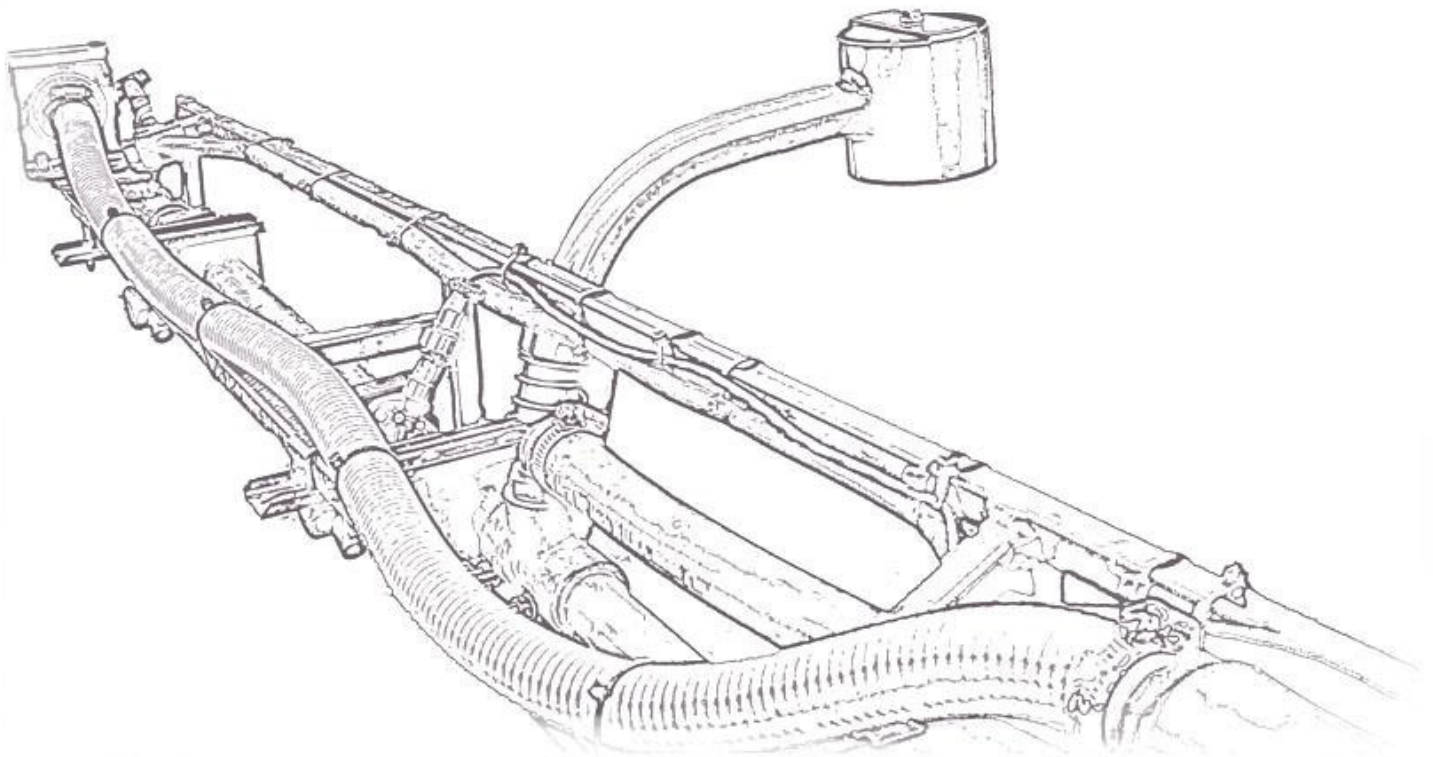




UC4+TM Spray Height Control System
ROLL CONTROL
Patented



John Deere 4700, 4710, 4720
Installation Manual

Improving the competitiveness of Industry and Agriculture
through Precision Measurement

Printed in Canada

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Reorder P/N: UC4+BC+JD7-INST Rev L (John Deere 4700, 4710, 4720)

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 UC4+ Spray Height Control System. This system is manufactured with top quality components and is engineered using the latest technology to provide operating features and 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.

2 GENERAL SYSTEM DESCRIPTION

Figure 1 depicts the general system layout of the UC4+ Spray Height Control System.

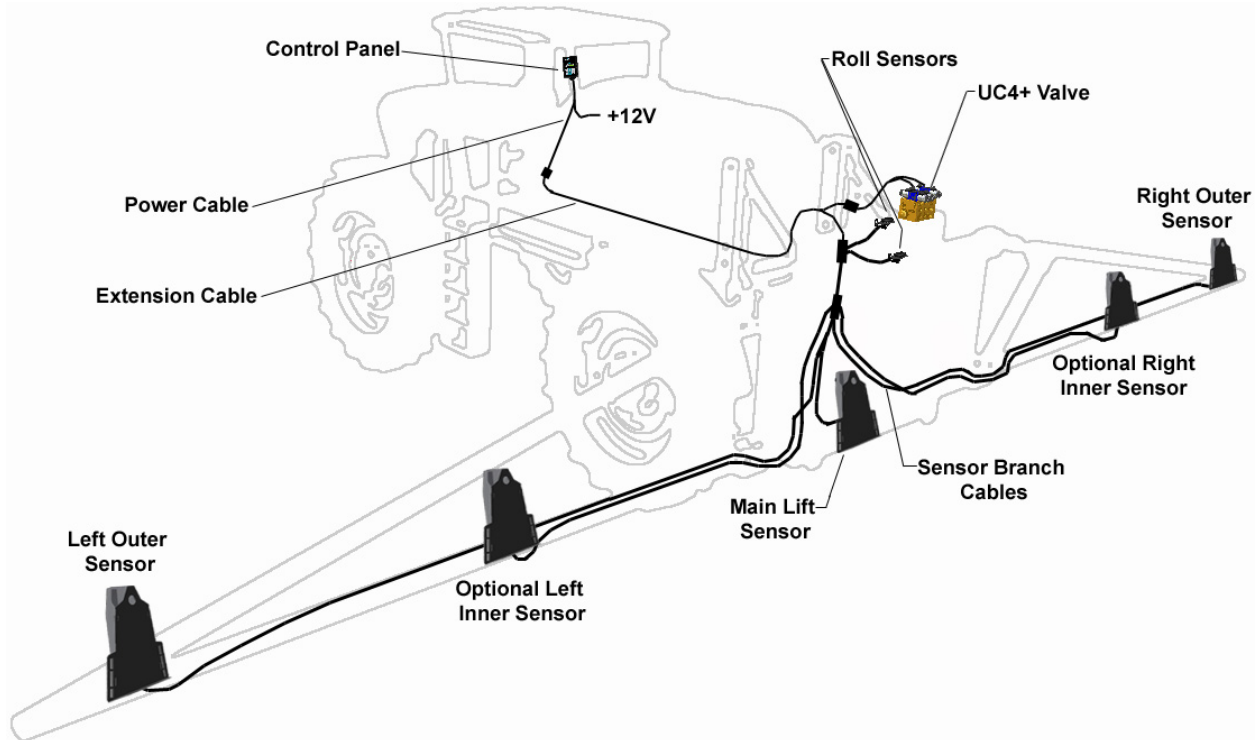


Figure 1: System Components and General Location

⚠ NOTICE:

Every effort has been made to ensure the accuracy of the information contained in this manual. All parts supplied are selected specially to 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.**

⚠ ATTENTION:

When installing the UC4+ Spray Height Control system please be aware that at a point in the installation your sprayer booms will be inoperative until the installation is complete. **Any installation procedure requiring boom movement will need to be done first.** Once the hydraulics have been disconnected you must complete the electrical installation before the booms become operative.

3 PARTS LISTS

The parts that come with your UC4+ Spray Height Control System are listed in **Table I**. The item number on the left side of this table references each part.

Please ensure that all parts in your kit are present before proceeding with your installation.

Table I: John Deere 4720 Spray Height Control System Parts

Item	Part Number	Name	Quantity
B05	44706-01	KIT CABLE TIE BLACK 10 PCS 21 IN 150 PCS 7.5 IN	1
B16	105415	CLAMP EXHAUST 2IN PLATED	4
B20	44971	SENSOR MOUNTING BRACKET LOW PROFILE 16GA	2
B21	44973	SENSOR MOUNTING BRACKET LOW PROFILE 16 GA LARGE FLANGE	1
C01	44662B-40	CABLE UC4 SENSOR TRUNK AMPF TO AMPF BLACK STANDARD 40FEET	1
C02	44668	CABLE UC4 SENSOR BRANCH 1 AMP RECEPT 3 AMP PLUG BC	1
C02B	44664	CABLE UC4 CAN NODE DUAL	1
C03	44656D	CABLE VALVE VARIABLE RATE DT	1
C04	44651	CABLE VALVE EXTENSION	1
C10	44650-14	CABLE POWER UC4 BOOM CONTROL JOHN DEERE	1
C12	44658-01	CABLE UC4 VALVE BC JD	1
E01	4461BC+	UC4 PLUS BOOM CONTROL PANEL	1
E02	44631	UC4 ULTRASOUND SENSOR	3
E03	45000*	UC4 PLUS ROLL SENSOR W TEMPERATURE PROBE VER. 2	1
E04	45001*	UC4 PLUS ROLL SENSOR VER. 2	1
H02	44863-23	HOSE ASSEMBLY 122R2-06 32 IN L 6FORX 6FORX	2
H06	44862-05	HOSE ASSEMBLY 122R2-04 144 IN L 4FORX 4FORX	1
H20	44865-19	HYDRAULICS FITTING KIT - JD7	1
M01	446BC+MAN7	OPERATOR MANUAL UC4+ SPRAY HEIGHT CONTROL	1
M10	UC4+BC+JD7-INST	MANUAL INSTALLATION UC4+ JOHN DEERE 4720	1
V01	44963D	VALVE BLOCK ASSEMBLY 2 STATION CC/LS PROP DT 4 BOLT	1

* For systems purchased BEFORE October 1, 2011, the roll sensor part numbers are 44641 and 44642.

Table 2: 44865-19 - Hydraulics Fittings Kit Details

Item	Part Number	Name	Quantity	Picture
F02	104691	TEE ADAPTER - 4FORXR 4MORT	1	
F03	104586	TEE ADAPTER - 6FORXR 6MORT	3	
F04	105226	MALE TO FEMALE ADAPTER - 4MOR 6FORX	1	
F05	44917	MALE ADAPTER - 6MB-6MOR MACHINED ORB	4	
F06	104693	MALE ADAPTER - 4MOR 4MB	1	
F07	44916	MALE ADAPTER - 6MB-4MOR MACHINED ORB	4	
F08	44928	ORIFICE INSERT .047 IN ONE WAY	4	
F09	103381	PLUG - 4MBP	4	
F15	105500	SETSCREW 1/4X3/8	1	

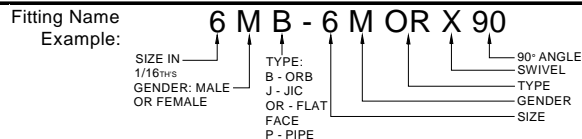






Table 3: Additional Parts

Item	Part Number	Packed with:	Name	Quantity	Picture
M13	104557	44650-14 (C10)	RUBBER GROMMET	1	
M14	104302	44658-01 (C12)	6 WAY SHROUD (KEYED B&F)	1	
M15	104303	44658-01 (C12)	6 WAY TOWER (KEYED B&F)	1	
M16	104302	44651 (C04)	6 WAY SHROUD	1	

⚠ 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.

The parts that come with your UC4+ System are shown below in their general installation configuration.

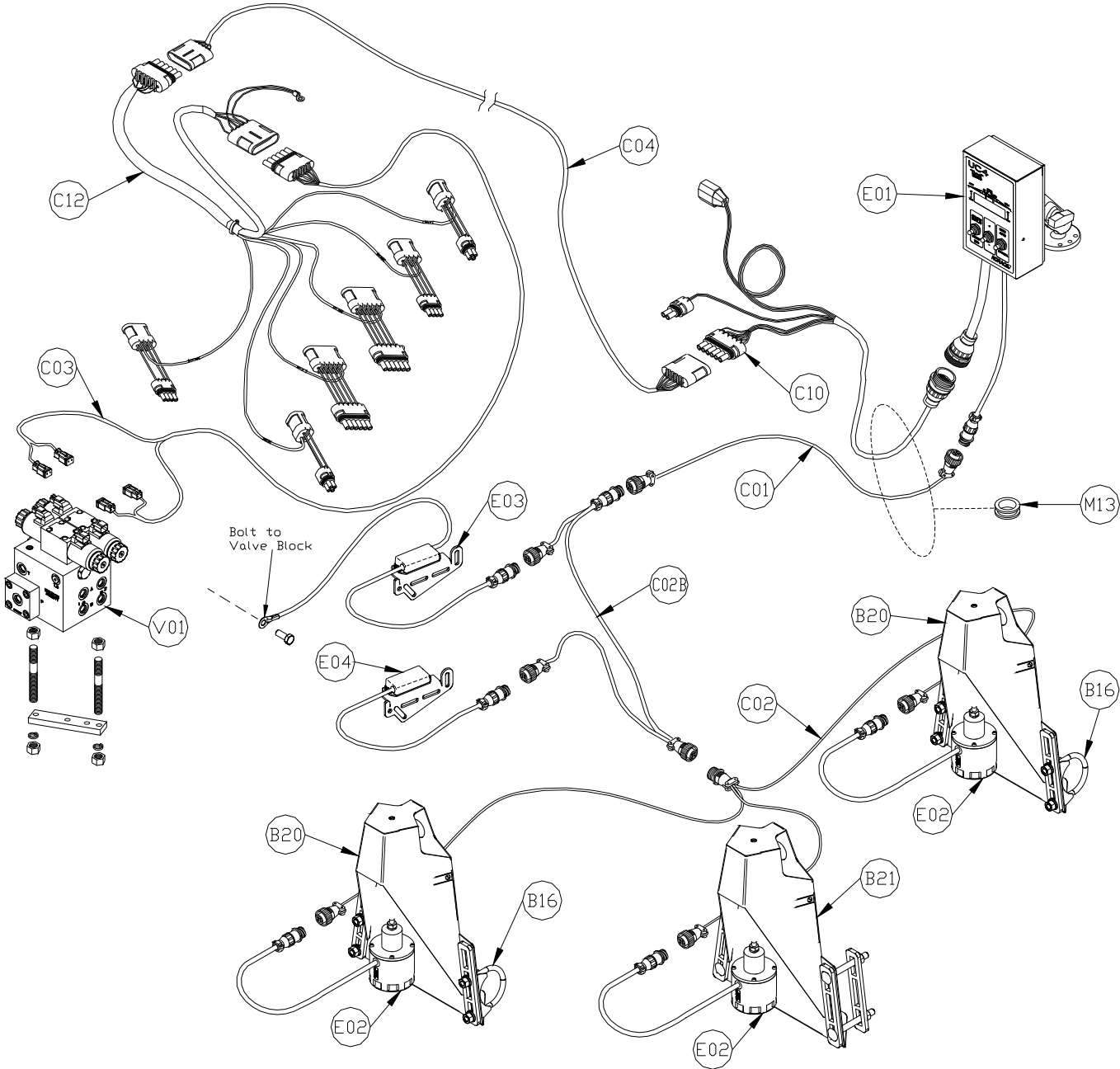


Figure 2: UC4+ Spray Height Control system Components

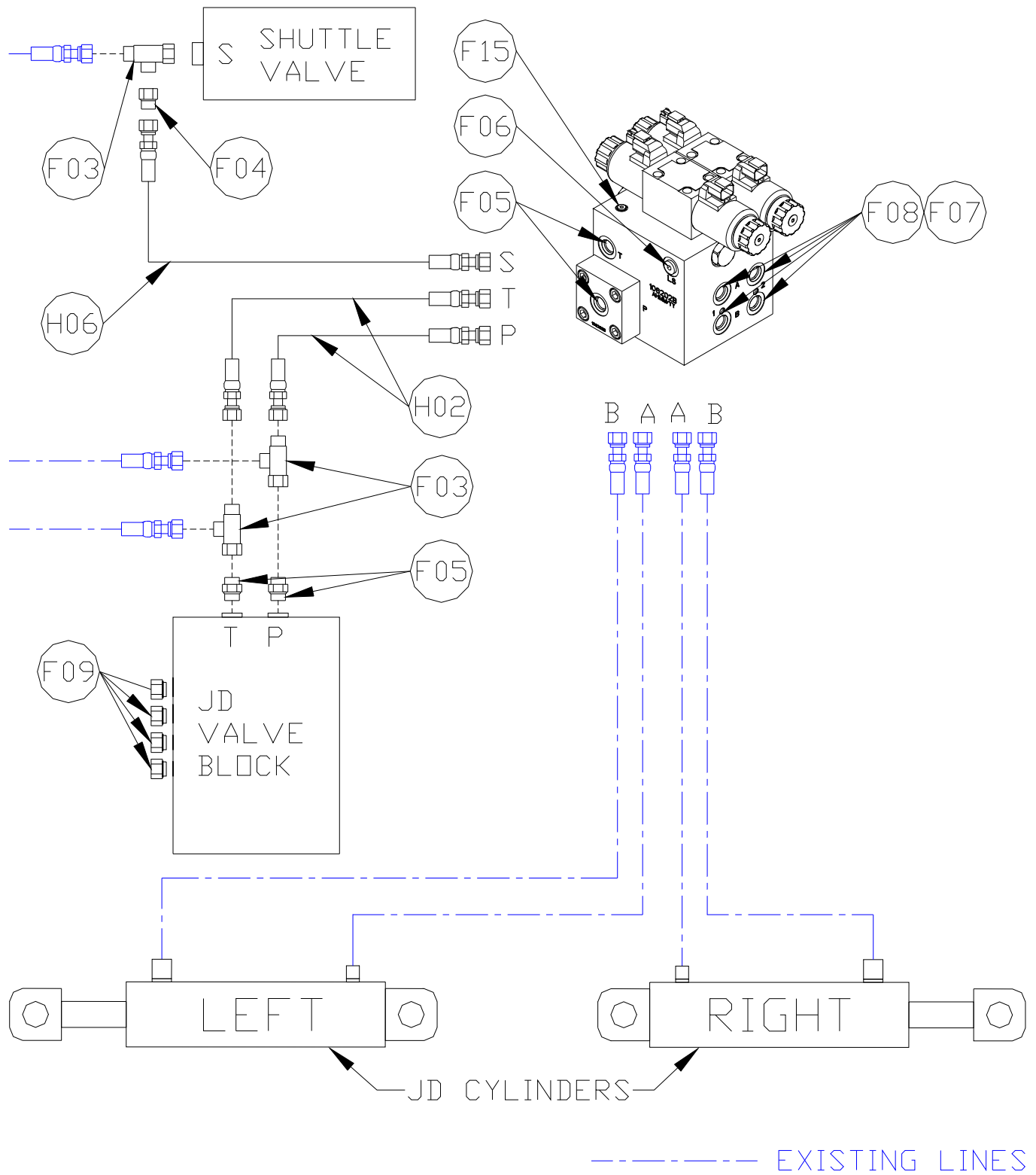


Figure 3: Hydraulic Plumbing Schematic

4 INSTALLATION PROCEDURE

4.1 EXISTING SYSTEM CHECK

It is necessary to check the existing system's functionality before installing the UC4+ Spray Height Control system.

1. Drive your sprayer onto a flat piece of land, with unobstructed boom movement (e.g. no power lines).
2. Test that all boom functions operate correctly. As you test each function check it off in **Table 4**.


 **It is necessary to test the boom functions in all directions**

Table 4: Hydraulic System Function Check Sheet

BOOM	FOLD IN	FOLD OUT	UP	DOWN
LEFT				
MAIN				
RIGHT				
ROLL*	N/A	N/A		


*Some sprayers may not have this function.

4.2 BOOM SPEED TEST


 **IMPORTANT:**

Raise/lower all boom sections several times to warm up the hydraulic system. Grease all moving parts for consistent results.

1. Lower each boom and main section as close to the ground as possible.
2. Set your sprayer at field working RPM on the throttle and mark this value in **Table 5**.

 **You will need a stopwatch or a watch that displays “seconds” for the next step.**

3. Raise the LEFT boom from its extreme LOW position to the very TOP of its travel. Record the time this takes in **Table 5**, “Trial #1” for “Left UP”.
4. Lower the LEFT boom from its extreme HIGH position to the BOTTOM of its travel. Record this time in **Table 5**, Trial #1 for “Left DOWN”.

 **Be careful when lowering the booms so they don't hit the ground.**

5. Similarly, record two more time trials (Trial #2 & #3) for the LEFT boom and record in **Table 5**.
6. Repeat Steps 1 through 5 for the RIGHT, MAIN and ROLL functions.

 **Your sprayer may not have a roll feature.**

7. Average the three trials recorded for each boom movement and record this calculation in the “Average Time” slot in **Table 5**.
8. These “Average Times” now represent how quickly your system can react to manual control. In **Section 4.8**, this procedure is repeated with the UC4+ Spray Height Control system installed for comparison and troubleshooting purposes.

Table 5: Boom Test Record (WITHOUT UC4+ Spray Height Control system)

Working RPM:				
<u>Boom</u>	<u>Trial #1</u> [Sec]	<u>Trial #2</u> [Sec]	<u>Trial #3</u> [Sec]	<u>Avg Time</u> [Sec]
Left UP				
Left DOWN				
Right UP				
Right Down				
Main UP				
Main DOWN				
Roll CW				
Roll CCW				

Table 6: Boom Test Record (WITH UC4+ Spray Height Control system)

Working RPM:				
<u>Boom</u>	<u>Trial #1</u> [Sec]	<u>Trial #2</u> [Sec]	<u>Trial #3</u> [Sec]	<u>Avg Time</u> [Sec]
Left UP				
Left DOWN				
Right UP				
Right Down				
Main UP				
Main DOWN				
Roll CW				
Roll CCW				

4.3 WING SENSOR INSTALLATION

1. Mount the Low Profile Sensor Mounting Brackets (B20) onto the boom as show in **Figure 4** and **Figure 5** with the mounting base in front of the tube.

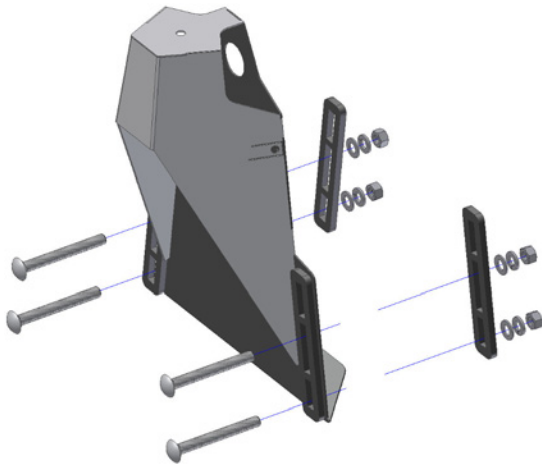


Figure 4: Low Profile Bracket Mounting

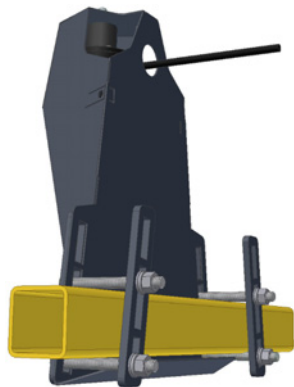
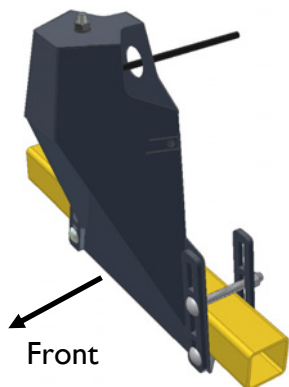


Figure 5: Low Profile Bracket Mounted on Boom

⚠ If possible, mount the sensor brackets while the booms are in their folded position to ensure that they will not interfere with anything when the boom is folded for transport.

⚠ Mounting the sensor bracket to the break-away section of the boom may cause the boom to drop suddenly as a break-away occurs. This will occur on break-away sections which lift as they break away.

⚠ For optimal boom tip protection, it is recommended that the sensor be mounted within approximately two feet (60cm) of the boom tip.

Please refer to the UC4+ system warranty at the end of the **UC4+ Sprayer Boom Control Operator's Manual (M01)** for implications.

2. Mount the NORAC UC4+ ultrasonic sensors (E02) into the sensor brackets. The sensors should be oriented forward (ahead) of the boom.

⚠ When installing the UC4+ sensors (E02), start with the smallest serial number on the left hand side proceeding to the largest serial number on the right hand side (Figure 9).

3. Sensor cables should run either through hole in the back or through the side cut-out and behind the bracket. Ensure the cable is clear of moving parts and will not be damaged during folding. Cable-tie the connector in place. The cable must not hang below the boom.

- ⚠ Exhaust clamps (B16) can be used if mounting the sensor brackets to a portion of the boom with round tubing.**

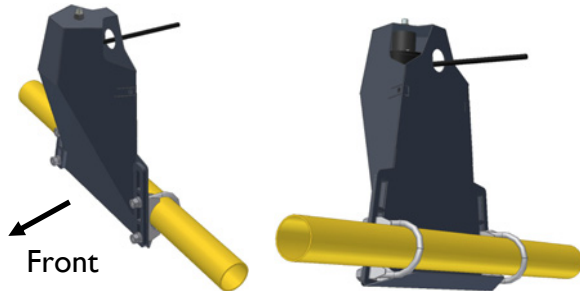


Figure 6: Low Profile Bracket Mounted with Exhaust Clamps

General Mounting Rules for Low Profile Brackets:

- a) Minimize the distance between the bolts to prevent bending the bracket and prevent the bracket from loosening over time.
- b) Ensure the bracket is mounted tight against the bottom of the boom, minimizing the distance between the boom structure and the angled flange.

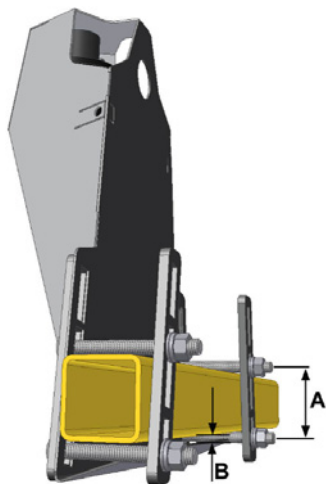


Figure 7: Bracket Mounting Guidelines

General Mounting Rules for UC4+ Ultrasonic Sensors:

- a) In its lowest position, the sensor must be 9 inches (23 cm) or more from the ground.
- b) Ensure that there are no obstructions within a 12-inch diameter circle projected directly below the center of the sensor.
- c) The sensor should be approximately vertical at normal operating heights.

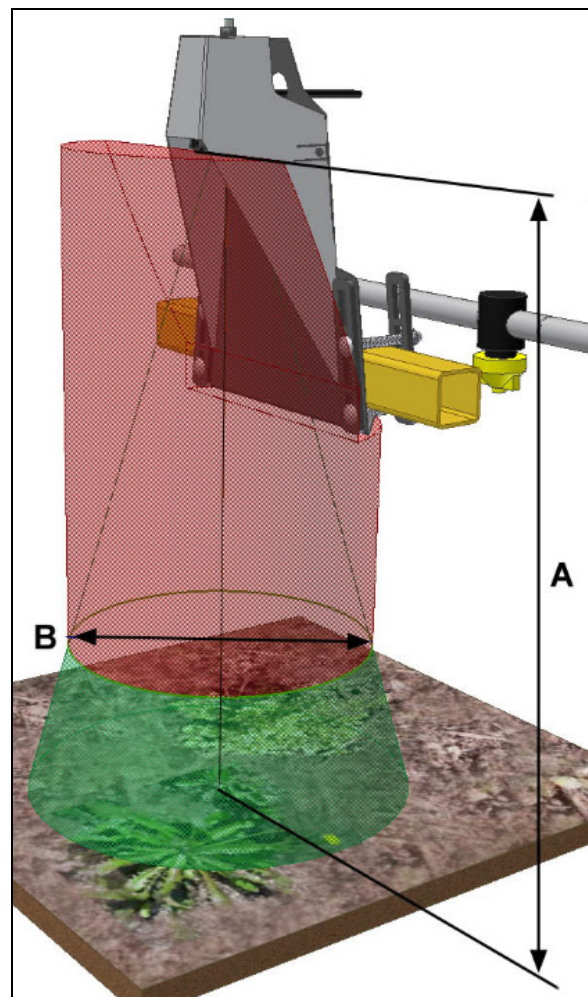
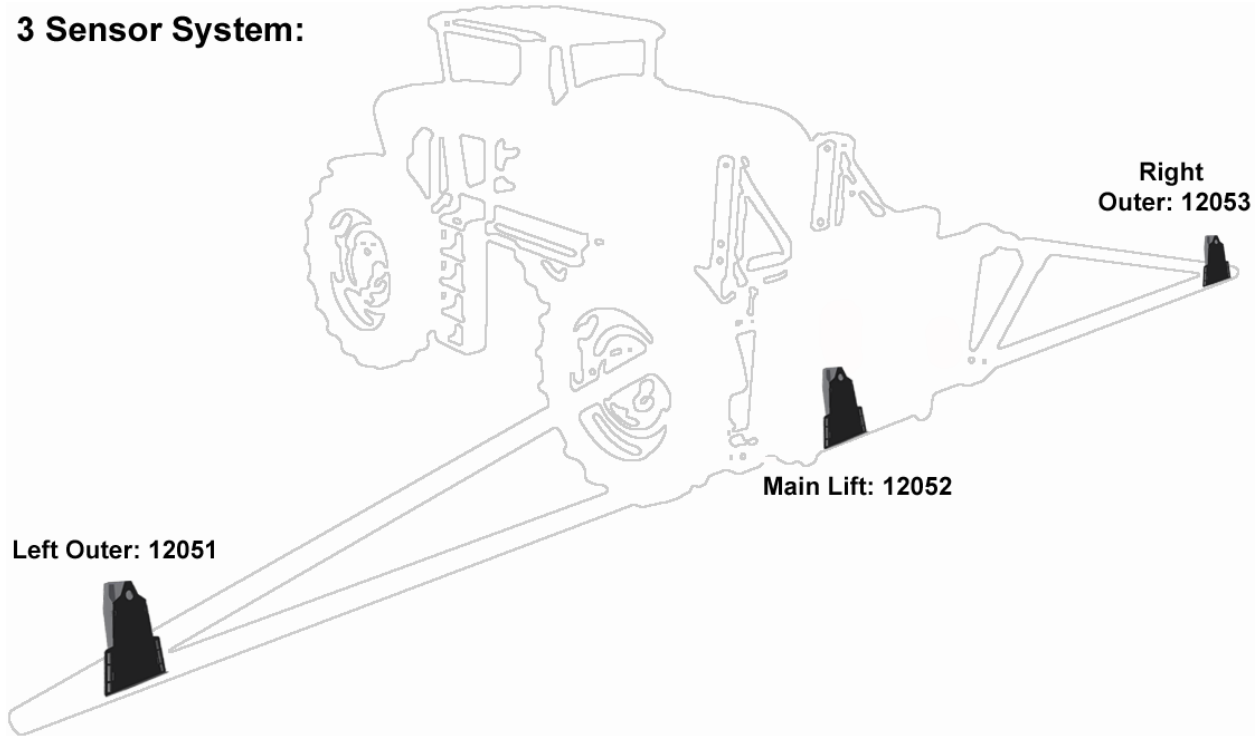


Figure 8: Sensor Mounting Guidelines

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

3 Sensor System:



5 Sensor System:

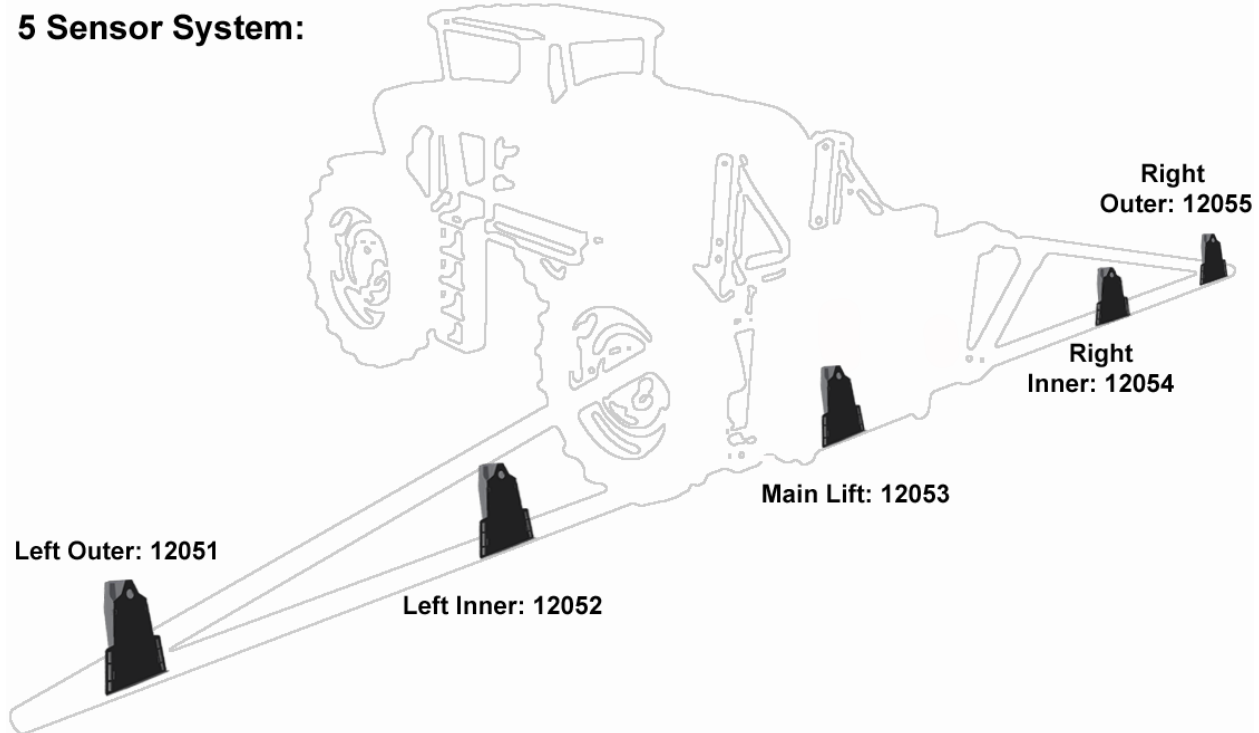


Figure 9: Sensor Serial Number Installation Location

4.4 MAIN LIFT SENSOR INSTALLATION

1. Mount the bracket onto the lowest frame member on the center section of the sprayer. (**Figure 11** and **Figure 12**).

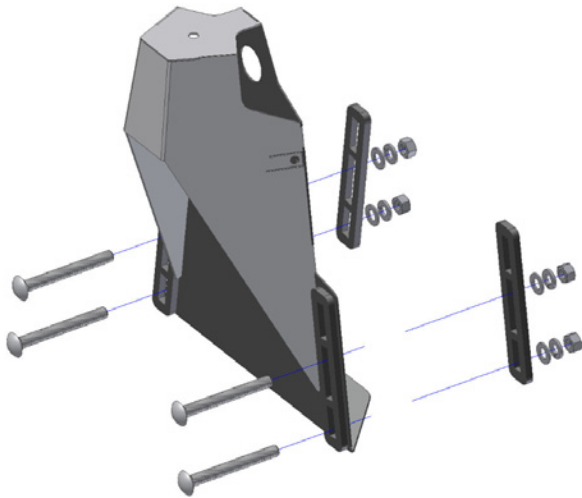


Figure 10: Main Lift Sensor Bracket Mounting

⚠ The General Mounting Rules for Low Profile Brackets and the General Mounting Rules for UC4+ Ultrasonic Sensors, from the previous section, must be followed.

2. Mount the sensor into the bracket.

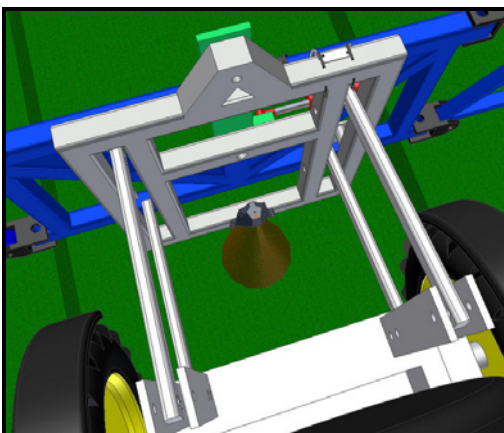


Figure 11: Main Lift Sensor Bracket Mounting Position (Top View)

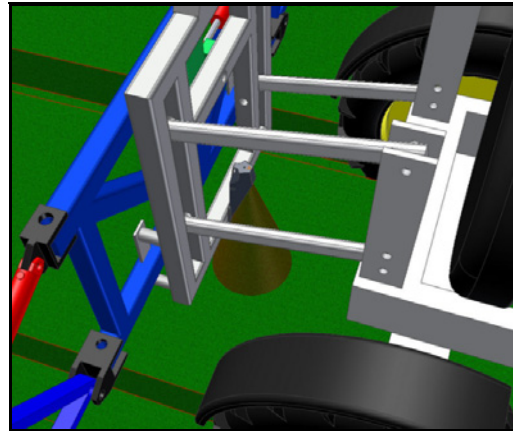


Figure 12: Main Lift Sensor Bracket Mounting Position (Side View)

4.5 ROLL SENSOR INSTALLATION

⚠ When mounting the roll sensors, be sure they cannot contact any parts of the boom or frame.

Mount the roll sensors to the included roll sensor brackets using the machine screws and nylon lock nuts, as illustrated in **Figure 13**.

⚠ The roll sensors must be mounted tightly to the brackets.

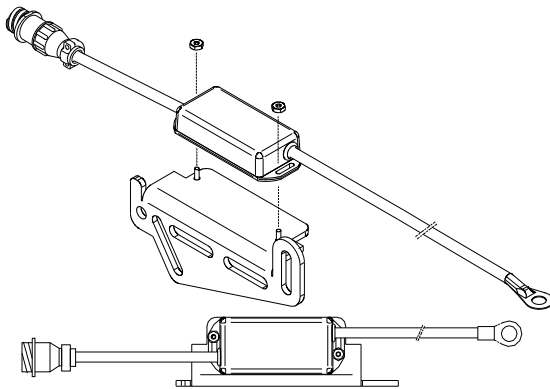
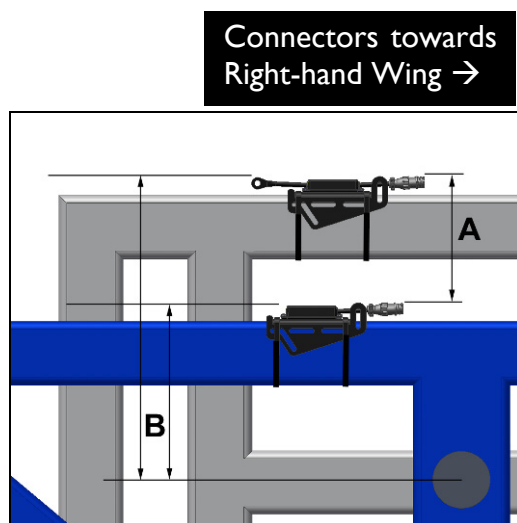


Figure 13: Mounting the Roll Sensor to the Roll Sensor Mounting Bracket



When mounting the roll sensors use the following guidelines and refer to **Figure 14**.

a) The smaller the distance between **A** and **B** in **Figure 14**, the better the performance will be.

⚠ Distance A cannot be more than 12”.

b) The roll sensors must not be mounted below the pivot point.

c) Ensure the roll sensors are sitting relatively level when the sprayer chassis and boom are level.

d) Both roll sensors must be mounted with the circular AMP connector facing towards the Right-Hand Wing (when looking from the rear of the sprayer).

e) It is recommended that you mount the roll sensor on the left hand side of the boom

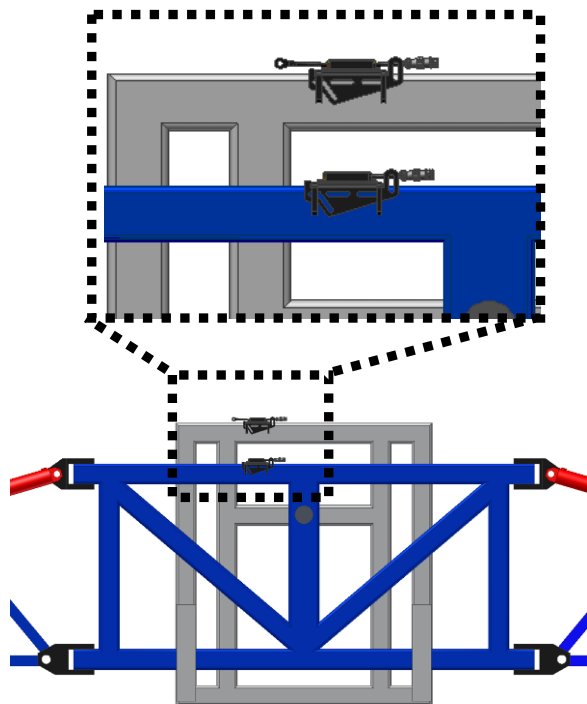


Figure 14: Mounting Guidelines for Center Pivot Sprayers

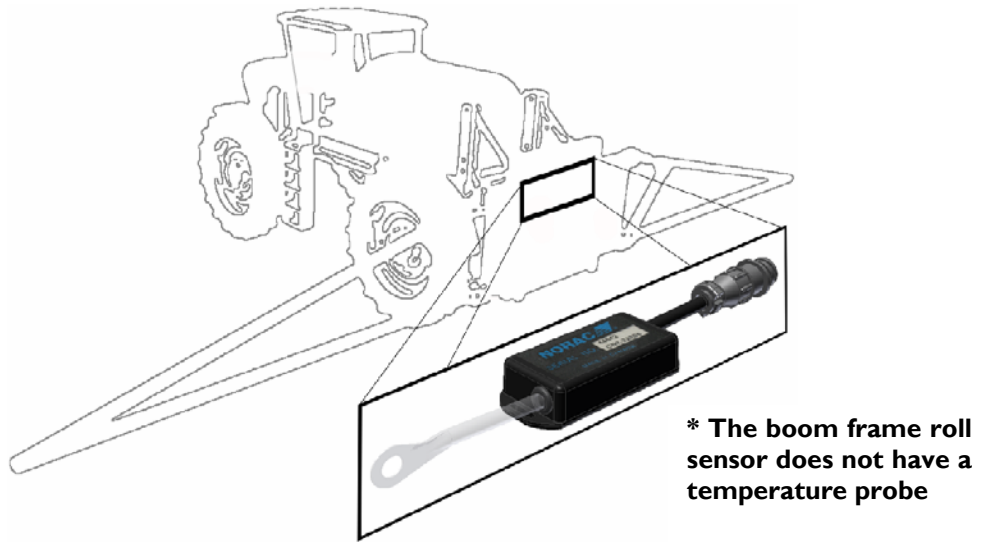


Figure 15: Roll Sensor Mounting with Respect to Sprayer Orientation

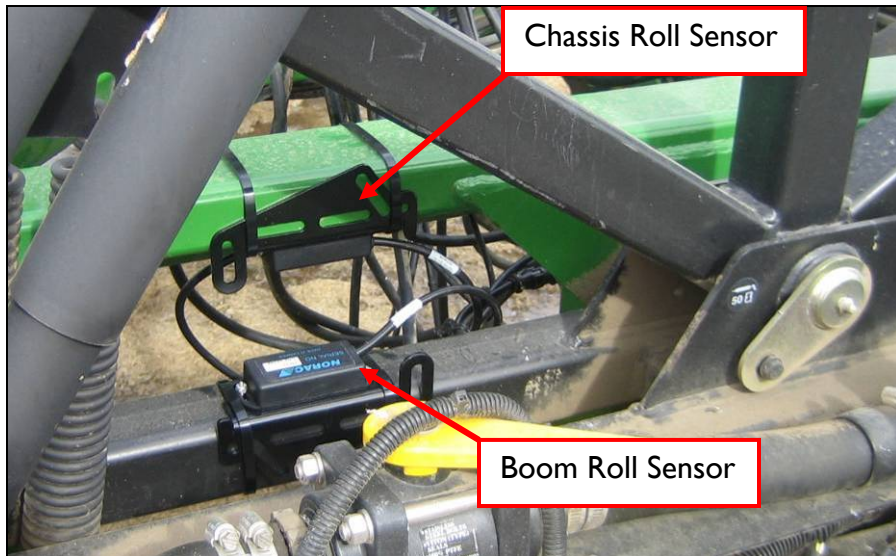


Figure 16: Common Roll Sensor Mounting on a JD (as viewed from rear of sprayer)

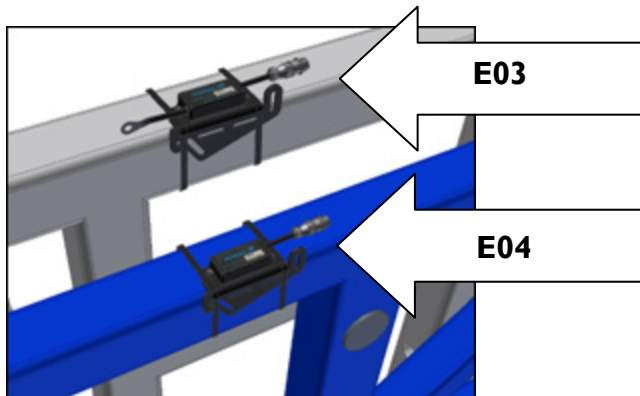


Figure 17: Boom and Chassis Roll Sensors Correctly Mounted

4.5.1 Boom Roll Sensor Mounting

The boom roll sensor (**E04**) must be mounted to the rotating part of the boom. Follow these guidelines and refer to and **Figure 16** and **Figure 17** to mount the sensor.

- a) Make sure you are using the roll sensor that does NOT have a temperature probe (only one cable) (**E04**).
- b) The boom roll sensor must be mounted to the rotating part of the boom suspension.
- c) Use cable-ties to secure the bracket to a square edge feature (square tube).
- d) Ensure the AMP (circular) connector exits towards the Right Hand Wing (when looking from the rear of the sprayer).
- e) Securely cable-tie the connector to the frame.

4.5.2 Chassis Roll Sensor Mounting

The chassis roll sensor must be mounted to a non-rotating part of the boom. To mount the chassis roll sensor, follow the following guidelines and refer to **Figure 16** and **Figure 17**.

- a) Make sure you are mounting the roll sensor that does have a temperature probe (2 cables) (**E03**).
- b) Mount the chassis roll sensor (**E03**) to a non-rotating part of the boom.
- c) Cable-tie the bracket to a square edge feature (square tube).
- d) The AMP (circular) connector **MUST** exit towards the Right Hand Wing (when looking from the rear).
- e) Securely cable-tie the connector to the frame.

4.5.3 Inverted Roll Sensor Mounting

If desired, the Roll sensor may be mounted inverted, so long as the connector exits towards the right-hand boom. Inverted mounting may be used to optimize the

mounting criteria as explained at the beginning of **Section 4.5**.

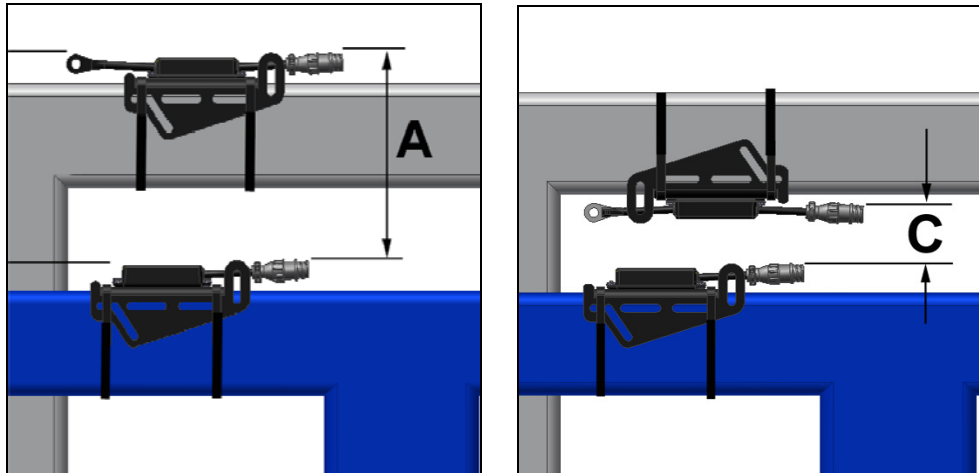


Figure 18: Inverted Roll Sensor Mounting may be Applicable for Optimal Performance

4.5.4 Temperature Probe

Fasten the temperature probe (**E03**) to the UC4 valve block using the included 3/8x1/2" bolt as illustrated in **Figure 19**.



Figure 19: UC4+ Valve Block with Temperature Probe Installed

4.6 HYDRAULIC INSTALLATION

! WARNING!

The hydraulic system creates very high pressure. Before disconnecting any hydraulic lines ensure all pressure has been bled from the system. When changing the boom hydraulic hoses leave the booms in **TRANSPORT POSITION**.

! IMPORTANT:

Component failure due to oil contamination is not covered under the **UC4+ Spray Height Control** system warranty. It is recommended that a qualified technician does the hydraulic installation.

4.6.1 Valve Assembly

1. On a clean surface remove all plastic plugs from the NORAC hydraulic Valve (**V01**) (**Figure 20**).
2. Install the 6MB-6MOR fittings (**F05**) on the "P" and "T" ports and tighten to 18 ft-lbs.
3. Install the 4MOR-4MB (**F06**) into the "S" port and tighten to 11 ft-lbs.

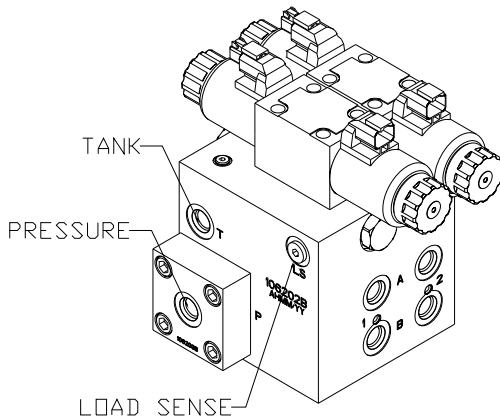


Figure 20: NORAC Valve Block

4. Install two orifices (**F08**) into the "B" ports **with the notch facing outward** as shown in **Figure 21**.
5. Install the remaining orifices (**F08**) into the "A" ports **with the notch facing inward** as shown in **Figure 21**.
6. Install the 6MB-4MOR fittings (**F07**) into the "A" and "B" ports and tighten to 18 ft-lbs.

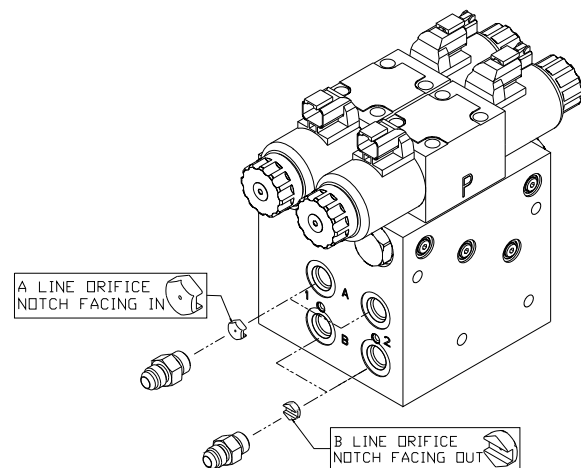


Figure 21: Valve Block Assembly

! If the Roll Control Option is also being installed the 3rd station valve can be assembled before mounting the valve. See the **Roll Control Option Installation Manual** that came with your kit.

4. Remove the plug from the Sense Line Bleed port. Location is shown in **Figure 22**. Gently tap the plug with a hammer to loosen it before attempting to remove it.
5. Remove the Sense Line Bleed Orifice and discard. **Figure 22**. Install the setscrew (**F11**) into the Sense Line Bleed Orifice location. Ensure the setscrew is threaded entirely into the

hole and tightened to 35-40 in-lbs to ensure a tight seal. Reinstall the plug and tighten to 35-40 in-lbs.

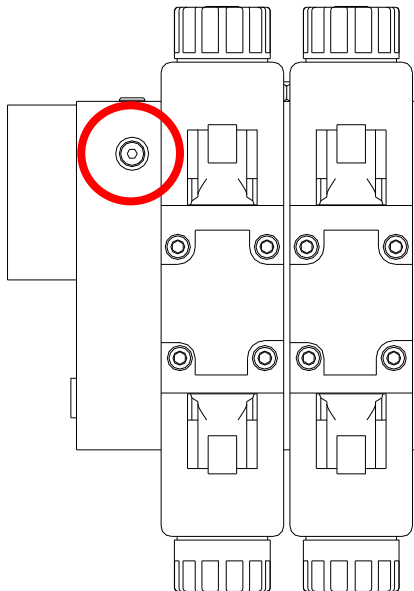


Figure 22: Load Sense Bleed Orifice Location on Top of Block

4.6.2 Valve Mounting

1. Mount the NORAC valve (**V01**) on the sprayer using the valve mounting bracket (**B10**).
2. As shown in **Figure 23**, screw short side of the threaded rods into the bottom of the valve block at least 3/8". The valve mounting holes are drilled and tapped 3/8 NC-1" deep.
3. Tighten the Hex nuts to hold the rods.
4. Put the mounting bracket on the other side of the tube and tighten with the spring washers and the Hex nuts.
5. Cut excess off of the rods, if necessary.

⚠ If using bolts, the bolts should thread into the valve block at

least 3/8". The valve mounting holes are drilled and tapped 3/8 NC-1" deep. The rule of thumb for bolt length is 1-1/2" longer than the tube size.

⚠ The recommended location for the valve is on the angled cross tube of the parallel linkage on the sprayer. Orient the valve block so the "A" and "B" ports face towards the boom (Figure 24).

⚠ You must ensure no hydraulic components will interfere with any sprayer parts or be pulled tight at any time.

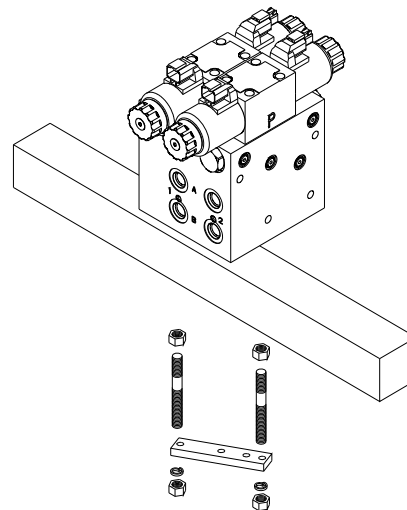


Figure 23: Valve Mounting Location

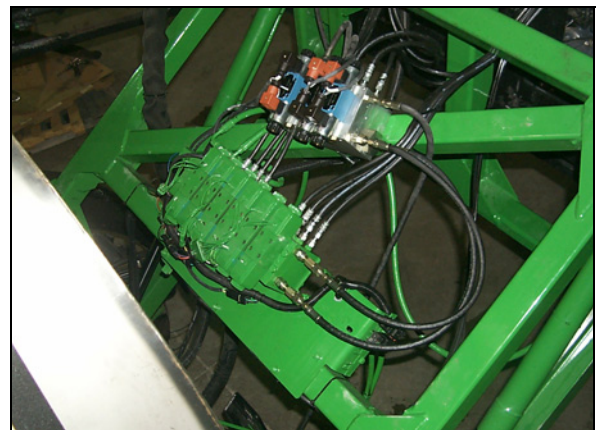


Figure 24: Valve Mounting Example

4.6.3 Hydraulic Plumbing

WARNING!

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

1. After the NORAC valves are mounted, the hydraulic hoses and fittings can be plumbed. The plumbing for the hydraulic circuit is shown schematically in **Figure 3**.
2. Connect the NORAC supplied hoses (**H02**) to the Pressure (“P”) and Tank (“T”) ports on the NORAC valve block (**V01**). Also connect **H06** to the Load Sense (“S”) port on the valve block.
3. Tee the hoses, **H02** (“P” and “T” lines), into the ports on the sprayer valve block with the 6FORXR-6MORT fittings (**F03**). The elbow fittings currently on the JD valve block must be replaced by the 6MB-6MOR fitting (**F05**).
4. The existing hoses that run to the boom tilt cylinders should be disconnected from the sprayer valve block and reconnected to the NORAC valve block.
5. The “raise” lines must be connected to the “B” ports of the NORAC valve block. The ports on the sprayer block must then be capped with 4MBP plugs (**F09**).
6. The “A” ports of the NORAC block must be connected to the “lower” lines of the cylinders. The ports on the sprayer block must then be capped with **F09**.
7. Tee the Load Sense line (**H06**) directly in to the S port of the shuttle valve manifold using fitting F03 as shown in **Figure 25, Figure 26, Figure 27 and Figure 28**.

⚠ Most John Deere Sprayers have orifices in the "A" and "B" lines of the boom tilt cylinders. To remove the orifices you must remove the fitting from the cylinder. The orifice is directly beneath the fitting.

⚠ There are multiple versions of JD load sense blocks on sprayers. Choose the picture that most closely resembles your sprayer valve block and tee in accordingly.

⚠ On some installs the Load sense hose (H06) may be too long and the excess hose must be coiled and secured where it will not interfere with other components.

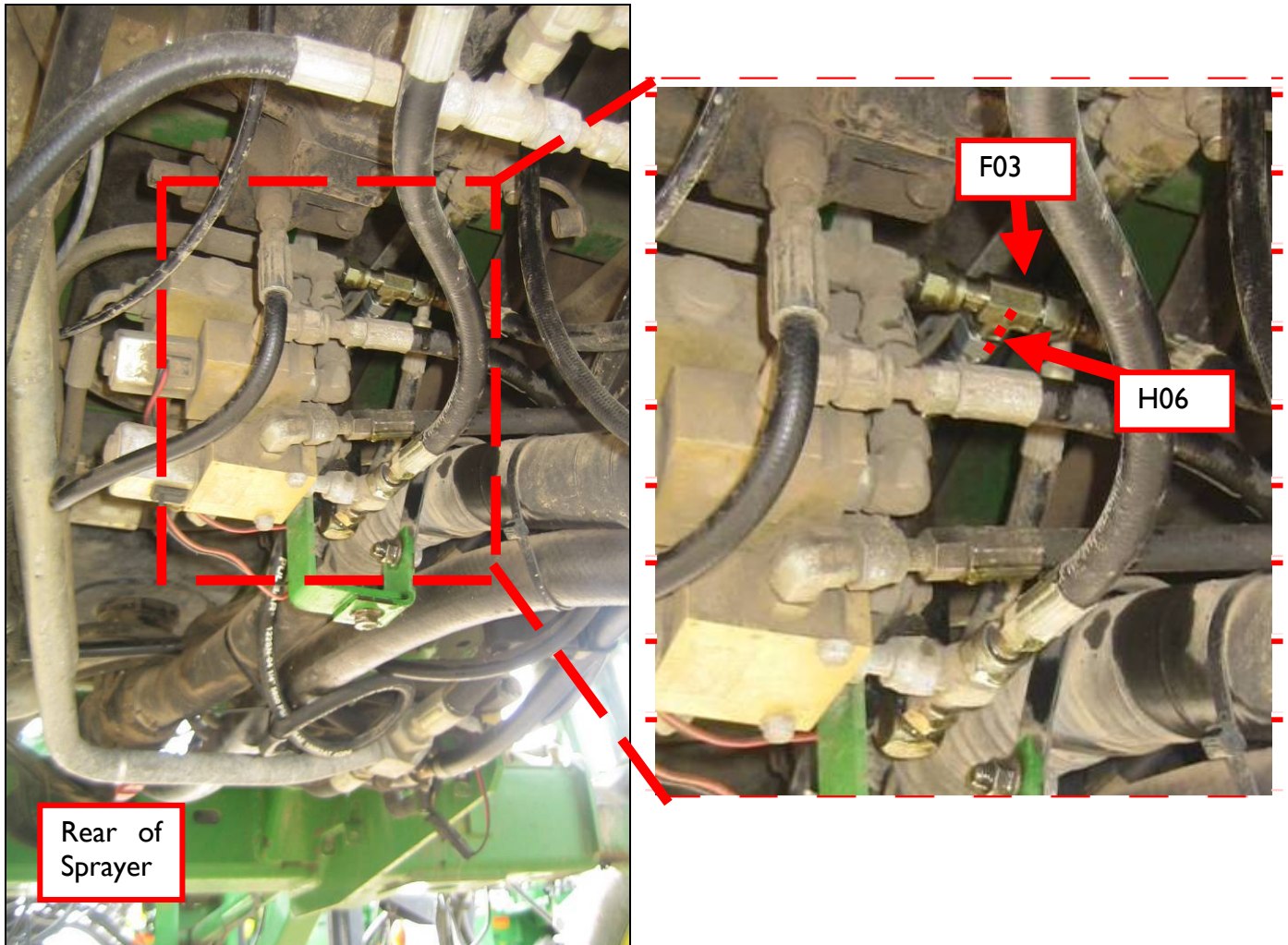


Figure 25: Looking towards the rear of the sprayer on a JD4700, JD4710

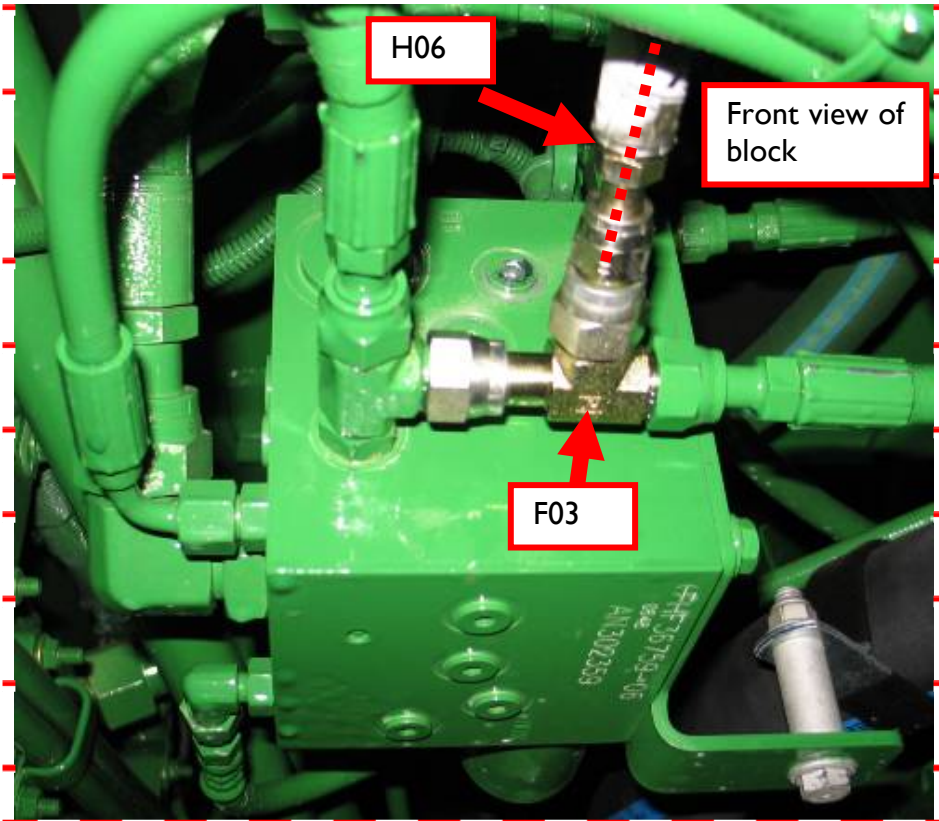
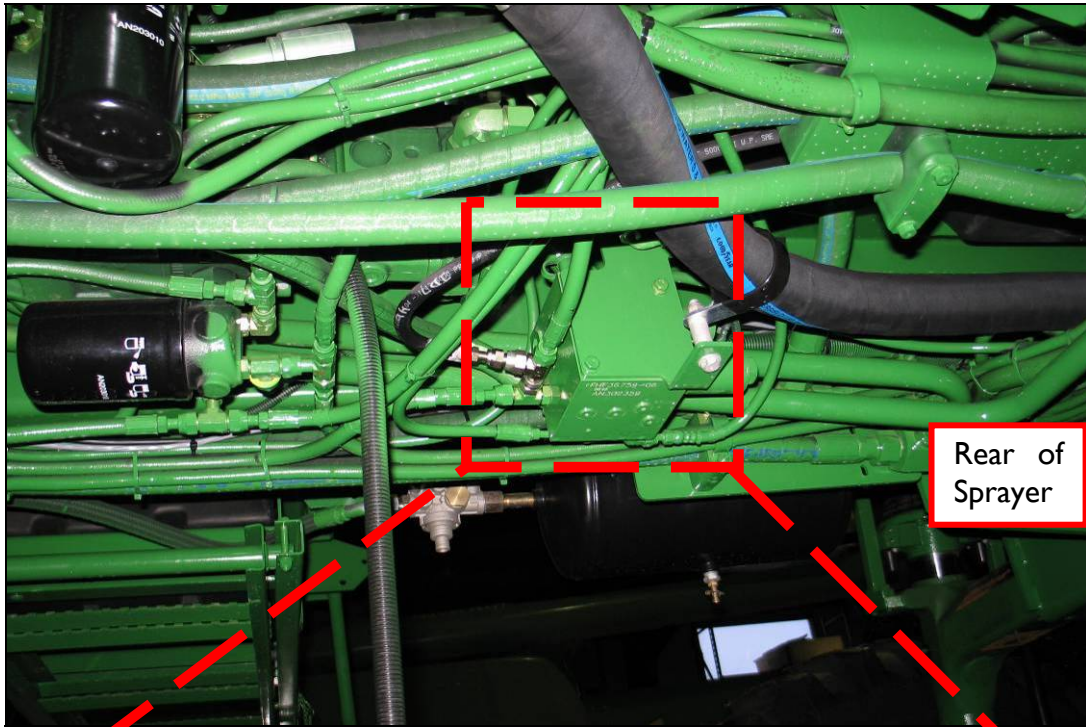


Figure 26: Load Sense Plumbing on some JD4710

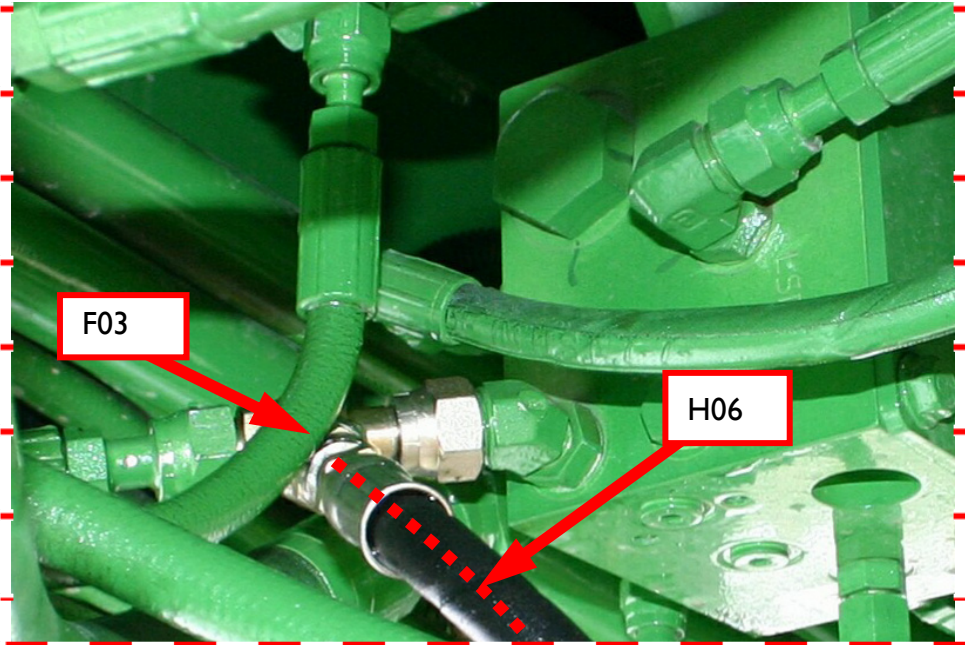
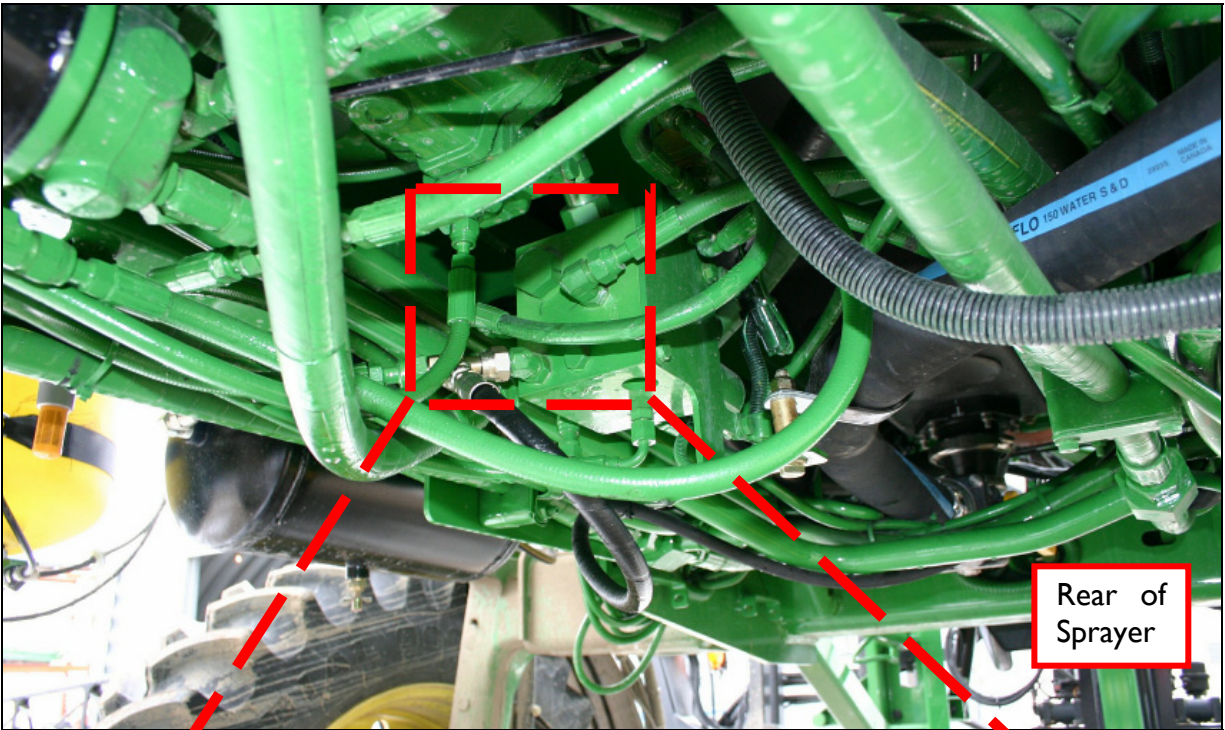


Figure 27: Load Sense Line Connection to John Deere Combination Valve Block

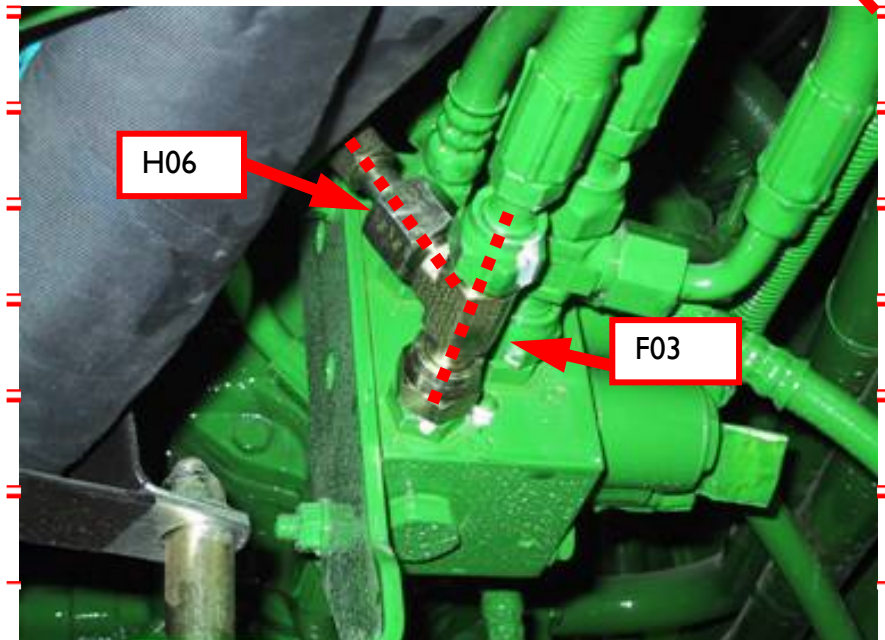
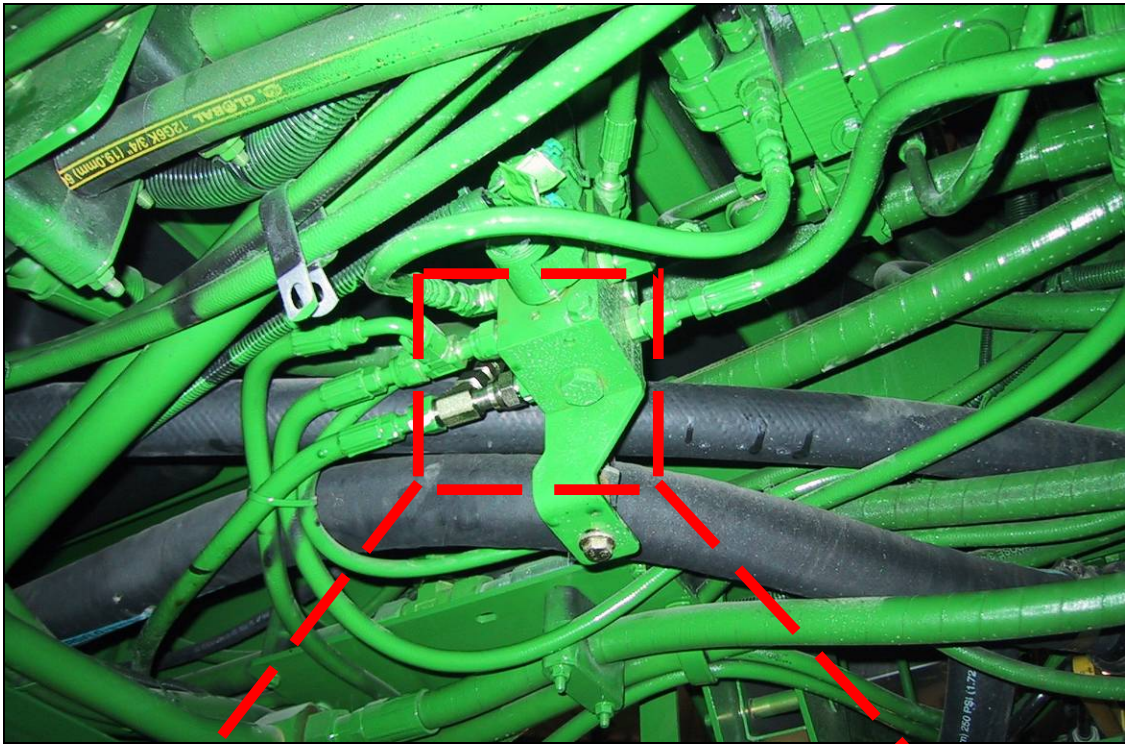


Figure 28: 2003+ Load Sense Line Connection

4.7 ELECTRICAL INSTALLATION

1. Install the UC4+ Control Panel (E01) in the cab of the sprayer. Mount the panel where it will be clearly visible and within easy reach of the operator.

A good spot to mount the UC4+ control panel is on the right hand side of the cab to the Roll Over Protection Bar. Four pilot holes for the screws provided need to be drilled to facilitate the control panel mounting.

If desired, a mounting bracket (part #A53255) can be purchased from your local John Deere dealer to allow the UC4+ control panel to be mounted to the existing John Deere terminal mount. Another option is to purchase an adapter for the flexible panel mount that has a 3/8" NC threaded stud on the end to bolt through the existing JD mount. You can find these at your local outdoor store as a RAM mount part number RAM-B-236. (See <http://www.ram-mount.com/>)

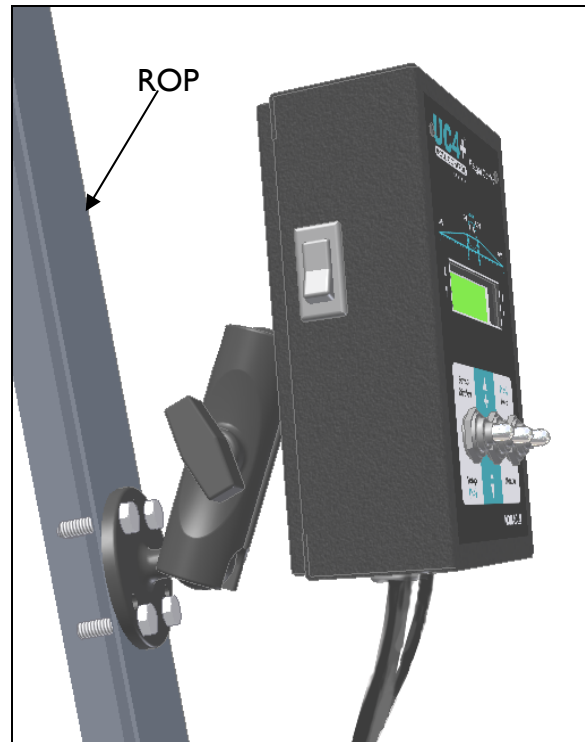


Figure 29: Control Panel Mounting



Figure 30: JD Control Panel Mounting

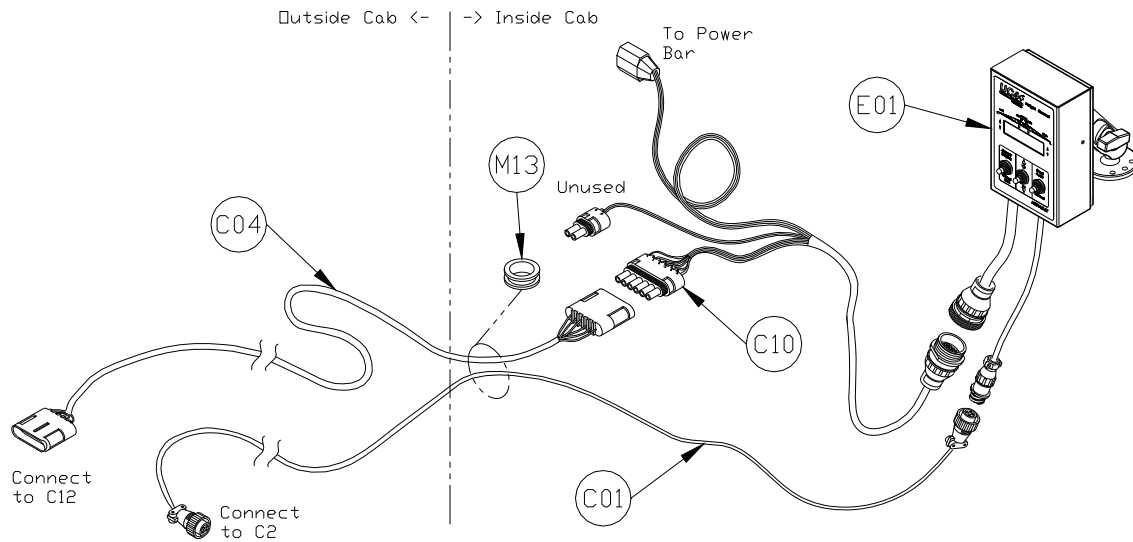


Figure 31: Cable Configurations: C10, C1 and C4

2. Connect the UC4+ power cable (**C10**) and sensor trunk cable (**C01**) to the UC4+ Control Panel (**E01**) (**Figure 31**).

⚠ Ensure the UC4+ Control Panel's power is OFF for the remaining installation. (Bottom of switch pressed IN).

3. Plug the 3-pin connector on **C10** into the cab's power bar.
4. Route the free ends of **C10** and **C01** along the side of the cab post and under the floor mat.

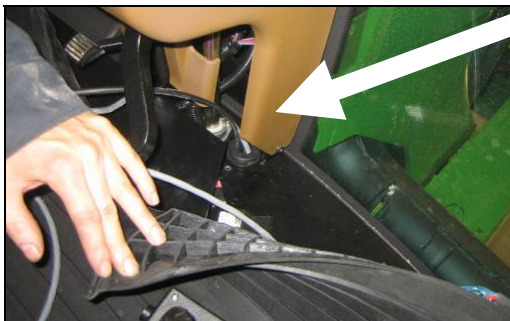


Figure 32: Hole under Floor Mat

5. Plug in the 6-pin Tower on **C10** to the 6-pin Shroud on the valve extension cable (**C04**) (**Figure 31**).

⚠ C04 comes with one connector (M16) unassembled to allow the cable to be run through a hole in the floor under the steering column. To assemble this connector (M16), refer to the drawing in Section 5.5. The pins require a special tool to remove them if you make an error.

⚠ The cables may also be routed through the rear window of the cab.

6. Route the free ends of **C01** and **C04** to the rear of the sprayer near the sprayer valve block. Run the cables along the sprayer frame with the JD harness.

⚠ The hole in the floor may be covered by a plate, or a grommet may be installed in the hole. They can be reinstalled after the wiring is complete. NORAC supplies a grommet (M13) for the hole if one does not exist.

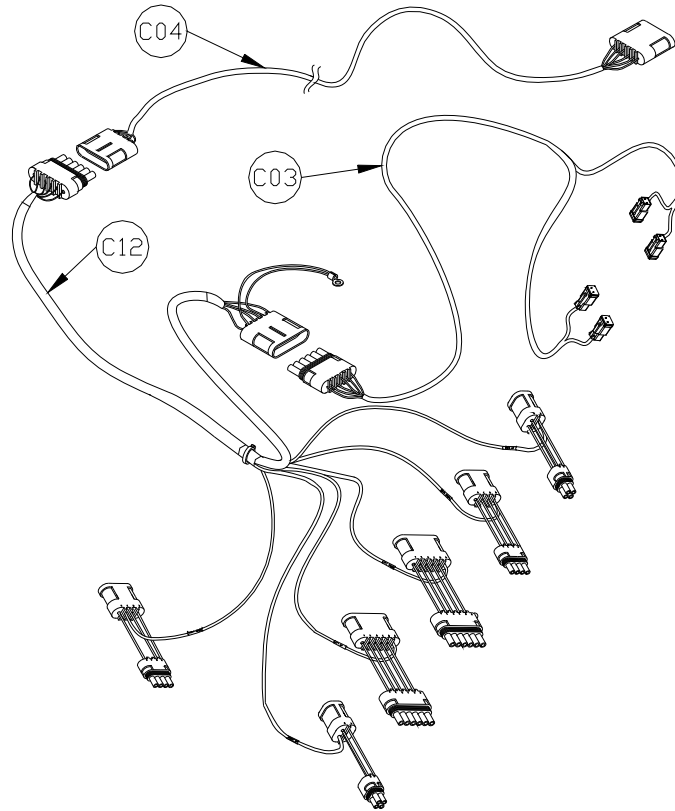


Figure 33: Cable Configurations: C12, C03 and C04

7. Connect the 6-pin Shroud on **C04** to 6-pin Tower on the junction cable (**C12**) (**Figure 31**).
8. Connect the 6-pin Tower on the valve cable (**C03**) to 6-pin Shroud on **C12**.
9. **C12** has a screw terminal. It must be connected to the frame of the sprayer (**Figure 33**). Scrape any paint off the frame where the terminal is mounted. A good location is the bolt holding the JD wiring harness next to the large connector at the rear of the sprayer frame.

⚠ The terminal must be attached directly to the sprayer frame NOT the parallel linkage. An improper ground can cause UC4+ Spray Height Control system malfunctions.

10. Insert the connectors labeled **Main Up** and

Main Down on **C12** into the main lift connectors on the John Deere solenoids (**Figure 34**).

11. Insert the other connectors on **C12** into the tilt connectors on the John Deere solenoids according to the labels on the wires (**Figure 34**).

⚠ Important

There is one set of different connectors (M14 and M15) included with the interface cable (C12). Some John Deere sprayers use this connector on the left down function. If your sprayer has this connector, remove the existing NORAC connectors using the included pin removal tool. Insert the wires into the new connector and ensure they are in the same position as they were in the previous connector.

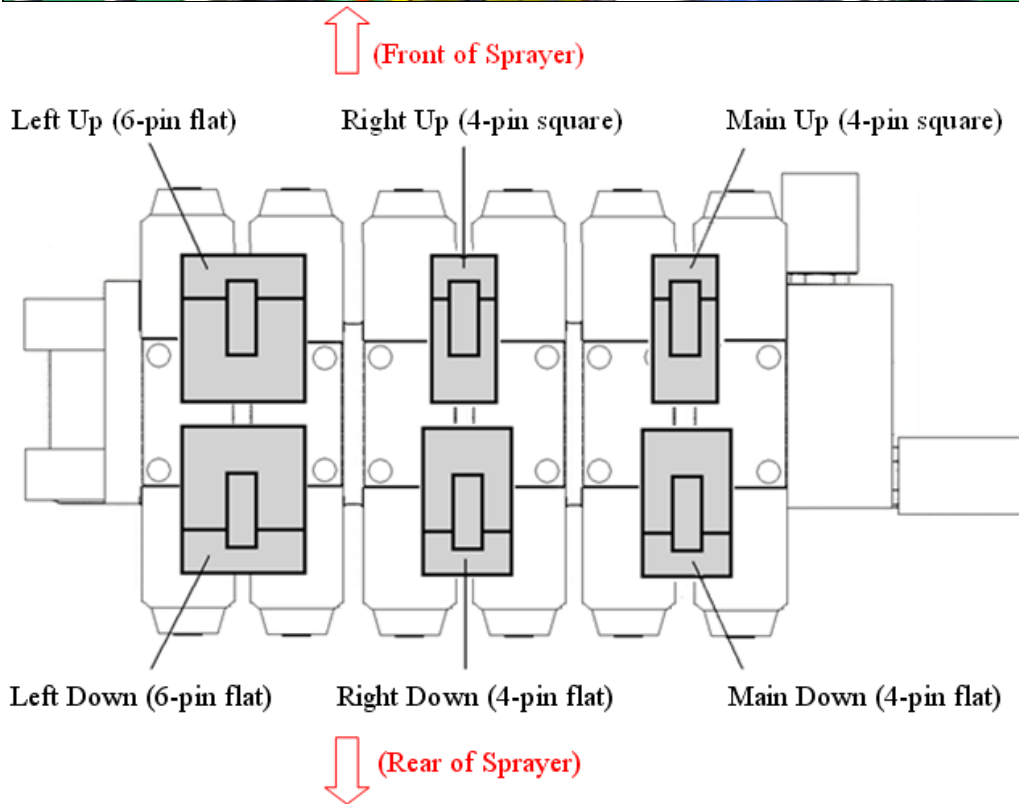
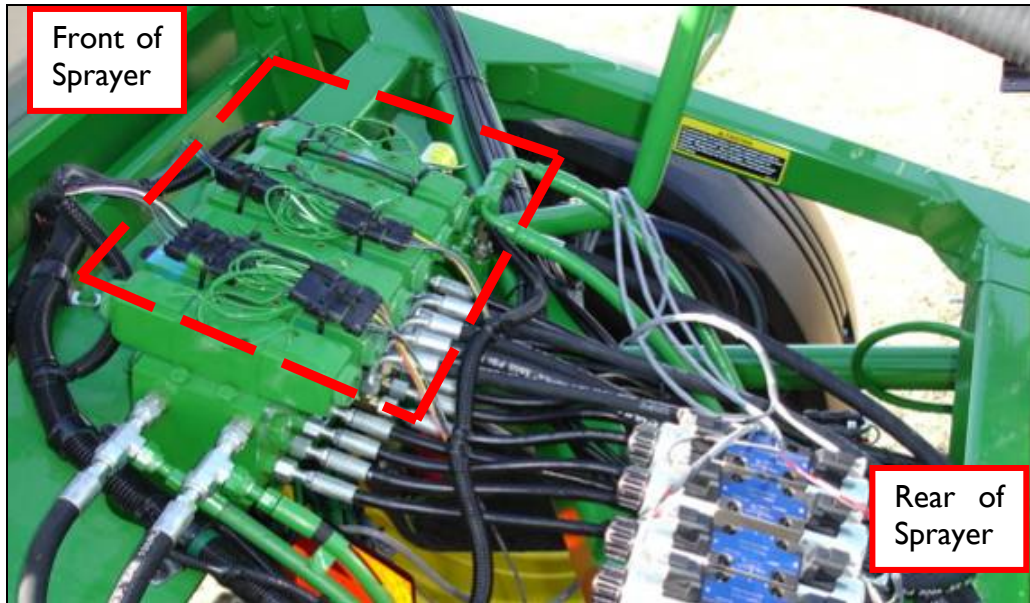


Figure 34: John Deere Boom Valve Block (top view) with Connectors Labeled

⚠ Important

Some older model John Deere sprayers (4700 and 4710) may have a different style boom valve block that has different connector arrangements. The NORAC interface cable (C12) 44658-01 will require modification. See Appendix A for modification procedure.

12. Install the 2-pin connectors from **C03** onto each NORAC valve as shown in **Figure 35**.
13. The connectors on the valve cable (**C03**) are marked **RIGHT UP**, **LEFT UP**, **RIGHT DOWN** and **LEFT DOWN**. Cables labeled with **UP** go on the same side as the hydraulic hoses.

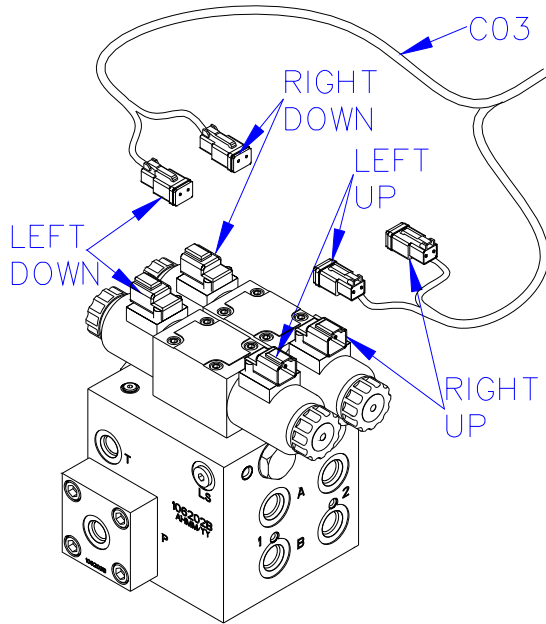


Figure 35: Valve Cable Connections

14. Connect the CAN Node cable (**C02B**) to the 4-pin AMP plug on **C01**
15. Route **C02B** to the roll sensors which are installed in **Section 4.5**. Follow existing cables and/or hydraulic lines.
16. Connect the sensor branch cable (**C02**) to the 4-pin AMP plug on **C02B** (**Figure 36**).
17. Route **C02** to the wing and main sensors and connect to the sensors. Follow existing cables and/or hydraulic lines along the boom.

! Route the main lift cable through the main lift mounting bracket

tube to provide additional cable protection

18. Cable-tie the installed cables every 12 inches.

! **IMPORTANT:**

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

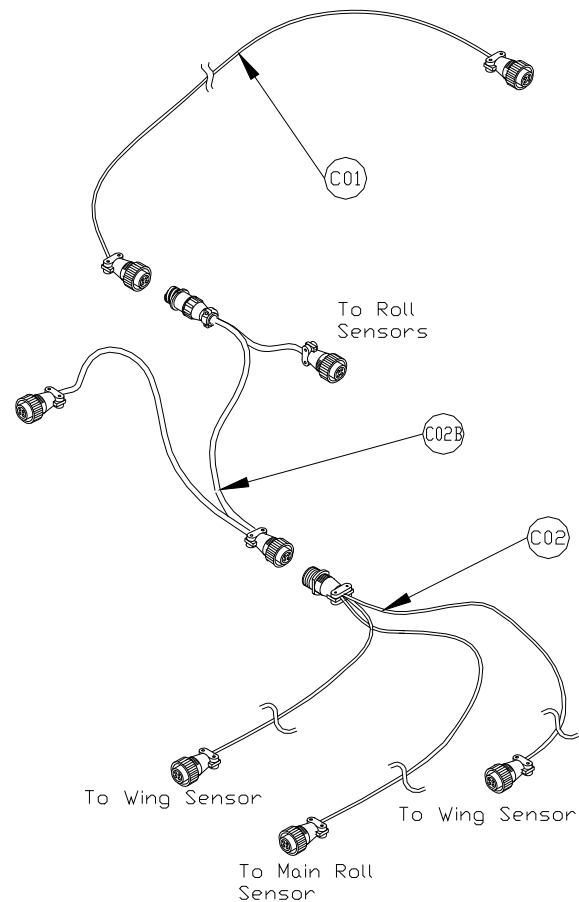


Figure 36: Cable Configurations: C01, C02 and C02B

4.8 COMPLETING THE INSTALLATION

1. Start up your sprayer and test the sprayer's functionality. The NORAC Control Panel does not need to be powered up for the original switches to function. Unfold the booms and raise/lower each boom and main section.

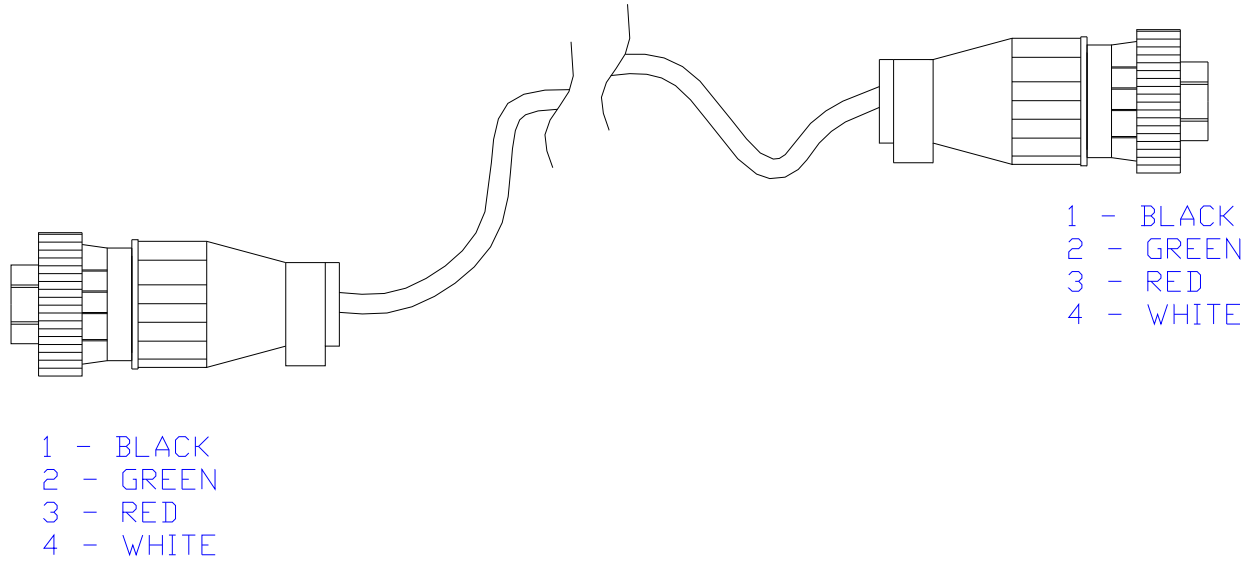


Again confirm that the cabling/hoses are agreeable to the entire range of motion.

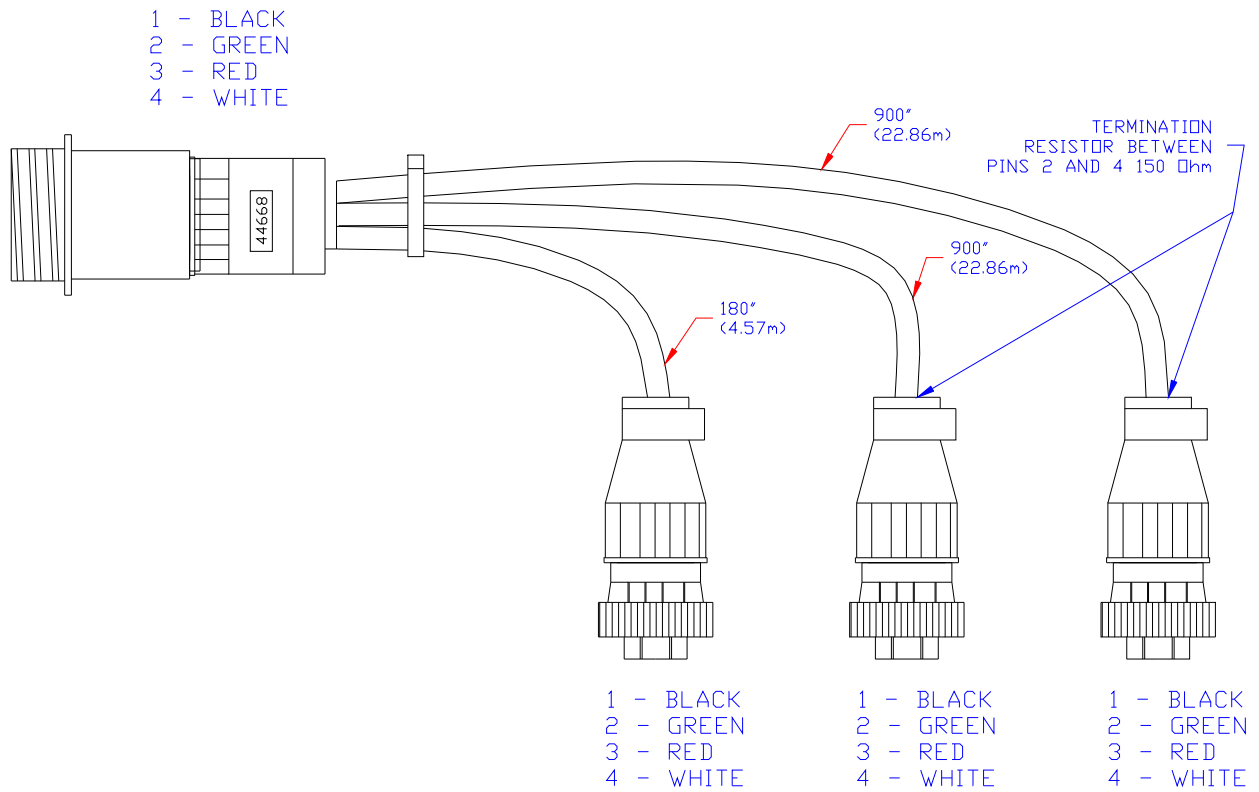
2. If any functions do not work, review the hydraulic and electrical portions of this manual to check for proper installation. If you still have trouble, contact NORAC for assistance.
3. Turn on the power for the UC4+ Control Panel using the switch on the side of its chassis.
4. Repeat the Boom Speed Test as described in Section **4.2 Boom Speed Test** with the NORAC UC4+ Spray Height Control system installed. Record the results for comparison in **Table 6**.
5. The procedure for the installation of the UC4+ Spray Height Control system is now complete. Begin the AUTOMATIC SYSTEM SETUP procedure as described in the **UC4+ Sprayer Boom Control Operator's Manual (M01)**.

5 ELECTRICAL REFERENCE – CABLE DRAWINGS

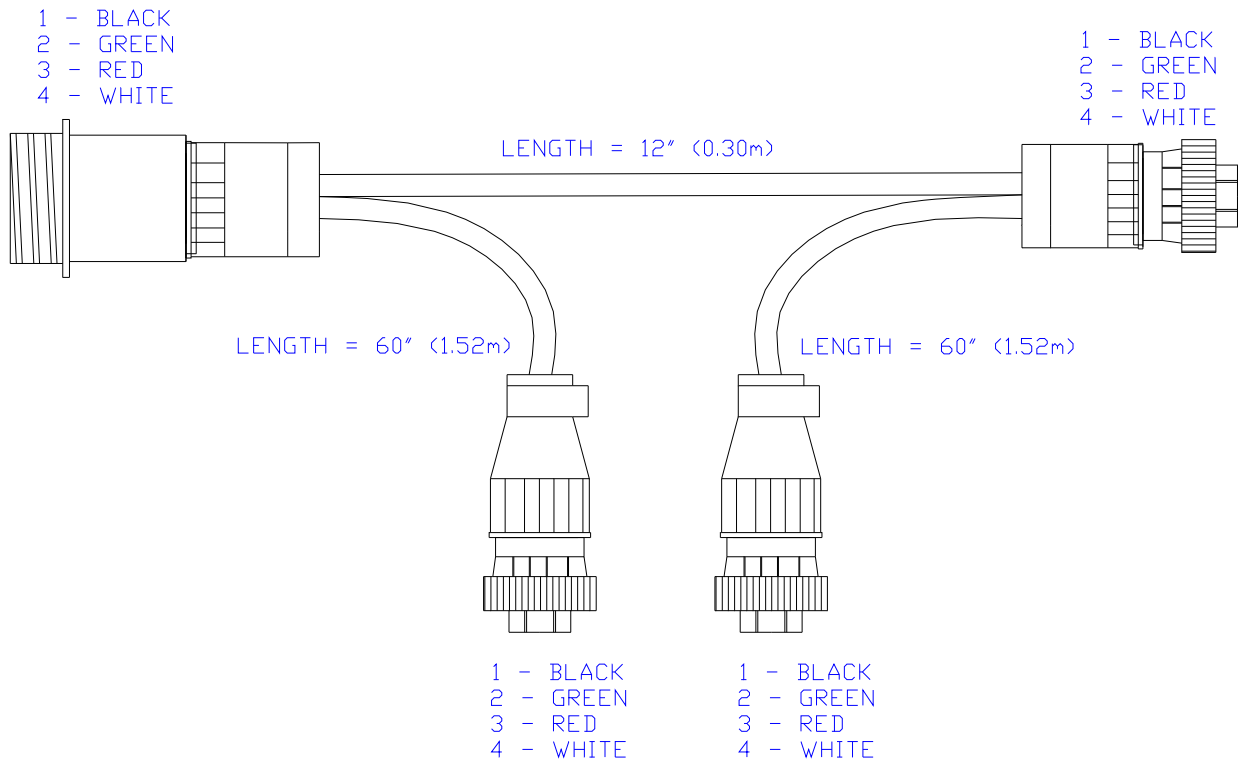
5.1 ITEM C01: 44662B-40 – CABLE SENSOR TRUNK



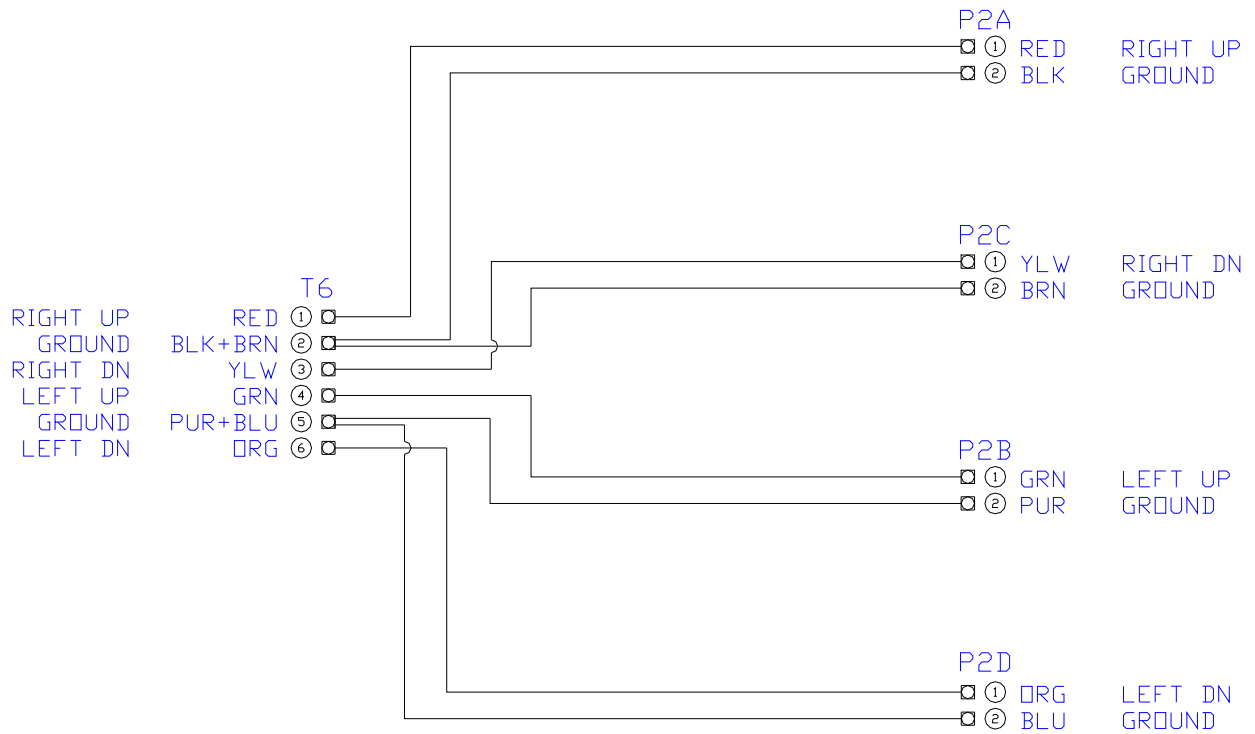
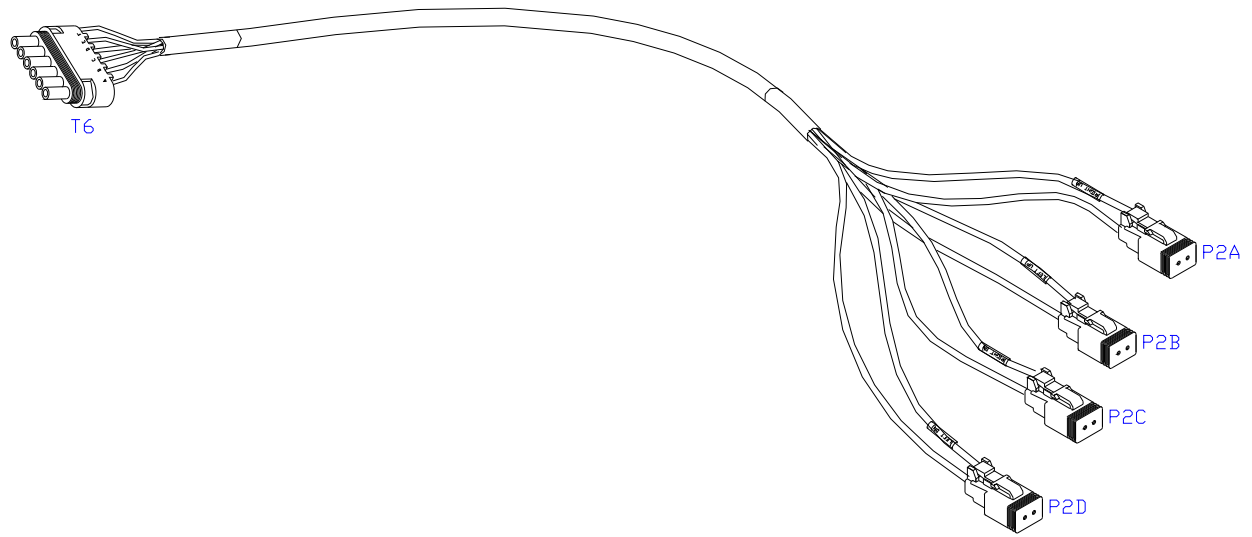
5.2 ITEM C02: 44668 – CABLE SENSOR BRANCH



5.3 ITEM C02B: 44664 - CABLE UC4 CAN NODE DUAL

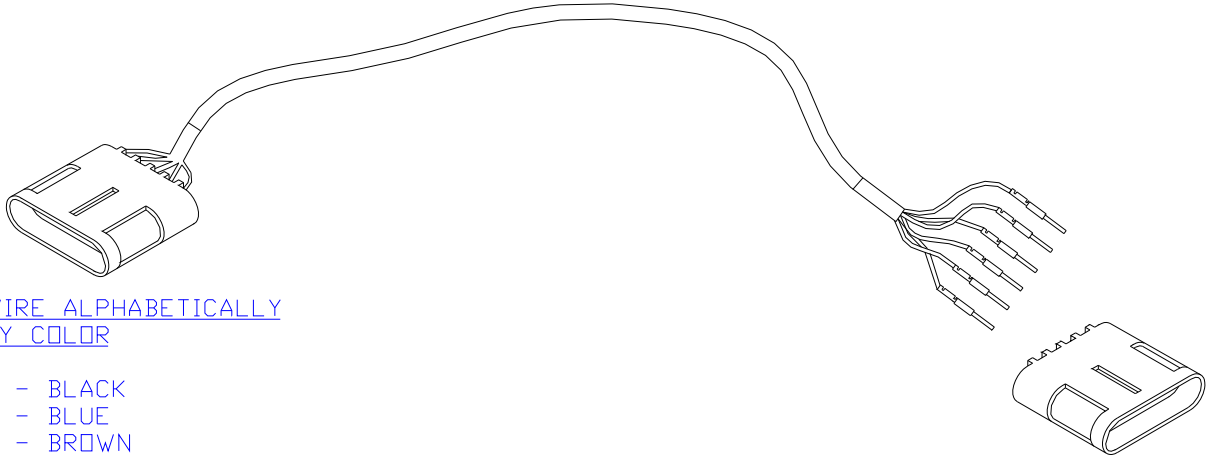


5.4 ITEM C03: 44656D – CABLE VALVE VARIABLE RATE DT



5.5 ITEM C04: 4465 I – CABLE VALVE EXTENSION

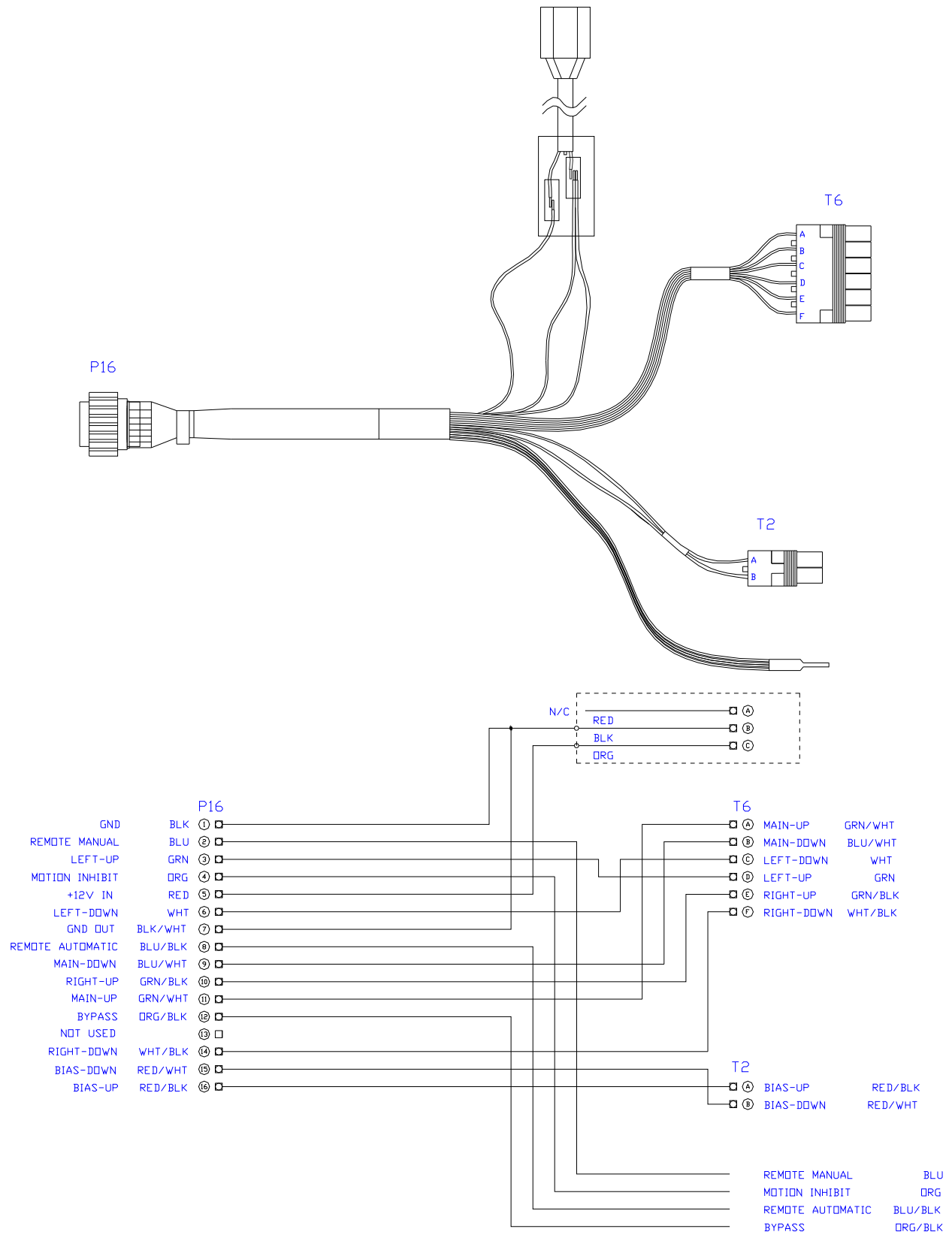
CONDUCTORS ARE CONNECTED A-A, B-B, ETC.



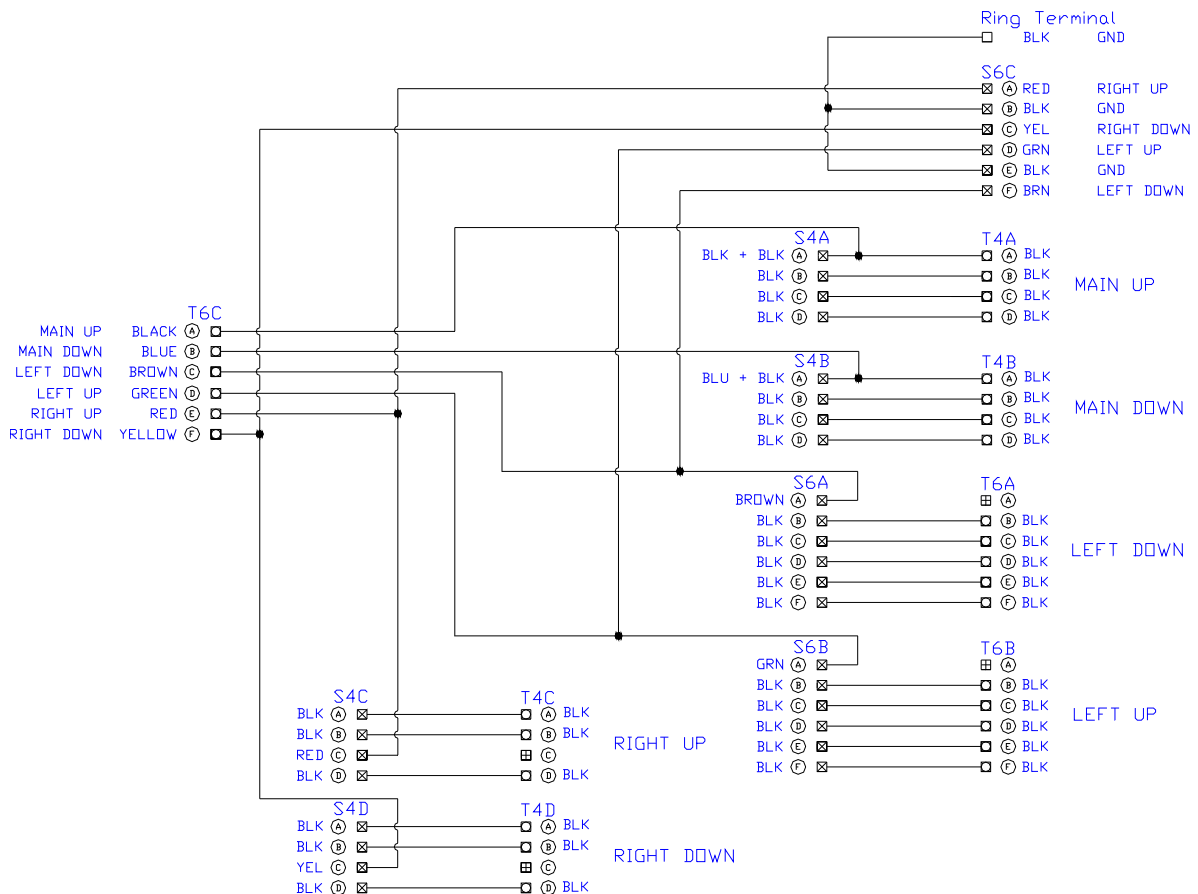
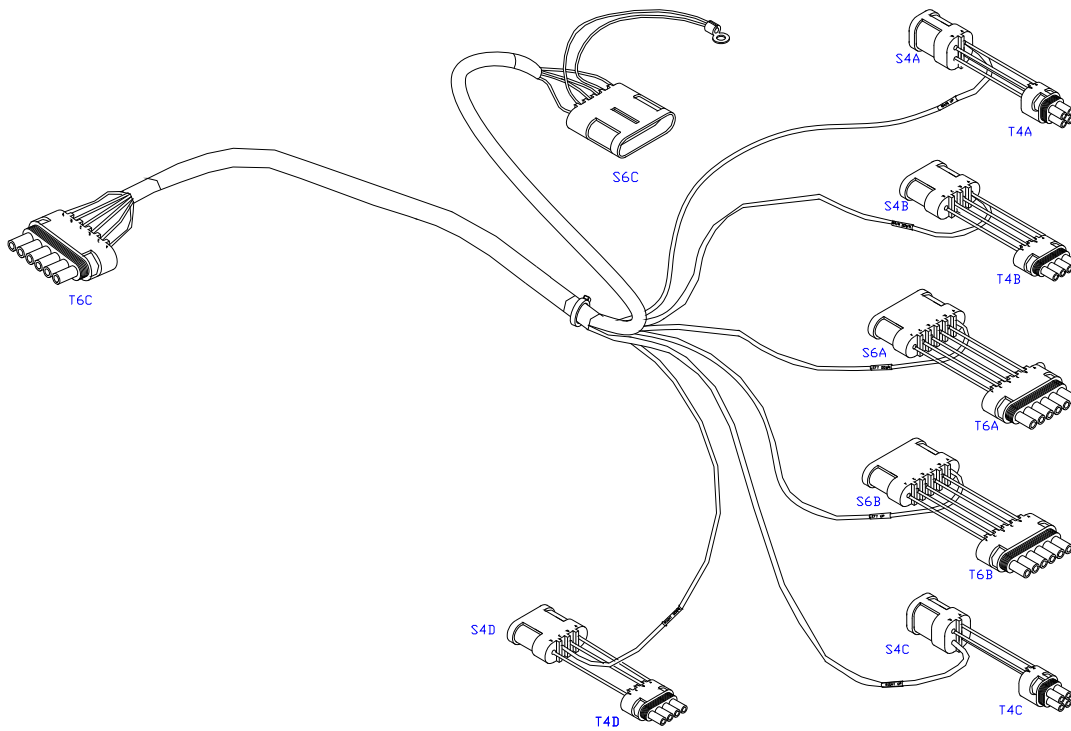
WIRE ALPHABETICALLY
BY COLOR

- A - BLACK
- B - BLUE
- C - BROWN
- D - GREEN
- E - RED
- F - WHITE

5.6 ITEM CI0: 44650-14 – CABLE UC4 POWER BOOM CONTROL JOHN DEERE



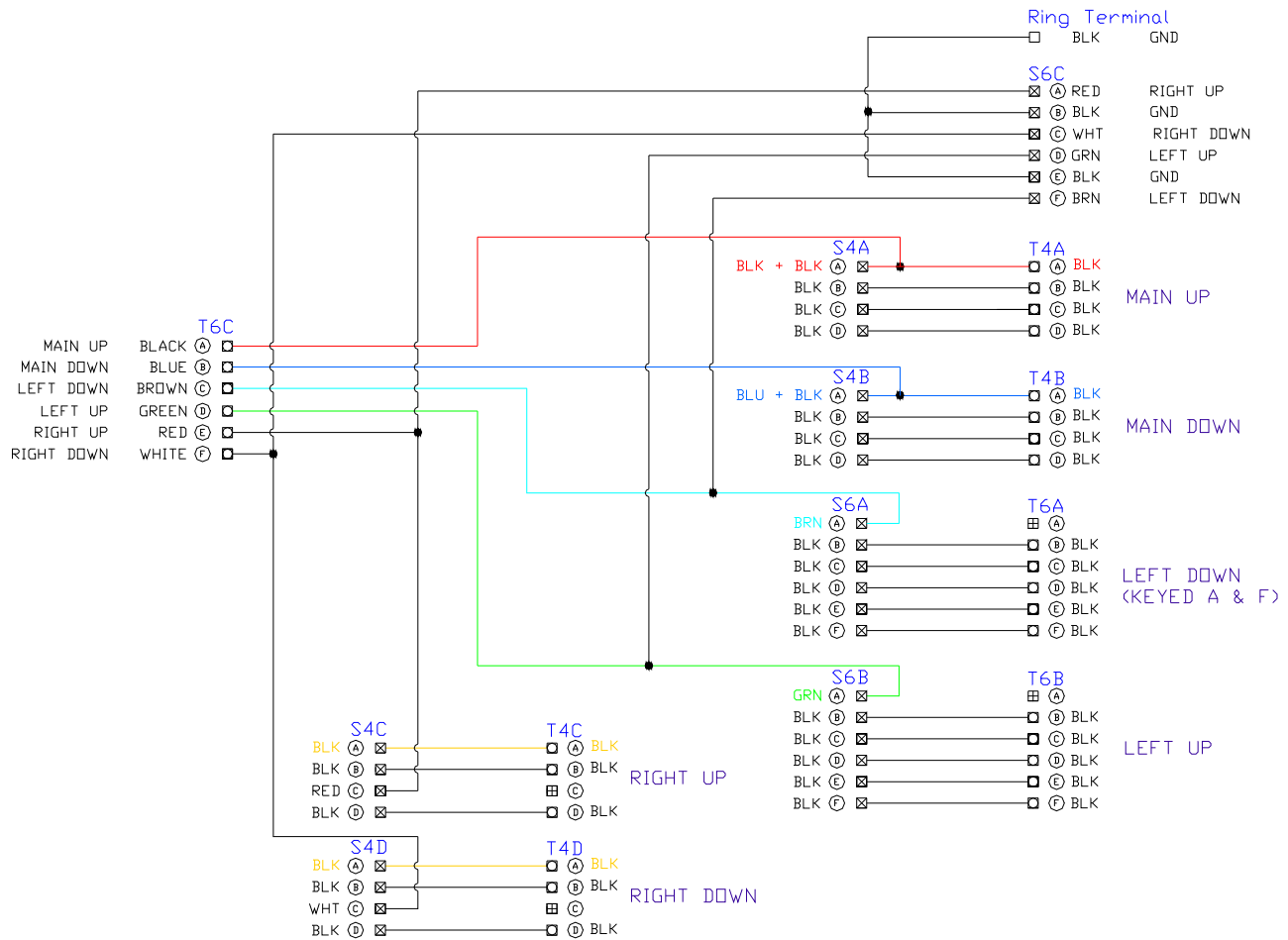
5.7 ITEM C12: 44658-01 – CABLE UC4 VALVE BC JD



6 APPENDIX A - INTERFACE CABLE MODIFICATION PROCEDURE

Some earlier models of John Deere sprayers (4700 and 4710) may use a different style of boom valve block with a different arrangement of the connectors. As a result, the NORAC 44658-01 interface cable (C12) will need to be modified according to the following instructions (See **Figure 37** and **Figure 38** for before and after schematics):

1. Using the supplied GP Weatherpack pin tool, locate and carefully remove the blue/black wire tee (Main Down) from the A-position of the 4-pin flat connector tee (S4B & T4B). The blue wire is attached to a black wire that goes across the tee connection (remove both ends of this tee).
2. Locate and remove the brown wire (Left Down) from the A-position of the 6-pin flat shroud (S6A).
3. Insert blue/black wire tee from step 1 into the A-position of the 6-pin flat connector tee (S6A & T6A). Remove the cavity plug from the A-position of the 6-pin tower (T6A).
4. Locate and remove the black wire (Main Up) from the A-position of the 4-pin square connector tee (S4A & T4A). This black wire is attached to a black tee wire similar to the wire described in step 1.
5. Locate and remove the green wire (Left Up) from the A-position of the 6-pin flat shroud (S6B).
6. Insert black wire tee from step 4 into the A-position of the 6-pin flat connector tee (S6B & T6B). Remove the cavity plug from the A-position of the 6-pin tower (T6B).
7. Remove the black wire that goes across the connection in the A-position of the 4-pin square tee with the red wire (Right Up) in the C-position (S4C & T4C). Insert the green wire (Left Up) from step 5 into the A-position of the 4-pin shroud (S4C). Seal the A-position on the 4-pin tower (T4C) with the cavity plug removed in step 3.
8. Remove the black wire that goes across the connection in the A-position of the 4-pin flat tee with the white wire (Right Down) in the C-position (S4D & T4D). Insert the brown wire (Left Down) from step 2 into the A-position of the 4-pin shroud (S4D). Seal the A-position on the 4-pin tower (T4D) with the cavity plug removed in step 6.
9. The cable modifications are complete. There should be 2 black wires, an incomplete 4-pin square tee and an incomplete 4-pin flat tee left over.
10. Connect the modified harness to the sprayer as indicated in **Figure 39**.



- Black wires to be removed
- Black (Main Up) wire
- Brown (Left Down) wire
- Blue (Main Down) wire
- Green (Left Up) wire

Figure 37: Cable C12 (44658-01) BEFORE Modification

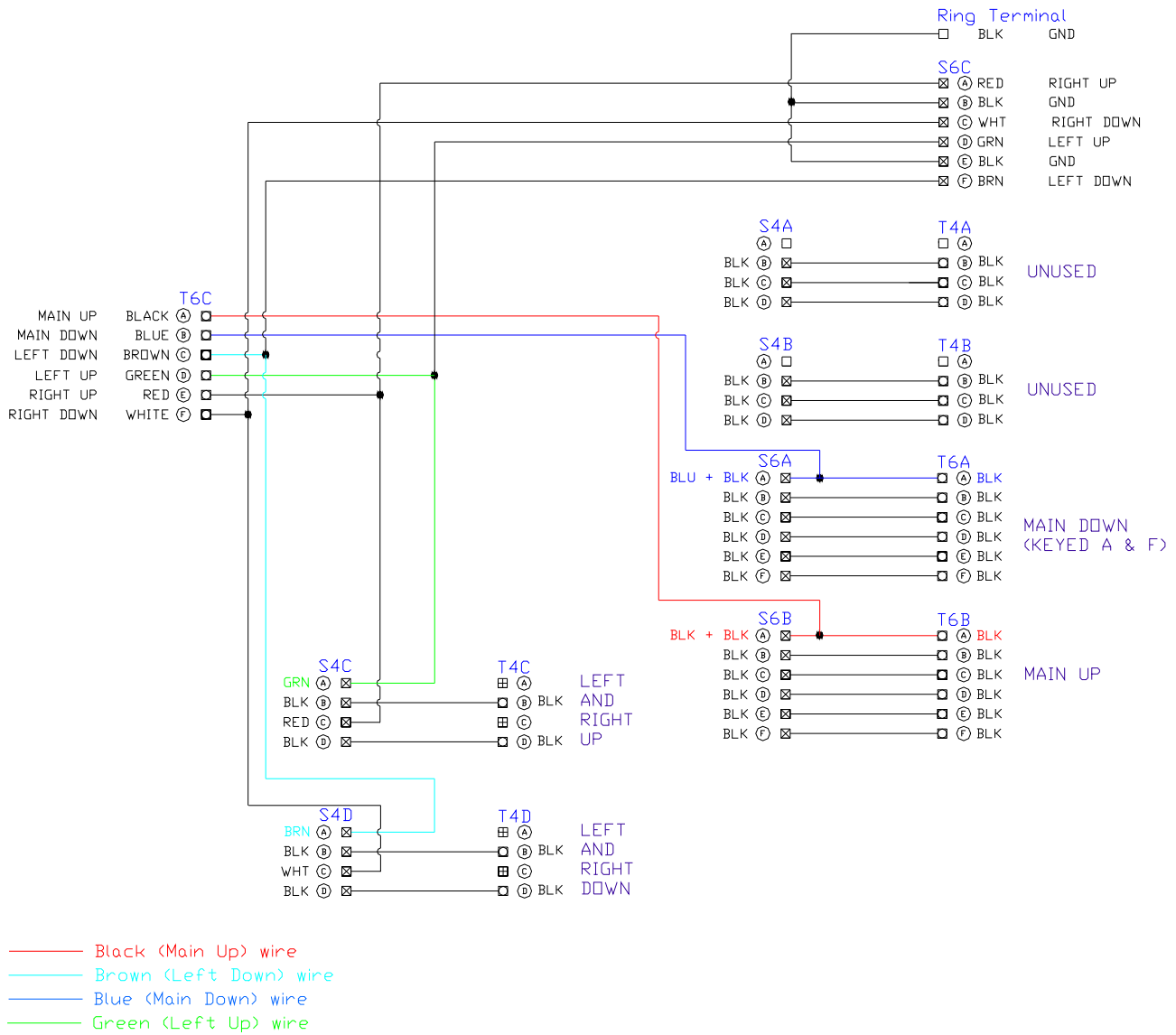


Figure 38: Cable C12 (44658-01) AFTER Modification

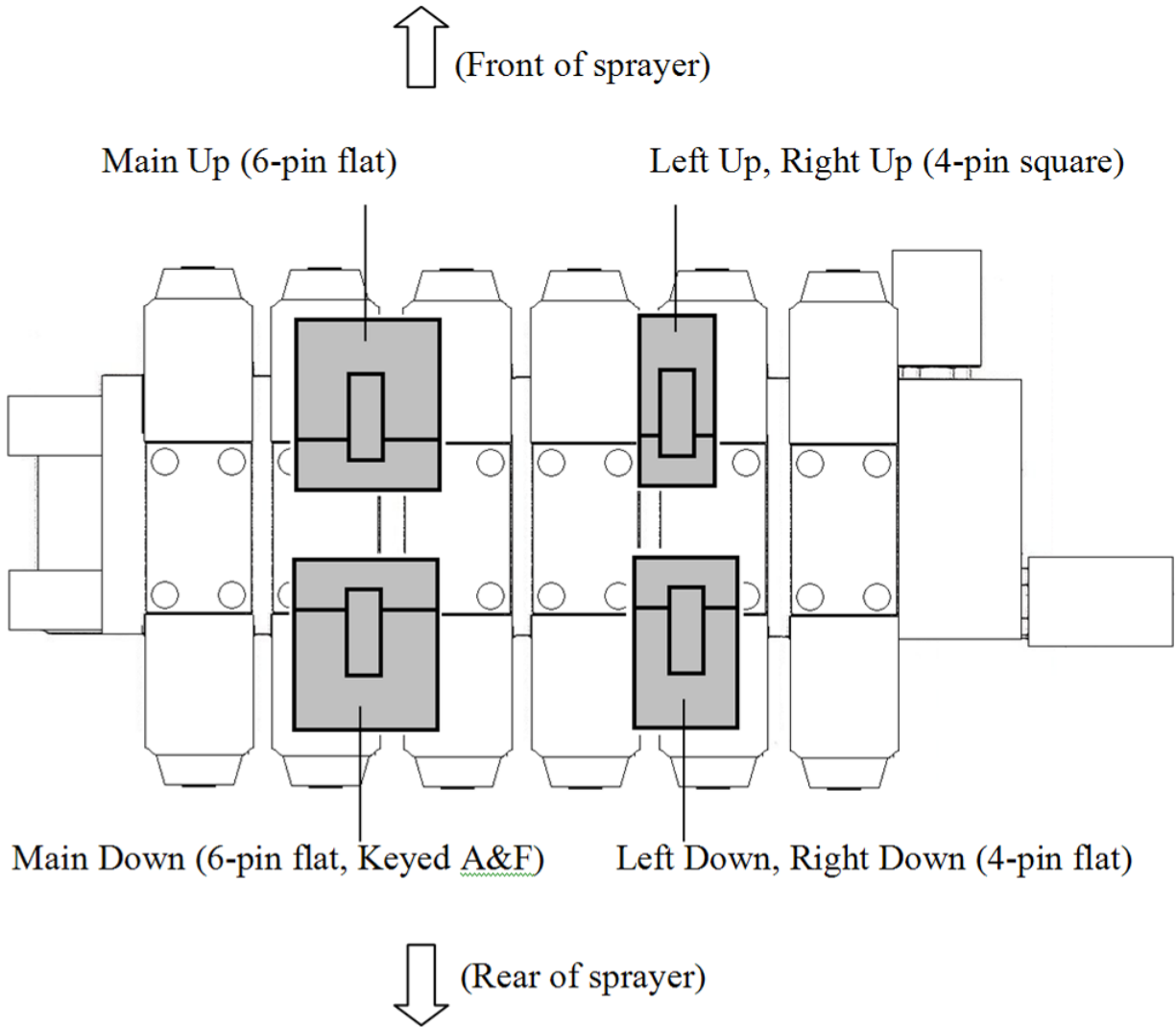


Figure 39: Early-Model John Deere Boom Valve Block (top view) with Connectors Labelled. (Valve may be different than illustrated.)

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