

# SpraCoupe 3000/4000 with SCS 460 Console AccuBoom Installation Manual

*Manual No. 016-0171-079 Rev F 01/17*

*E28992*



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# CHAPTER

# 1

# IMPORTANT SAFETY INFORMATION

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## IMPORTANT SAFETY INFORMATION

### **NOTICE**

Read this manual and the operation and safety instructions included with your implement and/or controller carefully before installing the AccuBoom™ system.

- Follow all safety information presented within this manual.
- If you require assistance with any portion of the installation or service of your Raven equipment, contact your local Raven dealer for support.
- Follow all safety labels affixed to the AccuBoom system components. Be sure to keep safety labels in good condition and replace any missing or damaged labels. To obtain replacements for missing or damaged safety labels, contact your local Raven dealer.

When operating the machine after installing AccuBoom, observe the following safety measures:

- Be alert and aware of surroundings.
- Do not operate AccuBoom or any agricultural equipment while under the influence of alcohol or an illegal substance.
- Remain in the operator's position in the machine at all times when AccuBoom is enabled.
- Disable AccuBoom when exiting from the operator's seat and machine.
- Do not drive the machine with AccuBoom enabled on any public road.
- Determine and remain a safe working distance from other individuals. The operator is responsible for disabling AccuBoom when the safe working distance has diminished.
- Ensure AccuBoom is disabled prior to starting maintenance on AccuBoom or the machine.

### **CAUTION**

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## INSTRUCTIONS FOR WIRE ROUTING

The word "harness" is used to mean all electrical leads and cables, bundled and unbundled. When installing harness, secure it at least every 30 cm (12in) to the frame. Follow existing harness as much as possible and use these guidelines:

Harness should not contact or be attached to:

- Lines and hoses with high vibration forces or pressure spikes

- Lines and hoses carrying hot fluids beyond harness component specifications

Avoid contact with any sharp edge or abrading surfaces such as, but not limited to:

- Sheared or flame cut edges
- Edges of machined surfaces
- Fastener threads or cap screw heads
- Ends of adjustable hose clamps
- Wire exiting conduit without protection, either ends or side of conduit
- Hose and tube fittings

Routing should not allow harnesses to:

- Hang below the unit
- Have the potential to become damaged due to exposure to the exterior environment. (i.e. tree limbs, debris, attachments)
- Be placed in areas of or in contact with machine components which develop temperatures higher than the temperature rating of harness components
- Wiring should be protected or shielded if it needs to route near hot temperatures beyond harness component specifications

Harnessing should not have sharp bends

Allow sufficient clearance from machine component operational zones such as:

- Drive shafts, universal joints and hitches (i.e. 3-point hitch)
- Pulleys, gears, sprockets
- Deflection and backlash of belts and chains
- Adjustment zones of adjustable brackets
- Changes of position in steering and suspension systems
- Moving linkages, cylinders, articulation joints, attachments
- Ground engaging components

For harness sections that move during machine operation:

- Allow sufficient length for free movement without interference to prevent: pulling, pinching, catching or rubbing, especially in articulation and pivot points
- Clamp harnesses securely to force controlled movement to occur in the desired harness section
- Avoid sharp twisting or flexing of harnesses in short distances
- Connectors and splices should not be located in harness sections that move

Protect harnesses from:

- Foreign objects such as rocks that may fall or be thrown by the unit
- Buildup of dirt, mud, snow, ice, submersion in water and oil
- Tree limbs, brush and debris
- Damage where service personnel or operators might step or use as a grab bar
- Damage when passing through metal structures

**IMPORTANT:** Avoid directly spraying electrical components and connections with high pressure water. High pressure water sprays can penetrate seals and cause electrical components to corrode or otherwise become damaged. When performing maintenance:

- Inspect all electrical components and connections for damage or corrosion. Repair or replace components, connections, or cable as necessary.
- Ensure connections are clean, dry, and not damaged. Repair or replace components, connections, or cable as necessary.
- Clean components or connections using low pressure water, pressurized air, or an aerosol electrical component cleaning agent.
- Remove visible surface water from components, connections, or seals using pressurized air or an aerosol electrical component cleaning agent. allow components to dry completely before reconnecting cables.

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## INSTRUCTIONS FOR HOSE ROUTING

The word "hose" is used to mean all flexible fluid carrying components. Follow existing hoses as much as possible and use these guidelines:

Hoses should not contact or be attached to:

- Components with high vibration forces
- Components carrying hot fluids beyond component specifications

Avoid contact with any sharp edge or abrading surfaces such as, but not limited to:

- Sheared or flame cut edges
- Edges of machined surfaces
- Fastener threads or cap screw heads
- Ends of adjustable hose clamps

Routing should not allow hoses to:

- Hang below the unit
- Have the potential to become damaged due to exposure to the exterior environment. (i.e. tree limbs, debris, attachments)
- Be placed in areas of or in contact with machine components which develop temperatures higher than the temperature rating of hose components
- Hoses should be protected or shielded if it needs to route near hot temperatures beyond hose component specifications

Hoses should not have sharp bends

Allow sufficient clearance from machine component operational zones such as:

- Drive shafts, universal joints and hitches (i.e. 3-point hitch)
- Pulleys, gears, sprockets
- Deflection and backlash of belts and chains
- Adjustment zones of adjustable brackets
- Changes of position in steering and suspension systems
- Moving linkages, cylinders, articulation joints, attachments
- Ground engaging components

For hose sections that move during machine operation:

- Allow sufficient length for free movement without interference to prevent: pulling, pinching, catching or rubbing, especially in articulation and pivot points
- Clamp hoses securely to force controlled movement to occur in the desired hose section
- Avoid sharp twisting or flexing of hoses in short distances

Protect hoses from:

- Foreign objects such as rocks that may fall or be thrown by the unit
- Buildup of dirt, mud, snow, ice, submersion in water and oil
- Tree limbs, brush and debris
- Damage where service personnel or operators might step or use as a grab bar
- Damage when passing through metal structures
- High pressure wash



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# CHAPTER

# INTRODUCTION

## 2

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### INTRODUCTION

Congratulations on your purchase of the Raven AccuBoom system! This system was designed to provide accurate and cost-efficient application control by avoiding no-spray zones and eliminating wasteful overlaps.

This manual applies to the following machines. For future reference, write the serial number of the machine in the space below.

MAKE: SpraCoupe  
MODEL: 3000/4000 Series  
YEAR:  
SERIAL NUMBER:

### RECOMMENDATIONS

Raven Industries recommends the following best practices when installing the AccuBoom system:

- Use part numbers to identify parts.
- Do not remove the plastic wrap from a part until it is necessary for installation.
- Use recommended cable routing practices:
  - Locate available switched and battery power sources before installation.
  - Map out the best available cable route before installation.
  - Ensure cables are able to rest in a relaxed state and are not pinched, kinked, or stretched.
  - Route cables away from moving parts and excessive heat sources.

### TOOLS NEEDED

The following tools are recommended for installation of the AccuBoom system:

- SAE standard-sized wrenches
- Cables ties
- Set of tools

### PREPARING FOR INSTALLATION

Before installing AccuBoom, park the machine on a clean, level, and dry surface. Leave the machine turned off for the duration of the installation process.

During the installation process, follow good safety practices. Be sure to carefully read the instructions in this manual as you complete the installation process.

POINT OF REFERENCE

The instructions in this manual assume that you are standing behind the machine, looking toward the cab.




ACCUBOOM KIT CONTENTS

This section contains a list of the components that are included in the AccuBoom kit. Before beginning the AccuBoom installation, compare the items in the AccuBoom kit with the components on this list. If you have questions about the kit, contact your local Raven dealer.

**IMPORTANT:** In addition to the following kit components, an AccuBoom CAN node (P/N 063-0172-316) is required for the operation of the AccuBoom system. Also, if a CAN system is not currently installed on the machine, a CAN terminator/power tee kit (P/N 117-0159-923) is required.

TABLE 1. AccuBoom Installation Kit (P/N 117-1004-028)

TABLE 2.

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - SCS 460 Console AccuBoom Installation	016-0171-079	1
	Cable - 6' CANBus	115-0171-326	1
	Cable - SCS 460 Console CAN AccuBoom	115-1001-008	1
	H-Driver - 5 Channel	063-0172-753	1

These instructions are designed to assist in the installation of the AccuBoom system on SpraCoupe 3000/4000 Series machines utilizing the SCS 460 Console. Refer to the Installation & Operation manual for the specific field computer being used for instructions on setting up the software and using the AccuBoom system.

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### INSTALL THE CAN POWER AND GROUND

**NOTE:** If the machine is equipped with a previously installed CAN system, skip this procedure and proceed to the section "Install the AccuBoom Node" on page 8.

**FIGURE 1. CAN Power Cable Connections**

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1. Determine the appropriate location for installing the CAN power adapter cable (P/N 115-0171-368).
2. Install a CAN terminator (P/N 063-0172-369) on the end of the cable containing the red power and white ground wires.

FIGURE 2. Field Computer Cable Connection

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3. Connect one end of the CAN power adapter cable to the Envizio Pro or Viper Pro interface cable.
4. Route the red power and white ground wires toward the battery.

**NOTE:** Do not connect the power and ground wires at this time. The power and ground wires will be connected at a later phase of the AccuBoom installation.

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## INSTALL THE ACCUBOOM NODE

FIGURE 3. AccuBoom Cable Connected to Node and H-Driver

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1. Connect the large, rectangular node connectors of the SCS 460 console CAN AccuBoom cable (P/N 115-1001-008) into the correct ports of the AccuBoom node.
2. Tighten the bolts on the node connectors to secure the connections.
3. Connect the smaller connectors of the SCS 460 console CAN AccuBoom cable to the 5-channel H-driver (P/N 063-0172-753).

FIGURE 4. AccuBoom Node Installed



4. Determine a suitable location on the inside of the cab, located below the SCS 460 console, in which to mount the node.
5. Using the holes on the node and driver as patterns, drill holes needed to mount the node and driver.

**NOTE:** Drill two holes per device being mounted.

6. Mount the node and driver at the chosen mounting locations.

## CONNECT THE ACCUBOOM CABLE TO THE BOOM SWITCHES

**IMPORTANT:** Work with only one boom switch and console wire at a time! Refer to the appropriate table on the following pages (depending on the number of boom valves) when connecting the machine's boom wires to the AccuBoom cable.

FIGURE 5. Machine Boom Switch Wiring Diagram Before AccuBoom Installation

### Boom 1 In a 3 Boom System

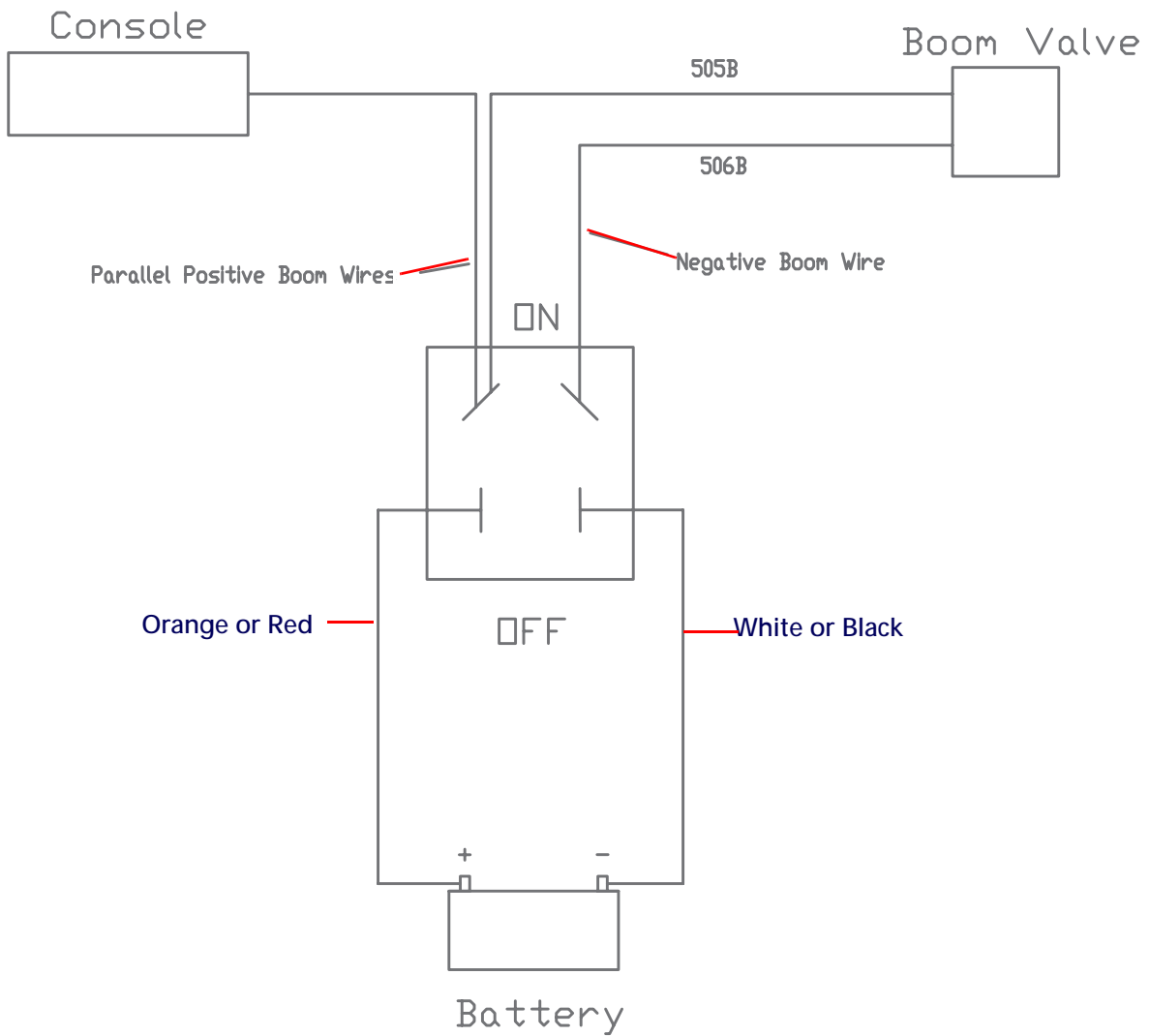


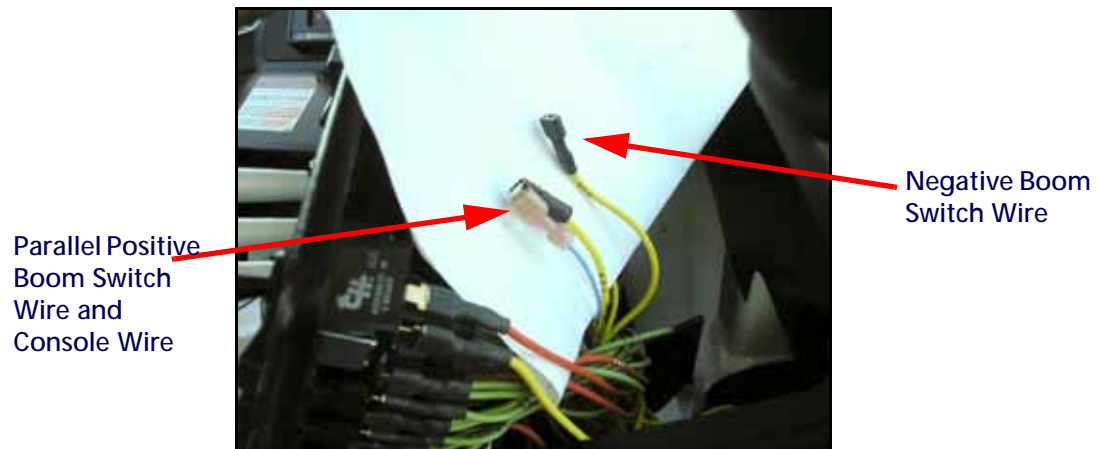
FIGURE 6. Boom Switch Console



1. Remove the four screws (shown in the figure above) used to secure the cover on the boom switch console.
2. Carefully remove the cover of the boom switch console.
3. Locate the parallel positive and negative wires located at the bottom of boom switch 1.

**NOTE:** The positive boom switch wire has an adapter that allows two wires to be connected to the switch connector (parallel). The connector the positive boom switch wire is connected to triggers the driver when in manual mode.

FIGURE 7. Boom Switch Wires Disconnected



4. Disconnect the parallel positive and negative boom switch wires from the bottom of the switch.

**IMPORTANT:** When connecting the boom valve connections, refer to Table 1 below if the machine has three boom sections, and Table 2 for five boom sections.

TABLE 1. 3-Boom Valve Wire Connections

Boom Switch Number	AccuBoom Connector	Connector Sheilding	SpraCoupe Wire Number
1+	Black	Unshielded	505B
1 -	Gray	Shielded	506B
2+	Brown	Unshielded	507B
2 -	Yellow	Shielded	508B
3+	Blue	Unshielded	509B
3 -	Orange	Shielded	510B
	Black/White	Unshielded	Not Connected
	Purple	Shielded	Not Connected
	Brown/White	Unshielded	Not Connected
	Green	Shielded	Not Connected

TABLE 2. 5-Boom Valve Wire Connections

Boom Switch Number	AccuBoom Connector	Connector Sheilding	SpraCoupe Wire Number
1+	Black	Unshielded	503B
1 -	Gray	Shielded	504B
2+	Brown	Unshielded	505B
2 -	Yellow	Shielded	506B
3+	Blue	Unshielded	507B
3 -	Orange	Shielded	508B
4+	Black/White	Unshielded	509B
4 -	Purple	Shielded	510B
5+	Brown/White	Unshielded	511B
5 -	Green	Shielded	512B

5. Locate the appropriate AccuBoom wire connector from the 10-wire bundle for the 1+ boom switch.

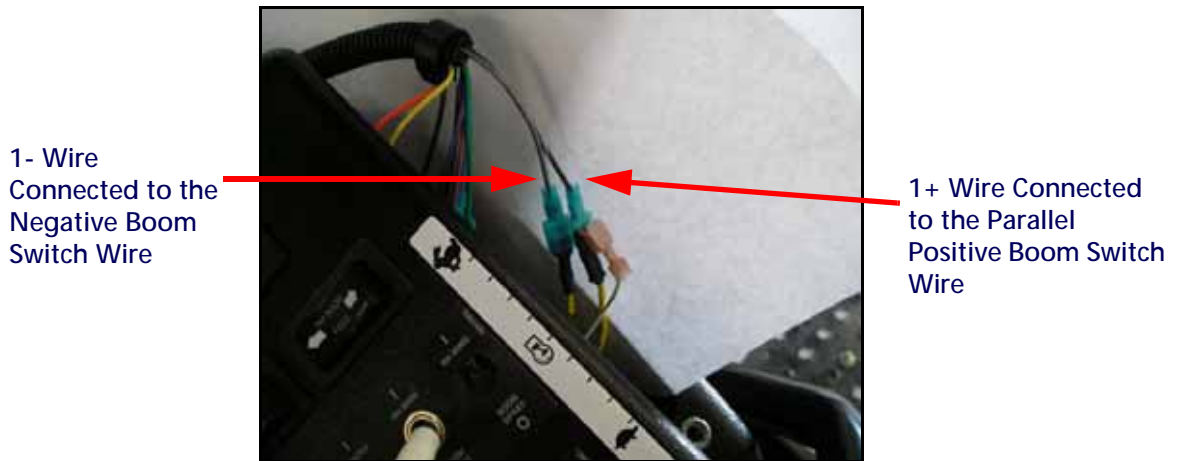
**NOTE:** The AccuBoom Connector column represents the wire colors that correspond to the appropriate boom switch. For example, the AccuBoom wire for the 1+ boom switch is black.

6. Locate the parallel positive boom switch wire that was disconnected in step 4.

**NOTE:** The SpraCoupe Wire Number column indicates the wire number printed on the parallel positive and negative wires that correspond to the appropriate boom switch. For example, if the machine has three boom sections, the SpraCoupe parallel positive wire for the 1+ boom switch is labeled 505B.



FIGURE 8. Boom Valve Wires Connected



7. Connect the AccuBoom 1+ wire to the parallel positive boom switch wire.
8. Locate the AccuBoom wire connector from the 10-wire bundle for the 1- boom switch.
9. Connect AccuBoom 1- wire to the negative boom switch wire that was disconnected in step 4.

**NOTE:** Refer to Table 3 below when connecting the AccuBoom cable to the boom switches.

TABLE 3. Boom Switch Connections

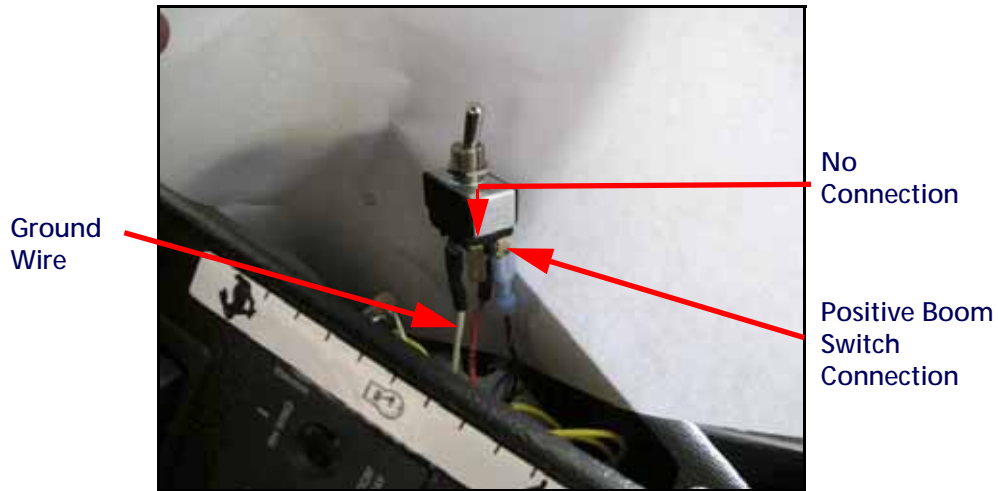
AccuBoom Wire Color	3-Boom System Boom Number	5-Boom System Boom Number
Black or Gray	1	1
Brown	2	2
Blue	3	3
Black/White	Not Connected	4
Brown/White	Not Connected	5

10. Locate the AccuBoom wire connector from the 5-wire bundle for the first boom switch.
11. Connect the AccuBoom wire to the positive terminal on the boom switch.

**NOTE:** The positive terminal is where the positive parallel wire connector was previously connected.

12. Repeat the steps above for the remaining boom sections, referring to the appropriate table for the number of boom sections present.

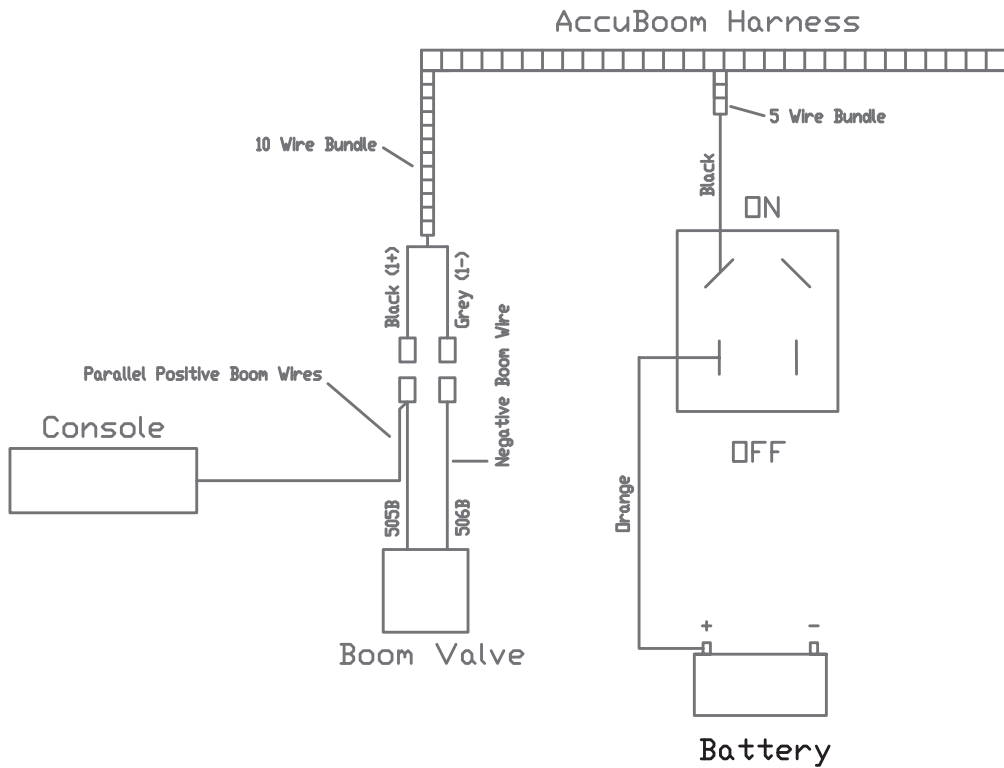
FIGURE 9. Boom Switch Wire Connections



13. Disconnect the ground wire from each of the boom switches.

FIGURE 10. Machine Boom Switch Wiring Diagram After AccuBoom Installation

### Boom 1 In a 3 Boom System With AccuBoom

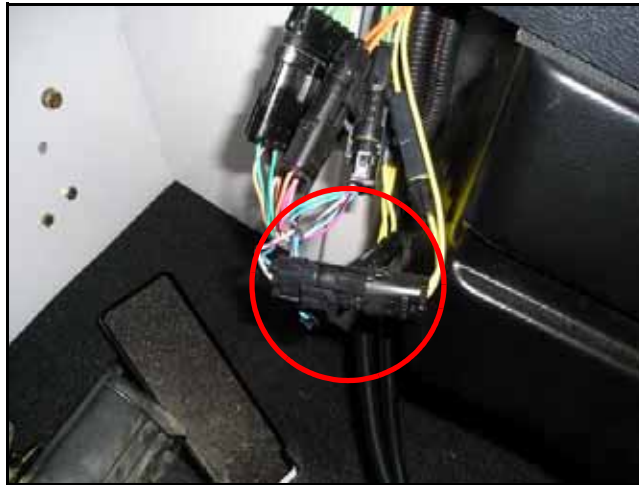


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## INSTALL THE MASTER SPRAY/HOLD SWITCH WIRING

FIGURE 11. Machine's Master Spray/Hold Switch Connection

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1. Pull the joystick cable connections out from under the side console.
2. Locate and disconnect the 2-pin weatherpack master spray/hold switch connectors.

FIGURE 12. Master Boom Enable Switch Connected

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3. Connect the orange wire connections from the AccuBoom harness cable to the disconnected master/spray hold switch connectors.
4. Envizio Pro Consoles Only:
  - a. On the AccuBoom harness cable, locate the 16-gauge gray wire with the male spade connector.
  - b. On the Envizio Pro cable (P/N 115-0171-746), locate the 16-gauge gray wire with the female spade connector.
  - c. Connect the wires together.
5. Tuck the cable connections back under the side console.

## CONNECT THE CAN BUS CABLE

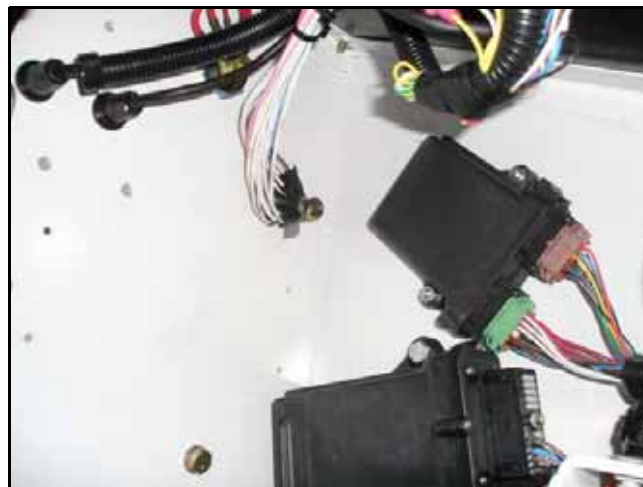
FIGURE 13. CAN Bus Cable Connected to the CAN Power Cable



1. Connect the single end of the CAN bus cable (P/N 115-0171-326) to the machine's existing product control CAN cable.
2. Connect the other end of the CAN bus cable to the SCS console AccuBoom cable (P/N 115-1001-008).
3. Install a CAN terminator (P/N 063-0172-369) on the remaining branch of the CAN bus cable.

## INSTALL THE LOGIC POWER AND GROUND CONNECTIONS

FIGURE 14. Ground



1. Route and connect the two ground wires from the AccuBoom cable to the secure battery ground located under the dash in the right corner of the cab.
2. Connect the high current power wires (10 and 12-gauge wires on the AccuBoom cable) to a fused connection within the fuse box.
3. Connect the logic power wire (16 gauge small wire on the AccuBoom cable) to a source of clean, switched power.

4. Connect the CAN power adapter cable (P/N 115-0171-368) power connections to the battery.
5. Reconnect the machine's battery connections.



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# CHAPTER

# SECTION MAPPING SETUP

## 4

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This section contains section mapping settings that are used to program the AccuBoom controller. Refer to the Installation and Operation Manual and the appropriate section in this chapter for the specific field computer being used for programming and section mapping settings.

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### ENVIZIO PRO

3 Section	
Boom	Section Label
1	1
2	2
3	3
4	*
5	*

5 Section	
Boom	Section Label
1	1
2	2
3	3
4	4
5	5

---

### VIPER PRO

3 Section		
Boom	Wired As	Display As
1	1	1
2	2	2
3	3	3
4	*	*
5	*	*

5 Section		
Boom	Wired As	Display As
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5



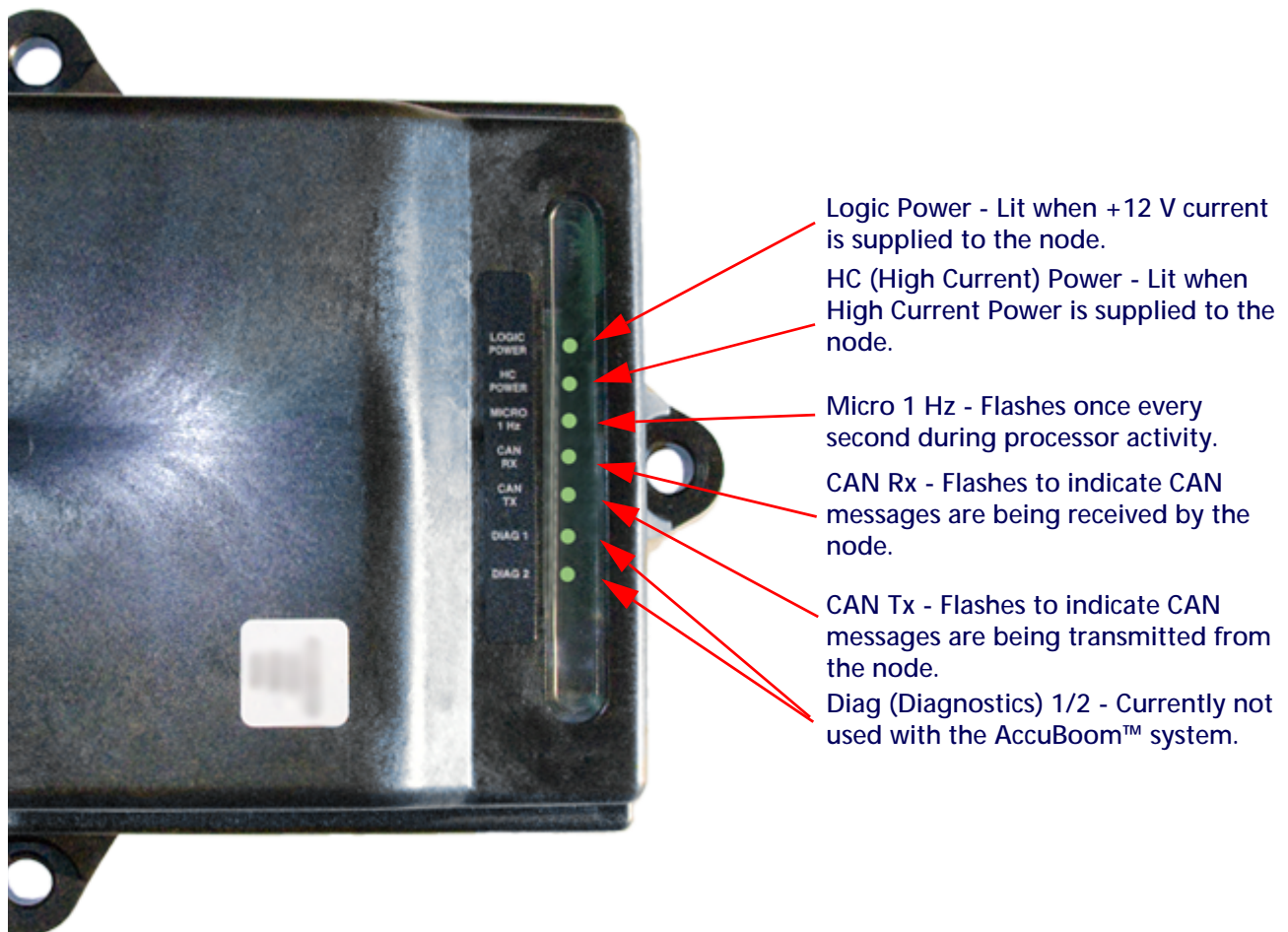


The AccuBoom CAN control node (P/N 063-0172-316) features several green light-emitting diodes (LEDs) which may be used to diagnose issues within the AccuBoom system.

**NOTE:** If the LEDs are not displayed as outlined in the figure below, check the CAN connections and the control cable connections on the node. If the issue persists, contact your local Raven dealer for additional technical support.

**NOTE:** All boom switches must remain in the off position while AccuBoom control is in operation.

FIGURE 1. AccuBoom CAN Control Node LEDs





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