AutoFarm GPS AutoSteer
Hardware Installation Guide

Supported Models:
Case AFX-8010 Combines

PN: 602-0039-01-A
Special Requirements

Tools
This list consists of special tools required to complete the installation. A complete set of common installation tools is assumed. If you find that you are using special tools, please notify Documentation@gpsfarm.com.

• metric open wrenches
• metric socket wrenches up to 24mm
• soft brush
• clean rags
• oil collection pan (for collecting oil when hose connections are opened)

Attention
Tighten all screws, bolts, nuts, hose connections and cable connections after the final assembly of the AutoFarm Steering System on the vehicle.

Technician Feedback
Please contact Novariant via email to Documentation@gpsfarm.com with:
• outdated pictures or instructions
• tips for other installers
• general comments or suggestions
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1. Installation Overview

1.1 Installation Kit Overview

The Case AFX 8010 Combine AutoSteer Kit (PN# 182-0012-01) contains the components shown below. (Note: Component size is not shown to scale.)
## 1.2 Installation Kit Components

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wheel Angle Sensor (WAS) unit</td>
<td>200-0169-01</td>
</tr>
<tr>
<td>2</td>
<td>SAM harness</td>
<td>200-0161-01</td>
</tr>
<tr>
<td>3</td>
<td>User Terminal Monitor bracket</td>
<td>200-0173-01</td>
</tr>
<tr>
<td>4</td>
<td>Roof Module bracket</td>
<td>200-0167-01</td>
</tr>
<tr>
<td>5</td>
<td>Valve bracket</td>
<td>200-0166-01</td>
</tr>
<tr>
<td>6</td>
<td>Hydraulic valve</td>
<td>500-0008-01</td>
</tr>
<tr>
<td>7</td>
<td>WAS cable extension</td>
<td>201-0120-01</td>
</tr>
<tr>
<td>8</td>
<td>Cable routing hardware</td>
<td>200-0129-01</td>
</tr>
<tr>
<td>9</td>
<td>Hose kit</td>
<td>500-0133-01</td>
</tr>
<tr>
<td>10</td>
<td>Main harness</td>
<td>200-0153-01</td>
</tr>
<tr>
<td>11</td>
<td>Installation Guide</td>
<td>602-0039-01</td>
</tr>
<tr>
<td>12</td>
<td>SA Module</td>
<td>200-0206-01</td>
</tr>
<tr>
<td>13</td>
<td>SA Module bracket</td>
<td>200-0190-01</td>
</tr>
<tr>
<td>14</td>
<td>Roof Module mounting rail</td>
<td>200-0221-02</td>
</tr>
<tr>
<td>15</td>
<td>Power adapter battery cable</td>
<td>201-0156-01</td>
</tr>
</tbody>
</table>
2. **Install Roof Module**

### 2.1 Safety Notes

<table>
<thead>
<tr>
<th>Safety Note</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>The AutoFarm system must be powered OFF when installing or removing the roof module.</td>
<td>The supplied locking pin or a padlock must be in place whenever the vehicle is in operation.</td>
</tr>
<tr>
<td>The roof module must be removed when transporting the vehicle at speeds above 30 mph.</td>
<td>Make sure that you are in a stable position on the tractor platform when removing the roof module, so that you do not fall or drop the roof module.</td>
</tr>
</tbody>
</table>

### 2.2 Install the Mounting Rail

Mount the roof module brackets on the four screws on the cab roof as shown below. Replace the four screws shown below by the four longer screws provided in your kit.

![Left side of combine with roof module bracket mounting location](image)
Install the two brackets on the cab roof using the four longer screws.

Mount the roof mounting rail over the brackets as shown in the figure below. Secure the rail with two large bolts.
2.3 Mount the Roof Module

Slide the roof module into locked position. The cable connection must be on the left side of the tractor, facing the rear.

The roof module fully assembled over the cab roof is shown below.
Insert and close the locking pin through the holes in the roof module and the mounting rail. Note that a padlock can replace the locking pin.

Attach the radio modem antenna. Note: The antenna should be attached “hand tight.” Do not use any tools to tighten the antenna. Apply a small amount of silicone grease to the o-ring seal on the antenna before mounting on the roof module.
3. Install the Wheel Angle Sensor (WAS)

### 3.1 Wheel Angle Sensor Overview

The Wheel Angle Sensor is shown in the diagram below.

![Diagram of Wheel Angle Sensor](image)

### 3.2 Mount Tie Rod and Sensor Brackets

Secure the sensor bracket to the steering cylinder in the position shown below. Use either the 2 3/4” or 3” U-Bolt according to steering cylinder diameter. (Different bracket shown below.)

![Mounting Diagram](image)
### 3.3 Mount the Sensor

Secure the sensor to the bracket with the two bolts provided. (Different bracket shown below.)

![Sensor Mounting](image1)

### 3.4 Mount the Sensor and Connect the Linkage Arms

Mount the linkage bracket in the position shown below. Secure the bracket with a bolt.

![Linkage Mounting](image2)
### 3.5 Adjust the Sensor and Linkage Arms

Adjust linkage arm length and/or linkage bracket position to obtain between 3200 and 3800 counts. Turn the wheels all the way in both directions to make sure the linkage arms can move without interference. Note: This step is done during the calibration and tuning steps. Adjust the wheel angle sensor by rotating the sensor after loosening the two socket head screws with an Allen Key wrench.

![Image of the wheel angle sensor](image1)

Route the wheel angle sensor cable along the left side of the combine frame and secure with cable ties. (Keep all cables away from moving parts.)

![Image of cable routing](image2)
4. Install the User Terminal

4.1 Assemble and Mount the User Terminal Bracket

The user terminal will be installed under the door frame on the right side of the cab. You will use the special screws provided in your kit to secure the bracket under the door frame. Mount the slider plate on steel bracket in the position shown above.

Choose a position for installing the bracket under the door frame. Move the user terminal forward and backward to find the best position. The driver should be able to reach the touch screen and emergency stop button while seated. The user terminal should not obstruct the driver’s view of the platform.
Drill five 13/64” holes for the screws using the bracket as a template. We recommend drilling one hole to secure the bracket with one screw before drilling the remaining holes. The holes should be drilled so that the bracket mounts in the position shown below when looking at the right side door from inside the cab. **CAUTION:** Use safety glasses to prevent eye injury while drilling.

Secure the bracket as shown below with five screws. Use the 3/8 socket wrench to tighten the screws. The screws will cut their own threads in the steel.
Install the user terminal and adjustable arm in the bracket as shown below.

Mount the monitor bracket assembly. Mount the slider plate as shown in the photo below.
4.2 Mount and Adjust the User Terminal

Attach the adjustable arm to the user terminal. (Note: Different vehicle shown below.)

Remove the travel stop on the bracket assembly.
Slide the user terminal arm onto the cab bracket.

Replace the travel stop.
Tighten the arm onto the bracket. (Different cab shown.)
Remove adjustment bolt caps.

Adjust user terminal arm tightness.
Replace the adjustment bolt caps and adjust the user terminal viewing angle. (Different cab shown.)
5. Assemble and Mount the Hydraulic Valve

5.1 Install the Hydraulic Valve

Fasten the bracket into place on the left side of the combine frame. Secure the bracket using the two bolts.

Mount the hydraulic valve on the bracket. Secure it with the three long Allen bolts provided.
6. Install the Hydraulic Hoses

6.1 Assemble the Hydraulic Hoses

Assemble hoses as shown (Hose length is not shown to scale below.)

6.2 Route the Hydraulic Hoses

Note: Secure the hoses with cable ties and be sure they are clear of moving parts and heat sources.
6.3 AutoFarm Steering Valve

The valve is shown in the figure below.

![AutoFarm Steering Valve Diagram](image)

6.4 AutoSteer Valve Port Connections

<table>
<thead>
<tr>
<th>Hydraulic Hose</th>
<th>Valve Port Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steer In (Right)</td>
<td>SR</td>
</tr>
<tr>
<td>Steer In (Left)</td>
<td>SL</td>
</tr>
<tr>
<td>Steer Out (Right)</td>
<td>R</td>
</tr>
<tr>
<td>Steer Out (Left)</td>
<td>L</td>
</tr>
<tr>
<td>Pressure</td>
<td>P</td>
</tr>
<tr>
<td>Return</td>
<td>T</td>
</tr>
<tr>
<td>Load Sense</td>
<td>LS</td>
</tr>
<tr>
<td>Pressure Transducer</td>
<td>Trans</td>
</tr>
</tbody>
</table>
6.5 Connect the Hydraulic Hoses

The pressure, return, and load sense lines for the AutoSteer valve connect to the existing hoses on the machine using “tee” adapters. The pressure, return, and load sense hoses locations are shown below.

The orifice installation is shown below.
Attach steer IN/OUT hoses to the hydraulic valve.

Route the IN/OUT hoses and connect to the combine steering hoses under the cab as shown below.
6.6 Connect the AutoSteer Hoses

1. Disconnect the combine steer hoses in the position shown.
2. Connect the “Steer In” and “Steer Out” hoses as shown.
3. Steer Right Hoses must connect to the Steer Cylinder Hose that causes a right turn when pressurized.

6.7 Connect the Oil Supply Hoses

Identify the three oil supply ports on the AutoFarm valve as shown in the photo below.
7. **Install the SA Module**

### 7.1 Mount the SA Module Bracket

Mount the SA module bracket in any protected position on the combine.

![SA module bracket](image)

### 7.2 Mount the SA Module to the Bracket

It is essential that the SA Module is NOT mounted so that the cable connection is on the top or on the side with the cable going up as shown in the photo below.

![SA module](image)
AutoFarm recommends mounting the SA module in the positions shown below.

Do NOT mount the SA module in the positions shown in the figure below.
8. Install the Main Cable Harness

8.1 Attach the Main Cable Harness to the User Terminal

8.2 Attach the Cable to the Power Supply in Cab

If a 12V electrical outlet is not available in the cab, you can connect the power adapter cable (# 201-0156-01) directly to a 12V power source inside the cab.
If 8.2 is not applicable, there is an option to use the AutoFarm battery adapter power cable to connect your AutoFarm system to the vehicle’s 12 volt electrical system.

Connect both the red and white wires to 12 volt power on the vehicle protected by a 20 amp fuse.

<table>
<thead>
<tr>
<th>Wire Color</th>
<th>12 Volt Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>12 V unswitched power</td>
</tr>
<tr>
<td>White</td>
<td>12 V switched power</td>
</tr>
<tr>
<td>Black</td>
<td>Ground</td>
</tr>
</tbody>
</table>
8.4 Attach the Main Cable Harness to the Roof Module

1. Route the antenna cables and steering cable to the cab through existing holes in the cab wall or floor. If necessary, drill a 1-3/4” diameter hole in the cab floor or wall using a hole saw. Use a rubber grommet to protect cables passing through the hole.

2. Route the cable down the left side of the cab and secure with cable ties. Secure the cable to the roof using the eye clamp.

3. Attach the cable to the roof module as shown in the photo below.
9. Install the SA Module Cable Harness

9.1 Attach the Cable to the SA Module

Connect the cable to the SA Module.

Close the cable connector locking mechanism.
Note: To disconnect the cable from the SA module, the connector must first be unlocked as shown.

9.2 Connect the SA Module Harness to the Hydraulic Valve

Route and secure the steering cable from the SA Module to the hydraulic valve.
9.3 Connect the SA Module Harness to the Wheel Angle Sensor

Route the wheel angle sensor cable along the left side of the combine frame and secure with cable ties. (Keep all cables away from moving parts.)

Route and secure the wheel angle sensor cable from the SA Module beneath the cab to the wheel angle sensor. Attach the cable to the connector on the wheel angle sensor. Use the extension cable supplied if necessary.
9.4 Attach SA Module Cable Harness to Main Cable Harness

Route the SA Module cable into the cab. Attach the harnesses with two connectors between the SA module and the main harness inside the cab.
## 10. Final Checklist

<table>
<thead>
<tr>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check all hose connections.</td>
</tr>
<tr>
<td>Check all cable connections.</td>
</tr>
<tr>
<td>Power up the vehicle and check for hydraulic leaks.</td>
</tr>
<tr>
<td>Check manual steering.</td>
</tr>
<tr>
<td>Proceed with calibration and tuning.</td>
</tr>
</tbody>
</table>