HARDI AUTOSLANT
End User Installation Manual
COMMANDER, NAVIGATOR
with HARDI DAH 09 PCB
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Introduction

Congratulations on your purchase of the NORAC UC4+ Spray Height Control System. This system is manufactured with top quality components and is engineered using the latest technology to provide operating reliability unmatched for years to come.

When properly used the system can provide protection from sprayer boom damage, improve sprayer efficiency, and ensure chemicals are applied correctly.

Please take the time to read this manual completely before attempting to install the system. A thorough understanding of this manual will ensure that you receive the maximum benefit from the system.

Your input can help make us better! If you find issues or have suggestions regarding the parts list or the installation procedure, please don’t hesitate to contact us.

IMPORTANT:

Every effort has been made to ensure the accuracy of the information contacted in this manual. All parts supplied are selected to specially fit the sprayer to facilitate a complete installation. However, NORAC cannot guarantee all parts fit as intended due to the variations of the sprayer by the manufacturer.

Please read this manual in its entirety before attempting installation.
# 2 Parts List

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Name</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>B06</td>
<td>105728</td>
<td>RAM-233 RAIL MOUNT ADAPTER KIT FOR RAM-202 BASE</td>
<td>1</td>
</tr>
<tr>
<td>C10</td>
<td>44658-52</td>
<td>CABLE UC4 POWER HARDI</td>
<td>1</td>
</tr>
<tr>
<td>E01</td>
<td>4461BC+HD</td>
<td>UC4 PLUS BOOM CONTROL PANEL HARDI</td>
<td>1</td>
</tr>
<tr>
<td>M01</td>
<td>4476BC+MAN7</td>
<td>OPERATOR MANUAL UC4+ SPRAY HEIGHT CONTROL (FIXED BOOM)</td>
<td>1</td>
</tr>
<tr>
<td>M03</td>
<td>UC4-BC-HD5-INSTE</td>
<td>MANUAL INSTALLATION END-USER HARDI</td>
<td>1</td>
</tr>
</tbody>
</table>

# 3 Control Panel Mounting

Install the UC4+ Control Panel (E01) in the cab of the sprayer or tractor with the supplied mounting bracket. The location must facilitate connecting the power cable (C10) to the bottom of the UC4+ Control Panel.

Using Item B06 together with the adjustable RAM mount on the control panel (E01), mount panel to the HARRDI controller bracket, as shown in Figure 1.

![Figure 1: UC4+ Panel Mounting](image-url)
4 Cable Installation

Figure 2: Cable Routing Overview

1. Connect C10 to the UC4+ Control Panel in the sprayer cab. Ensure that both plugs (P16A and P4) are connected to the panel.

2. Route the receptacle end (R16) of C10 to the exterior of the cab and connect to C11 at the hitch. Ensure cable is routed in a safe manner to avoid damage.

3. All other cables and connections shown are factory installed – they are illustrated in Figure 2 for reference only.
5 Calibration

5.1 Initial Power Up

1. Turn on the power for the UC4+ Control Panel using the switch on the side of its chassis. Ensure that the UC4+ display lights up to confirm that the panel has +12 volt power.

2. After a moment the panel will display the Main Run Screen:

   ![Main Run Screen]

5.2 ReTune

1. For optimal performance, the UC4+ Height Control System must be calibrated to the tractor unit powering the sprayer hydraulics. Before you start calibrating the hydraulics ensure you complete the following steps:

   • Unfold the sprayer in a location that is relatively level, and where the sensors are over bare soil or gravel. Do not conduct the setup procedure over standing crop, or tall weeds/grass.

   • Ensure the boom roll suspension system is functioning properly and smoothly. Friction on wear surfaces can be relieved using lubricants (grease, etc) or adjustment. Properly tuned suspension systems will optimize UC4+ performance.

   • For best results, the hydraulic system should be under a normal load and at a normal working temperature. Start the solution pump and run the sprayer’s engine at a normal working RPM for the entire setup. Cycle all boom sections up and down manually for five minutes to warm the oil. Ensure any hydraulic flow controls are adjusted for normal field operation. Changing the hydraulic flow controls after or during the system setup will affect the UC4+ performance.

2. To initiate the “ReTune” process, navigate from the Main Run Screen to the “ReTune” menu. Ensure the UC4+ control panel is in manual mode, at the run screen.

3. Toggle "SETUP" until the display shows "Retune?". Toggle "AUTO (YES)" to confirm.

4. The panel will start the “ReTune” process. Follow the on-screen prompts. Additional information concerning the “ReTune” procedure may be found in the UC4+ Operator’s Manual.

5. After you have completed the “ReTune”, you will need to manually calibrate the deadzone and gain for the slant valve (Section 5.3).
5.3 Calibrating the Slant Valve

The roll (slant) valve can only be calibrated manually as described below. When calibrating the roll valve you must first calibrate the deadzone clockwise and counter clockwise settings and then the gain clockwise and counter clockwise settings.

Navigating to the Slant Valve Settings:

1. Ensure the UC4+ control panel is in manual mode, at the run screen.
2. Toggle "SETUP" until the display shows "More?". Toggle "AUTO (YES)" to confirm.
3. Toggle "SETUP" until the display shows "Roll?". Toggle the "AUTO (YES)" switch to confirm.
4. Toggle the "SETUP" switch to access the next menu prompt or toggle "SENSOR DISPLAY" to access the previous menu. Choose the dead zone up/down or gain up/down setting (Figure 3).

![Figure 3: Slant Valve Settings]

Roll Channel On
Roll Channel Dead Zone Clockwise (cw)
Roll Channel Gain Clockwise (cw)
Roll Channel Dead Zone Counter Clockwise (ccw)
Roll Channel Gain Counter Clockwise (ccw)
**Manual Dead Zone Calibration:**

1. Follow **Section 5.2 Step 1** (level booms, working RPM, etc.) before proceeding.

2. Choose the dead zone up or down setting (**Figure 3**).

3. Press and hold the "MANUAL" switch.

4. The valve will turn on at the indicated setting for exactly one-second. The screen will show the actual change in height.

5. The change in height reading is live as long as you hold the "MANUAL" switch. Wait until the height reading has settled to a stable value and record this reading.

6. Average three readings. The acceptable average change in height should be from 20 to 50 mm.

7. If the average is less, increase the DZ setting with the "+/-" switch. If the average is more, decrease the DZ setting with the "+/-" switch.

8. Repeat **Steps 3 to 7** until the average falls within 20 to 50 mm.
**Manual Gain Calibration:**

This test will drive the boom at full speed in the selected direction for one second. Make sure the boom has full range of movement.

The purpose of this test is to determine the sprayer boom speeds. It is recommended that you perform each test three times and average your readings. From the speed measurements taken, use **Table 1** to determine the appropriate gain values to use for each function.

1. Follow **Section 5.2 Step 1** (level booms, working RPM, etc.) before proceeding.

2. Choose the gain up or down setting (**Figure 3**).

3. Press and hold the "MANUAL" switch.

4. The valve will turn on at 100 percent speed for exactly one-second, regardless of the value of the gain setting. The screen will show the actual change in height.

5. The change in height reading is live as long as you hold the "MANUAL" switch. Wait until the height reading has settled to a stable value and record this reading. This is your boom speed in inches per second (in/s) or mm per second (mm/s).

6. Repeat **Steps 3 to 5** three times, repositioning the boom as necessary. Average your three readings.

7. Set the gain value using the "+/-" switch using **Table 1** below as a guideline.

<table>
<thead>
<tr>
<th>Function</th>
<th>Boom Speed (mm/sec)</th>
<th>Gain Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll</td>
<td>&gt;2200</td>
<td>1</td>
</tr>
<tr>
<td>Roll</td>
<td>2200 - 1000</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Roll</td>
<td>1000 - 400</td>
<td>5 - 9</td>
</tr>
<tr>
<td>Roll</td>
<td>400 - 100</td>
<td>9 - 11</td>
</tr>
<tr>
<td>Roll</td>
<td>&lt;100</td>
<td>11 - 12</td>
</tr>
</tbody>
</table>
Use the "+/-" switch to change settings.

Press and hold “SETUP” or “SENSOR DISPLAY” for two seconds to return to the run screen.
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