Installation Instructions

BENDIX® TRDU™ TRAILER REMOTE DIAGNOSTIC UNIT

The Bendix® TRDU™ (Trailer Remote Diagnostic Unit) is a diagnostic tool providing the technician with a visual indication of component Diagnostic Trouble Code (DTC) information from Bendix® Antilock Brake Systems (ABS) for trailers. The TRDU™ unit communicates across PLC4Trucks supporting common diagnostic messages.

Additionally, the Bendix® TRDU™ provides odometer mileage readout, a method for clearing the ABS component Diagnostic Trouble Codes, and allows the user to self-configure the ABS ECU configuration on Bendix® TABS-6, and MC-30™ with PLC ECUs. It will also clear most A-18™ ABS with PLC ECUs (in this case, certain sensor DTCs require the vehicle to be driven).

The TRDU™ unit is specifically designed for use with Bendix® ABS and although Bendix has included some competitive support, based on reading some standard diagnostic messages, Bendix makes no claims for its operation and/or usability with other brands of ABS systems.

DEVICE FEATURES

The TRDU™ unit attaches to the main trailer electrical connector (SAE J560) located at the nose of the trailer by using a 7 to 7 pin adapter (802165).

The TRDU™ tool allows the technician to:

- Troubleshoot ABS system component problems using Diagnostic Trouble Code reporting via LEDs. Blink codes are also activated when the TRDU™ unit is first attached to trailers with a TABS-6 ECU (the full readout is displayed using the trailer-mounted ABS lamp).
- Reset the Diagnostic Trouble Codes on Bendix® ABS ECUs by holding a magnet over the “B” of the Bendix logo on the face of the TRDU™ tool for 6, or less, seconds.
- Enter the Self-Configuration Mode for MC-30 and TABS-6 standard & premium models by holding a magnet over the reset area for greater than 6 seconds but less than 11 seconds. Note that, in the case of TABS-6 advanced ECUs, to enter the self-configuring mode a connected PC with Bendix® ACom® Diagnostics Software is required.
- Read the odometer data. This information is continuously flashed out using the TRDU™ unit’s ODO LED as soon as communications is established, and repeats every 10 seconds.

OPERATION

When the TRDU™ unit is plugged in and receiving power (through the adapter), all the LEDs will illuminate for one half-second, and the green LED VLT will flash 4 times to indicate communications have been established. The blue ODO LED will immediately begin blinking out the odometer reading from the trailer ABS ECU, and continue blinking odometer reading out every 10 seconds.

- If the ABS ECU has no active Diagnostic Trouble Code(s), only the green LED will remain illuminated.
- If the ABS ECU has at least one active Diagnostic Trouble Code the TRDU™ tool displays the first Diagnostic Trouble Code by illuminating the red LEDs, indicating the malfunctioning ABS component and its location on the vehicle.
- If there are multiple Diagnostic Trouble Codes on the ABS system, the TRDU™ unit will display one Diagnostic Trouble Code at a time, then after the first Diagnostic Trouble Code has been repaired and cleared, the next code will be displayed.

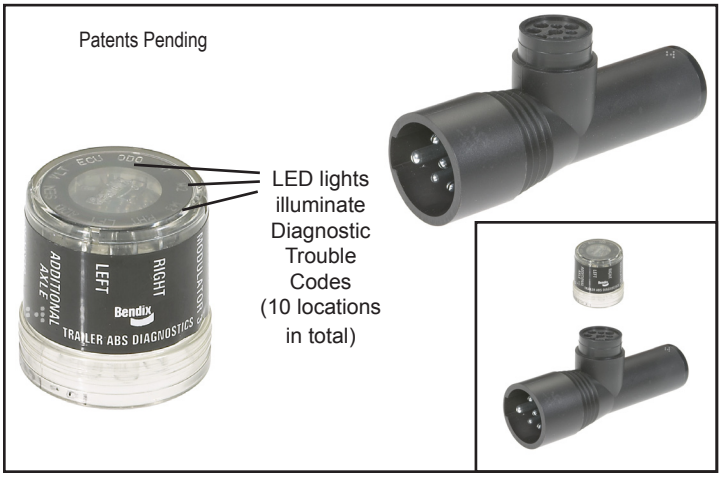

FIGURE 1 - *THE BENDIX® TRAILER REMOTE DIAGNOSTIC UNIT AND ADAPTER*

For example, if the Diagnostic Trouble Code is **Left Additional Sensor**, the TRDU will display the Diagnostic Trouble Code as shown.

Left Additional Sensor DTC

FIGURE 2 *- EXAMPLE OF A DIAGNOSTIC TROUBLE CODE*

TYPICAL LED ALERTS ARE:

Right sensor (RHT + SEN), Left sensor (LFT + SEN), Right additional sensor (RHT + ADD + SEN), Left additional sensor (LFT + ADD + SEN), Modulator 1 (M1), Modulator 2 (M2), Modulator 3 (M3), ECU, VLT (Flashing indicates either over or under voltage condition), All LEDs in a circular pattern = no communication.

To pinpoint the root cause and to ensure the system Diagnostic Trouble Code is properly corrected the first time, additional troubleshooting may be necessary.

For more information on troubleshooting and repairing Bendix ABS Diagnostic Trouble Codes, download the ABS service data sheet from www.bendix.com, or order paper copies from the Literature Center at bendix.com.

ABS Controller	**Service Data Sheet**
A-18™ Controller	SD13-4757 (order BW2262)
MC-30™ Controller	SD13-4834 (order BW2189)
TABS-6™ Stnd. & Prem. Controller	SD13-4767 (order BW2469)
TABS-6™ Adv. Single Channel . .	SD13-47671 (order BW2718)
TABS-6™ Adv. Multi Channel . .	SD13-47672 (order BW2726)

For other ABS manufacturer’s ECUs, obtain the appropriate service information from the ABS manufacturer. In some cases, the following chart may assist the technician when troubleshooting certain systems:

TRDU	Wabco*	Haldex**
2S/1M Systems		
SEN	YE1	S1A
ADD	YE2	S1B

TRDU	Wabco*	Haldex**
4S Systems		
SEN	YE1	S3A
ADD	YE2	S3B
LFT	BU1	S2A
RHT	BU2	S2B
M1	Red	Red
M2	Yellow	Yellow
M3	Blue	Blue

* Trademark of WABCO

** Trademark of HALDEX AB

Note: If connected to a Bendix product, the TRDU will show the sensor location (e.g. SEN & LFT Led's).

If connected to other OEM systems, only one LED will illuminate for a sensor fault, and the corresponding OEM designation must be read from the label on the side of the TRDU. Consult OEM documentation for wheel end location. Mod faults are interpreted by color, on the label.

RESET FUNCTION

The magnetic reset switch is located at the "B" in the Bendix logo in the top of the TRDU™ unit. Activation requires a magnet with 30 gauss minimum.

Using a magnet, the reset operations are:

1. If the magnet is held over the reset switch for less than 6 seconds and then removed, all Diagnostic Trouble Codes are cleared.
2. If the magnet is held over the switch for more than 6 seconds but less than 11 seconds the self-configuration command is sent (Bendix MC-30™ and TABS-6 ECUs only). The self-configuration is indicated when the LEDs illuminate then flash on and off in 2 half-circle patterns.

NOTE: The "clear codes" and "self configuration" functions may not operate with other ABS manufacturer's ECUs.

AFTER REPAIRS ARE MADE

It is recommended at the end of any repair to switch off and restore the power to the ABS ECU, then check the ABS Warning Lamp and TRDU™ tool to see if any Diagnostic Trouble Codes remain.

ODOMETER FUNCTION

The odometer mileage will be blinked out on the blue LED labeled ODO immediately upon the ABS ECU establishing communications and repeated every 10 seconds. The odometer reading is displayed by the thousands (x 1000). e.g. 152,287 miles would be presented as:

152 (x1000) or 1 blink – pause, 5 blinks – pause, and 2 blinks.

A zero will be displayed by quickly strobing the Blue ODO LED twice.

ABS WARNING LAMP BLINK CODES

NOTE: This feature only available with TABS-6™ ECUs.

When communications with a trailer TABS-6™ ECU is established, the TRDU™ will cause the TABS-6™ ECU to blink out any active codes on the trailer warning lamp.

Blink Code Lamp Timing	
Action	Timing
Duration of indicator blink pulse (lamp on)	0.4 seconds
Duration of indicator blink pulse (lamp off)	0.4 seconds
Strobe characteristics for display of zero digit (ON-OFF-ON)	0.2 Hz for 0.4 seconds @ 50% duty cycle
Duration between blink code digits	1.0 seconds
Duration between blink code messages	2.5 seconds
Duration of indicator illumination at completion of messages	5.0 seconds

ECU COMMUNICATION PROBLEMS

If the TRDU™ unit does not establish communication with the ABS ECU, it will illuminate each LED in a clockwise pattern. This pattern will continue until the ABS ECU responds and communication has been established. Note: The TRDU™ cannot communicate with non-PLC ABS units.

Possible sources of communication problems are:

1. The J2497 (PLC4Truck) communication is not present at the SAE J560 connector, or the ECU does not support PLC diagnostics.
2. The ECU does not support PID194, a standard message defined in the J1587 specification.
3. The ECU, J560, or diagnostic connector has no power.
4. The TRDU™ unit can not arbitrate bus access.
5. A malfunctioning TRDU unit.

If no active codes are present, the warning lamp will display 1-1 repeatedly for TABS-6 equipped trailers.

This will provide the user more detailed information regarding the code and it will be a reminder to remove the TRDU™ after service is complete.

If communications issues continue, contact Bendix at 1-800-AIR-BRAKE (1-800-247-2725) Monday through Friday 8 a.m. to 6 p.m. EST. Please have the Bendix ECU type, product part number & configuration, vehicle make and model information when you call.

WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:

When working on or around a vehicle, the following general precautions should be observed at all times.

1. **Park the vehicle on a level surface, apply the parking brakes, and always block the wheels. Always wear safety glasses.**
2. **Stop the engine and remove ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, EXTREME CAUTION should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically charged components.**
3. **Do not attempt to install, remove, disassemble or assemble a component until you have read and thoroughly understand the recommended procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.**
4. **If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle. If the vehicle is equipped with an Bendix® AD-IS® air dryer system or a dryer reservoir module, be sure to drain the purge reservoir.**
5. **Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.**
6. **Never exceed manufacturer's recommended pressures.**
7. **Never connect or disconnect a hose or line containing pressure; it may whip. Never remove a component or plug unless you are certain all system pressure has been depleted.**
8. **Use only genuine Bendix® brand replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.**
9. **Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.**
10. **Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.**
11. **For vehicles with Automatic Traction Control (ATC), the ATC function must be disabled (ATC indication lamp should be ON) prior to performing any vehicle maintenance where one or more wheels on a drive axle are lifted off the ground and moving.**

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