

Installation Instructions

EZ-Pilot™ Steering System

AgChem TerraGator Floater	■	3244, 6103, 6203, 8103, 8104, 8144, 8203, 8204, 8244, 9103, 9203, 9205
AgChem Rogator Sprayer	■	SS874, SS884, SS1074, SSc1074, SSc1084, 1254, 1264, 1274, 1286, 1286C
AGCO SprayCoupe	■	7450, 7650, 7455, 7655, 7460, 7660
GVM Prowler Sprayer	■	1149T, 9909T, 9275
Buhler Genesis II Tractor	■	2145, 2160, 2180, 2210
Buhler Versatile Articulated Tractor	■	2290, 2335, 2360, 2375, 2425
CAT Challenger Tracked Tractor	■	35, 45, 55
Fiat G Tractor	■	170, 190, 210, 240
Ford/New Holland Versatile Articulated Tractor	■	9184, 9280, 9282, 9384, 9480, 9482, 9484, 9680, 9682, 9684, 9880, 9882, 9884
New Holland Genesis Tractor	■	8670, 8670A, 8770, 8770A, 8870, 8870A, 8970, 8970A
Versatile Tractor	■	190, 220, 250, 280, 305
Versatile Articulated Tractor	■	305, 340, 375, 400, 435, 485, 535
Versatile Articulated Scraper Tractor	■	435SS, 485SS
Ford Tractor	■	8670, 8770, 8870, 8970
Ford/New Holland Genesis Tractor	■	8670, 8770, 8870, 8970

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This is the September 2012 release (Revision A) of the *EZ-Pilot Steering System Installation Instructions*, part number 78100-10-RS-E05.

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Product software, whether built into hardware circuitry as firmware, provided as a standalone computer software product, embedded in flash memory, or stored on magnetic or other media, is licensed and not sold. If accompanied by a separate end user license agreement, use of any such software will be subject to the terms of such end user license agreement (including any differing limited warranty terms, exclusions and limitations), which shall control over the terms and conditions set forth in this limited warranty).

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- your name, address, and telephone numbers
- proof of purchase
- this Trimble warranty card

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- an explanation of the problem.

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To recycle Trimble WEEE, call +31 497 53 2430, and ask for the "WEEE Associate", or **mail a request for recycling instructions to:**

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



Safety Information

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



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



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

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

Warnings



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



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



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



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



WARNING – THE EZ-PILOT STEERING SYSTEM IS SOLELY INTENDED FOR AGRICULTURAL USE IN AN OPEN FIELD ENVIRONMENT WITH AGRICULTURAL VEHICLES APPROVED BY THE MANUFACTURER FOR USE WITH THE EZ-PILOT SYSTEM, AND SHOULD NOT BE USED WITH ANY OTHER TYPE OF VEHICLE OR FOR ANY OTHER PURPOSE.

Contact your local EZ-Pilot system reseller or check www.trimble.com to confirm that the EZ-Pilot system has been tested and approved by the manufacturer for use with your vehicle make and model. The EZ-Pilot system should not be installed on a vehicle not approved by the manufacturer for such use. Installation of the EZ-Pilot system on an unapproved vehicle will invalidate the product warranty.

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 avoid malfunctions, or damage to cables:

- route cables away from areas where they may be pinched or rubbed.
- do not alter cable lengths and connections. If you must alter the length of the power cable do not remove the fuse or fuse holder from the cable.

Contents

	Safety Information	3
	Warnings	3
	Cautions.	4
1	Introduction	7
	Technical assistance	8
	Required components	8
	Hardware organization	9
2	EZ-Pilot System Installation	11
	Preparing the vehicle	12
	Removing the steering wheel	13
	Modifying the steering column cover	22
	Installing the anti-rotation bracket	26
	Assembling the SAM-200 EZ-Pilot drive motor	32
	Installing the SAM-200 EZ-Pilot drive motor	33
	Installing the Trimble steering wheel	36
	Removing the SAM-200 motor	44
	Additional information.	44
3	IMD-600 Unit Installation	45
	Preparing the IMD-600 unit for installation	46
	Mounting the IMD-600 unit in the cab	47
	Mounting methods	48
	Using VHB to mount the IMD-600 unit	48
	Using standoffs and screws to mount the IMD-600 unit	52
4	Display Connections	65
	FmX integrated display	66
	CFX-750 display	68
	Connecting the EZ-Pilot system	69
	Installing the emergency stop switch	75
	CFX-750 and FmX displays: Installing the GNSS antenna and mounting plate.	78
	CFX-750 and FmX displays: Installing the RTK radio antenna	80
5	Remote Engage	83
	Installing the remote engage switch	84
	FmX integrated display	84
	CFX-750 display	85
	Setting up the CFX-750 display	89
	Setting up the FmX integrated display	90

6	Final Machine Check91
	Performing the final machine check	92
	Calibration values	92
	Front wheel steer tractors	93
	Articulated floater	93
	Tracked tractors	94
	Vehicle measurements	95
	Front wheel steer tractors	95
	Articulated tractors	95
	Tracked tractors	96
	AGCO SprayCoupe sprayers	96
	AgChem Rogator sprayers	96
	AgChem TerraGator floaters	96
	AgChem TerraGator floaters	97
	GVM Prowler sprayers	97
	Buhler Genesis II tractors	97
	Buhler Versatile articulated tractors	97
	CAT Challenger tracked tractors	98
	Fiat G tractors	98
	Ford/New Holland Genesis tractors	98
	Ford/New Holland Versatile articulated tractors	98
	Versatile tractors	98
	Versatile articulated tractors	99
	Front wheel steer tractors	99

Introduction

In this chapter:

- [Technical assistance](#)
- [Required components](#)
- [Hardware organization](#)

This manual describes how to install the Trimble® EZ-Pilot™ steering system.

Even if you have used another Global Navigation Satellite System (GNSS), such as the United States' 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 GNSS, visit the Trimble website (www.trimble.com) for an interactive look at Trimble and GNSS.

Technical assistance

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

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

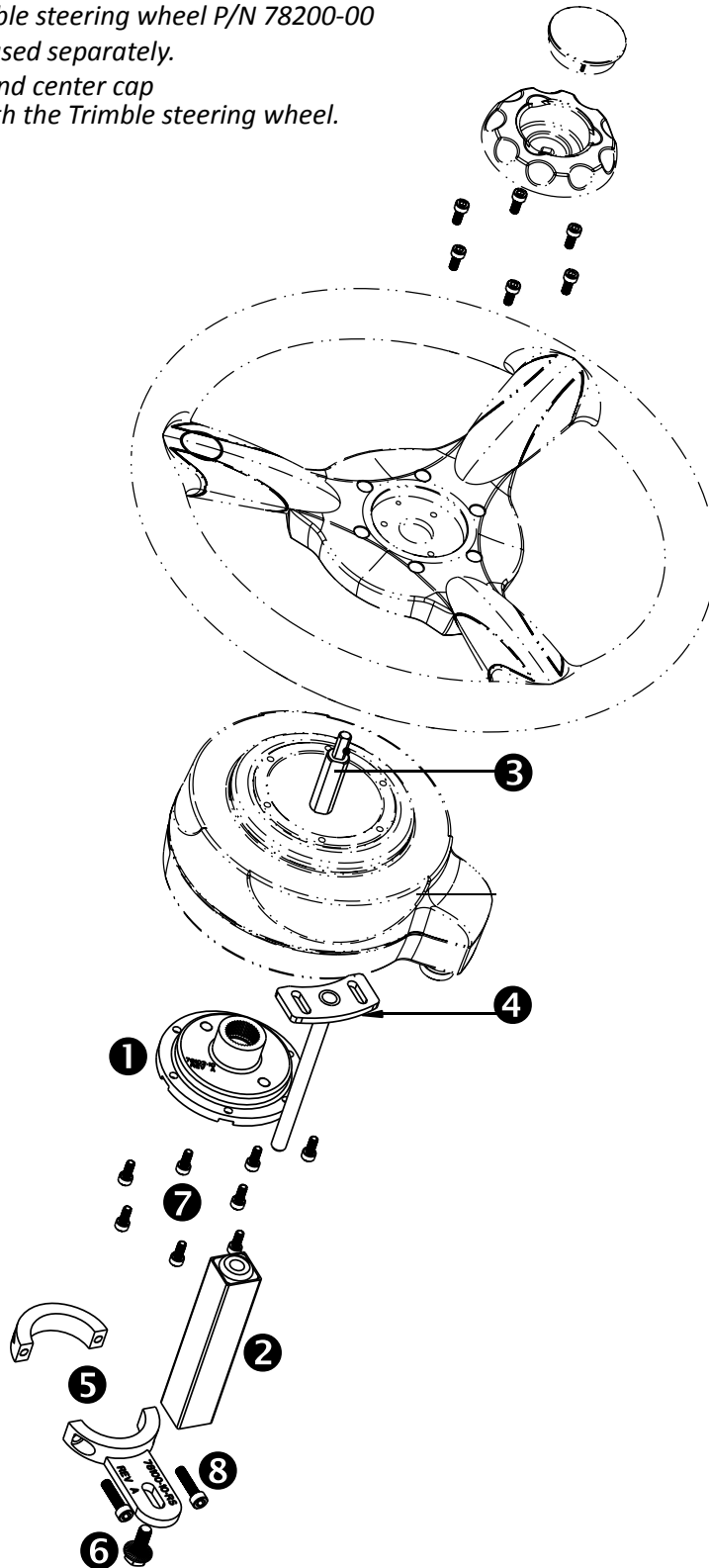
Required components

Kits required	Tools
EZ-Pilot platform kit: P/N 78100-10-RS	1/8" flat blade screwdriver 32 mm or 34 mm or 1 ⁵ / ₁₆ " deep socket
Trimble steering wheel kit: P/N 78200-00	#2 Phillips screwdriver 3 mm L shaped hex key 4 mm L-shaped hex key 5 mm T-handle hex wrench 4 mm T-handle hex wrench 13 mm deep socket 13 mm combination ratchet wrench

Hardware	Component	
Platform kit: P/N 78100-10-RS	① Steering shaft lower adaptor	⑥ 8 mm x 20 mm serrated flange head bolt
	② Anti-rotation tube	
	③ Telescopic extension shaft with 6 mm set screw	⑦ 5 mm x 12 mm hex socket head screws
	④ Anti-rotation pin	⑧ 6 mm x 25 mm hex socket head bolt
	⑤ Anti-rotation column clamp bracket	⑨ Heavy spacer, 5/16 ID x 1" long (not shown)

Hardware organization

Note: The Trimble steering wheel P/N 78200-00 must be purchased separately.
The lock knob and center cap are included with the Trimble steering wheel.



EZ-Pilot System Installation

In this chapter:

- Preparing the vehicle
- Removing the steering wheel
- Modifying the steering column cover
- Installing the anti-rotation bracket
- Assembling the SAM-200 EZ-Pilot drive motor
- Installing the SAM-200 EZ-Pilot drive motor
- Installing the Trimble steering wheel
- Removing the SAM-200 motor
- Additional information

This chapter describes how to install the anti-rotation bracket and drive motor for the EZ-Pilot steering system.



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

Preparing the vehicle

1. Park the vehicle on a hard, level surface.
2. Engage the park brake and then remove the ignition key.
3. On an articulated vehicle, install the articulation locks.
4. Remove all dirt and debris from the areas of the vehicle where the system is to be installed.
5. Open all kit boxes and lay all of the parts out on a clean workbench.
6. Check the contents of the boxes against the packing lists.

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

Removing the steering wheel

Step 1

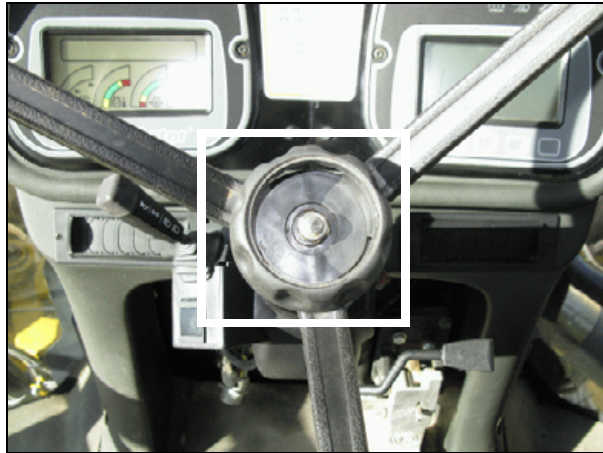
Use a $\frac{1}{8}$ " flat blade screwdriver to remove the cap in the center of the steering wheel.



Ford / New Holland / Buhler / Versatile
articulated tractors

Step 2

Use a 13 mm or ½" deep socket to remove the nylock nut, flat washers and lock knob.



**Ford / New Holland / Buhler / Versatile
articulated tractors**

Step 3

Use a 32 mm, 34 mm, or 1⁵/₁₆" deep socket to remove the large hex nut and small flat washer. Use an air or electric impact tool.



Ford / New Holland / Buhler / Versatile
articulated tractors

Step 4

Soak the steering wheel splines with a spray penetrant. Trimble recommends PB Blaster, available at www.pbblaster.com or your local automotive parts company.



Step 5

Apply anti-seize to the telescopic lock stem.



Step 6

Place the supplied 5/16" ID x 1" heavy spacer over the existing telescopic lock shaft.

Alternatively, you can use three 10 mm flange nuts.



Tip – If the spacer becomes stuck on the telescopic lock stem, use slip-joint pliers and rotate the spacer to remove it.



5/16" x 1" heavy spacer

Step 7

Pull the steering wheel for your machine, as described below.

*AGCO/AgChem Rogator sprayers
and TerraGator floaters*

Use a steering wheel puller.

Example tool:

www.oem-tools.com, P/N 27107

Alternatively, you can purchase the steering wheel puller (P/N 270170) from AutoZone (United States).

You also require 6 mm x 1.0 x 80 mm, grade 8.8, P/N 91280A350, available from www.mcmaster.com.





Tip – If you cannot remove the steering wheel using the P/N 27017 puller and 6 mm bolts, use a 10 ton Posilock, model 106 puller.

Example tool:

www.grainger.com, P/N 1AC04

www1.mscdirect.com,
P/N 35512045



Posi-lock model 106 puller

*Ford / New Holland / Buhler / Versatile
front wheel steer tractors,
and CAT tracked tractors*

Use a power steering pulley puller.

Example tool:

<http://www.napaonline.com>,
P/N BK 7769073



NAPA Balkamp puller 7769073

Ford/New Holland/Buhler/Versatile articulated tractors

Use a steering wheel puller.

Example tool:

www.oem-tools.com, P/N 27107

Alternatively, you can purchase the steering wheel puller P/N 27017 from AutoZone (United States).

You will also need 5/16-24 x 4" grade 8 bolts, P/N 91257A441, available from www.mcmaster.com.



OEM Tools 27017 puller

Step 8

If present, remove the o-ring around the steering shaft and then remove the tubular cover.



Step 9

Remove the front column cover. Use a #2 Phillips screwdriver to remove the four screws.



Step 10

If present, disconnect the Ether switch.



Step 11

Slide the rear column cover over the tilt lever.



Step 12

Tilt the column down and then remove the front cover.



Step 13

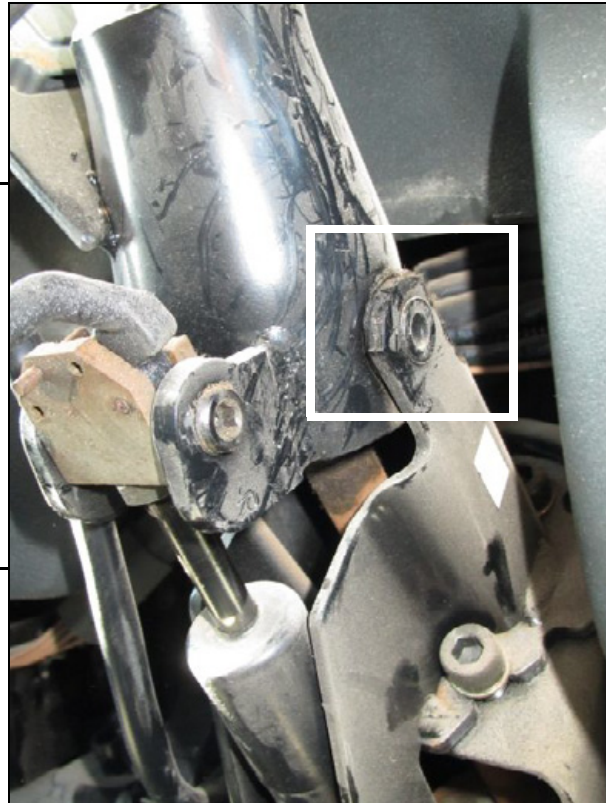
Tilt the column fully upward.

**Step 14**

Check the steering column's pivot point. Move the column by forcing it left or right.



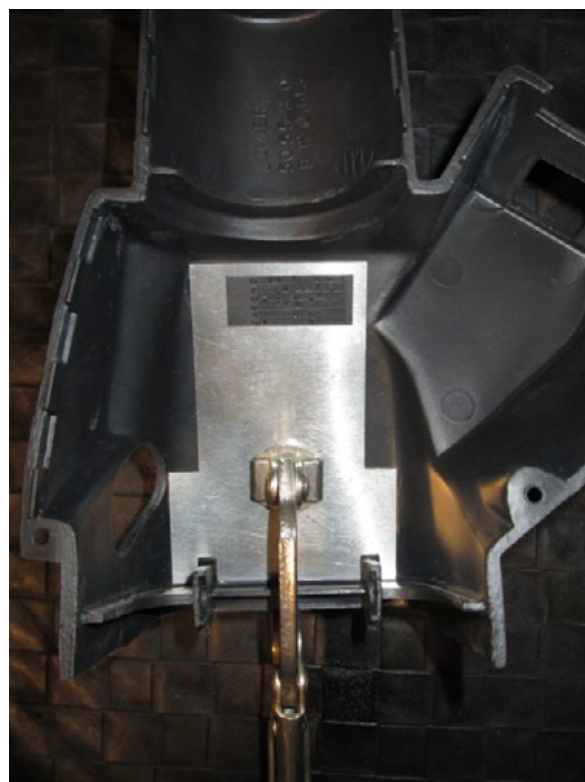
CAUTION – If the column moves left or right, the pivot point is worn. **Do not** proceed with the installation: You must replace the steering column. There is no repair kit available for this problem, which causes degraded steering accuracy in the EZ-Pilot system. The steering column will produce excessive noise and rotational motion when the EZ-Pilot motor is operating.



Modifying the steering column cover

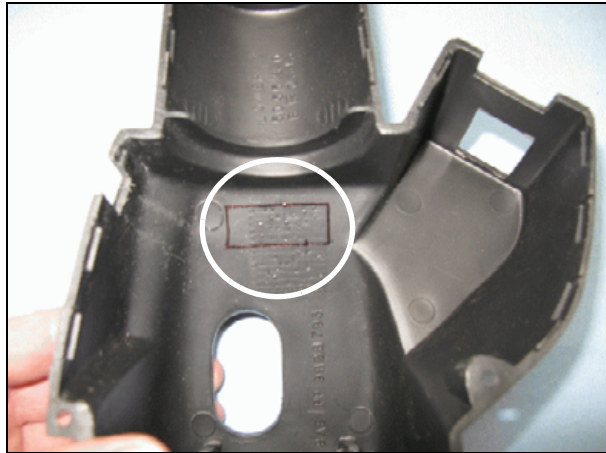
Step 1

Clamp the template to the inside of the cover, as shown. Align the template with the bottom edge of the cover.



Step 2

Use a black permanent marker to mark the slot area. When finished, remove the template from the cover.

**Step 3**

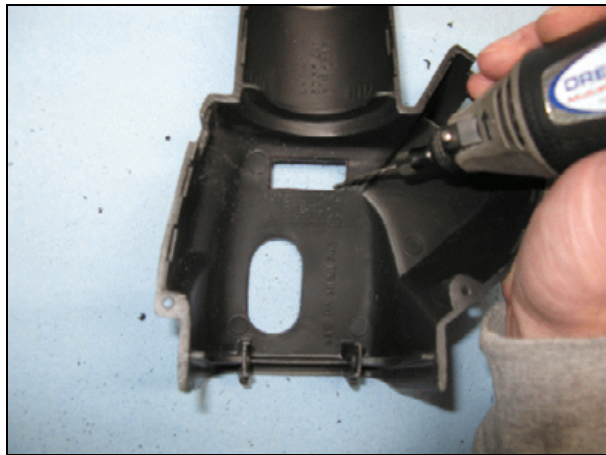
Use a rotary tool and a #561 cutting bit. Rough cut the rectangular slot.

Example tools:

www.dremel.com, 200 series variable speed rotary tool

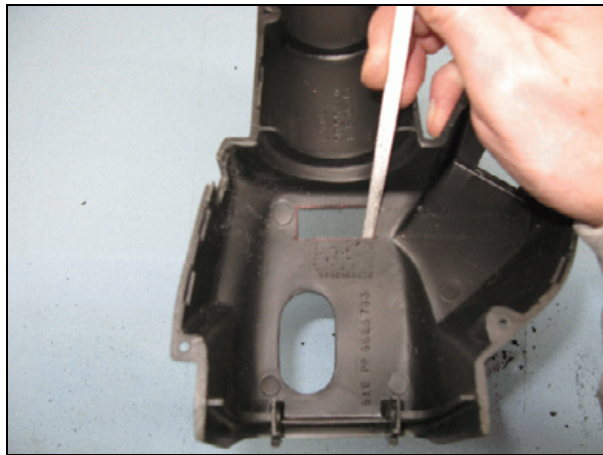
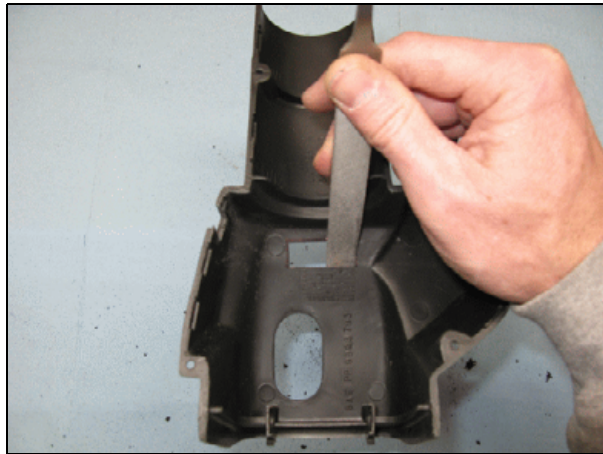
www.milwaukeetool.com, M12 Cordless LITHIUM-ION Rotary Tool 2460-21

www.dremel.com, # 561 multipurpose cutting bit



Step 4

Use a 6" half-round double-cut file and a 6" tapered triangular single-cut file to smooth the rough slot edges.



The covers, with slots cut out, should now appear as shown.



Installing the anti-rotation bracket

Step 1

Loosely assemble the supplied split clamp using the included 6 mm hex socket head bolts. Use a 5 mm T-handle hex wrench.

Example tool:

www.bondhus.com, P/N 15264

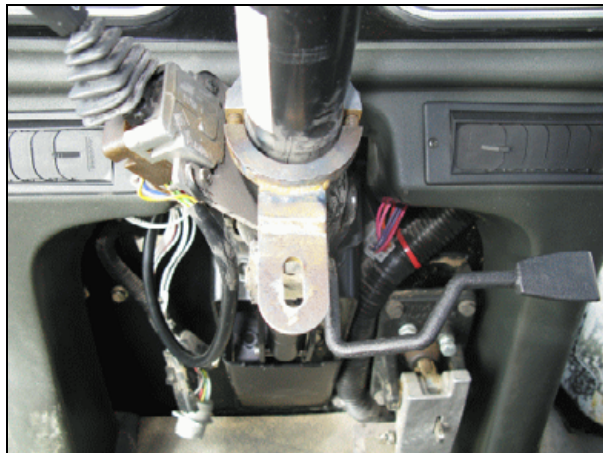


Step 2

With the **flat side of the bracket facing downward**, slide the split clamp bracket down over the column tube so that the bracket is in the 6 o'clock position. Tighten the split clamp using a 5 mm T-handle hex wrench.

Example tool:

www.bondhus.com, P/N 15264

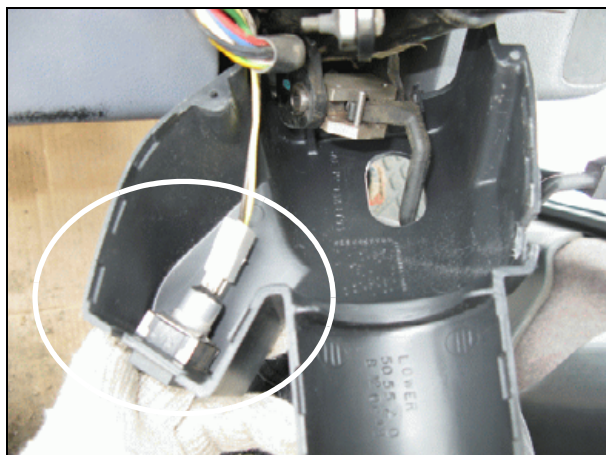


Step 3

Tilt the column down and then install the front cover.

**Step 4**

Before you install the rear cover, reconnect the Ether switch (if installed).



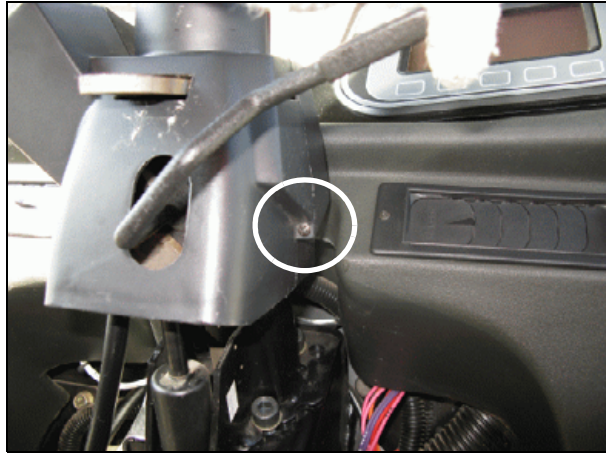
Step 5

Tilt the column midway up and then install the modified rear cover. Pull the covers upward and then snap them both together.

Use a #2 Phillips screwdriver to reinstall the 4 original screws.

Replace the two left side screws first and then replace the two right side screws.





Step 6

Slide the tubular cover over the steering shaft.



Step 7

Replace the original o-ring, if it was originally installed.



Step 8

Fit the square post onto the anti-rotation bracket using the supplied M8 x 20 mm flange head bolt. **Finger tighten** the bolt. You will adjust the tube in a later step.





Step 9

Insert the supplied anti-rotation pin into the grommet.



Step 10

Apply anti-seize to the steering shaft spline, threads, and taper.



Assembling the SAM-200 EZ-Pilot drive motor

Step 1

Flip the motor upside-down with the motor's electrical connector pointed upward at a 12 o'clock position.

Step 2

Fasten the lower spline adapter to the bottom of the motor. Use the supplied 5 mm hex socket head screws. Tighten the bolts using a 4 mm T-handle hex wrench.

Example tool:

www.bondhus.com, P/N 15260



Installing the SAM-200 EZ-Pilot drive motor

Step 1

Set the motor assembly onto the steering shaft with the motor's electrical connector at an 8 o'clock position.



The lower adapter spline is a tight fit. Align the spline teeth of the steering shaft and lower adapter by hand. Gently push downward on the motor *or* lightly tap the motor's rotor (the circular ring with six threaded holes) with a rubber dead blow hammer to begin mating the spline teeth together.



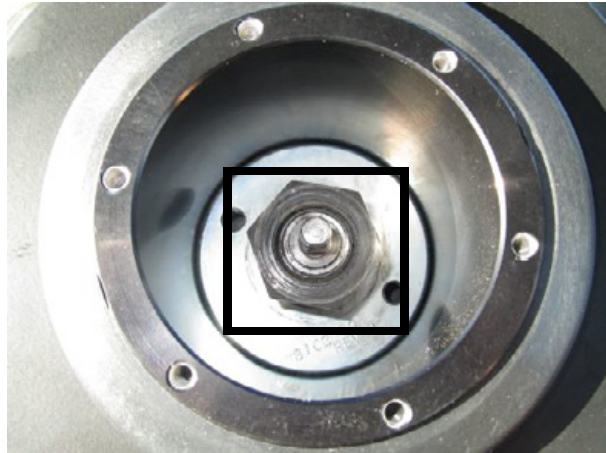
CAUTION – Do not force the spline adapter onto the steering shaft. If the splines do not mate together, **stop** and then recheck that the spline teeth are aligned or that you have the correct lower adapter for your machine.

When the hex nut is installed and tightened, the motor will slide downward and seat onto the steering shaft.



Step 2

Reinstall the original large hex nut. Use a 32 mm, 34 mm, or 1⁵/₁₆" deep socket. Torque the nut to 33-40 ft-lbs (44-54 Newton-meters).



Step 3

Install the extension rod. Thread the rod clockwise onto the existing shaft until it is finger tight. Reuse the original lock knob to rotate the extension rod. Turn the rod counter-clockwise to align the set screw with the flat face of the existing shaft. Tighten the set screw using a 3 mm L-shaped hex key.



Original lock knob

Step 4

Rotate the motor's electrical connector to a 7 o'clock position. Slide pin upward against the bottom of the motor. Align the threaded holes in the motor with the slots in the pin. Install the supplied 5 mm x 12 mm hex socket head screws.

Tighten the screws using a 4 mm ball drive hex socket bit or 4 mm L-shaped hex key.

Example tool:

www.snapon.com, P/N TMABM4E

www.matcotools.com, ABX4M



Tip – Installing both screws is easier if you telescope the steering column upward a short distance.

Align the square tube post vertically with the pin. Tighten the flange head bolt using a 13 mm ratchet combination wrench.





4 mm ball drive hex socket

Installing the Trimble steering wheel

Step 1

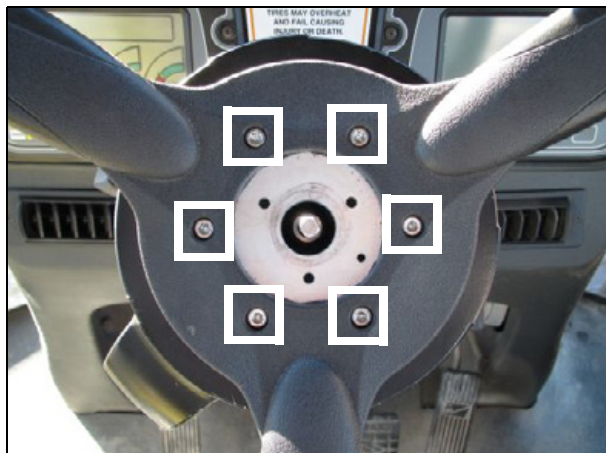
Install the cap into the center of the Trimble steering wheel. Use the provided #6 sheet metal screws.

Tighten the screws using a #2 Phillips screwdriver.



Step 2

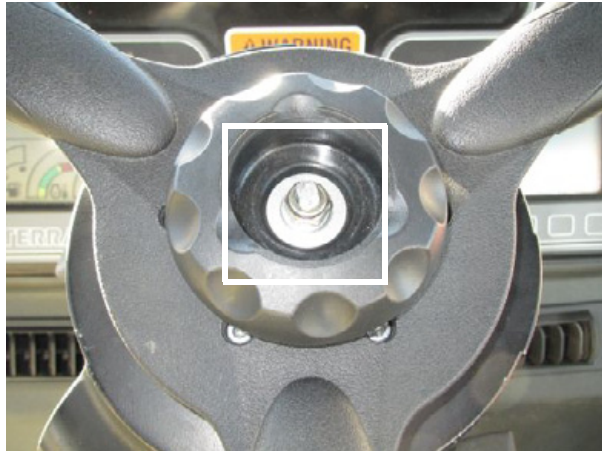
Fasten the supplied Trimble steering wheel to the motor. Use the supplied 5 mm hex socket head screws. Tighten the screws using a 4 mm T-handle hex wrench.



Step 3

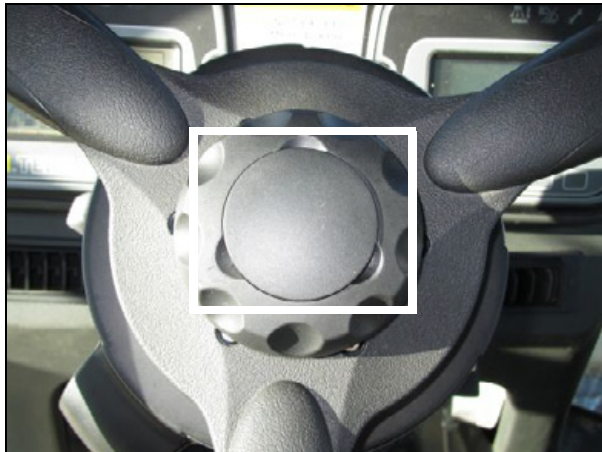
Install the Trimble lock knob, supplied 8 mm flat washer, and the original nylock nut.

Use a 13 mm deep socket to tighten the nylock nut.



Step 4

Install the center cap into the Trimble lock knob.



The figures show the installed SAM-200 motor, Trimble steering wheel, and anti-rotation bracket.

AgChem TerraGator floaters/Rogator sprayers



CAUTION – When using the EZ-Pilot steering system, telescope the steering inward as far as possible to comfortably operate the machine. Excessive steering column extension may reduce auto steer accuracy and degrade the SAM-200 motor’s performance when engaged.





*Ford/New Holland/Buhler/Versatile
front wheel steer tractors
and CAT tracked tractors*



CAUTION – When using the EZ-Pilot steering system, telescope the steering inward as far as possible to comfortably operate the machine. Excessive steering column extension may reduce auto steer accuracy and degrade the SAM-200 motor's performance when engaged.







Ford / New Holland / Buhler / Versatile articulated tractors



CAUTION – When using the EZ-Pilot steering system, telescope the steering inward as far as possible to comfortably operate the machine. Excessive steering column extension may reduce auto steer accuracy and degrade the SAM-200 motor’s performance when engaged.







Step 5

Find the supplied cable P/N 76351.
Plug connector P1 into the motor.



Removing the SAM-200 motor

If you need to remove the SAM-200 motor from the steering shaft, do the following.

Step 1

Pull the SAM-200 motor from the steering shaft. Use a steering wheel puller.

Example tools:

www.oem-tools.com, P/N 27017

www.otctools.com, P/N 7403

Alternatively, you can purchase the OEM Tools puller from AutoZone (United States), P/N 27017.

You will need grade 8.8, 8 mm x 120 mm hex bolts, available from www.mcmaster.com, P/N 91280A567.



OEM Tools 27017 puller

Step 2

Place the supplied 5/16" ID x 1" heavy spacer over the existing telescopic lock shaft.

Alternatively, you can use three 10 mm flange nuts.



Tip – If the spacer becomes stuck on the telescopic lock stem, use slip-joint pliers and rotate the spacer to remove it.



5/16" x 1" heavy spacer

Additional information

Refer to the documentation on www.trimble.com.

IMD-600 Unit Installation

In this chapter:

- Preparing the IMD-600 unit for installation
- Using VHB to mount the IMD-600 unit
- Using standoffs and screws to mount the IMD-600 unit

This chapter describes how to install the IMD-600 unit in the vehicle.

Preparing the IMD-600 unit for installation



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

Step 1

Fasten the provided sub plate to the IMD-600 unit (as shown) using the supplied #8-32 screws.

Tighten the screws using a #2 Phillips screwdriver.



Step 2

Fasten the IMD-600 assembly to the mounting plate using the supplied 5 mm screws.

Tighten the screws using a #2 Phillips screwdriver.



Mounting the IMD-600 unit in the cab

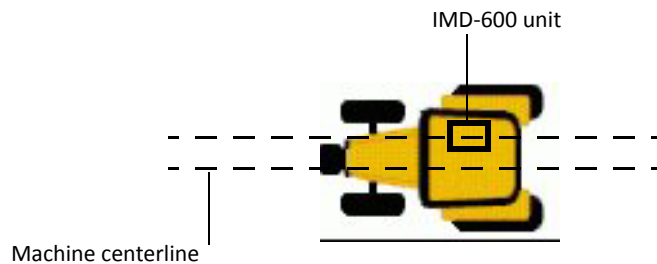


CAUTION – Do not mount the IMD-600 unit outside the cab.

Mount the IMD-600 unit inside the cab:

- where it will not be covered by hand tools, tool boxes, chains, tow ropes, food or drink coolers, and so on. Objects placed on top of the unit may cause vibration, which will degrade the steering accuracy.
- where the electrical connector and cable will not be stepped on. If the unit is pushed out of alignment from its original mounting orientation, steering accuracy will be degraded.
- either in-line with or at 90° angles to the vehicle's forward travel direction. Nonorthogonal angles will cause performance degradation

Note – For best accuracy, mount the IMD-600 unit level and parallel to the machine's center line:



Mounting methods

To mount the IMD-600 unit inside the operator's cab, use one of the following methods:

- Using VHB, see [page 48](#)
- Using standoffs and screws, see [page 52](#)

Using VHB to mount the IMD-600 unit

Step 1

Clean the mounting plate with denatured alcohol to remove grease and dirt.

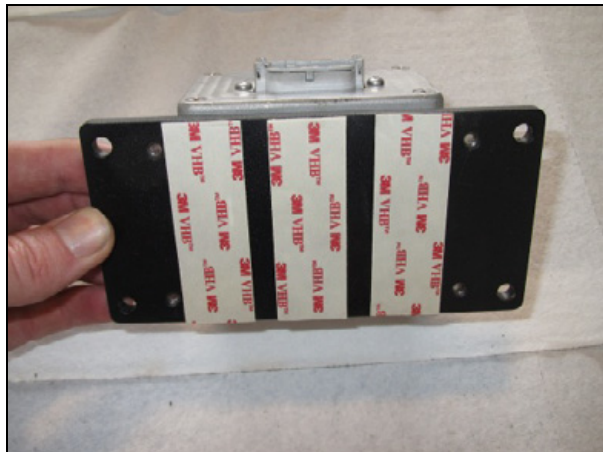
Use an adhesive promoter to increase the bonding between the supplied VHB tape and the metal plate.

Any surface with adhesive promoter applied will attract dirt. Apply the chemical to a very small area.

Example adhesive:

<http://www.3m.com>, 3M tape primer 94, P/N 24216

Allow the adhesive promoter to dry. Apply the supplied very high bond (VHB) adhesive strips to the mounting plate.



Step 2

AgChem TerraGator floaters / Rogator sprayers

Clean the lower right side of the operator's seat base with denatured alcohol to remove grease and dirt.

Use an adhesive promoter to increase the bonding between the VHB and metal seat base.

Any surface with adhesive promoter applied will attract dirt, so apply the promoter chemical to a very small area.



AgChem TerraGator Floaters

Example adhesive:

<http://www.3m.com>, 3M tape primer 94, P/N 24216

Stick the IMD-600 unit to the seat base with the electrical connector pointed to the right.

Mount the IMD-600 unit level and parallel to the centerline of the machine.

The VHB will harden in a few days and provide a very solid mount.



AgChem TerraGator floaters / Rogator sprayers

Ford / New Holland / Buhler / Versatile articulated tractors

Clean the rear cab wall behind the operator's seat with denatured alcohol to remove grease and dirt. Use an adhesive promoter to increase the bonding between the VHB and metal seat base.

Any surface with adhesive promoter applied will attract dirt, so apply the promoter chemical to a very small area.

Example adhesive:

<http://www.3m.com>, 3M tape primer 94, P/N 24216

Stick the IMD-600 unit to the rear cab with the electrical connector pointed downward.

Mount the IMD-600 unit level and close to the centerline of the machine.

The VHB will harden in a few days and provide a very solid mount.



Rear cab wall behind operator's seat



Step 3

Find the supplied cable P/N 76351.
Plug connector P3 into the IMD-600
unit.



**Example installation: IMD-600 cable connection
AgChem TerraGator floaters / Rogator sprayers**



**Example installation: IMD-600 cable connection
Ford/New Holland/Buhler/Versatile articulated tractors**

Using standoffs and screws to mount the IMD-600 unit



CAUTION – Do not use the supplied self tapping screws to attach the IMD-600 unit to the base of the instrument dash.

Step 1

*Ford/New Holland/Buhler/Versatile
front steer wheel steer tractors*

Place the IMD-600 unit in the right front corner of the operator's cab. The unit must be placed parallel to the centerline of the machine.



Ford / New Holland / Buhler / Versatile
front wheel steer tractors and
CAT tracked tractors

Step 2

Look under the floor mat for any cab wiring. Check under the cab floor for any obstructions, such as hydraulic lines/hoses, air ducts, A/C evaporators, diesel fuel tanks, hydraulic fluid tanks, and so on.



CAUTION – Rubber tracked machines are susceptible to cab vibration. The resulting IMD-600 vibration may cause a loss of communication with the Trimble display and/or degraded Autosteer accuracy. If this occurs, attach the IMD-600 unit to the cab floormat using short screws that will not contact the metal cab floor. Position the unit so that it is level, and parallel to the machine's center line.



**Ford / New Holland / Buhler / Versatile
front wheel steer tractors and
CAT tracked tractors**



**Ford / New Holland / Buhler / Versatile
front wheel steer tractors and
CAT tracked tractors**



**Right side of operator's seat:
AgChem TerraGator/Rogator**



**Under the floormat:
AgChem TerraGator / Rogator**



**Behind the operator's seat:
Ford/New Holland/Buhler/Versatile
articulated tractors**



**Under the floormat:
Ford/New Holland/Buhler/Versatile
articulated tractors**

Step 3

Use a 1/4" bit. Drill four holes through the floormat.



Example floormat

Do not drill into the metal cab floor.



Example floormat

Step 4

Use a ¼" pilot bit and ¾" hole saw. Drill four holes through the floor mat at the same locations previously drilled.



Example floor mat



Example floormat

Step 5



CAUTION – To avoid injury, handle sharp knives with care.

Use a very sharp box knife to cut away the floor mat webbing from around each newly created hole.



Example floormat



Example floormat

Step 6

Place the floormat back onto the cab floor and then insert the provided standoff spacers into the newly created holes.



Example floormat

Step 7

Place the IMD-600 unit on top of the spacers. Fasten the IMD-600 unit to the floor using the provided $\frac{1}{4}$ " x 2.5" long self tapping bolts. Use an 8 mm or $\frac{5}{16}$ " deep socket.

Check under the cab floor to make certain no obstructions were pierced or damaged by the self tapping screws.



Example: Mounting in the operator's cab



Example: Under cab floor

Step 8

Make sure that the bolts are tight. Mount the IMD-600 unit solidly so that it does not vibrate.

Find the supplied cable P/N 76351 and then plug connector P3 into the IMD-600 unit.



**Example installation: IMD-600 cable connection
Ford / New Holland / Buhler / Versatile
front wheel steer tractors and
CAT tracked tractors**



**Example installation: IMD-600 cable connection
Ford/New Holland/Buhler /
Versatile articulated tractors**

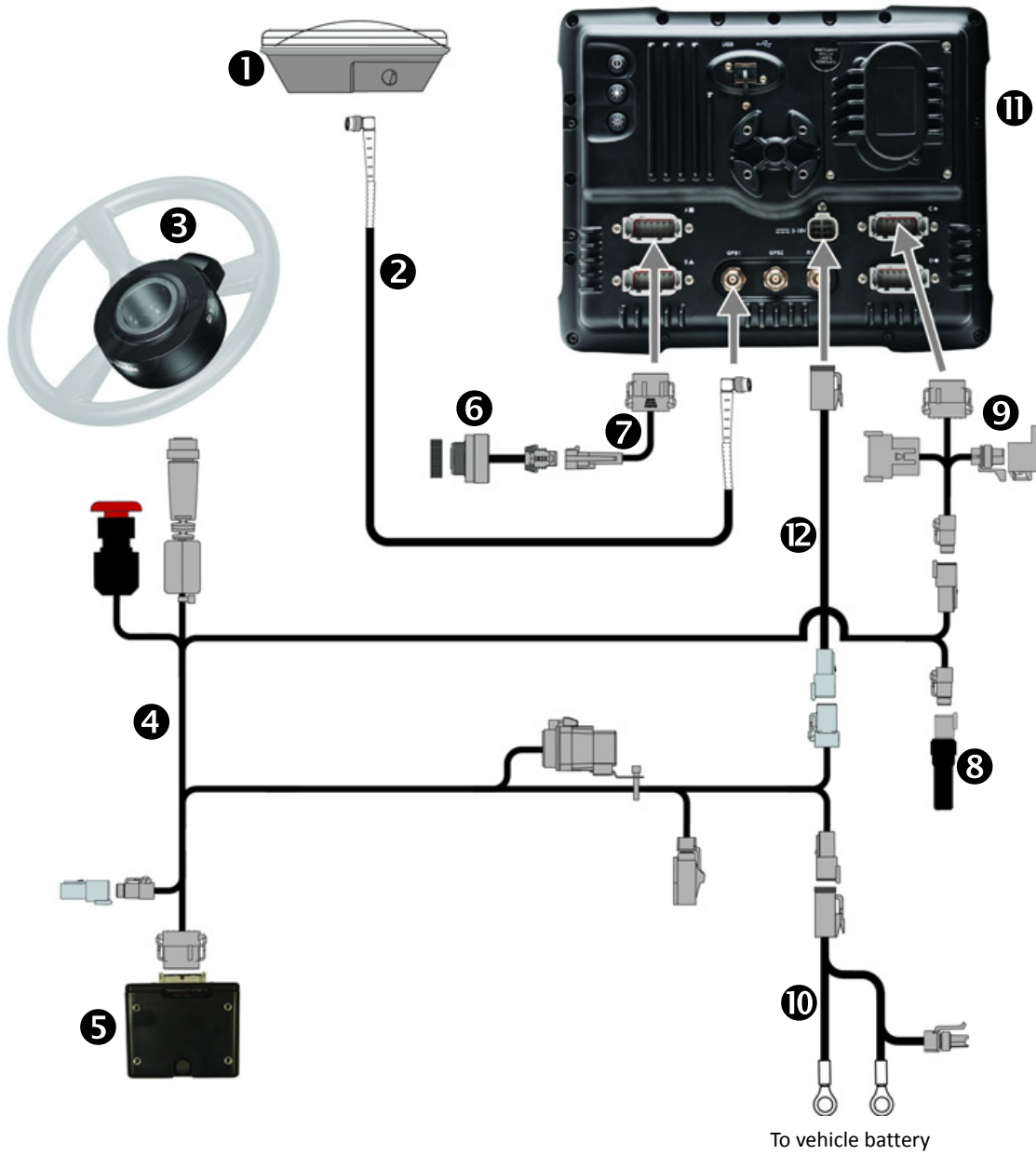
Display Connections

In this chapter:

- FmX integrated display
- CFX-750 display
- Connecting the EZ-Pilot system
- Installing the emergency stop switch
- CFX-750 and FmX displays: Installing the GNSS antenna and mounting plate
- CFX-750 and FmX displays: Installing the RTK radio antenna

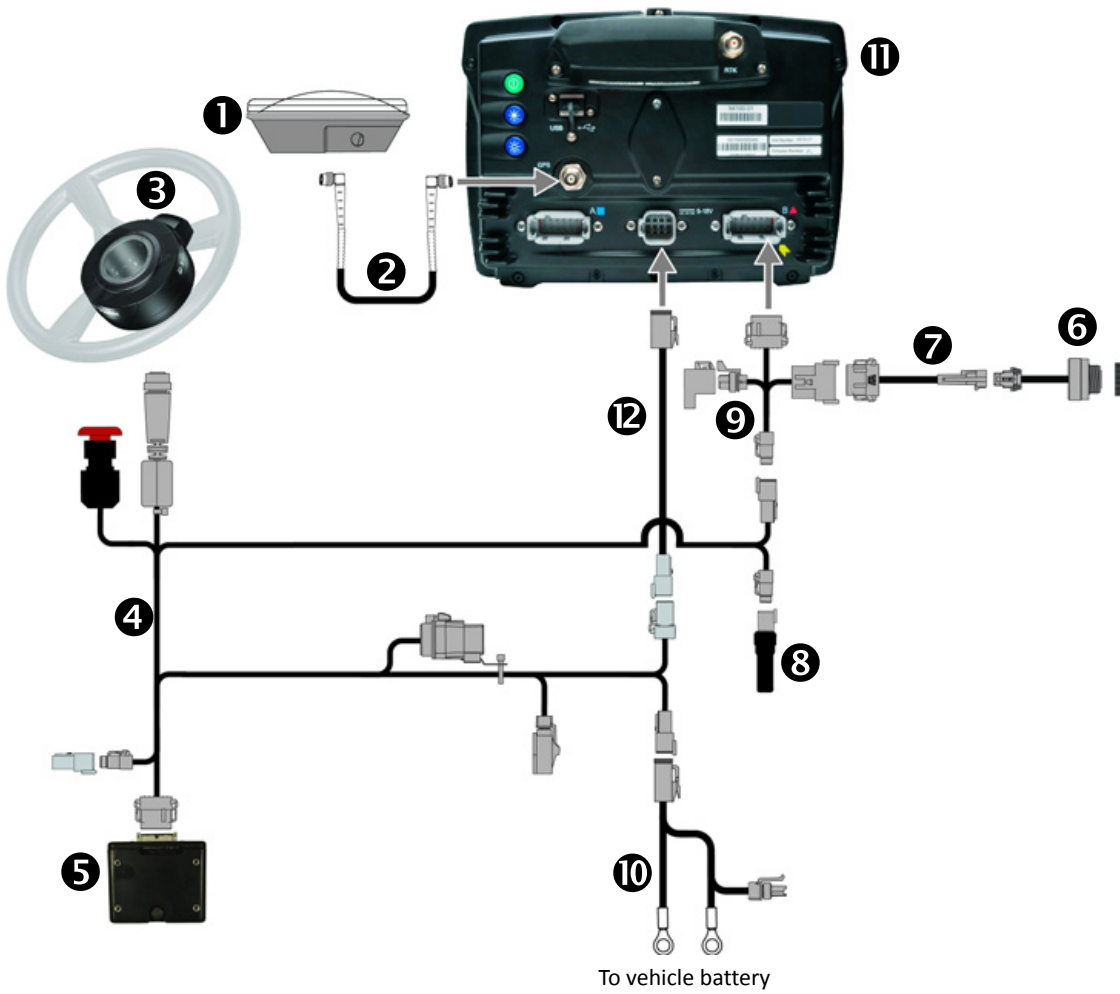
This chapter describes the cabling connections for the Trimble display.

FmX integrated display



Item	Description	P/N
①	Antenna	77038-00
②	Antenna cable	50449
③	SAM-200 steering motor	83382-xx
④	IMD-600 to SAM-200 to CAN power cable	76351
⑤	IMD-600 unit	83390-xx
⑥	Sonalert device	43104
⑦	Display to Sonalert cable	84668
⑧	CAN terminator	59783
⑨	Display to Field-IQ™ cable	75834
⑩	Basic power cable	67258
⑪	FmX integrated display	93100-xx
⑫	Display power cable	66694

CFX-750 display



Item	Description	P/N
①	Antenna	77038-00
②	Antenna cable	50449
③	SAM-200 steering motor	83382-xx
④	IMD-600 to SAM-200 to CAN power cable	76351
⑤	IMD-600 unit	83390-xx
⑥	Sonalert device	43104
⑦	Display to Sonalert cable	84668
⑧	CAN terminator	59783
⑨	Display to Field-IQ cable	75834
⑩	Basic power cable	67258
⑪	CFX-750™ display	94100-xx
⑫	Display power cable	77282

Connecting the EZ-Pilot system

Step 1

Connect the power cable to the battery.



Ford/New Holland 8970 tractor



Example battery connection:
Ford/New Holland 8970 tractor



CAT 55 tracked tractor



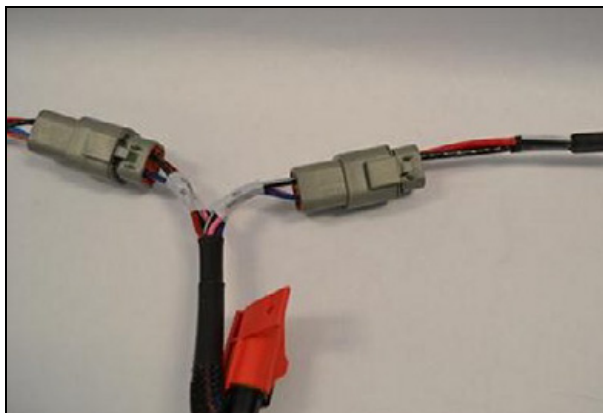
Example battery connection:
CAT 55 tracked tractor

Step 2

Connect the basic power cable to the cable P/N 76351.

Also connect one of the following:

- FmX power cable (P/N 66694)
- CFX-750 power cable (P/N 77282)



Step 3

Connect the power cable to the display.

FmX integrated display



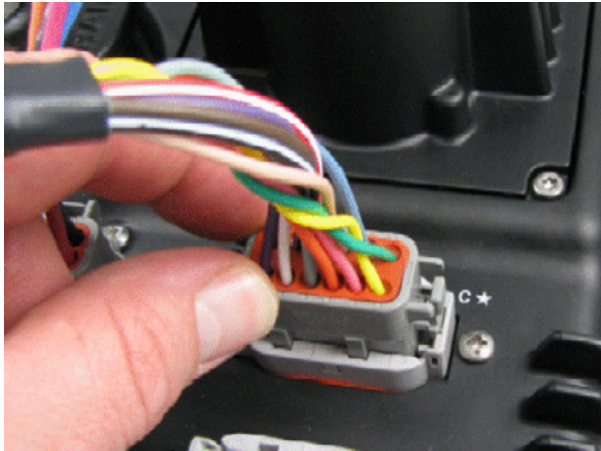
CFX-750 display



Step 4

Plug in the 12-pin CAN connection on P/N 75834:

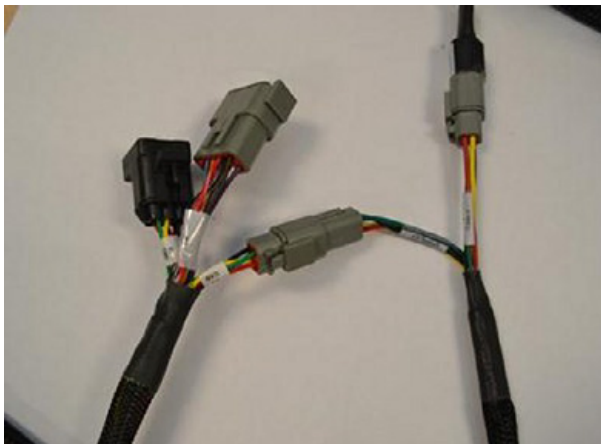
FmX display: Port C or D



CFX-750 display: Port B

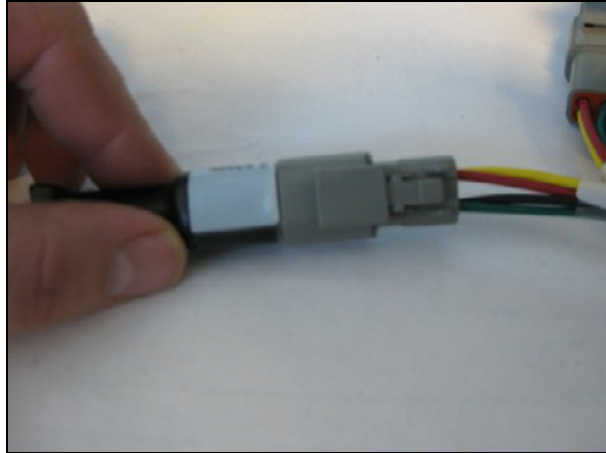
**Step 5**

Connect the 4-pin CAN plug on P/N 75834 to the 4-pin CAN receptacle on P/N 76351.



Step 6

Connect the CAN terminator P/N 59783 to cable P/N 76351.



Step 7

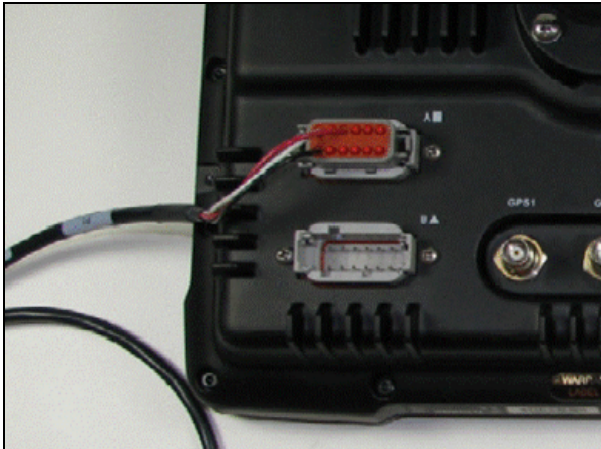
Connect the black 12-pin plug to the IMD-600 unit.



Step 8 Connecting the Sonalert device

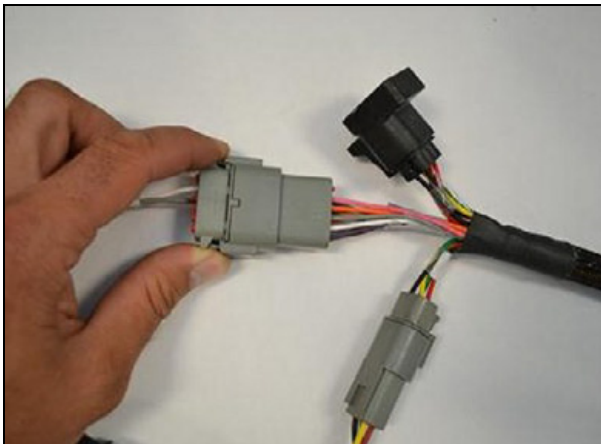
FmX display

Plug the Sonalert adapter into port A.



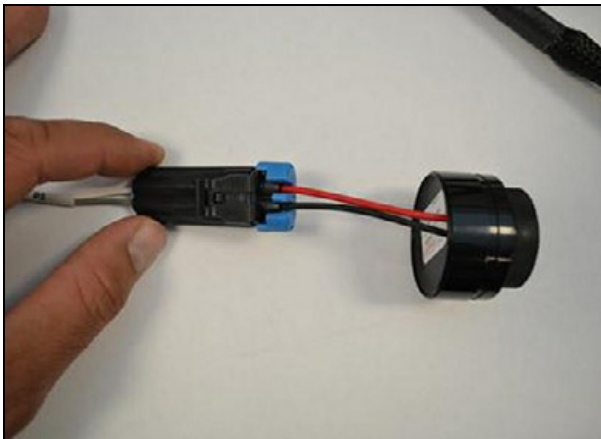
CFX-750 display

Connect the Sonalert adapter 12-pin plug the cable P/N 75834.



Both displays

Connect the Sonalert device to the adapter cable.



Step 9

Plug the round SAM-200 connector into the SAM-200 motor.



Installing the emergency stop switch

Mount the stop switch in a prominent location in the cab, where it is easily accessible in case of an emergency.

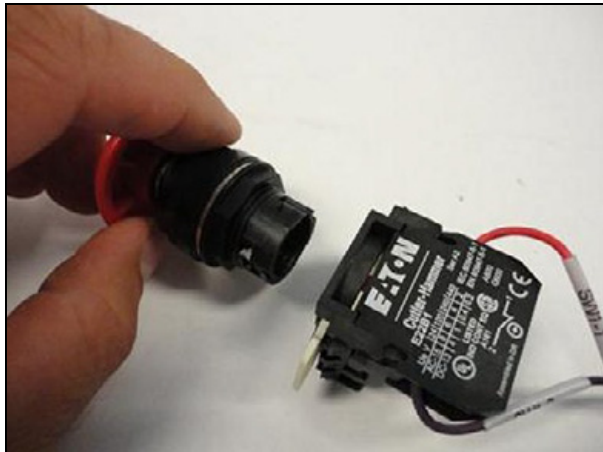
Step 1

Locate the emergency stop switch.



Step 2

Push the white release button to remove the top half of the switch.

**Step 3**

Remove the nut and washer.



Step 4

In the selected prominent location, drill a 7/8" hole and then mount the switch with the washer and nut.



Example stop switch installation

Step 5

Route the switch wires and then reattach the lower housing.



CFX-750 and FmX displays: Installing the GNSS antenna and mounting plate

Step 1

Pick a location on the cab roof where the GNSS antenna **will be mounted level**. Push down on the roof to find a firm location.

Placing the GNSS antenna as far forward as possible on top of the cab can improve steering performance. **Keep the antenna mounted level.**

Clean the antenna's mounting location on the roof of the cab with denatured alcohol to remove oil and dust.

Use an adhesive promotor to increase the bonding between the foam tape and the plastic cab roof.

Any surface with adhesive promotor applied will attract dirt. Apply the chemical to a very small area.

Example adhesive:

<http://www.3m.com>, 3M tape primer 94, P/N 24216

Step 2

Allow the adhesive promotor to dry. Remove the backing tape from the foam strips and then apply the plate to the cab roof **exactly on the centerline** of the machine. Ensure that the foam strips make even contact with the surface. Apply pressure to adhere.



Example antenna mount

Step 3

Attach the GNSS antenna to the center of the 5" x 5" plate (P/N 62034).



Example GNSS antenna mount

Step 4

Attach the Trimble display's coaxial cable to the antenna and then route the cable into the cab. Secure the cable along the route.

CFX-750 and FmX displays: Installing the RTK radio antenna

Step 1

Connect the RTK radio antenna to the magnetic antenna base

Step 2

Pick a location on the cab roof where the RTK antenna will be a minimum of 3 feet (1 m) from the GNSS antenna. Push down on the roof to find a firm location.

Clean the antenna's mounting location on the roof of the cab with denatured alcohol to remove oil and dust.

Use an adhesive promoter to increase the bonding between the foam tape and the plastic cab roof.

Any surface with adhesive promotor applied will attract dirt. Apply the chemical to a very small area.

Example adhesive:

<http://www.3m.com>, 3M tape primer 94, P/N 24216

Step 3

Allow the adhesive promoter to dry. Remove the backing tape from the foam strips and then apply the plate to the cab roof. Ensure that the foam strips make even contact with the surface. Apply pressure to adhere.



Example antenna mount

Step 4

Attach the magnetic radio antenna base to a 5" x 5" plate (P/N 62034).

Step 5

Route the RTK antenna's coaxial cable into the cab, and connect the cable to the Trimble display. Secure the cable along the route.



Example RTK antenna mount

Remote Engage

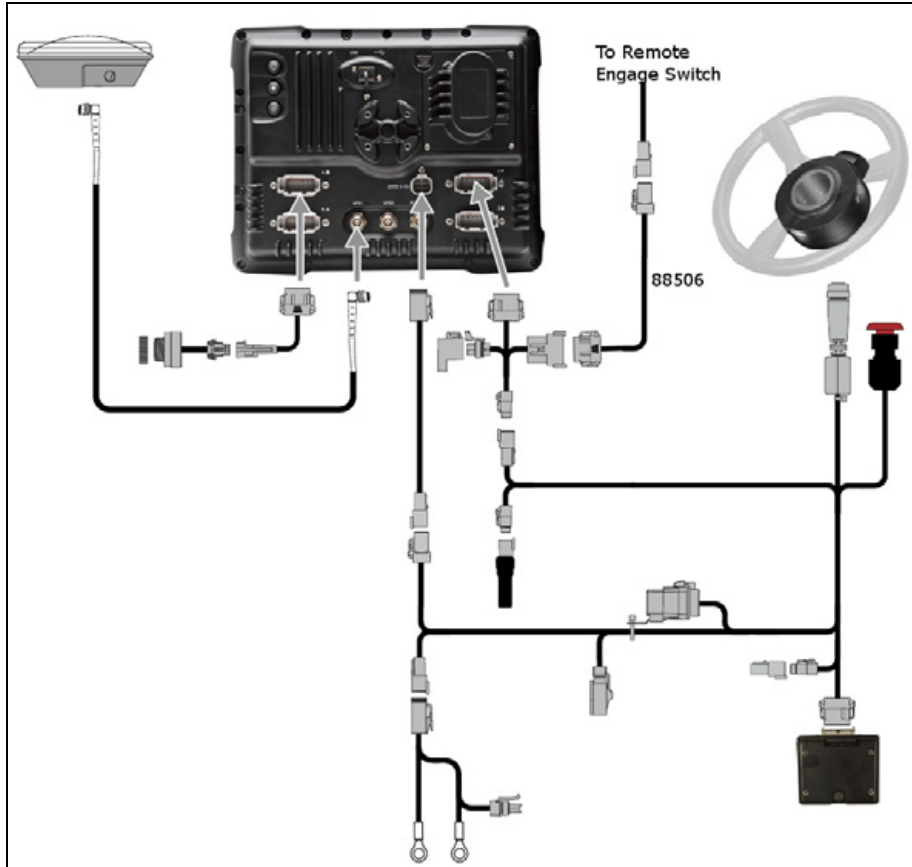
In this chapter:

- Installing the remote engage switch
- Setting up the CFX-750 display
- Setting up the FmX integrated display

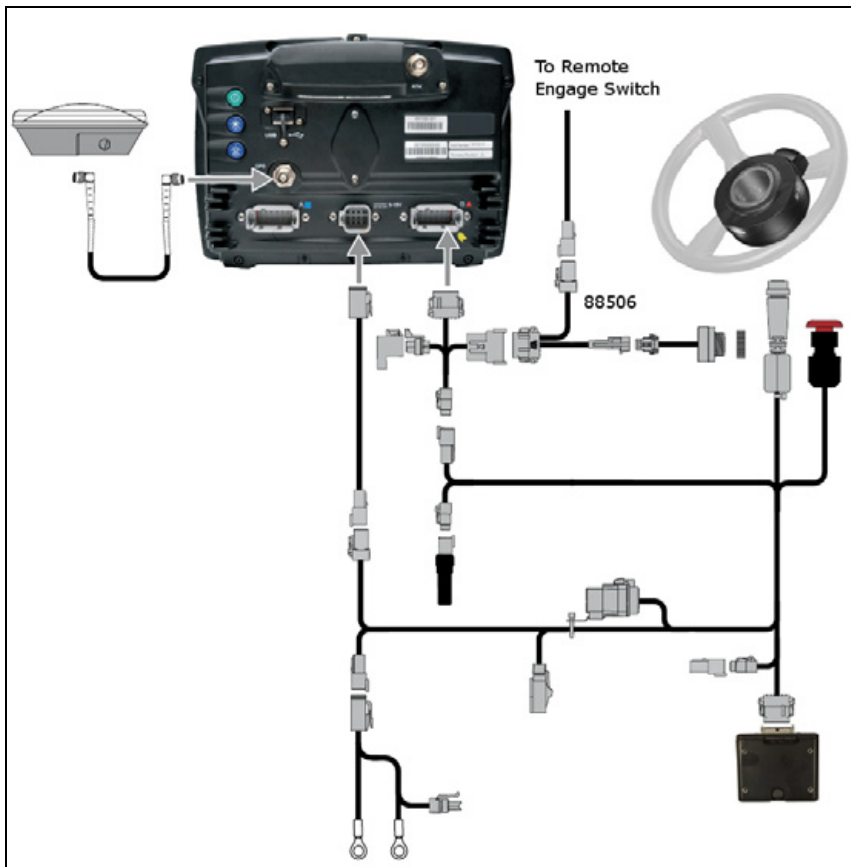
This chapter describes how to install and set up remote engage for the EZ-Pilot system on FmX and CFX-750 displays.

Installing the remote engage switch

FmX integrated display



CFX-750 display



To engage the EZ-pilot system, you can use one of these methods:

- Press the engage button on the screen
- Press the EZ-Remote Engage button
- Press an external foot or rocker switch

These instructions cover the method for the foot or rocker switch.

Step 1

Locate the foot or momentary rocker switch that will be used.

Locate the remote engage adapter cable P/N 88506, which is included with the Foot switch kit P/N 78150-00 or purchased separately.

Step 2

Remove the wedge from the receptacle 3-pin deutsch DTM.



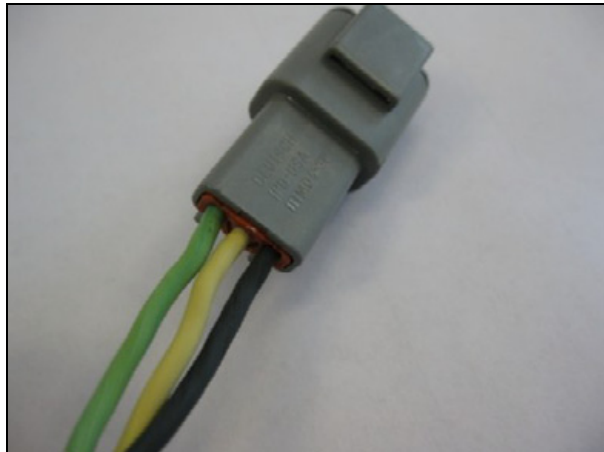
Step 3

Foot switch

Hold the receptacle with the lock facing upward.

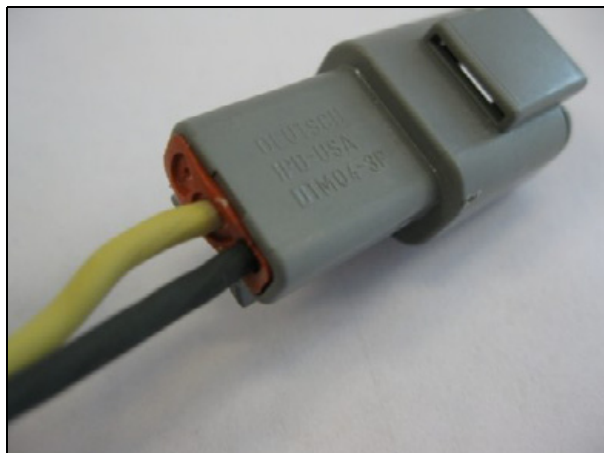
Insert the black wire on the right side, the white wire in the middle, and the green wire on the left.

Note – If you purchased P/N 78150, the correct connector is already attached.



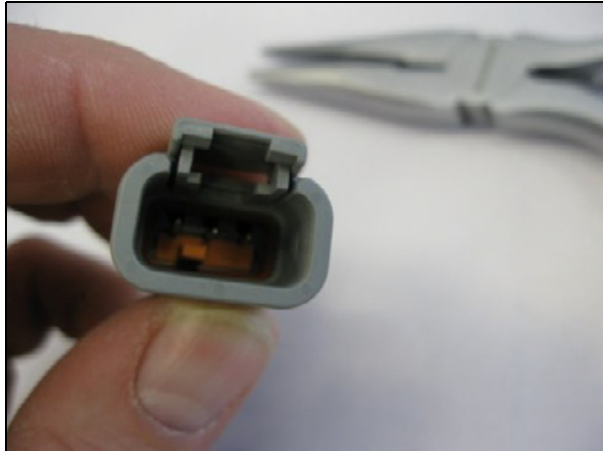
Rocker switch

Insert the wires into the right and middle sockets. Orientation does not matter.

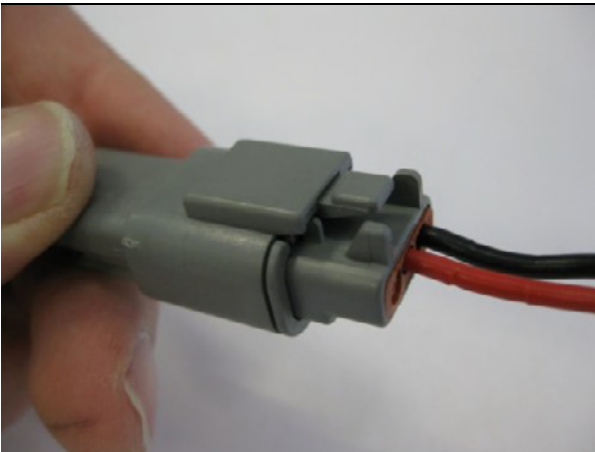


Step 4

Re-insert the wedge into the receptacle.

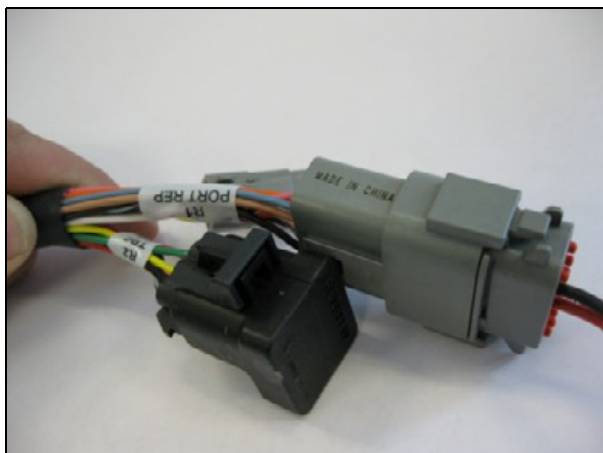
**Step 5**

Connect the attached receptacle to the 3-pin DTM plug on the remote engage adapter cable.

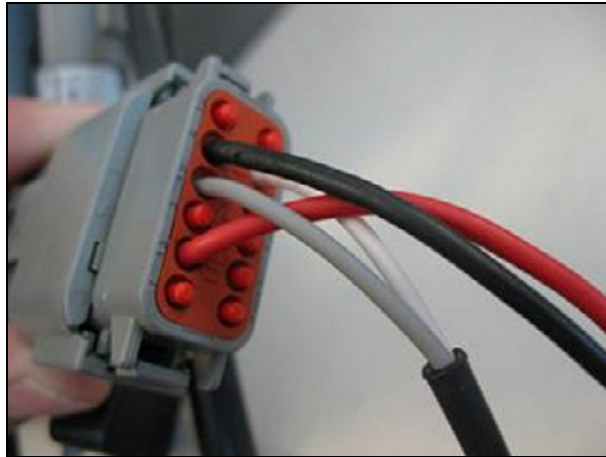
**Step 6**

Plug the other end of the remote engage adapter cable into the port replicator (pins 10 and 11) on the EZ-Pilot cable connected to one of the following:

- CFX-750 display: Port B.
- FmX display: Port C



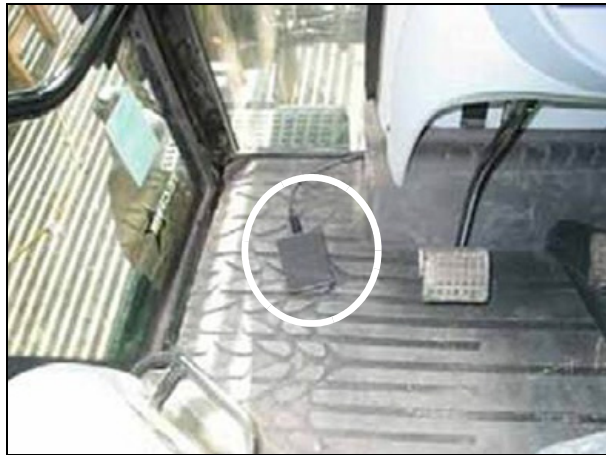
Note – For CFX-750 installations with a Sonalert, you must plug the ground wire from pin 10 into pin 8 (the red wire in this example).



Step 7

Route the cables to the required location.

Foot switch



Example installation

Rocker switch



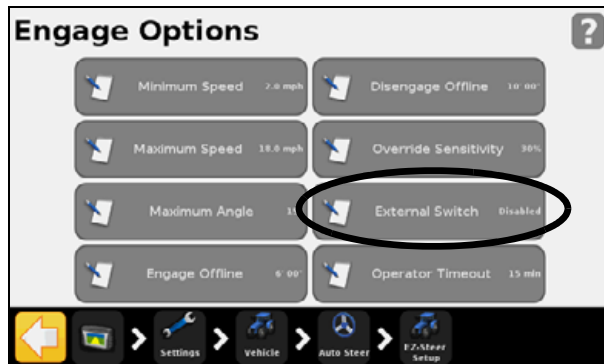
Example installation

Setting up the CFX-750 display

Step 1

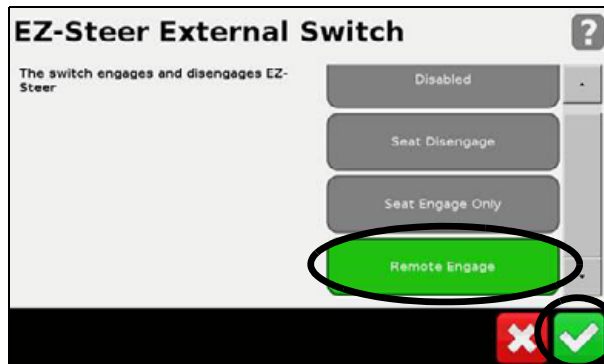
On the display, go to Settings, Vehicle, Auto Steer, EZ-Pilot Setup.

Press **External Switch**.

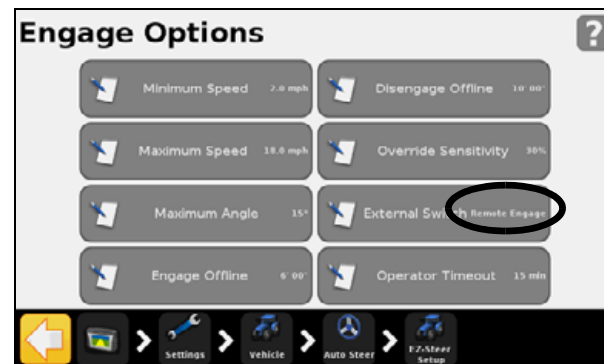


Step 2

Select **Remote Engage** and then tap the checkmark.



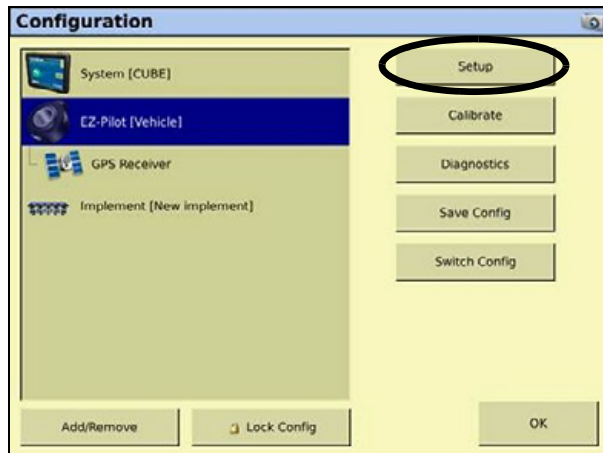
The **External Switch** now shows *Remote Engage*, and is ready to use.



Setting up the FmX integrated display

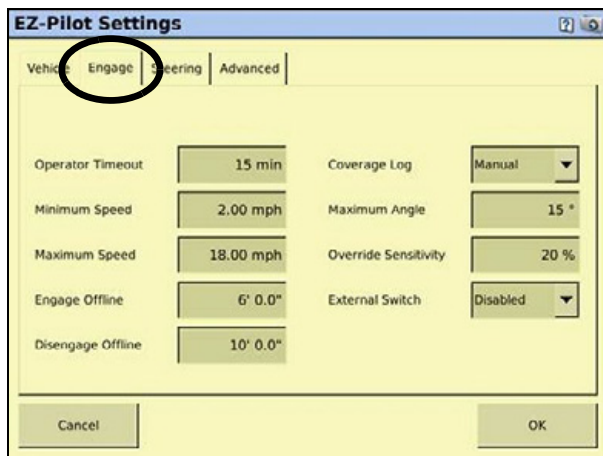
Step 1

On the display, select *EZ-Pilot* and then press **Setup**.



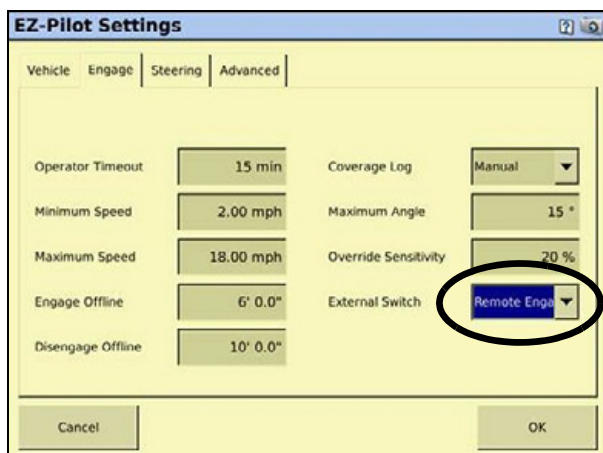
Step 2

Select the *Engage* tab.



Step 3

From the *External Switch* drop down menu, select *Remote Engage*.



Final Machine Check

In this chapter:

- [Performing the final machine check](#)
- [Calibration values](#)
- [Vehicle measurements](#)

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

Performing the final machine check



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

1. Make sure that the emergency stop switch is **not** depressed. If the switch is depressed, the SAM-200 motor **will not communicate** with the Trimble display, and the EZ-Pilot system will not engage for auto steering.
2. Make sure the IMD-600 unit is solidly mounted. If the IMD-600 unit vibrates, the SAM-200 drive motor will oscillate when engaged, causing the anti-rotation pin to damage the rubber grommet.
3. Update the Trimble display, IMD-600 unit, and SAM-200 motor to the latest firmware from <http://www.agpartners.trimble.com> or from www.trimble.com (Support and Training / Support A-Z).
4. Configure the EZ-Pilot system through the Trimble display. Depending on your machine type, the following items must be calibrated **before** you can use the EZ-Pilot system for autosteering:
 - IMD-600 unit mounting orientation
 - Antenna height, Antenna to axle offset, and Roll offset
 - Machine type, Machine Wheelbase
 - Angle per Turn left, Angle per Turn right
 - Motor Speed, Override Sensitivity

Calibration values



Tips:

- Configure the Trimble display to show travel speed on the map view screen.
- Adjust the Angle per Turn value within ± 3 degrees of the calculated calibration value for your machine may make a subtle improvement in steering accuracy.
- If the EZ-Pilot system consistently steers to one side on an AB line, adjust the left or right side freeplay individually. Use values of 0.1 - 0.2 to balance the steering accuracy either side of the AB line you are following.
- If the EZ-Pilot system exhibits a swimming motion while engaged, the IMD-600 unit may be experiencing subtle vibration. Pick a different mounting location and/or hard mount the IMD-600 unit using the screws and spacers provided and then check if the IMD-600 mounting calibration that is selected in the Trimble display is correct. You may need to recalibrate the IMD-600 roll offset.
- If the anti-rotation pin is bouncing against the rubber grommet or if the steering column is shaking, **reduce the motor speed**.

Front wheel steer tractors

EZ-Pilot calibration values are from a Ford/New Holland 8970 tractor with SuperSteer front axle traveling in actual field conditions. Travel speeds were 2-9mph. The CFX-750 display was running software version 2.0.



Tip – The EZ-Pilot system's automatic calibration for Angle Per Turn will result in an incorrect value for tractors with a Supersteer or Ultrasteer front axle. Use the suggested values shown below.

Item	Value
Vehicle Type	2WD / MFWD tractor
Motor Speed	Low
Angle Per Turn Left or Right	12.5
Online Aggressiveness	98-102%
Approach Aggressiveness	120%
Override Sensitivity	20%
Freeplay left or right	0
Wheelbase (A)	122"
Antenna height (B)	125"
Antenna to axle offset (C)	45" forward

Articulated floater

EZ-Pilot calibration values are from a TerraGator 3244 articulated floater traveling in actual field conditions. Travel speeds were 2-9mph. The FmX display was running firmware version 6.6.





Tip – The EZ-Pilot system's automatic calibration for Angle Per Turn may result in an incorrect value for articulated machines. Use the suggested values shown below.

Item	Value
Vehicle Type	Articulated tractor
Motor Speed	Low
Angle Per Turn left or right	12.5
Online Aggressiveness	120-125%
Approach Aggressiveness	100%
Override Sensitivity	20%
Freeplay left or right	0
Wheelbase (A)	112"
Antenna height (B)	123"
Antenna to axle offset (C)	0"

Tracked tractors

EZ-Pilot calibration values are from a CAT 55 tracked tractor traveling in actual field conditions. Travel speeds were 2-7 mph. The CFX-750 display was running software version 2.0.

 **Tip** – In CFX-750 firmware version 2.00, steering performance is improved for tracked tractors when the full wheelbase value is used.

 **Tip** – The EZ-Pilot system's automatic calibration for Angle Per Turn will result in an incorrect value for tracked tractors. Use the suggested values shown below.

Item	Value
Vehicle Type	Tracked tractor
Motor Speed	Low
Angle Per Turn Left or Right	13.5
Online Aggressiveness	110-113%
Approach Aggressiveness	115%
Override Sensitivity	20%
Freeplay left or right	0
Wheel base (A)	229 cm (90")



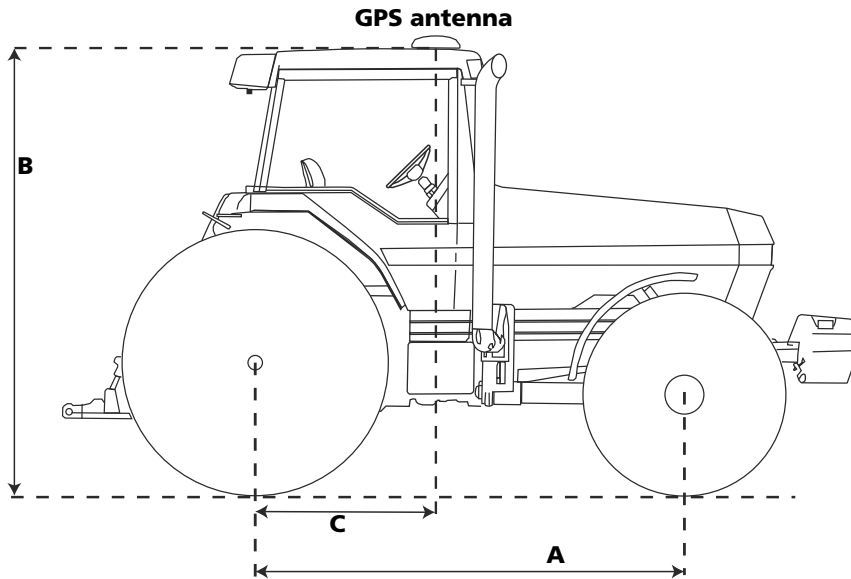
CAUTION – For tracked tractors, do not exceed 7 mph travel speed using CFX-750 firmware version 2.00.

Vehicle measurements

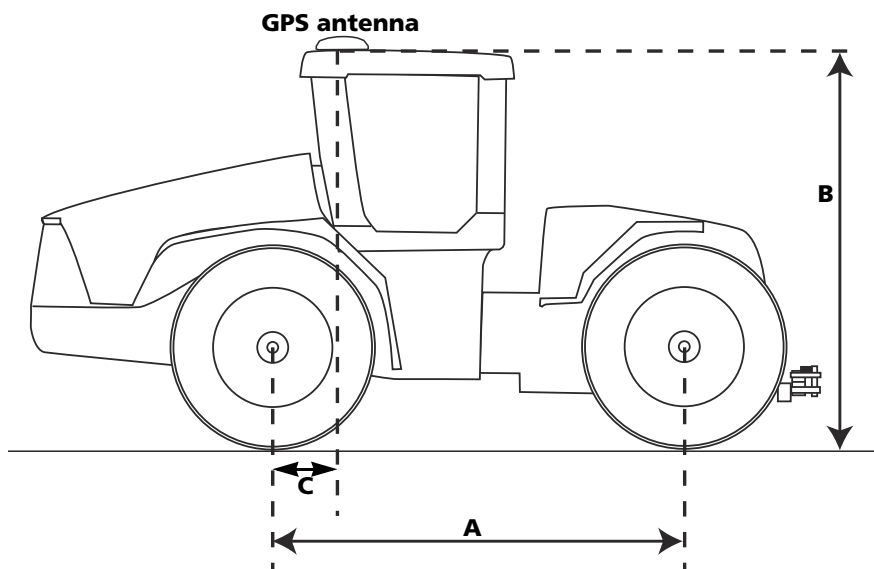


CAUTION – These measurements are provided as an example only. You must check the dimensions against your machine.

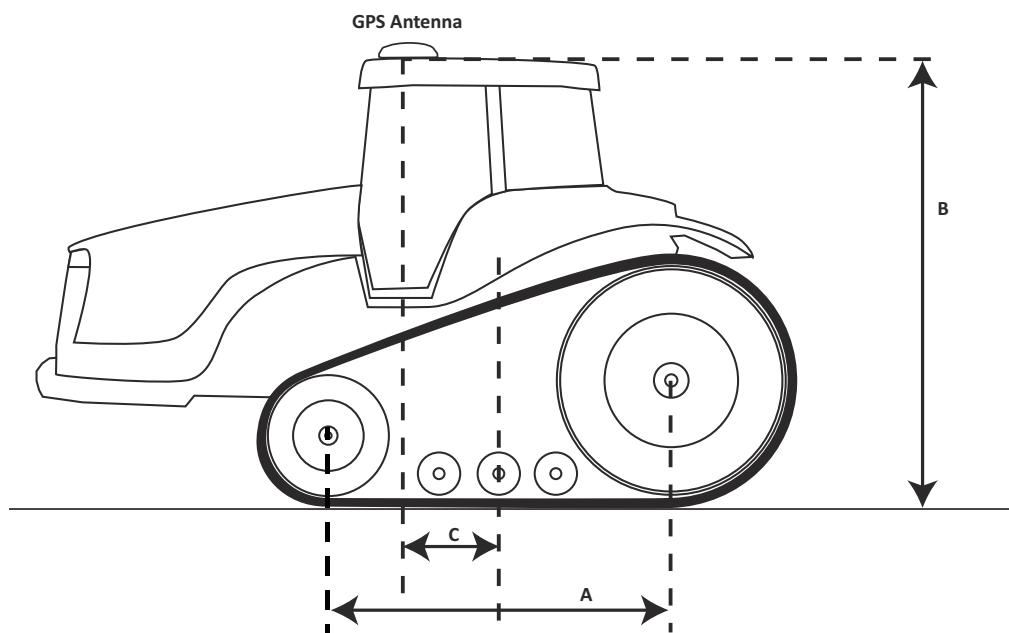
Front wheel steer tractors



Articulated tractors



Tracked tractors



AGCO SprayCoupe sprayers

Models: 7450, 7650, 7455, 7655, 7460, 7660

Item	Measurement
Wheel base (A)	391 cm–406 cm (157–160")
Antenna height (B)	363 cm (143")
Antenna / axle offset (C)	264 cm–274 cm (104–108") ahead

AgChem Rogator sprayers

Models: SS874, SS884, SS1074, SSc1074, SSc1084, 1254, 1264, 1274, 1286, 1286C

Item	Measurement
Wheel base (A)	429 cm–47 cm (169–185")
Antenna height (B)	366 cm–386 cm (144–152")
Antenna / axle offset (C)	350 cm–361 cm (138–142") ahead

AgChem TerraGator floaters

Models: 6103, 6203, 8103, 8203, 9103, 9203, 9205

Item	Measurement
Wheel base (A)	623 cm (248")
Antenna height (B)	350 cm (138")
Antenna / axle offset (C)	368 cm (145") ahead

AgChem TerraGator floaters

Models: 8104, 8204, 8244

Item	Measurement
Wheel base (A)	488 cm (192")
Antenna height (B)	361 cm (142")
Antenna / axle offset (C)	348 cm (137") ahead

GVM Prowler sprayers

Models: 1149T, 9909T, 9275

Item	Measurement
Wheel base (A)	373 cm (147")
Antenna height (B)	338 cm (133")
Antenna / axle offset (C)	528 cm (208") ahead

Buhler Genesis II tractors

Models: 2145, 2160, 2180, 2210

Item	Measurement
Wheel base (A)	315 cm–320 cm (124"–126")
Antenna height (B)	307 cm–312 cm (121"–123")
Antenna / axle offset (C)	127 cm–140 cm (50"–55") ahead

Buhler Versatile articulated tractors

Models: 2290, 2335, 2360, 2375, 2425

Item	Measurement
Wheel base (A)	338 cm (133")
Antenna height (B)	361 cm (142")
Antenna / axle offset (C)	61 cm (24") behind

CAT Challenger tracked tractors

Models: 35, 45, 55

Item	Measurement
Wheel base (A)	229 cm (90")
Antenna height (B)	310cm (122")
Antenna / axle offset (C)	75 cm (30") forward

Fiat G tractors

Models: 170, 190, 210, 240

Item	Measurement
Wheel base (A)	315 cm–320 cm (124"–126")
Antenna height (B)	307 cm–312.4 cm (121"–123")
Antenna / axle offset (C)	127 cm–138 cm (50"–55") ahead

Ford/New Holland Genesis tractors

Models: 8670, 8670A, 8770, 8770A, 8870, 8870A, 8970, 8970A

Item	Measurement
Wheel base (A)	315 cm–320 cm (124"–126")
Antenna height (B)	307 cm–312.4 cm (121"–123")
Antenna / axle offset (C)	127 cm–140 cm (50"–55") ahead

Ford/New Holland Versatile articulated tractors

Models: 9184, 9280, 9282, 9384, 9480, 9482, 9484, 9680, 9682, 9684, 9880, 9882, 9884

Item	Measurement
Wheel base (A)	338 cm (133")
Antenna height (B)	350 cm–356 cm (138"–140")
Antenna / axle offset (C)	61 cm–81 cm (24"–32") behind

Versatile tractors

Models: 250, 280

Item	Measurement
Wheel base (A)	315 cm–320 cm (124"–126")
Antenna height (B)	312 cm (123")
Antenna / axle offset (C)	138 cm (55") ahead

Versatile articulated tractors

Models: 305, 340, 375, 400, 435, 485, 535

Item	Measurement
Wheel base (A)	353 cm (139")
Antenna height (B)	343 cm (135")
Antenna / axle offset (C)	41 cm (16") ahead

