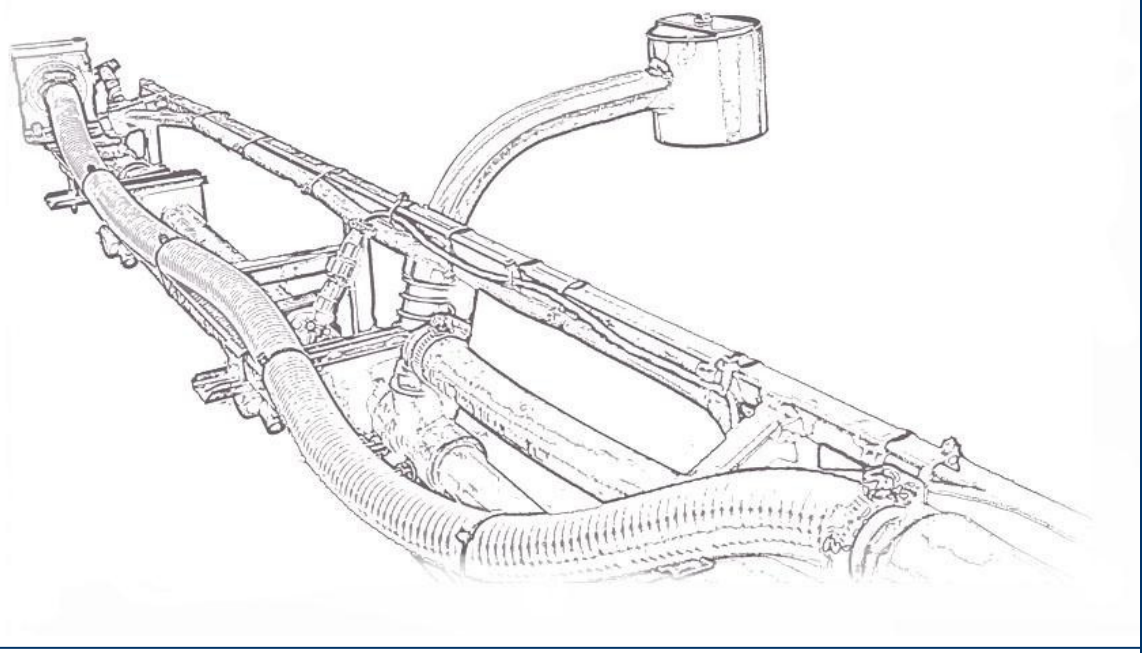
NORAC®

UC5™ CAN BUS Spray Height Control System



Rogator 900, 1100, 1300
Active Wing Roll Control Option
Installation Manual

5466BC-RG

Printed in Canada
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Reorder P/N: 5466BC-RG-INST Rev B (Rogator 900, 1100, 1300 Active Wing Roll Control Option)

NOTICE: NORAC Systems International Inc. reserves the right to improve products and their specifications without notice and without the requirement to update products sold previously. Every effort has been made to ensure the accuracy of the information contained in this manual. The technical information in this manual was reviewed at the time of approval for publication.

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1 Introduction

Congratulations on your purchase of the NORAC UC5 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

If the Active Wing Roll Control Option is being installed on a sprayer with an existing Active Roll system, a linear roll damper is needed and must be ordered separately.

Part Number	Name	Quantity
44792-111	ROLL POSITION DAMPER 40.86 IA RG	1
44750-12	HARDWARE MOUNTING RPD - ROGATOR LSD TO RPD UPGRADE	1

⚠ Important

Every effort has been made to ensure the accuracy of the information contained 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 Kit Parts

2.1 Kit Overview

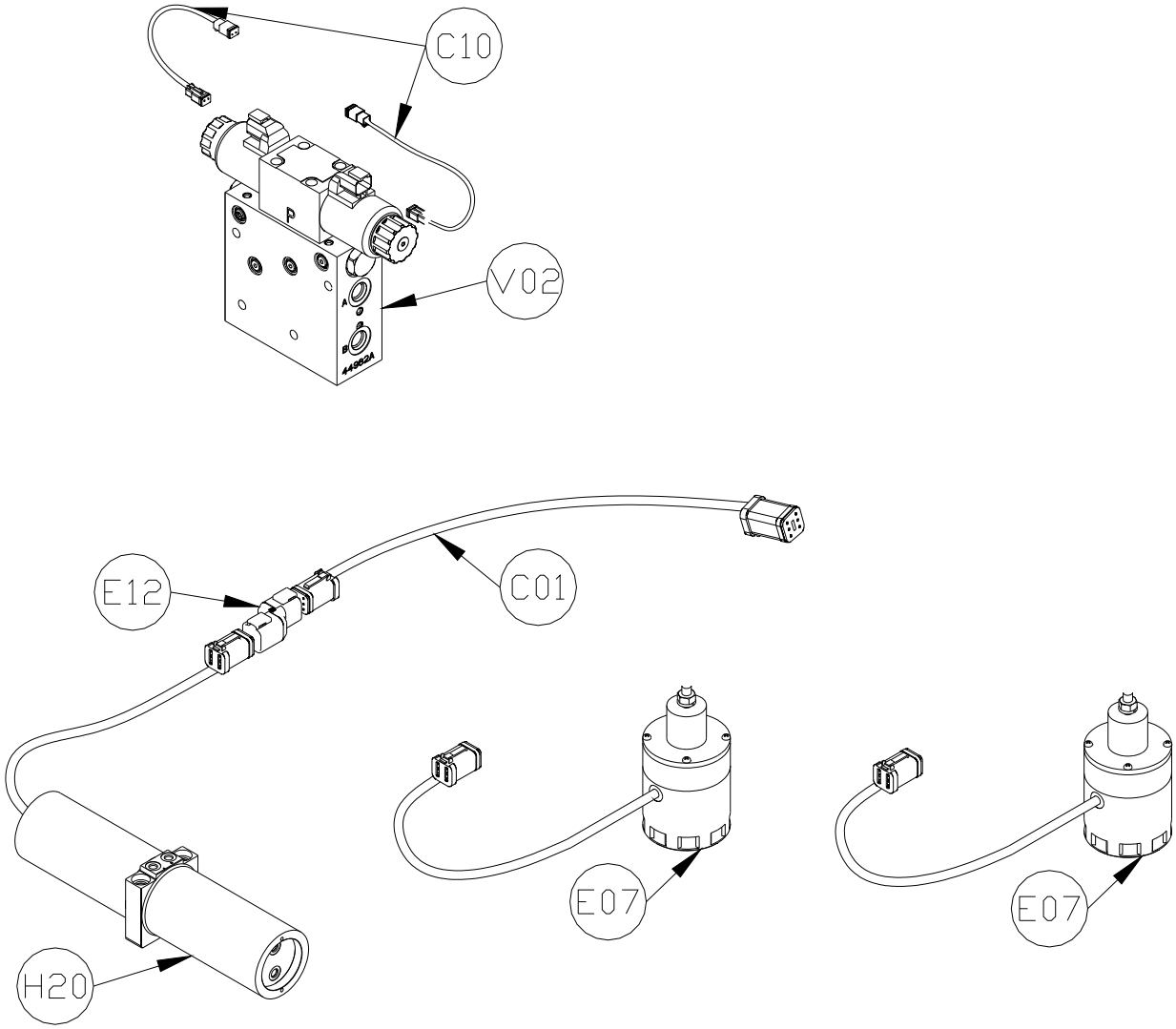


Figure 1: UC5 Active Wing Roll Control Parts

2.2 Hydraulic Plumbing

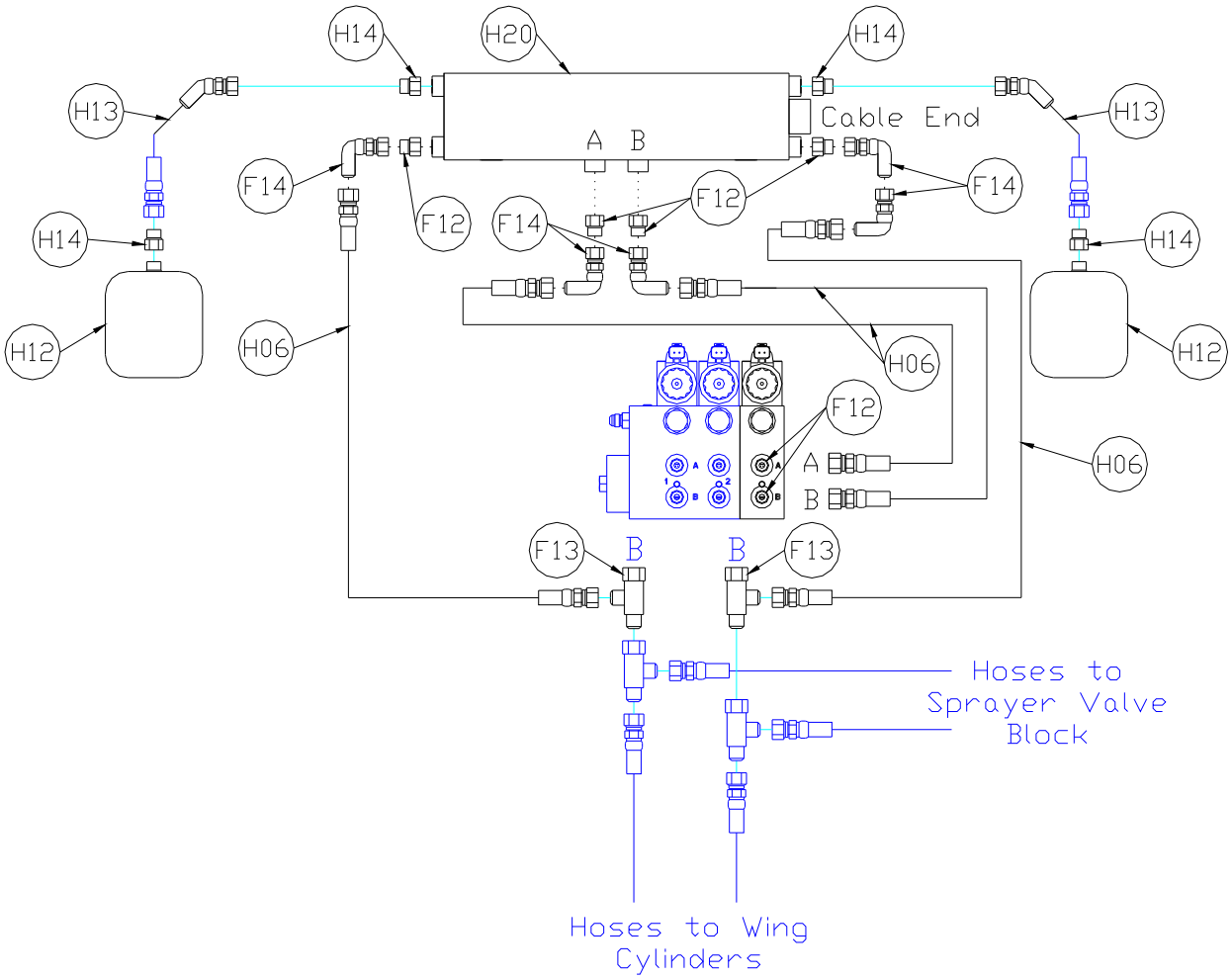


Figure 2: UC5 Active Wing Roll Control Hydraulic Plumbing on Rogator 900, 1100, 1300

Components shown in black are included in this kit.
Components shown in blue are existing components.

2.3 List of Parts

Item	Part Number	Name	Quantity
B05	44706-01	KIT CABLE TIE BLACK 10 PCS 21 IN 150 PCS 7.5 IN	1
C01	43220-03	CABLE UC5 NETWORK 14 AWG 3M	1
C10	43230-04	CABLE UC5 VALVE 2PIN DT TO 2PIN DT	2
E07	50100	ULTRASONIC MAX SENSOR	2
E12	43764	UC5 NETWORK COUPLER 2-WAY	1
H06	44863-31	HOSE ASSEMBLY 122R2-06 106 IN L 6FORX 6FORX	4
H11	44865-75	HYDRAULICS FITTING KIT - AWR1	1
H12	44868	ACCUMULATOR 10 CU INCH, 0.161 L, 900 PSI	2
H13	44863-61	HOSE ASSEMBLY 122R2-06 32IN L 6FORX 6FORX45	2
H14	44917	COUPLING HYD 6MB-6MOR MACHINED ORB	4
H20	44978	WING ROLL CYLINDER W/POSITION SENSOR	1
M03	5466BC-RG-INST	MANUAL INSTALLATION UC5 ACTIVE WING ROLL OPTION ROGATOR 900, 1100, 1300	1
M04	106742	BOLT SS M12x1.75 x 25mm	2
M05	106743	WASHER SS LOCK M12	2
M06	106759	WASHER SS FLAT M12	2
P03	105882	UC5 NETWORK 6 PIN PLUG	1
V02	44962D	VALVE ASSEMBLY EXPANSION DPOC PROP DT 4 BOLT	1

2.4 Tools Required

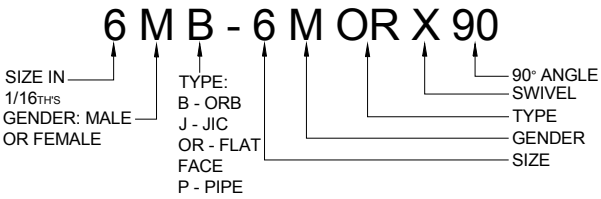
This list is intended to be a guideline for what is required for installation. Additional tools may be required or may work better.

- SAE Wrenches (sizes 7/16" to 1")
- Side-Cutting Pliers (for cable ties)
- Power Drill
- 5/8" Drill Bit
- Tape Measure
- Center Punch and Small Hammer (Optional)

2.5 Hydraulic Fitting Kit Details (P/N: 44865-75)

Item	Part Number	Name	Quantity	Picture
F12	44917	MALE ADAPTER - 6MB 6MOR	6	
F13	104586	TEE ADAPTER - 6FORXR 6MORT	4	
F14	104590	90 DEG ADAPTER - 6MOR 6FORX90	9	

Fitting Name Example:



Important

Do not use high speed power tools/drills when installing hardware.

Important

The use of dielectric grease is not recommended on any NORAC electrical connections.

Important

To ensure all stainless steel hardware does not gall or seize apply a light coating of the supplied Permatex Anti-seize grease to all threaded parts upon installation. Permatex Anti-seize lubricant is preferred, but other similar anti-seize products may be used.

3 Hydraulic Installation

Warning!

Ensure all pressure has been bled from the system before disconnecting any lines or fittings. Hydraulic pressure will exist on the wing tilt circuits unless the wings are being supported by other means. The hydraulic installation may be performed with the wings in transport position, resting on the ground or with the tilt cylinders fully extended.

Important

Component failure due to oil contamination is not covered under the NORAC UC5 system warranty. It is recommended that a qualified technician perform the hydraulic installation.

3.1 Valve Assembly

1. On a clean surface remove the plastic plugs from the block.

2. Install the 6MB-6MOR (F12) fittings into the "A" and "B" ports of the expansion block. Tighten to 18 ft-lbs (24 Nm).

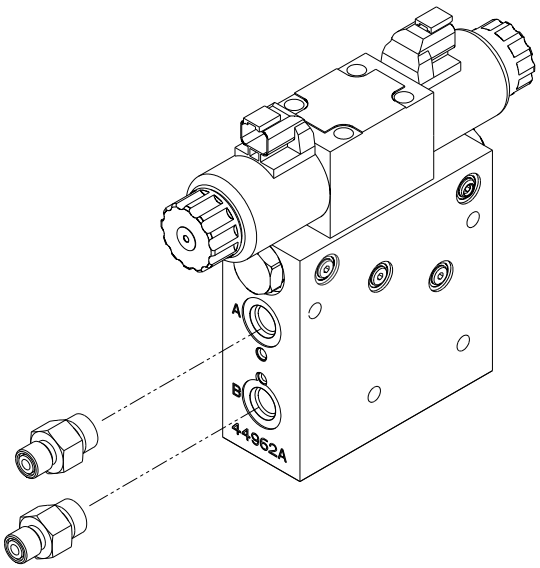


Figure 3: NORAC Valve Block Details

3.2 Expansion Block Assembly

1. Remove the plate and 3/8" bolts from the end of the valve block. Remove any yellow paint chips from the surface of the valve block to ensure a clean sealing surface.

2. Remove the four 4MBP plugs from the 2 station valve block (**Figure 4**). Gently tap the plugs with a hammer to loosen before attempting to remove.

3. Coat the four o-rings in hydraulic oil and install them into the expansion block. Ensure the o-rings are seated properly.

4. Attach the expansion block to the 2 station block using the included spring washers and bolts.

5. Tighten the bolts to 31 ft-lbs (42 Nm).

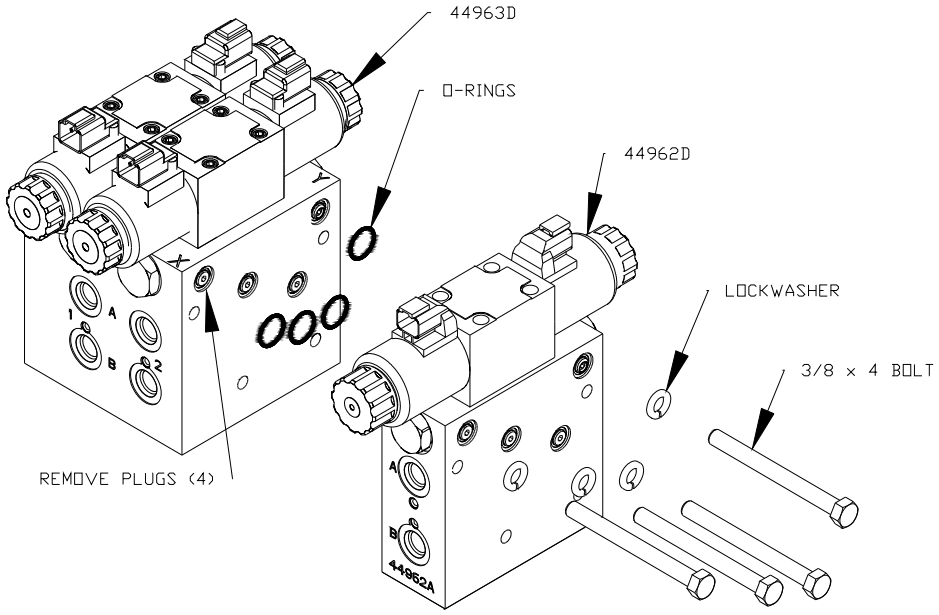


Figure 4: NORAC Expansion Block Assembly

3.3 Wing Roll Cylinder Mounting

1. Drill two (2) 5/8 inch holes in the cross member below the rear catwalk fourteen inches (14") in from the right side to mount the wing roll cylinder to the boom. The holes must be spaced 100 mm (3.94") apart.

2. Install four (4) 6MB-6MOR fittings (F12) onto the "A", "B" and outer ports (one on each end) on the wing roll cylinder (H20). Install two (2) 6MB-6MOR fittings (H14) onto the inner ports (one on each end) on the wing roll cylinder.

3. Mount the wing roll cylinder (H20) using the supplied M12x1.75x25mm, flat washers and lock washers. Install the wing roll cylinder with the cable end pointing towards the right-hand wing (when looking from the rear of the sprayer). Tighten mounting bolts to 60-70 ft-lb (81-95 Nm).

Figure 5: Wing Roll Cylinder Installed on the Boom Frame (when looking from the rear)

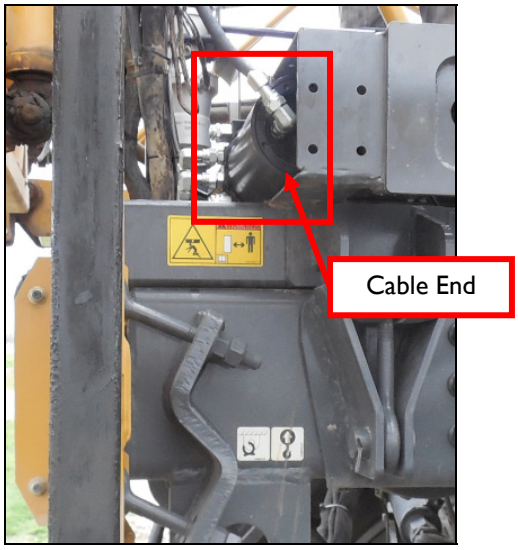


Figure 6: Wing Roll Cylinder Installed (Side View)

Figure 7: Wing Roll Cylinder Mounting Hardware

3.4 Hydraulic Plumbing

Warning!

From this point on in the installation the booms will be inoperative until the hydraulics are fully installed.

After the NORAC valve is mounted, the hydraulic hoses and fittings can be plumbed.

1. The plumbing for the hydraulic circuit is shown schematically in **Figure 2**.
2. Insert two (2) 6FORXR-6MORT tees (F13) between the NORAC valve block and the existing tee fittings on the "B" ports of the NORAC valve block.
3. Connect hoses H06 to the tees (F13).
4. Install four (4) 6MOR-6FORX90 fittings (F14) onto the F12 fittings on the "A", "B" and outer ports (one on each end) on the wing roll cylinder (H20).
5. Install a 6MOR-6FORX90 fittings (F14) onto the F14 fitting on the cable end of the wing roll cylinder (H20).
6. Connect hose H06 from the right "raise" line to the outer port on the cable end of the wing roll cylinder (H20).
7. Connect hose H06 from the left "raise" line to the outer port on the opposite end of the wing roll cylinder (H20).
8. Connect hose H06 between the "A" port on the wing roll cylinder (H20) and the "A" port on the NORAC expansion block.
9. Connect hose H06 between the "B" port on the wing roll cylinder (H20) and the "B" port on the NORAC expansion block.
10. Connect the 45 degree ends of hoses H13 to fittings H14 on the inner ports (one on each end) on the wing roll cylinder.
11. Connect the straight ends of hoses H13 to the accumulators (H12) using 6MB-6MOR fittings (H14).

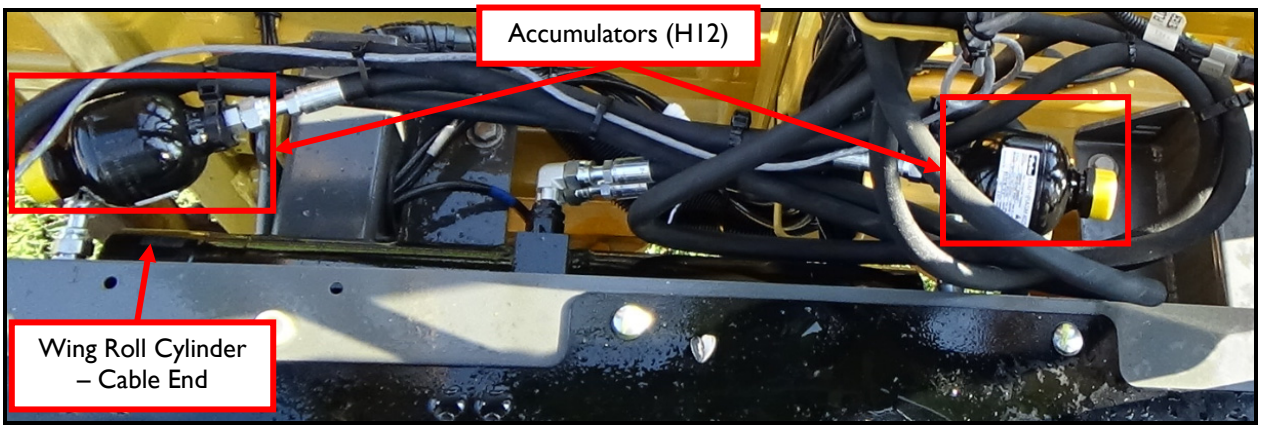
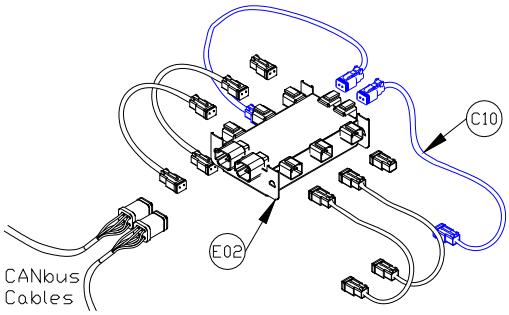


Figure 8: Accumulator Installation Location (Looking from Above)

4 Electrical Installation

1. Locate the valve module installed on the NORAC valve block. Remove the plugs installed in positions 7 and 8.

2. Connect the 2 pin connector on cables C10 into positions 7 and 8 on the valve module. Connect the other end of cables C10 to the 2 pin connectors on the NORAC expansion block (V02).



Output Number	Normal Function
1	Left Up
2	Left Down
3	Right Up
4	Right Down
5	Option 1
6	Option 2
7	Roll CW
8	Roll CCW

Figure 9: Valve Module Connections

3. Disconnect and remove the NORAC roll sensors (small rectangular box with a cable running from it). See **Figure 10** for the locations on Rogator 900, 1100, 1300. One of the roll sensors will be connected to the 8-way coupler with 3m cable and a 2-way coupler. This cable will be used when connecting the wing roll cylinder. Leave it connected. The other roll sensor will be connected directly to the 8-way coupler. Insert the 6-pin plug (P03) into the 8-way coupler where the roll sensor was connected.

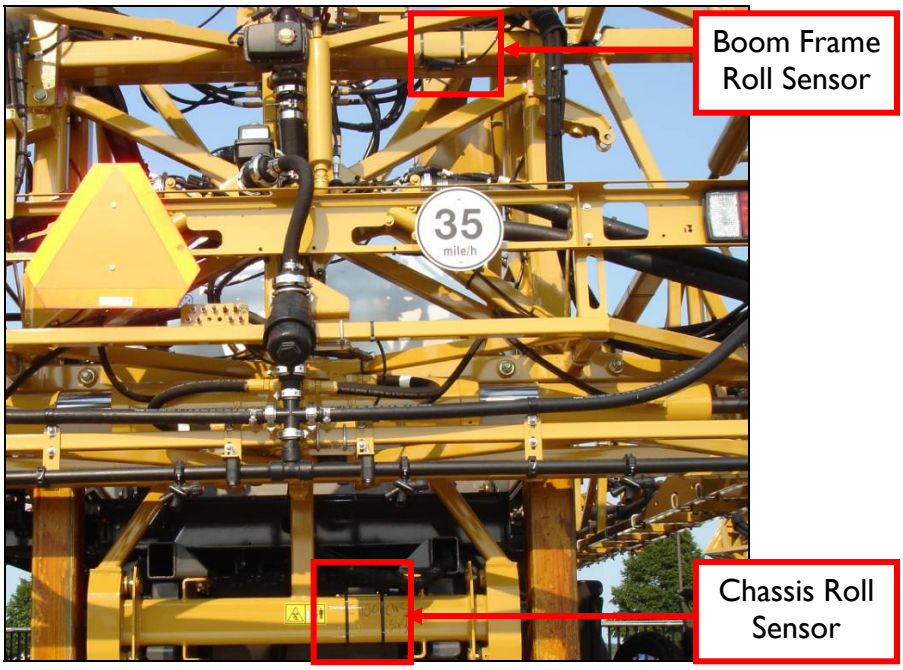


Figure 10: Roll Sensor Mounting (Viewed from the rear of sprayer) on Rogator 900, 1100 & 1300

4. Connect the wing roll cylinder (H20) to the 3m cable and 2-way coupler where one of the roll sensors was connected. It may be necessary to use cable C01 and the 2-way coupler (E12) to connect the wing roll cylinder cable to the existing 3m cable.

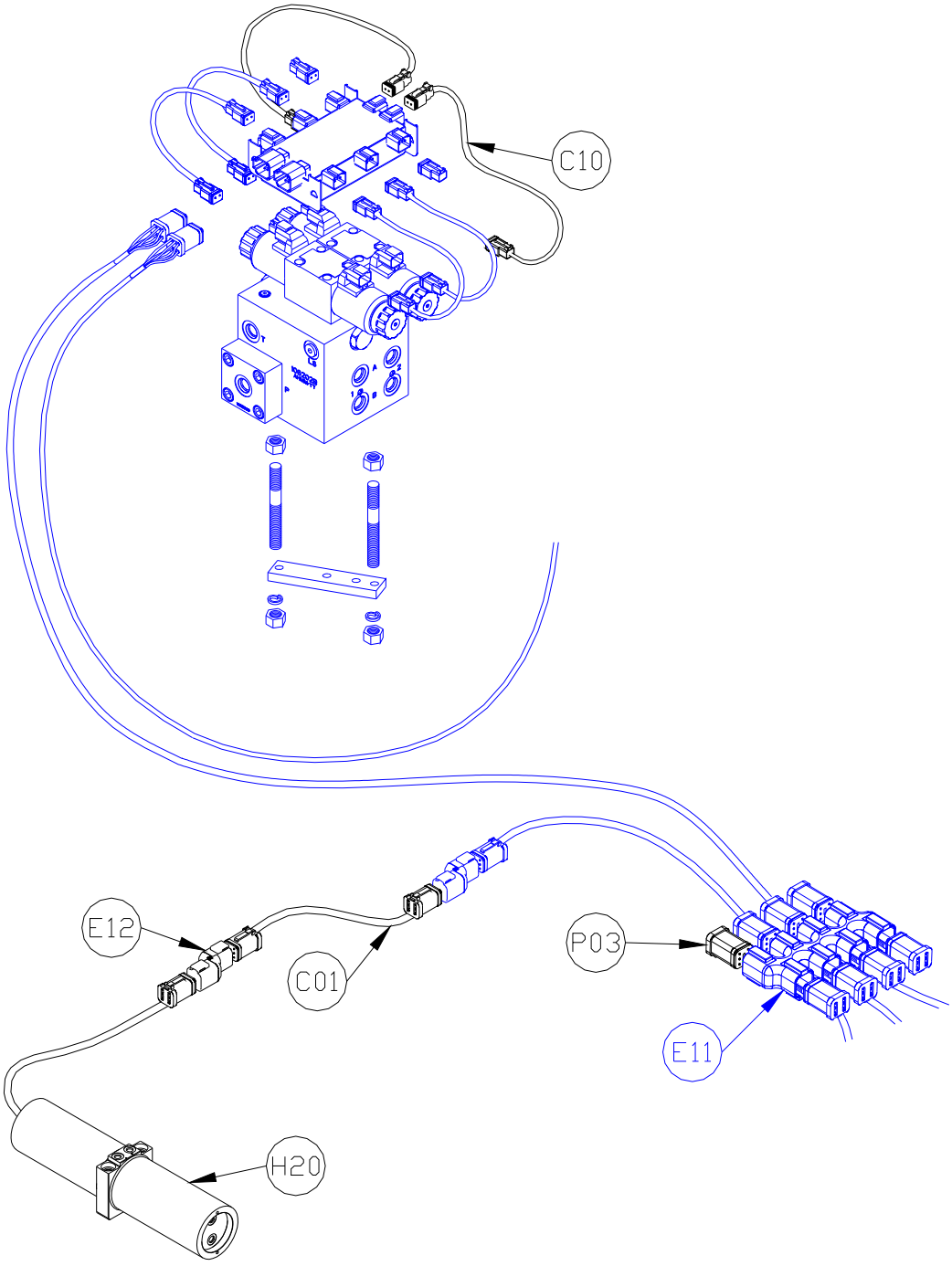


Figure 11: Electrical Installation

⚠ **Components shown in black are included in this kit.**
Components shown in blue are existing components.

4.1 Sensor Installation

1. Remove the inner height sensors from the brackets. Keep these sensors as spares.

2. Install the sensors (E07) into the brackets with the lower serial number on the left (**Figure 12**). Connect the sensors where the original sensors were disconnected.

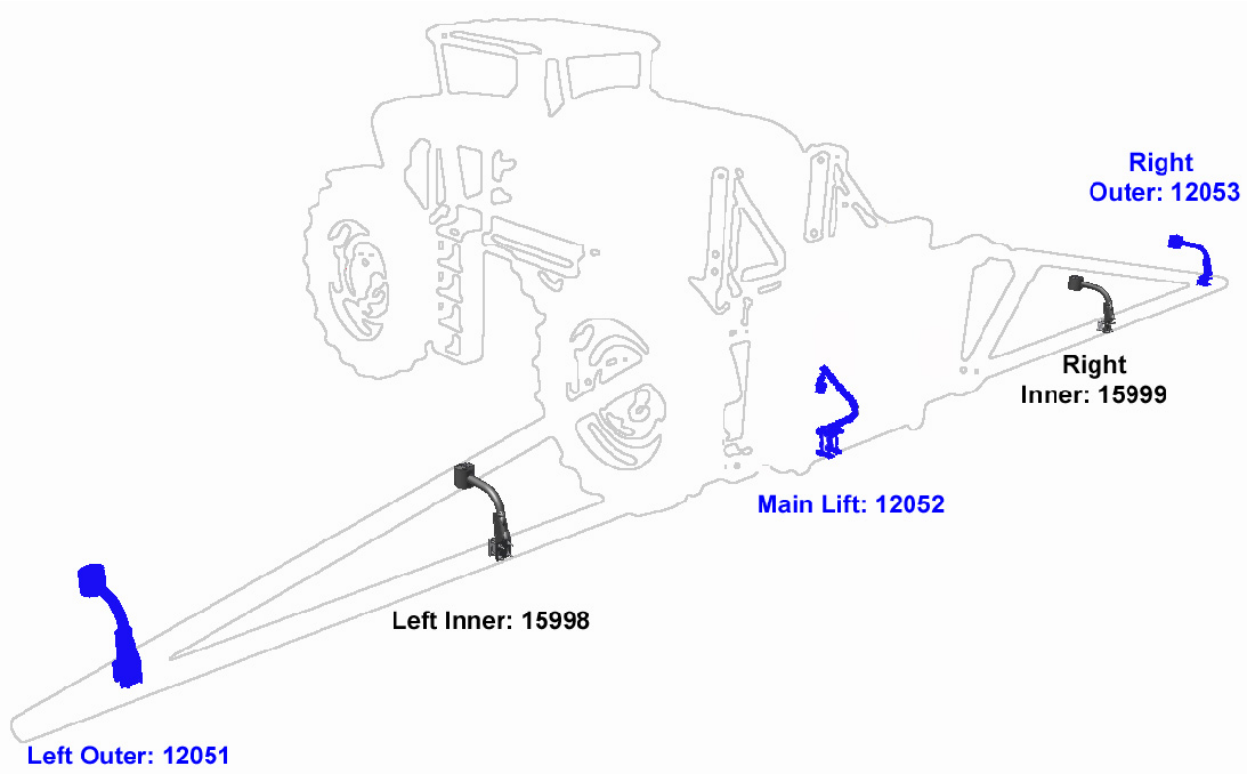


Figure 12: Sensor Serial Number Arrangement

⚠ **The E07 sensors will be mounted in the positions shown in black.**

5 Software Setup

1. Start up the sprayer and test the sprayer's functionality. The display terminal does not need to be powered on for the original boom function switches to operate. Unfold the booms and raise/lower each boom and the main section.

⚠ Important

Confirm that the cabling and hoses are agreeable to the entire range of motion.

2. If any functions do not work, review the hydraulic and electrical portions of this manual to check for proper installation.

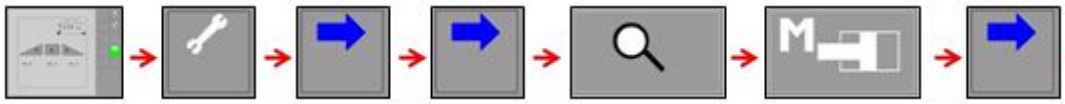
3. Turn on the power for the display terminal using the switch on the side.

5.1 Wing Roll Cylinder Air Bleed Procedure

After installing the Wing Roll Cylinder, air will have to be removed from the system. The following is a step by step procedure for bleeding air from the system using both the sprayer joystick and the NORAC manual valve drive screen.

1. Remove the air from the tilt cylinders, using the sprayer's joystick controls.
   a) Move the left tilt cylinder full stroke three times.
   b) Move the right tilt cylinder full stroke three times.

2. The NORAC screen on the VT or PULSE must be used to remove air from the roll channel:
   a) Start an Automatic Install.
      i) If this is a new install, the system will automatically start an automatic install.
      ii) If an install has already been performed, follow the icons in step 3 to start the install.
   b) Select the appropriate sprayer make and model on the screen.
   c) Read the disclaimer menus and move through the screens.
   d) At the screen reading "level the boom at 35in", press the button with a house on it to exit the install and return to the main run screen.
   e) Using the sprayer's controls raise the boom center to the maximum height and level the wings.
   f) Follow the symbols below to navigate to the manual valve drive screen.



g) Use the roll arrows to roll the boom over as far as possible in each direction a few times, allowing the air to escape. ***Don't adjust the wings individually, only use the roll arrows.**

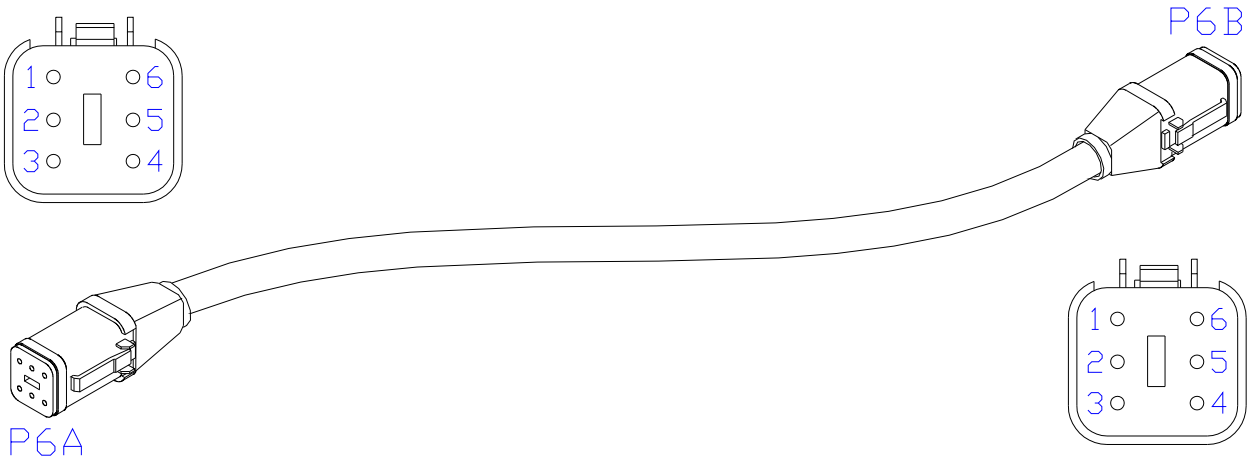
h) Stop with the wings at approximately the same height.

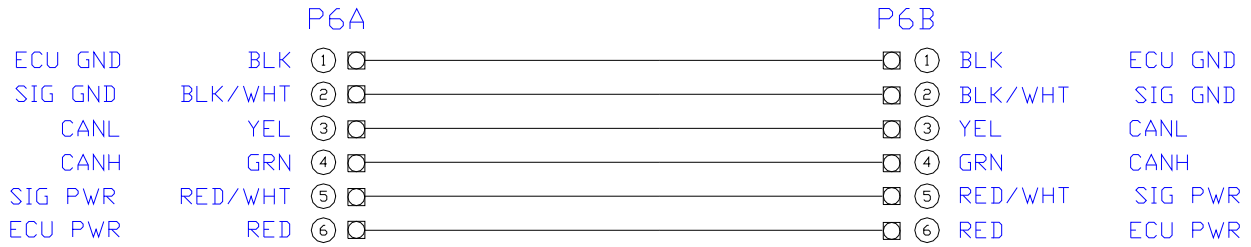
i) Ensure that each roll button allows for the boom to rotate in both directions. If the boom doesn't roll in one direction, roll it the opposite way and adjust the wings to their level position.

3. The procedure for the installation of the UC5 Spray Height Control system is now complete. Begin the AUTOMATIC SYSTEM SETUP procedure as described in the UC5 Spray Height Control Operator's Manual.

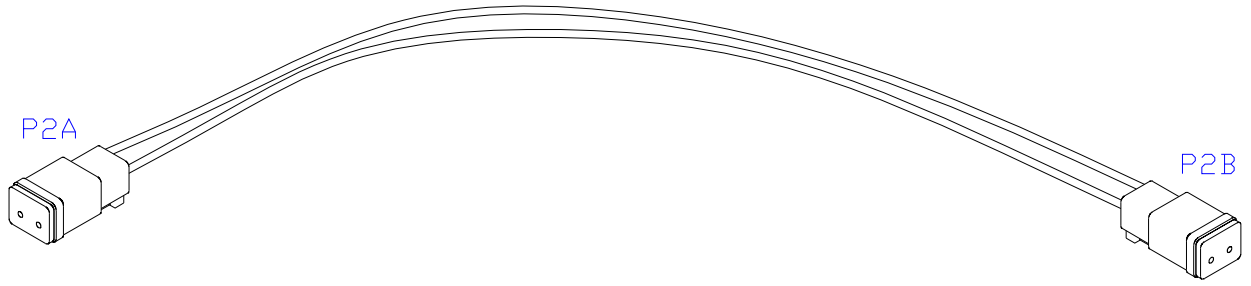
6 Cable Drawings

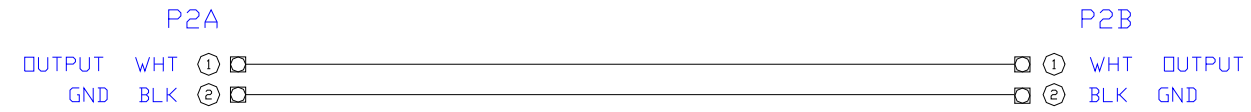
6.1 ITEM C01: 43220-03 - CABLE UC5 NETWORK 14 AWG - 3M





6.2 ITEM C10: 43230-04 – CABLE UC5 VALVE DT TO DT





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