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

**Case/New Holland**

**Supported Vehicles**

<table>
<thead>
<tr>
<th>Case Puma AccuGuide</th>
<th>New Holland Intellisteer</th>
</tr>
</thead>
<tbody>
<tr>
<td>165</td>
<td>T7030</td>
</tr>
<tr>
<td>180</td>
<td>T7040</td>
</tr>
<tr>
<td>195</td>
<td>T7050</td>
</tr>
<tr>
<td>210</td>
<td>T7060</td>
</tr>
<tr>
<td>130 Tier 4A</td>
<td>T7.170 Tier 4A</td>
</tr>
<tr>
<td>145 Tier 4A</td>
<td>T7.190 Tier 4B</td>
</tr>
<tr>
<td>160 Tier 4A</td>
<td>T7.210 Tier 4B</td>
</tr>
<tr>
<td>170 Tier 4A</td>
<td>T7.230 Tier 4B</td>
</tr>
<tr>
<td>185 Tier 4A</td>
<td>T7.250 Tier 4A</td>
</tr>
<tr>
<td>200 Tier 4A</td>
<td>T7.260 Tier 4A</td>
</tr>
<tr>
<td>215 Tier 4A</td>
<td>T7.270 Tier 4A</td>
</tr>
<tr>
<td>230 Tier 4A</td>
<td>T7.175 Tier 4B</td>
</tr>
<tr>
<td></td>
<td>T7.235 Tier 4A</td>
</tr>
<tr>
<td></td>
<td>T7.250 Tier 4A</td>
</tr>
<tr>
<td></td>
<td>T7.260 Tier 4A</td>
</tr>
<tr>
<td></td>
<td>T7.270 Tier 4A</td>
</tr>
</tbody>
</table>

AutoSteer
Install Kit: 186-0023-02
# Table of Contents

**INTRODUCTION** ................................................................................................................. 1
**LEGAL DISCLAIMER** ...................................................................................................... 1
**SAFETY INFORMATION** ................................................................................................. 2
  - Warning Alerts .............................................................................................................. 2
  - Caution Alerts .............................................................................................................. 4
**INSTALLATION REQUIREMENTS** ..................................................................................... 5
  - Standard Tool Requirements ...................................................................................... 5
  - Workshop ..................................................................................................................... 5
  - Vehicle Requirements ................................................................................................. 6
**TECHNICAL SUPPORT** ...................................................................................................... 6
**CONTACT INFORMATION** ............................................................................................... 6
**VEHICLE INSPECTION** ..................................................................................................... 7

## INSTALLATION OVERVIEW ................................................................................................. 9

**SUPPORTED MODELS** ...................................................................................................... 9
**KIT OVERVIEW** ............................................................................................................... 10
  - AutoSteer System Kit .................................................................................................. 10
  - Display Kit ................................................................................................................... 10
  - Vehicle Install Kit ....................................................................................................... 10
  - AutoSteer Vehicle Specific Kit ................................................................................... 11
**CASE ACCU/INTELLISTEER READY INSTALLATION** ................................................ 12
**INSTALLATION PROCEDURE OVERVIEW** ..................................................................... 15

## INSTALL THE GPS ANTENNA MOUNTING BRACKET ........................................................ 17

**OVERVIEW** ................................................................................................................... 17
**INSTALLATION PROCEDURE** ........................................................................................ 17

## INSTALL THE DISPLAY MOUNTING BRACKET ................................................................. 21

**OVERVIEW** ................................................................................................................... 21
**INSTALLATION PROCEDURE** ........................................................................................ 21
  - U-Bolt Bracket RAM Mount Ball ............................................................................... 21

## INSTALL AUTO/STEER HARNESSSES .............................................................................. 23

**OVERVIEW** ................................................................................................................... 23
**LOCATE CAB CABLE ACCESS POINT** ............................................................................ 23
**ATTACH THE HARNESSSES TO THE AUTO/STEER CONTROL UNIT** .................. 24
  - Vehicle-Specific ECU Harness .................................................................................. 24
  - Vehicle Specific ECU Harness; Tier 4A & Tier 4B with display .................................... 26
  - Vehicle Specific ECU Harness; Tier 4A & Tier 4B without factory display .................. 27
  - Connect the Steering Valve ....................................................................................... 28
  - Connect the Wheel Angle Sensor .............................................................................. 29
**OTHER AUTO/STEER HARNESSSES** ............................................................................. 32
  - Route Cables from Top of Cab ................................................................................... 32
  - POWER SUPPLY FOR AUTO/STEER SYSTEM .......................................................... 32
  - Access the Vehicle Battery ...................................................................................... 32
  - Connect the Cab Power ............................................................................................. 33

## POST-INSTALLATION PROCEDURES AND INFORMATION ................................................ 34

**INSTALL WARNING LABEL** ............................................................................................ 34
**VERIFY VEHICLE'S ACCU/INTELLISTEER SYSTEM IS READY** .................................. 35
  - AccuGuide/IntelliSteer Ready Installed on Vehicle ................................................... 35
AccuGuide/IntelliSteer Ready System Calibrated........................................................................................................... 35
CREATE NEW VEHICLE .......................................................................................................................................................... 35
CALIBRATION AND TUNING GUIDELINES ................................................................................................................................. 36

VEHICLE PROFILE WORKSHEET .............................................................................................................................................. 37

FINAL HARDWARE INSTALLATION CHECKLIST .......................................................................................................................... 39
**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 an 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.
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:

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

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

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

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

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

Standard Tool Requirements

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

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

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

Workshop

The following workshop facilities may be required for the fabrication of custom parts to complete this installation:

- Drill press with drill bits
- Metal cutting tools
- Metal bending tools
- Welding equipment
- Hose crimper or hose shop
- Additional hardware, such as bolts, nuts and washers
- Stock steel plate in 1/8” (3.2mm), 3/16” (4.5mm) and 1/4” (6.4mm) thicknesses
- Paint for steel
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 (for example, AutoTrac Ready\(^1\), AccuGuide Ready\(^2\), IntelliSteer Ready\(^3\), AutoGuide\(^2\) Ready\(^4\), VarioGuide Ready\(^5\), Agrosky Ready\(^6\)), verify with the vehicle manufacture’s service representative that the factory installed components (for example, Steering Valve, Steering Wheel Encoder, Wheel Angle Sensor, and so on.) 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 Deutz Fahr
Vehicle Inspection

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

- Verify that you can turn the steered wheels from lock to lock.
- Record the time it takes to turn the vehicle’s steering mechanism (ex. steering axle, articulation point) from full left to full right 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 and repair as necessary.
- Check and adjust the tire pressure per the vehicle manufacturer’s recommendation.

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 Case Puma vehicles that are AccuGuide Ready and New Holland vehicles that are IntelliSteer Ready.

The AutoSteer installation kit PN: 186-0023-02 is used on the vehicles models listed on the front cover of this manual.

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.

AutoSteer System Kit

This installation assumes the base AutoSteer components that were purchased separately from the AutoSteer Vehicle Specific Kit are available. These components could include the Electronic Control Unit, Main harnesses, and GPS components. Verify that these components are present before beginning the installation.

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 should be ordered in addition to the Vehicle Specific Kit so they can be left on the vehicle to allow easier switching of main components from vehicle to vehicle.

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>
<thead>
<tr>
<th>Item</th>
<th>Sub-Kit Identification</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>AutoSteer Vehicle Specific Kit</td>
<td>186-0023-02</td>
</tr>
</tbody>
</table>
### AutoSteer Vehicle Specific Kit

#### Figure 1-1  AutoSteer Vehicle Specific Kit Components (186-0023-02)

![Diagram of AutoSteer Vehicle Specific Kit Components](image)

#### Table 2  AutoSteer Vehicle Specific Kit Components Descriptions

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>ASSY. BRACKET ADAPTER NAV II</td>
<td>200-0651-02</td>
</tr>
<tr>
<td>2.</td>
<td>ASSY. BASE ROOF ANTENNA</td>
<td>200-0612-01</td>
</tr>
<tr>
<td>3.</td>
<td>RAM MOUNT DOUBLE U-BOLT</td>
<td>207-0010-01</td>
</tr>
<tr>
<td>4.</td>
<td>HARNESS, CNH, PUMA ACCUGUIDE</td>
<td>201-0541-02</td>
</tr>
<tr>
<td>5.</td>
<td>MANUAL INSTALLATION GEOSTEER</td>
<td>602-0425-02</td>
</tr>
<tr>
<td>6.</td>
<td>MOUNTING HARDWARE JD-8000 SERIES</td>
<td>200-0076-01</td>
</tr>
<tr>
<td>7.</td>
<td>LABEL ATTENTION SWITCH OFF</td>
<td>603-0074-01</td>
</tr>
<tr>
<td>8.</td>
<td>CABLE CAN AGCO (ISO)</td>
<td>201-0561-02</td>
</tr>
</tbody>
</table>
Case AccuGuide/IntelliSteer Ready Installation

- Foot Switch (PN 201-0376-01) is an optional accessory component.
- AutoSteer can be connected to multiple models of Displays. Refer to the Display User 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 unit mounted on the roof (not shown)
  - FOOT SWITCH* – The optional Foot Switch that can be used for Remote Engage (not necessary for installation)
  - ACCUGUIDE / INTELLISTEER HARNESS – The 40 pin connector on the factory supplied AccuGuide / IntelliSteer Harness
  - ACCUGUIDE/INTELLISTEER STEERING VALVE – The Enabler solenoid connector on the factory supplied Steering Valve

Figure 1-1  Case AccuGuide/IntelliSteer Ready Installation – Earlier models

Follow this cable diagram on older Puma or T7 tractors that are not Tier 4A or Tier-4B. This installation does not require a CAN connection between the AutoSteer Controller and the tractor.
Follow this cable diagram on newer Tier 4A and Tier-4B tractors that also have a factory display installed (Pro 700 etc…). This installation requires a CAN connection between the AutoSteer Controller and the tractor to support the factory wheel angle sensor. The CAN connection is achieved by connecting together the 4-pin CAN connectors on the main harness and the 4-pin CAN connector on harness 201-0541-02 as shown above.

This installation also requires a change to the connections on the factory harness going to the factory wheel angle sensor on the front axle.
Follow this cable diagram on newer Tier 4A and Tier-4B tractors that do not have a factory display installed. This installation requires a CAN connection between the AutoSteer Controller and the tractor to support the factory wheel angle sensor. The CAN connection is achieved by connecting an extra CAN adapter cable 201-0561-02 between the 4-pin CAN connector on the main harness and an existing diagnostic or implement CAN connector on the tractor.

This installation also requires a change to the connections on the factory harness going to the factory wheel angle sensor on the front axle.
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 manual. 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 the GPS Antenna Mounting Bracket* chapter in this manual.

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

4. **Display** – Follow the instructions provided with the *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** – Refer to the *Install AutoSteer Harnesses* chapter in this manual. Route the harness connections between the AutoSteer Control Unit’s left connector to each of the following:

   a. Connect to the Display and/or Display Harnesses (refer to the *Display Operator’s Manual* for instructions).
   b. Connect to the Power Activation connection (refer to the *Display Operator’s Manual* for instructions).
   c. Connect to the Power Supply (refer to the *Display Operator’s Manual* for instructions).
Installation Procedure Overview

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

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. Attach the GPS Coax Cable (if required).
   b. Attach the Cell Modem Coax Cable (if required).
   c. Attach the Radio Modem Data/Power Harnesses (if required).
   d. Attach the GPS 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. Power ON the AutoSteer system.
   b. 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 steering 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 the GPS Antenna Mounting Bracket

**Overview**

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

**Installation Procedure**

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

**Note:** The GPS antenna mounting plate can vary, depending upon 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.

**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.
Installation Procedure

Install the GPS Antenna Mounting Plate

1. Remove the GPS antenna mounting plate from the installation kit.
   
   Note: Notice the three tab slots on the GPS antenna mounting plate. They are used to align and center the GPS antenna when it is attached to the plate.
   
   Note: The “Front” of the plate will be oriented toward the front 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 will 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 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.
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 the 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

U-Bolt Bracket RAM Mount Ball
Figure 3-1 shows the Display Bracket that can be used to complete this type of Display installation in the cab. This is a U-bolt RAM mount ball that can be attached to a bar.

Figure 3-1   U-Bolt Bracket RAM Mount Ball

Note: If necessary, the U-Bolt threads can be trimmed with a hacksaw to shorten them. This will allow even more mounting possibilities for the RAM arm.
Installation Procedure

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

Figure 3-2 shows a possible location for this type of bracket.

**Figure 3-2 Possible Location of U-Bolt Bracket RAM Ball**
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** in this manual, 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 do not move and 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. Route the cables up and down the right side of the cab, across the back of the cab, and into a hole with a grommet that allows access in and out of the cab.

   **Note:** This may require cutting a slot in the rubber grommet so that all the wires can pass through the hole.
Attach the Harnesses to the 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 may 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.

---

**Vehicle-Specific ECU Harness**

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

**Note:** Never force the connector.
The AccuGuide ECU Harness has two cables that need to be connected to the vehicle’s AccuGuide/IntelliSteer harness and the Steering Valve Enabler. 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.

**AccuGuide/IntelliSteer Connector**

This 40-pin connector connects the AutoSteer system to the factory AccuGuide/IntelliSteer Harness. The AccuGuide/IntelliSteer Harness connects to the various sensors and controllers on the vehicle required to AutoSteer.

<table>
<thead>
<tr>
<th>AccuGuide/IntelliSteer Connector</th>
</tr>
</thead>
</table>

1. Refer to the cable diagram in Figure 1-1.
2. Remove the cover on the left, rear side of the cab and locate the larger 40 pin AccuGuide/IntelliSteer cable connector.

3. Connect the AutoSteer vehicle harness to the AccuGuide/IntelliSteer cable connector.
4. This completes the AccuGuide/Intellisteer connection.

**Note:** For this installation a CAN connection is not required between the AutoSteer controller and the tractor so the 4-pin CAN connectors are not connected.
Attach the Harnesses to the AutoSteer Control Unit

Vehicle Specific ECU Harness; Tier 4A & Tier 4B with factory display

AccuGuide/IntelliSteer Connector
Tier 4A & 4B with factory Display

1. Refer to the cable diagram in Figure 1-2.
2. Remove the cover on the left, rear side of the cab and locate the 40 pin AccuGuide/IntelliSteer cable connector.

3. Connect the AutoSteer vehicle harness to the AccuGuide/IntelliSteer cable connector.

4. Connect the 4-pin CAN connector on the AutoSteer vehicle harness to the 4-pin connector on the ECU main harness.
5. This completes the AccuGuide/IntelliSteer connection.

Note: In this installation the ECU sends the wheel angle sensor position to the tractor through the CAN bus to allow the automatic disengagement of the differential lock and the front axle 4WD.
Vehicle Specific ECU Harness; Tier 4A & Tier 4B without factory display

1. Refer to the cable diagram in Figure 1-3.
2. Remove the cover on the left, rear side of the cab and locate the 40 pin AccuGuide/IntelliSteer cable connector.
3. Connect the AutoSteer vehicle harness to the AccuGuide/IntelliSteer cable connector.
4. Identify the factory round diagnostic or implement CAN connector behind the rear cab panel.
5. Connect the CAN adapter harness (201-0561-02) between the 4-pin CAN connector on the ECU main harness and the bulkhead 9-pin diagnostic or implement CAN connector on the tractor.
6. Secure the cables with cable ties.
7. This completes the AccuGuide/IntelliSteer connection.

Note: In this installation the ECU sends the wheel angle sensor position to the tractor through the CAN bus to allow automatic disengagement of the differential lock and the front axle 4WD.
Connect the Steering Valve

1. The ECU vehicle harness must also be connected to an enable solenoid valve on the factory steering valve to allow AutoSteer.

2. Refer to the cable diagrams in Fig 1-1, 1-2 or 1-3 according to your vehicle model.

3. Open the hood of the engine compartment.

4. Locate the enabler solenoid valve connector on the factory AccuGuide/IntelliSteer valve

5. Disconnect the plug labeled “Isolation (Manifold)” and attach the AutoSteer enabler valve connector to this port.
Connect the Wheel Angle Sensor

Configure the Wheel Angle Sensor cables (Tier 4A & Tier 4B)

1. The newer Tier 4A and Tier 4B tractor models require a change to the factory wheel angle sensor cable connections in order to provide the correct wheel angle sensor signal to the steering controller ECU that is being installed. Follow these instructions and refer to the cable diagrams in Fig 1-2 and Fig 1-3.

2. Locate the cover shown on the lower right side of the engine.

**Note:** The changes to the wheel angle sensor cable connections shown here are only required on the newer Tier 4A and Tier 4B tractor models that use a CAN bus to pass wheel angle sensor information between the steering controller ECU and the tractor.

3. Remove the screws that secure this cover.

4. Remove the cover.

5. Identify the wheel angle sensor cables and the three connectors that are routed down the right side of the radiator.
6. Identify the three connectors.

7. Close up view of the wheel angle sensor cables and their function:
   
   A = protective cap
   B = Cable from the AutoSteer controller (ECU)
   C = Cable from the tractor system controller
   D = Cable from the wheel angle sensor on the front axle.

8. Remove the protective cap from cable B.

9. Open the connectors between cables C and D.
10. Connect cable B to cable D as shown. This will connect the wheel angle sensor to the cable going towards the new AutoSteer controller (ECU) that is being installed.

11. Cover the connector on cable C with the protective cap A.

12. Here the wheel angle sensor cables are shown after making the changes to the connections.

13. Replace the cover on the right side of the engine that was previously removed.

14. This completes the configuration of the factory wheel angle sensor connections.
Other AutoSteer Harnesses

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

Route Cables from Top of Cab

Route the cables from the top of the vehicle and into the cab as required according to the instructions on Cab Access above.

Power Supply for AutoSteer System

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

Figure 4-3 Typical Battery Cable Connection Diagram

Access the Vehicle Battery

The AutoSteer Main Cable Harness must be connected to a 12V power source. The Display user manual provides specific instructions for connecting power to the AutoSteer system and specifies the appropriate vehicle power source.
### Access the Vehicle Battery

1. Locate the vehicle battery on the right-hand side of the cab behind the steps.

2. Connect to the vehicle battery if the display manual specifies a direct battery connection.

   **Note:** A battery cable is provided with the AutoSteer system when a direct battery connection is required.

### Connect the Cab Power

1. Locate the cab console right-side 12V power outlet.

2. Use this 12V accessory power connector if the Display user manual specifies connecting to power inside the cab. Connect the power to the three-pin socket in the cab using the supplied adapter cable.
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.

![AutoSteer Warning Label](image)
Verify Vehicle's AccuGuide/IntelliSteer System is Ready

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

- AccuGuide/IntelliSteer Ready components have been installed.
- Accuguide/IntelliSteer Ready components have been calibrated by vehicle service representative.

AccuGuide/IntelliSteer Ready Installed on Vehicle

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

AccuGuide/IntelliSteer Ready System Calibrated

The AccuGuide/IntelliSteer Ready system on the vehicle itself must be calibrated by a vehicle manufacturer service rep. This should have been performed at the factory. However it may be necessary for the vehicle manufacturer service rep to repeat this process to ensure adequate performance. It is always best to verify these steps have been performed before continuing with the AutoSteer setup. For the correct operation of the automatic 4WD and differential lock on Tier 4A and Tier 4B tractors, it is very important to have the wheel angle sensor calibration performed by the vehicle service rep.

Create New Vehicle

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

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

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

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

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

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

<table>
<thead>
<tr>
<th>Wheel Base</th>
<th>Length</th>
<th>Units Used</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Wheel Base Diagram" /></td>
<td><img src="image2.png" alt="Length Diagram" /></td>
<td>Inches, Feet, Centimeters, Meters</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GPS Antenna Location</th>
<th>Fore/Aft</th>
<th>Left/Right</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3.png" alt="GPS Antenna Diagram" /></td>
<td><img src="image4.png" alt="Fore/Aft Diagram" /></td>
<td><img src="image5.png" alt="Left/Right Diagram" /></td>
<td><img src="image6.png" alt="Height Diagram" /></td>
</tr>
</tbody>
</table>

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

<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><img src="image7.png" alt="AutoSteer Control Unit Diagram" /></td>
<td><img src="image8.png" alt="Fore/Aft Diagram" /></td>
<td><img src="image9.png" alt="Left/Right Diagram" /></td>
<td><img src="image10.png" alt="Height Diagram" /></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Direction of Arrows (Front, Back, Left, Right, Up, Down)</th>
<th>X Arrow</th>
<th>Y Arrow</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image11.png" alt="Direction of Arrows Diagram" /></td>
<td><img src="image12.png" alt="X Arrow Diagram" /></td>
<td><img src="image13.png" alt="Y Arrow Diagram" /></td>
</tr>
</tbody>
</table>

<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><img src="image14.png" alt="AutoSteer Control Unit Orientation Diagram" /></td>
<td><img src="image15.png" alt="X Axis Diagram" /></td>
<td><img src="image16.png" alt="Y Axis Diagram" /></td>
<td><img src="image17.png" alt="Z Axis Diagram" /></td>
</tr>
</tbody>
</table>

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

**Measured Angle (Degrees):**

---

Hardware Installation Guide 37
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: ___________________________
**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. The factory wheel angle sensor has been calibrated (only on Tier 4A & Tier 4B)
2. Verified manual steering speed from lock to lock is satisfactory.  
   Value  __________ Sec
3. Verified AutoSteer steering speed from lock to lock is satisfactory.  
   Value  __________ Sec
4. Checked the total Wheel Angle Sensor Counts.  
   Left  __________  
   Center  __________  
   Right  __________
5. Verified that manual kick-out is working when the steering wheel is turned.
6. Completed the AutoSteer system calibration.
7. Completed the AutoSteer system tuning (if necessary).
8. Verified Line Acquisition steering performance is satisfactory.
9. Verified On-Line steering performance is satisfactory.