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MAINTENANCE MATTERS

Searching for clues: Retrieving diagnostic codes

In this age of technology, everything contains more electronics. While it may seem like a contradiction, the more sophisticated the system, the simpler it can be for operators. On MCI coaches, many electronic components feature a self-diagnosing function, and if something is amiss, the electronics will "tell" the operator what's wrong through the use of diagnostic codes. Finding those codes can make all the difference between an easy fix and hard-fought headaches. But sometimes it's difficult to remember what procedure to follow to view the information. To assist, we've created this handy guide to help you get the most out of your engine, transmission and ABS system.

Before discussing the procedure to retrieve diagnostic info for each specific component, let's discuss a few basic items that apply to all applications.

- Each diagnostic code is comprised of at least one two-digit number. In the case of the Allison B500 transmission the code is actually two two-digit numbers.
- There are two methods of displaying these diagnostic codes:
  - Through a digital display, in which the transmissions display the diagnostic code on the shifter pad.
  - Flashing some type of diagnostic lamp or LED, in which the engines and ABS cause tell-tale dash lights to flash a specific sequence or code.

Further explanation on reading the flash sequence of the tell-tale lights follows.

How to read the blinkin' lights

- Locate all switches and tell-tale lights mentioned below (see Photos 1-4).
- The dash tell-tale lights will display the diagnostic codes by flashing on and off.
- These lights will blink, then pause, then resume blinking. The flashes before the pause represents the "10s" part of the code, and the flashes after the pause represent the "1-9" part of the code.

  - Example: two blinks – pause – five blinks represents Code 25, not Code 7

- Consult the rear of the MCI Operator's Manual for the list of diagnostic codes for all electronic components on the coach. Compare the number retrieved to the corresponding number on the diagnostic code chart for that system.

Photo 1 - Check Engine/Stop Engine Tell-Tale lights

Photo 2 - ABS Tell-Tale light

Photo 3 - Engine Diagnostic Code Switch

Photo 4 - ABS Diagnostic Code Switch

Retrieving diagnostic codes for Detroit Diesel S60
Retrieving diagnostic codes for the Detroit Diesel S60 engine involves the Red Stop Engine tell-tale light and the Yellow/Amber Check Engine tell-tale light.

1. Turn on Ignition/Master run switch

   - Verify that the Check Engine/Stop Engine tell-tale lights illuminate during the dash self-test cycle (Photo 1).

2. Press and release the Engine Override switch (Photo 3).
3. Count the blinks of the Stop Engine and Check Engine tell-tale lights.

   - The Stop Engine light will flash first displaying Active codes.

     - Codes that are occurring at the moment of testing.

   - The Check Engine light will then flash displaying Inactive/Stored codes.

     - Codes that occurred previously (anywhere from one minute ago to 1 year ago)
     - The most recent code is displayed first.

Cat C13 engine code retrieval
Retrieving diagnostic codes for the Caterpillar C13 engine involves the Yellow/Amber Check Engine tell-tale light.

1. Turn on Ignition/Master run switch.

   o Verify that the Check Engine/Stop Engine tell-tale lights illuminate during the dash self-test cycle (Photo 1).

2. Press and hold the Engine Override switch (Photo 3).
3. Release the switch when the Yellow Check Engine tell-tale light illuminates.
4. Count the blinks on the Yellow Check Engine tell-tale light.

   o The Check Engine tell-tale light displays both active and stored codes.
   o If there were any active codes, the Red Stop Engine tell-tale light would have been illuminated prior to pressing the Engine Override switch

Retrieving diagnostic codes for Anti-Lock Brakes (ABS)
Retrieving diagnostic codes for the Anti-Lock Brakes (ABS) system involves the Yellow/Amber ABS tell-tale light.

1. Turn on Ignition/Master run switch, and verify that the ABS tell-tale momentarily illuminates (Photo 2).
2. Press the ABS Code switch briefly (Photo 4).

   o Do not press it for longer than 3 seconds or stored codes will be erased.

3. The ABS tell-tale light will begin blinking a two-digit code.

   o There is a 1.5-second pause between the 10s and 1s.
   o There is a 4-second pause between codes.

Photo 5 - WTEC Shifter

Photo 6 - ZF Shifter

Retrieving Diagnostic Codes for the Allison WTEC B500/R

1. Turn on Ignition/Master run switch, verifying that shifter display illuminates.
2. Start the engine.
3. Press the Up & Down arrows simultaneously twice (Photo 5).

   o Pressing both arrows only once will display the transmission oil level.

4. Codes will be displayed on the shift display.

   o Codes are listed as two two-digit numbers.
   o Each code begins with D and a number.

      ▪ Code 1 begins with D1, code 2 begins with D2, etc.
      ▪ The code repeats.

   • Press the Mode Button to obtain the second code, third code, etc.

      o A maximum of five codes are stored.
      o Two dashes (--) are displayed when all codes have been displayed.

Retrieving active diagnostic codes for the ZF Astronic

1. Turn on Ignition/Master run switch.

   o Verify that the shifter display illuminates.

2. Press the "N" Key (photo 6).
3. Press and hold the Up arrow.
4. The diagnostic codes will be shown on the shifter display.

   o The system will scroll through the active codes stored in the system.

Retrieving inactive/stored ZF codes

1. Turn on Ignition/Master run switch.

   o Verify that the shifter display illuminates.

2. Press the "N" Key (photo 6).
3. Apply the service brakes.
4. Press and hold the Up arrow.
5. The diagnostic codes will be shown on the shifter display.

   o The system will scroll through the inactive codes stored in the system.

If you require further assistance with code definition please contact the vendor or the MCI

If you require further assistance with code definition please contact the vendor or the MCI Technical Call Center for any questions you may have.

- Detroit Diesel (800) 445-1980
- Caterpillar   (800) 447-4986
- ZF Transmissions   (847) 919-3119
- Allison   (800) 524-2303
- MCI Technical Support (800)-241-2947

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