Please refer to this manual prior to beginning the installation of the GeoSteer® system.

**AutoGuide® Ready Installation**

Supported Models.

**Gleaner**
- R66
- R76

**Massey Ferguson**
- 9520
- 9540
- 9560

**Gleaner**
- S67
- S77

**AGCO Challenger**
- 540C
- 560C
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Introduction

This manual provides the basic information and overview of the installation procedure for installing a GeoSteer system on a vehicle. The GeoSteer 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 a GeoSteer system.

This manual provides the instructions for the installation of the components that come with this GeoSteer 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 GeoSteer system, be sure to read and understand the GeoSteer Operator’s Manual that comes with the GeoSteer system. That manual provides the instructions on how to operate the GeoSteer system as well as additional safety information.

Legal Disclaimer

Note: Read and follow ALL instructions in this manual carefully before installing or operating the GeoSteer 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 GeoSteer 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 GeoSteer 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 GeoSteer system will take over control of the vehicle’s steering system when the GeoSteer 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 GeoSteer system, verify that all people and obstacles are clear of the vehicle to prevent death, injury, or damage to property.

4. Use of the GeoSteer 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.

1 GeoSteer is a registered trademark of Novariant, Inc.
Safety Information

Warning Alerts

The GeoSteer 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 GeoSteer 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 a GeoSteer equipped vehicle, read the provided documentation prior to installing or operating the GeoSteer 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 GeoSteer system engaged.

⚠️ WARNING

To prevent accidental death or injury from being run over by the vehicle verify that area around the vehicle is clear of people and obstacles before startup, calibration, tuning, or use of the GeoSteer system.
To prevent the accidental engagement of the GeoSteer system and loss of vehicle control while driving on roads, shut down the GeoSteer system. Never drive on roads or in public areas with the GeoSteer system powered up.

Verify that you are in a stable position on the vehicle’s platform or stairs when installing or removing the GeoDock so you do not fall. If the vehicle does not provide a safe platform, use a ladder to safely access the vehicle’s roof.

To avoid electrical shock hazards, remove the GeoDock and/or other antennas from the vehicle before driving under low structures or low electrical power lines.

High-Pressure Fluid Hazard
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.

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.
Safety Information

Caution Alerts

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

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>The GeoDock must be removed when transporting or driving the vehicle at speeds above 31 mph (50 km/h). The GeoDock can possibly detach due to wind loads at higher speeds.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>The GeoSteer 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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>The GeoSteer 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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>The GeoSteer system must be powered OFF when installing or removing the GeoDock, GeoSteer Control Unit, or any other part of the GeoSteer system.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>The GeoDock must always be firmly secured to the mounting plate via the magnet whenever the vehicle is in operation to prevent the GeoDock from releasing from its bracket and falling and to ensure the GeoDock is placed at the same point every time.</td>
</tr>
</tbody>
</table>
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 installations.

- Drill
- Silicone sealant
Vehicle Requirements

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

- If the vehicle is equipped with a factory installed steering system (ex. AutoTrac Ready\textsuperscript{2}, AccuGuide Ready\textsuperscript{3}, IntelliSteer Ready\textsuperscript{4}, AutoGuide\textsuperscript{2} Ready\textsuperscript{3}, VarioGuide Ready\textsuperscript{6}, Agrosky Ready\textsuperscript{7}), 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.

  \textbf{Note:} Verify that the factory supplied components have been calibrated and set up by the vehicle manufacture’s service provider prior to installing the GeoSteer 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 GeoSteer system. A clean vehicle will improve the overall installation and cable routing and will also reduce the chance for 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 GeoSteer installation by a qualified service person for the vehicle.

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

\textbf{Note:} After the installation is completed, be sure to complete the \textit{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 \textit{Display Operator’s Manual} for technical support information.

Contact Information

Refer to your \textit{Display Operator’s Manual} for contact information.

\textsuperscript{2} AutoTrac is a registered trademark of John Deere
\textsuperscript{3} AccuGuide is a registered trademark of Case IH
\textsuperscript{4} IntelliSteer is a registered trademark of New Holland
\textsuperscript{5} AutoGuide\textsuperscript{2} is a registered trademark of AGCO
\textsuperscript{6} VarioGuide is a registered trademark of Fendt
\textsuperscript{7} Agrosky is a registered trademark of Same Deutz Fahr
Vehicle Inspection

Prior to installing the GeoSteer 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 and 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 okay.
- Verify 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 GeoSteer 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 Gleaner combines with the factory installed AutoGuide® steering system installed.

The AutoSteer installation kit PN: 186-0075-01 is used on the following vehicle series:

- Gleaner RX6 Series (R66 and R76) model year start 2009
- Gleaner SX7 Series (S67 and S77) model year start 2011
- Massey Ferguson  9520, 9540, 9560
- AGCO Challenger 540C, 560C

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 all the components will work and that any component with specific orientation and mounting requirements are met.
Kit Overview

The sub-kits that are required for the installation of the GeoSteer 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.

**GeoSteer System Kit**

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

**Note:** If the GeoSteer System Kit components have been installed on another vehicle and this kit is being installed as a switch kit, additional cables and harnesses (Items 2, 3, and 4) provided in this section 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.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>GeoSteer System Kit Components Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>Component</td>
</tr>
<tr>
<td>1.</td>
<td>GeoSteer Control Unit Assembly</td>
</tr>
<tr>
<td>2.</td>
<td>Cable, GPS Coax</td>
</tr>
<tr>
<td>3.</td>
<td>Cable, Cell Modem Coax</td>
</tr>
<tr>
<td>4.</td>
<td>Harness, Main GeoSteer</td>
</tr>
<tr>
<td>5.</td>
<td>GeoDock</td>
</tr>
</tbody>
</table>

**Figure 1-1  GeoSteer System Kit Components**
Display Kit

The GeoSteer system is compatible with multiple models of Displays. The Display power and communication cables are supplied with the Display Kit. The GeoSteer 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 GeoSteer Vehicle Install Kit provides all the components required to install a GeoSteer 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 GeoSteer 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.

<table>
<thead>
<tr>
<th>Item</th>
<th>Sub-Kit Identification</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>GeoSteer Vehicle Specific Kit</td>
<td>186-0075-01</td>
</tr>
</tbody>
</table>
GeoSteer Vehicle Specific Kit

Figure 1-2 GeoSteer Vehicle Specific Kit Components

Table 3 GeoSteer Vehicle Specific Kit Components Descriptions

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Common Parts</td>
<td>200-0647-03</td>
</tr>
<tr>
<td>2.</td>
<td>Harness, ECU to CAN</td>
<td>201-0584-01</td>
</tr>
<tr>
<td>3.</td>
<td>Install Guide</td>
<td>602-0372-01</td>
</tr>
<tr>
<td>4.</td>
<td>Bracket, ECU Mounting Kit</td>
<td>200-0679-03</td>
</tr>
<tr>
<td>5.</td>
<td>ECU Dummy Connector</td>
<td>201-0566-01</td>
</tr>
<tr>
<td>6.</td>
<td>Grommet, 1-3/4 OD 1-1/2 ID</td>
<td>508-0001-01</td>
</tr>
<tr>
<td>7.</td>
<td>Hole Saw, 1-3/4&quot;</td>
<td>808-0041-01</td>
</tr>
<tr>
<td>8.</td>
<td>Drill Bit, 1/4&quot;</td>
<td>500-0338-01</td>
</tr>
</tbody>
</table>
Cable Connection Diagram with AutoGuide² Adapter Harness

- Cell Antenna Coax Cable (PN 201-0539-02) is not required if not using a Cell Modem.
- Foot Switch (PN 201-0376-01) is an optional accessory.
- Remote Engage Harness (PN 201-0563-01) is a optional accessory to allow an external engage switch to be connected to the GeoSteer Control Unit.
- Vehicle Port Dummy Connector (PN 201-0566-01) must be installed if not using the optional Remote Engage Harness (PN 201-0563-01) to protect the Vehicle Port of the GeoSteer Control Unit.
- Refer to the Display Operator’s Manual for more detailed instructions on how to connect the GeoSteer to the Display data and power ports.
- Component definitions
  - DISPLAY – The Display that is connected to the GeoSteer system
  - BATTERY – The battery terminals for the power source for the GeoSteer system and Display
  - GEOSTEER CONTROL UNIT – The GeoSteer Control Unit
  - GEODOCK – The GPS antenna and optional cell modem antenna and/or radio modem kits mounted on the roof
  - FOOT SWITCH* – The optional Foot Switch that can be used for Remote Engage (not required for installation)
  - REMOTE ENGAGE HARNESS* - The optional harness that can be used to connect a Remote Engage Switch to a CAN steered vehicle using the Vehicle port on the GeoSteer Control Unit.
  - CAN BUS – The CAN Bus on the vehicle that communicates to the factory installed steering system.

Figure 1-3 GeoSteer to AutoSteer Valve Cable Connections
Installation Procedure Overview

This section provides an overview of all the steps that are required to complete the GeoSteer 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. **GeoDock** – Install the GeoDock Mounting Bracket and GeoDock on top of the vehicle’s cab roof. See the *Install GeoDock Mounting Bracket* chapter in this manual.

3. **Display RAM Mount** – Install the Display RAM Mount inside the cab. See the *Install Display Mounting Bracket* chapter in this manual.

4. **Display** – Follow the instructions provided with *Display Operator’s and Installation Manual* that comes with the Display Kit.

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

5. **GeoSteer Control Unit** – Follow the instructions provided in the ECU Mounting Bracket Install Kit.

   Note: The GeoSteer 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 (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 GeoSteer Control Unit when provided.

6. **GeoSteer Main Harness** – See the *Install GeoSteer Harnesses* chapter in this manual. Route the harness connections between the GeoSteer Control Unit’s left connector to each of the following:

   a. The Display and/or Display Harnesses (see *Display Operator’s Manual* for instructions)
   b. The Power Activation connection (see *Display Operator’s Manual* for instructions)
   c. Power Supply (see *Display Operator’s Manual* for instructions)

7. **GeoSteer Vehicle-Specific Harness** – See the *Install GeoSteer Harnesses* chapter in this manual.

   a. Install the Vehicle Port Dummy Connector (PN 201-0566-01) to protect unused port on the GeoSteer Control Unit.
8. **GeoDock Cables** – Route the following cables from the GeoSteer Control Unit to the GeoDock.

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

   a. GPS Coax Cable  
   b. Cell Modem Coax Cable (if required)  
   c. Radio Modem Data/Power Harnesses (if required)

9. **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 GeoSteer system.  
   c. Create a new vehicle profile.

10. **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.

11. **Vehicle Checklist** – Fill out the *Installation Checklist* at the end of this manual.
Install GeoDock Mounting Bracket

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

Overview
The GeoDock 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 GeoDock assembly is also the location where the optional radio modem antenna and radio modem or OmniSTAR demodulator accessory kits are installed. The GeoDock is attached magnetically to a GeoDock Mounting Plate that is permanently attached to the roof of the vehicle. This allows the GeoDock to be quickly removed and reattached in the same location on the vehicle.

Installation Procedure
This GeoDock 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 GeoDock Mounting Plate needs to be mounted flat, on the top of the vehicle in a stable location.
**Installation Procedure**

## Install GeoDock Mounting Plate

1. **Remove the GeoDock Mounting Plate from the installation kit.**

   **Note:** Notice the three tabs on the GeoDock Mounting Plate. They are used to center the GeoDock 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 by 20 inches (25 cm by 50 cm) along the center line of the cab roof.**

   **Note:** It may be necessary to build a mounting bracket to allow the GeoDock 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.
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 GeoDock Mounting Plate to the roof.

6. Use fixed points on the roof and a tape measure to find the exact centerline 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 the cab could be offset.

Always verify that the centerline marked is the centerline of the vehicle not just the cab.

7. Remove the four adhesive backings on the GeoDock Mounting Plate.
8. Use the two notches on the GeoDock Mounting Plate to center it over the marks that show the centerline of the vehicle. Carefully place the GeoDock Mounting Plate on the clean area.

**Note:** The GeoDock 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 GeoDock Mounting Plate is marked **FRONT** and should be oriented towards the front of the vehicle.

**Note:** Verify that the GeoDock 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 GeoDock 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.

10. Refer to your GeoSteer Operator’s Manual for instructions on installing and removing your GeoDock.
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 GeoSteer 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 on Page 13, 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 GeoSteer 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 GeoSteer 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. Locate the Cab Cable Access Point under the cab on the right side.
2. Locate the flat area behind the connectors coming from the bottom of the cab on the right side.

3. A hole will need to be drilled at this location later. Verify that there is nothing in the way that could be damaged when the hole is drilled.

4. Locate Cable Cab Access Point inside the cab under the plastic cover on the right side of the seat.

5. Open the right side window by releasing the latch and then pulling the pin holding the window to the latch.
6. Locate the rubber mat on top of the plastic cover. Use a flat screwdriver to pry the mat up and remove it.

7. Remove the three screws with a #2 Phillips screwdriver and then remove the plastic cover.

8. Remove the foam cover.
9. Locate the flat area to the rear of the cable connectors going down out the bottom of the floor.

10. Move the cables out of the way and drill a 1-3/4” hole through the steel plate to gain access to the outside where the cross hair is shown.

   **Note:** Verify that the drill bit will not damage anything under the cab.

11. Pass all cables and harnesses that need to go between the inside and outside of the cab through this port.

   **Note:** When all cables have been routed seal the hole using a rubber grommet and/or silicone sealant so that dirt, rodents, etc. cannot gain access to the cab.

---

**Attach Harnesses to GeoSteer Control Unit**

The GeoSteer Control Unit has two 30 port connectors. These connectors are keyed so that the connector can be attached in the proper port and orientation. The connectors on the GeoSteer Control Unit and the cables also have a colored dot to aid attaching the cables properly. The GeoSteer 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.
Vehicle Port Dummy Connector

This installation connects to the CAN Bus of the vehicle and thus the Vehicle Specific ECU Harness is not used. The installation kit comes with a Vehicle Port Dummy Connector (PN 201-0566-XX) that is used to protect the terminals on the GeoSteer Control Unit. Attach the 30-pin dummy connector to the right side connector on the GeoSteer Control Unit with a 1/4” nut driver. The dummy connector is keyed and has a White dot that needs to be matched to the port on the GeoSteer Control Unit.

Note: Never force the connector.

Note: The optional Remote Engage Harness (PN 201-0563-XX) can be connected to this port instead of the dummy connector in the event the user wishes to attach the optional Foot Switch (PN 201-0376-XX) or some other remote engage switch.
Attach Harnesses to GeoSteer Control Unit

**GeoSteer Main Harness**

The GeoSteer Main Cable Harness provides power to the GeoSteer Control Unit and communications to the Display and other accessories. This harness is connected to GeoSteer Control Unit’s left 30-pin port with a 1/4” nut driver. The cable connector is keyed and has a Yellow dot that needs to be matched on the correct connector on the GeoSteer Control Unit.

**Note:** Never force the connector.

---

**Figure 4-3 GeoSteer Main Harness Connector**

![GeoSteer Main Harness Connector](image)

---

**Figure 4-4 shows the GeoSteer Main Harness and the labels that are on each connector. Table 4 shows the functions of each the GeoSteer Main Harness cab connectors. Refer to your Display Operator’s Manual for instructions on connecting the GeoSteer Main Harness connections (Ethernet to Display, Power Activation, and Unswitched Power) to the correct ports and harnesses on the Display and Display harnesses.**

**Figure 4-4 GeoSteer Main Harness**

![GeoSteer Main Harness](image)
### Table 4  GeoSteer Main Harness Connections

<table>
<thead>
<tr>
<th>GeoSteer Main Cable Harness Connector</th>
<th>Connected to</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECU</td>
<td>GeoSteer Control Unit left side 30-Pin connector</td>
</tr>
<tr>
<td>ETHERNET TO DISPLAY</td>
<td>Ethernet Port (RJ-45) connected to the Display or Display Harness</td>
</tr>
<tr>
<td>UNSWITCHED POWER</td>
<td>12 Volt Power Source from Battery Harness</td>
</tr>
<tr>
<td>POWER ACTIVATION</td>
<td>Power activation signal from the Display or Display Harness</td>
</tr>
<tr>
<td>EXPANSION</td>
<td>Used to communicate and/or power optional accessories such as GeoDock Radio Modems or OmniSTAR demodulator</td>
</tr>
<tr>
<td>CAN</td>
<td>CAN Adapter Harness that connects to vehicle CAN Bus port</td>
</tr>
<tr>
<td>NMEA-A &amp; RADIO</td>
<td>Provides NMEA out and/or correction input from optional Third Party External Radio Modems</td>
</tr>
<tr>
<td>NMEA-B</td>
<td>Provides NMEA out to optional Third Party Devices</td>
</tr>
</tbody>
</table>

**CAN Connections**

For this installation the GeoSteer is connected to the vehicle's CAN Bus system and sends steering commands directly to the vehicle. The vehicle then takes this information to control the steering of the vehicle. The GeoSteer system does not communicate directly with the vehicle's steering valve or Wheel Angle Sensor in this installation.

### Connect CAN Connections

1. Attach the CAN Adapter Cable to the CAN connection on the GeoSteer Main Harness.
2. Locate the vehicle CAN connector under the front, center part of the cab.

3. Locate the three pin CAN Connector behind the steering valve and Orbitrol.

4. Cut the cable tie holding the connector to the rest of the wire bundle and then separate the CAN Terminator from the connector.
5. Route the CAN Adapter Harness from the GeoSteer Control Unit towards the vehicle CAN Connector.

6. Attach one end of the CAN Adapter Harness Tee to the vehicle CAN connector.

7. Attach the CAN Terminator removed earlier to the other end of the CAN Adapter Harness Tee.

8. Secure the CAN Adapter Harness with cable ties.

**Coax Cables**

The GeoSteer Control Unit is connected to the GeoDock with one or two coax cables, depending on the options that have been ordered. One of the coax cables connects the TNC connector on the GeoDock GPS antenna to the TNC connector on the GeoSteer Control Unit. If a cell modem is installed in the GeoSteer Control Unit, the second coax cable connects the Reverse TNC connector from the Cell Modem Antenna on the GeoDock to the SMA connector on the GeoSteer Control Unit. *Figure 4-5 and Figure 4-6 show the connectors on the GeoSteer Control Unit and GeoDock that need to be connected.*

**Note:** Do not use a tool to tighten the coax connectors on either end of the coax cable. Hand tighten only or the connectors could be damaged.
Note: If the installation requires connecting to a GS-900, GS-450, or OmniSTAR Accessory in the GeoDock, a power and communication harness will be routed from the GeoDock to the GeoSteer Control Unit as well as the coax cables. Refer to the instructions that come with the optional accessory for connection information. Route the harness the same way as the coax cables.

Routing Cables from the Top of Cab

1. Route the cables from the top of the roof to the back of the cab.
2. Route the cables down the back of the cab and secure with cable ties to existing structures.
Power Supply for AutoSteer System

The GeoSteer 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 GeoSteer system. The GeoSteer Control Unit must also be connected to a power activation signal from the Display. This connector provides a signal to the GeoSteer 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 GeoSteer system to power and the power activation signal. Figure 4-7 shows an example of a typical power connection scenario.

**Figure 4-7 Typical Battery Cable Connection Diagram**

![Typical Battery Cable Connection Diagram](image)

**Accessing Vehicle Battery**

The GeoSteer system and Display should get their power directly from the vehicle’s battery. Use this information to access the battery location.

### Access Vehicle Battery

1. Locate the battery compartment hatch on the rear, right side of the machine above the rear axle.
Access Vehicle Battery

2. Turn the bolt holding the door shut with a 9/16” socket.

3. Locate the batteries.

4. Attach Display power cable to the positive and negative terminals of the battery and route harness towards the cab.
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. Locate the battery disconnect under the side panel just in front of the battery compartment.

2. Locate the battery disconnect handle.
3. Turn the handle to the disconnect position. All power to the combine should be disabled now.

   **Note:** Verify that power has been disconnected before proceeding.

4. Locate the Alternative Power location under the right, front part of the cab near the Cab Cable Access Point.

5. Attach Display power cable to the positive and negative posts.
**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 4-8 Accessory Port Example**

This vehicle does not have a 12 Volt Accessory Port in the cab from the factory. If this option is required, 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.
Verify Vehicle's AutoGuide$^2$ System is Ready

The AutoSteer system performance and functionality depends on the factory installed AutoGuide$^2$ system being installed correctly, setup and calibrated by a factory rep, and being manually activated. Failure to verify all of the above may cause the system to not communicate or perform properly in the field while AutoSteering. Before setting the vehicle up in the AutoSteer system, verify the following:

- AutoGuide$^2$ components have been installed
- AutoGuide$^2$ components have been calibrated by vehicle service rep
- AutoGuide$^2$ has been activated

AutoGuide$^2$ Installed on Vehicle

The AutoGuide$^2$ 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.

AutoGuide$^2$ System Calibrated

The AutoGuide2 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.

Activate AutoGuide$^2$ on Vehicle

AutoGuide$^2$ equipped vehicles have a three way rocker switch that activates the Steering Valve and other AutoGuide$^2$ components that override any commands sent from the AutoSteer system. The switch is located under the armrest cover on the right side of the seat.

Figure 5-2  Locate Armrest Cover and Flip Open

![Image of armrest cover and switch]
Verify Vehicle's AutoGuide2 System is Ready

Figure 5-3  Switches Under Armrest Cover

Figure 5-4  AutoGuide2 Activate Switch

Before the AutoSteer system can communicate to the AutoGuide2, the rocker switch must be put into Engaged Position. The rocker switch position functions are as follows:

• **Off Position** (bottom part of rocker switch flush with panel) - Shuts down all power to AutoGuide2 system.

• **Power Position** (rocker switch in the middle position) - Powers up the AutoGuide2 system but does NOT allow the Steering Valve to receive commands from the AutoSteer system.

• **Engaged Position** (top part of rocker switch flush with panel) - AutoGuide2 system is fully enabled and ready for AutoSteering. Switch must be in this position for the AutoSteer system to communicate to the vehicle.

Refer to your specific model Vehicle Owner's Manual for a more complete explanation of the recommended AutoGuide2 Rocker Switch operational features.
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 Auto-Guide2 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

<table>
<thead>
<tr>
<th>Wheel Base</th>
<th>Length</th>
<th>Units Used</th>
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<tbody>
<tr>
<td><img src="image" alt="Wheel Base Image" /></td>
<td><img src="image" alt="Length Image" /></td>
<td>Inches, Feet, Centimeters, Meters</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GPS Antenna Location</th>
<th>Fore/Aft</th>
<th>Left/Right</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Antenna Image" /></td>
<td><img src="image" alt="Measurement Image" /></td>
<td><img src="image" alt="Measurement Image" /></td>
<td><img src="image" alt="Measurement Image" /></td>
</tr>
</tbody>
</table>

**Measurements:**
- Fore Aft
- Left Right

<table>
<thead>
<tr>
<th>GeoSteer Control Unit Location</th>
<th>Fore/Aft</th>
<th>Left/Right</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Control Unit Image" /></td>
<td><img src="image" alt="Measurement Image" /></td>
<td><img src="image" alt="Measurement Image" /></td>
<td><img src="image" alt="Measurement Image" /></td>
</tr>
</tbody>
</table>

**Measurements:**
- Fore Aft
- Left Right

<table>
<thead>
<tr>
<th>Direction of Arrows (Front, Back, Left, Right, Up, Down)</th>
<th>X Arrow</th>
<th>Y Arrow</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Arrow Directions Image" /></td>
<td><img src="image" alt="Arrow Image" /></td>
<td><img src="image" alt="Arrow Image" /></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>GeoSteer Control Unit Orientation</th>
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<th>Y Axis</th>
<th>Z Axis</th>
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</thead>
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<td><img src="image" alt="Axis Image" /></td>
<td><img src="image" alt="Axis Image" /></td>
<td><img src="image" alt="Axis Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Draw Orientation of GeoSteer Control Unit for all Three Directions and Angle Measured</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Orientation Diagram" /></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Measured Angle (Degrees):</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Angle Measurement Image" /></td>
</tr>
</tbody>
</table>
Final Hardware Installation Checklist

After the completion of the GeoSteer 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.

<table>
<thead>
<tr>
<th>Machine Model: ______________________________</th>
<th>Year: ______</th>
<th>Serial #: ______________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Name: __________________________________________________________________________</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location/Address: _________________________________________________________________________</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GeoSteer Installation Kit Part Number: ______________________________________________________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**

________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________

Name of Installer: ______________________________ | Date: ______________________________

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Final Hardware Installation Checklist

1. Display Bracket and Display installed and all fasteners are tight.
2. GeoDock is installed.
3. GeoSteer Control Unit is installed firmly to frame and all fasteners are tight.
4. All cable ends and terminations are connected.
5. All cables are secured with cable ties.

GeoSteer Performance Checklist

1. Verified manual steering speed from lock to lock is satisfactory. □ Value __________ Sec
2. Verified GeoSteer steering speed from lock to lock is satisfactory. □ Value __________ Sec
3. Verified that manual kick-out is working when turn the steering wheel. □
4. Completed the GeoSteer system calibration. □
5. Completed the GeoSteer system tuning (if necessary). □
6. Verified Line Acquisition steering performance is satisfactory. □
7. Verified On-Line steering performance is satisfactory. □