

AutoSteer

Install Kits: 186-0079-01

186-0079-02



Please refer to this manual prior to beginning the installation of the AutoSteer system

AccuGuide Ready Installation

Supported Models.

**Case Combines
2WD and 4WD**

7230

8230

9230

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Introduction

This manual provides the basic information and overview of the installation procedure for installing an AutoSteer system on a vehicle. The AutoSteer system can be installed on many makes, models, and types of vehicles. Read this manual prior to beginning the installation as this manual provides the cautions and warnings that need to be recognized and understood prior to installing or operating the AutoSteer system.

This manual provides the instructions for the installation of the components that come with this AutoSteer installation kit. The installation is broken down into specific sections that may refer to sub-kit assemblies that are part of this kit. These sub-kits will come with their own instructions, so refer to those when directed for information on installing the sub-kit parts.

Prior to operating and installing the AutoSteer system, be sure to read and understand the *AutoSteer Operator's Manual* that comes with the AutoSteer system. That manual provides the instructions on how to operate the AutoSteer system as well as additional safety information.

Legal Disclaimer

Note: Read and follow ALL instructions in this manual carefully before installing or operating the AutoSteer system.

Note: Take careful note of the safety information in the **Safety Information** section of this manual and the additional safety messages provided throughout this manual, and any other supplemental material provided.

The manufacturer disclaims any liability for damage or injury that results from the failure to follow the instructions, cautions, and warnings set forth herein.

Please take special note of the following warnings:

1. There is NO obstacle avoidance system included with the manufacturer's product. The owner must always have a human present in the operator's seat of the vehicle when the AutoSteer system is in use to look for obstacles including people, animals, trees, ditches, buildings, etc. and take control of the vehicle to manually avoid them if necessary.
2. The AutoSteer system does NOT control the speed of the vehicle. The operator must always adjust the speed of the vehicle manually so that it is operated at a safe speed that will not cause the vehicle to roll over or go out of control.
3. The AutoSteer system will take over control of the vehicle's steering system when the AutoSteer system is activated during testing, calibration, tuning, and automatic steering operations. The vehicle's steering axles, tracks, articulation point, or wheels may move unpredictably when activated. Prior to starting the vehicle and/or activating the AutoSteer system, verify that all people and obstacles are clear of the vehicle to prevent death, injury, or damage to property.
4. Use of the AutoSteer system is NOT permitted while the vehicle is on public roads or in public areas. Verify that the system is powered OFF before driving on roads or in public areas.


Safety Information


Warning Alerts


The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by the failure to adhere to the following safety requirements:


- As the operator of the vehicle, you are responsible for its safe operation.
- The steering system is *not* designed to replace the vehicle’s operator.


Note: After the installation of the AutoSteer system, verify that all the screws, bolts, nuts, and cable connections are tight. If any of the hydraulic lines or fittings were loosened during the installation, verify that they have been reattached and tightened to prevent oil leaks. Verify that all the cables and hoses have been secured to prevent them from being damaged.


	⚠ WARNING
	To understand the potential hazards associated with the operation of an AutoSteer equipped vehicle, read the provided documentation prior to installing or operating the AutoSteer system.


	⚠ WARNING
	To prevent accidental death or injury from being run over by the vehicle or automated motion of the steering system, never leave the vehicle’s operator seat with the AutoSteer system engaged.


	⚠ WARNING
	To prevent accidental death or injury from being run over by the vehicle, verify that the area around the vehicle is clear of people and obstacles before startup, calibration, tuning, or use of the AutoSteer system.

	⚠ WARNING
	<p>To prevent the accidental engagement of the AutoSteer system and loss of vehicle control while driving on roads, shut down the AutoSteer system. Never drive on roads or in public areas with the AutoSteer system powered up.</p>

	⚠ WARNING
	<p>Verify that you are in a stable position on the vehicle's platform or stairs when installing or removing the GPS antenna so you do not fall. If the vehicle does not provide a safe platform, use a ladder to safely access the vehicle's roof.</p>


	⚠ WARNING
	<p>To avoid electrical shock hazards, remove the GPS antenna and/or other antennas from the vehicle before driving under low structures or low electrical power lines.</p>


	⚠ WARNING
	<p style="text-align: center;">High-Pressure Fluid Hazard</p> <p>If the installation requires working on the hydraulic system on the vehicle, read and understand the hydraulic sections of the vehicle manufacturer's operators manual before starting the installation. Wear hand and eye protection while performing hydraulic system maintenance. Relieve hydraulic system pressure before servicing the hydraulic system.</p>


	<p>⚠ WARNING</p>
	<p>If the vehicle has a Wheel Angle Sensor as part of the installation, always shut off the vehicle when working around the steering axle while installing, checking, and adjusting the Wheel Angle Sensor and rod lengths. The steering mechanism could move suddenly and cause severe injury or death.</p>


Caution Alerts

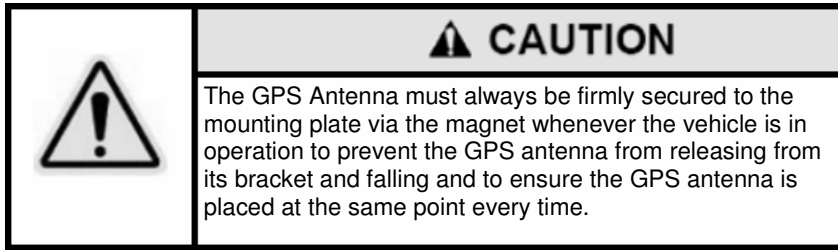
The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by the failure to adhere to the following safety requirements:

	<p>⚠ CAUTION</p>
	<p>The GPS antenna must be removed when transporting or driving the vehicle at speeds above 31 mph (50 km/h). The GPS antenna can possibly detach due to wind loads at higher speeds.</p>

	<p>⚠ CAUTION</p>
	<p>The AutoSteer system does not detect obstacles in the vehicle's path. The vehicle operator must observe the path being driven and take over steering manually if an obstacle must be avoided.</p>

	<p>⚠ CAUTION</p>
	<p>The AutoSteer system does not control the speed of the vehicle. The operator must manually adjust the speed of the vehicle to keep the vehicle safely under control.</p>

	<p>⚠ CAUTION</p>
	<p>The AutoSteer system must be powered OFF when installing or removing the GPS antenna, AutoSteer Control Unit, or any other part of the AutoSteer system.</p>



Installation Requirements

Standard Tool Requirements

The installer is assumed to have a complete set of common installation tools including:

- Imperial and Metric open end wrenches (both standard size and stubby lengths for tight fits)
- Imperial and Metric sockets, extensions, and ratchet
- Imperial and Metric Allen wrenches
- Flat and Philips screwdrivers
- Torx drivers
- 1/4" nut driver
- 2mm Allen wrench
- Metal hack saw
- Side cutters
- Step ladder, 10 ft (3 m)
- Tape measure, 13 ft (4 m) minimum

The installer is also assumed to have the following supplies and additional tools to complete the installation:

- Cleaning rags, abrasive cleaning pads and brushes
- Alcohol pads or other cleaning solution to verify oil and dirt is removed from surfaces prior to gluing them
- Oil pan or bucket when working with hydraulic lines
- Floor Dry to contain any spills

Special Tool Requirements

Some special additional tools may be required for this vehicle installation:

- Drill
- Silicone sealant

Vehicle Requirements

Prior to installing the AutoSteer system, verify the following items on the vehicle:

- If the vehicle is equipped with a factory installed steering system (ex. AutoTrac Ready¹, AccuGuide Ready², IntelliSteer Ready³, AutoGuide² Ready⁴, VarioGuide Ready⁵, Agrosky Ready⁶), verify with the vehicle manufacture's service representative that the factory installed components (ex. Steering Valve, Steering Wheel Encoder, Wheel Angle Sensor, etc.) have been installed on the vehicle.

Note: Verify that the factory supplied components have been calibrated and set up by the vehicle manufacture's service provider prior to installing the AutoSteer System.

- The vehicle's steering system is in good working order. Drive the vehicle to verify this prior to beginning the installation. There should be no play in the steering and the vehicle should turn proportionally the same to the left and right.
- The vehicle's electrical system and battery must be in good working order.
- The vehicle should be fully cleaned before installing the AutoSteer system. A clean vehicle will improve the overall installation and cable routing and will also reduce the chance of oil contamination if the hydraulic connections are opened. If installing any hydraulic components, it is important to clean the area around the steering unit (Orbitrol), under the cab, behind the rear cab cover, and all the hydraulic connection points.

If any issues are discovered with the vehicle, they must be repaired prior to beginning the AutoSteer installation by a qualified service person for the vehicle.

Note: This installation manual, vehicle-specific installation manuals, and sub-kit manuals contain valuable information for servicing the AutoSteer system. After the installation is complete, store all of these manuals in a safe place for future reference.

Note: After the installation is completed, be sure to complete the *Final Hardware Installation Checklist* and save this sheet with the installation manuals. The values recorded on these sheets can be referred to in the future when servicing the system.

Technical Support

Refer to your *Display Operator's Manual* for technical support information.

Contact Information

Refer to your *Display Operator's Manual* for contact information.

¹ AutoTrac is a registered trademark of John Deere

² AccuGuide is a registered trademark of Case IH

³ IntelliSteer is a registered trademark of New Holland

⁴ AutoGuide² is a registered trademark of AGCO

⁵ VarioGuide is a registered trademark of Fendt

⁶ Agrosky is a registered trademark of Same Deutz Fahr

Vehicle Inspection

Prior to installing the AutoSteer system, confirm that the vehicle and the vehicle's steering system are in good working order by driving it around. In addition, verify the following items:

- Verify that you can turn the steered wheels from lock to lock.
- Record the time it takes to turn the vehicle's steering mechanism (ex. steering axle, articulation point) from full left to full right, then record the time to go from full right to full left as fast as you can manually. This will be used later to ensure steering performance is correct.
- Verify that the vehicle steers straight and does not pull to one side when driving in a straight line.
- Verify that there are no oil leaks.
- Check for loose or worn steering components.

If any part of the vehicle is not in working order, have the system serviced by a qualified technician prior to beginning the AutoSteer installation procedure.

Installation Overview

Supported Models

These instructions provide the suggested procedure for installing the AutoSteer system on qualified vehicles for the easiest installation and best performance. The vehicles covered by this manual are the Case combines with the factory installed AccuGuide Ready steering system installed.

The AutoSteer installation kits PN: **186-0079-01** and **186-0079-02** are used on the following vehicle series:

- CNH CASE 7230, 8230, 9230 2WD and 4WD model years starting at 2013-

Note: The installer can install the AutoSteer system differently than how the manufacturer suggests; however the components that are called out in this manual may not fit properly or the lengths of cables and hoses may not be long enough with alternative mounting solutions. If the installer modifies the installation procedure, it is the responsibility of the installer to ensure that all the components work and that any component's specific orientation and mounting requirements are met.

Kit Overview

The sub-kits that are required for the installation of the AutoSteer system are provided in this section. Use this section to verify that all the sub-kits and parts required for the installation are available.

Note: All part numbers provided in this manual are subject to change without notice. They are provided as a reference at the time of this writing. Always verify that the part numbers are still valid from your AutoSteer dealer if spare parts need to be ordered.

AutoSteer System Kit

The following parts are assumed to be available for the installation from a AutoSteer System Kit that has been purchased separately and are not part of the AutoSteer Vehicle Specific Kit. This information is provided here for reference only.

A GPS receiver and a matching antenna provide the longitude and latitude position of the vehicle.

Steering Control (Electronic Control Unit or ECU)

The steering controller uses the position information from the GPS receiver and steers the vehicle on the desired path using terrain compensation and additional sensors for higher steering accuracy.

Display Kit

The AutoSteer system is compatible with multiple models of Displays. The Display power and communication cables are supplied with the Display Kit. The AutoSteer system gets its power and activation signal from these cables as well. It is assumed that these parts are available for the installation.

Note: If the Display Kit components have been installed on another vehicle and this kit is being installed as a switch kit, an additional Display Harness and Display Power Harness should be ordered in addition to the Vehicle Specific Kit so they can be left on the vehicle to allow easier switching of components from vehicle to vehicle.

Vehicle Install Kit

The AutoSteer Vehicle Install Kit provides all the components required to install a AutoSteer system on the vehicle. The Vehicle Kit is separated into individual sub-kits. This manual provides the parts list and instructions for installing the components from the AutoSteer Vehicle Specific Kit. The additional sub-kits referenced provide their own parts list and installation instructions that should be referenced when installing those components. This manual will indicate when to refer to those sub-kits during the installation overview. These Case combine models are supported by two installation kits where the only difference is the wheel angle sensor for either 2WD rear axle or 4WD rear axle.

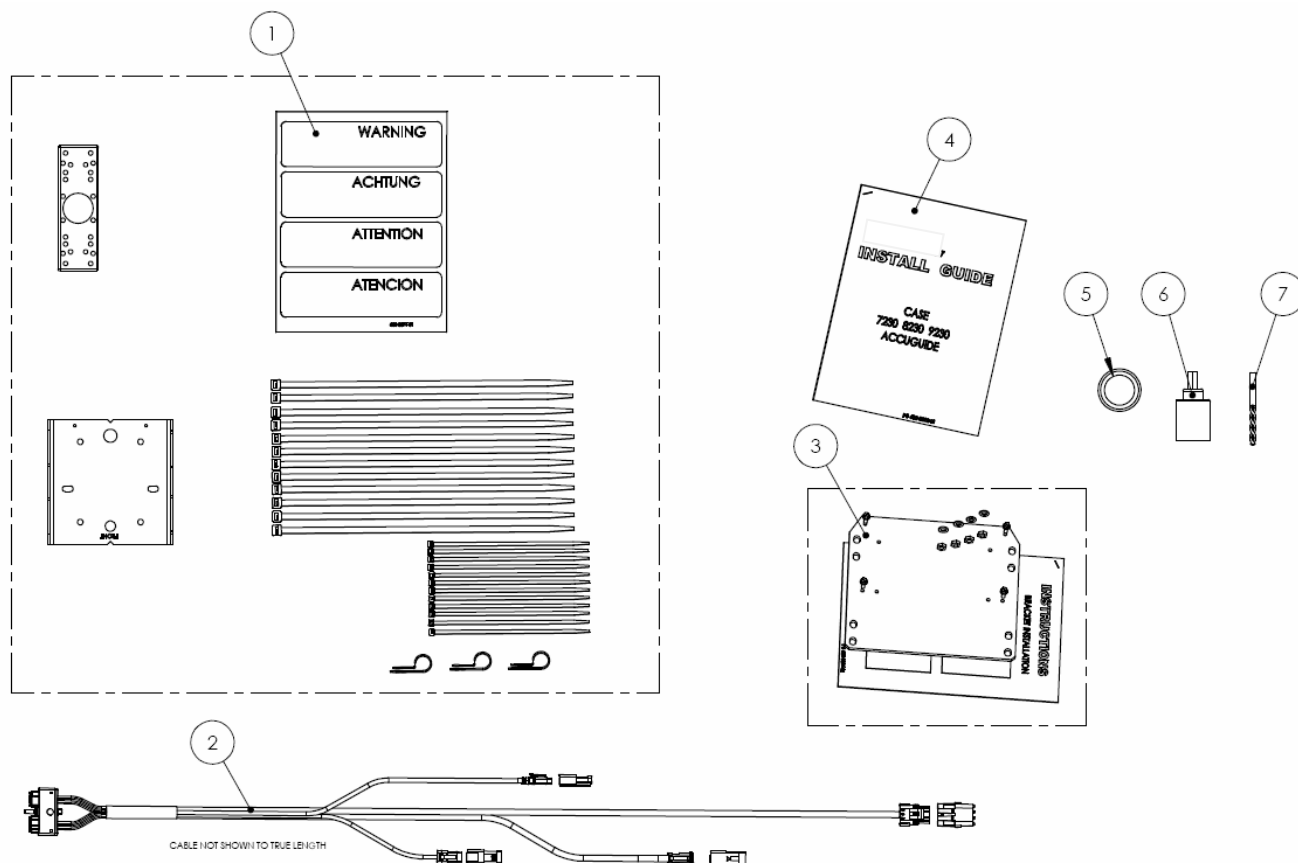
Table 1-1 Vehicle Install Kit Sub-Kits for 186-0079-01 (2WD)

Item	Sub-Kit Identification	Part Number
1.	AutoSteer Vehicle Specific Kit	151-0062-01
2.	Wheel Angle Sensor Kit 2WD	200-0549-01

Table 1-2 Vehicle Install Kit Sub-Kits for 186-0079-02 (4WD)

Item	Sub-Kit Identification	Part Number
1.	AutoSteer Vehicle Specific Kit	151-0062-01
2.	Wheel Angle Sensor Kit 4WD	200-0169-02

AutoSteer Vehicle Specific Kit

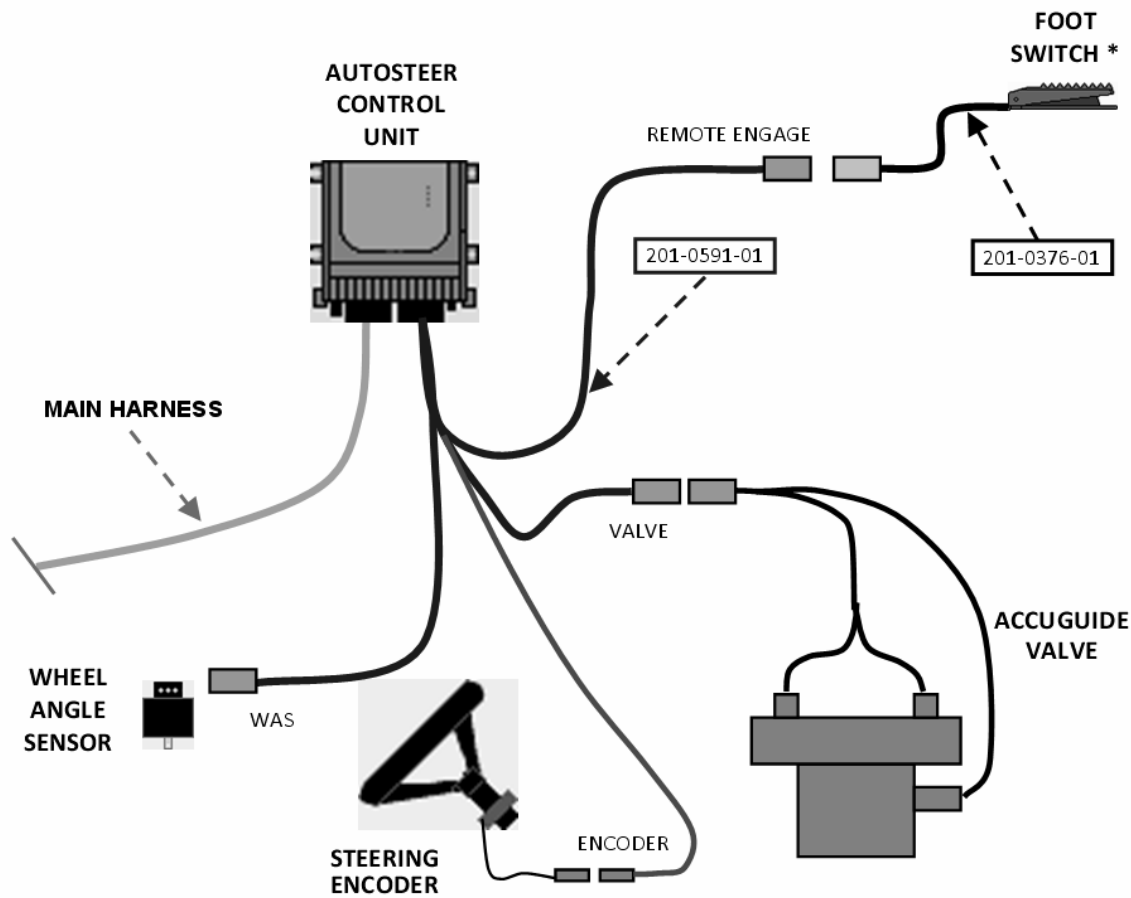
Figure 1-1 AutoSteer Vehicle Specific Kit Components (151-0062-01)**Table 1-3 AutoSteer Vehicle Specific Kit Components Descriptions**

Item	Component	Part Number
1.	Kit Common Parts	200-0647-03
2.	Harness Case 9230	201-0591-01
3.	Bracket ECU Mounting Kit	200-0651-02
4.	Installation Manual Case 9230	602-0392-02
5.	Grommet, 1-3/4 OD 1-1/2 ID	508-0001-01
6.	Hole Saw, 1-3/4"	808-0041-01
7.	Drill Bit, 1/4"	500-0338-01

Cable Connection Diagram with AccuGuide Adapter Harness

- Foot Switch (PN 201-0376-01) is an optional accessory.
- Refer to the *Display Operator's Manual* for more detailed instructions on how to connect the AutoSteer to the Display data and power ports.
- Component definitions
 - DISPLAY – The Display that is connected to the AutoSteer system (not shown)
 - BATTERY – The battery terminals for the power source for the AutoSteer system and Display (not shown)
 - AUTOSTEER CONTROL UNIT – The AutoSteer Control Unit
 - GPS ANTENNA – The GPS antenna and optional radio modem kits mounted on the roof (not shown)
 - FOOT SWITCH* – The optional Foot Switch that can be used for Remote Engage (not required for installation)
 - ACCUGUIDE STEERING VALVE – The factory supplied steering valve.
 - STEERING ENCODER - Encoder on steering wheel that allows system to detect when user turns steering wheel manually.
 - WHEEL ANGLE SENSOR - The factory Wheel Angle Sensor is not used for this installation. A secondary one is added and connected to the AutoSteer system while the factory one is left connected to vehicle Accuguide harness.
 - ACCUGUIDE HARNESS - This is the factory supplied harness that runs among the various factory installed AutoSteer components. (not shown)

Figure 1-2 AutoSteer Cable Connections Overview



Installation Procedure Overview

This section provides an overview of all the steps that are required to complete the AutoSteer system installation. For more detailed instructions of each step, follow the procedures provided in the subsequent chapters of this installation manual or instructions provided with the referred to. Install the components in the order provided in this section for best results.

1. **Kit Verification** – Verify that the installation kit ordered matches the vehicle that it is being installed on and that all the parts have been shipped.
2. **Wheel Angle Sensor** – Follow the instructions provided in the *Wheel Angle Sensor Installation Manual* provided with the Wheel Angle Sensor Kit.
 - a. Install the Wheel Angle Sensor Brackets.
 - b. Install the Wheel Angle Sensor.
3. **GPS Antenna** – Install the GPS Antenna Mounting Bracket and GPS Antenna on top of the vehicle's cab roof. See the *Install GPS Antenna Mounting Bracket* chapter in this manual.
4. **Display RAM Mount** – Install the Display RAM Mount inside the cab. See the *Install Display Mounting Bracket* chapter in this manual.
5. **Display** – Follow the instructions provided with *Display Operator's and Installation Manual* that comes with the Display Kit.

Note: AutoSteer can be matched with multiple Display options. Follow the instructions that come with your Display for the procedures to install the Display and to connect the Display Harnesses to vehicle for power and the AutoSteer system.

- a. Install the Display using the RAM Mount.
- b. Install the Display Harness.
- c. Install the Power Harness for the Display.

Note: Refer to the *Install AutoSteer Harnesses* chapter in this manual for information about locating and accessing the battery or other power source.

6. **AutoSteer Control Unit** – Follow the instructions provided in the ECU Mounting Bracket Install Kit.

Note: The AutoSteer Control Unit must be mounted in a place that is solid to the frame or cab of the vehicle. It must not move independently of the vehicle (it cannot be sitting on the floor of the cab loose). The mounting point must be vibration-free. Use the bracket(s) provided with the installation kit to mount the AutoSteer Control Unit when provided.

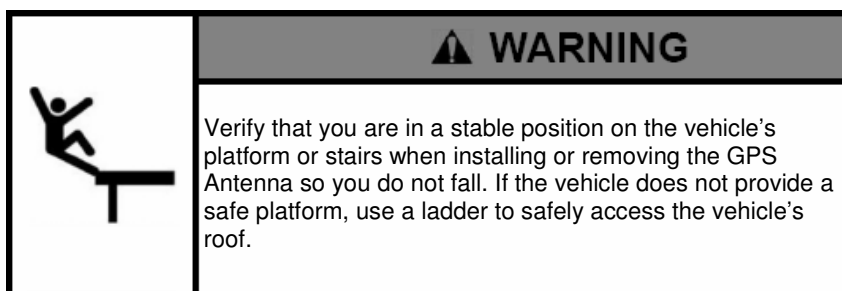
7. **AutoSteer Main Harness** – See the *Install AutoSteer Harnesses* chapter in this manual. Route the harness connections between the AutoSteer Control Unit's left connector to each of the following:
 - a. Connect to the Display and/or Display Harnesses (see *Display Operator's Manual* for instructions).
 - b. Connect to the Power Activation connection (see *Display Operator's Manual* for instructions).
 - c. Connect to the Power Supply (see *Display Operator's Manual* for instructions).

- 8. AutoSteer Vehicle-Specific Harness** – See the *Install AutoSteer Harnesses* chapter in this manual.
 - a. Install the AccuGuide Vehicle ECU Harness (PN 201-0591-01).
 - b. Connect the AccuGuide Vehicle ECU Harness (PN 201-0591-01) to the Wheel Angle Sensor.
 - c. Connect the AccuGuide Vehicle ECU Harness (PN 201-0591-01) to the Steering Wheel Encoder.
 - d. Connect the AccuGuide Vehicle ECU Harness (PN 201-0591-01) to the Steering Valve.
- 9. GPS Antenna Cables** – Route the following cables from the AutoSteer Control Unit to the GPS Antenna.

Note: Depending on options ordered, not all of the following connections are required for all installations.

- a. Attach the GPS Coax Cable. (if required)
 - b. Attach the Cell Modem Coax Cable (if required).
 - c. Attach the Radio Modem Data/Power Harnesses (if required).
 - d. Attach a serial NMEA cable (if required)
- 10. Final Hardware Verification** – Verify that all the bolts have been tightened, electrical and hydraulic connections are securely connected, and that all hoses and cables have been routed safely and secured to the frame of the vehicle away from moving parts with cable ties.
 - a. Fill out the *Vehicle Profile Worksheet* provided at the end of this manual.
 - b. Power ON the AutoSteer system.
 - c. Create a new vehicle profile.
- 11. Final Vehicle Set Up** – See *Post-Installation Procedures and Information* chapter.
 - a. Calibrate the vehicle.
 - b. If necessary, tune the vehicle to improve performance.
 - c. Verify the system has been installed properly and operates satisfactorily.
- 12. Vehicle Checklist** – Fill out the *Installation Checklist* at the end of this manual.

Install GPS Antenna Mounting Bracket



Overview

The GPS Antenna is the removable assembly that includes the GPS antenna and, if the installation requires, cell modem antenna that is mounted on top of the roof of the vehicle. The GPS Antenna assembly is also the location where the optional radio modem antenna and radio modem or OmniSTAR demodulator accessory kits are installed. The GPS Antenna is attached magnetically to a GPS Antenna Mounting Plate that is permanently attached to the roof of the vehicle. This allows the GPS Antenna to be quickly removed and reattached in the same location on the vehicle.

Installation Procedure

This GPS Antenna Mounting Plate is designed to fit any vehicle installation using the tape on the bottom of the bracket. Predrilled holes are also provided to allow the installer to bolt the bracket to existing structures on the vehicle. The GPS Antenna Mounting Plate needs to be mounted flat, on the top of the vehicle in a stable location.

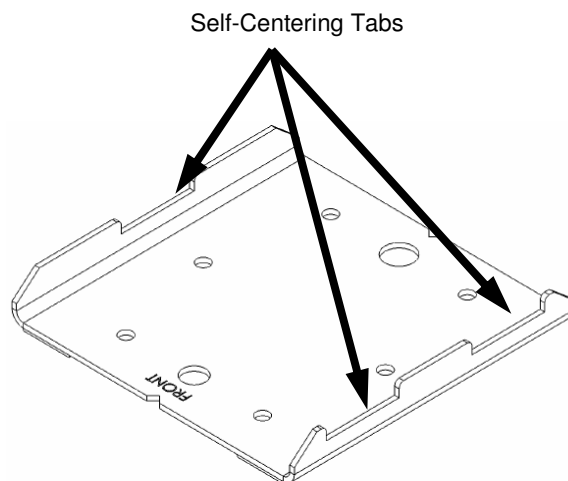
Note: The GPS antenna mounting plate can vary, depending on the exact model of GPS antenna used. Although this manual shows one particular model of mounting plate, the same general procedure applies to all mounting plates that use adhesive tape to secure the antenna to the cab roof. If your GPS antenna was provided with specific mounting plate installation instructions, follow those instructions.

Install GPS Antenna Mounting Plate

1. Remove the GPS Antenna Mounting Plate from the installation kit.

Note: Notice the three tabs on the GPS Antenna Mounting Plate. They are used to center the GPS Antenna when it is attached to the plate.

The two tabs should always be on the left side of the vehicle.

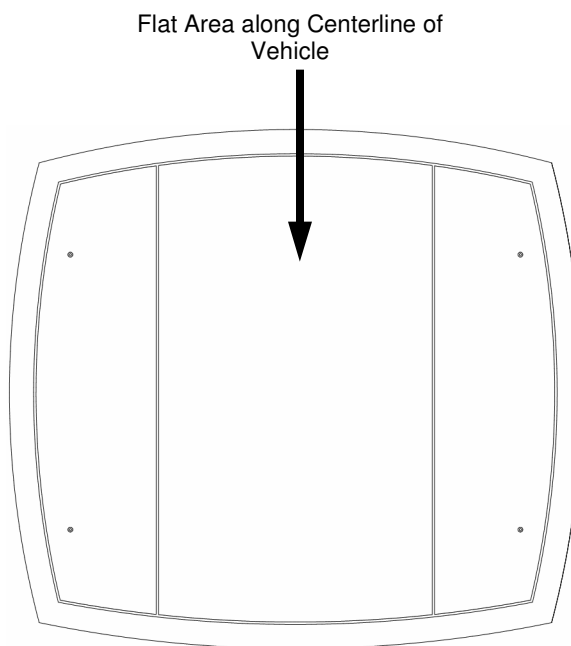


2. Locate a flat area at least 10 inches side to side by 20 inches front to back (25 cm by 50 cm) along the center line of the vehicle. This may not be the center line of the cab roof if the cab is offset.

Note: It may be necessary to build a mounting bracket to allow the GPS Antenna Mounting Plate to be mounted firmly. The plate has mounting holes for securing it to the vehicle or another bracket if necessary.

3. Thoroughly clean the area on the roof with soap and water to remove ALL dirt.

Note: Cabs with a great deal of oxidation or texture may require more abrasive cleaning methods to achieve a clean surface. When necessary, use a scour pad such as Scotch-Brite™ to thoroughly clean the surface until it is smooth and free of contaminants.



Rear of Cab

Install GPS Antenna Mounting Plate

4. Use alcohol wipes provided to finish cleaning the area to verify that all oil and grease is removed.
5. Let the area dry.

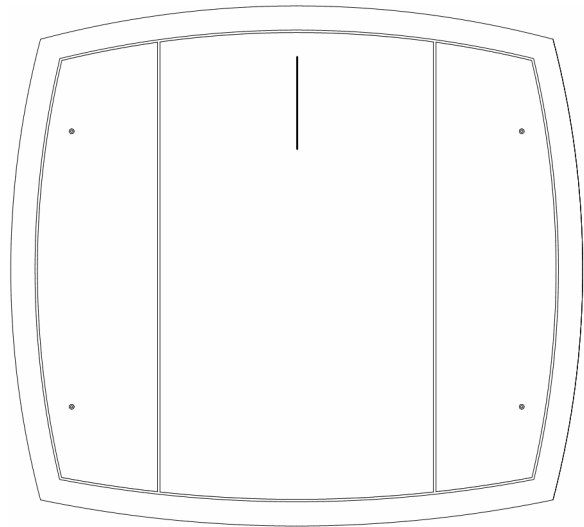
Note: It is very important that all dirt and oil have been removed from the mounting point on the cab so that the high bond strips will hold the GPS Antenna Mounting Plate to the roof.

6. Use fixed points on the roof and a tape measure to find the exact center line of the vehicle, and mark that position on the area that has been cleaned with a marking device.

Note: On some vehicles the center of the cab may not be the center of the vehicle as some cabs are offset.

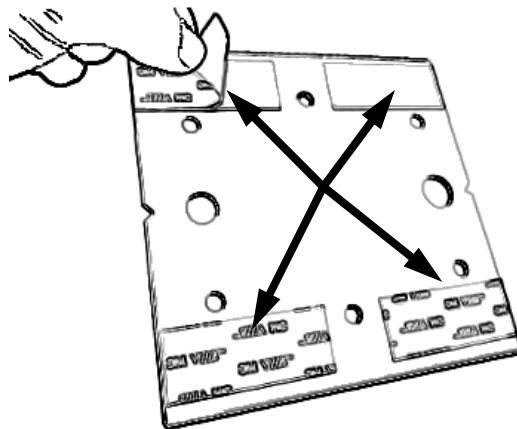
Always verify that the center line used is the center line of the vehicle, not necessarily the cab roof.

Centerline Mark



Rear of Cab

7. Remove the four adhesive backings on the GPS Antenna Mounting Plate.



Install GPS Antenna Mounting Plate

8. Use the two notches on the GPS Antenna Mounting Plate to center it over the marks that show the center line of the vehicle. Carefully place the GPS Antenna Mounting Plate on the clean area.

Note: The GPS Antenna Mounting Plate is orientation-dependent. Verify that the two tabs are on the left side of the vehicle and the single tab is on the right side.

The front of the GPS Antenna Mounting Plate is marked **FRONT** and should be oriented towards the front of the vehicle.

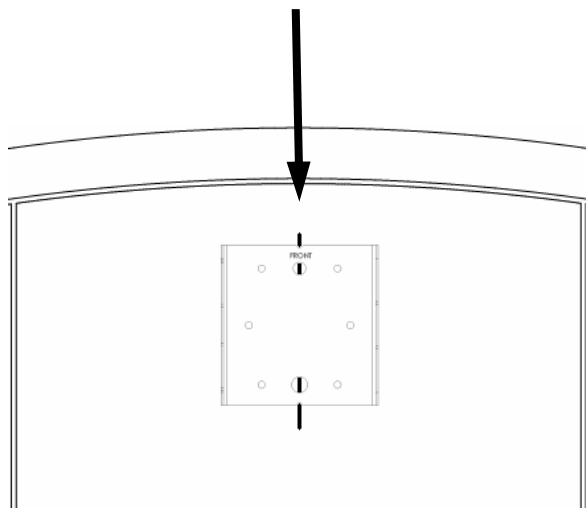
Note: Verify that the GPS Antenna Mounting Plate is square with the vehicle prior to letting the adhesive stick to the roof.

Note: The ideal temperature for applying the mounting plate using high bond tape is 70°F to 100°F (21°C to 38°C). Do not apply the high bond tape at temperatures below 60°F (15°C).

9. Once the GPS Antenna Mounting Plate is in the proper location, firmly press the adhesive areas to ensure a good contact is made with the roof. Apply pressure for a few seconds to all four corners of the plate.

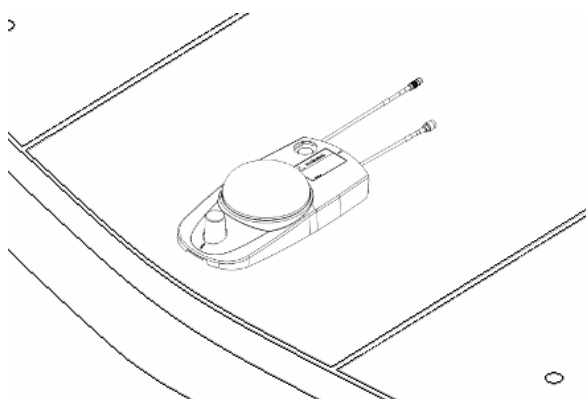
Note: The high bond tape uses a permanent adhesive. Verify and confirm the correct position and orientation of the mounting plate before applying it to the vehicle roof.

FRONT Mark towards Front of Vehicle



Rear of Cab

10. Refer to your *AutoSteer Operator's Manual* for instructions on installing and removing your GPS Antenna.



Install Display Mounting Bracket

Overview

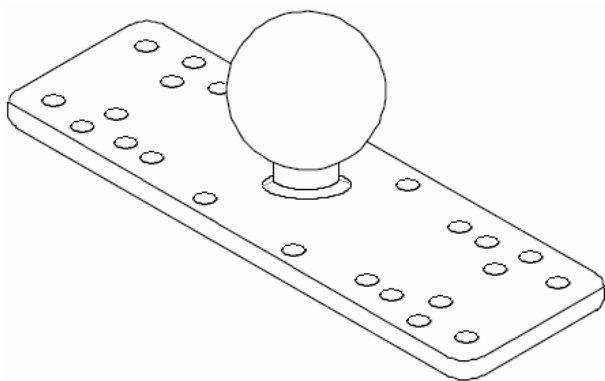
This guide provides instructions for installing the Display Mounting Bracket. These instructions assume a RAM Ball will be used for the final mounting solution. However it is possible to attach the Display with some other Display mounting solutions if desired.

Note: Refer to your *Display Operator's Manual* for instructions on installing the Display itself.

Installation Procedure

The installation kit provides a Flat Plate RAM mount ball that can be bolted to any flat surface. Locate a position in the cab that will allow the RAM mount ball to be attached. The location should allow the Display to be positioned close enough for the driver to comfortably press the AutoSteer Engage button on the screen (the lower, right hand corner). It should also be positioned so that the Display does not block the operator's field of view.

Figure 3-1 Flat Plate RAM Mount Ball



Once the RAM mount has been installed, follow the instructions in the *Display Operator's Manual* to install the Display in the vehicle.

Install AutoSteer Harnesses

Overview

The final step of the hardware installation is to connect all the components installed with the various harnesses that come with the system. Refer to the **Cable Diagram**, which shows all the necessary cable connections on the vehicle. Also refer to the *Display Operator's Manual* for additional instructions on how to connect the AutoSteer system to the Display.

Note: When routing harnesses, verify that all harnesses are routed away from moving parts and sharp objects. Secure the harnesses with cable ties to ensure they are not damaged.

Locate Cab Cable Access Point

The AutoSteer system has components installed both inside and outside the cab. To connect these components, some cables need to be run between the inside and outside areas. To make this easy, there is a Cab Cable Access Point that allows cables to be passed in and out of the cab. This section provides the location of this Cab Cable Access Point and the procedure for opening the ports. Use this point to run any cables in and out of the cab for the installation.

Note: It is the responsibility of the installer to ensure that the Cab Cable Access Point is sealed properly after the final installation has been completed. If required, use a sealant to verify that the hole has been completely sealed.

Locate Cab Cable Access Point

1. If your machine does not have a differential lock pedal, you can use the pedal access hole for routing cable into the cab. The hole has a plastic cover that can be moved or reworked by removing a corner to allow cable access.



Locate Cab Cable Access Point

2. If the differential lock hole is not available, locate a suitable flat panel on the cab floor or cab wall where a hole can be drilled for a cable access point. The area just to the left of the differential lock is a possible location for drilling an access hole.
3. Confirm that the hole area is free of components and cables on both sides of the panel.

-
4. Drill a 1-3/4" hole using the hole saw and drill bit provided in your kit.

Note: Verify that the drill bit will not damage anything on either side of the plate.

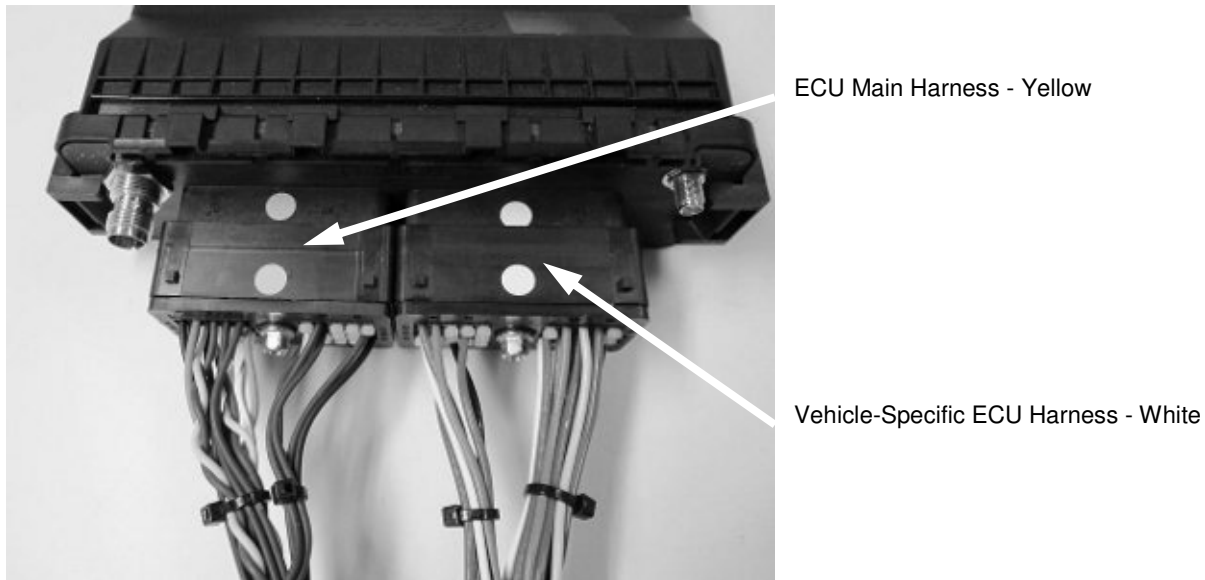
5. Deburr the hole to eliminate sharp edges.

-
6. Install the rubber grommet provided.
 7. Pass all cables and harnesses that need to go between the inside and outside of the cab through this port.
 8. Seal the hole with sealant to avoid air leakage and rodents.
-

Attach Harnesses to AutoSteer Control Unit

The AutoSteer Control Unit has two main connectors. These connectors are keyed so that the connector can be attached in the proper port and orientation. The connectors on the AutoSteer Control Unit and the cables also have a colored dot to aid attaching the cables properly. The AutoSteer Main Cable Harness is represented by a Yellow dot and the Vehicle Specific ECU Harness is represented by a White dot. Always verify that the colored dots match before attaching the Harnesses.

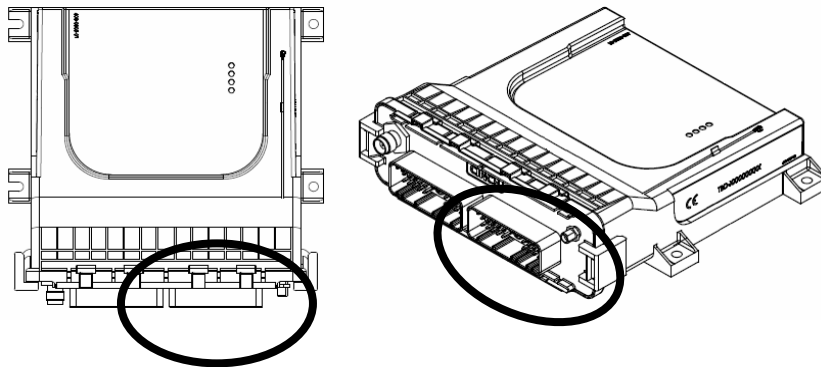
Note: Never force the connectors, the connectors should easily slide into place. Forcing the connector may damage the system.

Figure 4-1 AutoSteer Control Unit Cable Identifying Dots

Vehicle-Specific ECU Harness

The installation kit comes with a AccuGuide ECU Harness that is used to connect the vehicle components to the AutoSteer Control Unit. Attach the 30-pin connector of the harness to the right side connector on the AutoSteer Control Unit with a 1/4" nut driver. The cable connector is keyed and has a White dot that needs to be matched to the port on the AutoSteer Control Unit.

Note: Never force the connector.

Figure 4-2 AutoSteer Control Unit Vehicle-Specific ECU Harness Connector

The AccuGuide ECU Harness has three cables that need to be connected to the Wheel Angle Sensor, Steering Valve, and Steering Wheel Encoder. This harness also provides a 4 pin connector to attach to the optional remote engage foot switch. Carefully route these cables from the AutoSteer Control Unit to each of the components making sure that the cables will not be damaged by moving parts or sharp edges. After the cables have been run, secure them with cable ties.

Wheel Angle Sensor Connection

Note: The Case AccuGuide system comes equipped with a factory installed Wheel Angle Sensor. This Wheel Angle Sensor is used by other Case systems on the vehicle and therefore cannot be disconnected. Do not disconnect or attempt to use the factory Wheel Angle Sensor with the AutoSteer system.

Wheel Angle Sensor

1. Route the Wheel Angle Sensor cable towards the back of the vehicle where the Wheel Angle Sensor is located on the axle.
2. Connect the three pin connector to the Wheel Angle Sensor connector.

NOTE: The exact wheel angle sensor setup will look different depending if it is a 2WD or 4WD rear axle.



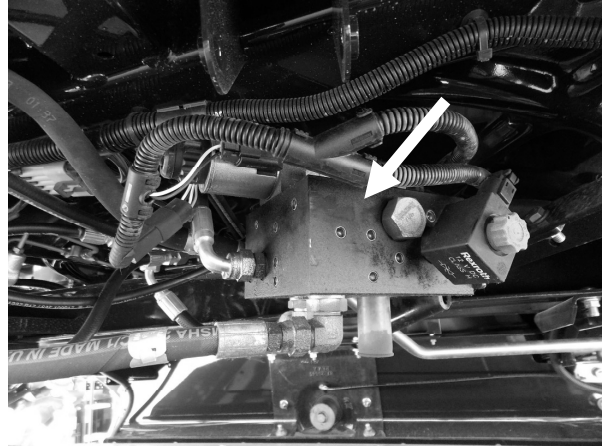
3. Secure the cables to the bracket using a cable tie so that the connector is NOT being stressed.
4. Route the cable in a protected position on the axle and provide sufficient cable loops between the axle and frame to allow axle movement. Secure the cable with cable ties.

Note: The Wheel Angle Sensor harness should be attached to the vehicle or bracket as close to the connector as possible with a cable tie to reduce strain on the connector.

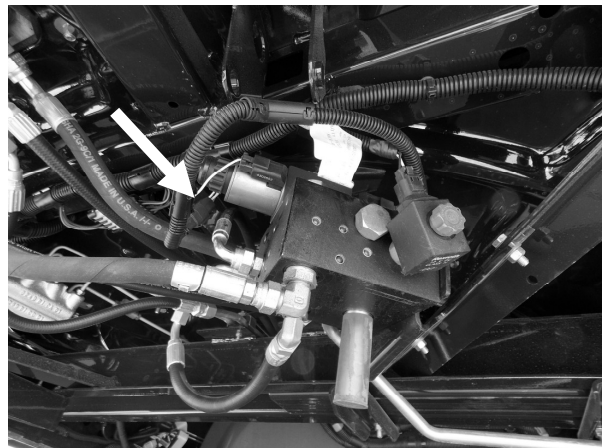
Steering Valve

Steering Valve

1. Route the Steering Valve cable towards the bottom of the cab where the factory Steering Valve is located.
2. Refer to the cable diagram on page 13 for an overview on the valve cable connection.



3. Locate the 4-pin valve connector shown. It may be hidden near the valve block.
4. Separate this connector and connect the 4-pin connector from the AccuGuide ECU harness to the factory valve harness. This connection will provide the right and left steering commands plus the enable solenoid activation.
5. Protect the unused connector on the factory harness using the blank mating connector provided.

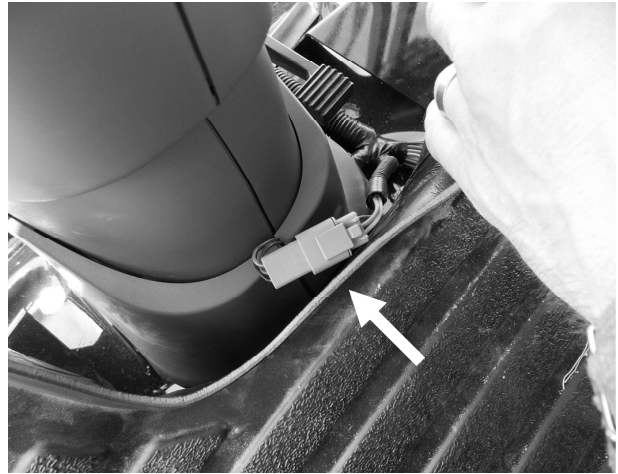


6. Secure all cables in a protected position using cable ties.
7. Confirm that all connectors are connected or covered with protective caps.

Steering Wheel Encoder

Steering Wheel Encoder

1. Locate the Encoder Harness connector in the cab under the mat at the bottom of the steering column.



2. Separate the connectors.



3. Connect the 3-pin connector from the ECU AccuGuide harness to the connector that goes to the encoder under the steering wheel.
4. Protect the factory harness unused connector with the blank mating connector provided with the new harness.

Other AutoSteer Harnesses

Refer to the manuals and documentation provided with the other components of your AutoSteer system to complete all necessary cable connections. Typically, a display and a steering controller are required to complete the AutoSteer installation, and they will each have their own specific cables and installation instructions.

Route Cables to Top of Cab

Route Cables to Top of Cab

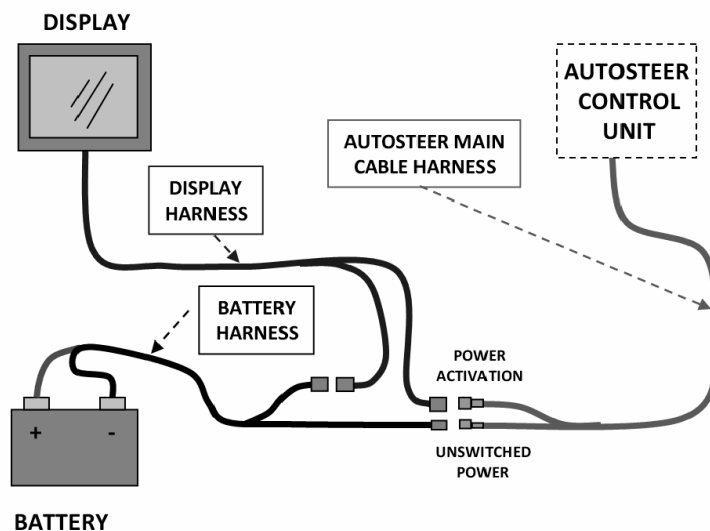
1. Route the coax cable(s) and Radio Power/Data (if applicable) out of the cab through the Cab Cable Access Point.
2. Route the cables up the back side of the cab towards the GPS antenna on the cab roof..
3. Secure the cable with cable ties to existing structures after the cable has been run the entire distance.



Power Supply for AutoSteer System

The AutoSteer Control Unit must be connected to a 12 volt uninterrupted power supply. In most situations, the Display kit will provide a harness that provides power directly from the battery to the Display and AutoSteer system. The AutoSteer Control Unit must also be connected to a power activation signal from the Display. This connector provides a signal to the AutoSteer Control Unit to command it to power up when the Display is powered up. Refer to your *Display Operator's Manual* for instructions on connecting the AutoSteer system to power and the power activation signal. *Figure 4-3* shows an example of a typical power connection scenario.

Figure 4-3 Typical Battery Cable Connection Diagram



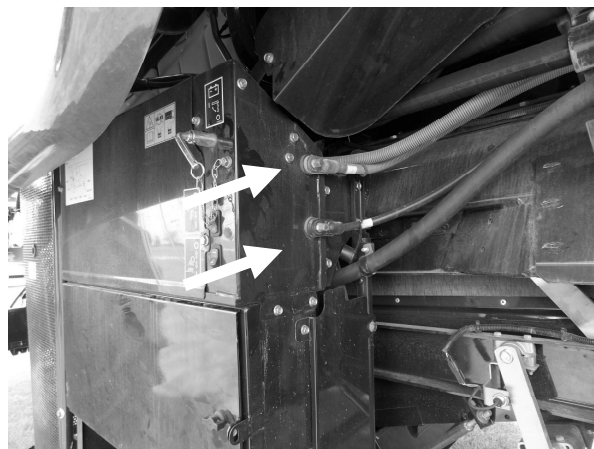
Access Vehicle Battery

Access Vehicle Battery

1. Locate the vehicle battery on the left side of the machine.

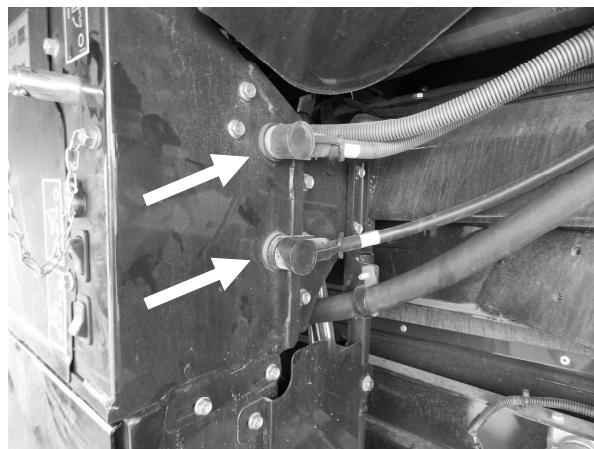


2. Identify the two power terminals on the outside of the battery box. These will be used for connecting your power cable.



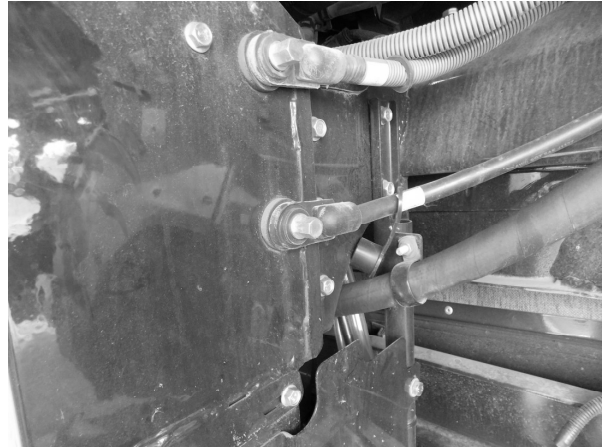
3. Remove the rubber boots covering the terminals.
4. Connect the positive (red) terminal of the display power harness to the positive (red) battery terminal.
5. Connect the ground terminal (black) from the display power harness to the negative (black) battery terminal.

NOTE: To avoid a short and possible fire hazard, follow electrical safety procedures when disconnecting the battery terminals. Do not allow tools to short between the positive terminal and the machine frame (ground).



Access Vehicle Battery

6. Tighten the nuts on the battery terminals.
7. Rout the power harness towards the cab in a protected position and secure with cable ties.



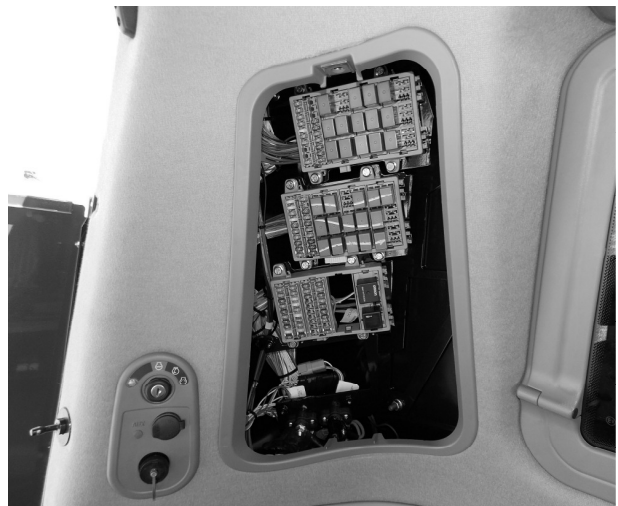
Alternative Power Connection

This vehicle has power junction posts that can simplify connecting auxiliary power cables. These posts will allow enough current to be supplied to the AutoSteer system, however it is not fused near the battery. If these connectors are used, the installer must disconnect battery power to the supply cables prior to connecting the AutoSteer battery supply cable to the terminals.

Note: Failure to disconnect the battery prior to connecting the AutoSteer battery supply cable may cause a short and damage to the vehicle if a live wire touches a ground when the nuts are removed from the terminal. Always disconnect the battery connection prior connecting the battery cable.

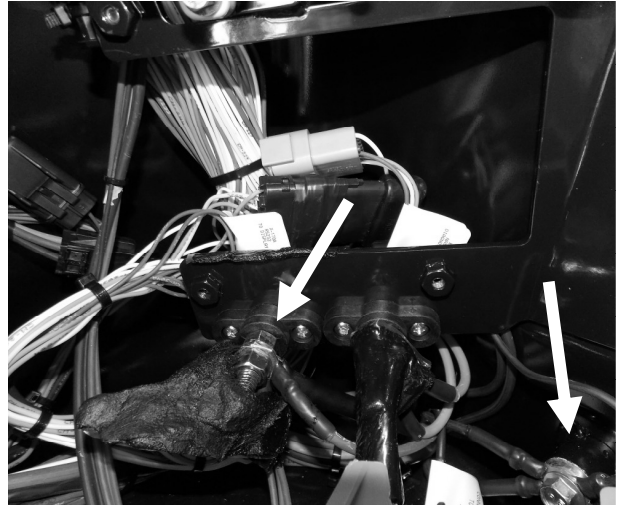
Alternative Power Connection

1. Open the fuse panel access door in the cab.

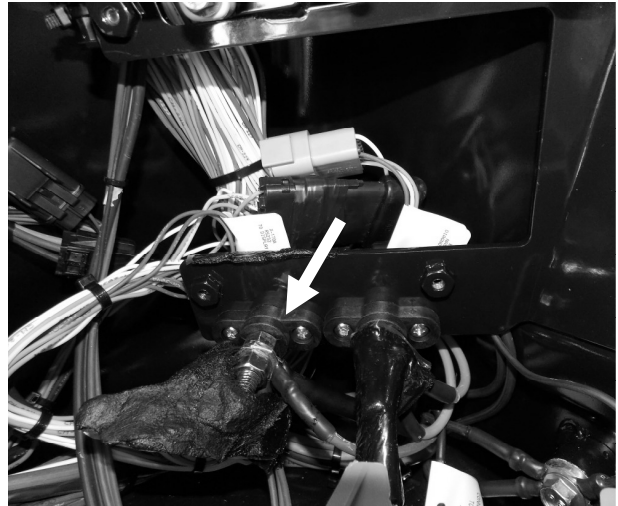


Alternative Power Connection

2. Identify the heavy duty positive and negative power terminals towards the bottom.



3. Connect the positive (red) terminal from the display power harness to the positive terminal on the machine.



Alternative Power Connection

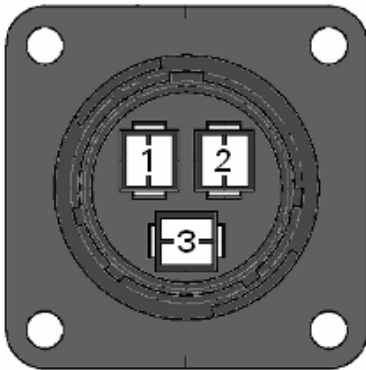
4. Connect the negative (black) end of the display power harness to the negative terminal screw on the machine frame.
5. Tighten all nuts and screws.
6. Connect the battery cables that were previously disconnected.



Cab 12 Volt Accessory Port

Some installations may allow the use of the Cab 12 Volt Accessory Port to provide power. Use this port only if the *Display Operator's Manual* directs you to do this.

Figure 4-4 Accessory Port Example



If this option is required and the vehicle does not have a 3-pin 12V power outlet in the cab, a Battery Power Adapter Kit (PN 201-0156-01) will need to be ordered and installed. Route the cable from the battery source to the Cab through the Cab Cable Access Point.

Note: Verify the fuse supplied with the kit is spliced between the end of the harness's Red and White wires and battery source. This provides power to pins 1 and 2 at the connector. The fuse protects the vehicle from a short should something damage the power cable. Failure to add the fuse may cause damage to the vehicle.

This solution is only necessary if your *Display Operator's Manual* directs you to connect to the Accessory Port.

Post-Installation Procedures and Information

Once the entire AutoSteer system, including the Display and Display Harnesses, has been installed on the vehicle, the procedures and notes provided in this chapter must be followed to complete the installation and prepare the vehicle for full AutoSteer capabilities.

Install Warning Label

Install the Warning Label on the cab window in a position that is easy to read and does not obstruct the driver's view of the road or surrounding obstacles.

Note: Install the Warning Label with the language that best matches the operator's language. If necessary, install labels in multiple languages. Warning labels are provided in the following languages: English, French, German, and Spanish.

Figure 5-1 AutoSteer Warning Label



Verify Vehicle's AccuGuide Ready System is Ready

The AutoSteer system performance and functionality depends on the factory installed AccuGuide Ready system being installed correctly and setup and calibrated by a factory rep. Failure to verify the above may cause the system to not to perform properly in the field while AutoSteering. Before setting the vehicle up in the AutoSteer system, verify the following:

- AccuGuide Ready components have been installed
- AccuGuide Ready components have been calibrated by vehicle service rep

AccuGuide Ready Installed on Vehicle

The AccuGuide Ready system must have the Steering Valve and all the sensors (Wheel Angle Sensor, Steering Wheel Encoder, etc.) installed on the vehicle from the factory. This must be confirmed by the vehicle manufacturer service rep. If any of the components are missing, the vehicle manufacturer service rep will have to have them installed prior to continuing with the AutoSteer setup.

AccuGuide Ready System Calibrated

The AccuGuide Ready system on the vehicle itself must be calibrated by a the vehicle manufacturer service rep. This should have been performed at the factory. However it may be necessary for the vehicle manufacturer service rep to repeat this process to ensure adequate performance. It is always best to verify these steps have been performed before continuing with the AutoSteer setup.

Create New Vehicle

The operator must first create a new vehicle profile. This configures the Steering System hardware so the Display can properly communicate with the various sensors and components on the vehicle. Enter all the appropriate information for setting up the vehicle.

1. Verify that the vehicle is in Park and/or the park brake is set to prevent the vehicle from moving.
2. Verify the vehicle is off. Do not start the vehicle yet.
3. Power up the AutoSteer system (turn the key to the Run position if necessary but do not start the engine).
4. Follow the instructions provided in the *Display Operator's Manual* to create a new vehicle using the **Setup Wizard**.

Note: Select **AccuGuide Ready** as the controller for the specific vehicle model when setting up your vehicle on the AutoSteer system Display

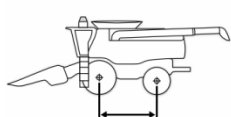
5. When the system reaches the *Auto Calibrate* screen, press the **Exit Screen Arrow** to exit the procedure and save the vehicle information.
6. Power down the AutoSteer System.


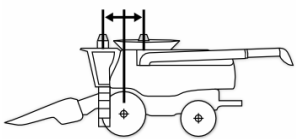
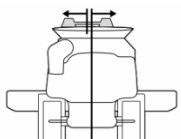
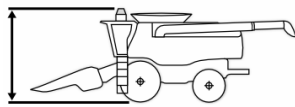
Calibration and Tuning Guidelines

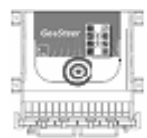
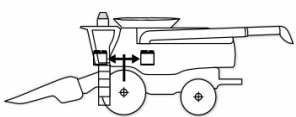
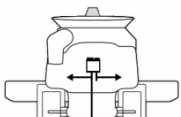

Note: For optimal steering performance, the AutoSteer system must be fully calibrated and then tuned.

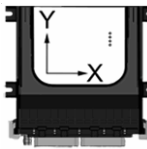
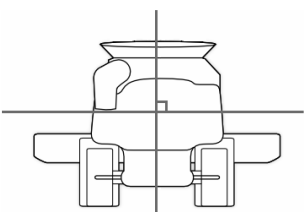
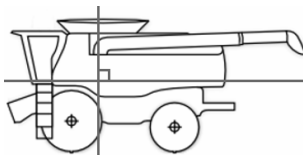
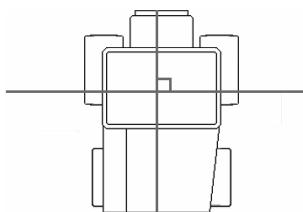
1. Start the vehicle and move it to an open area.
2. Power up the AutoSteer system.
3. Follow the instructions in the *Display Operator's Manual* to navigate to the **Vehicle** tab from the *AutoSteer Setup* screen. The current vehicle should have already been set up and selected during the **Create New Vehicle** section, if not, select the current vehicle profile in the **Manage Vehicle** screen.
4. From the **Vehicle** tab of the *AutoSteer Setup* screen, press the **Auto Calibrate** button. Follow the on screen procedure to calibrate the vehicle.
5. If additional performance is required, follow the instructions provided by the *Display Operator's Manual* to Tune the vehicle after the calibration has completed. Under normal circumstances this should not be necessary.

Vehicle Profile Worksheet

Wheel Base	Length	Units Used
		<input type="checkbox"/> Inches <input type="checkbox"/> Feet <input type="checkbox"/> Centimeters <input type="checkbox"/> Meters

GPS Antenna Location	Fore/Aft	Left/Right	Height
			
Measurements:	<input type="checkbox"/> Fore <input type="checkbox"/> Aft	<input type="checkbox"/> Left <input type="checkbox"/> Right	

AutoSteer Control Unit Location	Fore/Aft	Left/Right	Height
			
Measurements:	<input type="checkbox"/> Fore <input type="checkbox"/> Aft	<input type="checkbox"/> Left <input type="checkbox"/> Right	

	Direction of Arrows (Front, Back, Left, Right, Up, Down)	X Arrow	Y Arrow
AutoSteer Control Unit Orientation	X Axis	Y Axis	Z Axis
Draw Orientation of AutoSteer Control Unit for all Three Directions and Angle Measured			
Measured Angle (Degrees):			

After the completion of the AutoSteer installation, fill out this **Final Hardware Installation Checklist**. The checklist allows the installer to verify that all the steps have been performed and allows a place to record important system information for future reference.

AutoSteer Installation Kit Part Number: _____

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Name of Installer: _____ Date: _____

Final Hardware Installation Checklist

Completed

- | | |
|---|--------------------------|
| 1. Wheel Angle Sensor installed and all fasteners and rods are tight. | <input type="checkbox"/> |
| 2. Display Bracket and Display installed and all fasteners are tight. | <input type="checkbox"/> |
| 3. GPS Antenna is installed. | <input type="checkbox"/> |
| 4. AutoSteer Control Unit is installed firmly to frame and all fasteners are tight. | <input type="checkbox"/> |
| 5. All cable ends and terminations are connected. | <input type="checkbox"/> |
| 6. All cables are secured with cable ties. | <input type="checkbox"/> |

AutoSteer Performance Checklist

- | | | |
|--|--------------------------|---|
| 1. Verified manual steering speed from lock to lock is satisfactory. | <input type="checkbox"/> | Value _____ Sec |
| 2. Verified AutoSteer steering speed from lock to lock is satisfactory. | <input type="checkbox"/> | Value _____ Sec |
| 3. Checked the total Wheel Angle Sensor Counts. | <input type="checkbox"/> | Left _____
Center _____
Right _____ |
| 4. Verified that manual kick-out is working when the steering wheel is turned. | <input type="checkbox"/> | |
| 5. Completed the AutoSteer system calibration. | <input type="checkbox"/> | |
| 6. Completed the AutoSteer system tuning (if necessary). | <input type="checkbox"/> | |
| 7. Verified Line Acquisition steering performance is satisfactory. | <input type="checkbox"/> | |
| 8. Verified On-Line steering performance is satisfactory. | <input type="checkbox"/> | |