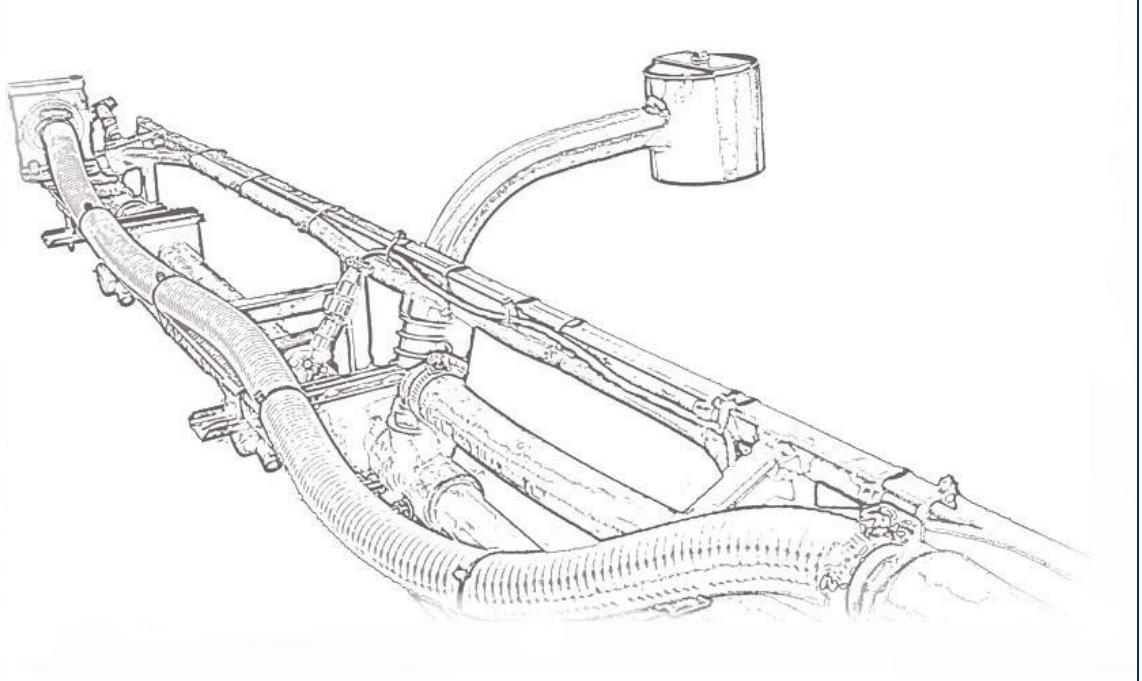
NORAC®

UC4.5™ Spray Height Control System



EVRARD – Auto Slant Installation Manual

EV5

Printed in Canada

Reorder P/N: UC4.5-BC-EV5-INST Rev B (EVRARD - Auto Slant)

Contents

1 Introduction

Congratulations on your purchase of the NORAC UC4.5 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 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 General UC4.5 System Layout

Figure 1 illustrates the general layout of the UC4.5 system components:

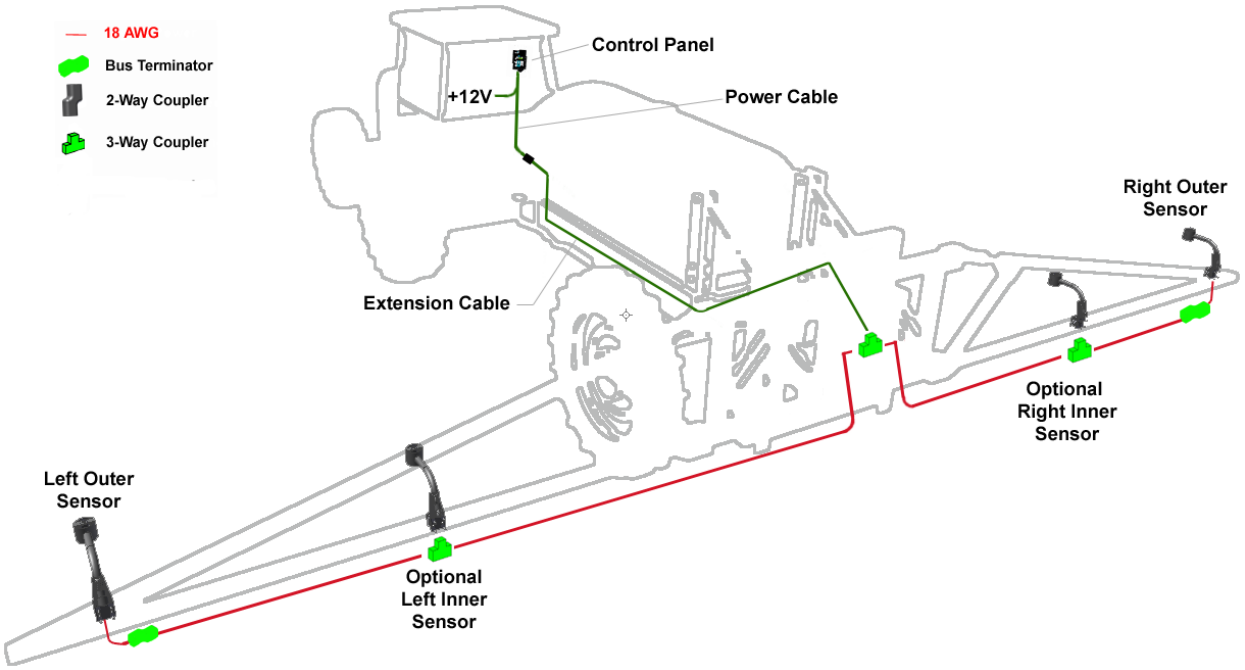


Figure 1: General UC4.5 System Layout (METEOR)

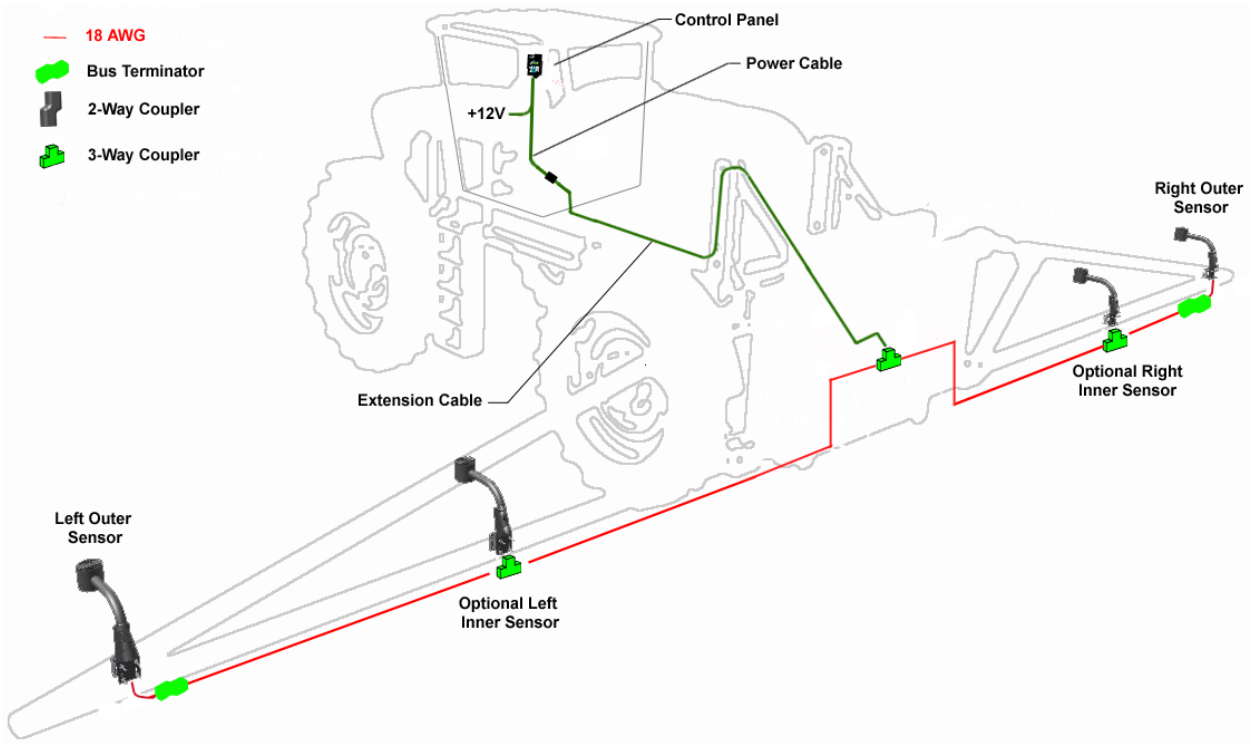


Figure 2: General UC4.5 System Layout (ALPHA)

3 Kit Parts

3.1 Kit Overview

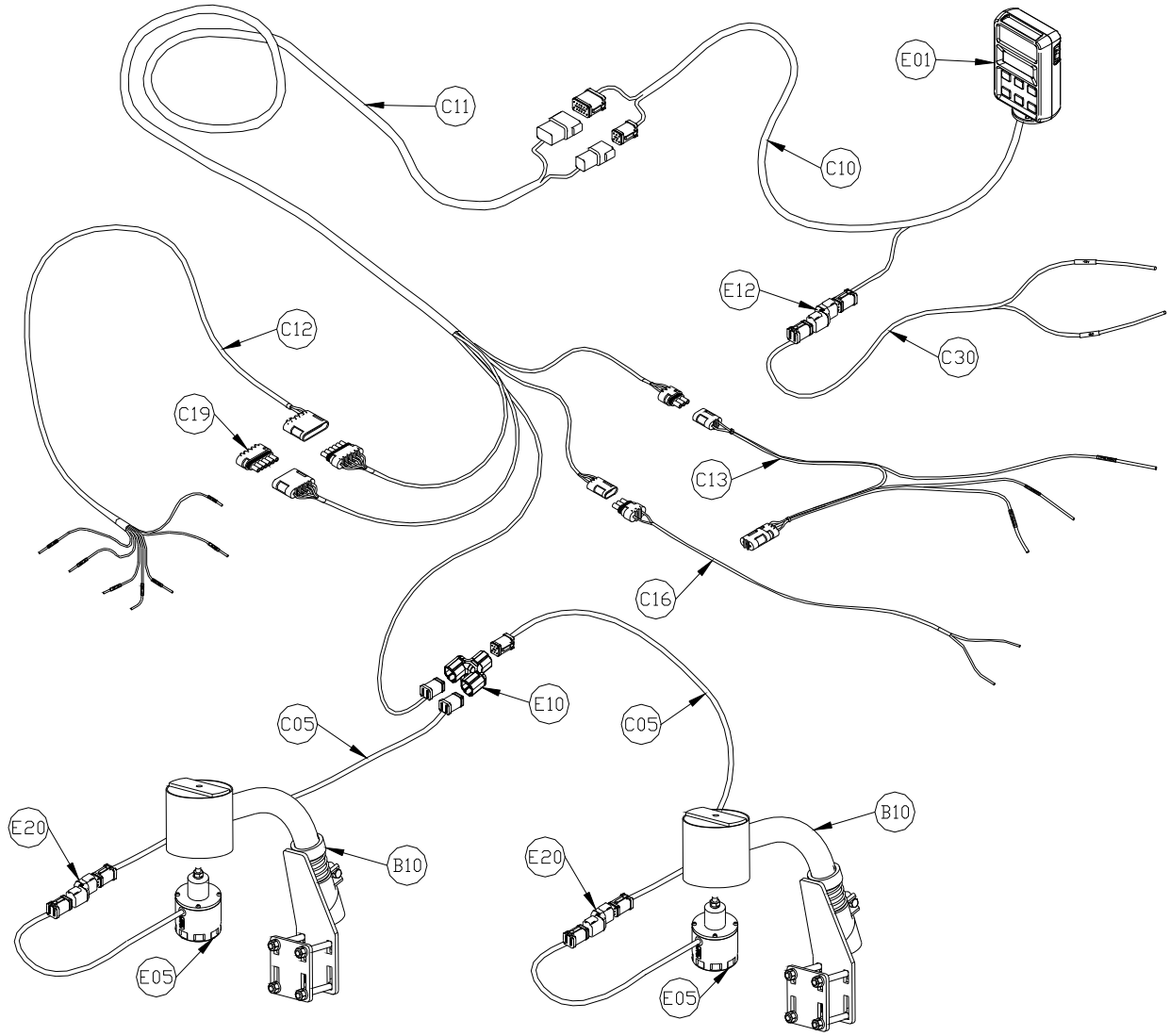


Figure 3: EV5 System Parts

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.

3.2 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
B10	44728	MOUNTING BRACKET COMPLETE UC4 BREAKAWAY EXTENDED	2
C05	43210-20	CABLE UC5 NETWORK 18 AWG 20M	2
C10	44650-51	CABLE UC4.5 POWER GENERIC PULL-TYPE	1
C11	44651-50	CABLE UC4.5 EXTENSION VALVE GENERIC	1
C12	44658-35	CABLE UC4 INTERFACE GENERIC	1
C13	44658-36	CABLE UC4 INTERFACE WINGS GENERIC	1
C16	44658-49	CABLE UC4 VALVE ROLL PIGTAIL	1
C19	44782	CONN GP TOWER PLUG 6 WAY	1
C30	43250-06	CABLE UC5 BATTERY PIGTAIL FUSED - 5A	1
E01	45100	UC4.5 BOOM CONTROL PANEL	1
E05	43750	UC5 ULTRASONIC SENSOR	2
E10	43760	UC5 NETWORK COUPLER 3-WAY	1
E12	43764	UC5 NETWORK COUPLER 2-WAY	1
E20	43764T	UC5 NETWORK COUPLER 2-WAY WITH TERMINATOR	2
M01	UC4.5-BC-MANUAL-OPERATOR	OPERATOR MANUAL UC4.5 SPRAY HEIGHT CONTROL	1
M02	UC4.5-BC-EV5-INST	MANUAL INSTALLATION UC4.5 EVRARD AUTOSLANT	1
M03	UC4.5-BC-EV5-INSTE	MANUAL INSTALLATION UC4.5 END USER EVRARD AUTOSLANT	1

3.3 EVRARD Parts Lists

The required EVRARD parts necessary for the UC4.5 install are listed below.

Part Number	Name	Quantity
	CLAMP ROUND 2IN SS	4
	CABLE TIES	175

⚠ Important

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

4 Existing System Check

1. Before beginning the install, ensure all hydraulic boom functions are operating properly on the sprayer.
   - All Fold Functions
   - Main Lift Function
   - Wing Tilt Functions
   - Slant Function
2. Inspect slide pads and wear surfaces for excessive wear. Replace or adjust if necessary.
3. Ensure the boom guide-rods are set to the "tapered" position (factory setting).
4. Set boom suspension to be critically damped (**Figure 4**). Adjust the boom damper accordingly.
   a. Unlock the pendulum, and push boom tip down approximately 75 cm (30 inches).
   b. Hold the boom steady for a moment, and release.
   c. Ensure the boom returns to its relaxed state as quickly as possible, with little to no overshoot.

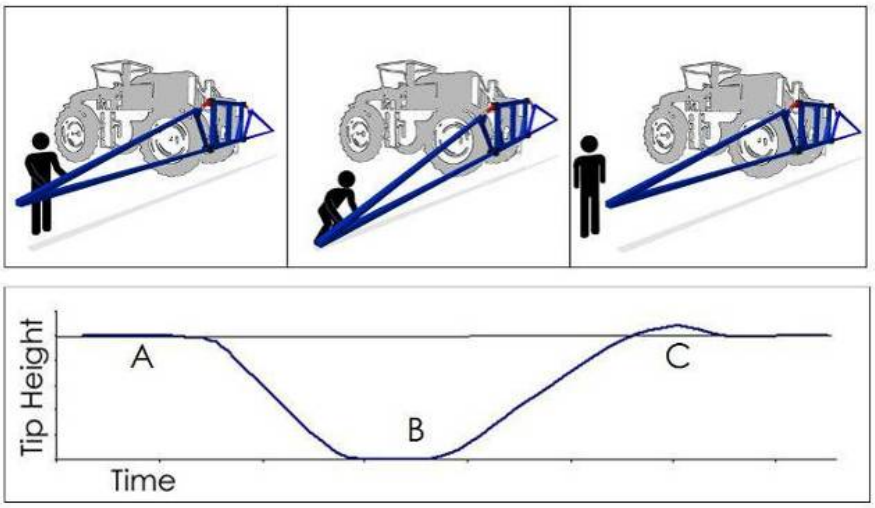


Figure 4: Boom Push Test- Critically Damped

5 Ultrasonic Sensor Installation

5.1 Bracket Assembly

Assemble the breakaway sensor bracket as illustrated in **Figure 5**, following the instructions below.

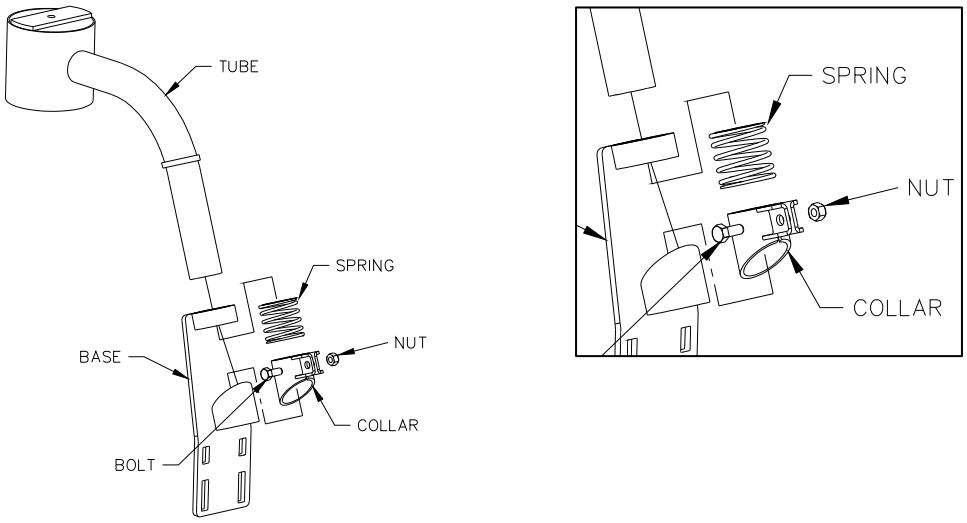


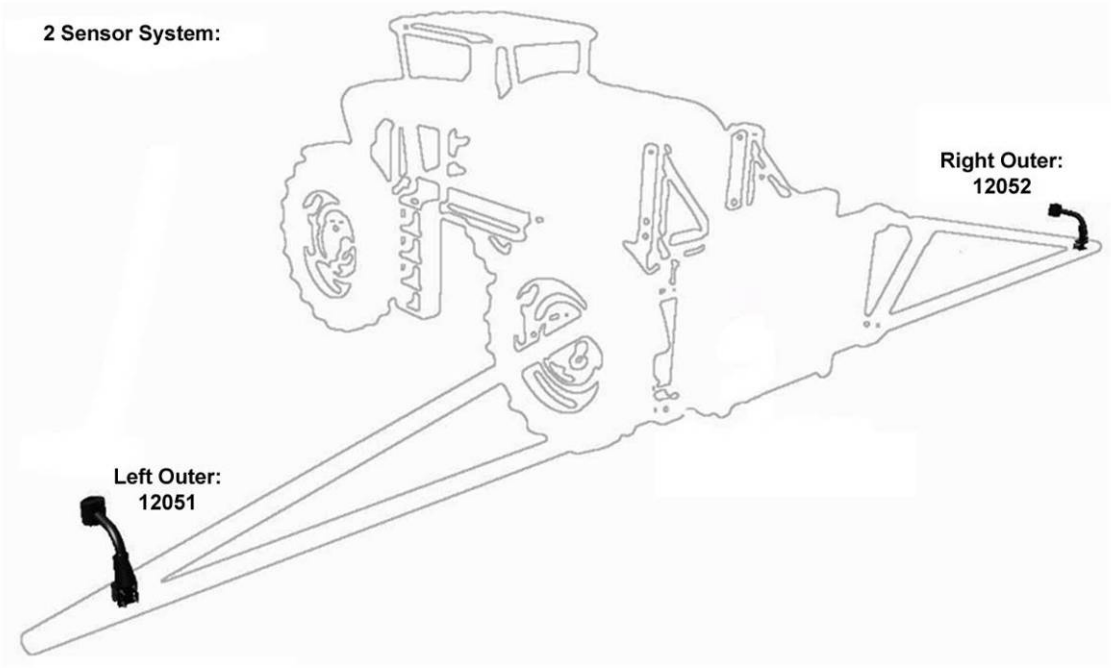
Figure 5: Breakaway Bracket Assembly

1. Compress the spring and insert it together with the collar into the base.
2. Slide the tube through the assembled part.
3. Using the bolt and nut, tighten the collar to the tube with the sensor tube centered.
4. Apply a small amount of grease to the rotating surfaces of the bracket.

5.2 Ultrasonic Sensor Serial Number Arrangement

When installing the sensors, start with the smallest serial number on the left-hand side, and proceed to the largest serial number on the right hand side. Each sensor has a serial number stamped on the sensor housing.

Apply a light coating of the supplied Permatex Anti-seize grease to all threaded parts upon installation.



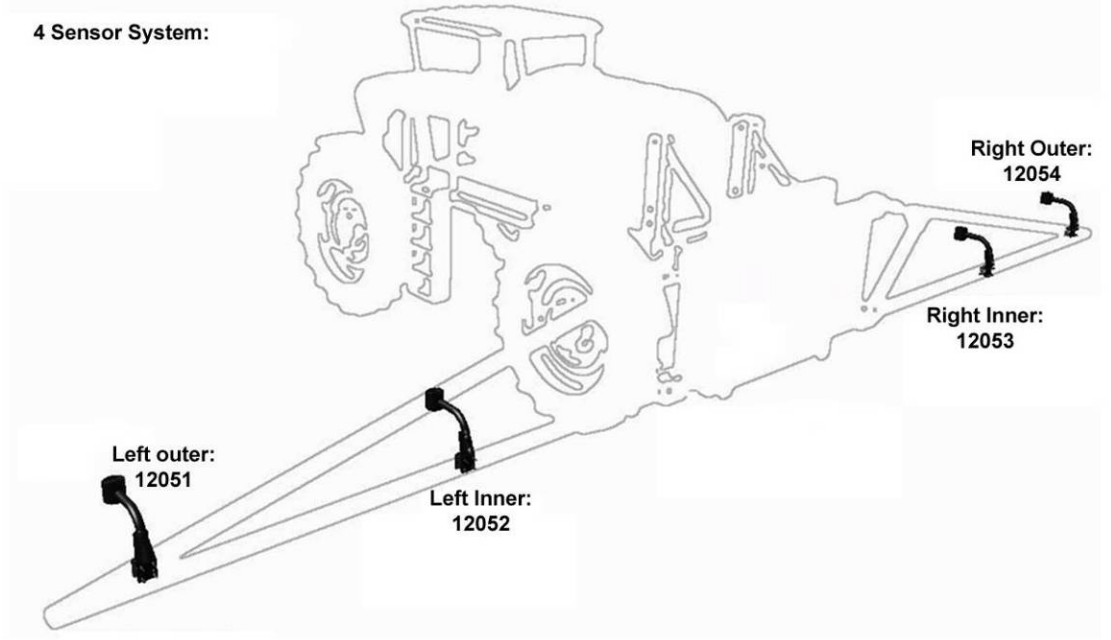


Figure 6: Sensor Serial Number Arrangement

5.3 Ultrasonic Sensor Mounting Guidelines

The following guidelines will ensure optimal sensor performance and prevent sensor measurement error. These rules should be followed for both the wing sensors and the main lift (middle) sensor.

1. In its lowest position, the sensor must be 9 inches (23 cm) or more from the ground **(A)**.
2. The centerline of the acoustic cone should be approximately vertical at normal operating heights **(A)**.
3. The bottom of the sensor must be at least 9 inches in front of the spray nozzles and boom structure **(B)**. (This does not apply for the main lift sensor)
4. The bottom of the sensor must be at least 9 inches above the spray nozzles **(C)**.
5. Ensure there are no other obstructions with a 12 inch (23 cm) diameter circle projected directly below the sensor **(D)**.

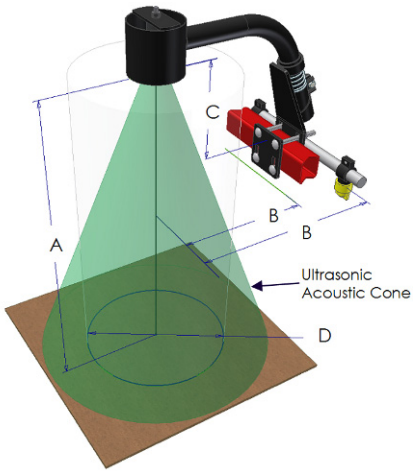


Figure 7: Sensor Mounting Guidelines

Figure 8: Sensor Reading Off Boom

⚠ Important

A problem can arise if a sensor is not mounted correctly. It is possible for the sensor to read off of the boom instead of the ground. This may only become apparent once the control system is switched from soil to crop mode.

Also be careful that the sensor bracket does not collide with any other part of the boom when the boom is folded to transport position. If possible, mount the sensor brackets while the booms are folded to ensure they will not cause interference.

5.4 Wing Sensor Installation

1. The sensor bracket should be oriented forward (ahead of the boom).

2. Typically the best mounting location for the wing sensor brackets will be near the end of the boom tips, approximately two feet (60cm) from the end.

3. Depending on the boom design, some breakaway sections will lift upwards as they break back. If the sensor is mounted to this portion of the boom, the system will force the boom downwards towards the ground as the boom folds backwards.

4. Use the round pipe clamps to fasten the sensor bracket to the TR4(R) boom. Mount the sensor on the front-side of the boom, in the position as illustrated in **Figure 9** and **Figure 10**.

5. Ensure the clamps are tight to prevent the bracket from rotating downward.

6. Mount the NORAC ultrasonic sensor into the sensor bracket and run the sensor cable through the sensor tube.

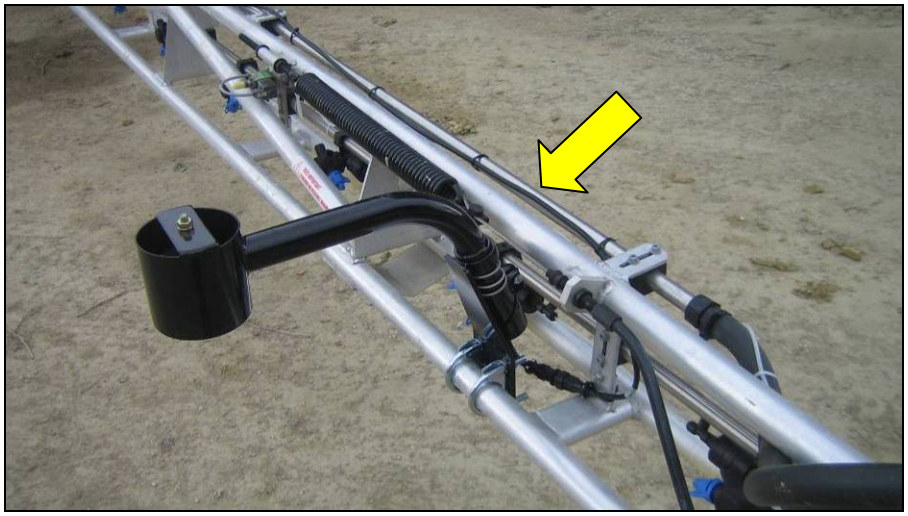


Figure 9: Sensor Bracket Mounted to Boom, Near the Break-Away Spring.

Figure 10: Location of Sensor on 28m TR4 Boom

6 Electrical Installation

Ensure all cables are routed safely and securely fastened using cable ties. Provide sufficient slack in the cable where required (between the moving and folding boom parts).

6.1 METEOR

1. Mount the UC4.5 control panel in the cab in a suitable location. Leave the power switch off.

2. Connect P16 and P4 of the power cable C10 to the UC4.5 Control Panel. Cable tie C10 to the RAM mount to help provide strain relief. Route C10 from the tractor cab to the sprayer hitch.

3. Connect cable C30 to P6A of C10 using a 2-way coupler (E12). Connect C30 to a suitable power supply in the cab.

4. Connect P12/P6B of C10 to R12/R6 of C11 at the hitch. This connection provides a hitch disconnect. Route C11 to the rear of the sprayer, near the large grey enclosure.

6.2 ALPHA

1. Mount the UC4.5 control panel in the cab in a suitable location. Leave the power switch off.

2. Connect P16 and P4 of the power cable C10 to the UC4.5 Control Panel. Cable tie C10 to the RAM mount to help provide strain relief. Route C10 from the cab into the electronics compartment. This compartment which is accessible from the outside right-hand side of the machine. Route C10 through the access hole.

3. Connect cable C30 to P6A of C10 using a 2-way coupler (E12). Connect C30 to a suitable power supply in the cab.

4. Connect P12/P6B of C10 to R12/R6 of C11 inside the electronics enclosure. Route C11 out of the enclosure. This may require removing a rubber plug from the enclosure wall (re-use the plug as a grommet by cutting a hole through it). Route C11 to the rear of the sprayer, near the large grey enclosure.

6.3 Both Installs

1. Connect cable C12, C13 and C16 to C11. The loose ends of C12, C13 and C16 connect to terminals within the grey electronics enclosure (**Figure 11**). Route these cables through an opened hole in the enclosure and make connections as indicated in **Table 1.** On cable C13 do not remove the diode pack (the connectors that are held together with a cable tie).

2. Insert C19 into the unused 6-way shroud on C11.

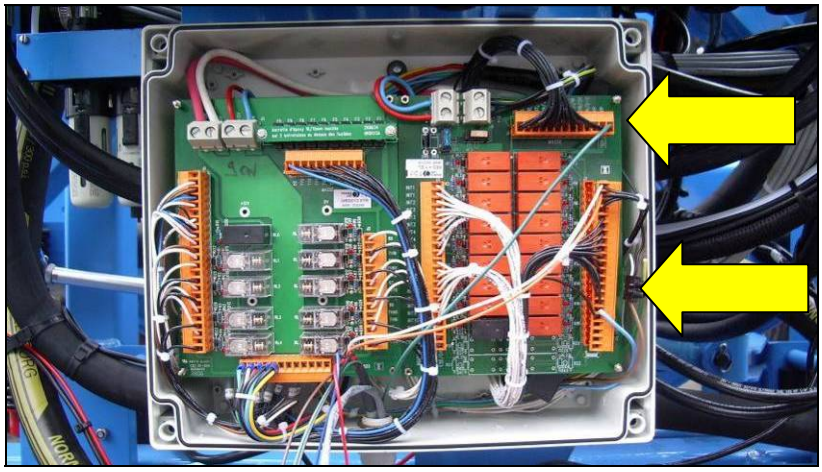


Figure 11: Opened Electronics Enclosure - J1 and J2 as indicated by arrows.

Function	NORAC UC4.5		EVRARD		
	Cable	Color	Connector	Pin	Wire
Bypass	C13	Green	J1	BYP	Leave
Main Down	C12	White	J2	ED1	Leave
Main Up	C12	Orange	J2	ED2	Leave
Roll CCW	C16	White	J2	ED3	Leave
Roll CW	C16	Black	J2	ED4	Leave

Table 1: Interface Wiring for EVRARD Electronics

3. All connections "tee" into the terminal (which already have a wire connected).

4. Close the electronics enclosure.

5. Fasten the 3-way coupler to the boom with cable ties. Connect P6 on C11 to the 3-way coupler.

6. Connect two cables (C05) to the 3-way coupler and route along the booms to the wing sensors. Follow existing cables and hoses to be sure the cable will not be pinched or stretched.

7. At the sensor brackets, attach a 2-way coupler with terminator (E20) to the sprayer boom. The 2-way coupler with terminator is the white two way coupler. Plug the sensor and the CANbus cable into the 2-way coupler.

⚠ **IMPORTANT:**

Provide enough slack in all cables to account for the movement of the main section, parallel lift, and FOLDING boom movement.

7 Software Setup

1. Start up the sprayer and test the sprayer's functionality. The NORAC control panel 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.

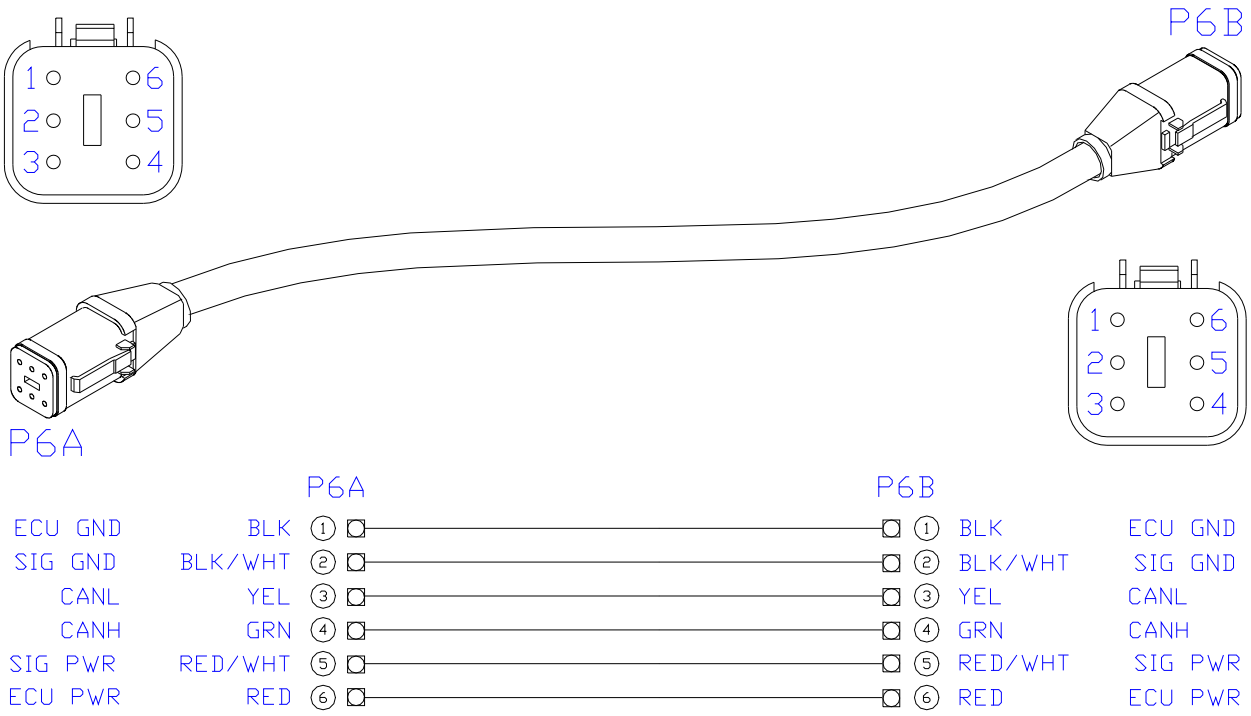
2. If any functions do not work, review the hydraulic and electrical portions of this manual to check for proper installation.

3. Turn on the power for the UC4.5 Control Panel using the switch on the side of its chassis.

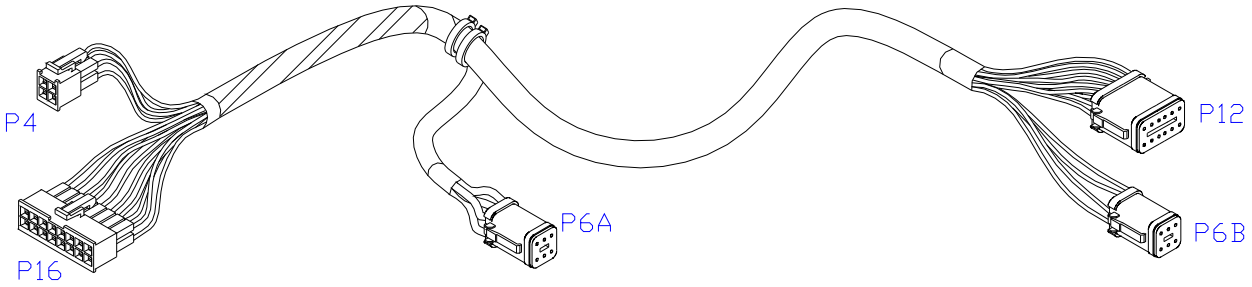
4. The procedure for the installation of the UC4.5 Spray Height Control system is now complete. Begin the AUTOMATIC SYSTEM SETUP procedure as described in the UC4.5 Spray Height Control Operator's Manual (M01).

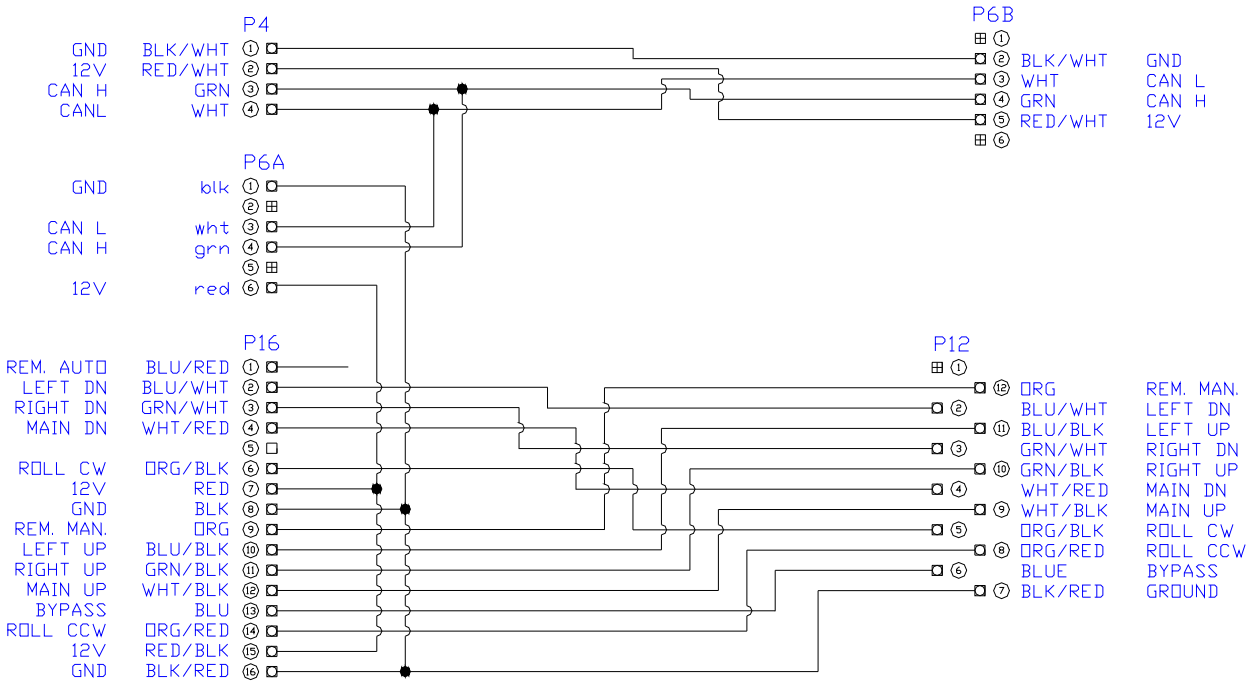
8 Cable Drawings

8.1 ITEM C05: 43210-20 - CABLE UC5 NETWORK 18 AWG - 20M

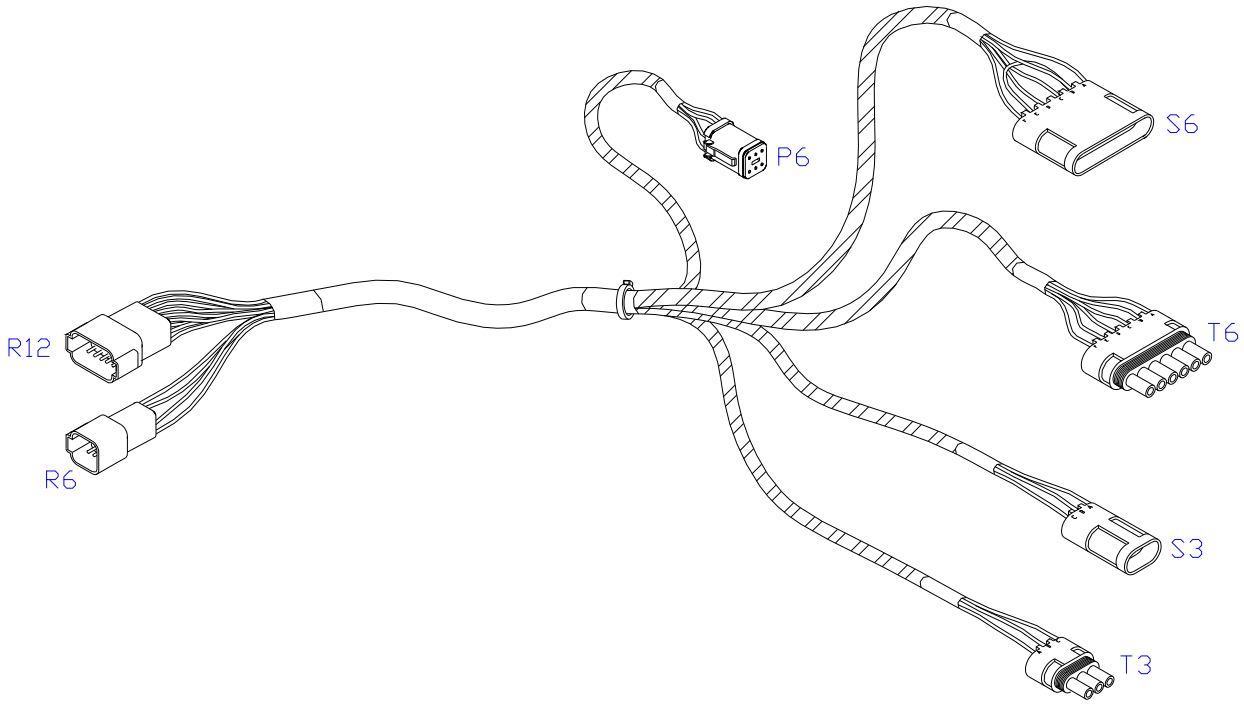


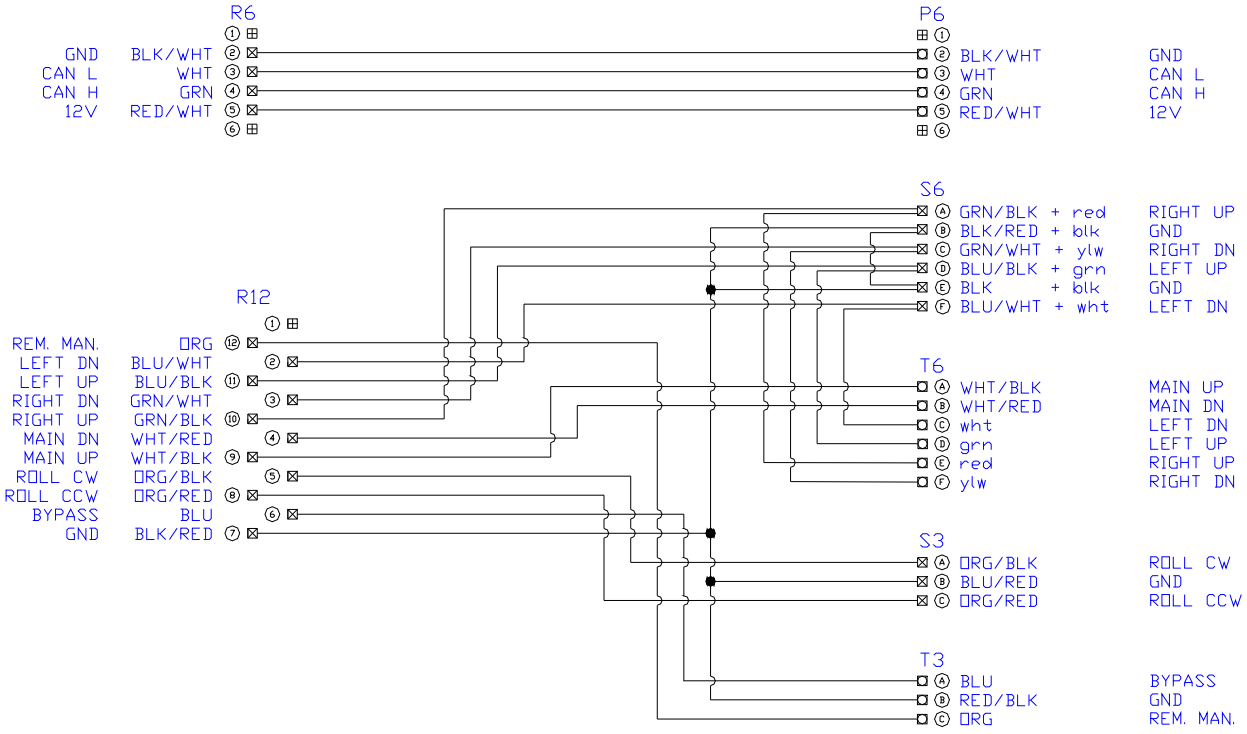
8.2 ITEM C10: 44650-50 - CABLE UC4.5 POWER GENERIC PULL-TYPE



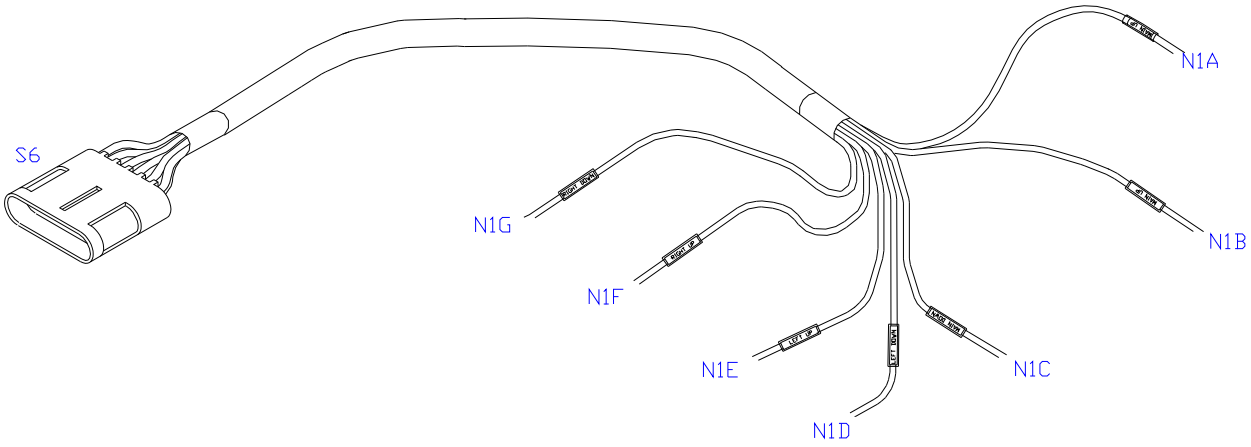


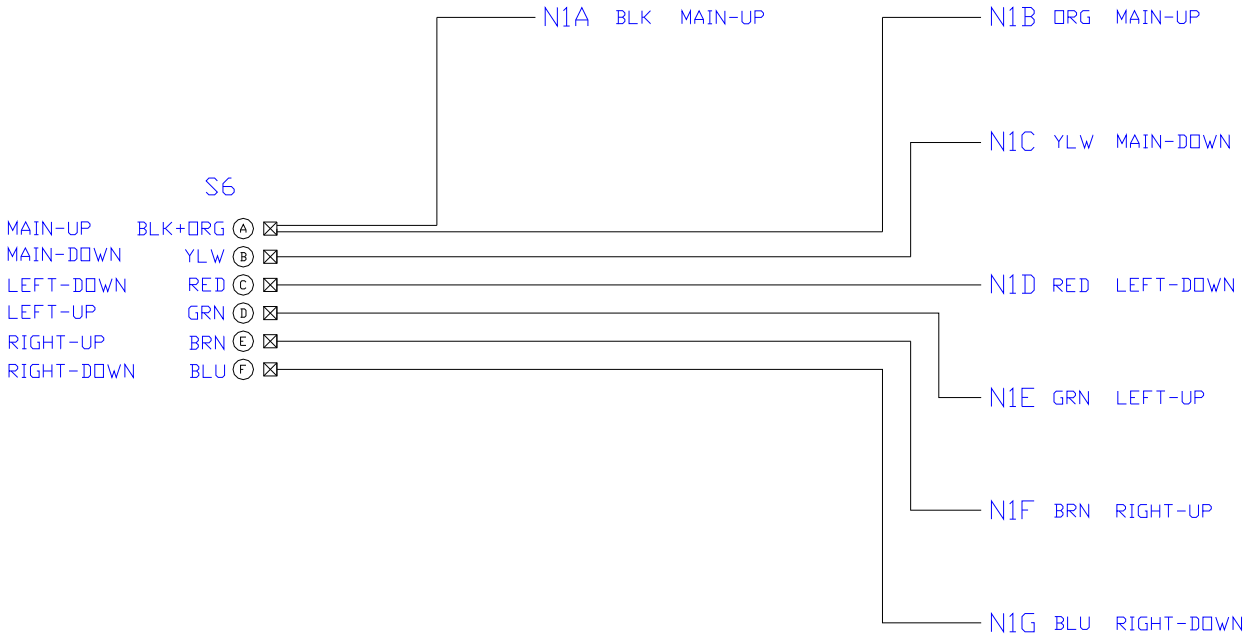
8.3 ITEM C11: 44651-50 - CABLE UC4.5 EXTENSION VALVE GENERIC



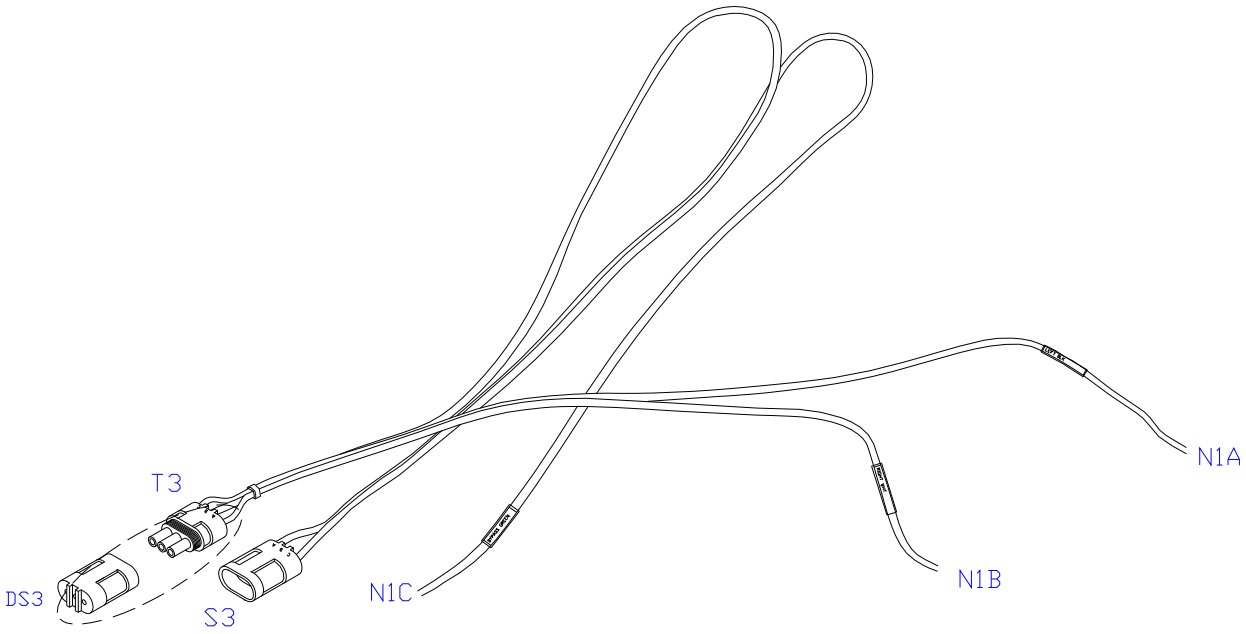


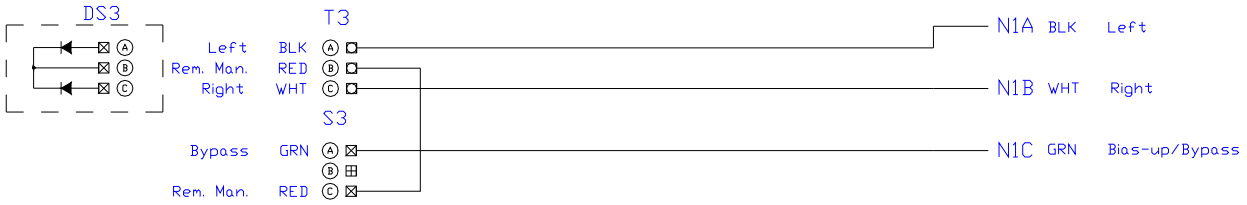
8.4 ITEM C12: 44658-35 – CABLE UC4 INTERFACE GENERIC



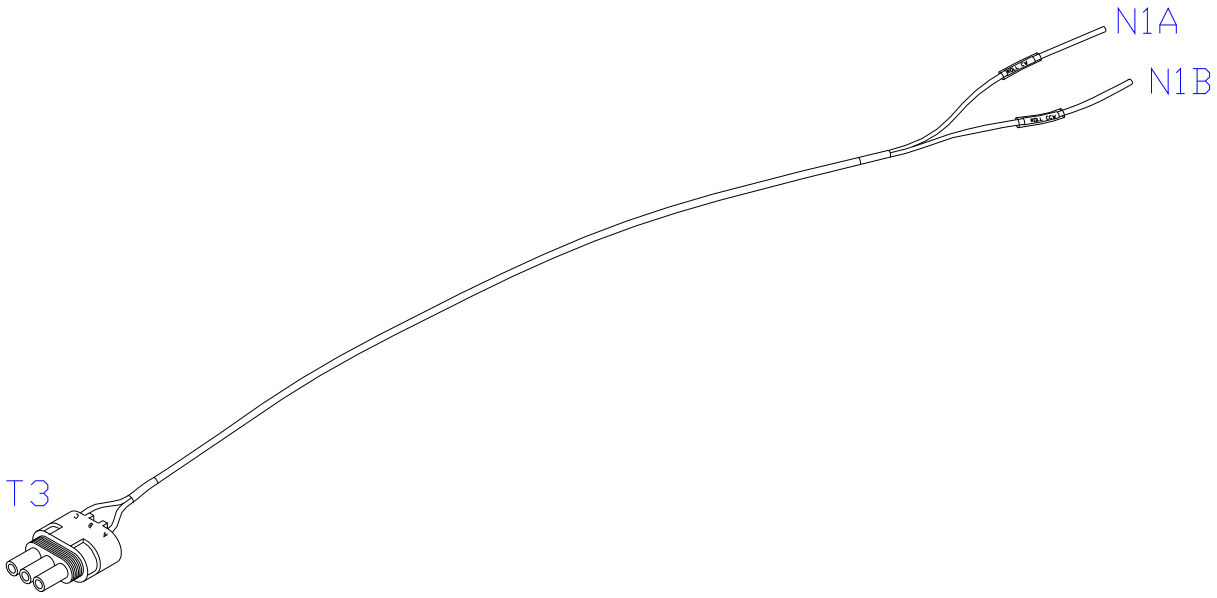


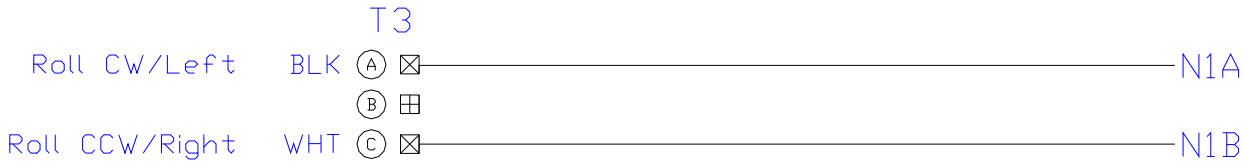
8.5 ITEM C13: 44658-36 – CABLE UC4 INTERFACE WINGS GENERIC



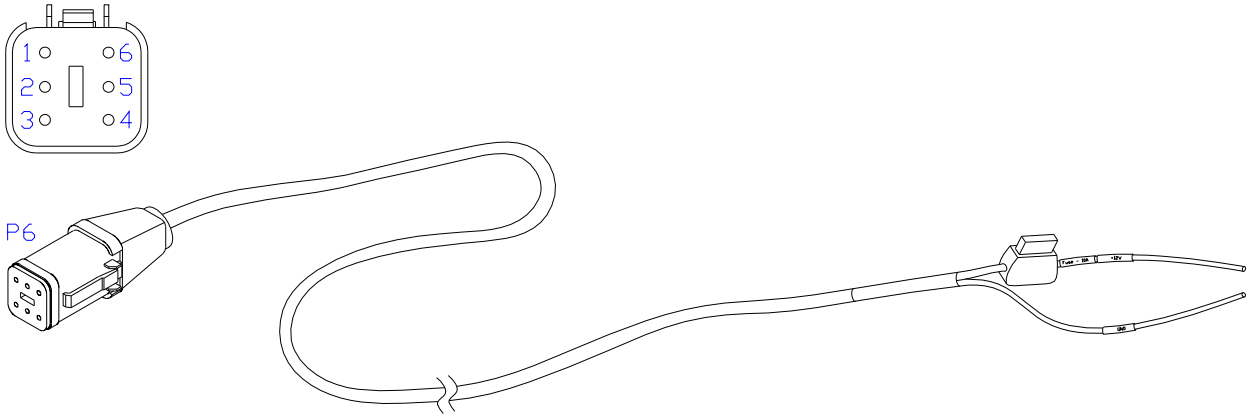


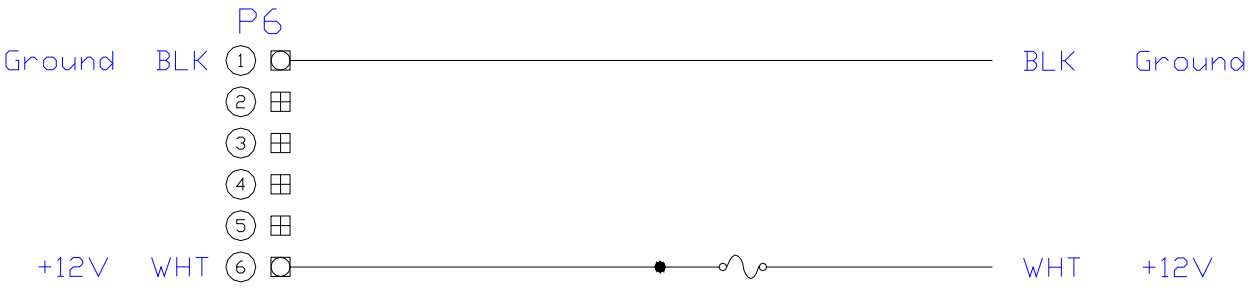
8.6 ITEM C16: 44658-49 - CABLE UC4 VALVE ROLL PIGTAIL





8.7 ITEM C30: 43250-06 – CABLE UC5 BATTERY PIGTAIL FUSED





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