

# RoGator (Liquid/AirMax 180) & TerraGator (Liquid/AirMax/Air- Spread) AccuBoom™ Installation Manual

*Manual No. 016-1001-063 Rev. E 12/16*

*E28917*

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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 been diminished.
- Ensure AccuBoom is disabled prior to starting any maintenance work on AccuBoom or the machine.

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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



### INTRODUCTION

Congratulations on your purchase of the Raven AccuBoom system! This system is 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 your serial number in the space below.

MAKE: RoGator & TerraGator

MODEL: RoGator Liquid/AirMax 180, TerraGator Liquid/AirMax/AirSpread

FIGURE 1. RoGator

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### PREPARING FOR INSTALLATION

Before installing AccuBoom, park the machine where the ground is level, clean, and dry. 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.

### RECOMMENDATIONS

Raven Industries recommends the following best practices before installing or operating the AccuBoom system for the first time, at the start of the season, or when moving the AccuBoom system to another machine:

- Ensure the machine's hydraulic filters have been recently changed and there are no issues with the machine's hydraulic system (e.g., pump issues, faulty hydraulic motors, fine metal deposits in the hydraulic hoses, etc.).
- Operate each of the machine's boom hydraulic functions (i.e., tilt, fold, center rack, tongue extension, or other hydraulic valve functions) three times to ensure the machine's hydraulic valve is using fresh oil and debris is flushed from the hydraulic hoses, valves, and filters.
- Upon installation of the AccuBoom system, operate the boom and center rack raise/lower functions through the machine's manual control functions first before operating them via the AccuBoom controller/field computer to ensure the hydraulic system has been installed correctly and air is released from the system.

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

- Use part numbers to identify the parts.
- Do not remove the plastic wrap from a part until it is necessary for installation.
- Do not remove plastic caps from a part until it is necessary for installation.

### Tools Needed

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

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

### POINT OF REFERENCE

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

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## UPDATES

Software and manual updates are available on the Raven Applied Technology website:

<http://www.ravenhelp.com>

At Raven Industries, we strive to make your experience with our products as rewarding as possible. One way to improve this experience is to provide us with feedback on this manual.

Your feedback will help shape the future of our product documentation and the overall service we provide. We appreciate the opportunity to see ourselves as our customers see us and are eager to gather ideas on how we have been helping or how we can do better.

To serve you best, please send an email with the following information to

[techwriting@ravenind.com](mailto:techwriting@ravenind.com)

- RoGator (Liquid/AirMax 180) & TerraGator (Liquid/AirMax/AirSpread) AccuBoom™ Installation Manual
- Manual No. 016-1001-063 Rev. E
- Any comments or feedback (include chapter or page numbers if applicable).
- Let us know how long have you been using this or other Raven products.

We will not share your email or any information you provide with anyone else. Your feedback is valued and extremely important to us.

Thank you for your time.



## 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.

**NOTE:** The AccuBoom node (P/N 063-0172-714) is sold separately. Contact your local Raven dealer for ordering information.

**TABLE 1. RoGator AccuBoom Installation Kit (P/N 117-1001-063)**



Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - RoGator (Liquid/AirMax 180) & TerraGator (Liquid/AirMax/AirSpread) AccuBoom Installation Manual	016-1001-063	1
	Cable - RoGator CAN AccuBoom Combo Node Harness	115-2001-018	1

TABLE 2. TerraGator AccuBoom Installation Kit (P/N 117-1001-071)

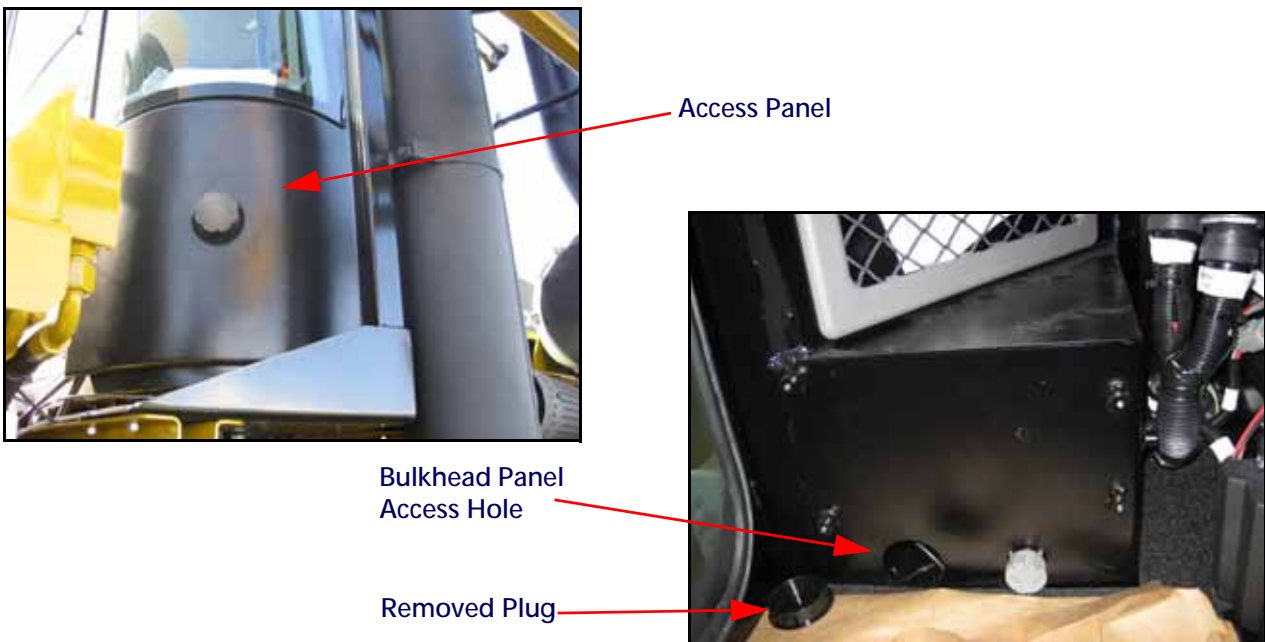
Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - RoGator (Liquid/AirMax 180) & TerraGator (Liquid/AirMax/AirSpread) AccuBoom Installation Manual	016-1001-063	1
	Cable - TerraGator CAN AccuBoom Combo Node Harness	115-2001-058	1

The instructions in this manual are designed to assist in the proper installation of the AccuBoom system on RoGator Liquid/AirMax 180 and TerraGator Liquid/AirMax/AirSpread series sprayers. Refer to your computer's Installation & Operation Manual for instructions on setting up the software and using the AccuBoom system.

**IMPORTANT:** When running a combination liquid/spinner spreader TerraGator, it is necessary to uninstall the AccuBoom system from the machine when switching from liquid to spinner spreader applications.

## INSTALL THE BOOM VALVE CONNECTIONS

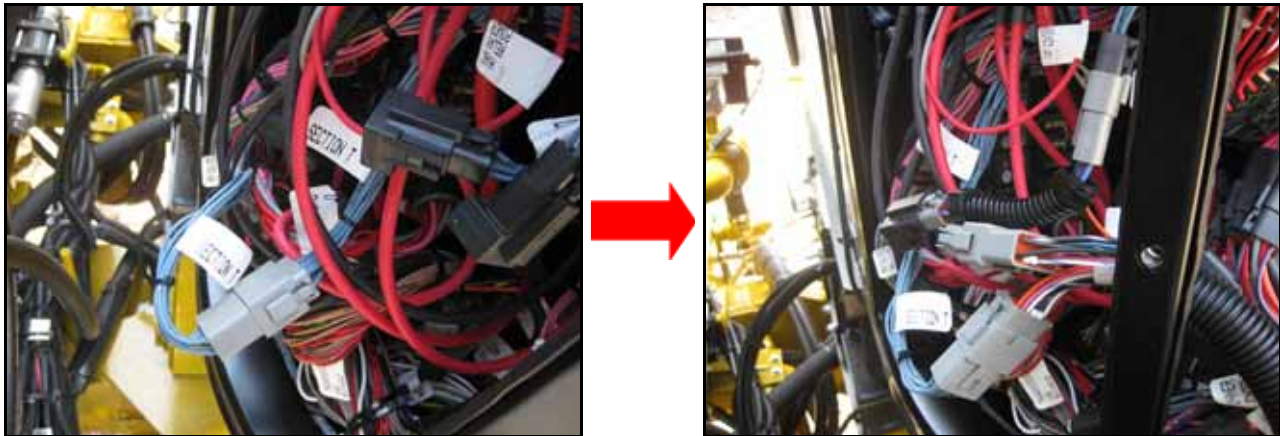
FIGURE 1. Access Panel Cover and Bulkhead Panel Access Hole



1. Locate the access panel on the right-rear corner outside the cab and remove the cover.
2. Locate the bulkhead panel access hole in the cab and remove the plug.
3. Insert the AccuBoom harness cable (P/N 115-2001-018 or 115-2001-058) into the bulkhead panel access hole so that the two CAN node connections protrude from the access hole inside the cab.

**NOTE:** It may be easier to route the node connections through the access panel outside the cab rather than routing the entire cable through the access hole from within the cab.

FIGURE 2. AccuBoom Control Cable Installed

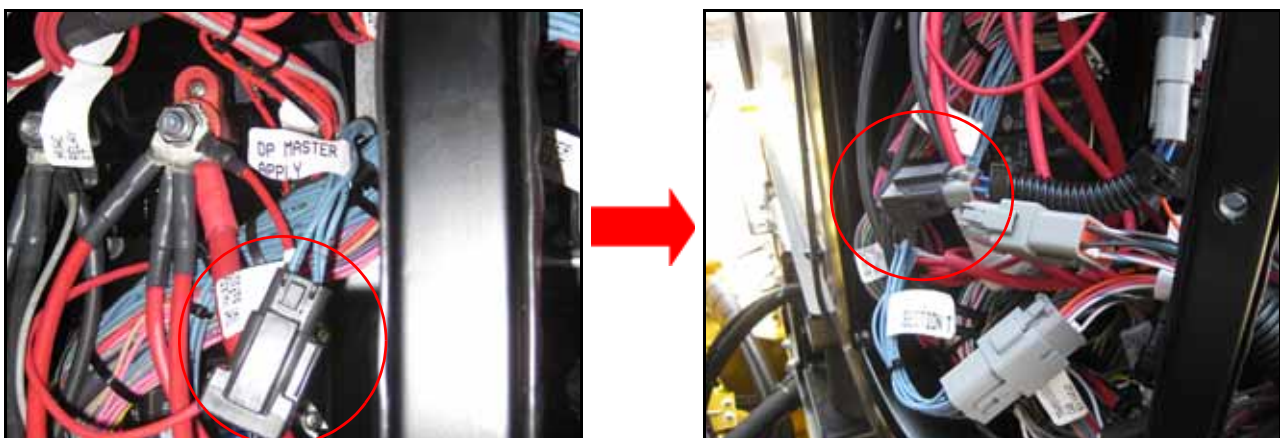


4. Locate the 12-pin Deutsch connectors labeled Section T in the access panel.
5. Disconnect the connectors.
6. Connect the TO MASTER MODULE connector to the mating connector of the AccuBoom harness cable.
7. Connect the TO ARMREST SWITCH connector to the mating connector of the AccuBoom harness cable.
8. Connect the large, rectangular node connectors on the harness cable into the AccuBoom node (P/N 063-0172-714).

**NOTE:** Do not force the connection. The node and cable are designed to connect only if the plug and connector are correctly oriented.

9. Tighten the bolts on the node connectors to secure the connection.
10. TerraGator (Liquid/AirMax/AirSpread) Only
  - a. Locate the diode splice pack labeled DP Master Apply in the access panel.
  - b. Remove the splice pack and connect the cable to the end of the AccuBoom harness cable labeled MASTER APPLY.
  - c. Reconnect the splice pack to the AccuBoom harness cable.

FIGURE 3. DP Master Apply Connection



11. Connect the appropriate jumper cable to the AccuBoom harness. Refer to the following table to choose the jumper cable.

**TABLE 1.**

Application	Jumper
RoGator Liquid	Liquid Jumper
RoGator AirMax 180	AirMax 180 Jumper
TerraGator Liquid	Liquid Jumper
TerraGator AirMax/AirSpread	Dry Jumper
TerraGator Spinner Spreader	Remove AccuBoom and refer to the next section

### SWITCHING FROM LIQUID APPLICATION TO SPINNER SPREADER CONFIGURATION - TERRAGATOR ONLY

When switching from a liquid application to a spinner spreader application on a TerraGator, AccuBoom must be removed from the system before the machine will operate correctly. Complete the steps in this section to convert the TerraGator system from a liquid to a spinner spreader application.

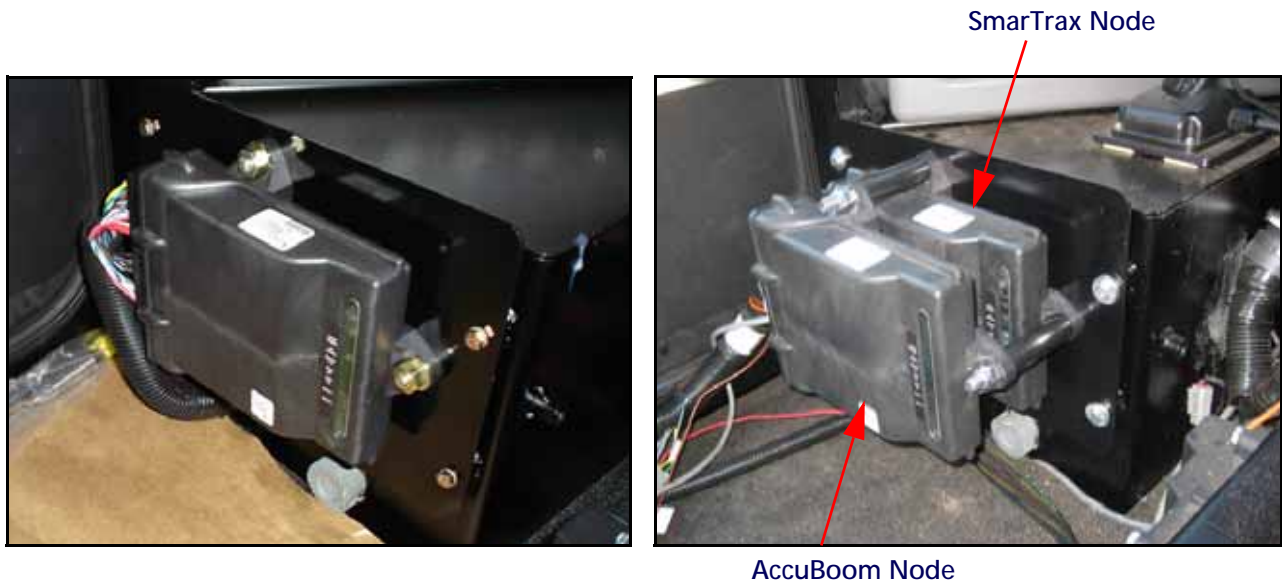
1. Disconnect the AccuBoom harness cable from the TerraGator Section T connection in the access panel and reconnect the Section T together.
2. Disconnect the AccuBoom Logic Power connector from the TerraGator Aux Pwr connector in the access panel.
3. In the Viper Pro Miscellaneous Settings screen, change the AccuBoom node from Combo to AccuBoom Only.

**NOTE:** Repeat the steps above in reverse order to convert the system from a spinner spreader application to a liquid application.

### INSTALL THE ACCUBOOM NODE

**NOTE:** The AccuBoom node (P/N 063-0172-714) is sold separately. Contact your local Raven dealer for ordering information.

FIGURE 4. Single and Double Node Mounting



1. Align the node mounting tabs with the holes on the mounting plate.
2. Secure the node to the mounting plate using the supplied hardware.

**NOTE:** If a SmarTrax node is present on the machine, stack the nodes so that the SmarTrax node is mounted against the mounting plate.

3. Align the node mounting plate with the mounting standoffs with the node connections facing the window of the cab.
4. Fasten the node mounting plate to the mounting standoffs using four M6 x 1" bolts and lock washers.

## INSTALL THE ACCUBOOM WIRING

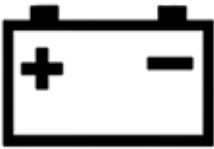
	<p><b>⚠ CAUTION</b></p> <p>Always connect the power cable as the last step in the wiring process and verify that the power leads are connected with the correct polarity. Reversing power leads can cause severe damage to the equipment.</p>
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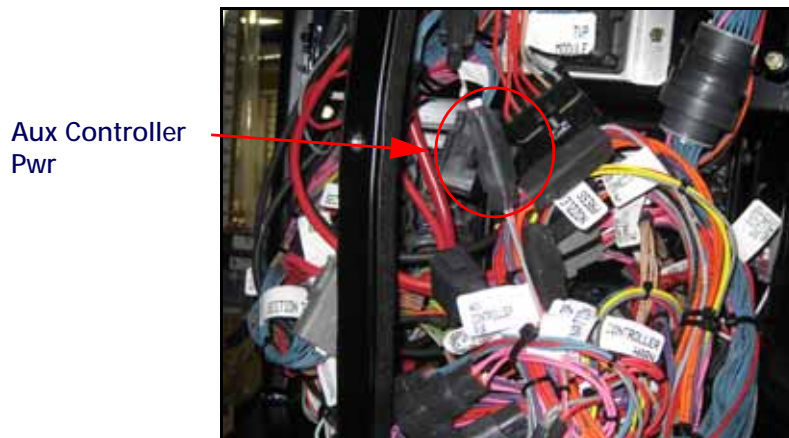


FIGURE 5. High Current Power/Ground



1. Route the power leads (High Current) on the AccuBoom control cable to the main power and ground studs in the access panel.
2. Connect the power lead to the positive stud.
3. Connect the ground lead to the negative stud.

FIGURE 6. Logic Power/Ground



4. Locate the 2-pin Deutsch receptacle (Logic Power) on the AccuBoom control cable.
5. Locate the 2-pin Deutsch plug labeled Aux Controller Pwr in the access panel.
6. Remove the cap and connect it to the AccuBoom control cable.

FIGURE 7. CANbus Terminator Location

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7. Remove the panel cover located to the right of the radio.

**NOTE:** If a CAN SmarTrax node was previously installed, the CAN terminator may be located elsewhere in the cab or access panel.

8. Remove the CAN terminator from the existing location and attach it to the AccuBoom control cable.

9. Route the CANbus lead from the AccuBoom control cable to the existing CANbus connector and connect.

**NOTE:** If the connection near the radio is being used, the cab upright cover may need to be removed to neatly route the cable to the connection point.

10. Replace the panel cover.

11. Replace the access panel cover located on the right-rear corner of the outside of the cab.

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

ENVIZIO PRO

ROGATOR

TABLE 1.

5 Section Liquid		7 Section Liquid		AirMax 180	
Boom	Section Label	Boom	Section Label	Boom	Section Label
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3		
4	4	4	4		
5	5	5	5		
6	*	6	6		
7	*	7	7		
8	*	8	*		
9	L	9	L		
10	R	10	R		

TERRAGATOR

TABLE 2.

5 Section Liquid		AirMax		AirSpread	
Boom	Section Label	Boom	Section Label	Boom	Section Label
1	1	1	1	1	1
2	2	2	2	2	2
3	3				
4	4				
5	5				
6	*				
7	*				
8	*				
9	L				
10	R				

VIPER PRO

ROGATOR

TABLE 3.

5 Section Liquid			7 Section Liquid			AirMax 180		
Boom	Wired As	Displayed As	Boom	Wired As	Displayed As	Boom	Wired As	Displayed As
1	9	L	1	9	L	1	1	1
2	1	1	2	1	1	2	2	2
3	2	2	3	2	2			
4	3	3	4	3	3			
5	4	4	5	4	4			
6	5	5	6	5	5			
7	10	R	7	6	6			
8	6	*	8	7	7			
9	7	*	9	10	R			
10	8	*	10	8	*			

TERRAGATOR

TABLE 4.

5 Section Liquid			AirMax			AirSpread		
Boom	Wired As	Displayed As	Boom	Wired As	Displayed As	Boom	Wired As	Displayed As
1	9	L	1	1	1	1	1	1
2	1	1	2	2	2	2	2	2
3	2	2						
4	3	3						
5	4	4						
6	5	5						
7	10	R						
8	6	*						
9	7	*						
10	8	*						



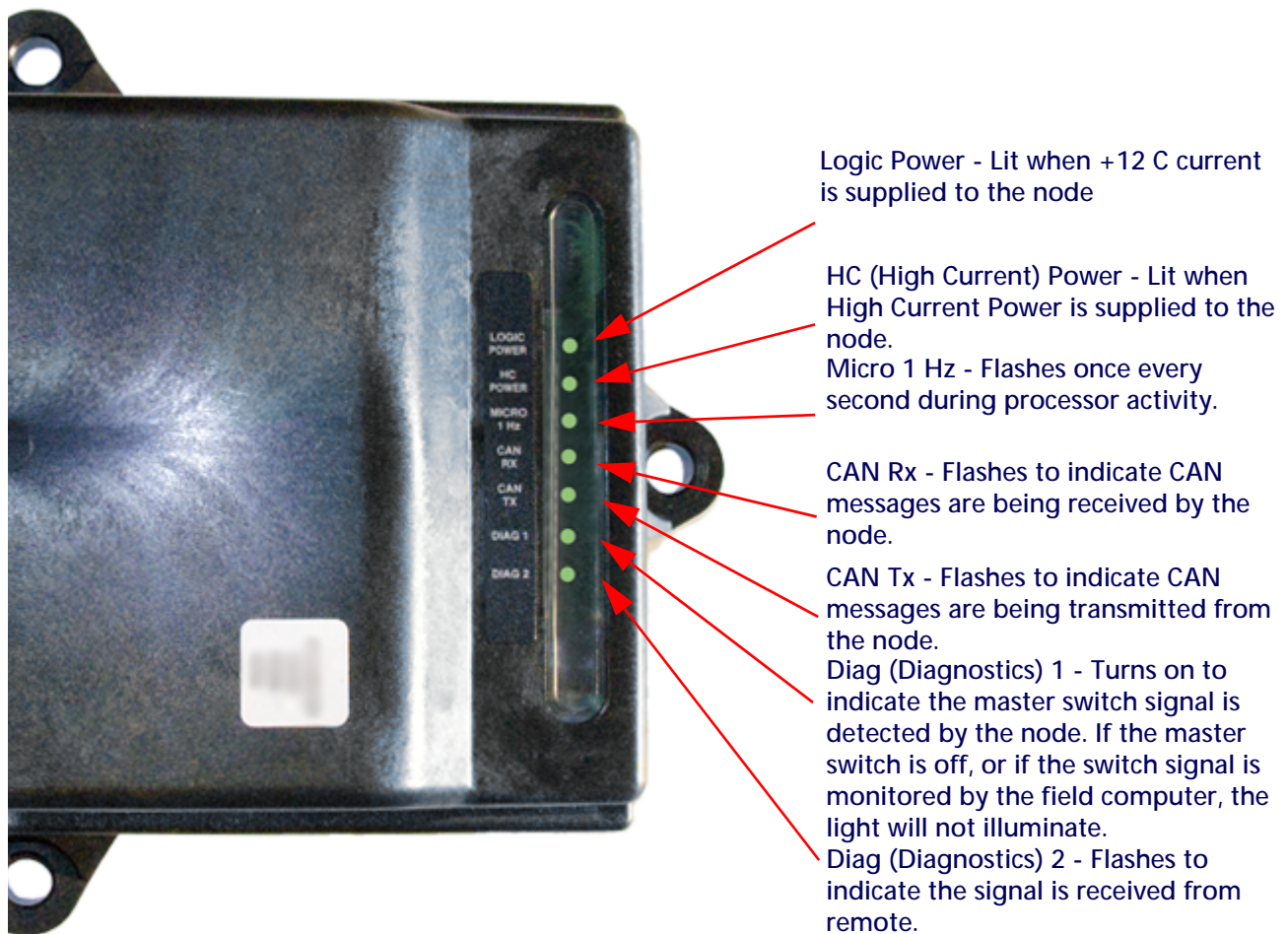


The AccuBoom CAN control node (P/N 063-0172-714) features several green light-emitting diodes (LEDs) which may be used to diagnose issues within the AccuBoom system.

**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 On position while AccuBoom control is in operation.

FIGURE 1. AccuBoom CAN Control Node LEDs







# RAVEN

## Limited Warranty

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### ***What Does this Warranty Cover?***

This warranty covers all defects in workmanship or materials in your Raven Applied Technology Division product under normal use, maintenance, and service when used for intended purpose.

### ***How Long is the Coverage Period?***

Raven Applied Technology products are covered by this warranty for 12 months from the date of retail sale. In no case will the Limited Warranty period exceed 24 months from the date the product was issued by Raven Industries Applied Technology Division. This warranty coverage applies only to the original owner and is non-transferable.

### ***How Can I Get Service?***

Bring the defective part and proof of purchase to your Raven dealer. If the dealer approves the warranty claim, the dealer will process the claim and send it to Raven Industries for final approval. The freight cost to Raven Industries will be the customer's responsibility. The Return Materials Authorization (RMA) number must appear on the box and all documentation (including proof of purchase) must be included inside the box to be sent to Raven Industries.

### ***What Will Raven Industries Do?***

Upon confirmation of the warranty claim, Raven Industries will (at our discretion) repair or replace the defective product and pay for the standard return freight, regardless of the inbound shipping method. Expedited freight is available at the customer's expense.

### ***What is not Covered by this Warranty?***

Raven Industries will not assume any expense or liability for repairs made outside our facilities without written consent. Raven Industries is not responsible for damage to any associated equipment or products and will not be liable for loss of profit, labor, or other damages. The obligation of this warranty is in lieu of all other warranties, expressed or implied, and no person or organization is authorized to assume any liability for Raven Industries.

**Damages caused by normal wear and tear, misuse, abuse, neglect, accident, or improper installation and maintenance are not covered by this warranty.**



## Extended Warranty

### ***What Does this Warranty Cover?***

This warranty covers all defects in workmanship or materials in your Raven Applied Technology Division product under normal use, maintenance, and service when used for intended purpose.

### ***Do I Need to Register My Product to Qualify for the Extended Warranty?***

Yes. Products/systems must be registered within 30 days of retail sale to receive coverage under the Extended Warranty. If the component does not have a serial tag, the kit it came in must be registered instead.

### ***Where Can I Register My Product for the Extended Warranty?***

To register, go online to [www.ravenhelp.com](http://www.ravenhelp.com) and select Product Registration.

### ***How Long is the Extended Warranty Coverage Period?***

Raven Applied Technology products that have been registered online are covered for an additional 12 months beyond the Limited Warranty for a total coverage period of 24 months from the date of retail sale. In no case will the Extended Warranty period exceed 36 months from the date the product was issued by Raven Industries Applied Technology Division. This Extended Warranty coverage applies only to the original owner and is non-transferable.

### ***How Can I Get Service?***

Bring the defective part and proof of purchase to your Raven dealer. If the dealer approves the warranty claim, the dealer will process the claim and send it to Raven Industries for final approval. The freight cost to Raven Industries will be the customer's responsibility. The Return Materials Authorization (RMA) number must appear on the box and all documentation (including proof of purchase) must be included inside the box to be sent to Raven Industries. In addition, the words "Extended Warranty" must appear on the box and all documentation if the failure is between 12 and 24 months from the retail sale.

### ***What Will Raven Industries Do?***

Upon confirmation of the product's registration for the Extended Warranty and the claim itself, Raven Industries will (at our discretion) repair or replace the defective product and pay for the standard return freight, regardless of the inbound shipping method. Expedited freight is available at the customer's expense.

### ***What is Not Covered by the Extended Warranty?***

Raven Industries will not assume any expense or liability for repairs made outside our facilities without written consent. Raven Industries is not responsible for damage to any associated equipment or products and will not be liable for loss of profit, labor, or other damages. Cables, hoses, software enhancements, and remanufactured items are not covered by this Extended Warranty. The obligation of this warranty is in lieu of all other warranties, expressed or implied, and no person or organization is authorized to assume any liability for Raven Industries.

**Damages caused by normal wear and tear, misuse, abuse, neglect, accident, or improper installation and maintenance are not covered by this warranty.**