AutoSteer
Install Kit: 186-0003-01

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

**CAN Installation**

**Supported Models.**

<table>
<thead>
<tr>
<th>Challenger</th>
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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 a 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 area around the vehicle is clear of people and obstacles before startup, calibration, tuning, or use of the AutoSteer system.
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.

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.

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.

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.
Safety Information

⚠️ WARNING

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.

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:

⚠️ CAUTION

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.

⚠️ CAUTION

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.

⚠️ CAUTION

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.

⚠️ CAUTION

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.
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:

- Alcohol pads or other cleaning solution to verify oil and dirt is removed from surfaces prior to gluing them
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 Ready\(^1\), AccuGuide Ready\(^2\), IntelliSteer Ready\(^3\), AutoGuide\(^4\) Ready\(^5\), VarioGuide Ready\(^6\), Agrosky Ready\(^6\)), 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 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 AutoSteer installation by a qualified service person for the vehicle.

  **Note:** This installation manual, vehicle specific installation manuals, and sub-kit manuals contains 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  
\(^4\)AutoGuide\(^2\) is a registered trademark of AGCO  
\(^5\)VarioGuide is a registered trademark of Fendt  
\(^6\)Agrosky is a registered trademark of Same DeutzFahr
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 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 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 Challenger track vehicles with the factory installed CAN interface installed.

The AutoSteer installation kit PN: 186-0003-01 is used on the following vehicle series:

- Challenger MT7X5 Series (MT735, MT745, MT755, and 765) model year start 2002
- Challenger MT7X5B Series (MT745B, MT755B, and MT765B) model year start 2005
- Challenger MT7X5C Series (MT745C, MT755C, and MT765C) model year start 2009
- Challenger MT7X5D Series (MT745D, MT765D, and MT765D) model year start 2012
- Challenger MT-7X5E Series (MT-755E, MT765E, and MT775E) model year start 2014
- Challenger MT8X5 Series (MT835, MT845, MT855, and MT865) model year start 2002
- Challenger MT8X5B Series (MT835B, MT845B, MT855B, and MT875B) model year start 2005
- Challenger MT8X5C Series (MT835C, MT845C, MT855C, MT865C, and MT875C) model year start 2009
- Challenger MT8X5E Series (MT845E, MT855E, MT865E, and MT875E) model year start 2014.

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 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.

GPS Receiver with Antenna

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.

Table 1-1 Vehicle Install Kit Sub-Kits for 186-0003-01

<table>
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<th>Item</th>
<th>Sub-Kit Identification</th>
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<td>1.</td>
<td>AutoSteer Vehicle Specific Kit</td>
<td>186-0003-01</td>
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</table>
AutoSteer Vehicle-Specific Kit

Figure 1-1  AutoSteer Vehicle-Specific Kit Components (186-0003-01)

Table 1-2  AutoSteer Vehicle Specific Kit Components Descriptions

<table>
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<tr>
<th>Item</th>
<th>Component</th>
<th>Part Number</th>
</tr>
</thead>
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<tr>
<td>1.</td>
<td>Assembly, Common Parts</td>
<td>200-0647-03</td>
</tr>
<tr>
<td>2.</td>
<td>Harness, ECU to CAN</td>
<td>201-0487-01</td>
</tr>
<tr>
<td>3.</td>
<td>Harness, Battery Cable 22 ft</td>
<td>201-0488-02</td>
</tr>
<tr>
<td>4.</td>
<td>Install Guide</td>
<td>602-0386-02</td>
</tr>
<tr>
<td>5.</td>
<td>Assembly, ECU Mounting Kit</td>
<td>200-0691-03</td>
</tr>
<tr>
<td>6.</td>
<td>ECU Dummy Connector</td>
<td>201-0566-01</td>
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Cable Connection Diagram with Challenger CAN Connection

- Foot Switch (PN 201-0376-01) is an optional accessory.
- Remote Engage Harness (PN 201-0563-01) is an optional accessory to allow an external engage switch to be connected to the AutoSteer 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 AutoSteer Control Unit.
- 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 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 AutoSteer Control Unit.
- CAN BUS – The CAN Bus on the vehicle that communicates to the factory installed steering system.

Figure 1-2 AutoSteer to Vehicle Cable Connections

Note: The number and type of connectors on the main harness can vary according to the AutoSteer Control Unit (ECU) installed.
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. **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.

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: 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.

5. **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 (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.

6. **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. 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. **AutoSteer Vehicle-Specific Harness** – See the Install AutoSteer Harnesses chapter in this manual.

   a. Install the Vehicle Port Dummy Connector (PN 201-0566-01) to protect unused port on the AutoSteer Control Unit.
   b. Install CAN Adapter Harness (PN 201-0487-01).
Installation Procedure Overview

8. **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. GPS Coax Cable (if required)
   b. Cell Modem Coax Cable (if required)
   c. Radio Modem Data/Power Harnesses (if required)
   d. Serial NMEA cable (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 AutoSteer 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 GPS Antenna Mounting Bracket

⚠️ WARNING
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.

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.
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 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.
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 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 if the cab is offset.
Always verify that the centerline used is the center line of the vehicle not necessarily the cab.

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

**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 centerline 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.

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 on Page 12, 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. Locate the Cab Cable Access Point at the rear of the cab near the lower, right part of the back window.
2. Locate Cable Cab Access Point inside the cab at the lower, right side of the rear window.

3. Pull the plastic cover up to gain access to the Cable Cab Access Point.

4. Open the rear window by releasing the latch and then pushing the window out.
5. Locate the rubber insert at the lower, right side of the cab.
6. Pull the rubber insert up and out. Pass cables in and out of the slot and through the rubber insert.

**Note:** A hole will need to be put into the rubber insert with a knife to allow cables to be passed through it when it is reinstalled after the cables have been routed.

---

**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

ECU Main Harness - Yellow

Vehicle Port Dummy Connector - White
Attach Harnesses to AutoSteer Control Unit

**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 AutoSteer Control Unit. Attach the 30-pin dummy connector to the right side connector on the AutoSteer 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 AutoSteer Control Unit.

*Note:* Never force the connector.

---

**Figure 4-2 AutoSteer Control Unit Vehicle Port Dummy Connector**

![Diagram of AutoSteer Control Unit Vehicle Port Dummy 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.

---

**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 each have their own specific cables and installation instructions.

**CAN Connections**

For this installation the AutoSteer 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 AutoSteer 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 AutoSteer Main Harness.

2. Locate the right side panel covering the vehicle CAN connector.

3. Rotate the two latches counter-clockwise to release and then pull the cover up.

The location of the CAN connectors inside the panel is slightly different depending on the series that the system is being installed on. Refer to one of the following sections that pertain to the vehicle that the system is being installed on.
1. Remove the side console panel.

2. Lift the floor mat on the right side of the cab around the fuse area to gain better access to the wires at the bottom, rear part of the fuse box area.

3. Locate the four-pin CAN Bus connector in the bundle of wires near the bottom of the fuse area. Split the connection by pressing the release latch.
Attach Harnesses to AutoSteer Control Unit

Connect CAN Connections (Original and B Series)

4. Attach the CAN Adapter Harness to the two CAN connector on the vehicle (make sure the connector clicks to lock into place).

5. Secure the CAN Adapter Harness with cable ties.

Connect CAN Connections (C, D and E Series)

1. Remove the side console panel.

2. Lift the floor mat on the right side of the cab around the fuse area to gain better access to the wires at the bottom, rear part of the fuse box area.

   Note: The CAN connectors can be difficult to find as they are near the back of the compartment behind the other wires.
3. Locate the four-pin CAN Bus connector in the bundle of wires near the bottom of the fuse area. Split the connection by pressing the release latch.

4. Attach the CAN Adapter Harness to the two CAN connector on the vehicle (make sure the connector clicks to lock into place).

5. Secure the CAN Adapter Harness with cable ties.

---

Replace Side Cover

1. Turn both thumb screws on the fuse panel cover counter clockwise until they stop turning.

   **Note:** As the thumb screws are loosened, they allow the locking clips to get more distance from the panel. This makes reattaching the panel to the vehicle easier.

2. Verify that the locking tab is perpendicular to the side of the cover.
Replace Side Cover

3. Pass the cables out the lower, rear area of the panel and replace the cover.
4. Verify that the receptacle in the back of panel matches the tab along the back of the console.
5. Verify that the two thumbscrew tabs enter the latch holes and then turn the thumbscrews clockwise until they are tightened.

Route Cables to Top of Cab

1. Route the cables along the bottom of the window to the Cab Cable Access Point.
2. Route the cables up the left, rear cab column and secure them to the vehicle with cable ties to the side door hinges.
3. Secure the cables with cable ties to the left, rear light.
4. Route the cables from the back of the roof to the top of the cab.

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.
Access Vehicle Battery

The AutoSteer system and Display should get their power directly from the vehicle’s battery. Use this information to access the battery location. A longer Battery Cable is provided with this kit to run from the front of the machine into the cab.

1. Locate the battery compartment on the front of the engine compartment.
2. Release to hood latches on both sides of the hood.

3. Lift the hood and locate the battery compartment.

4. Locate the positive (RED) and negative (black) battery terminals.
Power Supply for AutoSteer System

Cab 12 Volt Accessory Port

Some installations may allow the use of the Cab 12 Volt Accessory Port to provide power. Use this 3-pin port only if the Display Operator’s Manual directs you to do this.

### Cab Accessory Port

1. The Cab Accessory Port is located on the right side of the rear console behind the operator's seat. It is a 3-pin connector with flat terminals.

2. Cab Accessory Port shown.

   **Note:** Use this port only if the Display Operator’s Manual directs you to connect here.
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 is Ready for CAN Communications

The AutoSteer system performance and functionality depends on the factory installed CAN Bus communication system being installed correctly. Failure to verify that the CAN Bus is installed and updated may cause the system to not communicate or perform properly in the field while AutoSteering. Depending on the series the system is being installed, verify the requirements shown in the following sections that corresponds to the installation.

Original and B Series Models

Verify the following on all Original and B series models.

Verify ISO CAN Bus Kit is Installed

The ISO CAN Bus is a system of hardware and software protocols that utilizes international standards for linking the vehicle to various implements and other equipment such as GPS steering systems so they can communicate with each other. The ISO CAN Bus must be pre-installed and enabled on the vehicle before a GPS steering system will control the vehicle. The ISO CAN Bus is factory installed on most newer vehicles.

Verify ISO CAN Bus Kit is Installed

1. Look for the ISO connector shown in the on the back of the vehicle. It should be in the area shown.

2. The ISO connector should be located to the right of the valve stack.
3. The ISO connector is shown to the right.

Note: If this connector is not found on the back of the vehicle, the ISO CAN Bus kit has not been installed. Contact an AGCO Challenger service provider to have this kit installed on the vehicle.

Verify a Compatible Translator Software Version is Installed

Once the ISO CAN Bus kit installation has been confirmed, the software version running on it must be verified. GPS steering will only work with certain versions. Follow the steps in the following procedure to determine if the Translator Software is compatible for GPS steering.

1. Locate the Machine Interface Display System (MIDS) on the right armrest.
2. Turn the Selector Knob to the Field icon (Close up of icon shown in the upper, right hand corner of figure).
3. Press the **Enter** and **Right Arrow** buttons at the same time.

4. The screen will display all the vehicle’s current hardware and software versions.

5. Check the version of Translator Control Software installed on the vehicle.

6. Compare the value on the vehicle with the versions shown in *Table 5-1*. If the version from the vehicle has been confirmed to work, the vehicle is ready for GPS steering. If the version is not compatible or not on the list, contact an AGCO Challenger service provider to have the software updated to a compatible version.
Verify Vehicle is Ready for CAN Communications

Table 5-1  Translator Software Versions

<table>
<thead>
<tr>
<th>Translator Software Version</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>223-3927-XX</td>
<td>Not Approved</td>
</tr>
<tr>
<td>232-4556-XX</td>
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</tr>
<tr>
<td>241-4691-XX</td>
<td>Not Approved</td>
</tr>
<tr>
<td>247-9952-XX</td>
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<td>256-0187-XX</td>
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<tr>
<td>267-8439-XX</td>
<td>Approved</td>
</tr>
<tr>
<td>283-3405-XX</td>
<td>Approved</td>
</tr>
<tr>
<td>322-0266-XX</td>
<td>Approved</td>
</tr>
</tbody>
</table>

Enable the Class Three Hitch Control

Before the vehicle will work with the ISO CAN Bus, the hitch control must be enabled. The following steps provide the instructions that enable the ISO functionality.

Enable the Class Three Hitch Control

1. Turn the **Selector Knob** to the **M/E** icon (Close up of icon shown in the upper, right hand corner of figure).

2. Turn the **Dial** until \( P3 \) is highlighted on the bottom of the display.
Verify Vehicle is Ready for CAN Communications

**Enable the Class Three Hitch Control**

3. Use the **Left** and **Right** arrow buttons to move the thick border until it surrounds the **Class 3 Enable** block.

   **Note:** If the **Class 3 Enable** block does not appear in this screen, there is a problem with the ISO CAN Bus system. Contact an AGCO Challenger service provider to have the system repaired.

4. If **ENABLE** is not highlighted, rotate the **Dial** until it is highlighted

5. Once the **Class 3 External Implement Control** has been enabled, the display will show a warning message as shown to the right. To acknowledge this message, press the **Enter** button on the MIDS console.

   **Note:** This message will appear every time the vehicle is started and must be acknowledged before the GPS steering system will function. A warning message will also appear on this screen when the GPS steering system is powered down alerting the driver to the fact that the vehicle is no longer getting a signal from the **Class 3 External Implement Control** device.

6. Turn the **Selector Knob** to the **Home** icon to save the settings. The software has now been activated (Close up of icon shown in the upper, right hand corner of figure).
C D and E Series Models

The AGCO Challenger Track C and D Series models come from the factory with the ISO CAN Bus standard. The original C Series vehicles released from the factory before June 1, 2009 may not have had the proper software loaded on the vehicle to allow the system to work; however, all vehicles produced after this date should be compatible with GPS steering.

There is no screen on the vehicle’s display that will display whether the current version of armrest ECU software has been loaded on the vehicle. This can only be determined by an AGCO Challenger service provider using their AGCO tools interface. It is possible to look at the Wrench screen on the display and compare it to the screen shown in this procedure. If the Wrench screen looks DIFFERENT from what is shown in this manual, the software has most likely been upgraded and the GPS steering will work. This however is not a full proof method of determining the software version. If the vehicle was purchased prior to June 1, 2009 and the GPS steering system does not work after the installation, the actual version of the Armrest ECU software will need to be verified by an AGCO Challenger service provider.

**Check the Wrench Screen on the Display**

1. Turn the ignition key on or start the vehicle.
2. Wait for the display to appear similar to the right.
3. Press the button to the right of the Wrench icon.

4. The display will then show the Wrench screen.

   **Note:** There are software versions shown in the upper portion of the screen, but these have no bearing on whether the correct software has been loaded to allow GPS steering.

5. Compare the screen to the right to the one on the vehicle. If the screens appear different, the software has most likely been updated.

   **Note:** Key difference will be the addition of an AGCO graphic along the top, a change to the AUX icon, and possibly the order displayed on the screen.

**Verify Roading Switch has been Disabled**

These vehicles have a Roading Switch that disables AutoSteer commands to the vehicle when it is engaged. This switch must be disengaged for AutoSteering to work. Follow the procedure below to verify that the Roading Switch has been disabled.
Create New Vehicle

Note: Always put the Roading Switch in the deactivated position when driving on public roads.

Verify Roading Switch has been Disengaged

1. Locate the Roading Switch on the armrest console.
   
   **Note:** B Series Armrest shown, Roading Switch is in a similar position on all series.

2. Verify the white part of the rocker switch is flush with the console (pressed down). This indicates the Roading Switch has been disengaged.
   
   **Note:** To disable the switch, a locking mechanism on the black side needs to be slid towards the white area before the rocker will move.

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 **Vehicle CAN** 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

## Units Used

- [ ] Inches
- [ ] Feet
- [ ] Centimeters
- [ ] Meters

## GPS Antenna Location

<table>
<thead>
<tr>
<th>Fore/Aft</th>
<th>Left/Right</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
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<td><img src="image2.png" alt="Diagram" /></td>
<td><img src="image3.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

**Measurements:**

- [ ] Fore
- [ ] Aft
- [ ] Left
- [ ] Right

## AutoSteer Control Unit Location

<table>
<thead>
<tr>
<th>Fore/Aft</th>
<th>Left/Right</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image4.png" alt="Diagram" /></td>
<td><img src="image5.png" alt="Diagram" /></td>
<td><img src="image6.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

**Measurements:**

- [ ] Fore
- [ ] Aft
- [ ] Left
- [ ] Right

## Direction of Arrows

(Front, Back, Left, Right, Up, Down)

<table>
<thead>
<tr>
<th>X Arrow</th>
<th>Y Arrow</th>
</tr>
</thead>
</table>

**AutoSteer Control Unit Orientation**

<table>
<thead>
<tr>
<th>X Axis</th>
<th>Y Axis</th>
<th>Z Axis</th>
</tr>
</thead>
</table>

**Draw Orientation of AutoSteer Control Unit for all Three Directions and Angle Measured**

**Measured Angle (Degrees):**
Final Hardware Installation Checklist

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.

Machine Model: _______________________________ Year: _________ Serial #: ______________________________

Customer Name: _____________________________________ ________________________________________________

Location/Address: ________________________________________________

AutoSteer Installation Kit Part Number: ________________________________

NOTES

____________________________________________________________________

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Name of Installer: _____________________________________ Date: ___________________________
Final Hardware Installation Checklist

1. Display Bracket and Display installed and all fasteners are tight.
2. GPS Antenna is installed.
3. AutoSteer 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.

AutoSteer Performance Checklist

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