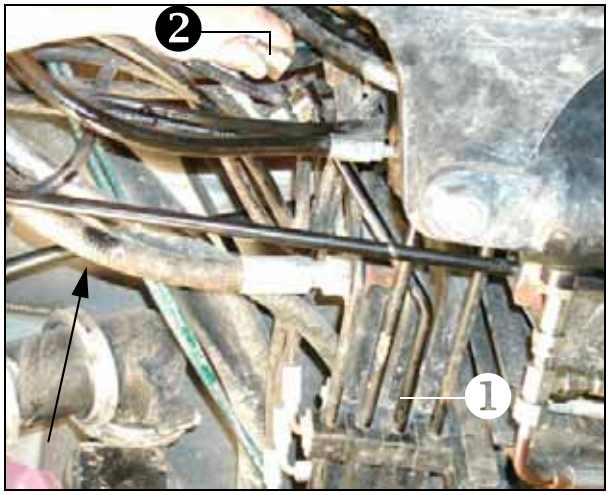
Install the -8 female swivel end of the 24 inch hose “Pressure Out” to the flow switch.



Step 2

Locate the third tube in the tube bank ❶. Follow the tube up to the hose connection ❷.

Note – *This view is from under the left side of the machine, looking from front to rear. The arrow points forward.*



Step 3

Remove the hose from the steel line.

Note – *This view is from under the left side of the machine, looking from rear to front.*



Step 4

Connect the male end of the 24 inch hose from the flow switch to the female hose fitting which was removed in the previous step.



Step 5

Connect the 90 degree end of the 48 inch long hydraulic hose "Pressure In" to the tee fitting at the manifold P port.



Step 6

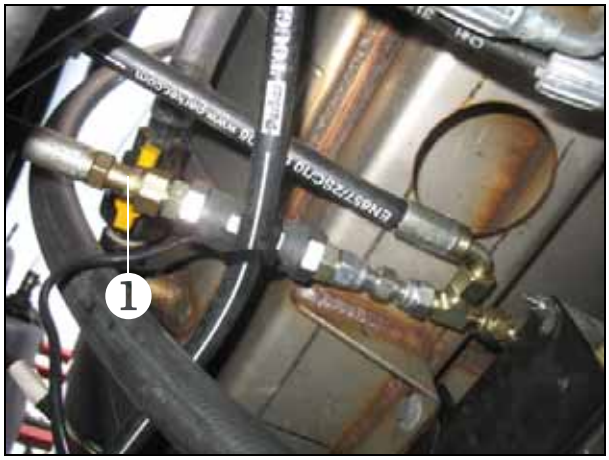
Connect the opposite end of the 48 inch hose to the steel hard line. See Step 3.



Pressure Line Installation: SPX 3320

Step 1

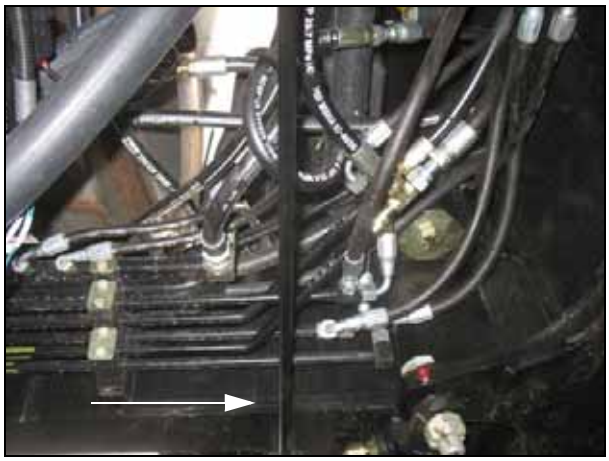
Install the -8 female swivel end of the 24 inch hose “Pressure Out” to the flow switch ❶.



Step 2

Locate the tube bank on the inside of the left frame rail behind the front axle.

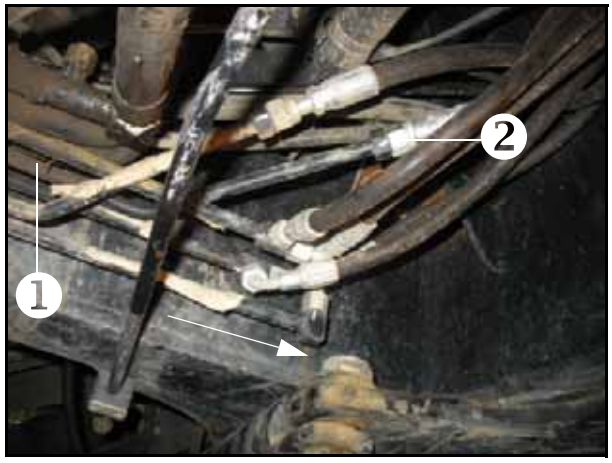
Note – *The arrow points forward.*



Step 3

Locate the upper tube in the inside tube bank with a 45 degree bend ❶. Follow the tube up to the -6 steel-line-to-hose connection ❷.

Note – *This view is from under the left side of the machine, looking from rear to front. The arrow points forward.*



Step 4

Remove the -6 hose from the steel line. Verify the pressure line by tracing it back to the pump output.

Note – *This view is from under the left side of the machine, looking from rear to front.*



Step 5

Connect the male end of the 24 inch hose from the flow switch to the female hose end which was removed in the previous step.



Step 6

Connect the 90 degree end of the 48 inch long hydraulic hose “Pressure In” to the tee fitting at the manifold P port.



Step 7

Connect the opposite end of the 48 inch hose to the steel hard line. See Step 4.

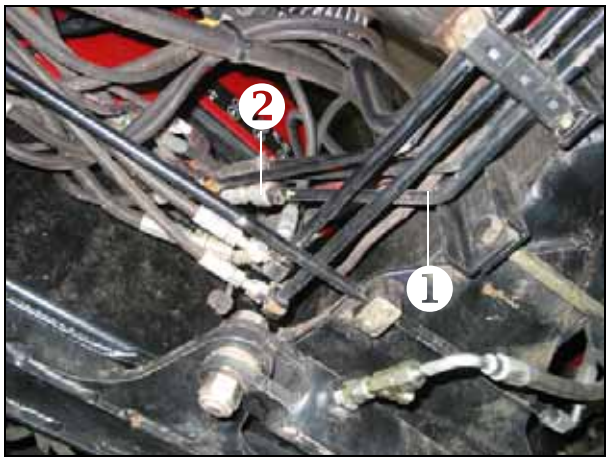


Tank Line Installation: SPX 4260C/4410/4420

Step 1

Locate the third line (tank) in the tube bank ❶ with a 45 degree bend. Follow the tank line up to the hose connection ❷.

Note – *This view is of the right side, looking from the rear to the front.*



Step 2

Insert a -8 ORFS run tee at the hose-to-hard-line connection, with the tee facing up.



Step 3

Connect the straight end of the 42 inch -8 tank hose to the tee.



Step 4

Connect the 90 degree swivel end of the 42 inch hose to the T port at the valve. First, tighten the 90 degree swivel tee at the manifold and then tighten the opposite end of the hose.

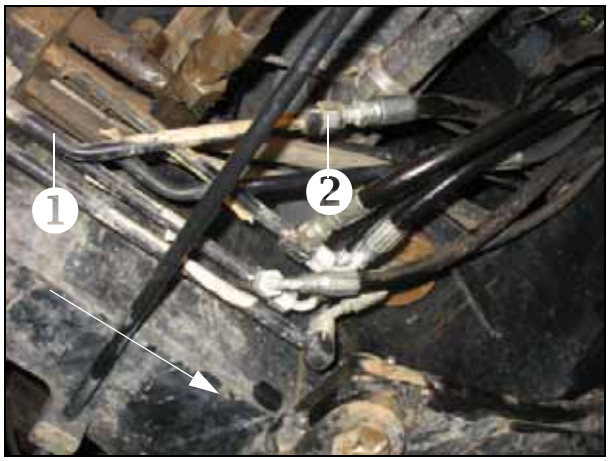


Tank Line Installation: SPX 3320

Step 1

Locate the lower inside line (tank) in the tube bank with a 45 degree bend ❶. Follow the tank line up to the hose connection ❷.

Note – *This view is of the left side, looking from the rear to the front. The arrow points forward.*



Step 2

Insert a -8 ORFS run tee at the hose-to-hard-line connection, with the tee facing up.



Step 3

Connect the straight end of the 42 inch -8 tank hose to the tee.



Step 4

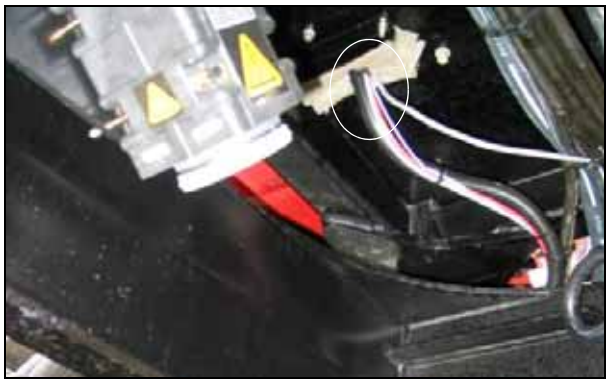
Connect the 90 degree swivel end of the 42 inch hose to the T port at the valve. First, tighten the 90 degree swivel tee at the manifold and then tighten the opposite end of the hose.



Electrical Connections

Step 1

Route the steering valve, steering sensor, and manual override cables into the cab.



Step 2

Route the other end of the steering valve, steering sensor, and manual override connections under the cab to the valve and sensors.



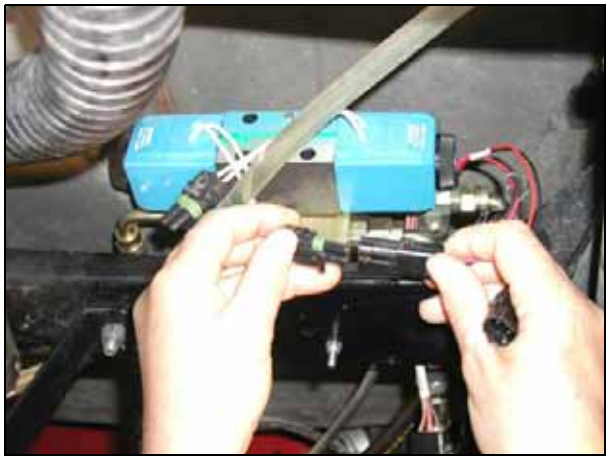
Step 3

Plug the connector on the flow switch cable into the flow switch.



Step 4

Connect the valve cables to the valve A and B leads. Secure all harnesses and connectors with tie straps.



CHAPTER

3

AutoSense Steering Device Installation

In this chapter:

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

This chapter describes how to install the AutoSense™ device.

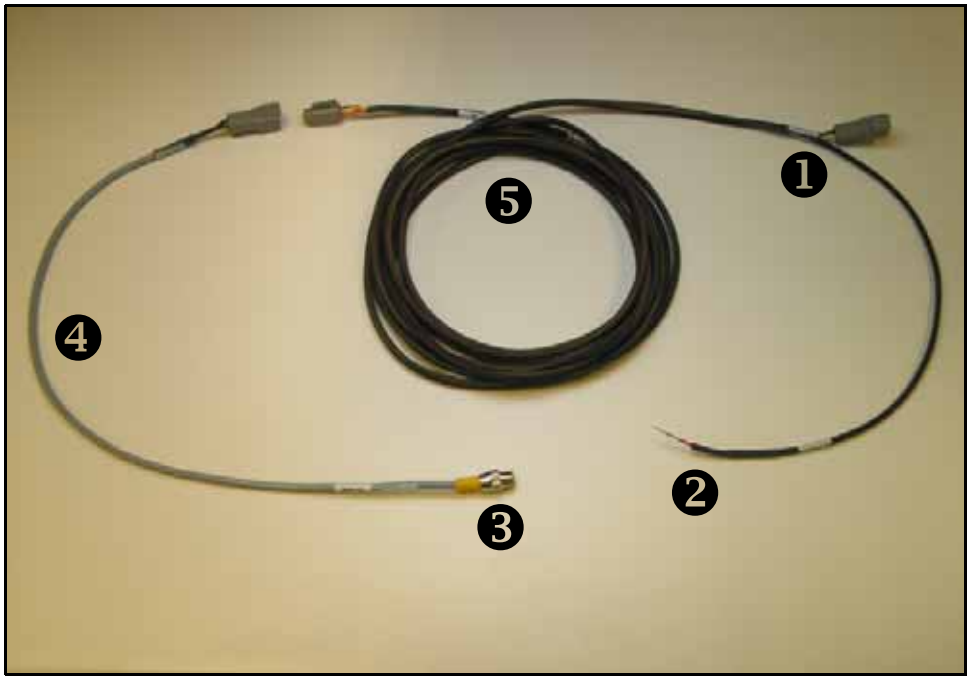
If the described mounting location is not accessible, chose an alternate location. To ensure proper function, the AutoSense device must be located in a position that is free of obstructions and allows it to rotate with the wheels when they turn.

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

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

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

AutoSense Steering Device Components



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

Install the AutoSense Steering Device

Step 1 SPX 4260C

Locate the mounting location on the fender, above the right steering knuckle.



SPX 3320/4410/4420

Locate the mounting location on the fender, just behind the right steering knuckle.



Step 2

Remove the fender bolt shown.



SPX 4260C SHOWN



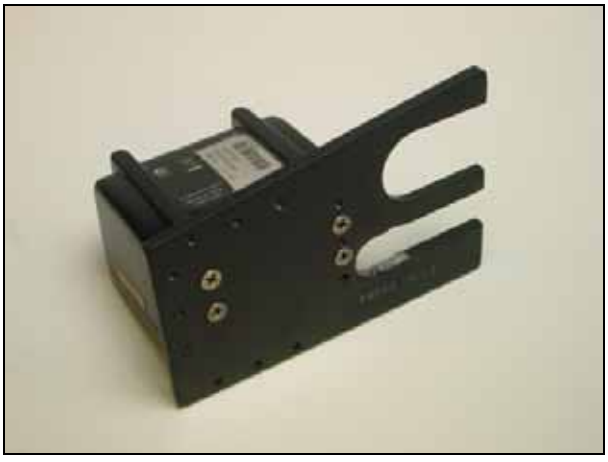
SPX 3320/4410/4420 SHOWN

Step 3

Mount the AutoSense device on the bracket as shown. Use the #6 flathead screws and countersunk holes.



SPX 4260C SHOWN



SPX 3320/4410/4420 SHOWN

Step 4

SPX 4260C

Mount the AutoSense device with the connector pointing toward the rear of the vehicle. Insert a ½" washer with the original fender bolt.



SPX 3320/4410/4420

Mount the AutoSense device with the connector pointing toward the front of the vehicle. Replace the fender bolt with a 2" long ½" bolt and washer.



Step 5

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.



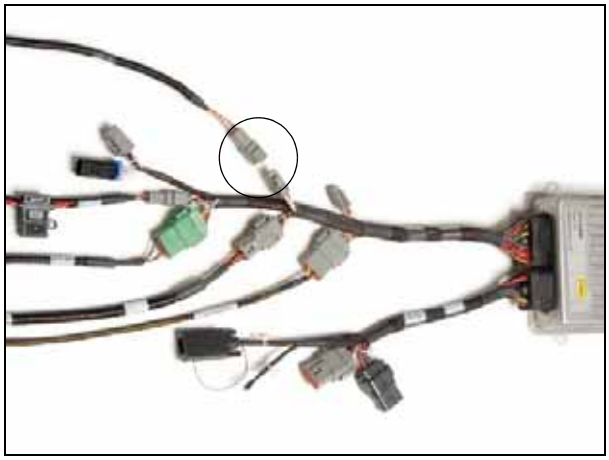
SPX 4260C SHOWN



SPX 3320/4410/4420 SHOWN

Step 6

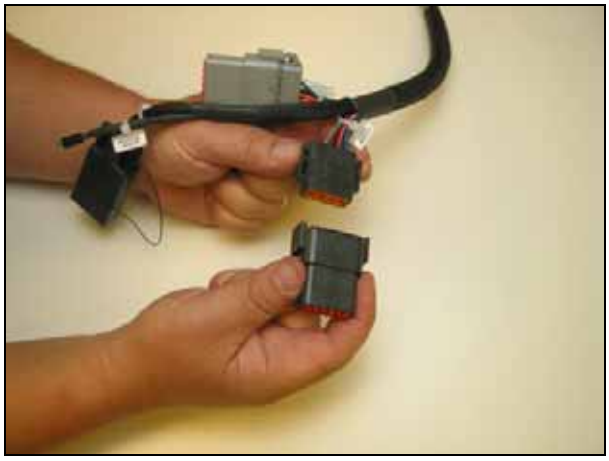
Connect the steering device cable connection to P-6 on the main wiring harness. P-6 is labeled “Steering Sensor”.



Harness Preparation (P/N 54602 Rev C)

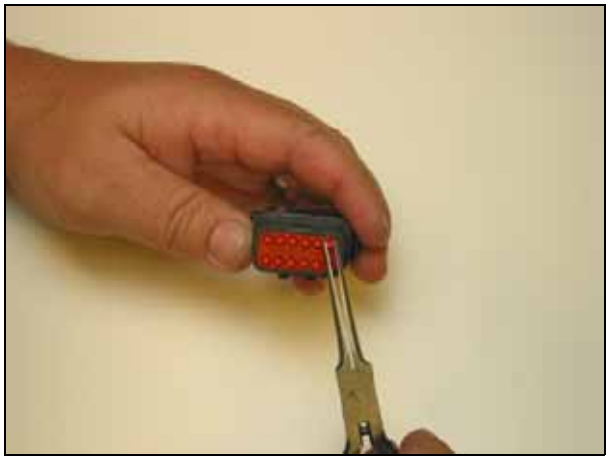
Step 1

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



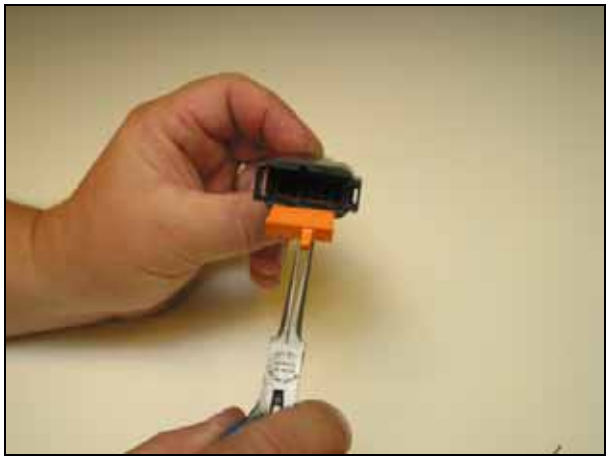
Step 2

Remove the plug from cavity number 1.



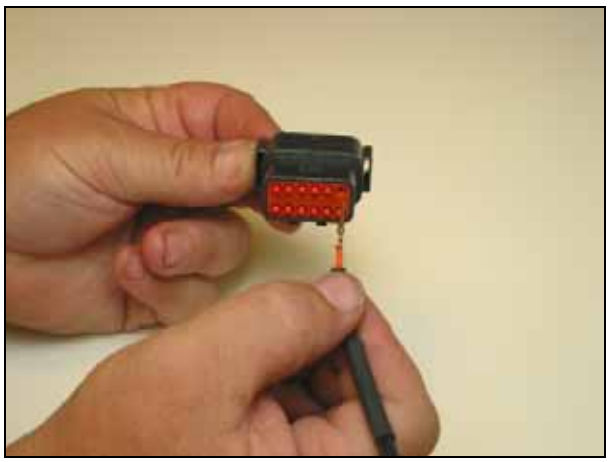
Step 3

Remove the wedge from the connector.



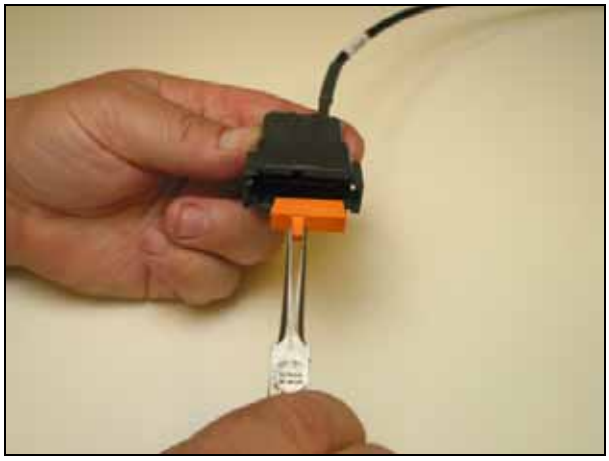
Step 4

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

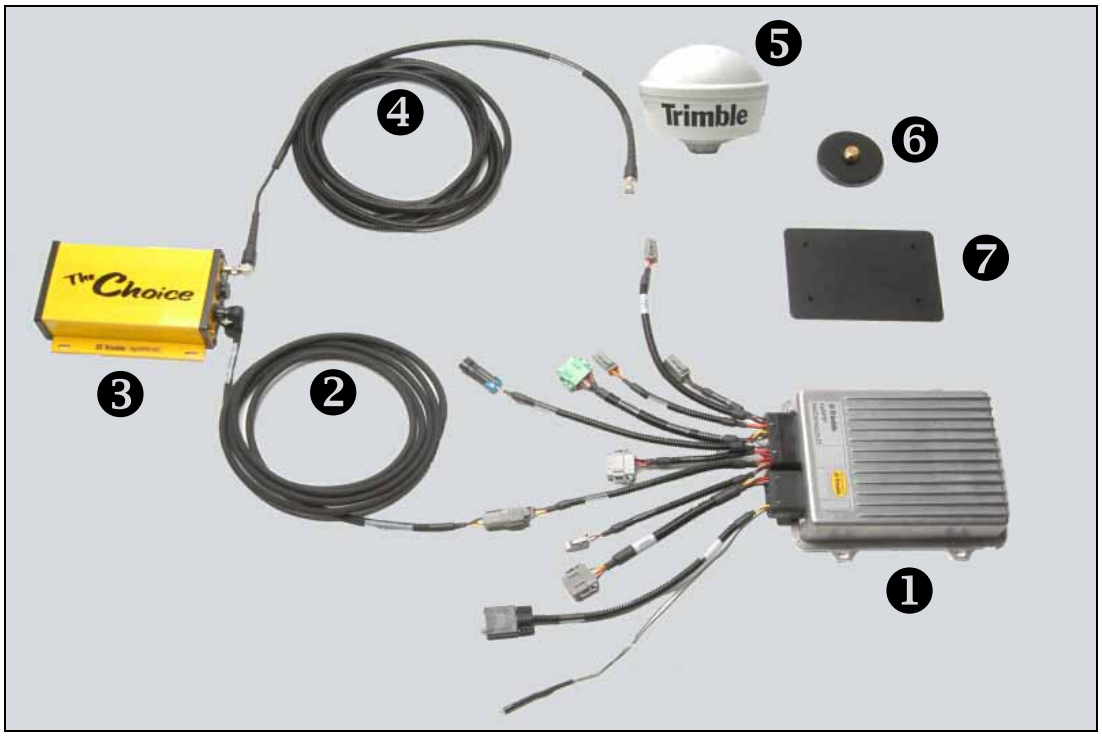
Antenna/Receiver Installations

In this chapter:

- AgGPS 132 Components
- AgGPS 132 Installation Process
- AgGPS 252 GPS Receiver with AgGPS 450/900 Radio Module (if Equipped) Components
- AgGPS 252 GPS Receiver with AgGPS 450/900 Radio Module (If Equipped) Installation Process

This chapter describes how to install an *Ag*GPS 132 receiver and antenna or an *Ag*GPS 252 receiver and *Ag*GPS 450/900 radio module.

*Ag*GPS 132 Components



Item	Description
❶	Controller
❷	Receiver cable
❸	*Ag*GPS 132 receiver
❹	Antenna cable
❺	*Ag*GPS 132 antenna
❻	Magnetic mount
❼	Mount plate

*Ag*GPS 132 Installation Process

Step 1

Measure from side to side on the cab roof. Locate and mark the center point of the cab roof. Clean the area around the center of the cab roof.



Step 2

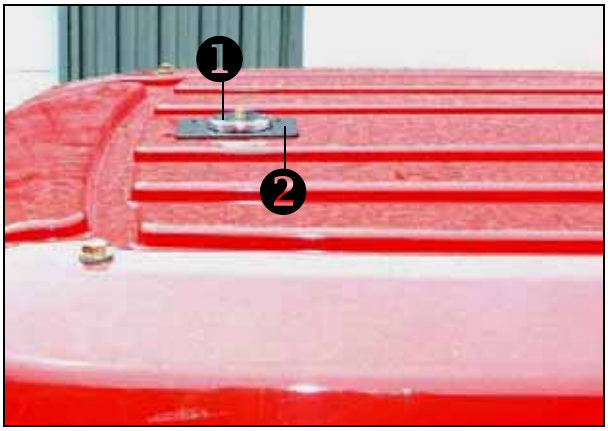
Remove the backing on the mounting plate's adhesive strips. Mount the plate on the center point mark.

Note – *The antenna may be placed in any accessible location between the front and rear of the cab. However, it must be centered left to right.*



Step 3

Attach the magnetic mount ❶ to the center of the plate. To attach the magnetic mount, use the four holes in the plate ❷ as a guide.



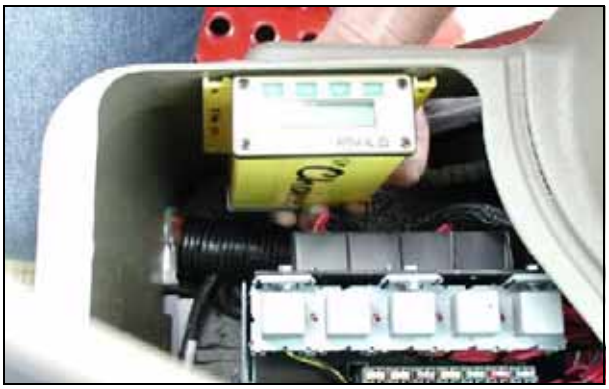
Step 4

Install the antenna on the magnetic mount.



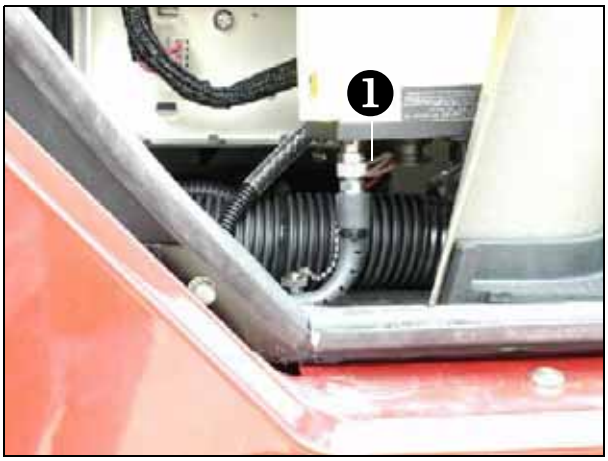
Step 5

Attach the antenna/receiver cable and route the cable toward the “C” post at the right rear of the cab. Secure the cable to the grab rail with ties. Route the cable into the cab electronics bay through the access hole in the cab floor. The access hole is insulated with foam. Route the remaining cable toward the front of the operator’s seat base. The connections will be established later.



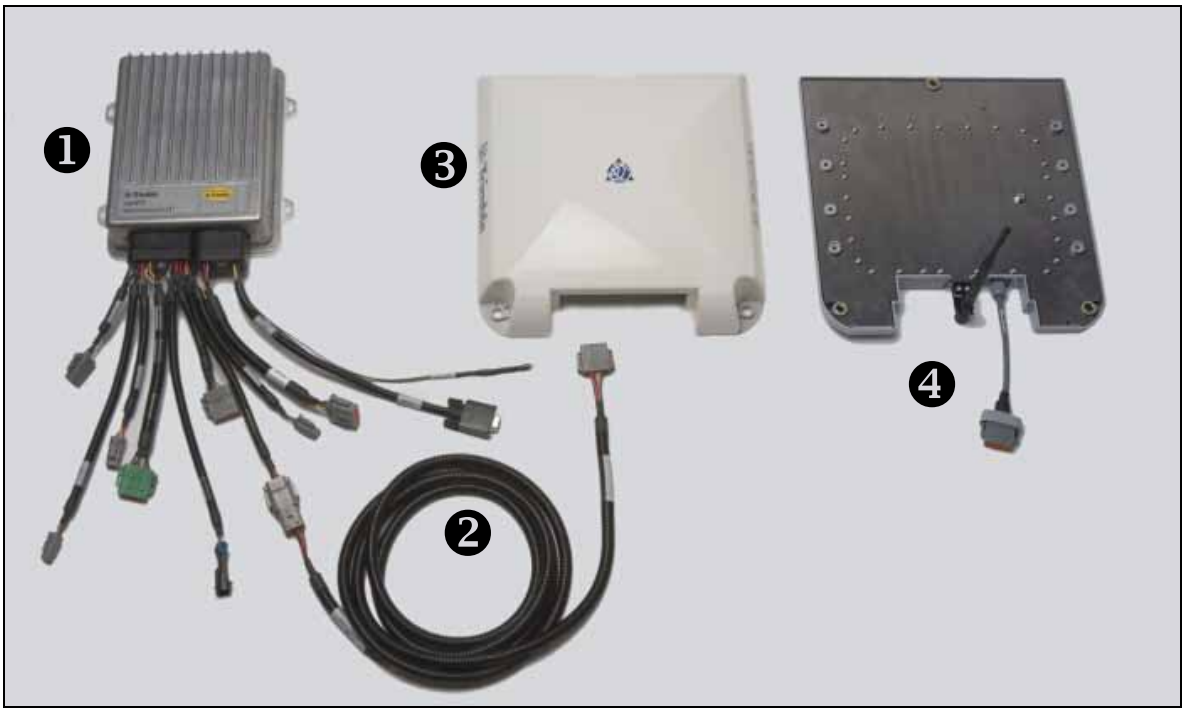
The *Ag*GPS 132 receiver can be mounted in the electronics bay next to the operator’s seat. Place the receiver in the electronics bay as shown. Use the receiver as a template to mark the top two holes. Drill holes in the electronics bay and then install the receiver with nuts and bolts.

Route the antenna cable ❶ and connect it to the receiver, which is mounted in the electronics bay. Connect the controller cable to cavity "A" on the receiver. Leave the power and ground wires on the controller cable in the cab electronics bay. Route the remaining cable toward the trainer seat. The connections will be established later.



RIGHT SIDE SHOWN

*Ag*GPS 252 GPS Receiver with *Ag*GPS 450/900 Radio Module (if Equipped) Components



Item	Description
1	Controller
2	Antenna/receiver cable
3	*Ag*GPS 252 antenna/receiver
4	*Ag*GPS 450/900 radio module (if equipped)

*Ag*GPS 252 GPS Receiver with *Ag*GPS 450/900 Radio Module (If Equipped) Installation Process

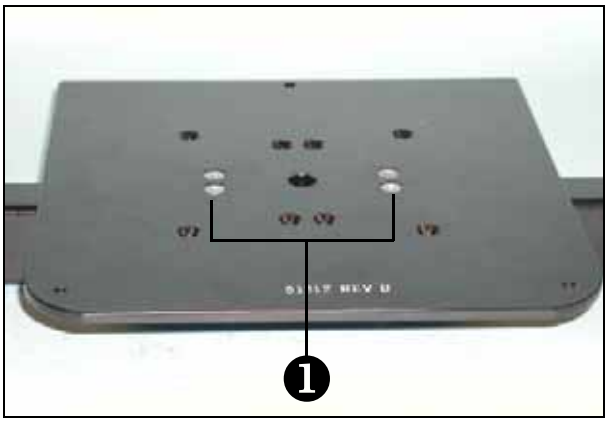
Step 1

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



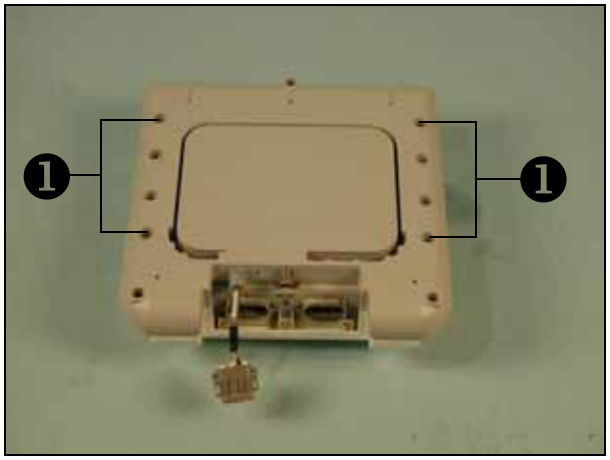
Step 2

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



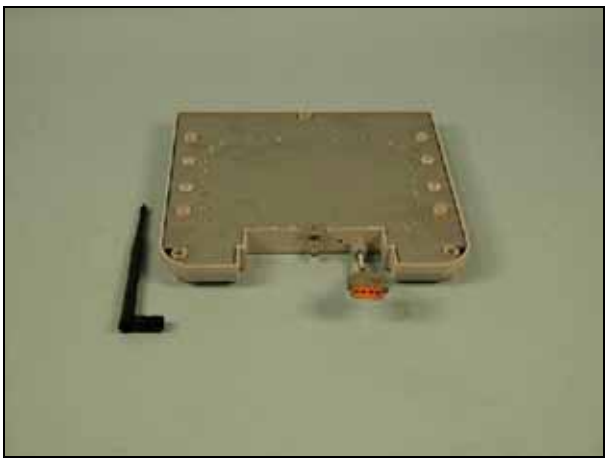
Step 3

Place the radio module on the *Ag*GPS 252 receiver. Install eight screws in the holes ❶ as shown.



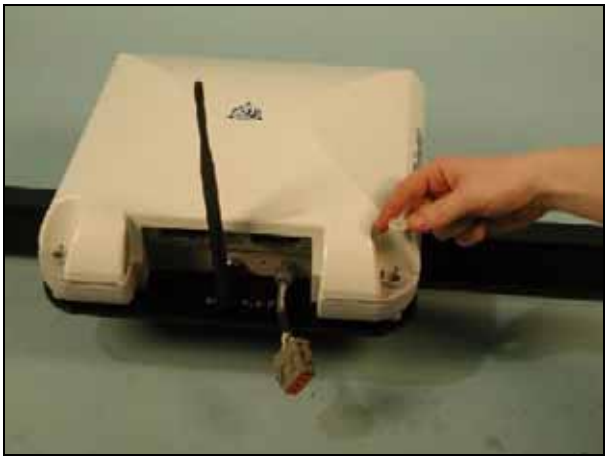
Step 4

If it is not already installed, attach the antenna to the radio module.



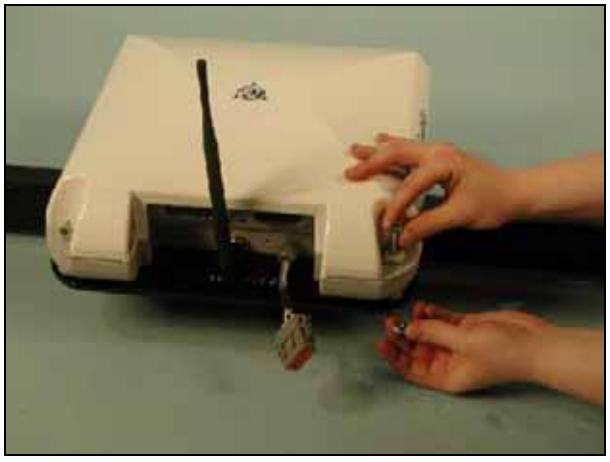
Step 5

Position the *Ag*GPS 252 receiver and radio on top of the mounting plate with the connector ports toward you. Align the three bolt holes with the receiver, radio, and mounting plate. Install the nylon bushings.



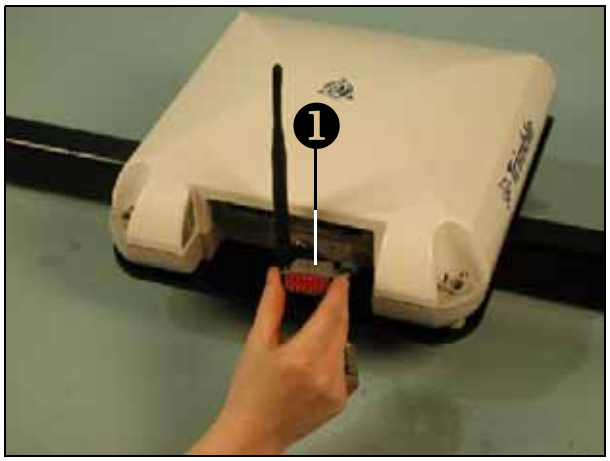
Step 6

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



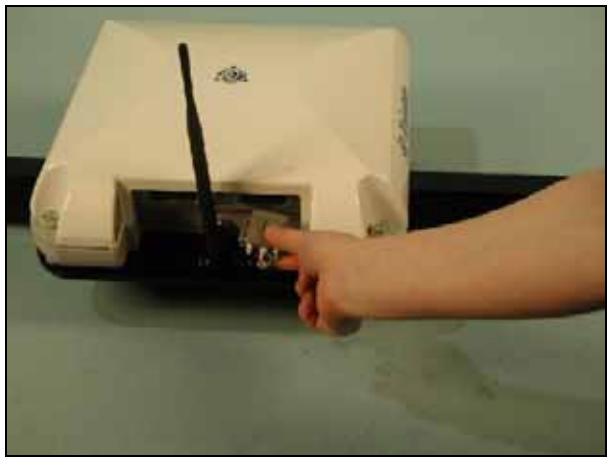
Step 7

Remove the connector plug from port B ❶.



Step 8

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



Step 9

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

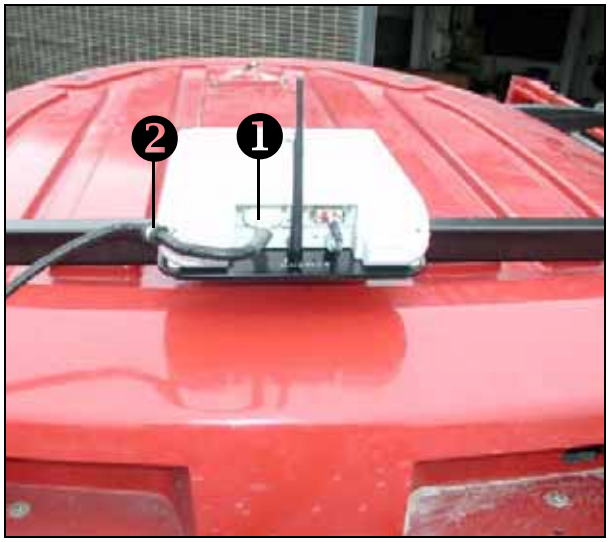
Note – *If the receiver is offset to the left or the right of the vehicle, AgGPS Autopilot system performance can be affected. Ensure that the GPS receiver and bracket are both aligned with the center of the vehicle before you tighten the cab bolts.*



Step 10

Connect the cable from the cab controller into port A ❶ of the *Ag*GPS 252 receiver. Bolt the cable clamp ❷ to the left side of the receiver.

Route the cable under the receiver, along the roof bracket, toward the right side of the cab. Place the cable along the C post of the cab, through the opening in the bottom of the electronics console. Continue to route the cable toward the buddy seat. Place ties along the cable to secure it.



CHAPTER

5

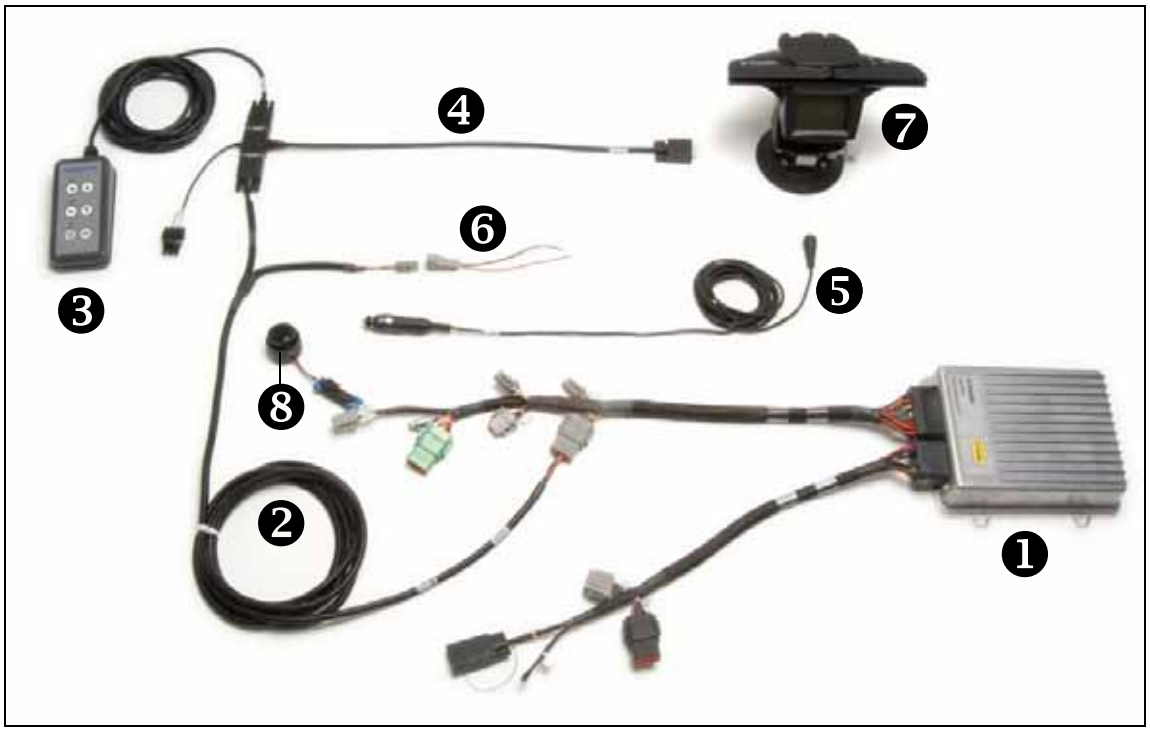
Display Installation

In this chapter:

- EZ-Guide Plus Lightbar Components
- EZ-Guide Plus Lightbar Display Installation
- Mounting the Lightbar
- AgGPS 170 Display System Components
- AgGPS 170 Display System Installation Process
- AgGPS FieldManager Display Components
- AgGPS FieldManager Display Installation Process
- AgGPS FieldManager Display Wiring Harness Preparation

This chapter describes and how to install and connect a display in the vehicle. The display can be the EZ-Guide Plus lightbar, the *Ag*GPS 170 Field Computer, or the *Ag*GPS FieldManager™ display.

EZ-Guide Plus Lightbar Components



Item	Description
❶	Controller
❷	Display cable
❸	Optional remote keypad
❹	External interface cable

Item	Description
❺	Power harness
❻	Alternative power supply
❼	EZ-Guide Plus lightbar
❽	Sonalert alarm (if connected)

EZ-Guide Plus Lightbar Display Installation

Step 1

Assemble the lightbar as shown below:

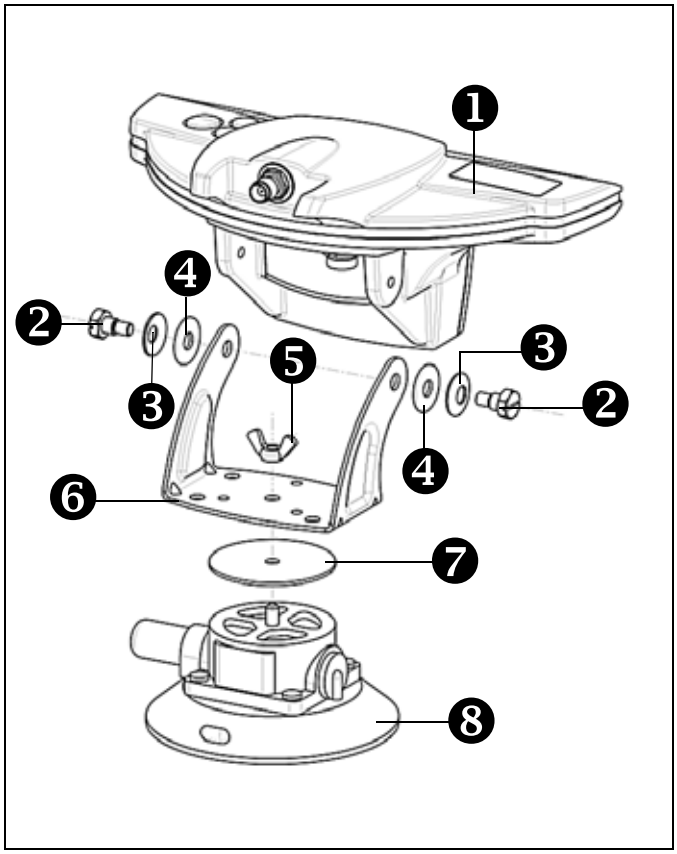


Figure 5.1 EZ-Guide Plus lightbar display

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

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

Step 2

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

Note – *Check the orientation of the bracket before you insert the screws.*

Mounting the Lightbar

There are two ways to mount the EZ-Guide Plus lightbar:

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

Vacuum mount installation

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

Step 1

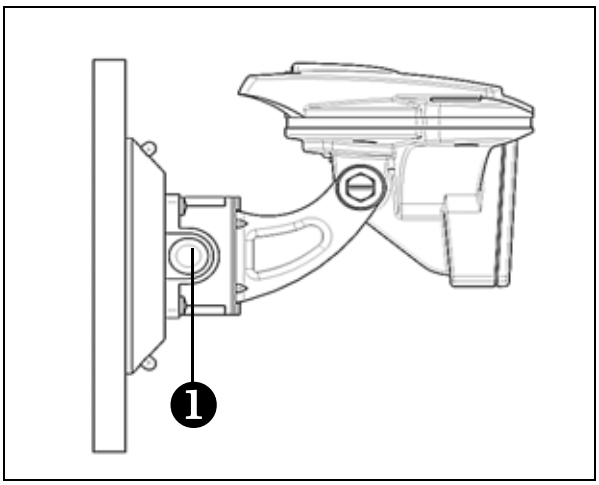
Use the hardware provided to secure the vacuum mount to the mounting bracket.

Step 2

Dampen the rubber seal on the suction cup.

Step 3

To secure the lightbar in the desired location, press the suction cup against a flat surface and then pump the gray button ❶ until the red line is no longer visible.



Mount bracket installation

Step 1

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

Step 2

Drill the holes in the bracket at the marked points.

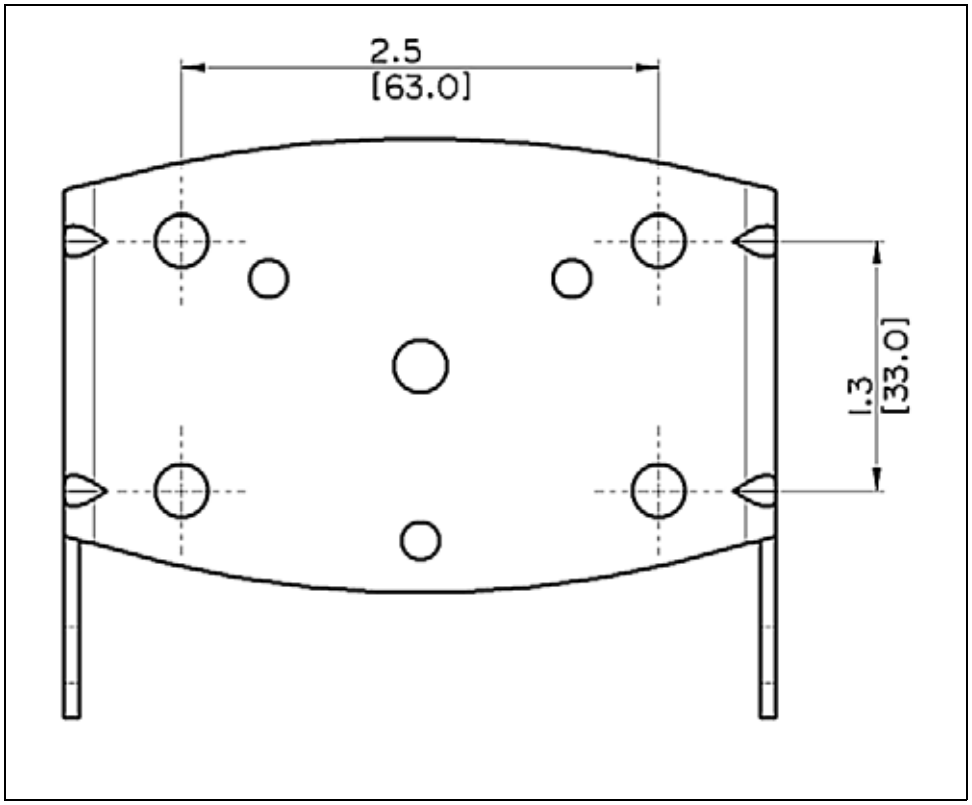


Figure 5.2 Bracket drilling template

Step 3

Screw the mount bracket to the horizontal surface.

Step 4

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

Step 5

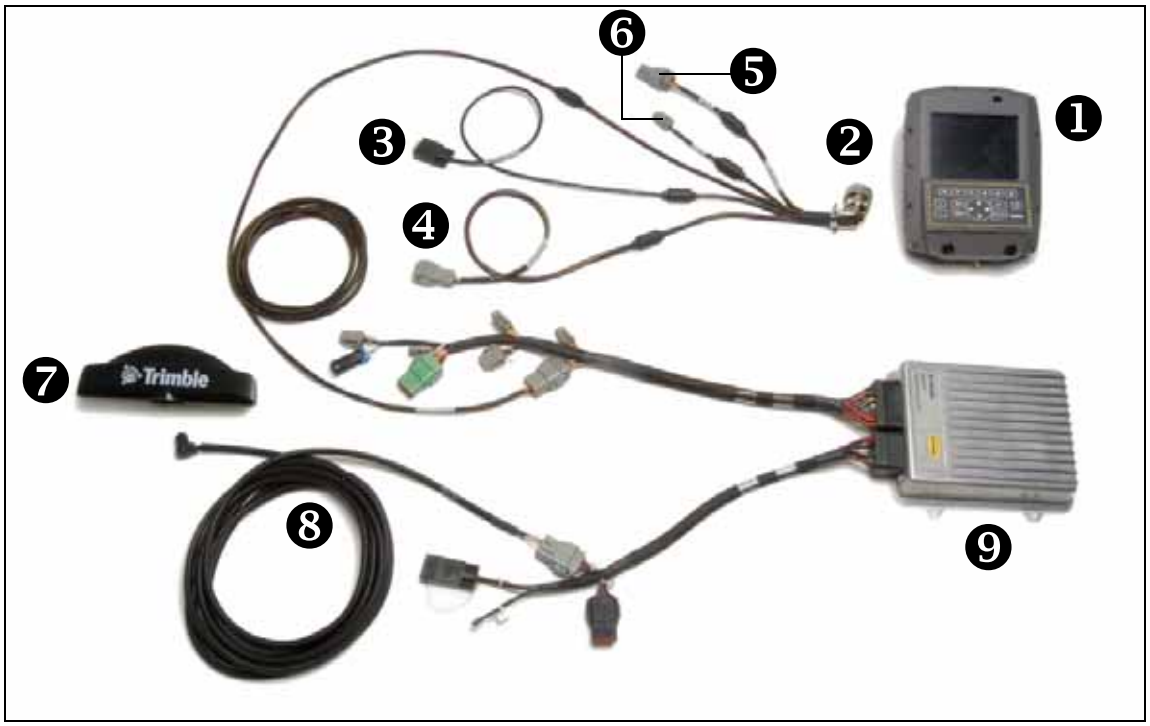
Connect the cable to the EZ-Guide Plus lightbar.

Step 6

Attach the EZ-Guide Plus display cable to the main harness connection, which is labeled "Display".

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

*Ag*GPS 170 Display System Components



Item	Description
❶	*Ag*GPS 170 display
❷	Display harness
❸	Com 1 serial I/O (not used)
❹	Switch + *Ag*GPS 170 alarm (not used)
❺	*Ag*GPS 170 lightbar (not used)

Item	Description
❻	CAN (not used)
❼	Lightbar (optional)
❽	Lightbar cable (optional)
❾	Controller

*Ag*GPS 170 Display System Installation Process

Step 1

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



Step 2

Use the provided hardware to assemble the display mounting bracket onto the ram mount.



Step 3

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



Step 4

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

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



Step 5

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



Step 6

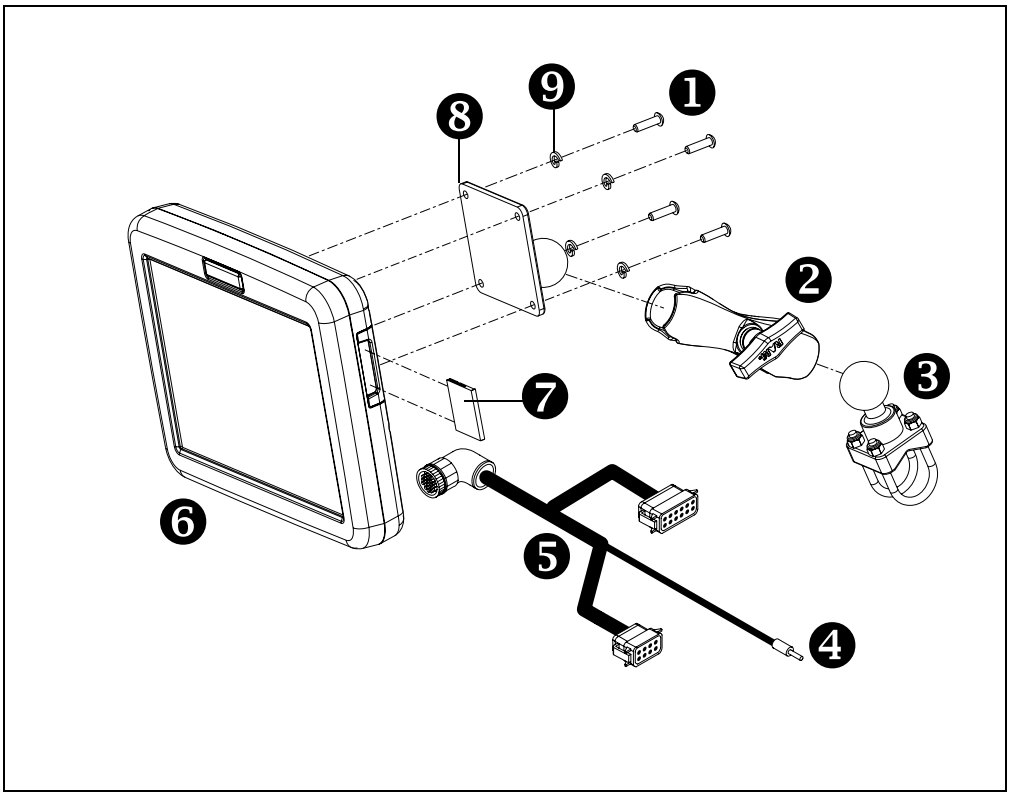
Connect the *Ag*GPS 170 display harness to the display. Route the cable to the controller and then connect it to the connection labeled "Display" on the main harness connection.

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

Step 7

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

*Ag*GPS FieldManager Display Components



Item	Description
❶	Screw, M6-1.0 x 16
❷	Double socket arm with 1½ ball
❸	U-bolt base with 1½ ball
❹	P9 connector
❺	FieldManager Display harness
❻	*Ag*GPS FieldManager Display
❼	128 MB CompactFlash card
❽	75 x 75 mm base with 1½ ball
❾	M6 washer

*Ag*GPS FieldManager Display Installation Process

Step 1

The *Ag*GPS FieldManager display is mounted in the cab with a bar mount RAM mount. Determine the mounting location in the cab. Use the provided bolts to attach the bar mount to the rail.

Route the *Ag*GPS Autopilot harness to the display location.



Step 2

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



Step 3

Attach the RAM mount to the rear of the display.



Step 4

Attach the other end of the RAM mount to the bar mount. Tighten the clamp on the RAM mount so the display is held securely in place.



Step 5

Attach the *Ag*GPS Autopilot cable to the back of the *Ag*GPS FieldManager display. Route the cable to the *Ag*GPS Autopilot controller and then connect it to the connection labeled "Display" on the main harness connection. The display is now installed.

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

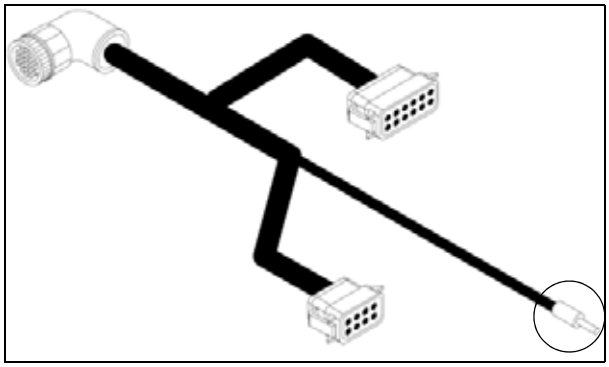


*Ag*GPS FieldManager Display Wiring Harness Preparation

The *Ag*GPS FieldManager display requires a constant unswitched B+ power lead.

Step 1

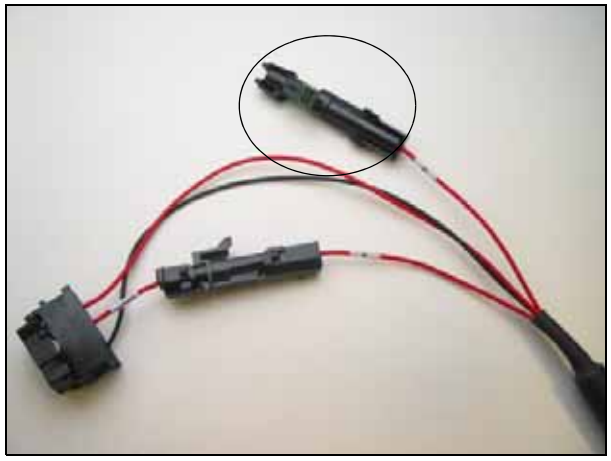
Locate connector P9 on the FieldManager display harness.



Step 2

Locate the unused connector labeled "B" on the power harness at the power switch and then verify that it is the unswitched power lead. If it is not, swap the "A" and "B" leads so that unswitched power is available in the extra lead.

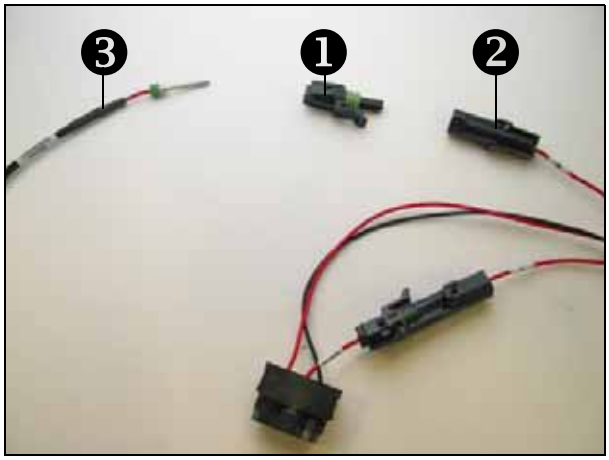
Tip – Turn the key off and then use a volt meter to determine which lead is constant battery power.



Step 3

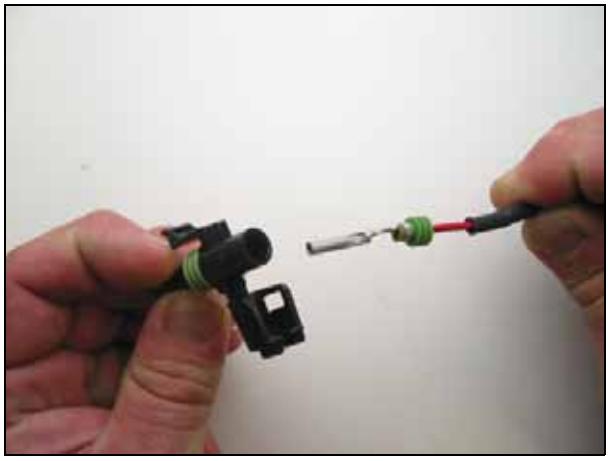
Remove the plug ❶ in the unswitched power lead ❷ and then insert the FieldManager display P9 ❸ pin into the female 1-pin Weatherpak plug. Connect to the mating connector.

***Note** – Verify that the lead is battery power by turning on the display while the vehicle key is turned off.*



Step 4

To insert the wire end into the connector, release the clips and then remove the cavity plug. Insert the pin.



CHAPTER

6

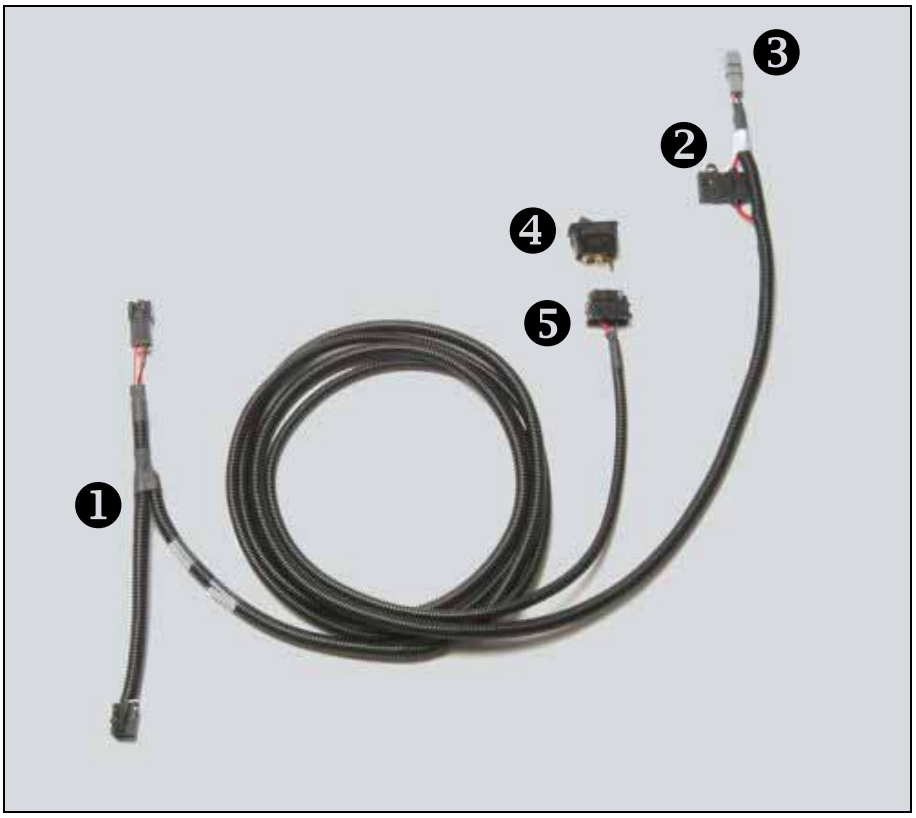
Power Harness Installation

In this chapter:

- Power Harness Components: SPX 4260C/4410/4420
- Power Harness Installation Process: SPX 4260C/4410/4420
- Power Harness Components: SPX 3320
- Power Harness Installation Process: SPX 3320

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

Power Harness Components: SPX 4260C/4410/4420



Item	Description
❶	Vehicle jumper cable (P/N 54603)
❷	Fuse holder - Littlefuse 257010, 10 amp
❸	Controller power connection
❹	Switch
❺	Switch receptacle

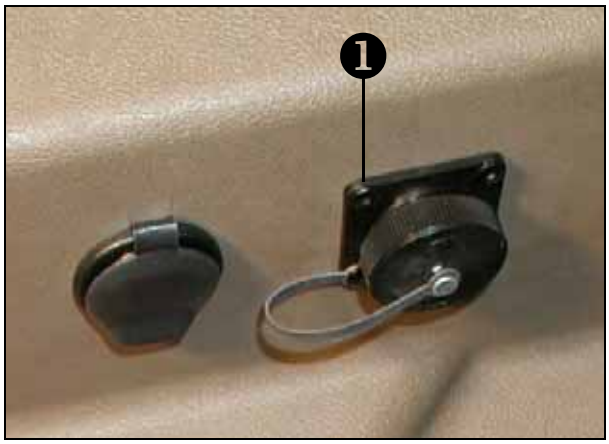
Note – *Route all harnesses, wires, and cables along routes that are free of obstructions and pinch points. Use wire ties where necessary. For ease of installation, connectors on all harnesses are identified by component. The following instructions will only give the installer the general direction to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

Note – *Make note of where any wire harness and hose tie straps were removed during disassembly so they can be properly installed during assembly.*

Power Harness Installation Process: SPX 4260C/4410/4420

Step 1

Locate the accessory outlet ❶ at the right rear of the cab, near the electronics bay.



Step 2

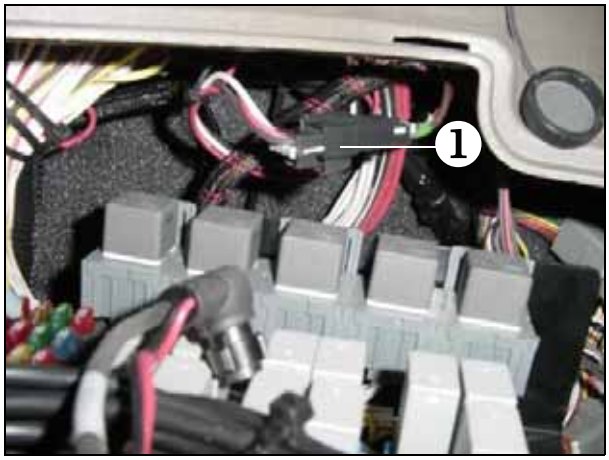
Remove the cover of the electronics bay. Reach into the electronics bay and up to the back of the accessory outlet. Trace the wire from the accessory outlet until you reach a three pin connector.



Step 3

Pull the connector ❶ out of the electronics bay so it is visible.

Note – *You may need to remove wire straps to access the connector.*



Step 4

Disconnect the connector and install the power cable jumper. Connect the jumper section of the cable to each side of the accessory outlet connections.



Step 5

Route the power connection behind the seat to the controller.



Step 6

Determine a location for the power switch in the right hand armrest. Remove the blank from that location.



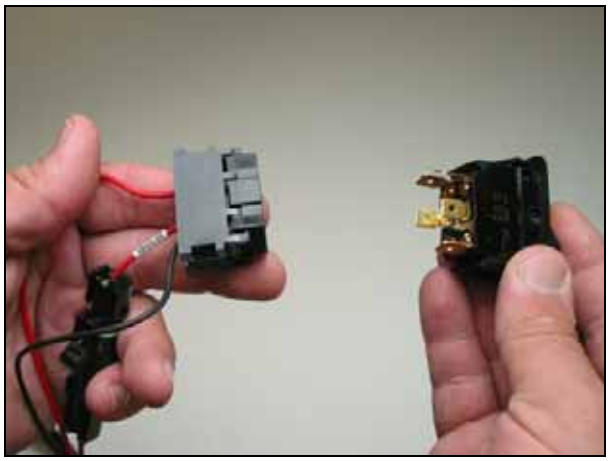
Step 7

Route the switch connector end of the power cable from the electronics bay up through the bottom of the right arm console.



Step 8

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

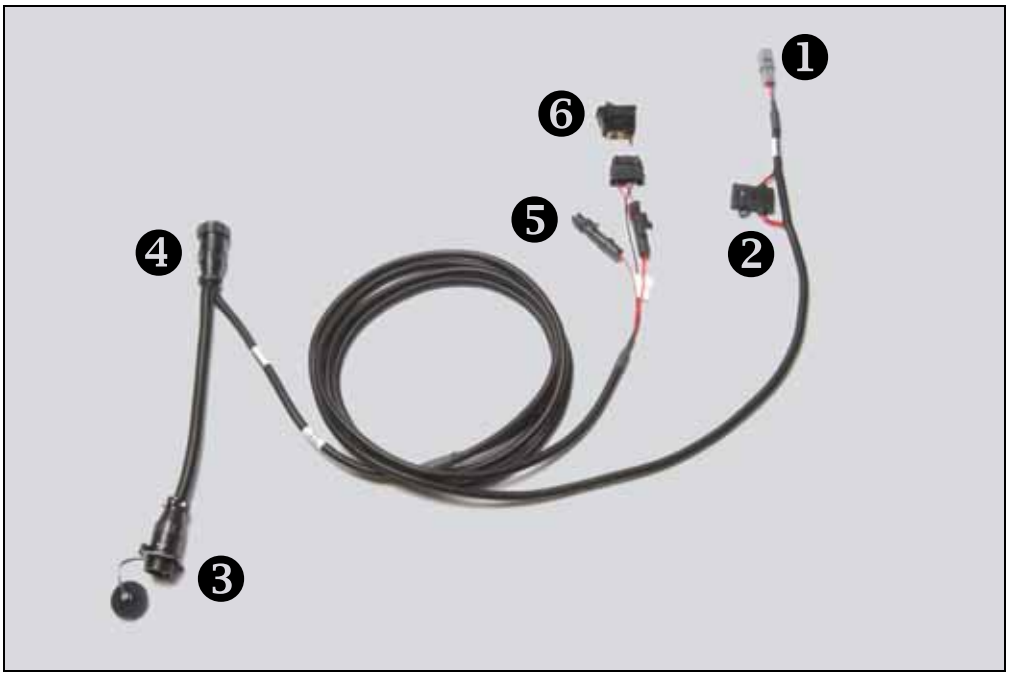


Step 9

Install the switch in the console.



Power Harness Components: SPX 3320



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

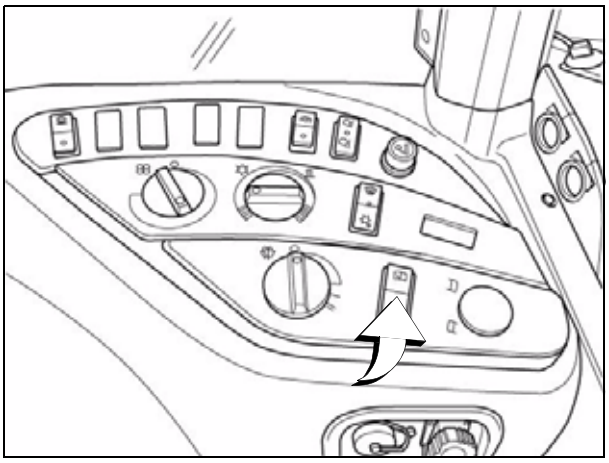
Note – *Route all harnesses, wires, and cables along routes that are free of obstructions and pinch points. Use wire ties where necessary. Connectors on all harnesses are identified by component for ease of installation. The following instructions will only give the installer the general direction to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

Note – *Make note of where any wire harness and hose tie straps were removed during disassembly so they can be properly installed during assembly.*

Power Harness Installation Process: SPX 3320

Step 1

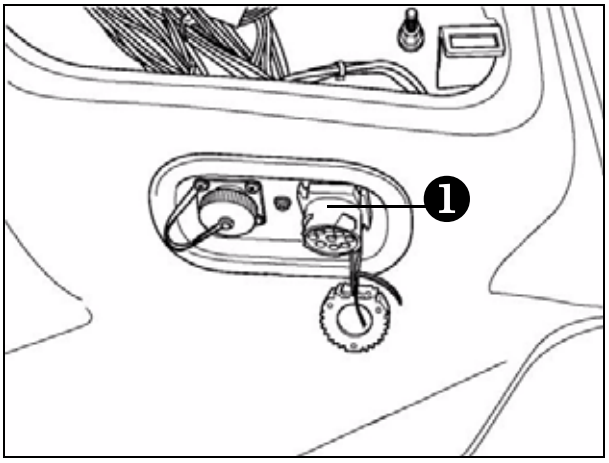
Remove the right hand control panel by pulling up on the edge closest to the seat.



Step 2

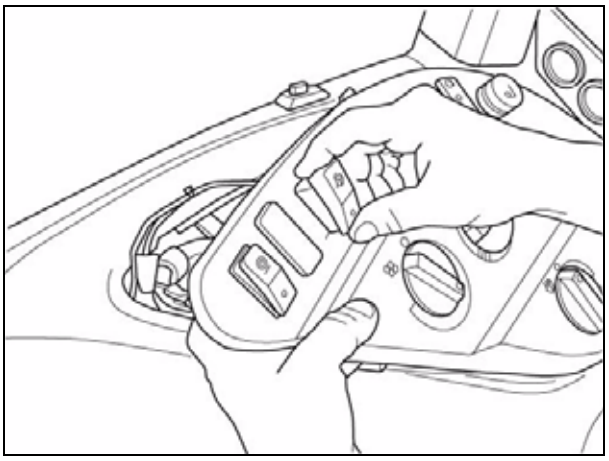
Remove the 3-pin auxiliary power outlet ❶ from the face plate and attach the mating jumper portion of the power cable. Reinstall the jumper power outlet to the face plate for continued use.

Note – *The extra connector on the jumper cable replaces the accessory outlet.*



Step 3

Remove the blank out plug from a slot in the control panel.



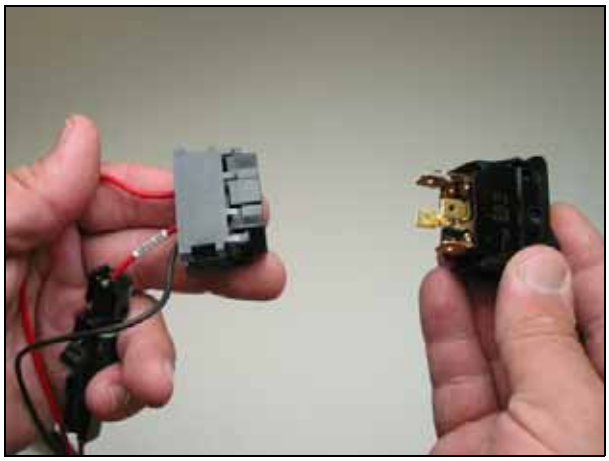
Step 4

Route the power switch leg of the cable to the switch location and then connect it to the switch.



Step 5

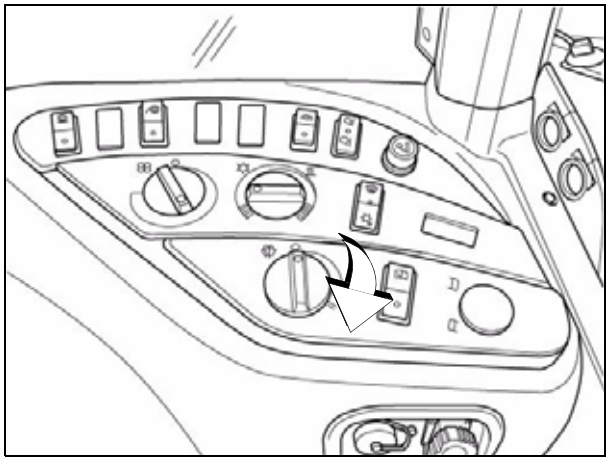
Mate the black (ground) wire in the receptacle with pin 3 of the switch. The pins are marked on the sides of the switch.



Step 6

Re-install the right hand control panel by snapping it back into place.

Note – *Make sure the retaining clips are not broken before installation. Replace as necessary.*



CHAPTER

7

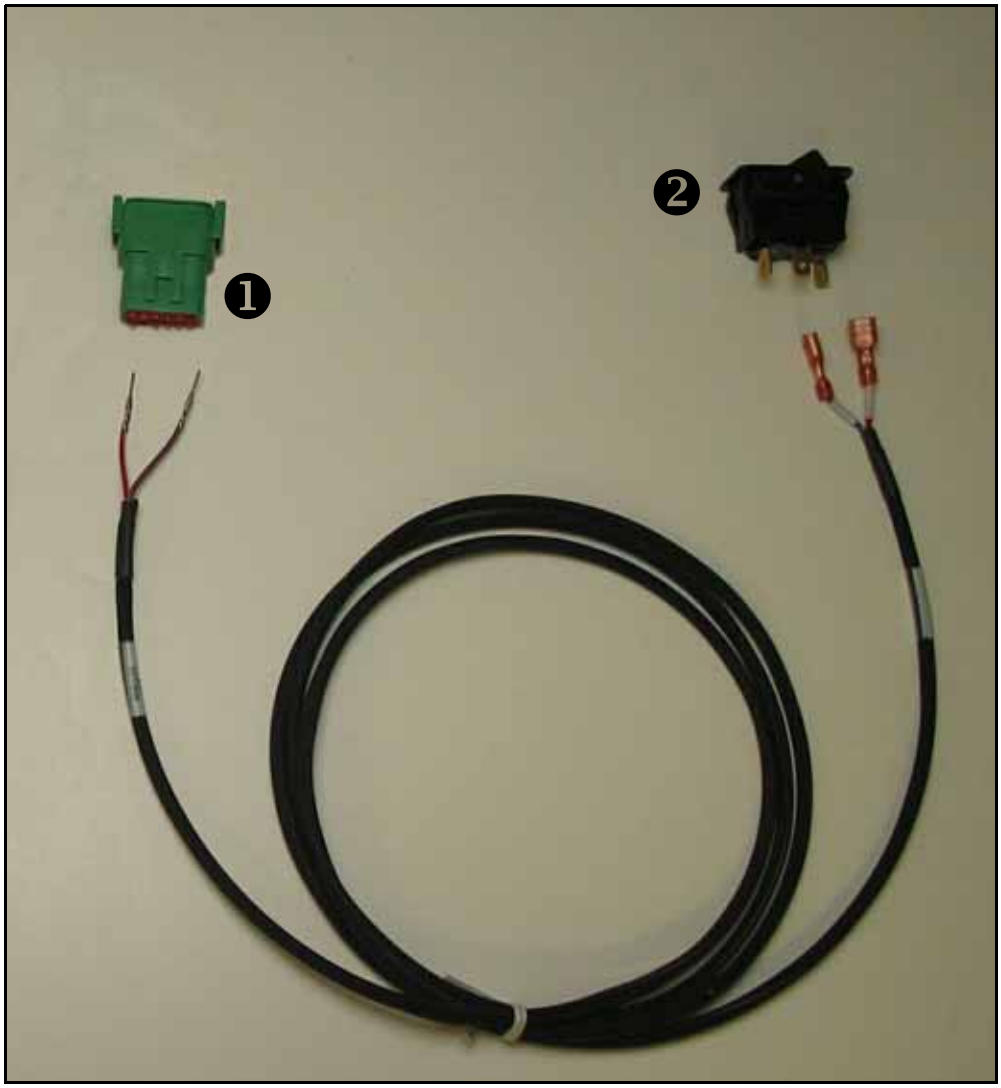
Remote Engage Switch Installation

In this chapter:

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

This chapter describes how to install the remote engage switch.

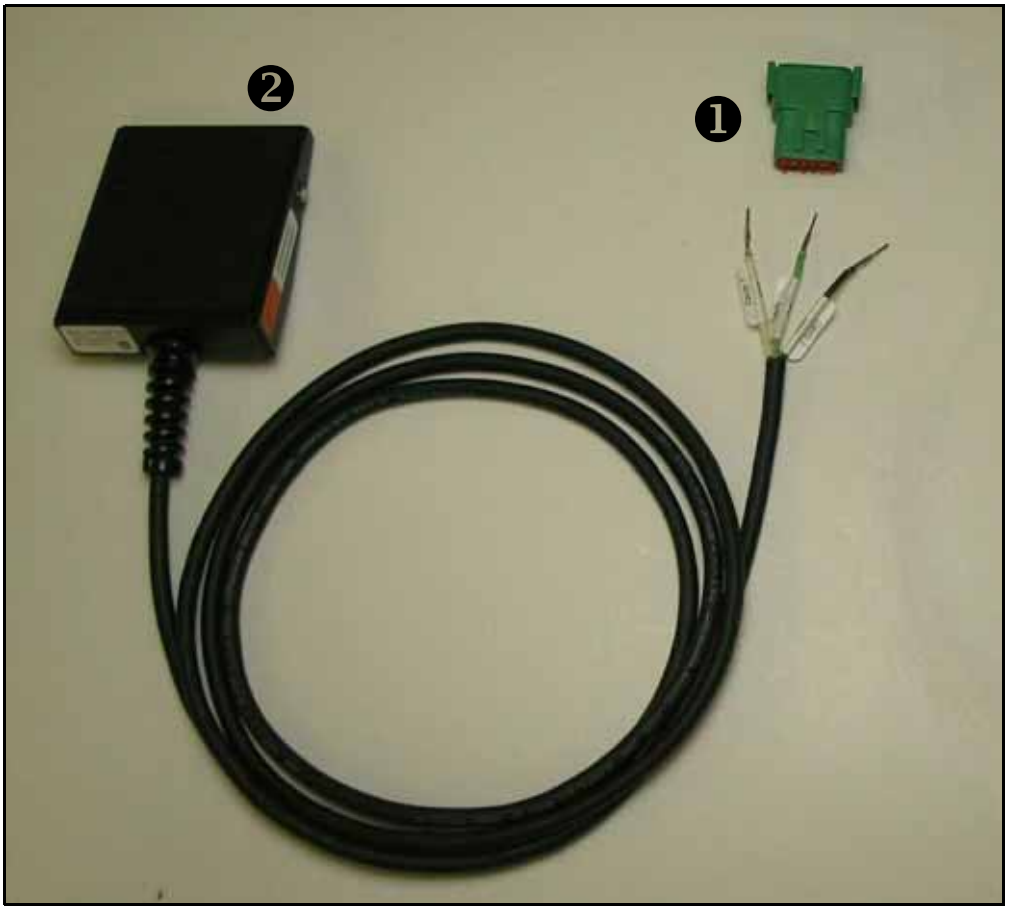
Remote Engage Switch Components: Rocker Switch



Item	Description
❶	DTM receptacle
❷	Remote engage rocker switch

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

Remote Engage Switch Components: Foot Switch

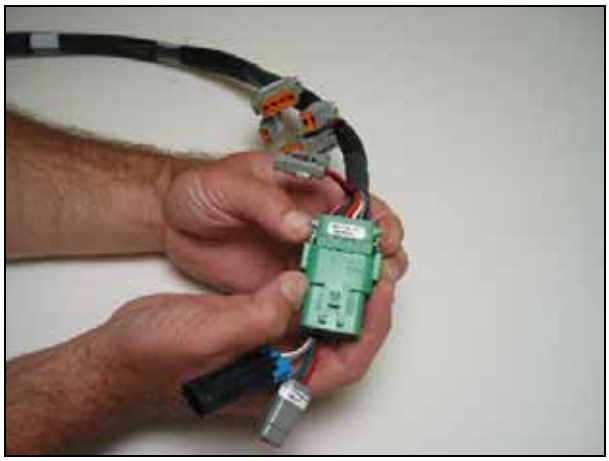


Item	Description
❶	DTM receptacle
❷	Remote engage foot switch

Prepare the Remote Engage Cable

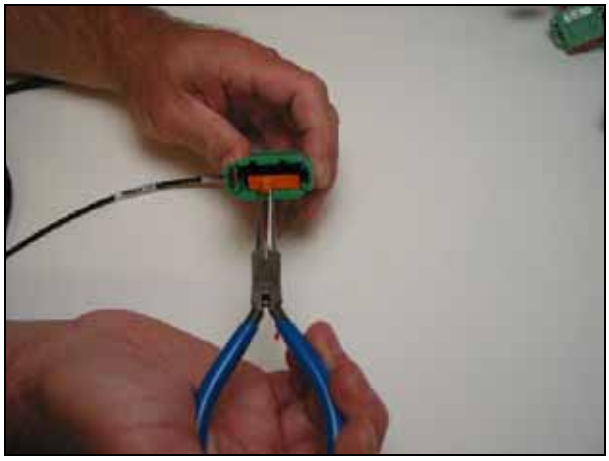
Step 1

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



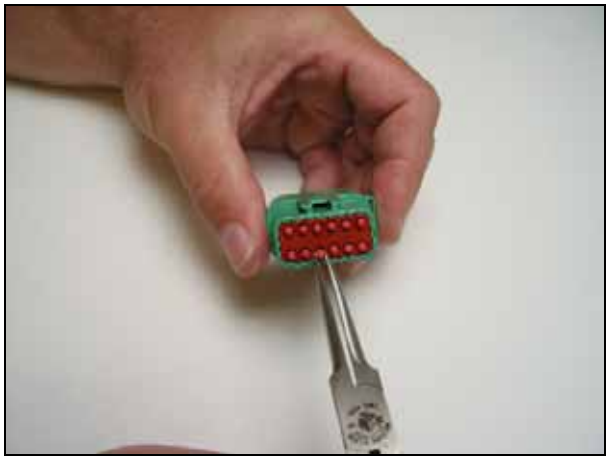
Step 2

Remove the wedge from the connector.



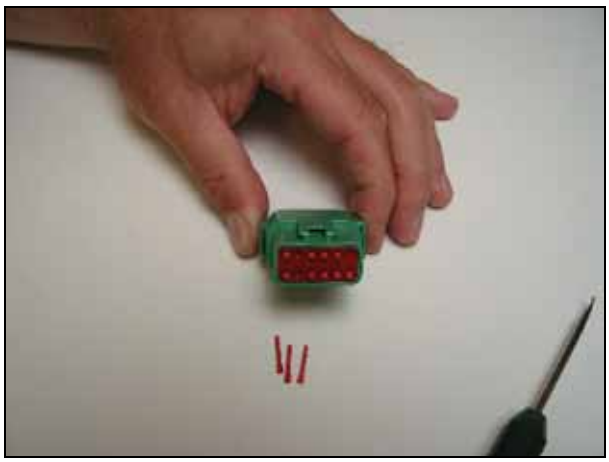
Step 3 Rocker switch only

Remove the plugs from cavity 2 and 7.



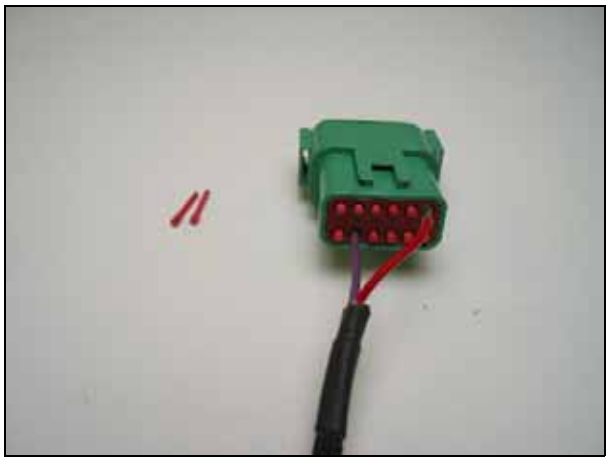
Foot Switch Only

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



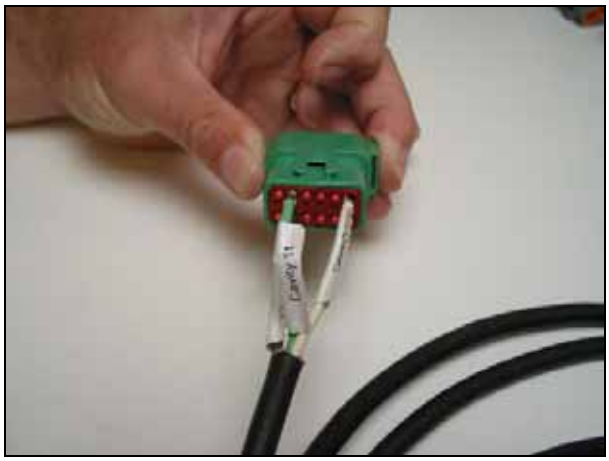
Step 4 Rocker Switch Only

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



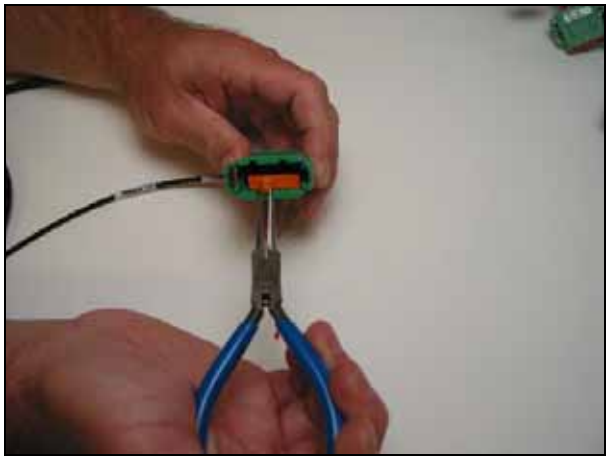
Foot Switch Only

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



Step 5

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



Step 6 Rocker Switch Only

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



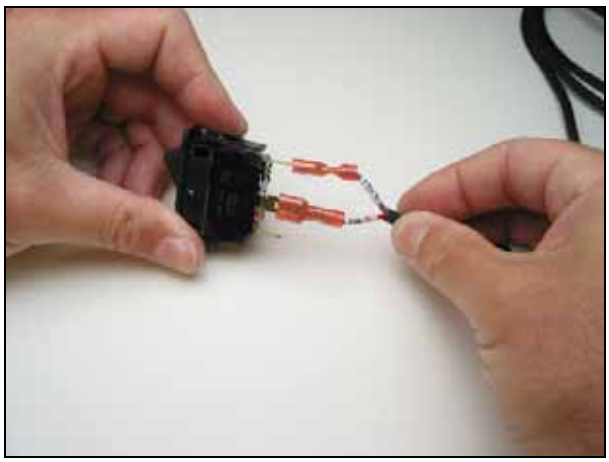
Foot Switch Only

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



Step 7 Rocker Switch Only

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



Step 8 Rocker Switch Only

Place the switch in the console.



Using the Remote Engage Switch

Step 1

Hold the switch down for at least 0.5 seconds.

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

Step 2

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

CHAPTER

8

Controller Installation

In this chapter:

- Controller Installation: SPX 4260C/4410/4420
- Controller Installation: SPX 3320
- Controller Connections

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

Controller Installation: SPX 4260C/4410/4420

Step 1

Locate the trainer seat in the cab and lift the seat cushion forward.



Step 2

Remove the plastic insert and the foam pad.



Step 3

Clear the cavity so the controller lies flat on the metal floor. Place the controller inside the cavity with connectors to the right of the machine and flanges down.



Step 4

Locate the center of the two mounting ears on the left side 3.0 inches from the left wall of the trainer seat.



Step 5

Locate the center of the two mounting ears towards the front of the trainer seat compartment 2.5 inches from the front steel lip.



Step 6

Using the controller as a template, mark the center of the four slots to be drilled. The controller must be square to the direction of travel. The straight edges of the controller should be parallel to the walls of the compartment.



Step 7

Drill four holes at the positions marked in Step 6. Prior to drilling verify no wires or hoses are underneath the floor in the way of the drilled holes. Drill the holes to match the 10-32 x 1" fasteners supplied.



Step 8

Attach the main and auxiliary cable harness prior to installing the controller. Use an Allen wrench to secure the connector to the controller.



Step 9

Ensure that the controller is square to the direction of travel. Insert the four socket head fasteners (supplied in the controller bolt kit) and secure the controller to floor.



Step 10

Attach the nylock nut to the fasteners on the underside of the cab to tighten.



Step 11

Route all cables into controller compartment and coil excess cable. Make all connections to main harness.

Note – *Cable connectors are labeled for proper connection.*

Note – *On later models, an access hole exists at the rear of the trainer seat compartment for the cable.*



Step 12

Secure the cables with tie wraps and reinstall the plastic insert.



Controller Installation: SPX 3320

Step 1

Remove the rear cover panel behind the seat.



Step 2

Place the controller mounting plate in position against the rear wall of the cab.



Step 3

Use the controller plate as a template to mark the four mounting points on the rear wall at the height shown. Use a level to ensure the plate is horizontally positioned.



Step 4

Drill four 5/16" holes. If required, adjust the mounting position to avoid existing studs.



Step 5

Install the 1½" long standoffs provided in the kit using ¼" screws and washers.



Step 6

Mount the controller plate to the standoffs using ¼" screws and washers provided in the kit.



Step 7

Connect the main and auxiliary harnesses to the controller.



Step 8

Mount the controller to the plate with the connectors pointing to the right of the cab. Use the #10 self-locking screws provided.

Check that the controller is level.

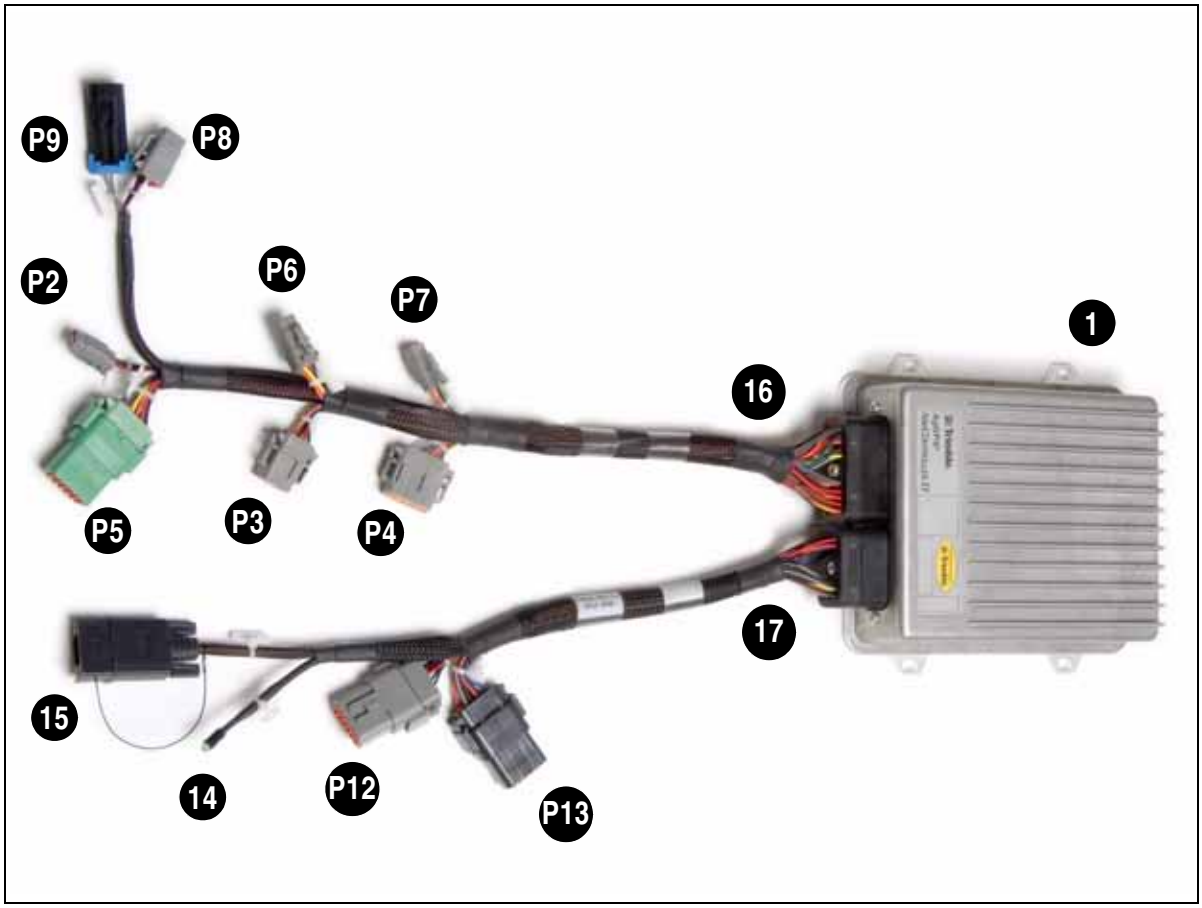


Step 9

When you have finished making the electrical connections, reinstall the rear cover.



Controller Connections



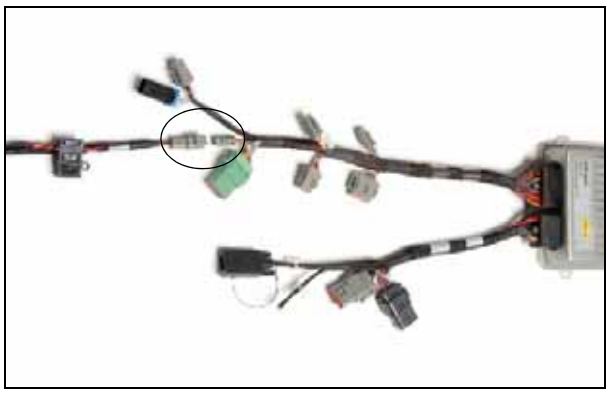
Item	Description
1	NavController II controller
P2	Power connector
P3	GPS connector
P4	Display connector
P5	Vehicle sensors connector
P6	Steering sensor connector
P7	Manual override connector
P8	Hydraulic valve connector

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

Step 1

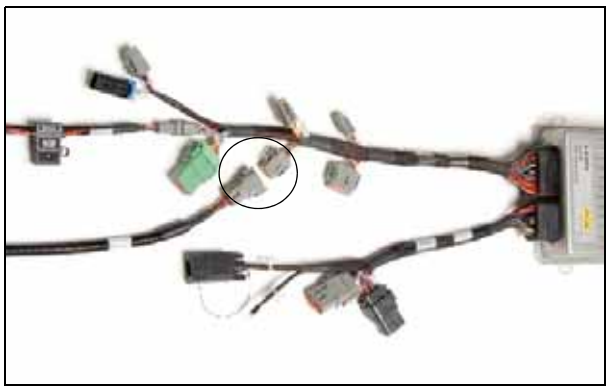
Connect the power cable connection to P-2, which is labeled “Power”. P-2 is located on the main wiring harness.

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



Step 2

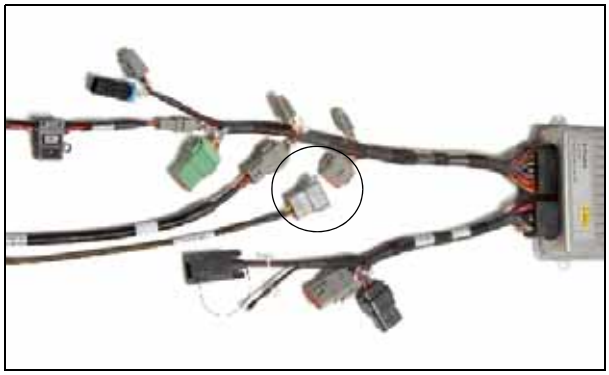
Connect the GPS cable connection to P-3, which is labeled “GPS”. P-3 is located on the main wiring harness.



Step 3

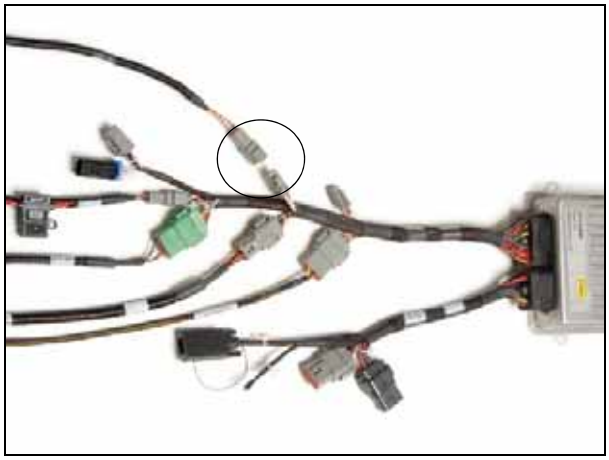
Connect the primary display cable connection to P-4, which is labeled “Display”. P-4 is located on the main wiring harness.

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



Step 4

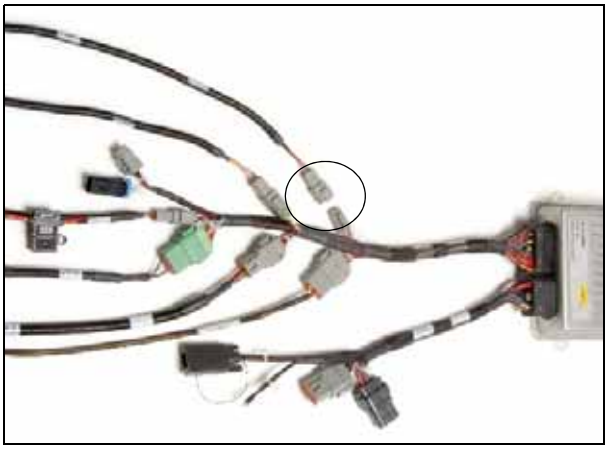
Connect the steering sensor cable connection to P-6, which is labeled “Steering Sensor”. P-6 is located on the main wiring harness.



Step 5

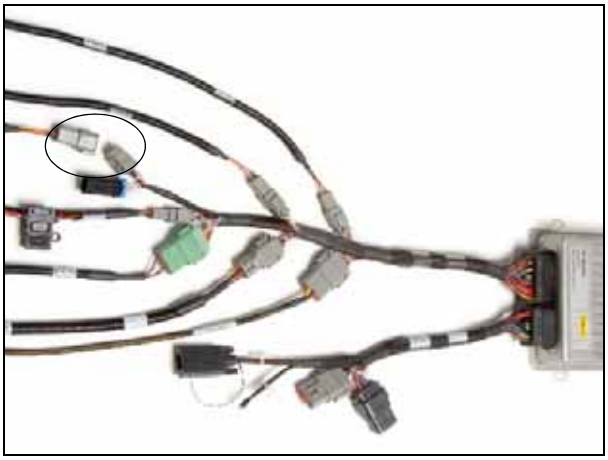
Connect the manual override cable connection to P-7, which is labeled "Manual Override". P-7 is located on the main wiring harness.

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



Step 6

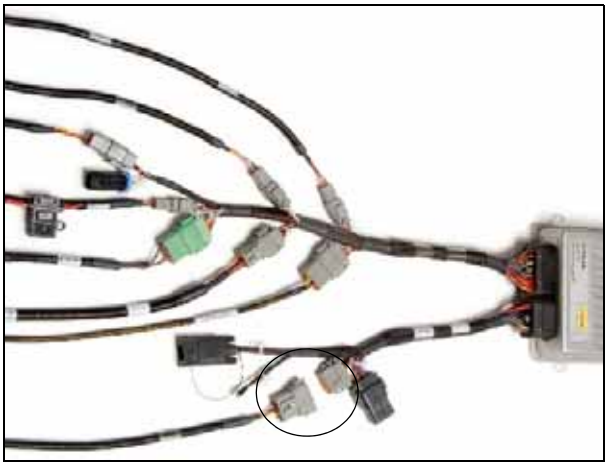
Connect the hydraulic steering valve cable connection to P-8, which is labeled "Hydraulic Valve". P-8 is located on the main wiring harness.



Step 7

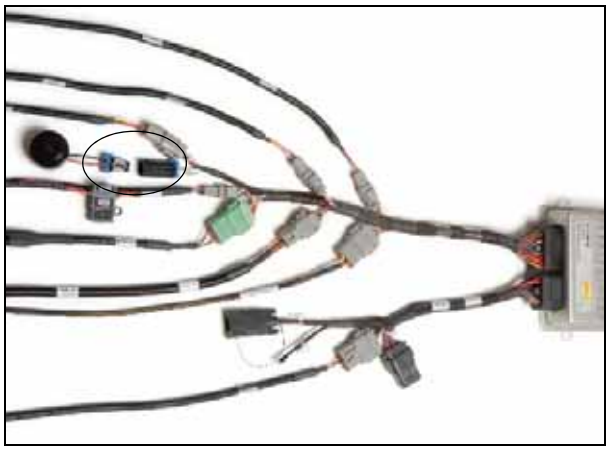
When using a lightbar as a secondary display to an *Ag*GPS 170 field computer, connect the lightbar cable connection to P-12, which is labeled "Lightbar/Spare". P-12 is located on the auxiliary wiring harness.

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



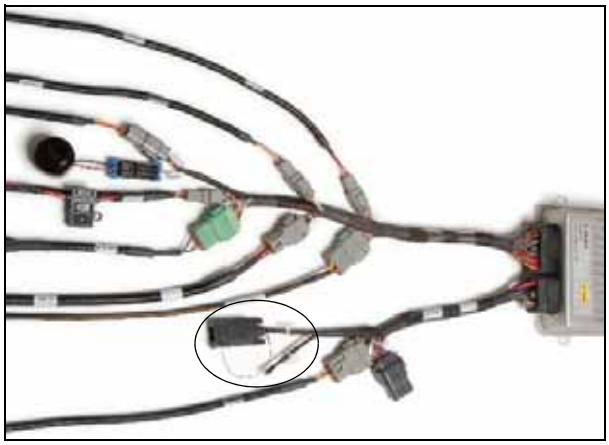
Step 8

Connect the Sonalert P-9 to the two pin Delphi connector on the main wiring harness. Route the cable so the Sonalert warning device is in a position that is audible to the operator.



Step 9

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



Step 10

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

CHAPTER

9

Final Machine Check

In this chapter:

- Final Machine Check

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

Final Machine Check

Step 1

Connect the battery.

Step 2

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

Step 3

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

Step 4

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