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**GROUP:** Vehicle  
Performance

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**SUBJECT:**

Co-Pilot Support and Correct Cable Usage

**MODELS:**

|             |         |   |
|-------------|---------|---|
| 1996 - 2003 | (AB)    | Ram Van/Wagon                                   |
| 1996 - 2004 | (AN)    | Dakota  |
| 1996 - 2002 | (BR/BE) | Ram Pickup                                      |
| 2004        | (CS)    | Pacifica  |
| 1998 - 2004 | (DN)    | Durango   |
| 2002 - 2004 | (DR)    | Ram Pickup                                      |
| 1996 - 2000 | (FJ)    | Avenger/Sebring/Talon                           |
| 1996 - 2000 | (GS)    | Chrysler Voyager (International Markets)        |
| 1996 - 2000 | (JA)    | Breeze/Cirrus/Stratus                           |
| 2001 - 2004 | (JR)    | Sebring Sedan/Stratus Sedan/Sebring Convertible |
| 1996 - 2000 | (JX)    | Sebring Convertible                             |
| 2002 - 2004 | (KJ)    | Liberty/Cherokee (International Markets)        |
| 1996 - 2004 | (LH)    | Concorde/Intrepid/Vision/LHS/New Yorker/300M    |
| 1996 - 2000 | (NS)    | Town & Country/Caravan/Voyager                  |
| 1996 - 2004 | (PL)    | Neon  |
| 2002        | (PG)    | PT Cruiser (International Markets)              |
| 1997 - 2002 | (PR)    | Prowler   |
| 2001 - 2004 | (PT)    | PT Cruiser                                      |
| 2001 - 2004 | (RG)    | Chrysler Voyager (International Markets)        |
| 2001 - 2004 | (RS)    | Town & Country/Caravan/Voyager                  |
| 1996 - 2002 | (SR)    | Viper   |
| 2001 - 2004 | (ST)    | Sebring Coupe/Stratus Coupe                     |
| 1997 - 2004 | (TJ)    | Wrangler  |
| 2001 - 2004 | (WG)    | Grand Cherokee (International Markets)          |
| 1999 - 2004 | (WJ)    | Grand Cherokee                                  |
| 1997 - 2001 | (XJ)    | Cherokee  |

|             |      |  |
|-------------|------|--|
| 2003 - 2004 | (ZB) | Viper                                  |
| 1996 - 1998 | (ZG) | Grand Cherokee (International Markets) |
| 1996 - 1998 | (ZJ) | Grand Cherokee/Grand Wagoneer          |

## ***DISCUSSION:***

### **General Information**

The dealership technician has a choice when it comes to making a recording of a supported Powertrain Control Module (PCM) or Transmission Control Module (TCM). The recording can be done using the DRBIII® and/or using a Co-Pilot. The Co-Pilot was released to provide a lower-cost option along with an element of simplicity that would allow a vehicle operator to capture intermittent problems to assist the dealer technician in identifying problems.

Whether a module can be data recorded effectively depends on a number of factors. The most important is communication speed between the tool and the module. DaimlerChrysler vehicles using modules that support Serial Communication Interface (SCI), currently our fastest serial communication, on PCMs or TCMs have the communication speeds to make recordings viable. To be viable, the module communication speed needs to be 62.5 Kbps (kilobytes per second) or higher. Modules that use slower communication protocols such as CCD, PCI, J1850, and ISO-9141 are too slow to be effective for making data recordings. DaimlerChrysler does not provide data recording support for these communication protocols.

The modules currently supported for data recordings are the PCM and TCM.

### **Co-Pilot**

The current Co-Pilot recording tool has been around almost as long as the DRBIII®. Co-Pilot only supports communication connections to a single pin. This tool must connect to the proper pin in the Data Link Connector (DLC) to produce data recordings. This limitation requires multiple cables (described later) to connect to the desired pin for successful recordings to occur.

### **DRBIII®**

This tool can connect to the various pins in the DLC using the CH7000/7001 cable for domestic vehicles. For MMC vehicles with domestic powertrains, use the CH7010, MMC double-headed (16 & 12 way support cable). The DRBIII® can move its reporting pin connection to different pins at the DLC because it can multiplex (mux) the communication wires for the various controllers to establish a connection link.

## ***MODULE SUPPORT:***

### **Powertrain Control Modules**

- Single Board Engine Controller (SBEC) - all versions .
- Jeep Truck Engine Controller (JTEC) - all versions .
- Next Generation Controller (NGC) - support added as new versions are released.
- Siemens70 (SIM70) - all versions (used on 1.6L engines for various international markets).

**NOTE: THE NGC IS REPLACING SBEC AND JTEC CONTROLLERS. ADDITIONALLY THE NGC CONTROLLER MAY ALSO HAVE THE TCM FUNCTIONALITY DEPENDING ON THE VEHICLE CONFIGURATION.**

### **Diesel Engine Controllers (ECM)**

Cummins 84x series - refers to various models of the new ECM used on the 2003 and up Cummins such as the 845 and 848 models used on 5.9L Turbo Diesel (TD) engines in Dodge Trucks. Data recorder support is being added.

Bosch - The diesel controller currently supplied does not support communication speeds fast enough for data recording.

### **Transmission Control Module**

- Electronic Automatic Transmission Modules (EATX) - all versions. Data recorder support for these modules start with the 1998 model year.
- JTEC - When coupled with an RE automatic transmission in trucks, provides the dual function of performing PCM as well as Transmission (TCM) control. Minimally provides shifting control on automatic transmissions with a Cummins diesel engine controller.
- NGC - will at times also have the EATX software for the automatic transmission/transaxle on the same controller. When recording using Co-Pilot it requires a different cable from the engine side.

**NOTE: CO-PILOT SUPPORT IS NOT AVAILABLE FOR THE 2002 LH AND 2002.5 DN NGC TRANSMISSION. DRBIII® DATA RECORDER MUST BE USED FOR THESE VEHICLES.**

### **Not Supported are:**

- Bosch ECM - The diesel controller currently supplied does not support communication speeds fast enough for data recording.
- Aisen - Warner TCM - This module does not support SCI so it cannot be data recorded. This module is used on AW4 automatic transmissions on various Jeep models.
- EGS52 - This module does not support SCI so it cannot be data recorded. The module is produced by Siemens and used in conjunction with the W4J500 transmission.
- MMC - This module uses ISO-9141 communication which is too slow to provide accurate recordings.

### **CABLES:**

#### **Successful Co-Pilot usage requires selecting the correct cable**

Eight (8) Co-Pilot cables have been released. The Co-Pilot tool can only record data using SCI lines for communication. The Co-Pilot tool cannot multiplex, as the DRBIII® does to different circuits in the J1962 connector. As a consequence, anytime the wiring of the diagnostic connector pin-outs change or new module support is added, this will in turn, often require a different Co-Pilot cable.

**NOTE: CHANGES TO CO-PILOT SOFTWARE ARE OFTEN NOT BACKWARDS COMPATIBLE. IF NEW CO-PILOT SOFTWARE IS RELEASED, ANY RECORDINGS TAKEN USING THE PREVIOUS SOFTWARE SHOULD NOT BE UPLOADED TO THE TechCONNECT/MDS2 FOR VIEWING. PROBLEMS WITH INVALID DATA BEING DISPLAYED ON THE TechCONNECT/MDS2 MAY OCCUR. ALWAYS PERFORM A RECORDING USING THE NEWEST CO-PILOT SOFTWARE AVAILABLE ON THE TechCONNECT/MDS2.**

Co-Pilot is an optional diagnostic tool for the dealership or workshop. Because of this, please review the cables listed and the appropriate application or usage chart.

**NOTE: USING THE WRONG CABLE WILL PREVENT YOU FROM GETTING RECORDINGS!**

**NOTE: IF YOU NEED ONE OF THE CABLES LISTED BELOW, CONTACT TEAM PSE AT 1-800-223-5623.**

There are 6 OBDII (J1962) compliant vehicle cables used with TechCONNECT/MDS2.

| <b>Cable No.</b> | <b>Color</b> | <b>Description</b>      |
|------------------|--------------|-------------------------|
| OT-2040          | Blue         | 16-way                  |
| OT-2090          | Black        | 16-way                  |
| OT-2091          | Black        | 12-way and 16-way (MMC) |
| OT-2092          | Blue         | 12-way and 16-way (MMC) |
| OT-2095          | Yellow       | 16-way                  |
| OT-2045          | Green        | 16 way                  |

There are 2 non-OBDII cables supported by MDS1, when available.

| <b>Cable No.</b> | <b>Color</b> | <b>Description</b>                               |
|------------------|--------------|--|
| OT-2010          | Black        | 6-way (old style Engine)                         |
| OT-2030          | Black        | 6-way (old style Body used on 93-95 LH vehicles) |

**NOTE: WHEN USING A DRBIII® FOR DATA RECORDINGS INSTEAD OF THE CO-PILOT, NO SPECIAL CABLES ARE NEEDED SINCE THE DRBIII® CAN MULTIPLEX TO THE CORRECT PINS ON THE DLC. THE PROCESS FOR DATA RECORDING WITH THE DRBIII® IS VERY SIMILAR TO THAT OF RECORDING WITH A CO-PILOT.**

**Non-supported Module List**

- Bosch (Diesel/Trans)
- Siemens EGS52 (Trans)
- MMC (all)
- Aisen-Warner AW4 (Trans)

**NOTE: THESE MODULES ARE NOT SUPPORTED BECAUSE THE COMMUNICATION SPEEDS AVAILABLE ARE TOO SLOW FOR ACCURATE RECORDINGS.**

**Co-Pilot Cable Application Chart**

Engine (MDS2 support coverage starts with MY1996)

| Usage                                    | Engine Controllers | Cable/Color        | Notes  |  |
|--|--------------------|--------------------|--|--|
| 2003 & up                                | Cummins 84x        | OT-2040/Blue       |  |  |
| 1998.5 - 2002                            | Cummins 551        |                    |  |  |
| 1996 - 2002                              | SBEC               | OT-2090/Black      |  |  |
| 1996 - 2002 All (except AN/DN/DR Trucks) | JTEC               |                    |  |  |
| 2003 - AB/KJ/TJ/WJ                       |                    |                    |  |  |
| 2001.5 & up PG/PL/PT                     | Siemens (SIM70)    |                    |  | Currently BUX Only                         |
| 1996 - 2000 FJ                           | SBEC - MMC         | OT-2091/Black      | 12 & 16 way connector  |  |
| 2002 AN/DN/DR                            | JTEC               | OT-2095/Yellow     |  |  |
| 2003 - All (except 2003 AB/KJ/TJ/WJ)     |                    |                    |  |  |
| 2002 & up                                | NGC - All          |                    |  | Different cable for Trans (see next table) |
| 2003 & up                                | SBEC               |                    |  |  |
| All                                      | Bosch              | No Cable Available | Not supported in module - communication speeds used are too slow |  |
|  | MMC                |                    |  |  |

Transmission/Transaxle (MDS2 support coverage starts with MY1998)

| Usage                                   | Trans/Engine Controllers | Cable/Color   | Notes  |   |
|---|--------------------------|---------------|--|---|
| 1998.5 - 2002 Cummins 551               | JTEC                     | OT-2090 Black | Auto Trans Only<br>JTEC control<br>the AT shifting |   |
| 1998 - 2000 JA/JX/NS                    | EATX                     | OT-2040 Blue  |  |   |
| 1998 - 2001 LH                          |                          |               |  |   |
| 1998 - 2002 PR                          |                          |               |  |   |
| 1999 & UP WJ                            |                          |               |  |   |
| 2000 - 2001 AN/DN                       |                          |               |  |   |
| 2001 - 2002 JR                          |                          |               |  |   |
| 2001 - 2002 RS                          |                          |               |  |   |
| 2001 - 2002 PT                          |                          |               |  |   |
| 2002 - 2003 KJ                          |                          |               |  |   |
| 2002 PL                                 |                          |               |  |   |
| 2003 TJ                                 |                          |               |  |   |
| 1998 - 2000 FJ                          |                          |               |  | EATX-MMC  |
| 2002 - AN/DN/DR                         | EATX                     | OT-2045 Green |  |   |
| 2003 - DR 5.7L                          |                          |               |  |   |
| 2003 & UP<br>AN/CS/DN/DR/JR/LH/PL/PT/RS | NGC Trans                |               |  | Available Spring<br>2003                            |
| 2004 - KJ                               | NGC Trans                |               |  |   |
| 2003 & UP DR Cummins 84x                | JTEC                     |               |  | Auto Trans Only<br>JTEC Controls<br>the AT shifting |

**NOTE: CO-PILOT SUPPORT IS NOT AVAILABLE FOR THE 2002 LH AND 2002.5 DN NGC TRANS. DRBIII® DATA RECORDER MUST BE USED FOR THESE VEHICLES.**

***POLICY:***

Information Only.