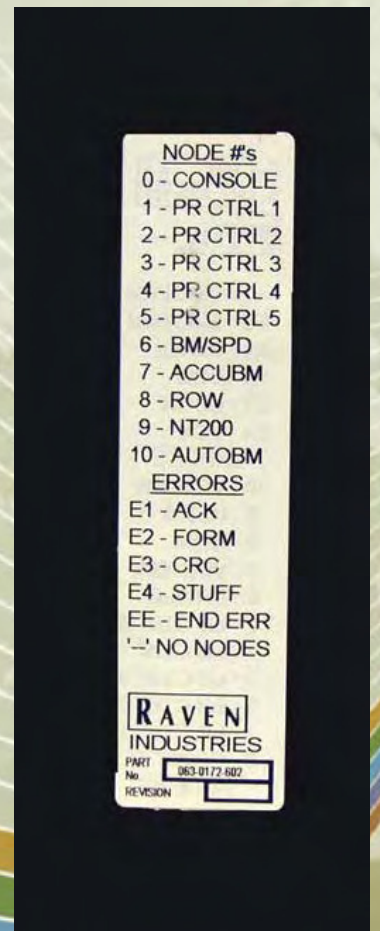


Installation & Operators Manual



CAN Diagnostic Tool

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CHAPTER

1

INTRODUCTION

Congratulations on your purchase of the Raven CAN Diagnostic Tool! This tool is designed to diagnose issues occurring with a Raven CAN system. These issues may include the console (Viper or 4000 Series) not recognizing one or more nodes, boom status on the console not matching what is expected, or intermittent communication within the CAN bus system.



Important: Do not use this diagnostic tool in place of a terminator. There should be exactly two terminators on every CAN bus system.

Notes:

CHAPTER**2****SYSTEM DIAGRAMS**

Please see the following diagrams for a CAN system:

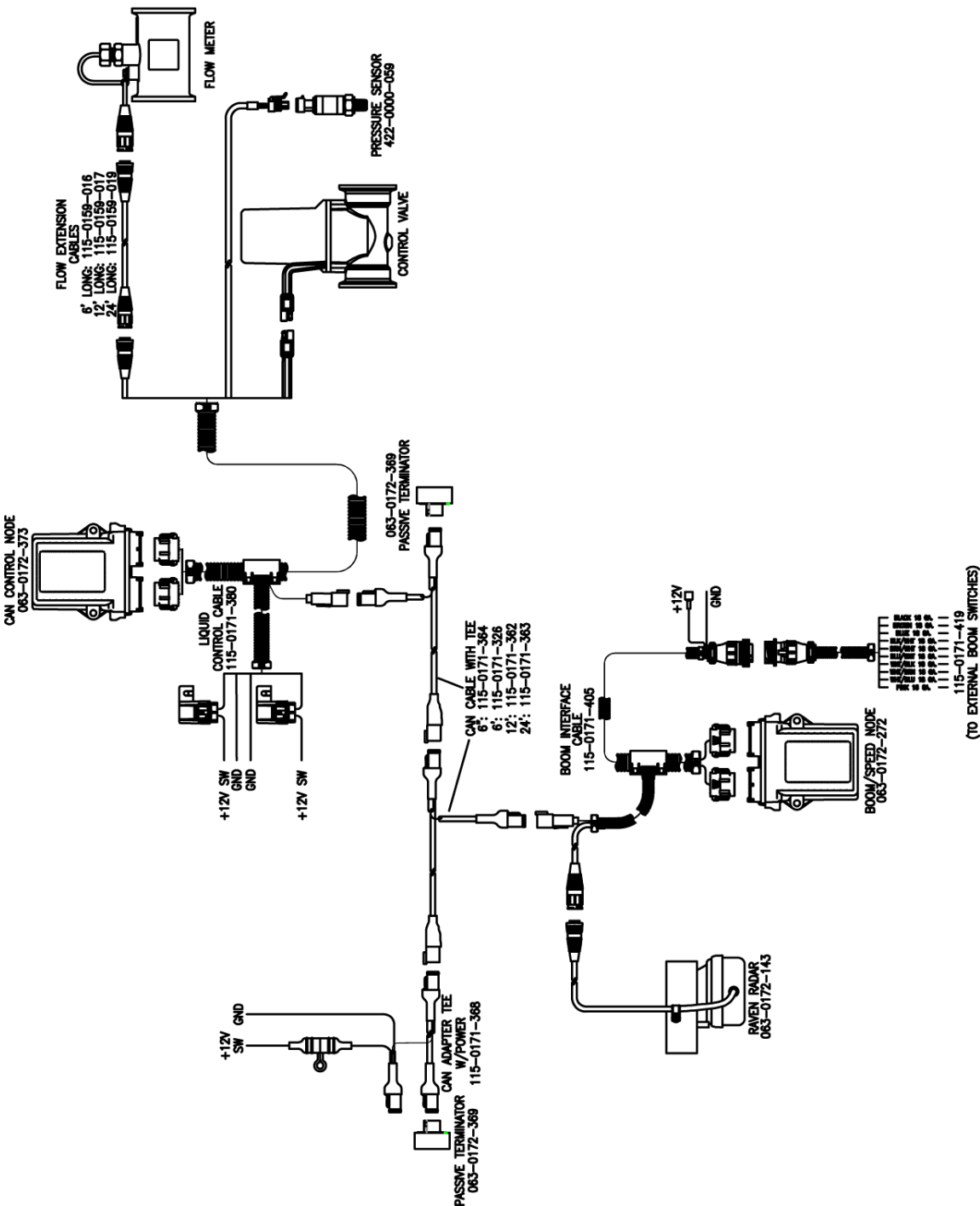
Pin Connector Diagram

Pin	Charge
1	12 Volts DC
2	CAN High
3	Ground
4	CAN Low

Expected Voltage Between Pins

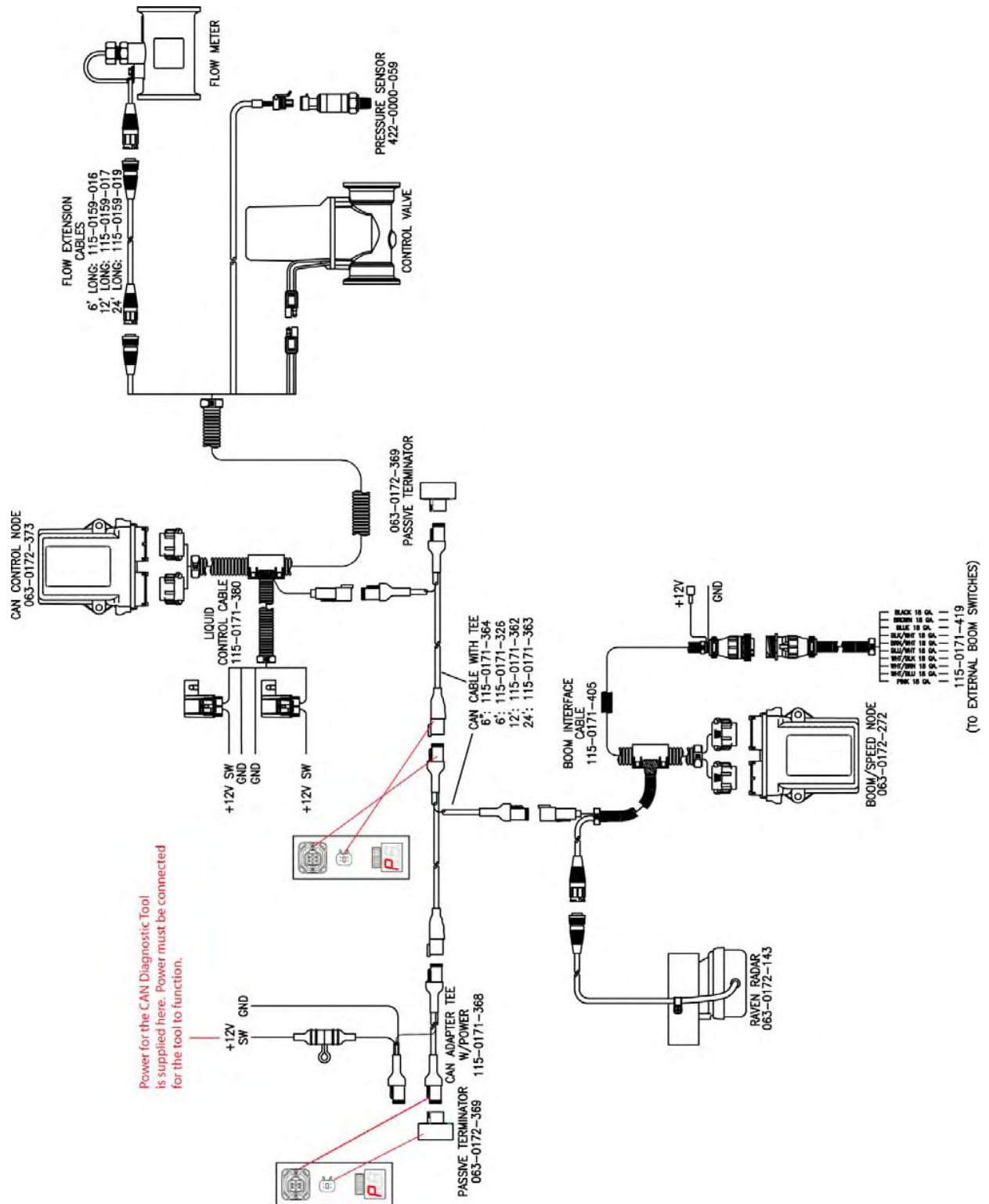
- Pins 1 & 3: 12 Volts DC
- Pins 2 & 3: 2.5 Volts +/- 1 Volt
- Pins 3 & 4: 2.5 Volts +/- 1 Volt
- Pins 2 & 4: 75 Ohms

CAN System Wiring Diagram



Attaching the CAN Diagnostic Tool to the CAN System

You can attach the CAN Diagnostic Tool at any connection point along the CAN bus, or at the first and last terminators as shown below.



Notes:

CHAPTER

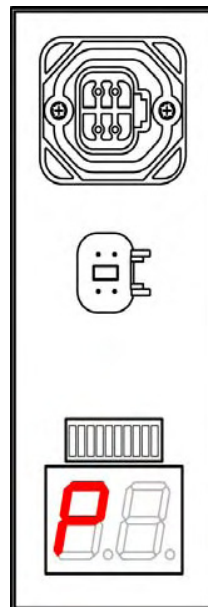
3

OPERATION

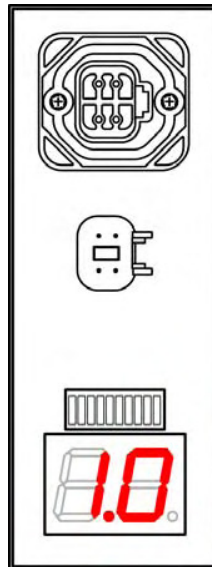
The CAN diagnostic tool is powered through the 4-pin CAN plug. Power must be supplied to the proper pins on the CAN cable in order for the tool to work. This power is supplied by the CAN Adapter Tee w/power.

The tool may be connected at any junction in the CAN bus. To connect the tool, simply unplug a junction and connect the tool in-line with the system.

Immediately after power is applied to the tool, a 'P' (for program) will appear on the display.



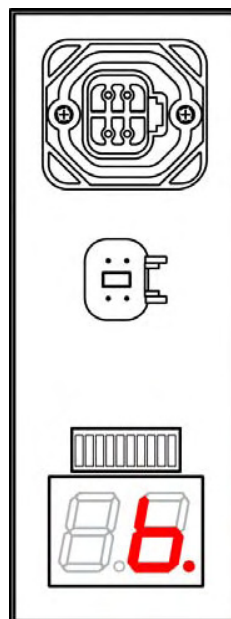
After a short time, the current program revision will appear, i.e. '1.0'.



This is displayed for 2 seconds before the tool begins to search for and display information.

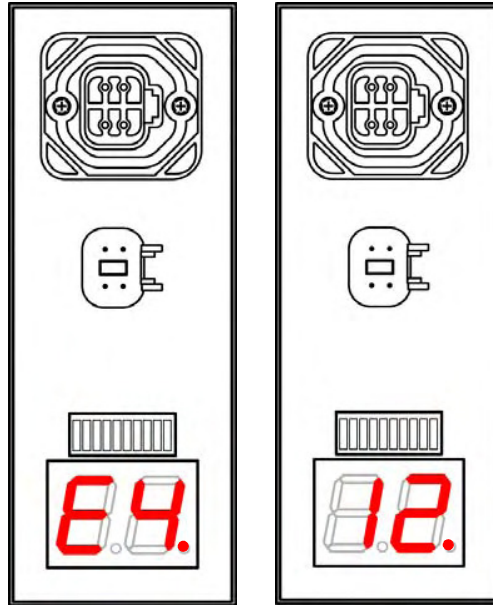
Information Displayed

The first information displayed will be the nodes that have been found. The numbers displayed for the nodes found are shown on the back of the tool (see Appendix A for a complete list of the display codes). For example, a '6' on the display means that the Boom Sense/Speed Node is connected to the CAN bus.

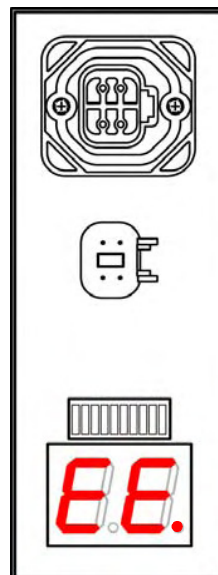


The flashing right decimal point shows that the unit is running correctly.

If any standard CAN errors have occurred, they will be displayed after the last node number. The type of error is shown for 1 second followed by a running total of that type of error. For example, 'E4' followed by '12' means that 12 Stuff errors have occurred thus far.

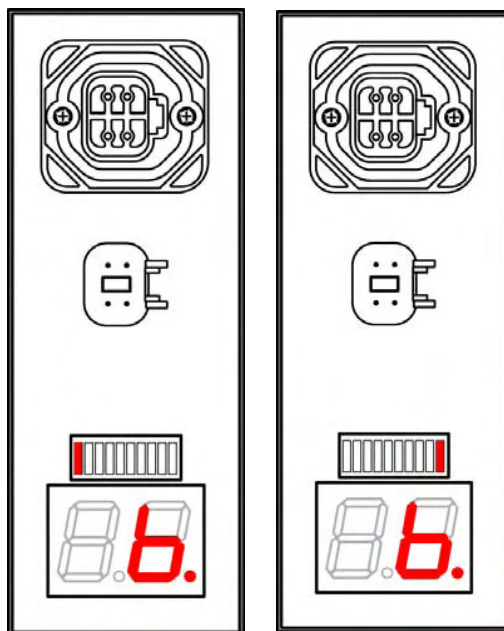


After errors have been displayed, 'EE' flashes on the display twice.

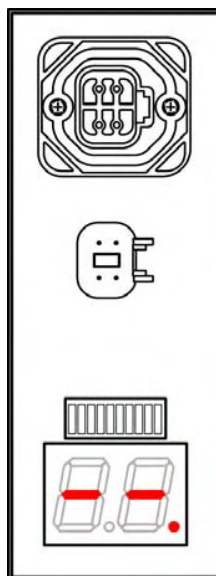


This signifies the end of the errors and the node numbers are displayed once again. This cycle repeats continuously.

The LED bar graph above the display is continuously updated with boom status. Boom 1 is the far left, with Boom 10 being the far right. When the booms are on and active, the light for each corresponding boom should be on as well.



If the system does not find or recognize any nodes, a '-' will display.



C H A P T E R**4****TROUBLESHOOTING**

Some errors occurring on the CAN bus are normal. However, if a large number of errors are showing up on this diagnostic tool, make sure both ends of the CAN bus system are terminated. There is to be exactly two terminators on every CAN bus. Having more or less will likely cause more errors. Other possible reasons for large numbers of errors are poor connections or a noisy system.

If you are still getting a large number of errors after checking and correcting the above possible causes, follow the steps below:

1. Connect the diagnostic tool at a junction near the console.
2. Power up the console.
3. Make sure that the diagnostic tool 'sees' the console.
 - a. If the tool does not 'see' the console, the CAN transceiver on the console may be defective.
 - b. If the tool 'sees' the console but not all of the nodes, power down the console, disconnect the tool and reconnect it at the next CAN bus junction.
4. Repeat steps 1-3.
5. If different nodes are seen when the diagnostic tool is hooked up at different junctions, the CAN cable could possibly need to be replaced. If some nodes are never found, be sure to check the CAN cable connection at that particular node and make sure there is power to the node.

Readdressing Nodes

If you are still having problems with the system recognizing the nodes, they may need to be readdressed. Refer to your console manual (either the Viper or SCS4000 Series manual) and follow the instructions given for readdressing nodes. After the nodes have been readdressed, re-attach the diagnostic tool and start operation again.

Notes:

A P P E N D I X**DISPLAY CODES**

Node # Codes	Description
0	Console
1	Product Control Node 1
2	Product Control Node 2
3	Product Control Node 3
4	Product Control Node 4
5	Product Control Node 5
6	Boom Speed/Boom Sense Node
7	AccuBoom Node
8	Potato Row Planter Node
9	NT200 Green Seeker Node
10	Autoboom Node

Error Codes	Description
E1	Acknowledgement Error - There was no detection of the dominant bit in the acknowledge slot.
E2	Form Error - A form error results from one or more violations of the fixed form of the following bit fields: CRC Delimiter, Acknowledgement Delimiter, and End of Frame.
E3	CRC Error - Receiver checksum does not match transmitted checksum.

E4	Stuff Error - A stuff error is the detection of more than five consecutive bits of the same parity.
EE	End of Errors - All errors on the system have been displayed.
-	Node Error - No nodes are seen or recognized on the system.

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What Does this Warranty Cover?

This warranty covers all defects in workmanship or materials in your Raven Applied Technology Product under normal use, maintenance, and service.

How Long is the Coverage Period?

Raven Applied Technology Products are covered by this warranty for 12 months after the date of purchase. This warranty coverage applies only to the original owner and is nontransferable.

How Can I Get Service?

Bring the defective part and proof of purchase to your Raven Dealer. If your Dealer agrees with the warranty claim, the Dealer will send the part and proof of purchase to their distributor or to Raven Industries for final approval.

What Will Raven Industries Do?

Upon confirmation of the warranty claim, Raven Industries will, at our discretion, repair or replace the defective part and pay for return freight.

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 or other special 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.



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Simply improving your position.SM



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