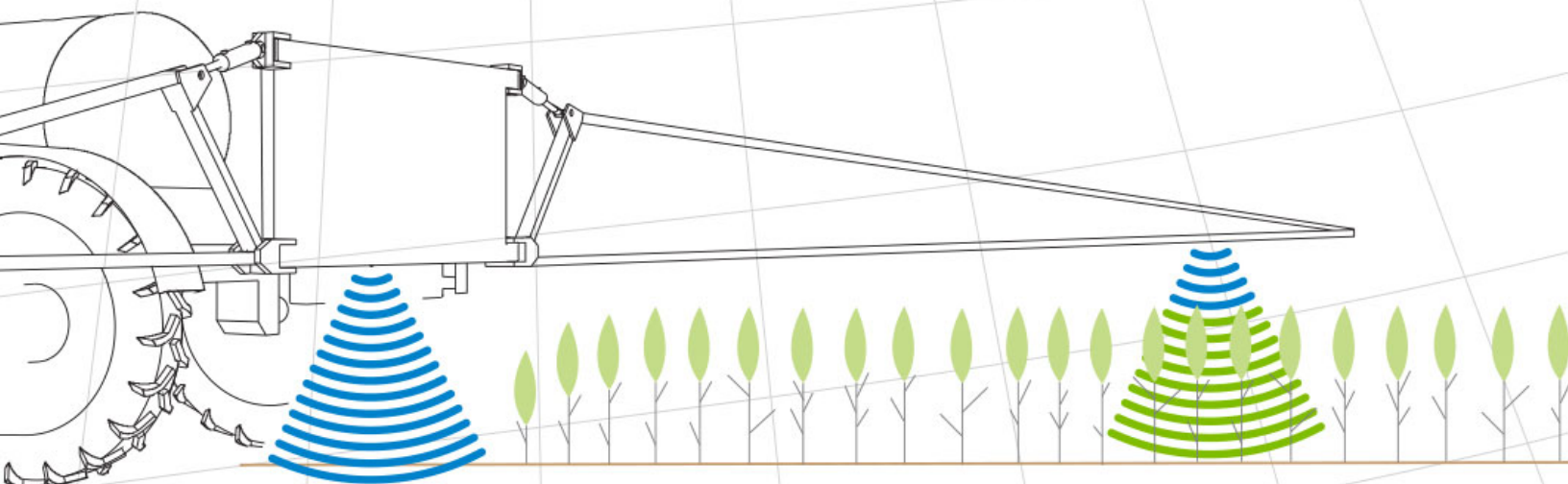


PRECISION DEFINED

Air Boom Standard Control UC7 Boom Height Control System Installation Manual



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Reorder P/N: UC7-BC-TG03-INST Rev C (AIR BOOM Standard Control)

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 Boom 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

Technical Specifications

**CAN ICES-3(A)/NMB-3(A)**

This Class A digital apparatus complies with Canadian ICES-003.

Pursuant to EMC Directive – Article 9, this product is not intended for residential use.

Table 1: System Specifications

Supply Voltage (rated)	12VDC
Supply Current (rated)	10A
Hydraulic Pressure (maximum)	3300 psi
Baud Rate	250 kbps
Operating Temperature Range	0°C to 80°C

3

Parts Overview

3.1. Electronic Installation Overview

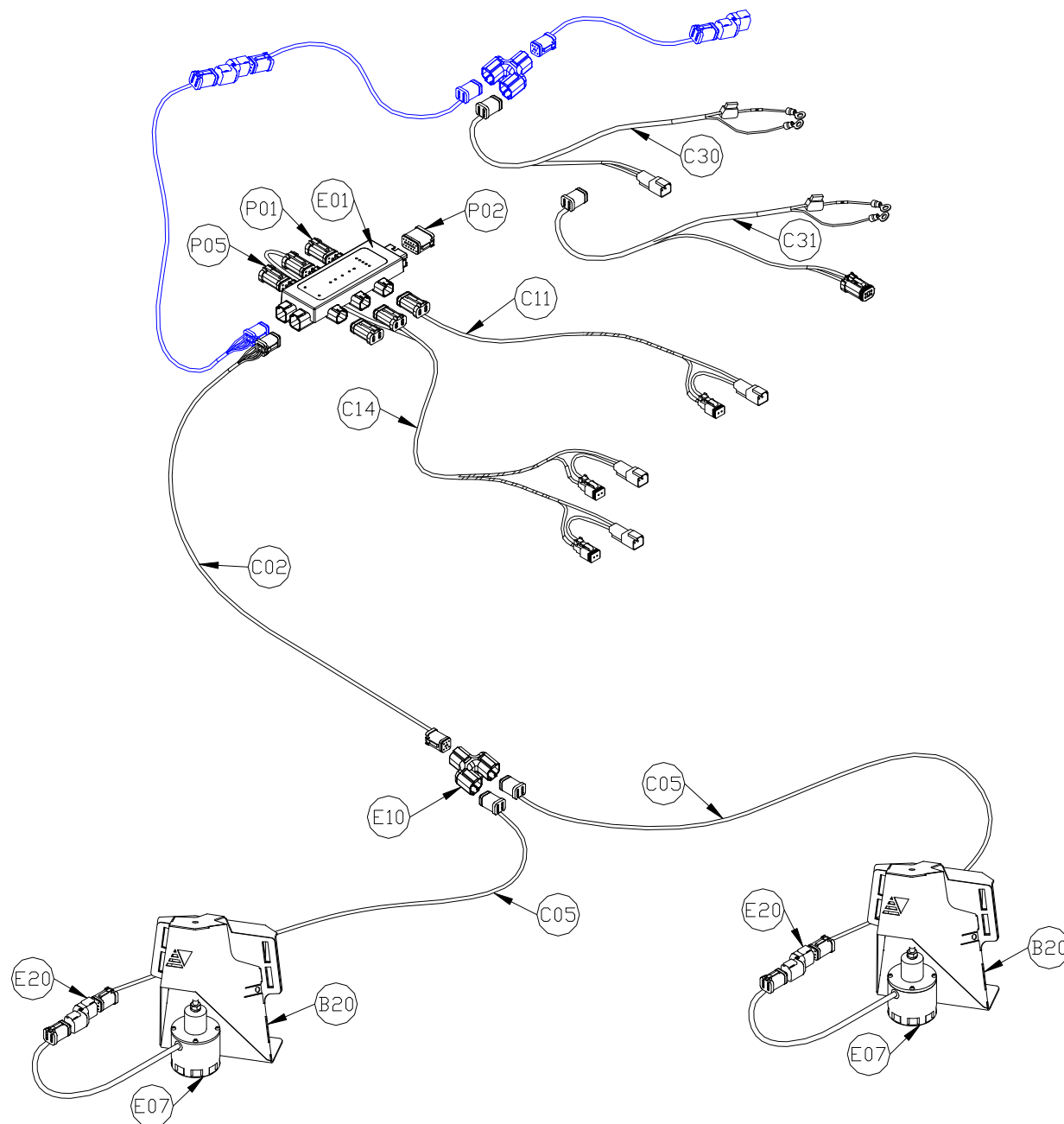


Figure 1: Electronic Installation Overview

Items shown in BLUE are included in the display package and may not be exactly as shown.

3.2. List of Parts

Item	Part Number	Name	Quantity
B05	44706-01	KIT CABLE TIE BLK 10x21 150x7.5	1
B09	1036898-01	BRKT SENSOR ADAPTER SS FLOATER	2
B20	44973-03	BRKT, SENSOR MNT LOW PRO AIRMAX	2
C02	43220-05	CBL, NETWORK 14 AWG 5M	1
C05	43220-15	CBL, NETWORK 14 AWG 15M	2
C11	50130-27	CBL, VLV 4PIN TO 2PIN DT TEE DIODE	1
C14	50130-28	CBL, TILT I/F DT 76CM 30IN	1
C30	43250-22	CBL, PWR & CAN TERRAGATOR	1
C31	43250-24	CBL, PWR & CAN AIRMAX	1
E01	50000	HCM1 MODULE	1
E07	50300	ULTRASONIC MAX SENSOR	2
E10	43760	NETWORK COUPLER 3-WAY	1
E20	43764T	NETWORK COUPLER 2-WAY WITH TERMINATOR	2
M02	UC7-BC-TG03-INST	MANUAL INSTALLATION UC7 AIR BOOM STANDARD CONTROL	1
M04	100870	NUT LOCK NYLON SS316 5/16-18	4
M05	100658	BOLT HEX NC SS 5/16X1	4
P01	106705	NETWORK 4 PIN CAVITY PLUG	3
P02	106602	NETWORK 12 PIN PLUG (A-KEY) DT	1

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.

4

Pre-Installation Checklist

The pre-install checklist is necessary to check the existing sprayer functionality before the installation.

1. Unfold the sprayer over a flat, unobstructed area (i.e. no power lines...etc.).
2. Ensure all boom-fold operations are functional (place a check mark in boxes below).
3. Bring engine to field-operational RPM and record below.
4. Record the time (seconds) it takes for a full stroke for all boom functions. To ensure repeatable measurements, take the average of 3 trials.
5. Not all sprayers will have the functions listed below in Figure 2.

⚠ Important

Ensure the boom has sufficient travel so it does not contact the ground during these tests.

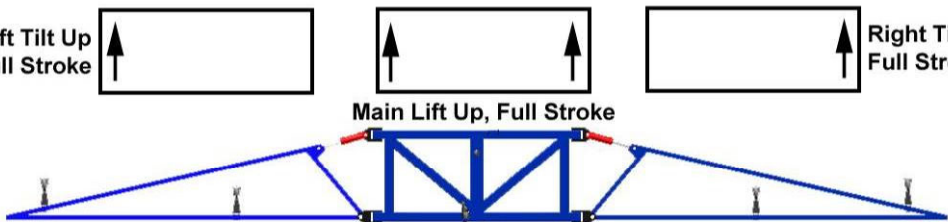
☐ ☐ Inner Fold ☐ ☐ Outer Fold IN OUT		 Engine RPM
Left Tilt Up Full Stroke 	Main Lift Up, Full Stroke 	Right Tilt Up Full Stroke
		
Left Tilt Down Full Stroke 	Main Lift Down, Full Stroke 	Right Tilt Down Full Stroke
Roll CCW (Slant Left)		Roll CW (Slant Right)

Figure 2: Pre-Install Boom Speeds

5

Ultrasonic Sensor Installation

5.1. Ultrasonic Sensor Serial Number Arrangement

The MAX Sensors™ (E07) are mounted in the outer wing positions with the lowest serial number on the left side and the highest serial number on the right 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.

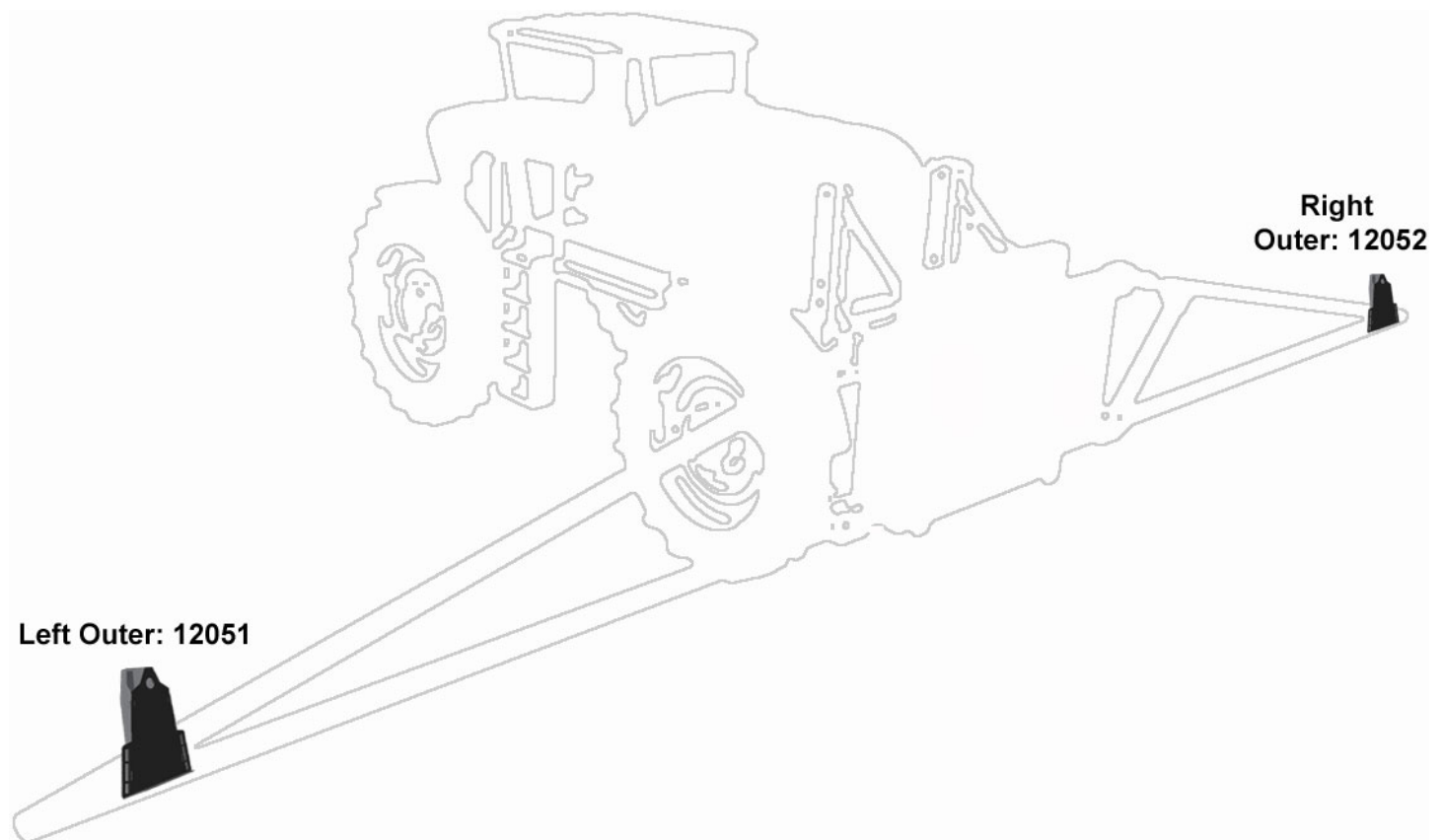


Figure 3: Sensor Serial Number Arrangement

5.2. Ultrasonic Sensor Mounting Guidelines

The following guidelines will ensure optimal sensor performance and prevent sensor measurement error.

1. In its lowest position, the sensor must be 9 inches (230 mm) or more from the ground.
2. Ensure that there are no obstructions within a 12 inch (300 mm) diameter circle projected directly below the center of the sensor.
3. The sensor should be approximately vertical at normal operating heights.

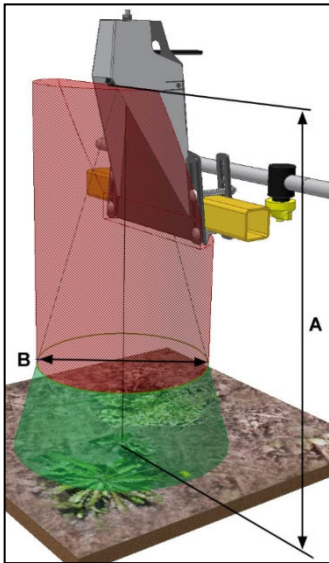


Figure 4: Sensor Mounting Guidelines

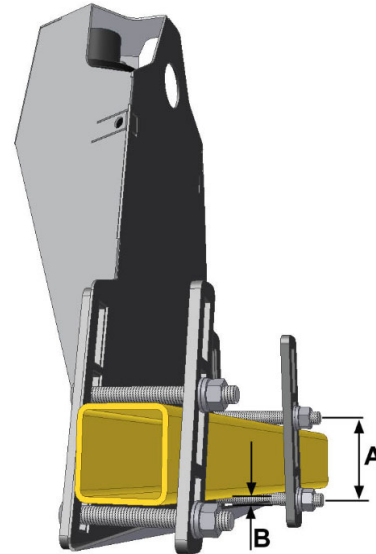


Figure 5: Bracket Mounting Guidelines

5.3. Low Profile Bracket Mounting Guidelines

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

Important

A problem can arise if a sensor is not mounted correctly. This may only become apparent once the control system is switched from soil to crop mode.

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 sensor brackets will be near the end of the boom tips, approximately two feet (0.6 m) from the end.
3. Mount the sensor into the sensor bracket. Run the sensor cable through hole and behind the bracket. Ensure the cable is clear of moving parts and will not be damaged during folding.
4. On some booms, the adapters (B09) are needed to mount the sensor brackets.

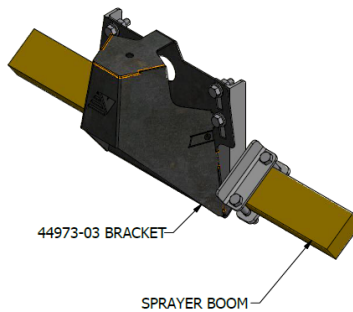


Figure 6: Bracket Mounted Using Adapters

5. The mounting location for the wing sensor brackets on a boom with skid plates is shown in Figure 7, Figure 8, and Figure 9.



Figure 7: Skid Plate Location



Figure 8: Remove Bolts from Skid Plate and Use to Mount Bracket Adapter



Figure 9: Mount Bracket

6

Electronic Installation

6.1. HCM1 Installation

1. Install the HCM1 (E01) on the boom near the valve block with the large label and LEDs facing up. Secure with cable ties.

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

Figure 10: HCM1 Connections

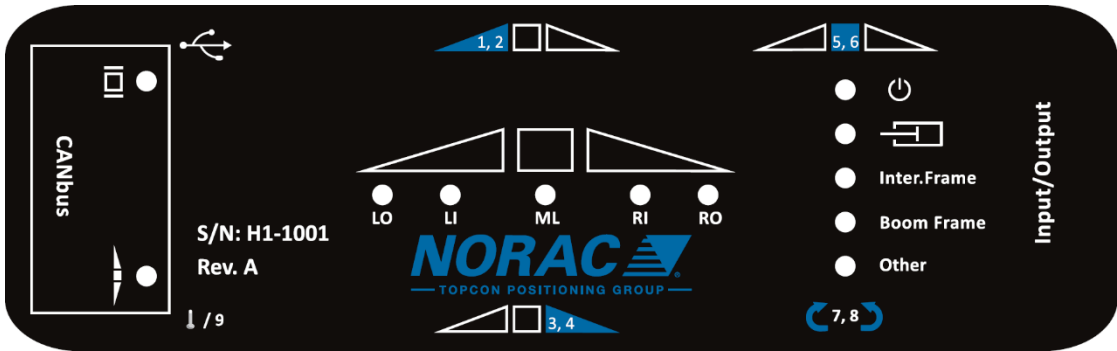


Figure 11: HCM1 Label

2. Insert 4-pin plugs (P01) into any unused connectors on the HCM1.

Steps 3, 4, and 5 are examples of installations using a directional valve and a left and right coil connection. Standard control interface cable options are available for different connectors. Please refer to Table 2 for ordering alternate cabling.

Table 2: Alternate Interface Cabling Available

Item Number	Part Number	Connector Type	Connector Illustration
C14	50130-14	Weatherpack	
C14	50130-28*	Deutsch DT	

*Included in this kit.

3. Connect the 4-pin connector on cable C11 to the connector labeled 7,8 on the HCM1. Tee the O/P 1 connectors into the directional coil on the sprayer.



Figure 12: Cable C11 Connection to Directional Coil

4. Connect the 4-pin connector P4A on cable C14 to the connector labeled 1,2 on the HCM1. Tee the left up connectors into the left boom coil on the sprayer.
5. Connect the 4-pin connector P4B on cable C14 to the connector labeled 3,4 on the HCM1. Tee the right up connectors into the right boom coil on the sprayer.

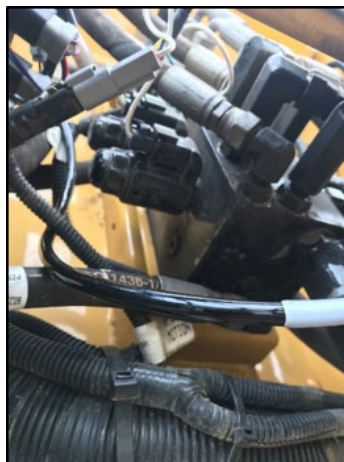


Figure 13: Cable C14 Left and Right Connections

Important

Ensure that all unused connectors are plugged with the plugs provided.

6. Depending on the type of sprayer, use either cable C30 or cable C31 to provide power and CANbus communication.

7. **Cable C30:** Connect the 6-pin connector on cable C30 as described in the display option manual. Connect the ring terminals on cable C30 to power as shown in Figure 14. Connect the 2-pin Deutsch connector to the connector shown in Figure 15.



Figure 14: Cable C30 Power Connections



Figure 15: Cable C30 CAN Connection

8. **Cable C31:** Connect the 6-pin connector on cable C31 as described in the display option manual. Connect the ring terminals on cable C31 to power. Connect the 4-pin Deutsch connector to the connector shown in Figure 16.

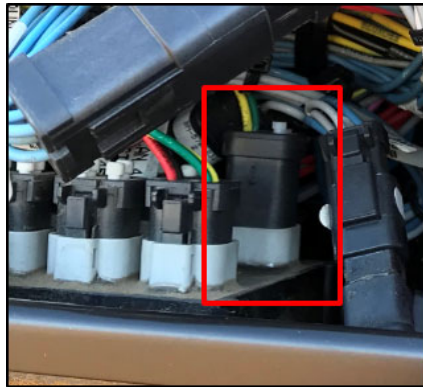


Figure 16: Cable C31 CAN Connection

6.2. Cabling Connections

1. Fasten the 3-way coupler to the boom with cable ties. Connect cable C02 between the 3-way coupler (E10) and the 6-pin NORAC bus connector on the HCM1.

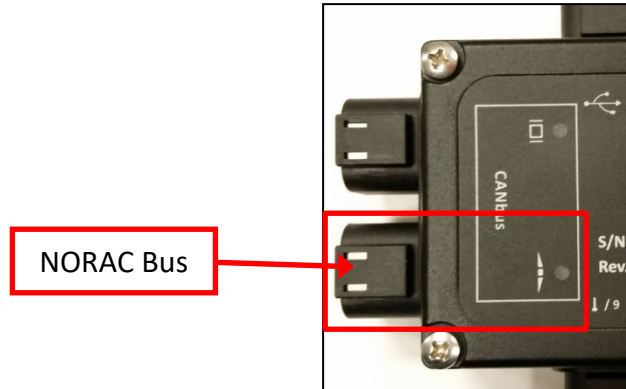


Figure 17: NORAC Bus Location

2. Connect cable C05 to the 3-way coupler and route along the boom to the outer wing sensors.
3. 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 2-way coupler. Plug the sensor and the CANbus cable into the 2-way coupler.

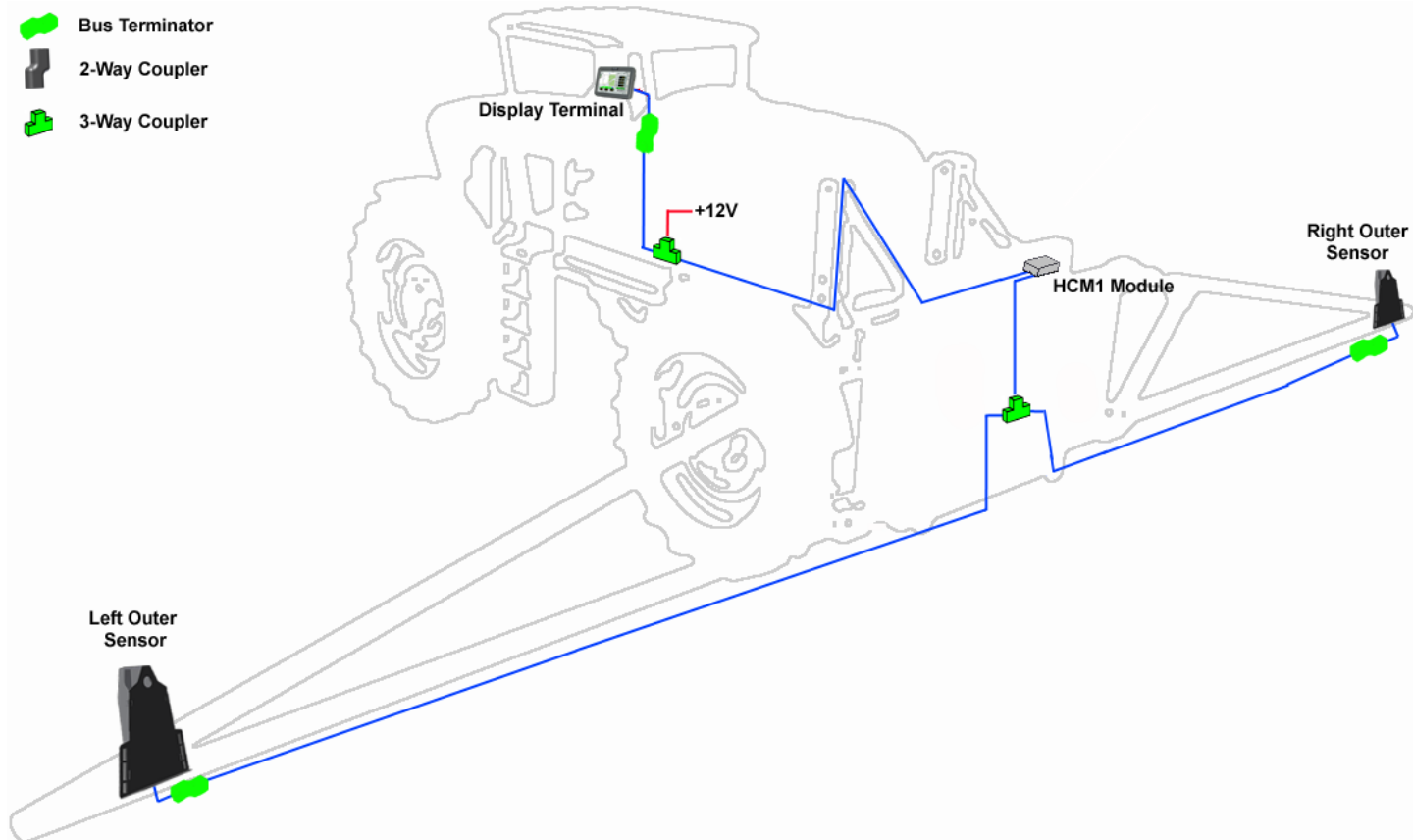


Figure 18: Cabling and Parts Layout

7

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

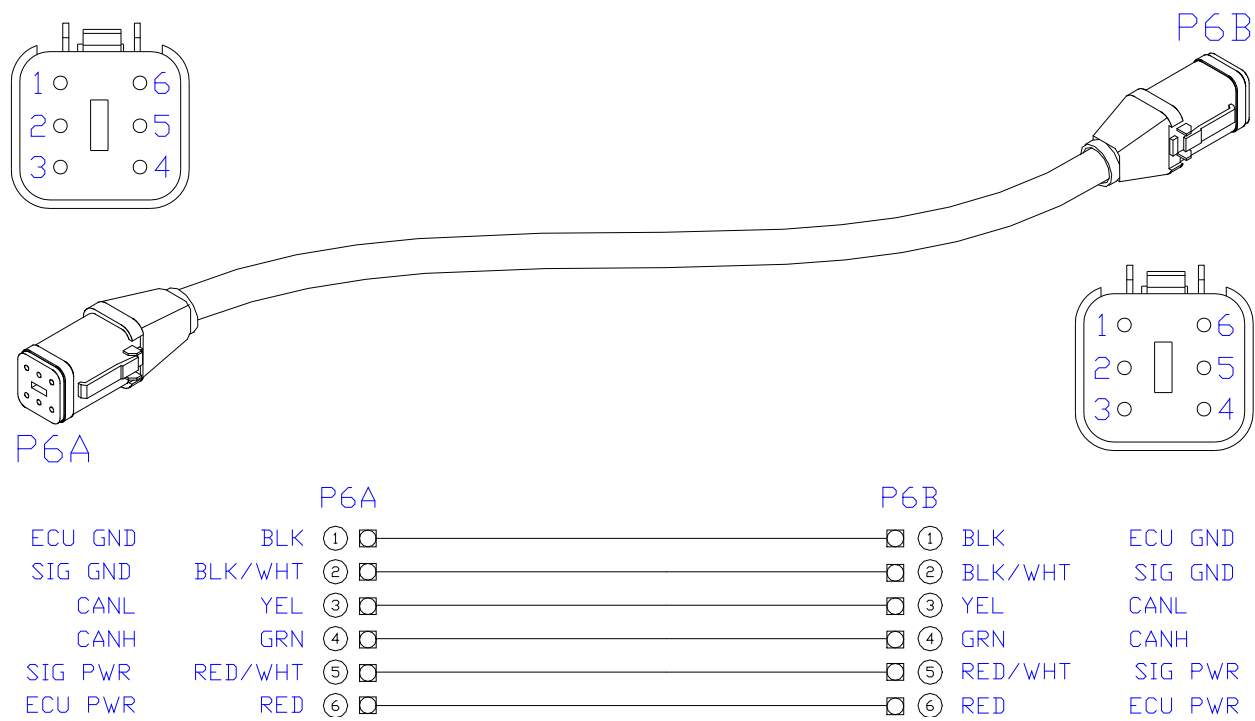
Confirm that the cabling and hoses do not pinch, stretch or bind over the entire range of motion.

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.
4. The procedure for the installation of the UC7™ Boom Height Control system is now complete. Begin the Automatic System Setup procedure as described in the UC7 Technical Operation Manual.

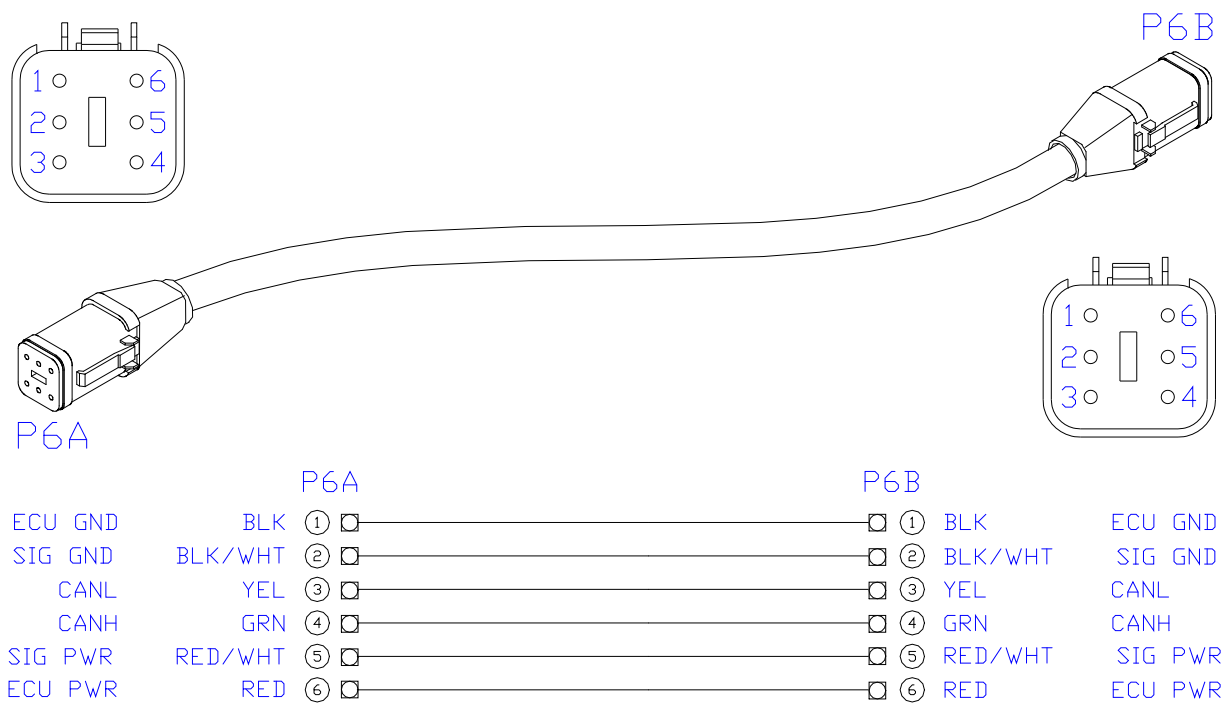
8

Cable Schematics

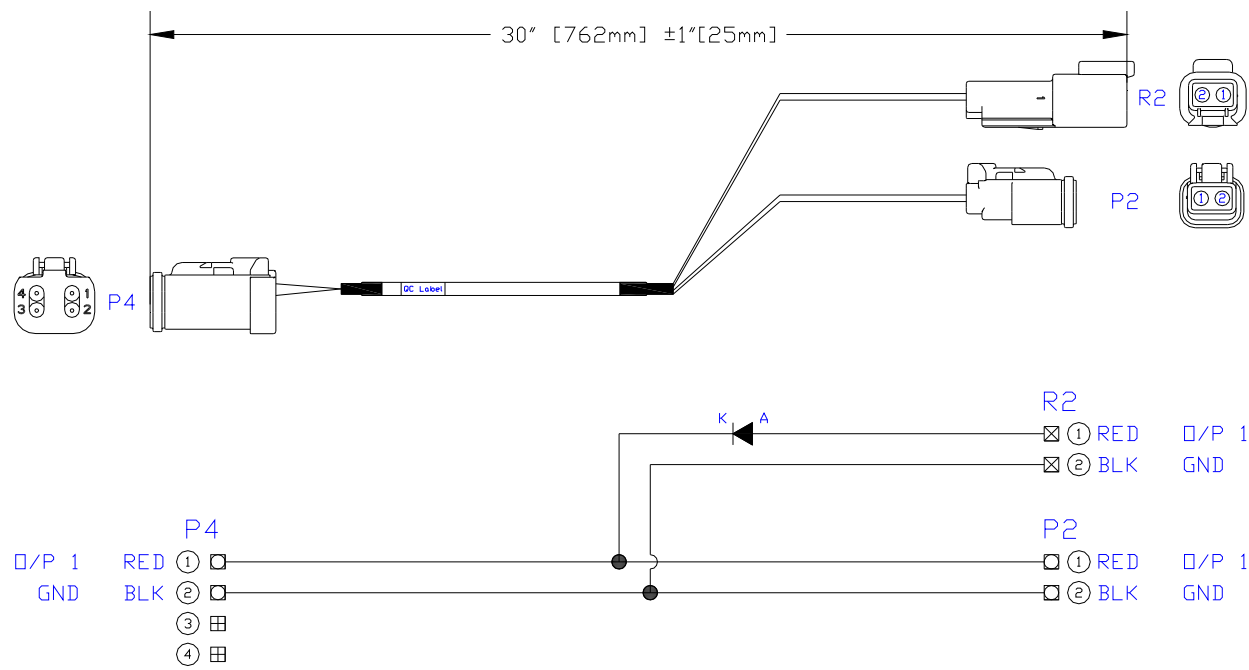
8.1. Item C02: 43220-05 - CBL, NETWORK 14 AWG 5M



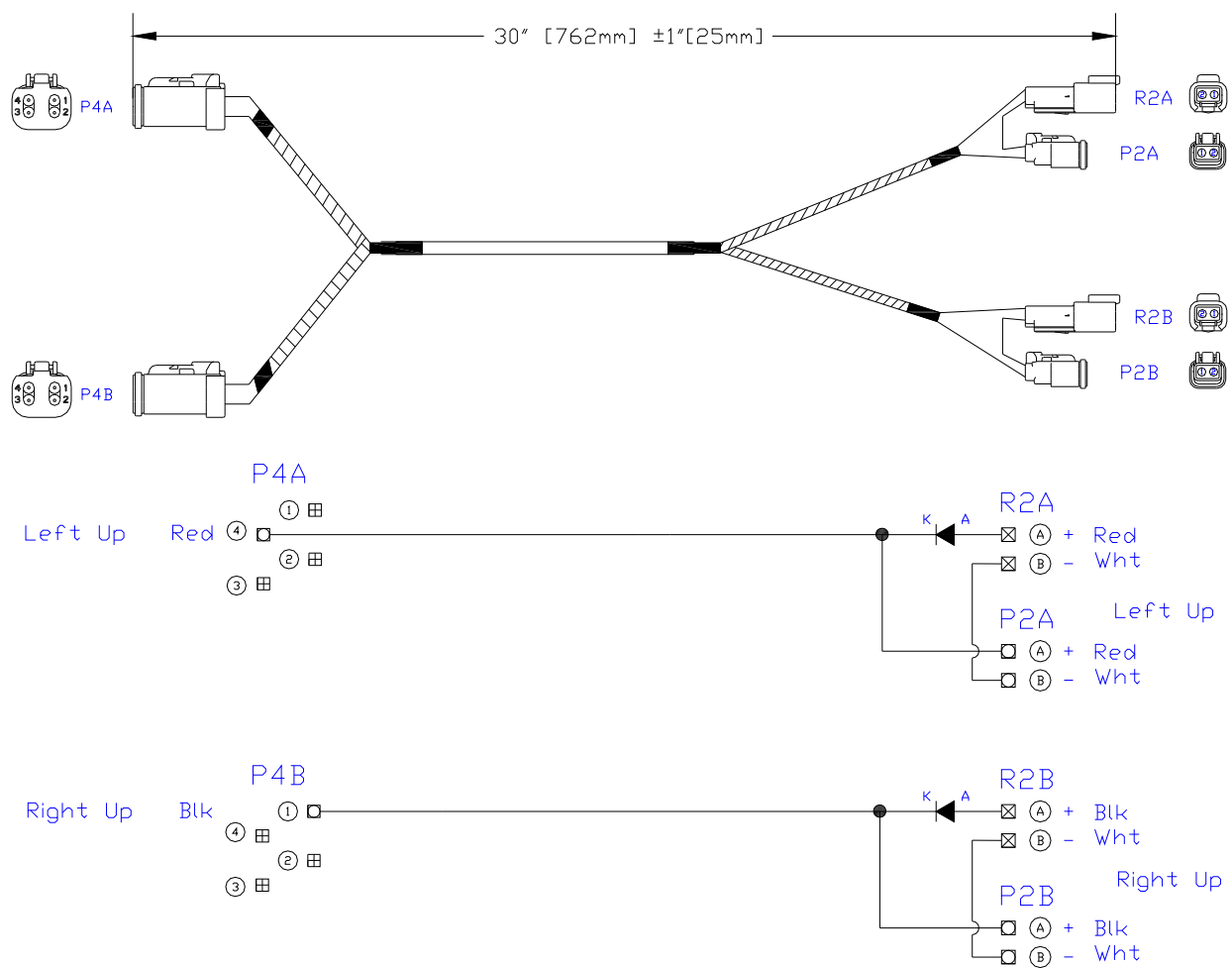
8.2. Item C05: 43220-15 - CBL, NETWORK 14 AWG 15M



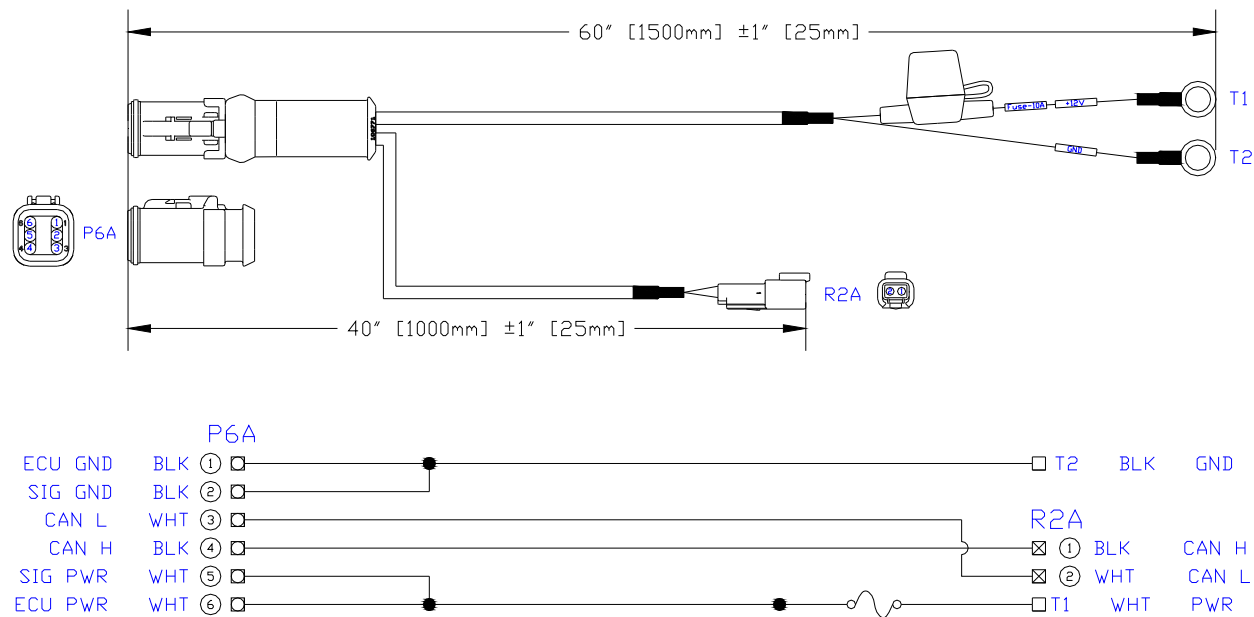
8.3. Item C11: 50130-27 - CBL, VLV 4PIN TO 2PIN DT TEE DIODE



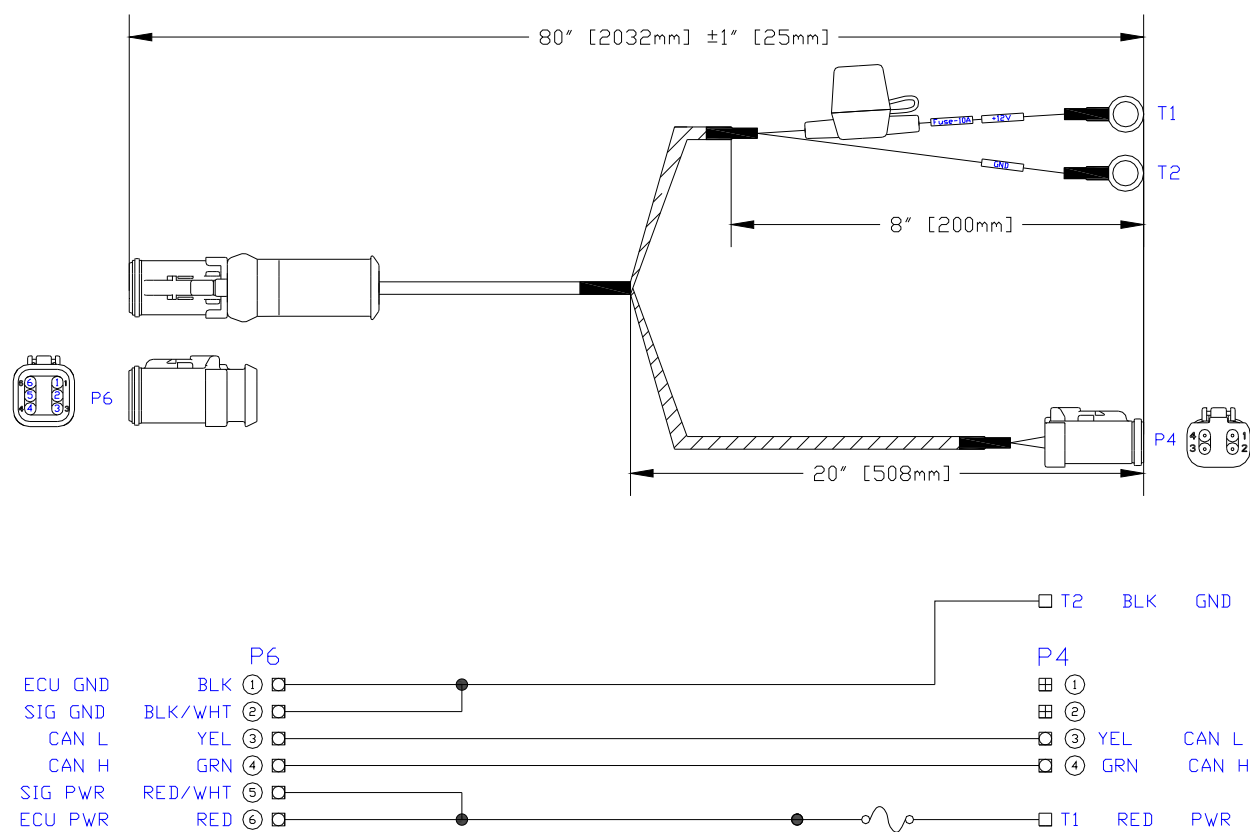
8.4. Item C14: 50130-28 - CBL, TILT I/F DT 76CM 30IN



8.5. Item C30: 43250-22 – CBL, PWR & CAN TERRAGATOR



8.6. Item C31: 43250-24 – CBL, PWR & CAN AIRMAX



Notes

Notes

Notes

TOPCON Agriculture Canada

3702 Kinnear Place
Saskatoon, SK S7P 0A6

TOPCON Agriculture Americas

W5527 Hwy 106
Fort Atkinson, WI 53538

TOPCON Precision Agriculture Europe

Avenida de la industria,
35, Tres Cantos, España
Spain

Support

Phone: 888 979 9509
E-mail: tasupportn@topcon.com
Web: www.norac.ca