AutoSteer
Install Kit: 811-0006-01

Refer to this manual before installing the AutoSteer system

**Challenger and Fendt 1000 Series**

**Supported Models**

- 1038
- 1042
- 1046
- 1050
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Introduction

This manual provides an overview of and basic information on the installation of an autosteer system (‘autosteer’) on Challenger and Fendt 1000 series machines (see front cover and Supported Models, page 7. Read this manual before beginning the installation as it provides the warnings and cautions that you need to recognize and understand before installing or operating autosteer.

The manual provides parts details and step-by-step installation instructions for the machine-specific kit and references to related sub-kits.

Before installing and operating autosteer, read and understand the operator’s manual that comes with your autosteering system. That manual provides autosteer operating instructions and safety information.

Legal Disclaimer

Notes:

(i) Read and follow ALL instructions in this manual carefully before installing or operating the autosteer system.

(ii) Heed all 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.

About Autosteering:

1. There is NO obstacle avoidance system included with the manufacturer’s product. There must always be a human in the operator’s seat of the vehicle when autosteer is in use to look for obstacles including people, animals, trees, ditches, buildings, and to take manual control of the vehicle to avoid them if necessary.

2. Autosteer 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. Autosteer will take control of the vehicle’s steering system when it 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. Before starting the vehicle and/or activating autosteering, ensure that people and obstacles are clear of the vehicle to prevent death, injury, or damage to property.

4. Use of autosteering is NOT permitted while the vehicle is on public roads or in public areas (‘roading’). Ensure that the system is powered OFF before driving on roads or in public areas.
Safety Information – Warnings and Cautions

The autosteer installer and manufacturer disclaim any responsibility for damage or physical harm caused by 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 autosteer, ensure that all the screws, bolts, nuts, and cable connections are tight. If any of the hydraulic lines or fittings were disconnected or loosened during the installation, ensure that they have been reattached and tightened to prevent oil leaks. Ensure that all the cables and hoses have been secured to prevent them from being damaged.

<table>
<thead>
<tr>
<th>![WARNING]</th>
<th>To understand the potential hazards associated with the operation of an autosteer equipped vehicle, read the provided documentation before installing or operating the autosteer system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>![WARNING]</td>
<td>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 autosteering engaged.</td>
</tr>
<tr>
<td>![WARNING]</td>
<td>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 autosteer.</td>
</tr>
<tr>
<td>![WARNING]</td>
<td>To prevent the accidental engagement of autosteering and loss of vehicle control while driving on roads, shut down autosteering. Never drive on roads or in public areas with autosteering powered up.</td>
</tr>
<tr>
<td>![WARNING]</td>
<td>To prevent accidental falls, maintain a stable position on the vehicle’s platform or stairs when installing or removing the GPS antenna. If the vehicle does not provide a safe platform, use a ladder to safely access the vehicle’s roof.</td>
</tr>
<tr>
<td>![WARNING]</td>
<td>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.</td>
</tr>
<tr>
<td>![WARNING]</td>
<td>If the installation requires work on the vehicle’s hydraulic system, read and understand the hydraulic sections of the vehicle manufacturer’s operator manual before starting the installation. Wear hand and eye protection while performing hydraulic system maintenance. Relieve hydraulic system pressure before servicing the hydraulic system.</td>
</tr>
<tr>
<td>![WARNING]</td>
<td>If the vehicle has a wheel angle sensor as part of the installation, because the steering mechanism could move suddenly and cause severe injury or death, always shut off the vehicle when working around the steering axle while installing, checking, and adjusting the wheel angle sensor and rod lengths.</td>
</tr>
<tr>
<td>CAUTION</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>![Exclamation Mark]</td>
<td>Because the GPS antenna could detach due to wind loads at higher speeds, it must be removed when transporting or driving the vehicle at speeds above 31 mph (50 km/h).</td>
</tr>
<tr>
<td>![Exclamation Mark]</td>
<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>
<tr>
<td>![Exclamation Mark]</td>
<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>
<tr>
<td>![Exclamation Mark]</td>
<td>The autosteer system must be powered OFF when installing or removing the GPS antenna, autosteer control unit (ECU), or any other part of the autosteer system.</td>
</tr>
<tr>
<td>![Exclamation Mark]</td>
<td>The GPS antenna must 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 needs to have a complete set of common installation tools that includes:

• 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
• 2 mm Allen wrench
• Metal hacksaw
• Sidecutters
• Step ladder, 10 ft (3 m)
• Tape measure, 13 ft (4 m) minimum
• Wire puller

The installer will also need the following supplies and additional tools to complete the installation:

• Cleaning rags, abrasive cleaning pads and brushes
• Alcohol pads or other cleaning solution to ensure oil and dirt are removed from surfaces before gluing them
• Oil pan or bucket when working with hydraulic lines
• Spill absorbent to contain any spills
Vehicle requirements

Before installing the autosteer system, ensure the following:

- If the vehicle is equipped with a factory-installed steering system (ex. AutoTrac Ready\(^1\), AccuGuide Ready\(^2\), IntelliSteer Ready\(^3\), AutoGuide\(^2\) Ready\(^4\), VarioGuide Ready\(^5\), Agrosky Ready\(^6\)), verify with the vehicle manufacturer’s service representative that the factory-installed components (for example, steering valve, steering wheel encoder, wheel angle sensor) have been installed on the vehicle.

(i) Verify that the factory-supplied components have been calibrated and set up by the vehicle manufacturer’s service provider before installing autosteer.

(ii) A poor calibration will result in poor autosteering performance. The steering valve and wheel angle sensor, in particular, must be fully calibrated either at the factory or by the Challenger/Fendt dealer (calibration can be completed using the A-post user interface in the cab). Consult your vehicle dealer on any issues relating to the servicing and calibration of factory steering components. If you have any doubts or performance issues, following the procedure recommended by your vehicle manufacturer, complete your own full steering component calibration.

- The vehicle’s steering system is in good working order. Drive the vehicle to verify that there is no play in the steering and that the vehicle turns proportionally the same to the left and right.

- The vehicle’s electrical system and battery are in good working order.

- The vehicle has been fully cleaned. A clean vehicle will improve the overall installation and cable routing and reduce the chance for oil contamination if hydraulic connections are opened. If installing hydraulic components, it is essential to clean the area around the steering unit (Orbitrol), under the cab, behind the rear cab cover, and at all the hydraulic connections.

Any defects with the vehicle must be repaired by a qualified service person before the autosteer system installation is begun.

Notes:

(i) This installation manual, vehicle-specific installation manuals, and sub-kit manuals contain valuable information for servicing the autosteer system. After the installation is complete, store all these manuals in a safe place for future reference.

(ii) When the installation is completed, complete the Final Hardware Installation Checklist and save the checklist with the installation manuals for future reference.

Technical Support and Contact Information

For technical support and contact information, refer to your display’s operator manual

\(^1\)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 Challenger  
\(^6\)Agrosky is a registered trademark of Same DeutzFahr
Vehicle Inspection

Before installing the autosteer system, confirm that the vehicle and its steering system are in good working order by driving it. In addition:

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

Any defects with the vehicle must be repaired by a qualified service person before the autosteer system installation is begun.
Installation Overview

Supported Models
The autosteer installation kit (part number 811-0006-01) provides instructions on the installation of autosteer—on the specified vehicles—for the easiest installation and best performance. The vehicles covered by this manual are Challenger and Fendt 1000 series autosteer-ready vehicles, models 1038, 1042, 1046, 1050 (see also, front cover).

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

Kits Overview
The kits/components required to complete the autosteer installation are described below. Use this section to check that you have all the kits/components required.

Note: Part numbers provided in this manual are subject to change without notice. They are provided as a reference at the time of writing. If spare parts are needed, check with your autosteer dealer that part numbers are still valid.

The following items are assumed to be available for the installation from an autosteer kit that has been purchased separately and are not part of the autosteer vehicle-specific kit. This information is provided here for reference only.

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

Steering electronic control unit (ECU)
The steering controller, using the position information from the GPS receiver, steers the vehicle on the desired path, using terrain compensation and other sensors for higher steering accuracy. This manual includes the installation of the ECU mounting bracket, the installation of the ECU on its bracket and sections on cabling connections.

Display kit
Autosteer is compatible with multiple models of displays. The display power and communication cables are supplied with the display’s installation kit. Autosteer 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, a display harness and display power harness, additional to those in the vehicle-specific kit, should be ordered 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 (part number 811-0006-01) provides all the components required to install autosteer on the specified vehicles. It provides parts details and step-by-step installation instructions for the machine-specific kit and references to any related sub-kits.

Autosteer Vehicle-specific Kit 811-0006-01

Figure 1-1  Autosteer vehicle-specific kit components – schematic

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Installation manual (this document)</td>
<td>875-0406-01</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>ECU bracket (from kit 700-0018-01)</td>
<td>202-0484-01</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Washers, flat (from kit 700-0018-01, use with nuts on vehicle’s seat studs)</td>
<td>517-0002-01</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Screws, washerhead (from kit 700-0018-01)</td>
<td>514-0151-01</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Assembly, dummy connector, 30 pin</td>
<td>201-0566-01</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Cable, CAN</td>
<td>050-0053-01</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Cabling ties and clips, set</td>
<td>200-0076-01</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Label, ‘Attention’ switch off, set (of four)</td>
<td>603-0074-01</td>
<td>1</td>
</tr>
</tbody>
</table>
Installation Procedure Overview

The autosteer installation comprises the activities listed below; for more detailed instructions of each step, follow the procedures detailed in the related section of this manual or the instructions provided with the relevant component.

1. **Kit verification** – check the contents of all kits, ensure they are right of your installation.

2. **Display** – follow the instructions in the display kit’s installation manual and user manual.
   
   *Note: Autosteer can be matched with multiple displays. Follow the instructions that come with your display when installing it and connecting its harnesses to the vehicle for autosteer and power.*
   
   a. Install the display using the RAM mount (if necessary)
   b. Install the display harness
   c. Install the power harness for the display
   
   *Note: Refer to the Installing and Connecting the Autosteer Harnesses chapter in this manual for information about locating and accessing the battery or other power source.*

3. **ECU installation and harness connections** – refer to the Installing and Connecting the Autosteer Harnesses chapter in this manual. Route the harness connections from the autosteer ECU’s left connector to each of the following and connect (see the display’s operator manual for instructions):
   
   a. The display and/or display harnesses
   b. The power activation connection
   c. A power supply

4. **Final hardware verification** – verify that all the bolts have been tightened, electrical and hydraulic connections are securely connected, and that all hoses and cables have been routed safely and secured to the frame of the vehicle away from moving parts with cable ties.
   
   a. Fill out the Vehicle Profile Worksheet provided at the end of this manual
   b. Power ON autosteer
   c. Create a new vehicle profile

5. **Final vehicle setup** – see Post-Installation Procedures and Information.
   
   a. Calibrate the vehicle
   b. If necessary, tune the vehicle to improve performance
   c. Ensure all components have been correctly installed and all connections correctly made; ensure autosteering operates as it should

6. **Final information record and checklists** – add required information and complete the two checklists at the end of this manual.
Installing and Connecting the Autosteer Harnesses

When routing harnesses, route them clear of moving parts and sharp objects. Secure the harnesses with cable ties or clips to ensure they are not damaged.

Once the ECU is installed (at the next step), for connection details, see:
- “Connections at the ECU”, page 13
- “Autosteer Cabling Connections”, page 14
- “Connecting Other Autosteer Harnesses”, page 15
- “Accessing the Vehicle’s CAN Connections”, page 15
- “Connecting to the Vehicle’s CAN”, page 16
- “Supplying Power to Autosteer”, page 18
- Your display’s connection documentation as required.

Installing the ECU mounting bracket and the ECU

The ECU 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 (so, for example, cannot be sitting loose on the cab floor). The mounting point must be vibration free.

1. Access the two studs/nuts at the bottom of the back of the seat frame and remove the nuts.

   Note: Without fully lowering the seat to the floor, release enough air to relieve the pressure on the two nuts.
2. Install the ECU bracket (item 2) on the studs, mounting face rearward. Secure it using the nuts you removed, adding flat washers (item 3, not shown).

3. Using the supplied washerhead screws (item 4), install the ECU on the bracket with its sockets to the right (shown with main cable already connected at right).
Connections at the ECU

The autosteer ECU has two connection ports—for the main harness and the dummy connector (Figure 2-1). The ports are keyed to ensure against incorrect connections.

Because this installation connects to the CAN bus of the vehicle, the vehicle-specific ECU harness is not used. Installation of dummy connector PN 201-0566-01 (item 5 on page 8) protects the unused terminals on the ECU.

Note: The optional remote engage harness (PN 201-0563-01) can be connected instead of the dummy connector if the optional foot switch (PN 201-0376-01) or some other remote engage switch is to be connected.

CAUTION

Never force the connectors; the connectors should easily slide into place. Forcing a connector may cause damage.

Figure 2-1  Autosteer ECU – main harness and dummy connector installed

Connect the main harness to the left port (as viewed in Figure 2-1) and the dummy connector to the right port. Secure with the center screws.
**Autosteer Cabling Connections**

Component definitions:

- **Display** – the display that is connected to autosteer (not shown)
  
  *Note: Autosteer can be connected to multiple models of displays. Refer to the display’s user manual for more detailed instructions on how to connect autosteer to the display data and power ports.*

- **Battery** – the battery terminals for the power source for autosteer and the display (see Figure 2-4, page 18)

- **Autosteer control unit** – the autosteer ECU

- **GPS antenna** – the GPS antenna and optional radio modem kits mounted on the roof (not shown)

- **Foot switch** – the optional foot switch that can be used for remote engage (not necessary for installation)

- **CAN bus cable** – the optional foot switch that can be used for remote engage (not necessary for installation)

- **CAN bus cable** – connects to the machine’s factory CAN 1 circuit

**Figure 2-2  ECU cabling connections**
Connecting 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 installation, and they each have their own specific cables and installation instructions (see Connecting to the Vehicle’s CAN on the next page).

Accessing the Vehicle’s CAN Connections

To connect the CAN cable (item 2) to the vehicle’s two CAN connections, you need to access the cabling/electronics compartment in the right rear of the vehicle’s cab. You access the compartment by removing/moving three covers.

1. Remove the four screws holding the cover on the right rear pillar of the cab. Remove a fifth screw that is revealed at the bottom of the pillar (holds the main compartment cover).

2. Remove the four screws holding the (document pocket) panel directly behind the seat. Move the panel to the left (right as viewed).
3. Remove the two screws holding the edge of the main compartment cover revealed by removing the previous panel (top left image at right). Remove two more screws holding the compartment cover: one at the bottom front, the other at the bottom, facing the seat (top right image).

The bottom image at right shows the area within the cabling/electronics compartment you need to access.

Connecting to the Vehicle’s CAN

For this installation autosteer is connected to the vehicle's CAN bus system and sends steering commands directly to the vehicle. The vehicle then takes this information to control the steering of the vehicle. Autosteer does not communicate directly with the vehicle's steering valve or wheel angle sensor in this installation.

Figure 2-3 CAN bus cable – ECU to vehicle (see also Figure 2-2, page 14)

Connect CAN bus cable 050-0053-01 (item 6 on page 8) between the CAN A and CAN B connector on the main ECU harness and the vehicle's two CAN connectors.
Installing the CAN Cable

Install the CAN cable (item 6) as indicated in Figure 2-3, that is, between the ECU harness’s CAN A and CAN B connectors and the vehicle’s two (brown and dark gray) CAN connectors.

1. Disconnect the brown and the dark gray CAN connectors from their bulkhead plugs (temporarily disconnect the blue connector to improve access to the dark gray connector beneath it if necessary).

2. Connect CAN cable’s color-coded connectors (item 6) between the bulkhead plugs and the disconnected connectors: brown connections, left image at right; gray connections, right image.

3. Route the CAN cable down to the floor and out at the edge of the main compartment cover. At the ECU’s main cable, connect the black connector to CAN B, the CAN cable’s gray connector to CAN A (‘EXPANSION’).
Supplying Power to Autosteer

The autosteer ECU must be connected to a 12 V uninterrupted power supply. In most situations, a display kit will include a harness for connecting to the battery directly (or to a battery harness). The autosteer ECU must also be connected to a power activation signal from the display so that when the display is powered up, a signal commands the ECU to power up. Refer to your display’s documentation for information on connecting the display and autosteer to a power source and a power activation signal. Figure 2-4 shows an example of a typical power connection scenario to the battery.

Figure 2-4 Typical battery cable connections

Accessing Vehicle Battery Power

The autosteer ECU and display need to be powered from the vehicle’s battery—either directly or indirectly, see note following.

*Note: Unless your display documentation specifically recommends or instructs otherwise, it is strongly recommended that you connect the display and the ECU directly to the vehicle’s battery. This eliminates any possible grounding or low power issues.*

For a direct connection, route the battery harness to/from the vehicle’s battery through one of the plugged channels at the rear of the cab similar to those shown at right (left two images).

For an indirect connection, route the battery harness to/from the remote power posts located near the front of the main cabling/electronic compartment (right image).
Post-Installation Procedures and Information

When the autosteer installation is complete (as detailed in this guide and the sub-kit guides), follow the procedures and notes in this section to prepare the machine for full autosteering capabilities.

**Installing Warning Label(s)**

In an easy-to-read position on the cab window that does not obscure the operator’s view, install the warning label. Install the warning in the language in or that best matches the operators’ language. Install the warning in multiple languages (of four) if necessary.

![Autosteer Warning Label](image-url)
Operating the Autosteer System

These models of Challenger and Fendt vehicles have armrest buttons that activate and ready the vehicle to accept steering commands from the autosteer system. These controls can also be used to engage and disengage autosteering without having to push the engage/disengage button on the display. It is important to understand how these buttons affect the autosteering system. The autosteering control buttons are located on the right side console connected to the side of the seat. These instructions are provided as a reference only. The function and design of the autosteering system parts may change without notice. Always refer to your Challenger/Fendt operator’s manual for the latest information on how these features work.

Figure 3-2 Location of the autosteering control buttons

The LED on the autosteering activation button has two states:

Off – autosteering is off. No power can reach the steering valve and the autosteer system will not be communicating with the vehicle.

Solid On – autosteering is ready. The vehicle can communicate with the autosteer system and the steering valve will accept commands from the autosteering system and steer the vehicle.
The autosteering system must be activated before it is operated. If the LED is off, press and hold the autosteering activation button and the LED will turn on.

To deactivate autosteering, press the autosteering activation button while the LED is on and the LED will now turn off.

Notes:

(i) If the autosteering system has initiated communication with the vehicle and autosteering is completely powered down, the vehicle will show an error code on its multifunction display indicating this loss of communication. The vehicle will continue to operate and communication can be restored by turning autosteering on.

(ii) If the vehicle is turned off, when it is restarted the LED light will return to the state it was when the vehicle was turned off.

**Autosteer Button**

*Figure 3-4  Autosteer button*

The LED on the autosteering button has two states:

- **Off** – the vehicle is not being autosteered.
- **Solid On** – the vehicle is being autosteered.

The user can either press the autosteer button on the side console or the autosteer button on the display to enable or disable autosteering. When the vehicle is being autosteered, the autosteer button LED will turn on solid. The LED on the autosteer button will always mimic the autosteer button on the display.

Notes:

(i) The autosteer activation button LED must be solid on before the autosteer button is pressed. If the activation button LED is off, autosteering will not be able to control the steering valve on the vehicle.

(ii) The remote switch must be enabled in the accessory page of the system tab on the autosteer system for the autosteer engage button to function. Verify that this has been enabled after the vehicle setup steps. If the autosteer engage button is pressed and the remote switch has not been enabled, the LED on the autosteer engage button will blink eight times and then stay off and the Challenger/Fendt multifunction display will show an autosteer icon with a line across it indicating that the tractor cannot engage autosteering.
Calibrating the Challenger/Fendt Steering System

Before setting up autosteering and trying to calibrate it, it must be calibrated by an authorized Challenger/Fendt service technician. The autosteer system sends steering commands to the vehicle and the vehicle system must be able to properly command the valve internally to the correct positions. There are two steps to this calibration process. The first part calibrates the wheel angle sensor, the second calibrates the valve.

**Note:** This process should be performed by a Challenger/Fendt authorized service technician. However, the procedures for these steps are provided as a reference. These steps may change without notice. Contact your Challenger/Fendt dealer for any service related questions about these procedures.

The Challenger/Fendt vehicle calibration processes are displayed on the factory multifunction display on the front dash.

**Figure 3-5  Multifunction display**

The controls to change screens and enter information into the multifunction display are located on the front console to the right of the steering wheel.
There are four green buttons used to interface with the multifunction display.

- **ESC** - return to previous menu level.
- **Up Arrow** - browse through the menu levels and set functions.
- **Down Arrow** - browse through the menu levels and set functions.
- **Enter** - call up menu levels and enter settings.

### Wheel Angle Sensor Calibration

*Note: The Challenger/Fendt calibration screen shots are provided as a reference. Some screens will not be exactly as described in this document and will change depending on the options installed on the vehicle. Use this information for reference only. For questions on this procedure always refer to your Challenger/Fendt dealer.*

1. From the main display screen that shows time, temperature, engine hours, etc., press the Enter button.
2. Icons will show up with one of them blinking. Use the up arrow or down arrow buttons to get the book icon blinking then press the Enter button.

3. Press the up arrow or down arrow arrows to get the steering wheel wrench icon blinking then press the Enter button.

4. If necessary, press the up arrow or down arrow buttons to get the wrench icon flashing then press the Enter button.
5. Use the up arrow and down arrow buttons to change the values and the Enter button to move to the next character. Use these buttons to enter the code 2401 on the display. Then press the Enter button to accept the value.

6. Manually turn the vehicle’s steering wheel all the way to the left, full lock position and hold it there. Press the Enter button to indicate the steering wheel is in the correct position.

7. Manually turn the vehicle’s steering wheel all the way to the right, full lock position and hold it there. Press the Enter button to indicate the steering wheel is in the correct position.
8. Manually turn the vehicle’s steering wheel back to the center or straight ahead position. Try and get this position as close as possible then press the Enter button.

9. If the calibration is successful the display will show an O.K. Press the ESC button multiple times to return to the main display screen that shows time, temperature, engine hours, etc. The calibration is complete.

10. If the calibration fails, press the ESC button once, re-enter the 2401 code and repeat the calibration.

   Note: If the calibration continues to fail, have a Challenger/Fendt service technician troubleshoot the steering system of the vehicle.

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Steering Valve Calibration

11. From the main display screen that shows time, temperature, engine hours, etc., press the Enter button.
12. Icons will show up with one of them blinking. Use the up arrow or down arrow buttons to get the book icon blinking then press the Enter button.

13. Press the up arrow or down arrow arrows to get the steering wheel wrench icon blinking then press the Enter button.

14. If necessary, press the up arrow or down arrow buttons to get the wrench icon flashing then press the Enter button.
15. Use the up arrow and down arrow buttons to change the values and the Enter button to move to the next character. Use these buttons to enter the code 2403 on the display. Then press the Enter button to accept the value.

16. The system will show an hour glass on the display. Let the system sit and do not touch anything or attempt to drive the vehicle. It will appear as if nothing is happening and nothing will move. When this step is completed, the system will automatically move on to the next step.

   *Note: The system will stay in this state for 1 to 2 minutes while it finds the dead band of the valve. Do not touch anything while this process is working.*

17. The arrows will change to the other direction. Again, let the system sit and do not touch anything or attempt to drive the vehicle. It will continue to appear as if nothing is happening and nothing will move. When this step is completed, the system will show the results of the calibration.

   *Note: The system will stay in this state for 1 to 2 minutes while it finds the dead band of the valve. Do not touch anything while this process is working.*
Creating a New Vehicle Profile

Creating a New Vehicle Profile

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. Ensure the vehicle is in park and/or the park brake is set to prevent the vehicle from moving.
2. Ensure the engine is not running; do not start the vehicle yet.
3. Power up autosteer (turn the key to the ‘run’ position but do not start the engine).
4. Follow the instructions in the display’s operator manual to create a new vehicle using the Setup Wizard.
   
   Note: Select AccuGuide or IntelliSteer as the controller for the specific vehicle model when setting up your vehicle on the autosteer 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 autosteer.
Calibration and Tuning – Guidelines

Notes:

(i) For optimal steering performance, autosteer must be fully calibrated and then tuned (see also critical notes (i) and (ii) near the top of page 5).

(ii) The vehicle must be in gear and moving for autosteering to engage. If the vehicle is stationary, you will get a 'user turning wheel’ error message.

(iii) You can engage autosteering using the engage button on the display or by using the factory remote engage switch.

1. Start the vehicle and move it to an open area.
2. Power up autosteer.
3. Follow the instructions in the display’s operator 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 Vehicles 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’s operator manual to tune the vehicle after calibration has completed (under normal circumstances this will not be necessary). See note (i) above.
### 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" alt="Wheel Base Image" /></td>
<td></td>
<td><img src="image2" alt="Units Used Options" /></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" alt="GPS Antenna Image" /></td>
<td><img src="image4" alt="Fore/Aft Measurement" /></td>
<td><img src="image5" alt="Left/Right Measurement" /></td>
<td><img src="image6" alt="Height Measurement" /></td>
</tr>
</tbody>
</table>

| Measurements: | ![Fore Measurement](image7) | ![Aft Measurement](image8) | ![Left Measurement](image9) | ![Right Measurement](image10) |

<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="image11" alt="Autosteer Control Unit Image" /></td>
<td><img src="image12" alt="Fore/Aft Measurement" /></td>
<td><img src="image13" alt="Left/Right Measurement" /></td>
<td><img src="image14" alt="Height Measurement" /></td>
</tr>
</tbody>
</table>

| Measurements: | ![Fore Measurement](image15) | ![Aft Measurement](image16) | ![Left Measurement](image17) | ![Right Measurement](image18) |

<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="image19" alt="Direction of Arrows Image" /></td>
<td><img src="image20" alt="X Arrow Image" /></td>
<td><img src="image21" alt="Y Arrow Image" /></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="image22" alt="Orientation Image" /></td>
<td><img src="image23" alt="X Axis Image" /></td>
<td><img src="image24" alt="Y Axis Image" /></td>
<td><img src="image25" alt="Z Axis Image" /></td>
</tr>
</tbody>
</table>

| Draw Orientation of Autosteer Control Unit for all Three Directions and Angle Measured | ![Orientation Diagram](image26) |

| Measured Angle (Degrees): | | | |
|---------------------------|----------------|----------------|
| ![Measured Angle Image](image27) | | | |

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Autosteer Installation Manual 31
Final Installation Checklists – Hardware and Performance

After the completion of the autosteer installation, enter the required information below then complete the **Final Hardware Installation Checklist** and the **Autosteer Performance Checklist**. Use the checklists to confirm that all steps have been completed and create a record of important system information.

Machine Model: _______________________________  Year: ________  Serial #: ______________________________

Customer Name: ______________________________________________________________________________________

Location/Address: ______________________________________________________________________________________

Autosteer Installation Kit Part Number: _____________________________________________________________________

Notes:
_____________________________________________________________________________________________________
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_____________________________________________________________________________________________________
_____________________________________________________________________________________________________
_____________________________________________________________________________________________________

Name of Installer: ____________________________________________   Date: ____________________________________

Autosteer Installation Manual  33
Final Hardware Installation Checklist

1. Display bracket and display installed and all fasteners are tight.

2. GPS antenna is installed.

3. Autosteer ECU 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.

Final Autosteer Performance Checklist

1. Manual steering speed from lock to lock is satisfactory. Value _____ sec

2. Autosteer steering speed from lock to lock is satisfactory. Value _____ sec

3. Wheel angle sensor counts recorded.
   Left □
   Center □
   Right □

4. Manual kick-out is working when the steering wheel is turned.

5. Autosteer system calibration completed.

6. Autosteer system tuning completed (if necessary).

7. Line acquisition steering performance is satisfactory.

8. On-line steering performance is satisfactory.

Print per Specification #953-0001-01.