



Trailer ABS Field Diagnostics Guide

March 2021

Overview

The current market supply situation is strained. The global materials shortages are impacting production across many industries.

Some current supply constraints:

- IHS predicts that the shortage of semiconductors will impact the global vehicle production upwards of 20% in Q1, (672,000 units of ~ 17-18M)
- Cost of wood is up 80% since April 2020
- Cost of steel is \$59.23 vs. \$29.67 one year ago
- Port congestion is up 41% in March which is one of the slowest times of the year

These constraints, global material shortages and other factors are impacting our delivery of parts.

- Trailer ABS has a significant backorder involving the modulator cable (part of the ABS assembly 400 500 101 0).

To help reduce the impact, ZF is offering other options for servicing the unit. The instructions on the following pages will provide guidance on proper diagnostics of WABCO Trailer ABS in order to determine if the user needs to replace the whole assembly or just certain parts.

We appreciate your patience and understanding as we work through these challenging times.

WABCO Enhanced Easy Stop Trailer ABS: 400 500 101 0

Standalone components of 400 500 101 0 that can be purchased for service:

- **446 108 201 0**: ECU
- **472 195 033 0**: Modulator Valve
- **478 407 058 4**: Bracket
- **891 550 346 4**: Bolt
- **894 606 275 2**: Modulator cable, currently backordered and cannot be purchased

400 500 101 0



446 108 201 0



472 195 033 0

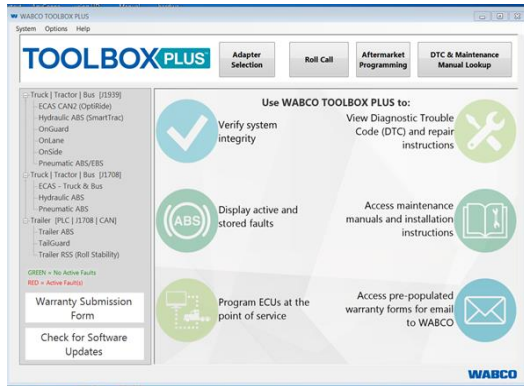


End User Requirements for Diagnostics

Any of the following methods could be used for diagnostics:

- **Computer with WABCO TOOLBOX™ PLUS software installed (TOOLBOX PLUS can be purchased via <https://wabco.snapon.com/>)**
 - TOOLBOX™ Version 12.2 (or higher) also supports Enhanced Easy-Stop Trailer ABS
 - PLC diagnostic adaptor such as Noregon will be required to connect the computer to the vehicle
- **Blink code diagnostics**
 - Only generic fault codes will be available; detailed diagnostics are not possible using blink codes

TOOLBOX PLUS



TOOLBOX 12 – not sold anymore, but functional if already installed



Refer to ZF North America literature center for more information on TOOLBOX PLUS, including user manual MM19047

[WABCO Literature Center](#)

Diagnostics Using TOOLBOX PLUS or TOOLBOX 12

TOOLBOX software is a PC-based diagnostics program that can:

- Display specific fault codes related to the failure versus a generic/blink code, making it possible for technicians to identify which specific system(s) have failed
- Activate ABS components to verify system integrity, component operation and installation wiring for end of line check
- Provide reverse Diagnostic Trouble Code (DTC) lookup

How to determine fault code using TOOLBOX:

1. Refer to Installation Guide TP-20212 (http://www.speakvisually.net/WABCO/Technical_Publications/TP20212_web.pdf) and maintenance manual MM0180 for detailed TOOLBOX diagnostics process (https://www.wabco-auto.com/americas_en/Get-in-touch/Literature)
2. Connect the computer with TOOLBOX software to the trailer that has WABCO Trailer ABS installed, using Noregon or any PLC adaptor
3. During diagnostics, if you see fault code **"Ext modulator RED open circuit detected"** which corresponds to **SID 7 - FMI 5**, the issue could be related to the modulator cable associated with the trailer ABS assembly and will likely need to be replaced.
 - If it is any other fault code, the issue is not related to the modulator cable. In that case, perform detailed diagnostics of the Trailer ABS system and replace the affected component(s) only, while keeping (saving) the modulator cable from the original assembly



Contact WABCO Customer Care for assistance with diagnostics
Phone: (855) 228-3203 or email: wnacustomer care@wabco-auto.com

Diagnostics Using Blink Codes

- The WABCO Enhanced Easy-Stop Trailer ABS ECU detects any electrical fault in the trailer ABS. Each of the faults has a code. When a fault occurs, the ECU stores the code for that fault in its memory. The code (blink code) can be obtained using the Ignition Power Activation method (described below).
- Although the ECU can store multiple faults in its memory, it only displays one fault at a time. Hence, it is important to recheck the blink codes after repairing a fault. If there are additional codes in the memory, they only blink after you have repaired the first fault.

How to determine fault code using Blink Code:

1. Ignition Power Activation is the process of using the vehicle's ignition switch to display blink codes on the trailer ABS indicator lamp located on the side of the trailer. This method is for constant power vehicles only
2. To obtain blink codes using ignition power activation, perform the following procedure:
 1. Turn the ignition switch on for no longer than 5 seconds. The ABS indicator lamp will be on
 2. Turn the ignition switch off. The ABS indicator lamp will go out
 3. Turn the ignition switch on. The ABS indicator lamp will then come on, then go out
 4. The blink code will be displayed by the ABS indicator lamp on the trailer
3. If **blink code is 7 (ABS lamp flashes 7 times)**, the issue could be related to the modulator cable associated with the trailer ABS assembly and will likely need to be replaced
 - If any other blink codes are visible, the issue is not related to the modulator cable. In that case, perform detailed diagnostics of the Trailer ABS system and replace the affected component(s) only, while keeping (saving) the modulator cable from the original assembly

Blink Code Table

Blink Code	Problem Area	Action
3	Sensor C	Determine sensor location. Check sensor installation. Perform necessary repairs.
4	Sensor YE1	Determine sensor location. Check sensor installation. Perform necessary repairs.
5	Sensor BU2	Determine sensor location. Check sensor installation. Make necessary repairs.
6	Sensor YE2	Determine sensor location. Check sensor installation. Perform necessary repairs.
7	External ABS modulator valve	Verify correct electrical installation. Check power supply. Make necessary corrections.
8	Service interval notification	Indication that designated service mileage has elapsed.
9	Internal modulator failure, inlet valve #2	Verify correct installation. If code continues, contact WABCO for assistance.
10	Internal modulator failure, inlet valve #1	Verify correct installation. If code continues, contact WABCO for assistance.
11	Internal modulator failure, outlet valve	Verify correct installation. If code continues, contact WABCO for assistance.
14	Power Supply	Verify correct electrical installation. Check power supply. Make necessary corrections.
15	ECU Failure	Verify correct installation. If code continues, contact WABCO for assistance.
16	SAE J1708 Failure	Internal failure, contact WABCO.
17	SAE J2497 (PLC) Failure	Internal failure, contact WABCO.
18	Generic I/O Failure	Internal failure, contact WABCO.

Contact WABCO Customer Care for assistance with diagnostics
Phone: (855) 228-3203 or email: wnacustomer care@wabco-auto.com

