
NEXIQ Brake-Link™ Bendix® & Eaton® ABS Applications Operator's Manual

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Chapter 1

Getting Started



- ▼ *Getting Started, page 2*
- ▼ *Safety Warnings & Cautions, page 3*
- ▼ *Using this Manual, page 4*
- ▼ *Navigating Brake-Link™, page 6*

Brake-Link™ is a hand-held diagnostic tool primarily designed to troubleshoot heavy-duty vehicle Anti-lock Braking Systems (ABS). It also provides a variety of utilities and configuration options. As such, the documentation is divided into a set of task-oriented operator's manuals; this manual details the **Bendix® & Eaton® ABS Applications**.

Note: Eaton® ABS Application exclusively supports Generation 4 and 5 Trailer ABS controllers (formerly marketed by Eaton®). Because Bendix® recently acquired distribution of the Knorr-Bremse® ABS product lines from Eaton®, the Bendix® ABS Application supports Gen 4 & 5 in addition to EC-17, EC-30 and EC-30T.

Getting Started

Brake-Link™ is a multi-faceted, hand-held, ABS diagnostic tool that offers a variety of utilities, diagnostic applications and configuration options.



Figure 1.1 NEXIQ Brake-Link™

Component connection procedures and navigation vary depending on the utility or application you're using. The connection and navigation sections in this manual are specific to the **Bendix® & Eaton® ABS Applications**.

Refer to the:



Introducing Brake-Link™ Operator's Manual for:

- a list of safety warnings and cautions
- an overview of the documentation
- a formal introduction to Brake-Link™
- *general* Brake-Link™ connection instructions
- *general* navigation information
- **GENERIC PLC TEST** and **RP1210A PC LINK** option details
- warranty and service information



The manufacturer-specific application **Brake-Link™** manual for the controller you're testing.



Safety Warnings & Cautions

To protect yourself from injury and the test vehicle from damage:

- ✓ Always wear approved eye protection.
- ✓ Always refer to and follow the vehicle manufacturer's WARNINGS, CAUTIONS and service procedures.
- ✓ Exhaust gas contains deadly poison. Always test outdoors *or* use properly vented exhaust hose.
- ✓ Keep yourself and your test equipment clear of all moving or hot engine parts.
- ✓ Unless otherwise noted, set the parking brake and place the gear selector in the NEUTRAL or PARK position. If the vehicle has an automatic parking brake release, temporarily disconnect the release mechanism. Also, block the drive wheels before performing a test with the engine running.
- ✓ Unless otherwise directed, turn the ignition switch OFF before disconnecting or connecting any electrical components.
- ✓ Read and understand this manual before operating your NEXIQ Brake-Link™.
- ✓ NEXIQ Technologies recommends having an assistant drive the vehicle while you use NEXIQ Brake-Link™ if you need to test the vehicle in transit.
- ✓ Never leave the vehicle unattended while testing.



Certain Electro-Static Discharge (ESD) and/or Electrical Fast Transient (EFT) events may lock up the NEXIQ Brake-Link™. Disconnect the NEXIQ Brake-Link™ from the power source and re-connect to regain full operation.

Using this Manual

This manual contains comprehensive information to teach you how to use the Bendix® and Eaton® ABS Applications. It also provides the following features to support quick reference once you're familiar with the application.

- A detailed *Table of Contents* to help you find exactly what you're looking for quickly and easily
- *All-inclusive discussions* to minimize referencing other sections
- *Comprehensive illustrations* to help you visualize concepts
- *Troubleshooting Tips* to help you solve or avoid common issues

Additionally, each chapter begins with an “at-a-glance” list of the chapter's contents, along with corresponding page numbers.

Specialized Text

This manual features the following specially formatted text to help you differentiate software elements presented by the NEXIQ Brake-Link™.

- **Menu items:** Whenever the manual instructs you to select from a list of menu items, it presents the desired choice with the formatting you see here, e.g., “From the main menu, select **J1708/J1587 BUS**.”
- **Screen titles:** Once you select a menu item, Brake-Link™ presents the selected item's screen. A screen may display information or present another list of menu items. The screen title appears in bolded type, e.g., “From the **Protocol Selection** menu, select **PLC/ENHANCED MODE**.”
- **Field/Line:** The manual presents a field or line of text from a display with this formatting. For instance, “The **Request Lamp** line updates to reflect the current request.”
- **Emphasis:** This format draws your attention to particularly important information.

Navigation Icons

Brake-Link™ offers two methods of navigation: **menu** and **direct access buttons**. See “*Navigating Brake-Link™*”, on page 6. If a task can be performed with both, the manual provides separate instructions for each method. Topic introductions indicate when there are two sets of instructions and the following icons help you easily locate the desired set.

 Exhaust modulators ***via menu navigation:***

 Exhaust modulators ***via buttons navigation:***

General Icons

This manual also presents icons that denote specific types of peripheral information.



Troubleshooting Tips help you diagnose or anticipate potential issues.



Caution Tips help you avoid injury or prevent damage to NEXIQ Brake-Link™.



Frequently asked questions, industry definitions and other relevant background information.

Navigating Brake-Link™

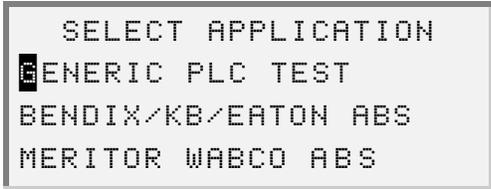
Brake-Link™ offers the following navigation options:

- Menu navigation: use the arrow buttons to scroll through the menu screens and select the menu options.
- Buttons navigation: use the direct access buttons to access specific Brake-Link™ options directly.

This section provides an *overview* of button functionality. The procedure discussions specify which buttons to push and when.

Home Button

Use the  button to return to the **Select Application** screen.



```
SELECT APPLICATION
GENERIC PLC TEST
BENDIX/KB/EATON ABS
MERITOR WABCO ABS
```

Note: This button does not function if the screen displays “[ENTER] TO CONTINUE”.

Enter Button

Use the  button to select a menu item, confirm a response, or instruct Brake-Link™ to proceed to the next step.

Menu Buttons

If you choose *MENU NAVIGATION*, use the menu buttons (located below the tool's LCD) to navigate through the menu screens.

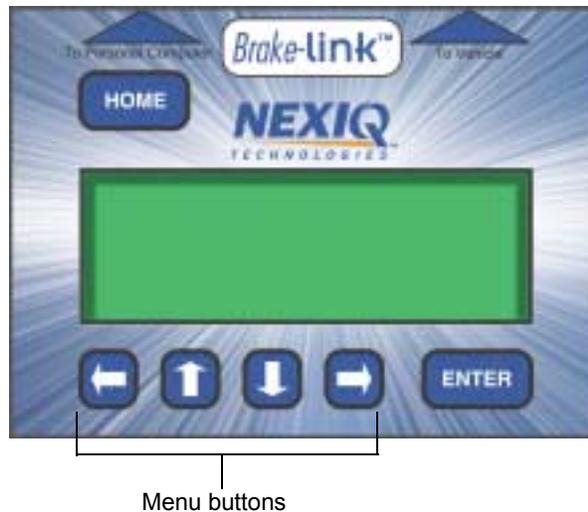


Figure 1.2 Menu buttons

When the LCD displays a list of options,

- press the  or  keys to scroll through the available options;

Note: A dashed line displays after the last option indicating the end of the menu or list.

- press  to select the option the blinking cursor is on;
- press  to exit your selection and return to the previous menu or screen.

Direct Access Buttons

The direct access buttons reside on the lower portion of the Brake-Link™. Notice they are grouped by functionality. The section provides a button *overview* for each button group.

Note: These buttons operate differently depending on the application you're using and/or controller you're diagnosing. This section provides a cursory explanation of their functionality within the Bendix® and Eaton® ABS Applications, per controller. Refer to the appropriate manufacturer-specific Brake-Link™ manual for the controller you're testing.

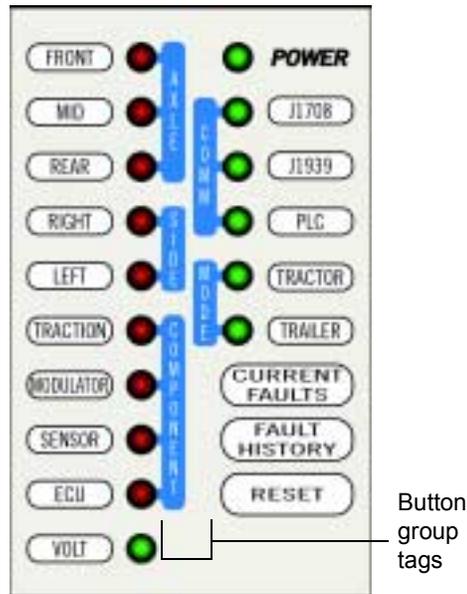


Figure 1.3 Direct Access Buttons

COMM Buttons

Use the **COMM** buttons to select the hardware/communication protocol. See “Selecting a Protocol & Registering the ECU”, on page e25.

J1708

Press to select the **J1708/J1587 BUS** hardware/communication protocol.

J1939

J1939 is not currently implemented.

PLC

Press PLC to select the *PLC/ENHANCED MODE* hardware/communication protocol.

MODE Buttons

Use the **MODE** buttons to select the portion of the vehicle you need to test, i.e., Tractor or Trailer.

Tractor

Push TRACTOR to select tractor.

Trailer

Push TRAILER to select trailer.

AXLE Buttons

Use the **AXLE** buttons to specify which axle you need to test.

Note: These buttons support EC-17, EC-30 and EC-30T diagnostics only.

The available **AXLE** buttons are:

Front

Push FRONT to select the front axle.

Mid

Push MID to select the middle axle.

Rear

Push REAR to select the rear axle.

Note: **AXLE** buttons work in conjunction with the **SIDE** and **COMPONENT** buttons.

SIDE Buttons

Use the **SIDE** buttons to select the side of the brake system that you wish to test.

Note: These buttons support EC-17, EC-30 and EC-30T diagnostics only.

The available buttons are:

Left

Push **LEFT** to select the left side.

Right

Push **RIGHT** to select the right side.

Note: **SIDE** buttons work in conjunction with the **AXLE** and **COMPONENT** buttons.

COMPONENT Buttons

Use the **COMPONENT** buttons to select the component that you wish to test. The available buttons are:

Traction

Push **TRACTION** to temporarily disable the traction control on a Brake-Link™ ECU.

Note: This button supports EC-17, EC-30 and EC-30T diagnostics only.

Modulator

Push **MODULATOR** to access the following Brake-Link™ modulator tests:

- **CHUFF MODULATOR**; see “Chuffing Modulators”, on page 60.
- **EXHAUST MODULATOR**; see “Exhaust Modulators”, on page 69.
- **HOLD MODULATOR**; see “Hold Modulators”, on page 74.

Note: This button supports EC-17, EC-30 and EC-30T diagnostics only.

Sensor

This button behaves differently depending on the system you're diagnosing. For:

- EC-17, EC-30 and EC-30T diagnostics, **SENSOR** retrieves the wheel speed for each wheel on the tractor/trailer. See "To retrieve wheel speeds via button navigation:", on page 57.
- Gen 4 and 5 controllers, this button presents the Data List which contains wheel speeds. See "To access the Data List via button navigation:", on page 116.

ECU

For EC-17, EC-30 and EC-30T diagnostics, the **ECU** button produces the following list of options:

- **ECU INFORMATION**; see "ECU Information", on page 87.
- **SYSTEM SETUP**; see "Modifying System Configuration", on page 93.
- **SELF-CONFIGURATION**; see "Using Self-Configuration", on page 91.

For Gen 4 and 5 diagnostics, it presents ECU Information; see "To view ECU Information via button navigation:", on page 102.

Other Buttons

Use the following buttons to select other Brake-Link™ options:

Current Faults

If you're diagnosing:

- EC-17, EC-30 or EC-30T systems, use **CURRENT FAULTS** to view and/or clear all current faults. See "Current Faults", on page 45.
- Gen 5 system, use it view existing faults. See "Viewing Existing Faults", on page 104.

Fault History

If you're diagnosing:

- EC-17, EC-30 or EC-30T systems, use **FAULT HISTORY** to view and/or clear all fault history. See "Fault History", on page 50.
- Gen 4 or 5 systems, use it to view stored faults. See "Viewing Stored Faults", on page 108.

Reset

If you're diagnosing:

- EC-17, EC-30 or EC-30T systems, **RESET** resets the ECU. See "Reset ECU", on page 89.
- Gen 4 or 5 systems, it clears all existing and/or stored fault codes from the controller. See "Clearing Faults", on page 111.

VOLT

If you're diagnosing:

- EC-17, EC-30 or EC-30T systems, use the **VOLT** button to ***VIEW THE BATTERY VOLTAGE*** (see pg. 57) or access the ***LOAD BATTERY TEST*** (see pg. 84).

Note: The LED next to this button illuminates if the ECU is powered up.

- Gen 4 or 5 systems, use it to view the Data List which contains various system voltage data points. See "To access the Data List via button navigation:", on page 116.

Light Emitting Diodes (LEDs)

The **POWER** LED indicates Brake-Link™ is receiving power. The **COMM** and **MODE** LEDs light up, according to the Brake-Link™ operation(s) you select.

When you're diagnosing EC-17, EC-30 or EC-30T systems, the **AXLE**, **SIDE**, **COMPONENT** and **VOLT** LEDs reflect the LED illumination on the ECU's front panel. Red LEDs indicate the presence of a fault code.

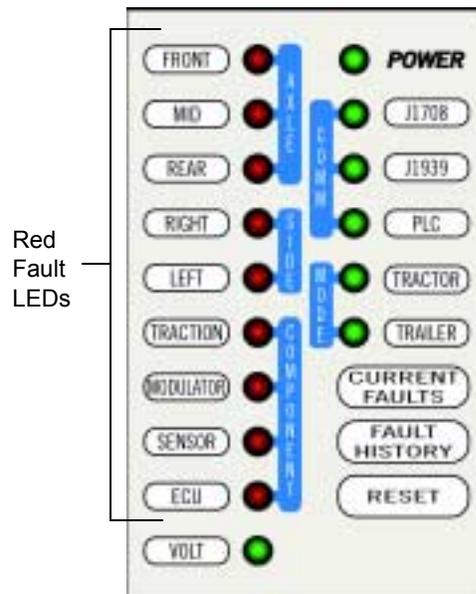


Figure 1.4 Light Emitting Diodes

Chapter 2

Establishing Connection



- ▼ *Connecting Brake-Link™ Components, page 16*
- ▼ *Selecting a Protocol & Registering the ECU, page 19*
- ▼ *Enabling Enhanced PLC Mode, page 30*

NEXIQ Brake-Link™ offers a variety of connection options. Quickly and easily attach Brake-Link™ to the vehicle, power up and register the ECU to begin a diagnostic session. This chapter details each step necessary to establish communication with the ABS ECU.

Connecting Brake-Link™ Components

Connect Brake-Link™ to the vehicle with one of the following adapters:

- J560 PLC Cable Set. Attach to the tractor or trailer J560 Power Line Connector. **Note:** *The ECU must be configured to support Enhanced PLC Mode in order to use this adapter.*
- 9-Pin Deutsch. Attach to the Deutsch Connector typically located under the dash (driver's side), beside the driver's seat or near the trailer brake ECU.

Choosing the appropriate adapter depends on:

- whether you're diagnosing the Tractor or Trailer;
- which connectors are available on the Tractor/Trailer;
- whether the Tractor is connected to the Trailer;
- whether the ECU is configured to support *Enhanced PLC Mode*.



Do you know what Enhanced PLC Mode is?

Older brake ECUs transmit diagnostic information over the J1708 Bus only (Figure 2.3, page 19)—accessing both tractor and trailer ECUs requires independent connections. Newer ECUs offer Enhanced PLC Mode—they can send diagnostic information over the power line. If the tractor and trailer are connected, access both ECUs via a single connection.

Use the following table to help you decide which adapter to use with the Bendix® & Eaton® ABS Applications. Then look at the connection diagram and complete the instructions that follow the table.

<i>BENDIX & EATON ABS APPLICATIONS</i>	
Are you testing the...	Connect to the...
Tractor Only	If the tractor ECU supports Enhanced PLC Mode, connect to either the Deutsch or J560 Power Line Connector. If it doesn't, use the Deutsch Connector.
Trailer Only	If the trailer ECU supports Enhanced PLC Mode, connect to the J560 Power Line; otherwise, connect to the Deutsch if available.
Tractor/Trailer Together	If the <i>trailer</i> ECU supports Enhanced PLC Mode, connect to the tractor Deutsch to communicate with both ECUs via a single connection. If it doesn't, connect to the trailer and tractor separately via their perspective Deutsch Connectors.

Note: Bendix® Generation 5 controllers (formerly of Eaton®) support Enhanced PLC Mode. EC-30 and EC-30T also support it, but may require configuration to enable it; see “Enabling Enhanced PLC Mode”, on page 30.

Figure 2.1 shows how to connect Brake-Link™ components for standard ABS diagnostics.



Figure 2.1 Connectivity diagram for standard ABS diagnostics.

Use the J560 PLC Cable Set in place of the Deutsch adapter if you plan to attach to the tractor or trailer's power line connector.



Figure 2.2 J560 PLC Cable Set

To connect Brake-Link™ components:

- 1 Attach the Power/Data Cable DB15 Connector to the data port (labelled **To Vehicle**) on the Brake-Link™; tighten the thumbscrews.

- 2 Plug the Data Cable Atari End into the Atari End on the cable you attach to the vehicle, i.e., Deutsch adapter or J560 PLC Cable Set.
- 3 Attach the vehicle interface cable to the vehicle.
 - If you're using the J560 PLC Cable Set, plug into the Power Line Connector on the outside of the tractor or trailer.



*If you're connecting to a tractor, use the **Quick Disconnect** (Figure 2.2) to remove the alligator clips from the cable set first. Since the tractor provides power, the alligator clips are unnecessary and could potentially cause a short.*

- If you're using the Deutsch Adapter, plug into the Deutsch Connector typically located under the dash on the driver's side, beside the driver's seat or near the brake ECU on the trailer.

Note: Not all trailers are equipped with Deutsch Connectors.

- 4 If you're using the J560 PLC Cable Set to attach to the *trailer*, connect the alligator clips to an external power supply; otherwise, turn the tractor's key to the "on" position.

Selecting a Protocol & Registering the ECU

NEXIQ Brake-Link™ uses the SAE J1587 *communication* protocol to interact with the vehicle's brake controllers. It sends and receives diagnostic information (i.e., J1587 messages) over the:

- J1708 Bus
- or*
- Power Line Carrier (PLC) (only available if the ECU(s) support Enhanced PLC Mode; see pg .30)

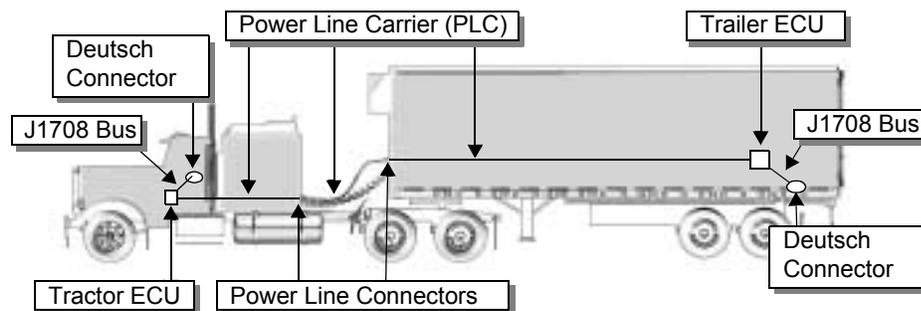


Figure 2.3 Power Line Carrier and J1708 Bus Illustration

These data bus options provide several ways to access brake ECUs. For example, if you're testing a trailer that does not have a Deutsch Connector, use the J560 PLC Cable Set to obtain information over the power line.

Both Bendix® and Eaton® ABS Applications require you to select a hardware/communication protocol in order to establish a connection to the ECU. In other words, you must tell Brake-Link™ which Data Bus to use for communications: **J1708/J1587 BUS** or **PLC/ENHANCED MODE**. Use the following table to help you decide which protocol best suites your needs.

<p>J1708/ J1587</p>	<p>Benefits:</p> <ul style="list-style-type: none"> • provides ECU access via a standard Deutsch connection • supported by all Bendix® brake ECUs
	<p>Considerations:</p> <ul style="list-style-type: none"> • ECU access typically requires connecting to the tractor and trailer separately • some <i>trailers</i> do not provide Deutsch connectors • if you're diagnosing a trailer that <i>isn't</i> connected to a tractor, an external power supply and adapter is required in <i>addition</i> to the Deutsch adapter
	<p>Use if:</p> <ul style="list-style-type: none"> • the ECU you're testing doesn't support Enhanced PLC Mode, i.e., Gen 4 or EC-17 • the ECU you're testing supports, but is not configured for, Enhanced PLC Mode; once you enable it, you can use either protocol
<p>PLC/ Enhanced Mode</p>	<p>Benefits:</p> <ul style="list-style-type: none"> • provides ECU access via a Deutsch <i>or</i> J560 Power Line Connection • if the tractor is attached to the trailer, it provides access to both ECUs via a single connection • provides access to the <i>trailer</i> ECU if there is no Deutsch Connector available
	<p>Considerations:</p> <ul style="list-style-type: none"> • the applicable ECU(s) must support Enhanced PLC Mode (see pg. 30) to utilize this protocol
	<p>Use if:</p> <ul style="list-style-type: none"> • the tractor is connected to the trailer and you need to communicate with the trailer or both ECUs • there is no Deutsch Connector available on the trailer • you're testing a trailer that is not connected to a tractor

Once you connect Brake-Link™ to the vehicle, choose the application, select a navigation method & hardware/communication protocol, Brake-Link™ attempts to establish communication with the ECU. This process is called ECU registration. The discussions in Chapter 3 & 4 assume that you have registered the ECU. The rest of this section explains how to register the ECU using each navigation method.

  Register ECU **via menu navigation:**

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 16).
- 2 Brake-Link™ boots up and presents the **Select Application** screen.

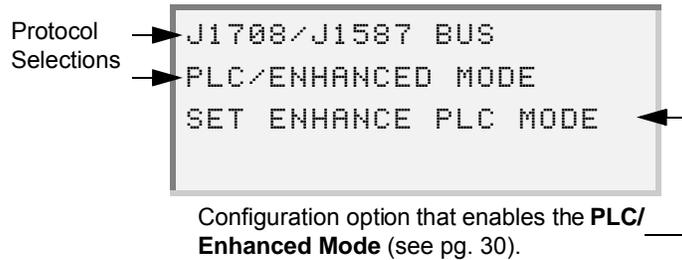
```
SELECT APPLICATION
GENERIC PLC TEST
BENDIX/KB/EATON ABS
MERITOR WABCO ABS
```

Use the  and  keys to select **BENDIX/KB/EATON ABS** or **EATON ABS**; press .

Note: **EATON ABS** exclusively supports Generation 4 & 5 controllers (formerly marketed by Eaton®); **BENDIX ABS** supports EC-17, EC-30, EC-30T, and Generation 4 & 5.

- 3 Brake-Link™ displays navigation options; use the  and  keys to select **MENU NAVIGATION** and press .

4 The **Protocol Selection** screen displays.



Use the and keys to select the desired option:

- **J1708/J1587 BUS** configures Brake-Link™ to communicate with the ECU via the J1708 Bus (accessed through the standard Deutsch Connection). **Go to step 5.**
- **PLC/ENHANCED MODE** configures Brake-Link™ to communicate with the ECU(s) via the Power Line Carrier (accessed through the Deutsch or J560 Tractor/Trailer Power Line Connections). This option requires Enhanced Mode support and configuration of the ECU(s). See “Enabling Enhanced PLC Mode”, on page 30. **Go to step 6.**
- **SET ENHANCE PLC MODE** enables Enhanced PLC Mode on the ECU, providing the ECU is equipped with Enhanced Mode capability. See “Enabling Enhanced PLC Mode”, on page 30.

Note: This menu item only appears if you selected **BENDIX/KB/EATON ABS**.

Press

- 5 If you selected *J1708/J1587 BUS*, Brake-Link™ auto-detects the Bendix® (and/or formerly Eaton®) ECUs present on the J1708 Bus. If it finds a Tractor and Trailer ECU, it prompts you to select **TRACTOR** or **TRAILER**; use the  and  keys to select the desired option and press .

Brake-Link™ then presents an **ECU Registration** screen. The information on this screen varies depending on the controller.

EC-17/30/30T Registration screens show ECU ID, sensor/modulator configuration and indicate whether there are active faults; if there are, Brake-Link™ illuminates the LEDs on the front panel to reflect the LED illumination on the ECU itself.

```
BENDIX TRAILER
      2S/1M EC30T
ACTIVE FAULTS EXIST
[ENTER]   TO CONTINUE
```

Generation 4/5 Registration screens show ECU ID and indicate whether there are Existing (Gen 5 only) and/or Stored Faults.

```
TRAILER ABS GEN 5
EXISTING FAULTS   YES
STORED FAULTS    YES
[ENTER]          TO CONTINUE
```

Press  to access the application main menu; refer to Chapter 3, "Diagnosing EC-17, EC-30 & EC-30T ABS" or Chapter 4, "Diagnosing Gen 4 & 5 ABS".



If you selected **BENDIX/KB/EATON ABS** and Brake-Link™ presents **CAN NOT IDENTIFY ECU**:

- the detected ECU is not a Bendix® EC-17, EC-30, EC-30T, Generation 4, or Generation 5 controller.

If you selected **EATON ABS** and Brake-Link™ presents **CAN NOT IDENTIFY ECU**:

- the detected ECU is not a Bendix® Generation 4 or Generation 5 controller (formerly marketed by Eaton®).

If it returns **ECU NOT RESPONDING**:

- you may have a loose connection; check all cables and reboot Brake-Link™.
- the ECU or Data Bus may not be working properly.

- 6 If you selected **PLC/ENHANCED MODE**, Brake-Link™ auto-detects the Bendix® (and/or formerly Eaton®) ECUs present on the J1708 Bus. If it finds a tractor and trailer ECU, it prompts you to select **TRACTOR** or **TRAILER**; use the  and  keys to select the desired option and press .

Brake-Link™ then presents an **ECU Registration** screen. The information on this screen varies depending on the controller.

EC-17/30/30T Registration screens show ECU ID, sensor/modulator configuration and indicate whether there are active faults; if there are, Brake-Link™ illuminates the LEDs on the front panel to reflect the LED illumination on the ECU itself.

```
BENDIX TRAILER
      2S/1M EC30T
ACTIVE FAULTS EXIST
[ENTER]   TO CONTINUE
```

Generation 4/5 Registration screens show ECU ID and indicate whether there are Existing (Gen 5 only) and/or Stored Faults.

```
TRAILER ABS GEN 5
EXISTING FAULTS   YES
STORED FAULTS    YES
[ENTER]          TO CONTINUE
```

Press  to access the application main menu; refer to Chapter 3, "Diagnosing EC-17, EC-30 & EC-30T ABS" or Chapter 4, "Diagnosing Gen 4 & 5 ABS".



If you selected **BENDIX/KB/EATON ABS** and Brake-Link™ presents **CAN NOT IDENTIFY ECU:**

- the detected ECU is not a Bendix® EC-17, EC-30, EC-30T, Generation 4, or Generation 5 controller.

If you selected **EATON ABS** and Brake-Link™ presents **CAN NOT IDENTIFY ECU:**

- the detected ECU is not a Bendix® Generation 4 or Generation 5 controller (formerly marketed by Eaton®).

If it displays **ECU NOT RESPONDING:**

- you may have a loose connection; check all cables and reboot Brake-Link™.
- the brake ECU may not be equipped with Enhanced PLC Mode; connect to the tractor/trailer Deutsch and select the J1708/J1587 protocol.
- Enhanced PLC Mode may not be enabled (see “Enabling Enhanced PLC Mode”, on page 30).
- the ECU or Data Bus may be malfunctioning.

Direct Access

Register ECU **via direct access buttons:**

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 16).
- 2 Brake-Link™ boots up and presents the **Select Application** screen.

```

SELECT APPLICATION
GENERIC PLC TEST
BENDIX/KB/EATON ABS
MERITOR WABCO ABS
    
```

Use the  and  keys to select **BENDIX/KB/EATON ABS** or **EATON ABS**; press .

Note: **EATON ABS** exclusively supports Generation 4 & 5 controllers (formerly marketed by Eaton®); **BENDIX ABS** supports EC-17, EC-30, EC-30T, and Generation 4 & 5.

- 3 Brake-Link™ displays navigation options; use the  and  keys to select **BUTTON NAVIGATION** and press .
- 4 Brake-Link™ prompts you to press the appropriate **COMM** button; press:
 -  to configure Brake-Link™ to communicate with the ECU via the J1708 Bus (accessed through the standard Deutsch Connectors).
 -  to configure Brake-Link™ to communicate with the ECU(s) via the Power Line Carrier (accessed through the Deutsch or J560 Tractor/Trailer Power Line Connectors).

Note: This option requires Enhanced Mode support and configuration of the ECU(s). See “Enabling Enhanced PLC Mode”, on page 30.

- 5 Next, Brake-Link™ prompts you to select a **MODE**; press  or .
- 6 Brake-Link™ then presents an **ECU Registration** screen. The information on this screen varies depending on the controller.

EC-17/30/30T Registration screens show ECU ID, sensor/modulator configuration and indicate whether there are active faults; if there are, Brake-Link™ illuminates the LEDs on the front panel to reflect the LED illumination on the ECU itself.

```

BENDIX TRAILER
  2S/1M EC30T
ACTIVE FAULTS EXIST
[ENTER]    TO CONTINUE
    
```

Generation 4/5 Registration screens show ECU ID and indicate whether there are Existing (Gen 5 only) and/or Stored Faults.

```

TRAILER ABS GEN 5
EXISTING FAULTS    YES
STORED FAULTS     YES
[ENTER]    TO CONTINUE
    
```

Press **ENTER**; refer to Chapter 3, "Diagnosing EC-17, EC-30 & EC-30T ABS" or Chapter 4, "Diagnosing Gen 4 & 5 ABS".



If you selected **BENDIX/KB/EATON ABS** and Brake-Link™ presents **CAN NOT IDENTIFY ECU**:

- the detected ECU is not a Bendix® EC-17, EC-30, EC-30T, Generation 4, or Generation 5 controller.

If you selected **EATON ABS** and Brake-Link™ presents **CAN NOT IDENTIFY ECU**:

- the detected ECU is not a Bendix® Generation 4 or Generation 5 controller (formerly marketed by Eaton®).

If it returns **ECU NOT RESPONDING** and you're using the **J1708** protocol:

- Brake-Link™ can't find a supported ECU for the selected **MODE**, e.g., you chose trailer while attached to the tractor and the tractor and trailer ECUs reside on separate J1708 Buses. Connect to the desired J1708 Bus and start again.
- you may have a loose connection; check all cables and reboot the application.
- the ECU or Data Bus may not be working properly.

If it presents **ECU NOT RESPONDING** and you're using the **PLC** protocol:

- the brake ECU may not be equipped with Enhanced PLC Mode; attach Brake-Link™ to the applicable Deutsch Connector (i.e., tractor or trailer) and use the **J1708** protocol.
- Enhanced PLC Mode may not be enabled on the ECU. Attach Brake-Link™ to the applicable Deutsch Connector (i.e., tractor or trailer) and use the **J1708** protocol; then, see "Enabling Enhanced PLC Mode", on page 30.
- the ECU or Data Bus may be malfunctioning.

7 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**. Refer to the "Table of Contents" to find information on the tasks you wish to perform for the system you're diagnosing or configuring.

Enabling Enhanced PLC Mode

ABS controllers that are equipped with *Enhanced PLC Mode* can send diagnostic information over the tractor/trailer power lines. This feature makes it possible to:

- access *all* ECUs residing on the power line via a single diagnostic connection. For example, if the Tractor and Trailer are connected, attach Brake-Link™ to the Tractor Deutsch to access both Tractor and Trailer ABS ECUs.
- access a Trailer ABS ECU when a Deutsch Connector isn't available. It also makes Trailer ECU access more convenient, as you only need one adapter (J560 PLC Cable Set) to supply power and communicate with the ECU.

Bendix® EC-30 and **EC-30T controllers** may require configuration to enable Enhanced PLC Mode. The rest of this section details enabling Enhanced Mode.

  To enable Enhanced PLC Mode:

- 1 Connect Brake-Link™ to the Tractor or Trailer Deutsch Connector (see “Connecting Brake-Link™ Components”, on page 16).

Note: Some ECUs support Enhanced Mode configuration over the PLC. In other words, if the trailer is attached to the tractor, you *may* be able to configure both ECUs through a single connection to the tractor Deutsch. If you receive an **ECU NOT RESPONDING** message, connect Brake-Link™ to the trailer Deutsch and try again.

- 2 Turn the tractor key “on”. Brake-Link™ boots up and presents the **Select Application** screen.

```

SELECT APPLICATION
GENERIC PLC TEST
BENDIX/KB/EATON ABS
MERITOR WABCO ABS
  
```

Use the  and  keys to select **BENDIX/KB/EATON ABS**; press .

Note: If Brake-Link™ has already registered an ECU and you returned to this screen by pressing , press ; then, select **BENDIX/KB/EATON ABS**.

- 3 Brake-Link™ presents navigation options; use the  and  keys to select **MENU NAVIGATION**; press .
- 4 Brake-Link™ displays the following screen; use the  and  keys to select **SET ENHANCE PLC MODE** and press .

```
J1708/J1587 BUS
PLC/ENHANCED MODE
SET ENHANCE PLC MODE
```

- 5 Brake-Link™ prompts you to select **TRACTOR** or **TRAILER**; use the  and  keys to select the desired option and press .
- 6 Next, Brake-Link™ displays your tractor/trailer selection and asks if you'd like to enable Enhanced PLC Mode permanently (**PERM**) or for the current ignition cycle (**TEMP**); use the  and  keys to select the desired option and press .

```
SET ENHANCE PLC MODE
TRAILER
PERM      [TEMP]
```

- 7 Brake-Link™ confirms the configuration is complete.



If it returns **ECU NOT RESPONDING**:

- the ECU may not be a Bendix® EC-30 or EC-30T; perform an ECU Registration (see pg. 19) to determine the type of ECU.
- the ECU may not support Enhanced PLC Mode.
- you may have selected the incorrect **MODE**, e.g., you're connected to the Trailer Deutsch and selected Tractor Mode.
- the ECU or Data Bus may not be working properly.

- 8 Press  to return to the **Protocol Selection** screen.

Chapter 3

Diagnosing EC-17, EC-30 & EC-30T ABS



▼ *Using EC-17, EC-30 & EC-30T Diagnostic Options, page 34*

Brake-Link™ offers the **Bendix**® ABS Application for diagnosing and/or configuring Bendix® Anti-lock Braking Systems controlled by the following ECUs:

Trailer

- EC-30T
- Generation 4 (formerly of Eaton®)
- Generation 5 (formerly of Eaton®)

Tractor

- EC-17
- EC-30

This chapter explains how to use the Bendix® ABS Application to diagnose systems controlled by EC-17, EC-30 or EC-30T. See Chapter 4, "Diagnosing Gen 4 & 5 ABS" for instructions on diagnosing Generation 4 and 5 ABS systems.

Note: Diagnostic functionality differs depending on the controller. Register the ECU (see pg. 25) to determine which controller you're working with; then, refer to the appropriate chapter.

Bendix® ABS Application supports both methods of navigation (see pg. 8). Most discussions in this chapter provide a separate set of instructions for each method. Topic introductions indicate when there are two sets of instructions and the following icons help you easily locate the desired set.



To exhaust modulators ***via menu navigation:***



To exhaust modulators ***via buttons navigation:***

Using EC-17, EC-30 & EC-30T Diagnostic Options

The following table shows the all of the options available for diagnosing systems controlled by EC-17, EC-30 and/or EC-30T. It also indicates the number of items offered by each option, e.g., the **TESTS** menu offers 11 tests.

EC-17/30/30T Options	# of Items
CURRENT FAULTS (see pg. 34)	2
FAULT HISTORY (see pg. 38)	2
DATA LIST (see pg. 40)	1
TESTS (see pg. 44)	11
ECU INFORMATION (see pg. 63)	1
RESET ECU (see pg. 65)	1
CONFIGURATION (see pg. 66)	2

The rest of this discussion details each of these options.

Current Faults

Brake-Link™ offers an option to view or clear all active (current) fault codes.

Some ECUs do not clear active fault codes immediately after you make a repair. For example, a fault may continue to exist until the vehicle reaches a certain speed. To ensure the repair corrected the issue, clear all codes; then view all codes again. If the repair did not fix the problem, the fault code re-appears.

Viewing & Clearing All Active Fault Codes

This section explains how to view and clear all active fault codes for each navigation method.

  To view/clear all active fault codes **via menu navigation**:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **CURRENT FAULTS** and press .

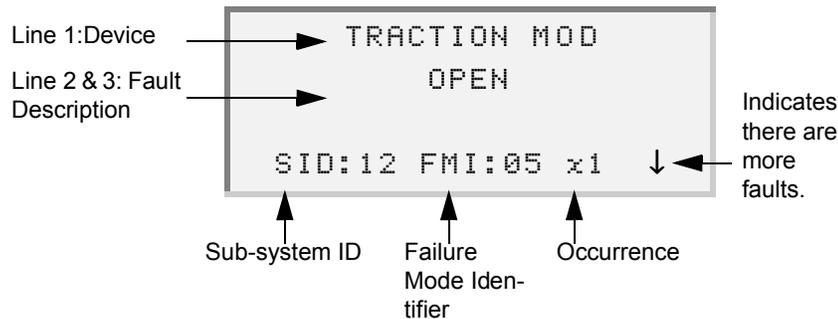


```

CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
  
```

- 4 Brake-Link™ prompts you to select **VIEW ALL** or **CLEAR ALL**. Use the  and  keys to select the desired option and press .

- 5 If you select **VIEW ALL**, Brake-Link™ presents the active faults one at a time. Brake-Link™ continuously queries for faults; the display updates as new faults are detected or existing faults are resolved. An arrow appears on the last line of the display if there is more than one fault; use the  and  keys to scroll through the fault codes. Press  to return to the **VIEW ALL/CLEAR ALL** selection dialog



Note: Some fault code descriptions, as defined by Bendix®, are longer than the LCD line. See Appendix A, “EC-17, EC-30 & EC-30T SID/FMI Tables”, for complete fault descriptions.

If you select **CLEAR ALL**, Brake-Link™ prompts you for confirmation. Use the  and  keys to select **YES** or **NO** and press .

— **NO** returns you to the **VIEW ALL/CLEAR ALL** selection dialog.

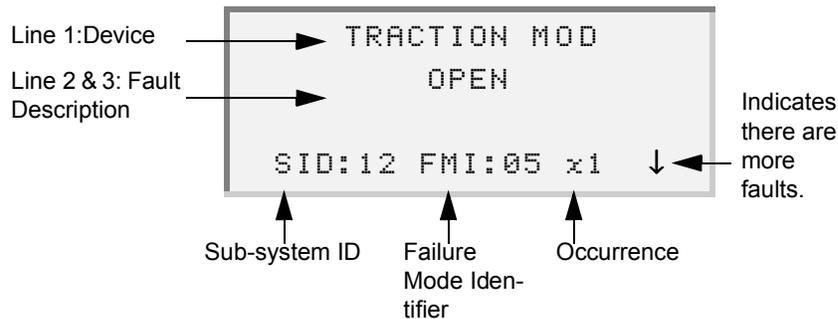
— **YES** clears the faults; press  to return to the **VIEW ALL/CLEAR ALL** selection dialog.

Direct Access

To view/clear all active fault codes **via button navigation:**

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**; press .
- 4 Brake-Link™ prompts you to select **VIEW ALL** or **CLEAR ALL**. Use the  and  keys to select the desired option and press .

- 5 If you select **VIEW ALL**, Brake-Link™ presents the active faults one at a time. Brake-Link™ continuously queries for fault codes; the display updates as new faults are detected or existing faults are resolved. An arrow appears on the last line of the display if there is more than one fault; use the  and  keys to scroll through the fault codes. Press  to return to the **VIEW ALL/CLEAR ALL** selection dialog.



Note: Some fault code descriptions, as defined by Bendix®, are longer than the LCD line. See Appendix A, “EC-17, EC-30 & EC-30T SID/FMI Tables”, for complete fault descriptions.

If you select **CLEAR ALL**, Brake-Link™ prompts you for confirmation. Use the  and  keys to select **YES** or **NO** and press .

— **NO** returns you to the **VIEW ALL/CLEAR ALL** selection dialog.

— **YES** clears the faults; press  to return to the **VIEW ALL/CLEAR ALL** selection dialog.

Fault History

Use **FAULT HISTORY** to view or clear all inactive (historical) fault codes.

Note: If you clear *current* (active) fault codes (see pg. 35), the ECU typically records those fault codes in the fault history.

Viewing & Clearing All Inactive Fault Codes

This section explains how to view and clear all inactive fault codes for each navigation method.

  To view/clear all inactive fault codes **via menu navigation:**

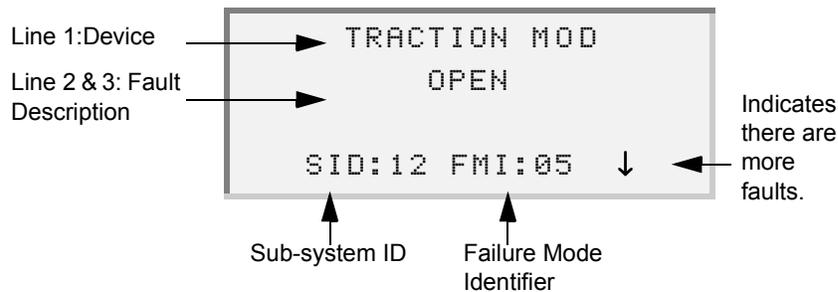
- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **FAULT HISTORY** and press .



```
CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
```

- 4 Brake-Link™ prompts you to select **VIEW ALL** or **CLEAR ALL**. Use the  and  keys to select the desired option and press .

- 5 If you select **VIEW ALL**, Brake-Link™ presents the inactive faults one at a time. An arrow appears on the last line of the display if there is more than one fault; use the  and  keys to scroll through the fault codes. Press  to return to the **VIEW ALL/CLEAR ALL** selection dialog



Note: Some fault code descriptions, as defined by Bendix®, are longer than the LCD line. See Appendix A, “EC-17, EC-30 & EC-30T SID/FMI Tables”, for ECU specific fault descriptions.

If you select **CLEAR ALL**, Brake-Link™ prompts you for confirmation. Use the  and  keys to select **YES** or **NO** and press .

— **NO** returns you to the **VIEW ALL/CLEAR ALL** selection dialog.

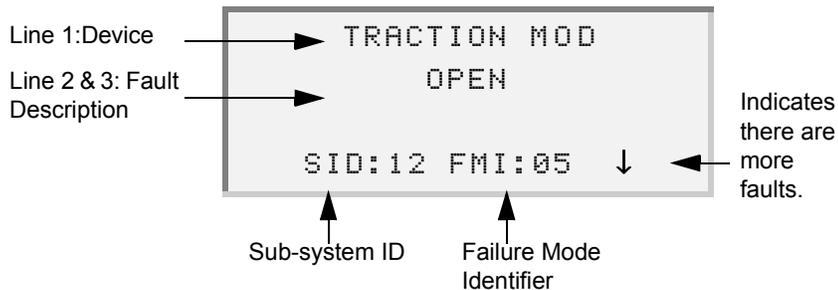
— **YES** clears the faults; press  to return to the **VIEW ALL/CLEAR ALL** selection dialog.

Direct
Access

To view/clear all inactive fault codes ***via button navigation:***

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**; press .
- 4 Brake-Link™ prompts you to select **VIEW ALL** or **CLEAR ALL**. Use the  and  keys to select the desired option and press .

- 5 If you select **VIEW ALL**, Brake-Link™ presents the inactive faults one at a time. An arrow appears on the last line of the display if there is more than one fault; use the  and  keys to scroll through the fault codes. Brake-Link™ displays **NO FAULTS** if there are no historical faults. Press  to return to the **VIEW ALL/CLEAR ALL** selection dialog.



Note: Some fault code descriptions, as defined by Bendix®, are longer than the LCD line. See Appendix A, “EC-17, EC-30 & EC-30T SID/FMI Tables”, for complete fault descriptions.

If you select **CLEAR ALL**, Brake-Link™ prompts you for confirmation. Use the  and  keys to select **YES** or **NO** and press .

— **NO** returns you to the **VIEW ALL/CLEAR ALL** selection dialog.

— **YES** clears the faults; press  to return to the **VIEW ALL/CLEAR ALL** selection dialog.

Data List

The **DATA LIST** option displays information gathered by the ECU. The following table provides a list of the *all* available data items and indicates which ECUs present the given data item.

Data Item	Description	ECU Support
LF Wheel*	Left Front Wheel Speed	EC-17/30/30T
RF Wheel*	Right Front Wheel Speed	EC-17/30/30T
LR Wheel*	Left Rear Wheel Speed	EC-17/30/30T
RR Wheel*	Right Rear Wheel Speed	EC-17/30/30T
LM Wheel*	Left Middle Wheel Speed	EC-17/30

Data Item	Description	ECU Support
RM Wheel*	Right Middle Wheel Speed	EC-17/30
Batt Voltage*	Battery Voltage	EC-17/30/30T
Traction Lamp	Traction Lamp Status	EC-17/30
Warning Lamp	Warning Lamp Status	EC-17/30/30T
Retarder Relay	Retarder Relay Status	EC-17/30
Engine Datalink	Engine Datalink Status	EC-17/30
J1922 Eng Comm	J1922 Engine Communication Status	EC-30
J1939 Eng Comm	J1939 Engine Communication Status	EC-30
J1939 Eng Ret	J1939 Engine Retarder Communication Status	EC-30
J1939 Exh Ret	J1939 Exhaust Retarder Communications Status	EC-30
J1939 DRLN Ret	J1939 Driveline Retarder Communications Status	EC-30
J1939 Trans Ret	J1939 Transmission Retarder Communication Status	EC-30
PLC Status†	Trailer Communication Status Over J2497	EC-30
Odometer	Trailer Odometer	EC-30T

* You may also retrieve these Data Items via Direct Access Buttons.

† PLC Status indicates whether the tractor ECU is configured to support J2497 communications. See Chapter 3, "Using Generic PLC Test", in the "Introducing Brake-Link™ Operator's Manual".

Use **menu navigation** to access a complete data list; use **direct access buttons** to retrieve Wheel Speed and/or Battery Voltage. The rest of this section explains how to complete all three of these tasks.

  To access a complete Data List ***via menu navigation:***

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **DATA LIST** and press .

```

CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
    
```

- 4 The Data List displays. Scroll through the data items with the  and  keys.

```

BATT VOLTAGE      14.2v
TRACTION LAMP     ON
WARNING LAMP      ON
RETARDER RELAY    NOAV
    
```

- 5 For each data item, Brake-Link™ returns:
 - **N/A** if the ECU does not respond to the data request.
 - **NOAV** if the ECU is configured to return “not available” for the given data item.
 - a value applicable to the given data request, e.g., 65mph for wheel speed.
 - **ERROR** if the ECU detects an error with the parameter or device.
- 6 Press  to return to the **EC-17/30/30T Diagnostic Options** menu or  to return to the **Select Application** screen.

 Direct Access

To retrieve wheel speeds ***via button navigation:***

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).

- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**; press the desired **AXLE** button.
- 4 It displays the selected axle and prompts you to select a side and component.

```
MID
->SIDE?
->COMPONENT?
```

Press **RIGHT** or **LEFT**; then, **SENSOR** or **ENTER** displays the speed of each wheel on the tractor or trailer.

- 5 Press **+** to return to the **CONTINUE BY PRESSING BUTTONS** prompt or **HOME** to return to the **Select Application** screen.

Direct
Access

To retrieve battery voltages via button navigation.

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**; press **VOLT**. Brake-Link™ presents the following options.

```
VIEW BATT VOLTAGE
LOAD BATTERY TEST
```

- 4 Select **VIEW BATT VOLTAGE** and press **ENTER**. Brake-Link™ displays the battery voltage.
- 5 Press **+** once to return to the **Battery Test Options** screen; twice to return to the **CONTINUE BY PRESSING BUTTONS** prompt, or press **HOME** to return to the **Select Application** screen.

Tests

Brake-Link™ offers the following tests.

Tests	Available for ECUs
Chuff Modulators (pg. 44)	EC-17/30/30T
Sensor Sequence Test (pg. 47)	EC-30/30T
Test Trailer on PLC (pg. 49)	EC-30
Disable Traction (pg. 50)	EC-17/30
Exhaust Modulators* (pg. 51)	EC-17/30/30T
Hold Modulators* (pg. 54)	EC-17/30/30T
Test Warning Lamp* (pg. 57)	EC-17/30/30T
Test Traction Lamp* (pg. 58)	EC-17/30
Test Trailer ABS Warning Lamp* (pg. 59)	EC-30
Test Retarder Relay* (pg. 60)	EC-17/30
Load Battery Voltage Test* (pg. 61)	EC-30/30T

* These tests reside on the Special Tests menu. See “Running Special Test”, on page 51.

Note: Brake-Link™ will not perform any test if it detects a wheel speed of 5mph or greater upon initiating the **TESTS** option.

Chuffing Modulators

Use this test to chuff each modulator independently or all modulators at once.

Note: This test supports EC-17, EC-30, and EC-30T.

The rest of this section explains how to chuff the modulators with each method of navigation.



To chuff the modulators **via menu navigation:**

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).

- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **TESTS** and press .

```
CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
```

- 4 Brake-Link™ displays a list of tests; scroll to **CHUFF MODULATORS** with the  and  keys and press .
- 5 If you're connected to the *tractor* ECU, Brake-Link™ presents:

```
CHUFF ALL
RIGHT FRONT MOD
LEFT FRONT MOD
RIGHT REAR MOD
```

If you're connected to the *trailer* ECU, it presents:

```
CHUFF ALL
MODULATOR 1
MODULATOR 2
```

Use the  and  keys to select the desired option and press .

- 6 Brake-Link™ chuffs the selected modulator(s) and returns **TEST IS COMPLETE**; press  to return to the **Modulator Selection** screen.
- 7 Press  once to return to the **Tests** menu; twice to return to the **EC-17/30/30T Diagnostic Options** menu; or press  to return to the **Select Application** screen.

Direct
Access

To chuff the modulators **via button navigation**:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**; press the desired **AXLE** button.
- 4 It displays the selected axle and prompts you to select a side and component.

```
MID
->SIDE?
->COMPONENT?
```

Press **RIGHT** or **LEFT** then, **MODULATOR** and **ENTER**

Note: If you select an invalid combination, Brake-Link™ presents an *N/A at the bottom of the screen and marks the invalid selections with an *. Press the appropriate **AXLE**, **SIDE** or **COMPONENT** button to modify your selection. For example, press **FRONT** to select a different axle.

```
MID*
RIGHT
MODULATOR*
      *N/A
```

5 Next, it presents the following choices.

```

CHUFF MODULATOR
EXHAUST MODULATOR
HOLD MODULATOR
  
```

Use the  and  keys to select *CHUFF MODULATOR* and press .

6 Brake-Link™ chuffs the selected modulator and returns **TEST IS COMPLETE**; press  to return to the **Modulator Test Selection** screen.

7 Press  to return to the **CONTINUE BY PRESSING BUTTONS** prompt.

Testing Sensor Sequence

Use this test to ensure the wheel sensors are functioning properly and attached to the correct wheels. For example, if you spin the right front wheel, Brake-Link™ displays the right front wheel speed. If it doesn't, the sensor may be malfunctioning. If it shows a wheel speed for a different wheel, the sensor is connected to the wrong wheel.

Note: This test supports EC-17, EC-30 and EC-30T.

  To test Wheel Sequence:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **TESTS** and press .

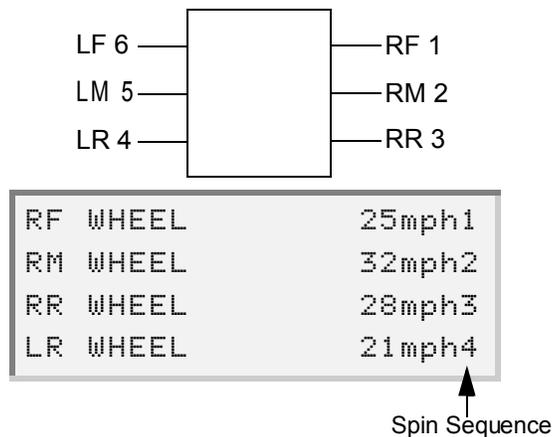
```

CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
  
```

- 4 Brake-Link™ displays a list of tests; scroll to **SENSOR SEQUENCE TEST** with the  and  keys and press .
- 5 Brake-Link™ displays the following screen.

```
RF WHEEL      <1mph
RM WHEEL      <1mph
RR WHEEL      <1mph
LR WHEEL      <1mph
```

Spin the wheels corresponding to the sensors you're testing. The display updates to reflect the greatest wheel speed detected for each wheel and indicates the sequence that the wheels were spun. The sample screen below shows the expected sequence if you spin the right front wheel first and work your way around the tractor clockwise.



Use the  and  keys to scroll through the list.

- 6 Press  once to return to the **Tests** menu; twice to return **EC-17/30/30T Diagnostic Options** menu; or press  to return to the **Application Selection** menu.

Testing Trailer on PLC

If the *trailer* ECU:

- detects an ABS fault, it sends an “on” message (MID 10) to the tractor ECU over the Power Line Carrier (PLC) to turn the In-dash Trailer ABS Warning Lamp on.
- **does not** detect an ABS fault, it sends an “off” message (MID 11) over the PLC.

This test monitors the **tractor** ECU for 1 second to determine if it’s receiving “off” messages only.

  To test for “off” message coming from Trailer over PLC:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).

Note: The trailer must be connected to the tractor to perform this test.

- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **TESTS** and press .



```

CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
  
```

- 4 Brake-Link™ displays a list of tests; scroll to **TEST TRAILER ON PLC** with the  and press .

- 5 Brake-Link™ reports the test:

- **successful** if the tractor only receives “off” messages during the 1 second test.
- **unsuccessful** if the tractor receives an “on” message or no message at all during the 1 second test.

Disabling Traction

This test temporarily disables traction control.

Note: This test supports EC-17 and EC-30.

The rest of this section explains how to temporarily disable traction control with each navigation method.



To temporarily Disable Traction Control ***via menu navigation:***

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **TESTS** and press .



```
CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
```

- 4 Brake-Link™ displays a list of tests; scroll to **DISABLE TRACTION** with the  and  keys and press .
- 5 Brake-Link™ disables the traction control. When you're ready to re-enable the traction control, simply press .
- 6 Press  again to return to the **Test Selection** screen.



To temporarily Disable Traction Control ***via button navigation:***

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS;** press .

- 4 Brake-Link™ disables the traction control. When you're ready to re-enable it, simply press **ENTER**.
- 5 Press **ENTER** again to return to the **CONTINUE BY PRESSING BUTTONS** prompt.

Running Special Test

The tests described in this section require the ECU to be in *test mode*; as such, they are called special tests and reside on the **Special Tests** menu. When you initiate a special test via menu navigation, Brake-Link™ automatically sends the ECU into test mode. It remains in test mode until you exit the **Special Tests** menu.

Some of these applications are also accessible via direct access buttons. When you initiate a special test with direct access buttons, Brake-Link™ enables test mode for the duration of the test.



If you disconnect the Brake-Link™ before exiting the SPECIAL TESTS menu, the ECU remains in test mode (i.e., not in normal operating state). If this happens, cycle the ignition power to return the system to normal state before operating the vehicle.

Exhaust Modulators

Use this test to exhaust the modulators, one at a time, for a period of 3 seconds.

Note: This test supports EC-17, EC-30 and EC-30T.

The rest of this section describes running this test with each navigation method.



To exhaust the modulators ***via menu navigation***:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).

- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **TESTS** and press .

```
CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
```

- 4 Brake-Link™ displays a list of tests; scroll to **SPECIAL TESTS** with the  and  keys and press .
- 5 Then it displays the **Special Test** menu; use the  and  keys to select **EXHAUST MODULATORS** and press .
- 6 If you're connected to the *tractor* ECU, Brake-Link™ presents:

```
RIGHT FRONT MOD
LEFT FRONT MOD
RIGHT REAR MOD
LEFT REAR MOD
```

If you're connected to the *trailer* ECU, it presents:

```
MODULATOR 1
MODULATOR 2
```

Use the  and  keys to select the desired modulator and press .

- 7 If this is the first *special test* performed since you entered the **Special Test** menu, Brake-Link™ configures the ECU for test mode. It remains in test mode until you exit the **Special Test** menu.
- 8 Brake-Link™ exhausts the selected modulator(s) and returns **TEST IS COMPLETE**; press  to return to the **Modulator Selection** screen.
- 9 Press  to return to the **Special Test** menu; or  to the **Application Selection** menu.

Direct
AccessTo exhaust the modulators ***via button navigation***:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**; press the desired **AXLE** button.
- 4 It displays the selected axle and prompts you to select a side and component.

```
MID
->SIDE?
->COMPONENT?
```

Press **RIGHT** or **LEFT** then, **MODULATOR** and **ENTER**

Note: If you select an invalid combination, Brake-Link™ presents an *N/A at the bottom of the screen and marks the invalid selections with an *. Press the appropriate **AXLE**, **SIDE** or **COMPONENT** button to modify your selection. For example, press **FRONT** to select a different axle.

```
MID*
RIGHT
MODULATOR*
      *N/A
```

- 5 Next, Brake-Link™ presents the following choices.

```
CHUFF MODULATOR
EXHAUST MODULATOR
HOLD MODULATOR
```

Use the  and  keys to select **EXHAUST MODULATOR** and press .

- 6 Brake-Link™ configures the ECU for test mode; then, it exhausts the selected modulator and returns **TEST IS COMPLETE**; press .
- 7 Brake-Link™ returns the ECU to regular mode and returns you to the **Modulator Test Selection** screen.
- 8 Press  to return to the **CONTINUE BY PRESSING BUTTONS** prompt or press  to return to the **Select Application** screen.

Hold Modulators

Use this test to hold the modulators, one at a time, for a period of 3 seconds.

Note: This test supports EC-17, EC-30 and EC-30T.

The rest of this section describes running this test with each navigation method.

  To hold the modulators **via menu navigation**:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **TESTS** and press .



```

CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
    
```

- 4 Brake-Link™ displays a list of tests; scroll to **SPECIAL TESTS** with the  and  keys and press .
- 5 Then it displays the **Special Test** menu; use the  and  keys to select **HOLD MODULATORS** and press .

- 6 If you're connected to the *tractor* ECU, Brake-Link™ presents:

```

RIGHT FRONT MOD
LEFT FRONT MOD
RIGHT REAR MOD
LEFT REAR MOD

```

If you're connected to the *trailer* ECU, it presents:

```

MODULATOR 1
MODULATOR 2

```

Use the  and  keys to select the desired option and press .

- 7 If this is the first *special test* performed since you entered the **Special Test** menu, Brake-Link™ configures the ECU for test mode. It remains in test mode until you exit the **Special Test** menu.
- 8 Brake-Link™ holds the selected modulator(s); when it's done, it returns **TEST IS COMPLETE**; press  to return to the **Modulator Selection** screen.
- 9 Press  to return to the **Special Test** menu or press  to return to the **Select Application** screen.

Direct
Access

To hold the modulators ***via button navigation***:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**; press the desired **AXLE** button.

- 4 It displays the selected axle and prompts you to select a side and component.

```
MID
->SIDE?
->COMPONENT?
```

Press **RIGHT** or **LEFT** then, **MODULATOR** and **ENTER**

Note: If you select an invalid combination, Brake-Link™ presents an *N/A at the bottom of the screen and marks the invalid selections with an *. Press the appropriate **AXLE**, **SIDE** or **COMPONENT** button to modify your selection. For example, press **FRONT** to select a different axle.

```
MID*
RIGHT
MODULATOR*
          *N/A
```

- 5 Next, Brake-Link™ presents the following choices.

```
CHUFF MODULATOR
EXHAUST MODULATOR
HOLD MODULATOR
```

Use the **↑** and **↓** keys to select **HOLD MODULATOR** and press **ENTER**.

- 6 Brake-Link™ configures the ECU for test mode; then, it holds the selected modulator and returns **TEST IS COMPLETE**; press **ENTER**.
- 7 Brake-Link™ returns the ECU to regular mode and returns you to the **Modulator Test Selection** screen.
- 8 Press **↑** to return to the **CONTINUE BY PRESSING BUTTONS** prompt or press **HOME** to return to the **Select Application** screen.

Test Warning Lamp

Use this test to force the *Tractor* ABS Warning Lamp or the *exterior* Trailer ABS Warning Lamp on and off.

Note: This test supports EC-17, EC-30 and EC-30T.

  To test *Tractor* in-dash or *Exterior* Trailer ABS Warning Lamp:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **TESTS** and press .

```

CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
  
```

- 4 Brake-Link™ displays a list of tests; scroll to **SPECIAL TESTS** with the  and  keys and press .
- 5 Next, Brake-Link™ displays the **Special Test** menu; use the  and  keys to select **TEST WARNING LAMP** and press .
- 6 If this is the first *special test* performed since you entered the **Special Test** menu, Brake-Link™ configures the ECU for test mode. It remains in test mode until you exit the **Special Test** menu.
- 7 Brake-Link™ presents the status of the lamp.

```

          WARNING LAMP
              ON

[CONTINUE]                EXIT
  
```

Select **CONTINUE** and press  to turn the lamp turn on/off.

- 8 Use the  and  keys to select **EXIT** and press  to return to the **Special Test** menu.
- 9 Press  to return to the **EC-17/30/30T Diagnostic Options** menu or press  to return to the **Select Application** screen.

Test Traction Lamp

Use this test to force the interior Traction Warning Lamp on and off.

Note: This test supports EC-17 and EC-30.

  To test the interior Traction Warning Lamp:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **TESTS** and press .



```
CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
```

- 4 Brake-Link™ displays a list of tests; scroll to **SPECIAL TESTS** with the  and  keys and press .
- 5 Next, Brake-Link™ displays the **Special Test** menu; use the  and  keys to select **TEST TRACTION LAMP** and press .
- 6 If this is the first *special test* performed since you entered the **Special Test** menu, Brake-Link™ configures the ECU for test mode. It remains in test mode until you exit the **Special Test** menu.

- 7 Brake-Link™ presents the status of the lamp.

```

TRACTION LAMP
      ON
[CONTINUE]      EXIT
  
```

Select **CONTINUE** and press **ENTER** to turn the lamp turn on/off.

- 8 Use the **←** and **→** keys to select **EXIT** and press **ENTER** to return to the **Special Test** menu.
- 9 Press **←** to return to the **EC-17/30/30T Diagnostic Options** menu or press **HOME** to return to the **Select Application** screen.

Test Interior Trailer ABS Warning Lamp

Use this test to force the *Interior* Trailer ABS Warning Lamp on and off.

Note: This test supports EC-30.

  To test the *interior* Trailer ABS Warning Lamp:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the **←** and **→** keys to scroll to **TESTS** and press **ENTER**.

```

CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
  
```

- 4 Brake-Link™ displays a list of tests; scroll to **SPECIAL TESTS** with the **←** and **→** keys and press **ENTER**.
- 5 Next, Brake-Link™ displays the **Special Test** menu; use the **←** and **→** keys to select **TEST TR ABS WAR LAMP** and press **ENTER**.

- 6 If this is the first *special test* performed since you entered the **Special Test** menu, Brake-Link™ configures the ECU for test mode. It remains in test mode until you exit the **Special Test** menu.
- 7 Brake-Link™ presents the status of the lamp.

```

TRAILER ABS
WARNING LAMP
      ON
[CONTINUE]      EXIT
    
```

Select **CONTINUE** and press **ENTER** to turn the lamp turn on/off.

- 8 Use the **←** and **→** keys to select **EXIT** and press **ENTER** to return to the **Special Test** menu.
- 9 Press **←** to return to the **EC-17/30/30T Diagnostic Options** menu or press **HOME** to return to the **Select Application** screen.

Test Retarder Relay

Use this test to force the Retarder Relay on and off.

Note: This test supports EC-17 and EC-30.

↑ **←** To test Retarder Relay:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the **←** and **→** keys to scroll to **TESTS** and press **ENTER**.

```

CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
    
```

- 4 Brake-Link™ displays a list of tests; scroll to **SPECIAL TESTS** with the **←** and **→** keys and press **ENTER**.

- 5 Next, Brake-Link™ displays the **Special Test** menu; use the  and  keys to select **TEST RETARDER RELAY** and press .
- 6 If this is the first *special test* performed since you entered the **Special Test** menu, Brake-Link™ configures the ECU for test mode. It remains in test mode until you exit the **Special Test** menu.
- 7 Brake-Link™ presents the status of the lamp.

```

RETARDER RELAY
      ON
[CONTINUE]          EXIT
  
```

Select **CONTINUE** and press  to turn the retarder relay on/off.

- 8 Use the  and  keys to select **EXIT** and press  to return to the **Special Test** menu.
- 9 Press  to return to the **EC-17/30/30T Diagnostic Options** menu or press  to return to the **Select Application** screen.

Load Battery Voltage Test

This test monitors the battery voltage drop while exhausting all modulators at the same time for a period of 3 seconds.

Note: This test supports EC-30 and EC-30T.

The rest of this section describes running this test with each navigation method.

  To run a Load Battery Voltage Test ***via menu navigation:***

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).

- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **TESTS** and press .

```
CURRENT FAULTS
FAULT HISTORY
DATA LIST
TESTS
```

- 4 Brake-Link™ displays a list of tests; scroll to **SPECIAL TESTS** with the  and  keys and press .
- 5 Then it displays the **Special Test** menu; use the  and  keys to select **LOAD BATT VOLT TEST** and press .
- 6 If this is the first *special test* performed since you entered the **Special Test** menu, Brake-Link™ configures the ECU for test mode. It remains in test mode until you exit the **Special Test** menu.
- 7 Brake-Link™ presents the battery voltage prior to exhausting the modulators and the lowest voltage detected during the test; press  to return to the **Special Test** menu.
- 8 Press  again to return to the **Tests** menu or press  to return to the **Select Application** screen.

Direct Access

To run a Load Battery Test ***via button navigation***:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**; press .
- 4 Next, it presents the **Battery Test Selection** screen.

```
VIEW BATT VOLTAGE
LOAD BATTERY TEST
```

Use the  and  keys to select **LOAD BATTERY TEST** and press .

- 5 Brake-Link™ configures the ECU for test mode; then, it presents the battery voltage prior to exhausting the modulators and the lowest voltage detected during the test; press .
- 6 Brake-Link™ returns the ECU to regular mode and returns you to the **Battery Test Selection** screen.
- 7 Press  to return to the **CONTINUE BY PRESSING BUTTONS** prompt or press  to return to the **Select Application** screen.

ECU Information

Use this option to retrieve the following ECU information:

- Software Revision Number
- Part Number
- Serial Number
- Firmware Version Number
- Type of ECU
- ECU Model

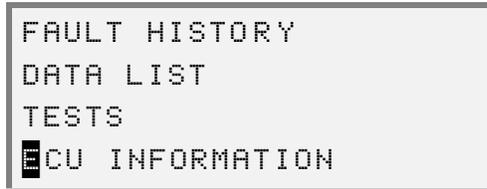
The rest of this section describes retrieving ECU information with each navigation method.



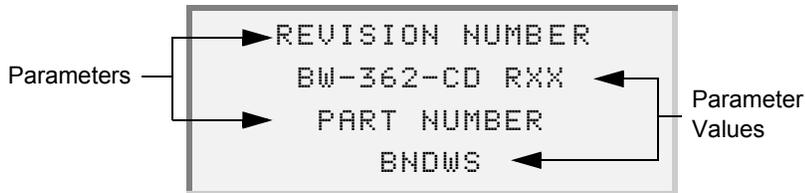
To view ECU Information ***via menu navigation***:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).

- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **ECU INFORMATION** and press .



- 4 Brake-Link™ displays the selected ECU's Information. Scroll the display with the  and  keys. A dashed line appears at the end of the list.

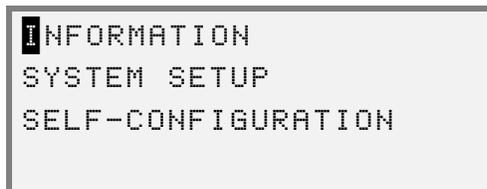


- 5 Press  to return to the main menu or press  to return to the **Select Application** screen.

Direct Access

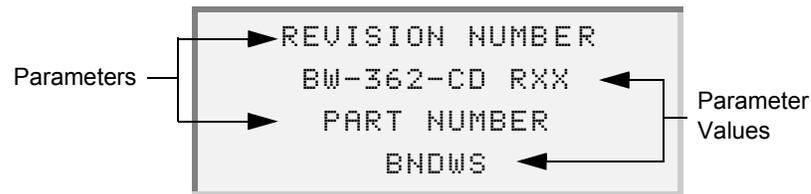
To view ECU Information ***via button navigation***:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**; press .
- 4 Brake-Link™ presents the **ECU Option Menu**.



Use the  and  keys to select **INFORMATION** and press .

- 5 Brake-Link™ displays the selected ECU's Information. Scroll the display with the  and  keys. A dashed line appears at the end of the list.



- 6 Press  to return to the **ECU Option Selection** screen or  return to the **Select Application** screen.

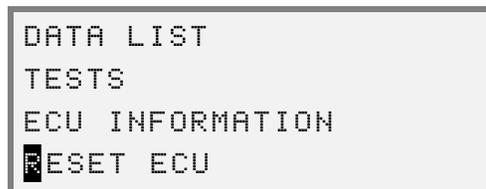
Reset ECU

Reset cycles the ECU, similar to powering down and up again.

The rest of this section describes resetting the ECU with each navigation method.

  To reset ECU **via menu navigation**:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; use the  and  keys to scroll to **RESET ECU** and press .



- 4 Brake-Link™ prompts you for confirmation; use the  and  keys to select **YES** and press .

- 5 Brake-Link™ displays a countdown while it resets the ECU; then it returns to the **EC-17/30/30T Diagnostic Options** menu.
- 6 Press **HOME** in to the **Select Application** screen.

Direct
Access

To reset ECU **via button navigation**:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**; press **RESET**.
- 4 Brake-Link™ prompts you for confirmation; use the **←** and **→** keys to select **YES** and press **ENTER**.
- 5 Brake-Link™ displays a countdown while it resets the ECU; then it returns you to the **CONTINUE BY PRESSING BUTTONS** prompt.
- 6 Press **HOME** in to the **Select Application** screen.

Configuration

Use configuration to enable, disables and configure ABS system components. Brake-Link™ offers the following ECU configuration options:

- **SELF-CONFIGURATION** restores the factory default configuration (pg. 66).
- **SYSTEM CONFIGURATION** allows you to configure the ECU (pg. 68).

Using Self-Configuration

SELF-CONFIGURATION restores the ECU's default factory settings.

The rest of this section describes running self-configuration with each navigation method.



To run Self-Configuration **via menu navigation**:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).

- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; scroll to **CONFIGURATION** with   and press .
- 4 Brake-Link™ presents **Configuring Options**; use the   keys to select **SELF CONFIG** and press .
- 5 Brake-Link™ prompts you for confirmation; use the  and  keys to select **YES** and press .
- 6 Brake-Link™ displays a countdown while it configures the ECU; then it returns to the **Configuration Option** menu.
- 7 Press  to return to the **Bendix® ABS Application** main menu or  to return to the **Select Application** screen.

Direct
AccessTo run Self-Configuration via button navigation:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**; press .
- 4 Next, it presents the **ECU Options** menu; use the  and  keys to select **SELF-CONFIGURATION** and press .
- 5 Brake-Link™ prompts you for confirmation; use the  and  keys to select **YES** and press .
- 6 It displays a countdown while it configures the ECU; then it returns to the **ECU Options** menu.
- 7 Press  to return to the **CONTINUE BY PRESSING BUTTONS** prompt or  to the **Select Application** screen.

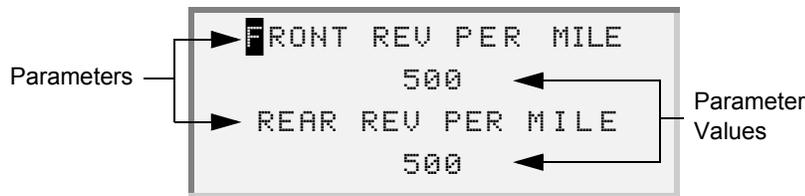
Modifying System Configuration

Use the *SYSTEM CONFIGURATION* option to individually configure ECU parameters.

The rest of this section describes configuring the ECU with each navigation method.

  To configure individual ECU parameters **via menu navigation**:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **EC-17/30/30T Diagnostic Options** menu; scroll to *CONFIGURATION* with   and press .
- 4 Brake-Link™ presents the **Configuration Options**; use the   keys to select *SYSTEM CONFIG* and press .
- 5 Brake-Link™ displays the current configuration; use the   keys to scroll through the parameters.



When the cursor rests on the parameter you wish to change, press .

- 6 Brake-Link™ presents information relevant to the selected parameter, e.g., warnings, selection instructions, etc. Use the arrow keys to edit the setting. Press  to save your changes or  to return to the parameters list *without* saving changes.

Note: Some parameters present one or more information screens before the **Parameter Value Edit** screen. Read the information on each screen and press  as instructed.

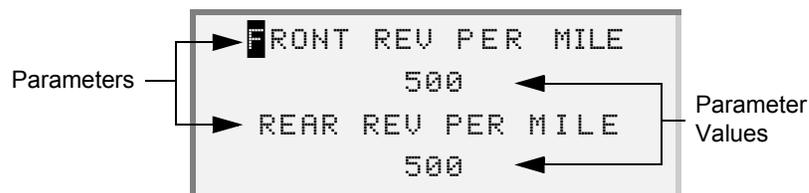
- 7 When you're done changing parameters, press  to exit configuration.
- 8 Brake-Link™ prompts you for confirmation; use the   keys to select **YES** and press .
- 9 Brake-Link™ displays a countdown while it configures the ECU; then it reports the success of the configuration; press  to return to the **Configuration Option** menu.

Note: Some parameter changes may be unsuccessful, while the rest are successful resulting in a successful response. After configuration, initiate this option again and review the parameters to ensure all changes took effect.

Direct
Access

To configure individual ECU parameters ***via button navigation:***

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS;** press .
- 4 Next, it presents the **ECU Options** menu; use the  and  keys to select **SYSTEM SETUP** and press .
- 5 Brake-Link™ displays the current configuration; use the   keys to scroll through the parameters.



When the cursor rests on the parameter you wish to change, press .

- 6 Brake-Link™ presents information relevant to the selected parameter, e.g., warnings, selection instructions, etc. Use the arrow keys to edit the setting. Press **ENTER** to save your changes or **←** to return to the parameters list *without* saving changes.

Note: Some parameters present one or more information screens before the **Parameter Value Edit** screen. Read the information on each screen and press **ENTER** as instructed.

- 7 When you're done editing parameters, press **←**.
- 8 Brake-Link™ prompts you for confirmation; use the **←** and **→** keys to select **YES** and press **ENTER**.
- 9 Brake-Link™ displays a countdown while it configures the ECU; then it reports the success of the configuration; press **ENTER** to return to the **Configuration Option** menu.

Note: Some parameter changes may be unsuccessful, while the rest are successful resulting in a successful response. After configuration, initiate this option again and review the parameters to ensure that all changes took effect.

Chapter 4

Diagnosing Gen 4 & 5 ABS



▼ *Using the Gen 4 & 5 Diagnostic Options, page 72*

Brake-Link™ offers the **Eaton**® ABS Application for diagnosing and/or configuring Generation 4 and 5 Trailer Anti-lock Braking Systems (ABS).

Note: Effective June 1, 2002, Bendix Commercial Vehicle Systems, LLC., acquired distribution of the Knorr-Bremse® ABS products, from Eaton® Corporation. All Knorr-Bremse® ABS product lines will be marketed in North America under the Bendix® brand name. Eaton® Roadranger® field representatives will continue to provide fleet and dealer sales and service support for the Bendix®/Knorr-Bremse® ABS product line. For more information, call 1-800-AIR-BRAKE (1-800-247-2725) or visit www.bendix.com.

Eaton® ABS Application also supports both methods of navigation (see pg. 8). Most discussions in this chapter provide a separate set of instructions for each method. Topic introductions indicate when there are two sets of instructions and the following icons help you easily locate the desired set.



To exhaust modulators ***via menu navigation:***



To exhaust modulators ***via buttons navigation:***

Using the Gen 4 & 5 Diagnostic Options

The following table shows the **Gen 4/5 Diagnostic Options** menu and indicates the number of items offered by each option, e.g., the **TESTS** menu offers 3 tests.

Generation 4 & 5 Diagnostic Options	# of Items
ECU INFORMATION (see pg. 72)	1
FAULTS (see pg. 74)	2 or 3*
DATA LIST (see pg. 83)	1
TESTS (see pg. 85)	2
SELF CONFIGURATION (see pg. 87)	1

* The faults menu present 2 options for Generation 4 controllers and 3 for Generation 5.

This rest of this section details each of these options.

ECU Information

Use this option to retrieve the following ECU information:

- ECU Model
- Part Number
- Manufacture Date
- Serial Number
- Software Number
- System Configuration
- Diagnostic Version

The rest of this section describes retrieving ECU information with each navigation method.

 To view ECU Information **via menu navigation**:

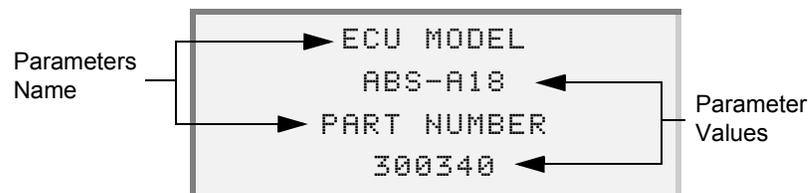
- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **Gen 4/5 Diagnostic Options** menu; use the  and  keys to scroll to **ECU INFORMATION** and press .

```

ECU INFORMATION
FAULT
DATA LIST
TESTS

```

- 4 Brake-Link™ displays the ECU's Information. Scroll the display with the  and  keys. A dashed line appears at the end of the list.



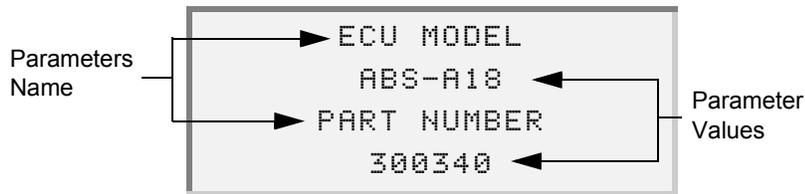
Note: If the ECU doesn't report a parameter's value, Brake-Link™ displays N/A.

- 5 Press  to return to the **Gen 4/5 Diagnostic Options** menu or  to return to the **Select Application** screen.

 To view ECU Information **via button navigation**:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**; press .

- 4 Brake-Link™ displays the ECU's Information. Scroll the display with the  and  keys. A dashed line appears at the end of the list.



Note: If the ECU doesn't report a parameter's value, Brake-Link™ displays N/A.

- 5 Press  to return to **CONTINUE BY PRESSING BUTTONS** prompt or  to the **Select Application** screen.

Faults

Gen 4 and Gen 5 controllers report fault code information differently.

Generation 4 controllers *store* all detected fault codes and report them one code at a time. Brake-Link™ offers an option for viewing the stored fault and clearing faults from the ECU.

- ✓ View the stored fault screen (*pg. 77*).
- ✓ Clear the fault codes from the ECU (*pg. 80*). If the cleared code appears again, it's active.
- ✓ Repair the system and clear faults again to ensure that the repair remedied the fault code.

Generation 5 controllers differentiate between active and historical fault codes. Active fault code appear in the **Existing Fault Code List**, while historical fault codes appear in the **Stored Fault Code List**. Once you repair a problem, the ECU moves the associated fault code to the stored list for future reference.

- ✓ Review existing codes (*pg. 75*); then, review fault history in the stored list (*pg. 77*). Both lists display up to 16 codes.
- ✓ Repair the vehicle.
- ✓ Clear the fault codes (*pg. 80*) before cycling power or road testing. A code that appears in the stored list *only*, after cycling power or road testing the vehicle, indicates an intermittent problem.

This section explains how to: **VIEW EXISTING FAULTS** (Gen 5), **VIEW STORED FAULT(S)** and **CLEAR FAULTS**.

Viewing Existing Faults

This section explains how to view existing fault codes for each navigation method.

Note: This option is only available for Gen 5 controllers.

  To view existing fault codes **via menu navigation**:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **Gen 4/5 Diagnostic Options** menu; use the  and  keys to scroll to **FAULTS** and press .

```

ECU INFORMATION
F FAULTS
DATA LIST
TESTS
  
```

- 4 Brake-Link™ displays the **Faults Menu**; select **VIEW EXISTING FAULTS** and press .

5 Brake-Link™ shows existing fault code(s).

```

SENSOR MEMORY CHECK
DRIVE VEHICLE
SID: 151(97h)      B: 17-12
FMI: 014(0Eh)     x: N/A↓
    
```

- Line 1 shows the System ID (SID) description.
- Line 2 shows the Failure Mode Indicator (FMI) description.
- Line 3 shows the SID value in decimal and hexadecimal, and the Blink Code value in decimal only.
- Line 4 shows the FMI value in decimal and hexadecimal, and an occurrence count. If the ECU doesn't support occurrence count reporting, Brake-Link™ displays **N/A**. If there is more than one code, a down arrow appears next to the occurrence count; scroll the display with the  and  keys. At the end of the list, the down arrow disappears and an up arrow appears on the left side of the screen.

Note: Refer to Appendix B for a list of all supported Generation 4 and 5 Fault Codes.

6 Press  to return to the main menu or  to the **Select Application** screen.

Direct Access

To view existing fault codes ***via button navigation:***

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS;** press 

- 4 Brake-Link™ shows existing fault code(s).

```

SENSOR MEMORY CHECK
DRIVE VEHICLE
SID:151(97h)      B:17-12
FMI:014(0Eh)     z:N/A↓

```

- Line 1 shows the System ID (SID) description.
- Line 2 shows the Failure Mode Indicator (FMI) description.
- Line 3 shows the SID value in decimal and hexadecimal, and the Blink Code value in decimal only.
- Line 4 shows the FMI value in decimal and hexadecimal, and an occurrence count. If the ECU doesn't support occurrence count reporting, Brake-Link™ displays **N/A**. If there is more than one code, a down arrow appears next to the occurrence count; scroll the display with the  and  keys. At the end of the list, the down arrow disappears and an up arrow appears on the left side of the screen.

Note: Refer to Appendix B for a list of all supported Generation 4 and 5 Fault Codes.

- 5 Press  to return to the **CONTINUE BY PRESSING BUTTONS** prompt or  to the **Select Application** screen.

Viewing Stored Faults

Generation 4 and 5 controllers report stored faults differently:

- Gen 4 stores all fault codes and presents them one at a time.
- Gen 5 controllers record inactive fault codes in the Stored Faults list.

Refer to the beginning of this discussion (*pg. 74*) to find out how to use the **Faults** options together to diagnose an issue. There is a separate procedure for Generation 4 and 5.

The rest of this section explains how to view stored fault(s) with each method of navigation.

  To view stored fault codes ***via menu navigation***:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).

- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **Gen 4/5 Diagnostic Options** menu; use the  and  keys to scroll to **FAULTS** and press .

```
ECU INFORMATION
FAULTS
DATA LIST
TESTS
```

- 4 Brake-Link™ displays the **Faults Menu**; select **VIEW STORED FAULT(S)** and press .
- 5 Brake-Link™ shows the stored fault code(s).

```
SPEED SENSOR C
SHORT HI/LOW OR OPEN
SID:003(03h)      B:4-6
FMI:012(0Ch)     x:001↓
```

— Line 1 shows the System ID (SID) description.

— Line 2 shows the Failure Mode Indicator (FMI) description.

— Line 3 shows the SID value in decimal and hexadecimal, and the Blink Code value in decimal only.

— Line 4 shows the FMI value in decimal and hexadecimal, and an occurrence count. If you’re diagnosing a Gen 5 system with more than one code, a down arrow appears next to the occurrence count; scroll the display with the  and  keys. At the end of the list, the down arrow disappears and an up arrow appears on the left side of the screen.

Note: Refer to Appendix B for a list of all supported Generation 4 and 5 Fault Codes.

- 6 Press  to return to the main menu or  to the **Select Application** screen.

Direct
AccessTo view stored fault codes **via button navigation:**

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS;** press .
- 4 Brake-Link™ shows the stored fault code(s).

```

SPEED SENSOR C
SHORT HI/LOW OR OPEN
SID:003(03h)      B:4-6
FMI:012(0Ch)     z:001↓

```

- Line 1 shows the System ID (SID) description.
- Line 2 shows the Failure Mode Indicator (FMI) description.
- Line 3 shows the SID value in decimal and hexadecimal, and the Blink Code value in decimal only.
- Line 4 shows the FMI value in decimal and hexadecimal, and an occurrence count. If you’re diagnosing a Gen 5 system with more than one code, a down arrow appears next to the occurrence count; scroll the display with the  and  keys. At the end of the list, the down arrow disappears and an up arrow appears on the left side of the screen.

Note: Refer to Appendix B for a list of all supported Generation 4 and 5 Fault Codes.

- 5 Press  to return to the **CONTINUE BY PRESSING BUTTONS** prompt or  to the **Select Application** screen.

Clearing Faults

CLEAR FAULTS clears existing and stored fault codes from the ECU.

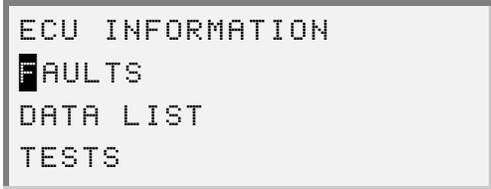
Refer to the beginning of this discussion (pg. 74) to find out how to use the **Faults** options together to diagnose an issue. There are separate procedures for Generation 4 and 5.

The rest of this section explains how to clear faults with each method of navigation.



To clear fault codes **via menu navigation**:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **Gen 4/5 Diagnostic Options** menu; use the  and  keys to scroll to **FAULTS** and press .



```

ECU INFORMATION
█ FAULTS
DATA LIST
TESTS
  
```

- 4 Brake-Link™ displays the **Faults Menu**; select **CLEAR FAULT** and press .
- 5 Brake-Link™ requests confirmation; use the  and  keys to select **YES** and press .
- 6 Brake-Link™ clears stored and existing fault codes from the controller’s *memory*; then, it checks to see if the controller is detecting any faults in the system.

If there:

- are *no* problems in the ABS, Brake-Link™ confirms that the faults have been cleared; press **ENTER** to return to the **Faults Menu**.
- is a problem in the ABS, Brake-Link™ displays the following screen.

```

FAULTS STILL PRESENT

[ENTER]      TO CONTINUE
```

Press **ENTER** to review the active fault(s) in the Existing Faults List (Gen 5) or Stored Fault screen (Gen 4); press **←** to return to the **Faults Menu**.

Direct
Access

To clear stored fault codes ***via button navigation:***

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS**; press **RESET**
- 4 Brake-Link™ requests confirmation; use the **→** and **←** keys to select **YES** and press **ENTER**.
- 5 Brake-Link™ clears stored and existing fault codes from the controller’s *memory*; then, it checks to see if the controller is detecting any faults in the system.

If there:

- are *no* problems in the ABS, Brake-Link™ confirms that the faults have been cleared; press **ENTER** to return to the **CONTINUE BY PRESSING BUTTONS** prompt.
- is a problem in the ABS, Brake-Link™ displays the following screen.

```
FAULTS STILL PRESENT

[ENTER]      TO CONTINUE
```

Press **ENTER** to review the active fault(s) in the Existing Faults List (Gen 5) or Stored Fault screen (Gen 4); press **↵** to return to the **CONTINUE BY PRESSING BUTTONS** prompt.

Data List

The **DATA LIST** option displays information gathered by the ECU. The following table provides the data list parameters and their descriptions.

Data Item	Description
Wheel Speed A	SPEED A
Wheel Speed B	SPEED B
Wheel Speed C	SPEED C
Wheel Speed D	SPEED D
Cut Out Speed A	CUT OUT A
Cut Out Speed B	CUT OUT B
Cut Out Speed C	CUT OUT C
Cut Out Speed D	CUT OUT D
ECU Voltage*	ECU VOLTAGE
Brake Light Voltage*	BRAKE LIGHT
Blue Line Voltage†	BLUE LINE
Brake Line Voltage†	BRAKE LINE
Travel Distance‡	TRV DIST

* Generation 4 controllers only.

† Generation 5 controllers only.

‡ The data list contains two Travel Distance parameters: one for Miles and one for Kilometers.

The rest of this section explains how to view the data list with each method of navigation.



To access the Data List **via menu navigation**:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).

- 3 Brake-Link™ presents the **Gen 4/5 Diagnostic Options** menu; use the  and  keys to scroll to *DATA LIST* and press .

```

ECU INFORMATION
FAULTS
DATA LIST
TESTS
    
```

- 4 Brake-Link™ displays the data list; use the  and  keys to scroll the list. A dashed line appears at the end of the list.

```

TRV DIST          1400 km
-----
SPEED A           4 mph
SPEED B           4 mph
    
```

Note: All parameters update continuously to show the most recent values.

- 5 Press  to return to the **Gen 4/5 Diagnostic Options** menu or  to return to the **Select Application** screen.

Direct
Access

To access the Data List ***via button navigation:***

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ instructs you to **CONTINUE BY PRESSING BUTTONS;** press  or .
- 4 Brake-Link™ displays the data list; use the  and  keys to scroll the list. A dashed line appears at the end of the list.

```

TRV DIST          1400 km
-----
SPEED A           4 mph
SPEED B           4 mph
    
```

Note: All parameters update continuously to show the most recent values.

- 5 Press  to return to the **CONTINUE BY PRESSING BUTTONS** prompt or  to the **Select Application** screen.

Tests

Brake-Link™ offers the following tests:

- **TEST VALVES** to ensure the modulator valves are working properly (pg. 85).
- **TEST WARNING LAMP** to ensure the ABS Warning Lamp on the outside of the trailer is working properly (pg. 86).

Access all tests *via menu navigation*.

Testing Valves

This test cycles the selected modulator valve.

Note: The vehicle must be stationary in order to perform this test.

  To test selected modulator valve ***via menu navigation***:

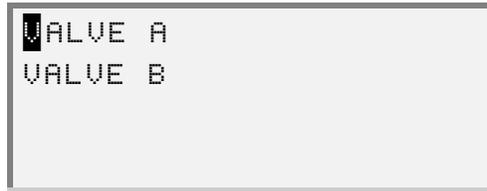
- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **Gen 4/5 Diagnostic Options** menu; use the  and  keys to scroll to **TESTS** and press .

```

ECU INFORMATION
FAULTS
DATA LIST
TESTS
  
```

- 4 Brake-Link™ displays the **Tests Menu**; use the  and  keys to position the cursor on **TEST VALVES** and press .

- 5 The **Valve Selection** screen displays next.



Use the  and  keys to position the cursor on the desired valve and press .

Note: *VALVE B* only appears on the **Valve Selection** screen if ABS is a 2S/2M or 4S/2M configuration.

- 6 Brake-Link™ executes the valve test. It displays a countdown while the test is running. When it's finished, it displays **TEST IS COMPLETE**; press  to return to the **Valve Selection** screen.
- 7 Press  to return to the **Tests** menu or  to the **Select Application** screen.

Testing Warning Lamp

Use this option to ensure the ABS Warning Lamp on the outside of the trailer is functioning properly. This test blinks the lamp 4 times.

Note: Before the warning lamp is tested, Brake-Link™ detects wheel speeds to verify that speeds are less than 5 kph. If wheel speeds are *not* less than 5 kph, the Brake-Link™ displays a message indicating that the test cannot be performed.

  To test Trailer ABS Warning Lamp ***via menu navigation***:

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).

- 3 Brake-Link™ presents the **Gen 4/5 Diagnostic Options** menu; use the  and  keys to scroll to **TESTS** and press .

```

ECU INFORMATION
FAULTS
DATA LIST
TESTS

```

- 4 Brake-Link™ displays the **Tests Menu**; use the  and  keys to position the cursor on **TEST WARNING LAMP** and press .

Note: If wheel speeds are greater than 5 kph, Brake-Link™ displays a message indicating that the test cannot be performed.

- 5 Brake-Link™ blinks the lamp 4 times; while performing the test, it displays the following message.

```

ACTIVATING
WARNING LAMP
ON AND OFF...

```

Once it finishes the test, it displays **TEST IS COMPLETED**. Press  to return to the **Tests Menu**.

- 6 Press  to return to the main menu or  to the **Select Application** screen.

Self-Configuration

Generation 4 and 5 controllers can auto-detect ABS components and automatically adjust the current configuration. Use Brake-Link™ to initiate this procedure.



*The ECU **must** recognize all ABS components. To avoid improper re-configuration and/or damaging the ECU, be sure all system peripherals (i.e., modulators, sensors, etc.) are properly installed/connected **before** initiating self-configuration.*

Initiate procedure via menu navigation.

  To run self-configuration ***via menu navigation:***

- 1 Connect Brake-Link™ to the tractor or trailer and power-up (see “Connecting Brake-Link™ Components”, on page 20).
- 2 Register the ECU (see “Register ECU via menu navigation:”, on page 28).
- 3 Brake-Link™ presents the **Gen 4/5 Diagnostic Options** menu; use the  and  keys to scroll to **SELF-CONFIGURATION** and press .

```
FAULTS
DATA LIST
TESTS
SELF-CONFIGURATION
```

- 4 Brake-Link™ displays the following screen.

```
CONTINUING WILL
RECONFIGURE ECU
ARE YOU SURE?
YES                [NO]
```

The ECU **must** recognize all ABS components. To avoid improper re-configuration and/or damaging the ECU, be sure all system peripherals (i.e., modulators, sensors, etc.) are properly installed/connected; then, use the  and  keys to toggle to **YES** and press .

- 5 The ECU begins self-configuration; when it's complete, Brake-Link™ displays the new configuration, e.g.,

```
SYSTEM CONFIGURATION
4S/2M SIDEWISE SL
[ENTER] TO CONTINUE
```

Press  to return to **Gen 4/5 Diagnostic Options** menu.

Appendix A

EC-17, EC-30 & EC-30T SID/FMI Tables



- ▼ *EC-17 SIDs & FMIs, page 90*
- ▼ *EC-30 SIDs & FMIs, page 92*
- ▼ *EC-30T SIDs & FMIs, page 95*

Some Failure Mode ID (FMI) descriptions, as defined by Bendix®, may be longer than 20 characters; since the Brake-Link™ LCD is 20 characters wide, it may display a shortened version of the description. This appendix provides a SID (Sub-system ID)/FMI table for each supported ECU.

EC-17 SIDs & FMIs

The following tables list all EC-17 Sub-system IDs (SIDs) and Failure Mode IDs (FMIs) with complete descriptions.

Sensors			
SIDs	Description	FMIs	Description
01	Left Front Sensor	01	Sensor Start
02	Right Front Sensor	02	Intermittent
03	Left Rear Sensor	05	Open
04	Right Rear Sensor	06	Shorted
05	Left Middle Sensor	07	Lock Time Out
06	Right Middle Sensor	08	Frequency Doubling
		09	High Frequency Noise
		0A	Wobble
		0D	Invalid Tire Size (Gross Mismatch)

Modulators			
SIDs	Description	FMIs	Description
07	Left Front Modulator	03	Off Failure
08	Right Front Modulator	05	Open
09	Left Rear Modulator	06	Shorted
0A	Right Rear Modulator	07	Lock Time Out
		0B	ASIC Shorted or Open
		0E	Solenoid Shorted

Traction			
SIDs	Description	FMIs	Description
12	Traction Modulator	05	Open
		06	Shorted

Lamps			
SIDs	Description	FMIs	Description
17	ABS Warning Lamp	05	Open
18	Traction Lamp	06	Shorted

J1939			
SIDs	Description	FMIs	Description
E7	J1939	05	No Communications
		0C	No Retarder

J1922 Engine Comm.			
SIDs	Description	FMIs	Description
F9	J1922 Engine Comm.	05	No Communications

Battery Voltage			
SIDs	Description	FMIs	Description
FB	Battery Voltage	03	Low
		04	High

ECU			
SIDs	Description	FMIs	Description
FE	ECU	02	Intermittent Watchdog
		07	ASIC Analog Feedback
		09	NVRAM CSUM Failure
		0A	Stack Overrun
		0B	Watchdog Failure
		0C	SSIO Communication Lost
		0D	Invalid NVRAM Data

EC-30 SIDs & FMIs

The following tables list all EC30 Sub-system IDs (SIDs) and Failure Mode IDs (FMIs) with complete descriptions.

Sensors			
SIDs	Description	FMIs	Description
01	Left Front Sensor	01	Needs adjustment; output low during startup
02	Right Front Sensor	02	Intermittent output; check sensor adjustment and exciter ring
03	Left Rear Sensor	03	Shorted to VBAT
04	Right Rear Sensor	04	Shorted to ground
05	Left Middle Sensor	05	Open
06	Right Middle Sensor	06	Shorted across sensor
		07	Output low or missing; sensor locked out to eliminate excessive modulator cycling
		08	Output incorrect at speed (8)
		09	Connection has corrosion; sensor loose in block, output noisy.
		0A	Sensor or exciter ring needs adjustment, output intermittent, wobble run in exciter ring
		0C	Abnormal speed
		0D	Invalid tire size; gross mismatch

Modulators			
SIDs	Description	FMIs	Description
07	Left Front Modulator	03	Shorted to VBAT
08	Right Front Modulator	05	Open
09	Left Rear Modulator	06	Shorted to ground
0A	Right Rear Modulator	07	Not responding; sensor out of adjustment or modulator issue
		08	Shorted between
		0E	Solenoid Shorted

Retarder Relay			
SIDs	Description	FMIs	Description
0D	Retarder Relay	05	Open
		06	Shorted

Traction			
SIDs	Description	FMIs	Description
12	Traction Modulator	03	Shorted to VBAT
		05	Open
		06	Shorted to ground
		0E	Shorted

Lamps			
SIDs	Description	FMIs	Description
17	ABS Warning Lamp	05	Open
18	Traction Lamp	06	Shorted
51	Trailer ABS Warning Lamp (Dash mounted)		

J1939			
SIDs	Description	FMI	Description
E7	J1939	05	Engine Comm Fault
		0C	Retarder Comm Fault

J1922 Engine Comm.			
SIDs	Description	FMI	Description
F9	J1922 Engine Comm.	05	Engine Comm Fault
		0C	Retarder Comm Fault

Battery Voltage			
SIDs	Description	FMI	Description
FB	Battery Voltage	03	Low
		04	High

ECU			
SIDs	Description	FMI	Description
FE	ECU	01	ECU Fault
		02	ECU Fault
		03	ECU Fault
		06	ECU Fault
		07	ECU Fault
		08	ECU Fault
		09	ECU Fault
		0A	ECU Fault
		0B	ECU Fault
		0C	ECU Fault
		0D	ECU Fault
		0E	ECU Fault

EC-30T SIDs & FMIs

The following tables list all EC30T Sub-system IDs (SIDs) and Failure Mode IDs (FMIs) with complete descriptions.

Sensors			
SIDs	Description	FMIs	Description
01	Left Front Sensor	01	Needs adjustment; output low during startup
02	Right Front Sensor	02	Intermittent output; check sensor adjustment and exciter ring
03	Left Rear Sensor	03	Shorted to VBAT
04	Right Rear Sensor	04	Shorted to ground
		05	Open
		06	Shorted across sensor
		07	Output low or missing; sensor locked out to eliminate excessive modulator cycling
		08	Output incorrect at speed (8)
		09	Connection has corrosion; sensor loose in block, output noisy.
		0A	Sensor or exciter ring needs adjustment, output intermittent, wobble run in exciter ring
		0C	Abnormal speed
		0D	Invalid tire size; gross mismatch

Modulators			
SIDs	Description	FMIs	Description
07	Modulator 2	05	Open
08	Modulator 1	06	Shorted to ground
		07	Not responding; sensor out of adjustment or modulator issue
		08	Shorted between
		0E	Solenoid shorted

Lamp			
SIDs	Description	FMI	Description
17	ABS Warning Lamp	03	Shorted to VBAT
		05	Open
		06	Shorted

Battery Voltage			
SIDs	Description	FMI	Description
FB	Battery Voltage	03	Low
		04	High

ECU			
SIDs	Description	FMI	Description
FE	ECU	02	ECU Fault
		06	ECU Fault
		07	ECU Fault
		08	ECU Fault
		09	ECU Fault
		0A	ECU Fault
		0B	ECU Fault
		0C	ECU Fault
		0D	ECU Fault
		0E	ECU Fault

Appendix **B**

Gen 4 & 5 Fault Code Tables



▼ *Generation 4, page 98*

▼ *Generation 5, page 100*

This appendix provides a list of all supported Generation 4 & 5 Trailer ABS Fault Codes.

Generation 4

The following table lists all Generation 4 Trailer ABS Internal Fault Codes with their descriptions and associated SID/FMIs. It also lists each fault's Blink Code.

Internal Fault	Description	SID	FMI	Blink Code *
00h	No failure	-	-	C - 1
62h	SPEED SENSOR A: excessive wheel lock	1	10	C - 2
72h	SPEED SENSOR A: air gap too large	1	8	C - 2
82h	SPEED SENSOR A: air gap too large	1	7	C - 2
92h	SPEED SENSOR A: high decel/shorted	1	10	C - 2
A2h	SPEED SENSOR A: short hi/low or open	1	12	C - 2
63h	SPEED SENSOR B: excessive wheel lock	2	10	C - 3
73h	SPEED SENSOR B: air gap too large	2	8	C - 3
83h	SPEED SENSOR B: air gap too large	2	7	C - 3
93h	SPEED SENSOR B: high decel/shorted	2	10	C - 3
A3h	SPEED SENSOR B: short hi/low or open	2	12	C - 3
64h	SPEED SENSOR C: excessive wheel lock	3	10	C - 4
74h	SPEED SENSOR C: air gap too large	3	8	C - 4
84h	SPEED SENSOR C: air gap too large	3	7	C - 4
94h	SPEED SENSOR C: high decel/shorted	3	10	C - 4

Internal Fault	Description	SID	FMI	Blink Code*
A4h	SPEED SENSOR C: short hi/low or open	3	12	C - 4
65h	SPEED SENSOR D: excessive wheel lock	4	10	C - 5
75h	SPEED SENSOR D: air gap too large	4	8	C - 5
85h	SPEED SENSOR D: air gap too large	4	7	C - 5
95h	SPEED SENSOR D: high decel/shorted	4	10	C - 5
A5h	SPEED SENSOR D: short hi/low or open	4	12	C - 5
68h	PMV A: open/short circuit	7	12	C - 8
69h	PMV B: open/short circuit	8	12	C - 9
1Bh	TONE RING: defective	254	12	C - 11
6Bh	VALVE A/B: short to low	7	12	C - 11
7Ch	POWER SUPPLY: low voltage	251	4	C - 12
0Eh	CONTROLLER: defective	254	12	C - 14
1Eh	CONTROLLER: defective	254	12	C - 14
2Eh	CONTROLLER: defective	254	12	C - 14

Internal Fault	Description	SID	FMI	Blink Code*
3Eh	CONTROLLER: out of calibration	254	13	C - 14
4Eh	CONTROLLER: defective	254	2	C - 14
6Eh	CONTROLLER: defective	254	12	C - 14
7Eh	CONTROLLER: out of calibration	254	13	C - 14
8Eh	CONTROLLER: defective	254	12	C - 14

* Replace "C" with the appropriate Configuration Value. Use the Legend below to determine the configuration value.

Configuration Value Legend	
Configuration Value (C)	ECU Configuration
1	2S/1M
2	2S/2M
3	4S/2M sidewise SL
4	4S/2M axlewise SL

Generation 5

The following table lists all Generation 5 Trailer ABS Internal Fault Codes with their descriptions and associated SID/FMIs. It also lists the Blink Code for each fault.

Internal Fault	Description	SID	FMI	Blink Code
00h	No failure	-	-	1 - 1
47h	SPEED SENSOR A: air gap too large	1	0	2 - 1
48h	SPEED SENSOR A: air gap too large	1	8	2 2 -
45h	SPEED SENSOR A: noisy signal, tone r	1	10	2 - 3

Internal Fault	Description	SID	FMI	Blink Code
49h	SPEED SENSOR A: excessive wheel lock	1	8	2 4 -
4Ah	SPEED SENSOR A: high decel/shorted	1	8	2 - 5
41h	SPEED SENSOR A: short hi/low or open	1	12	2 6 -
87h	SPEED SENSOR B: air gap too large	2	0	3 - 1
88h	SPEED SENSOR B: air gap too large	2	8	3 2 -
85h	SPEED SENSOR B: noisy signal, tone r	2	10	3 - 3
89h	SPEED SENSOR B: excessive wheel lock	2	8	3 4 -
8Ah	SPEED SENSOR B: high decel/shorted	2	8	3 - 5
81h	SPEED SENSOR B: short hi/low or open	2	12	3 6 -
A7h	SPEED SENSOR C: air gap too large	3	0	4 - 1
A8h	SPEED SENSOR C: air gap too large	3	8	4 2 -
A5h	SPEED SENSOR C: noisy signal, tone r	3	10	4 - 3
A9h	SPEED SENSOR C: excessive wheel lock	3	8	4 4 -
AAh	SPEED SENSOR C: high decel/shorted	3	8	4 - 5
A1h	SPEED SENSOR C: short hi/low or open	3	12	4 6 -
67h	SPEED SENSOR D: air gap too large	4	0	5 - 1
68h	SPEED SENSOR D: air gap too large	4	8	5 2 -

Internal Fault	Description	SID	FMI	Blink Code
65h	SPEED SENSOR D: noisy signal, tone r	4	10	5 - 3
69h	SPEED SENSOR D: excessive wheel lock	4	8	5 - 4
6Ah	SPEED SENSOR D: high decel/shorted	4	8	5 - 5
61h	SPEED SENSOR D: short hi/low or open	4	12	5 6 -
57h	VALVE A: rel sol shorted high	7	3	8 - 1
56h	VALVE A: rel sol shorted low	7	4	8 2 -
55h	VALVE A: rel sol open ckt	7	5	8 - 3
54h	VALVE A: valve cmn open ckt	7	5	8 4 -
53h	VALVE A: hld sol shorted high	7	3	8 - 5
52h	VALVE A: hld sol shorted low	7	4	8 6 -
51h	VALVE A: hld sol open ckt	7	5	8 - 7
5Dh	VALVE A: valve location	7	2	8 8 -
97h	VALVE B: rel sol shorted high	8	3	9 - 1
96h	VALVE B: rel sol shorted low	8	4	9 2 -
95h	VALVE B: rel sol open ckt	8	5	9 - 3
94h	VALVE B: valve cmn open ckt	8	5	9 4 -
93h	VALVE B: hld sol shorted high	8	3	9 - 5

Internal Fault	Description	SID	FMI	Blink Code
92h	VALVE B: hld sol shorted low	8	4	9 6 -
91h	VALVE B: hld sol open ckt	8	5	9 - 7
9Dh	VALVE B: valve location	8	2	9 8 -
B7h	VALVE C: rel sol shorted high	9	3	10 - 1
B6h	VALVE C: rel sol shorted low	9	4	10 - 2
B5h	VALVE C: rel sol open ckt	9	5	10 - 3
B4h	VALVE C: valve cmn open ckt	9	5	10 - 4
B3h	VALVE C: hld sol shorted high	9	3	10 - 5
B2h	VALVE C: hld sol shorted low	9	4	10 - 6
B1h	VALVE C: hld sol open ckt	9	5	10 - 7
BDh	VALVE C: valve location	9	2	10 - 8
77h	VALVE D: rel sol shorted high	10	3	11 - 1
76h	VALVE D: rel sol shorted low	10	4	11 - 2
75h	VALVE D: rel sol open ckt	10	5	11 - 3
74h	VALVE D: valve cmn open ckt	10	5	11 - 4
73h	VALVE D: hld sol shorted high	10	3	11 - 5
72h	VALVE D: hld sol shorted low	10	4	11 - 6

Internal Fault	Description	SID	FMI	Blink Code
71h	VALVE D: hld sol open ckt	10	5	11 - 7
7Dh	VALVE D: valve location	10	2	11 - 8
27h	VALVE(S) shorted high	14	3	10 - 9
29h	VALVE(S) shorted high	14	3	10 - 10
2Ah	VALVE(S) shorted low	14	4	10 - 11
10h	ECU defective	254	12	15 - 1
11h	ECU defective	254	12	15 - 2
17h	ECU EEPROM error	253	13	15 - 3
18h	ECU defective	253	12	15 - 4
13h	ECU defective	254	2	15 - 5
14h	ECU defective	254	12	15 - 6
12h	ECU defective	254	2	15 - 7
16h	ECU invalid config	254	2	15 - 9
1Ah	ECU defective	30	12	15 - 10
1Bh	ECU defective	30	12	15 - 11
23h	VOLTAGE over voltage	251	3	16 - 1
24h/25h	VOLATGE low voltage	251	4	16 - 2

Internal Fault	Description	SID	FMI	Blink Code
26h	VOLTAGE open circuit	251	5	16 - 3
20h	VOLTAGE over voltage	251	3	16 - 9
21h/22h	VOLATGE low voltage	251	4	16 - 10
30h	RETARDER RELAY shorted high	13	3	17 - 1
31h	RETARDER RELAY shorted low or open	13	4	17 - 2
33h	DATALINK (RETARDER) no communication	231	12	17 - 3
34h	DATALINK (RETARDER) timeout	231	2	17 - 4
D2h	TIRE SIZE ALIGNMENT whl dia mismatch	253	13	17 - 5
D1h	WL SHORTED HIGH OR SAE A short to ground	23	14	17 - 10
D0h	SENSOR MEMORY CHECK drive vehicle	151	14	17 - 12
D4h	SENSORS LEFT/RIGHT mismatched	151	2	17 - 13

