AutoSteer
Install Kit: 186-0007-01
186-0007-02

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

Non-Factory AutoSteer Ready Installation
Supported Models.

<table>
<thead>
<tr>
<th>CNH</th>
<th></th>
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<tbody>
<tr>
<td><strong>Case Magnum (Kit 186-0007-01)</strong></td>
<td><strong>New Holland (Kit 186-0007-02)</strong></td>
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<td><strong>MX-285</strong></td>
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Introduction

This manual provides the basic information and overview of the installation procedure for installing a 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 a 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 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.
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 Tools 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
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\(^2\), AccuGuide Ready\(^3\), IntelliSteer Ready\(^4\), AutoGuide\(^2\) Ready\(^5\), VarioGuide Ready\(^6\), Agrosky Ready\(^7\)), 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.

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

  Note: After the installation is completed, be sure to complete the Final Hardware Installation Checklist at the end of the manual 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.

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

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

- Verify that all the vehicle manufacturer supplied components are installed, calibrated, and functional.
- 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 information will be used later to ensure steering performance has not been altered after the installation is complete.
- Verify that the vehicle steers straight and does not pull to one side when driving in a straight line.
- Verify that there are no oil leaks.
- Check for loose or worn steering components.

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

Supported Models

These instructions provide the suggested procedure for installing the AutoSteer system on qualified vehicles for the easiest installation and best performance. The vehicles covered by this manual are the Case Magnum and New Holland tractor series without a factory installed steering system.

The AutoSteer installation kit PN: 186-0007-01 and 186-0007-02 are used on the vehicle series listed on the front cover. The two kits are very similar and the only difference is the wheel angle sensor installation due to differences in the front axle used on the Case MX and New Holland TG series tractors.

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

This section provides an overview of the parts and sub-kits that are required for a complete AutoSteer installation. Use this section to verify that all the parts and sub-kits required for the installation are available.

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

**AutoSteer System Kit**

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

**Note:** If the AutoSteer 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.

**GPS Receiver with Antenna**

The following parts are assumed to be available for the installation from an AutoSteer System Kit that has been purchased separately and are not part of the AutoSteer 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 an 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 process overview.

**Table 1**  
**Vehicle Specific Installation Sub-Kits for 186-0007-01**

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<tr>
<th>Item</th>
<th>Sub-Kit Identification</th>
<th>Part Number</th>
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<tr>
<td>1.</td>
<td>AutoSteer Vehicle Specific Kit</td>
<td>151-0004-01</td>
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<tr>
<td>2.</td>
<td>Steering Valve Kit</td>
<td>200-0457-02</td>
</tr>
<tr>
<td>3.</td>
<td>Hydraulic Install Kit</td>
<td>500-0294-02</td>
</tr>
<tr>
<td>4.</td>
<td>Wheel Angle Sensor Install Kit</td>
<td>200-0101-03</td>
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**Table 2**  
**Vehicle Specific Installation Sub-Kits for 186-0007-02**

<table>
<thead>
<tr>
<th>Item</th>
<th>Sub-Kit Identification</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
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<td>1.</td>
<td>AutoSteer Vehicle Specific Kit</td>
<td>151-0004-01</td>
</tr>
<tr>
<td>2.</td>
<td>Steering Valve Kit</td>
<td>200-0457-02</td>
</tr>
<tr>
<td>3.</td>
<td>Hydraulic Install Kit</td>
<td>500-0294-02</td>
</tr>
<tr>
<td>4.</td>
<td>Wheel Angle Sensor Install Kit</td>
<td>200-0028-03</td>
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AutoSteer Vehicle Specific Kit

Figure 1  AutoSteer Vehicle Specific Kit Components

Table 3  AutoSteer Vehicle Specific Kit Components Descriptions

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Part Number</th>
<th>Qty.</th>
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<tr>
<td>1.</td>
<td>Common Components</td>
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<tr>
<td>2.</td>
<td>Harness, Wheeled Std. Long</td>
<td>201-0512-02</td>
<td>1</td>
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<tr>
<td>3.</td>
<td>Install Guide</td>
<td>602-0383-02</td>
<td>1</td>
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<tr>
<td>4.</td>
<td>Bracket, Compact Valve Kit</td>
<td>200-0434-01</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>Assy. Bracket seat M8</td>
<td>200-0670-01</td>
<td>1</td>
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</table>
Cable Connection Diagram with AutoSteer Valve

- 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 component.
- 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
- BATTERY – The battery terminals for the power source for the AutoSteer system and Display
- 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)
- STEERING VALVE – The Steering Valve used to control the vehicle’s steering system
- WHEEL ANGLE SENSOR – The device used to measure the angle of the wheel position

Figure 2  AutoSteer ECU to Valve Cable Connections
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 sub-kits 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. **Steering Valve** – Follow the instructions provided in the *Hydraulic Kit Installation Manual* provided with the hose kit.
   a. Configure the Hydraulic Steering Valve for the installation type.
   b. Install the Hydraulic Steering Valve assembly.
   c. Connect the Hydraulic Steering Valve to the vehicle hydraulic system with the hose kit.

3. **Wheel Angle Sensor** – Follow the instructions provided in the *Wheel Angle Sensor Installation Manual* provided with the Wheel Angle Sensor Kit.
   a. Install the Wheel Angle Sensor Brackets
   b. Install the Wheel Angle Sensor.

4. **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.

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

6. **Display** – Follow the instructions provided with *Display Operator’s and Installation Manual* that comes with the Display Kit.
   a. Install the Display using the RAM Mount.
   b. Install the Display Harness.
   c. Install the Power Harness for the Display.

   **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.

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

7. **AutoSteer Control Unit** – Follow the instructions provided in the *ECU Mounting Bracket Installation Manual* provided with the ECU Mounting Bracket 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.
Installation Procedure Overview

8. **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)

9. **AutoSteer Vehicle-Specific Harness** – See *Install AutoSteer Harnesses* chapter in this manual. Route the harness connections between the AutoSteer Control Unit’s right connector to each of the following:
   a. Wheel Angle Sensor
   b. Pressure Transducer (Enabler)
   c. Steering Valve

10. **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
    b. Cell Modem Coax Cable (if required)
    c. Radio Modem Data/Power Harnesses (if required)
    d. GPS antenna NMEA data cable

11. **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.

12. **Final Hydraulic Install Verifications** – Follow the instructions provided in the *Hydraulic Kit Installation Manual* provided with the hose kit

    Note: Do not start the vehicle until the *Leak Test* has been performed.

    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.
    d. Follow the *Leak Test* procedure provided in the *Hydraulic Kit Installation Manual*.
    e. Follow the *Adjust the Load Sense Pressure Relief Valve* procedure provided in the *Hydraulic Kit Installation Manual*.


    a. Calibrate the vehicle.
    b. If necessary, tune the vehicle to improve performance.
    c. Verify the system has been installed properly and operates satisfactorily.

14. **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 to the same location on the vehicle.

Installation Procedure
This GPS antenna Mounting Plate is designed to fit any vehicle installation using the high bond 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 if available. The GPS antenna Mounting Plate needs to be mounted flat, on the top of the vehicle at a stable location.
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 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 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 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 GPS antenna Mounting Plate.
Installation Procedure

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 comfortably (the lower, right hand corner). It should also be positioned so that the Display does not block the operator’s field of view.

Once the RAM mount has been installed, follow the instructions in the Display Operator’s Manual to install the Display in the vehicle.
Install AutoSteer Harnesses

Overview

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

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

Locate Cab Cable Access Point

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

Note: It is the responsibility of the installer to ensure that the Cab Cable Access Point is sealed properly after the final installation has been completed. If required, use a sealant to ensure 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 through the rubber panel in the lower right corner of the rear window.
2. Pass cables into the cab through an opening identified by the circle on the right.
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.

![AutoSteer Control Unit Cable Identifying Dots](image)

**Vehicle-Specific ECU Harness**

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

**Note:** Never force the connector.
Attach Harnesses to AutoSteer Control Unit

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

**Note:** The steering axles on this machine can be mechanically moved in and out to adjust to various row spacing. When running the Wheel Angle Sensor cable verify that the cable will move with the rest of the hoses and harnesses going to the steering axle and will not be broken if the steering axle is moved in or out.

**Wheel Angle Sensor Connection**

1. Route the ECU Harness to the Wheel Angle Sensor and secure the ECU Harness with cable ties at regular intervals along the whole length.
2. Connect the three pin connector to the Wheel Angle Sensor connector and the secure the cables along the bracket top using a cable tie as close as possible to reduce strain on the connector.

**Steering Valve and Pressure Transducer (Enabler) Connection**

Connect the four pin connector for the Steering Valve and the ten pin connector for the Pressure Transducer (Enabler) and the secure the cables with cable ties.
Attach Harnesses to AutoSteer Control Unit

**Figure 6** Steering Valve and Pressure Transducer (Enabler) Connection

---

**AutoSteer Main Harness**

The AutoSteer Main Cable Harness provides power to the AutoSteer Control Unit and communications to the Display and other accessories. This harness is connected to AutoSteer Control Unit’s Left 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 AutoSteer Control Unit. Refer to your system Operator Manual for details and connector identification on the main harness.

**Note:** Never force the connector.

**Figure 7** AutoSteer Main Harness Connector

*Error! Reference source not found.* shows the AutoSteer Main Harness and the labels that are on each connector. *Error! Reference source not found.* shows the functions of each the AutoSteer Main Harness cab connectors. Refer to your Display Operator’s Manual for instructions on connecting the AutoSteer Main Harness connections (Ethernet to Display, Power Activation, and Unswitched Power) to the correct ports and harnesses on the Display and Display harnesses.
Antenna Cables

The AutoSteer Control Unit is connected to the GPS antenna through one or two cables, depending on the options that have been ordered. Refer to your system Operator Manual for details of the antenna cables.

Note: If the installation requires connecting to a GS-900, GS-450, or OmniSTAR Accessory in the GPS antenna, a power and communication harness will be routed from the GPS antenna to the AutoSteer Control Unit. Refer to the instructions that come with the optional accessory for connection information. Route the harness the same way as the antenna cables.

Cable Routing from Top of Cab

It is important that the cables that run from the top of the cab to the Cable Access Point are properly secured. Use cable ties and/or cable clamps to attach the cables to existing structures along the top and side of the cab.

Figure 8 Route Cab Cables

Cable Attachment Points
**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* shows an example of a typical power connection scenario.

*Figure 10  Typical Battery Cable Connection Diagram*
### Accessing 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.

<table>
<thead>
<tr>
<th>Access Vehicle Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image.png" alt="Image" /></td>
</tr>
</tbody>
</table>

1. Locate the vehicle battery and remove its cover.

2. Attach the power cable directly to the battery.
3. Route the power cable underneath the cab to the battery. Use the cable ties to secure the cable in a protected position.
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 port only if the Display Operator’s Manual directs you to do this.

---

1. Locate the Cab 12 Volt Accessory Port inside the cab.

   **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.
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.

Note: After the vehicle has been created, DO NOT start the vehicle for the Manual Steering Override procedure and Auto Calibrate procedure. Skip these steps for now and leave the vehicle turned off until after the Hydraulic Leak Test and Load Sense Pressure Relief Valve Adjustment procedures have been completed. Refer to the Hydraulic Kit Installation Manual for these procedures.

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 Standard - Hydraulic as the controller for the specific vehicle model when setting up your vehicle on the AutoSteer system Display

5. When the system reaches the Manual Steering Override screen, press the Right Arrow to skip on to the next screen.
6. When the system reaches the Auto Calibrate screen, press the Exit Screen Arrow to exit the procedure and save the vehicle information.
7. Power down the AutoSteer System.

Hydraulic Leak Test

Prior to starting the vehicle after the installation, all connections must be checked for leaks. Refer to the Hydraulic Kit Installation Manual for these procedures.

Note: Failure to follow the procedure shown and check for leaks may cause damage to the vehicle or AutoSteer system.

Load Sense Pressure Relief Valve Adjustment

The Steering Valve comes with a Load Sense Pressure Relief Valve built into the valve to prevent system overpressuring and damage to the vehicle and AutoSteer system. This valve must be adjusted prior to AutoSteering. Refer to the Hydraulic Kit Installation Manual for these procedures.

Note: Failure to follow the procedure shown and check for leaks may cause damage to the vehicle or AutoSteer system.
Calibration and Tuning Guidelines

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

Note: For optimum steering performance, the front wheels must be aligned with the correct toe-in adjustment (1/4”-1/2”) and the steering cylinders must be phased per the manufacturer’s recommendations. Measure and confirm the correct toe-in of the front wheels. Refer to your machine owner’s manual or contact your dealer for details.

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 Steering Components button, select Manual Steering Override and then press the Autocal button. Follow the on screen procedure to calibrate the manual steering override for the vehicle.
5. From the Vehicle tab of the AutoSteer Setup screen, press the Auto Calibrate button. Follow the on screen procedure to calibrate the vehicle.
6. 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 (MFWD)

<table>
<thead>
<tr>
<th>Wheel Base</th>
<th>Length</th>
<th>Units Used</th>
</tr>
</thead>
<tbody>
<tr>
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<td>![Length Image]</td>
<td><a href="#">Inches</a>, <a href="#">Feet</a>, <a href="#">Centimeters</a>, <a href="#">Meters</a></td>
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</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>![GPS Antenna Location Image]</td>
<td>![Fore/Aft Image]</td>
<td>![Left/Right Image]</td>
<td>![Height Image]</td>
</tr>
</tbody>
</table>

**Measurements:**
- ![Fore Image]  ![Aft Image]  ![Left Image]  ![Right Image]

<table>
<thead>
<tr>
<th>AutoSteer Control Unit Location</th>
<th>Fore/Aft</th>
<th>Left/Right</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>![AutoSteer Control Unit Location Image]</td>
<td>![Fore/Aft Image]</td>
<td>![Left/Right Image]</td>
<td>![Height Image]</td>
</tr>
</tbody>
</table>

**Measurements:**
- ![Fore Image]  ![Aft Image]  ![Left Image]  ![Right Image]

<table>
<thead>
<tr>
<th>AutoSteer Control Unit Orientation</th>
<th>X Axis</th>
<th>Y Axis</th>
<th>Z Axis</th>
</tr>
</thead>
<tbody>
<tr>
<td>![AutoSteer Control Unit Orientation Image]</td>
<td>![X Axis Image]</td>
<td>![Y Axis Image]</td>
<td>![Z Axis Image]</td>
</tr>
</tbody>
</table>

**Direction of Arrows**  
(Front, Back, Left, Right, Up, Down)

<table>
<thead>
<tr>
<th>Draw Orientation of AutoSteer Control Unit for all Three Directions and Angle Measured</th>
<th>X Arrow</th>
<th>Y Arrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Draw Orientation Image]</td>
<td>![X Arrow Image]</td>
<td>![Y Arrow Image]</td>
</tr>
</tbody>
</table>

**Measured Angle (Degrees):**

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Hardware Installation Guide 35
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

___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________

Name of Installer: __________________________ Date: __________________________
Hydraulic Installation Checklist

1. Steering Valve Bracket and Steering Valve installed and all fasteners are tight. ☐ ☐
2. All hose fittings are tight. ☐ ☐
3. Checked for oil leaks on all hydraulic connections. ☐ ☐
4. All hoses routed and secured with cable ties. ☐ ☐
5. Stand by pump pressure has been measured. ☐ ☐ Value __________
6. Maximum pump pressure has been measured. ☐ ☐ Value __________
7. Load Sense Pressure Relief Valve has been adjusted and locked. ☐ ☐ Value __________
8. Manual Steering is normal after the AutoSteer installation. ☐ ☐

Final Hardware Installation Checklist

1. Assisted Steering Unit installed and all fasteners and brackets are tight. ☐ ☐
2. Wheel Angle Sensor installed and all fasteners and rods are tight. ☐ ☐
3. Display Bracket and Display installed and all fasteners are tight. ☐
4. GPS antenna is installed. ☐
5. AutoSteer Control Unit is installed firmly to frame and all fasteners are tight. ☐
6. All cable ends and terminations are connected. ☐
7. 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. Checked the total Wheel Angle Sensor Counts. ☐ ☐ Left __________
   ☐ ☐ Center __________
   ☐ ☐ Right __________
4. Verified that manual kick-out is working when turn the steering wheel. ☐ Value __________
5. Completed the AutoSteer system calibration. ☐
6. Completed the AutoSteer system tuning (if necessary). ☐
7. Verified Line acquisition performance is satisfactory. ☐
8. Verified On-line steering performance is satisfactory. ☐