GMC

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# Using the TransFlow Transmission Oil Cooler Flush and Flow Test Tool

**FECHILINK** 

GM studies indicate that restricted transmission oil flow is detrimental to the life of any automatic transmission. Plugged oil coolers and oil cooler line restrictions cause insufficient transmission lubrication and elevated operating temperatures that can lead to premature transmission failure. Many repeat repair cases can be prevented by following published procedures for transmission oil cooler flushing and flow checking to ensure there is proper flow through the transmission oil cooler.

The DT-45096 (previously J-45096) TransFlow® transmission oil cooler flush and flow test tool can be used to flush and flow test the transmission oil cooler and the oil cooler pipes after the transmission has been removed for repairs. The TransFlow tool is designed to measure oil flow capability within the transmission oil cooler and performs a flow rate test meeting GM flow rate specifications. It is a self-contained unit using a 12-volt flow meter, shop air supply and DEXRON VI automatic transmission fluid (ATF).

The DT-45096 TransFlow tool uses conventional automatic transmission fluid as the cleaning agent. It doesn't use any detergents, chemical cleaning agents or hot water, so there is no hazardous waste to dispose of.

If the transmission fluid requirement for the vehicle is different than DEXRON VI, flushing the cooler with DEXRON VI is an acceptable service procedure. Very little fluid remains in the cooler after the flush procedure. After performing the flush and flow test, use compressed air to blow the residual transmission fluid out of the oil cooler and lines.

Time allowance for performing the transmission oil cooler flushing and flow checking procedure has been included in the appropriate labor time guide operations since the 1987 model year.

The DT-45096 TransFlow includes:

- 32 quart (30 liters) supply vessel
- 34 guart (32 liters) waste oil vessel
- Air pressure supply fitting
- · Digital flow rate indicator
- 12V DC power cable
- Black supply oil hose with guick connect fitting



- Clear waste oil hose with guick connect fitting



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GM

# Using the TransFlow Transmission Oil Cooler Flush and Flow Test Tool - continued from page 1

**TIP:** A new Operation Manual has just been released with updated information along with a new Adapter Application Chart. The new manuals are available under the Support tab for the DT-45096 (previously J-45096) tool at gmtoolsandequipment.com.



New manuals available under the Support tab for the tool at  $\ensuremath{\mathsf{gmtoolsandequipment.com}}$  .

# Flushing

The TransFlow equipment is connected to the vehicle's transmission oil cooler lines using the current cooler line adapters. Two adapters are included with the TransFlow. Five other adapters also are available. The most commonly used adapters are the DT-45096-30



DT-45096-30



DT-45096-50

(for 6-speed, 8-speed and 10-speed longitudinally-mounted transmissions) and DT-45096-50 (for 6-speed and 9-speed transverse-mounted transmissions).

In the flush mode, air pressure forces clean transmission fluid through the oil cooler and lines, removing dirty oil and blockages. To enhance the cleaning action, the oil is agitated with bursts of air. The cooler is flushed first in the backflush direction, then the normal flow direction. Waste oil is collected in a built-in waste tank.

### **Flow Test**

After flushing, use the digital flow rate indicator in the DT-45096 to perform a flow test. The flow test indicates whether the oil cooler and cooler lines still have restrictions, which must be addressed before the repair is completed.

An electronic flow meter is used to measure the minimum flow capability of the transmission oil cooling system. A digital display indicates the ATF flow rate in gallons per minute (GPM) along with the amount of ATF in the supply vessel, supply vessel ATF temperature, machine cycles and the operating mode.

Insufficient oil flow through the transmission oil cooling system will cause premature transmission failure. The required minimum ATF flow rate reading is directly related to the supply oil temperature. In addition to transmission fluid temperature, minimum flow rates vary depending on whether the oil cooler is made of aluminum or steel.

Refer to the flow rate chart for the oil flow rate specification based on the temperature of the ATF in the supply vessel. The User's Manual and the Service Information include minimum flow rate charts. Refer to the appropriate Service Information for complete flow rate information for the model and cooling system being tested.

The published flow rates are based on the tool calibrated at 2.0 GPM (7.6L/minute) using ATF at 65° F (18° C) with 90 psi of air pressure. Dealership tools should be calibrated using the same specifications. If the tool is set up with higher temperature ATF, then artificially high flow rates could be seen. Remember, the tool is only measuring minimum flow rates. Fluid warmer than room temperature may result in higher self-test readings.



Published flow rates are based on the tool calibrated at 2.0 GPM.

The entire flushing and flow test procedure takes only 5-8 minutes. The waste tank can be emptied either using a suction hose in the port provided or by draining from the built-in drain fitting at the

# Using the TransFlow Transmission Oil Cooler Flush and Flow Test Tool - continued from page 2

bottom of the tank. In either case, the waste oil can be disposed of the in the same manner as any other drained transmission fluid.

After the flow test, the following information is displayed:

- Tested flow rate in GPM
- Temperature in degrees Fahrenheit
- Cycle number
- 7 or 8-digit alpha/numeric flow code. This flow code must be written on the repair order for the warranty claim.

## Self-Test Flow Rate

If an oil cooler fails the flow test, repeat the flow test to confirm the condition. If it fails again, disconnect the tool from the cooler lines and run the TransFlow self-test procedure to verify flow is 2.0 GPM (7.6L/minute) or greater using ATF at 65° F (18° C) with a minimum 90 psi of air pressure. The self-test should take no more than two minutes to complete.

**TIP:** Refer to the Useful Information/Helpful Hints section of the User's Manual for additional information on the self-test procedure.

If you are having difficulty obtaining the 90 psi of shop air required to run the TransFlow tool:

- Connect an accurate pressure gauge between the TransFlow air inlet and the shop to verify the pressure going into Trans-Flow from the shop air supply is at least 90 psi and there are no obstructions in the shop line.
- Connect TransFlow to an air line that is closer to the service compressor.
- Check the service compressor's pressure.
- Connect to the body shop air line, which may be at a higher pressure.

## **Transmission Fluid Temperature**

The ATF in the supply vessel must be greater than 65° F (18° C). This is the minimum required operating temperature. Below 65° F (18° C), the TransFlow will shut off. Below this temperature, it is difficult to accurately measure the flow of transmission fluid.

(5) Thanks to Chuck Berecz, Mark Kevnick and Dan Popoff

# Diagnosing the Selective Catalyst Reduction System

The Check Engine MIL may be illuminated and DTC P20EE (NOx Catalyst Efficiency Below Threshold) may be set on some 2017-2018 Silverado and Sierra models equipped with the 6.6L Duramax diesel engine (RPO L5P). There may be several reasons why DTC P20EE has set, even when the Selective Catalyst Reduction (SCR) system is functioning properly.

The SCR system reduces oxides of nitrogen (NOx) emissions by injecting a metered amount of Diesel Exhaust Fluid (DEF), or reductant, into the exhaust gas stream entering the SCR. Within the Selective Catalytic Reduction Catalyst, the reductant reacts with the NOx to form nitrogen, carbon dioxide, and water vapor. Upstream and downstream NOx sensors provide the Engine Control Module (ECM) with engine-out and tailpipe-out NOx levels.



Ensure the Reduction Fluid tank isn't frozen before diagnosis.

Check the following items to help determine if the vehicle's SCR system is operating correctly.

#### **Check for other DTCs**

- Complete repairs as needed for any other DTCs.
- Clear all DTCs.

#### Verify DEF (or Reductant) Concentration

- Using a scan tool, check the reductant concentration in the reductant system data.
- The reductant concentration temperature reading may be inaccurate if the reductant is frozen or contains ice crystals. If the reductant temperature is below 25 degrees F (-4 degrees C), warm the fluid in the tank by parking the truck in a warm environment until the DEF tank temperature is warmer than 25 degrees F (-4 degrees C).
- If the concentration is not between 28.8% and 36.2%, replace the DEF and continue with the following steps.

#### **Run the Emission Reduction Fluid Injector Quantity Test**

 If the test does not pass, refer to Emission Reduction Fluid Injector Quantity Test in the appropriate Service Information and then re-run the test.

#### Perform the Reductant System Malfunction Warning Service Bay Test

- Warm the vehicle to proper operating temperature; otherwise the Reductant System Malfunction Warning Service Bay Test may time out.
- If the test passes, return the vehicle to the customer.
- If the test fails, repeat the Reductant System Malfunction Warning Service Bay Test up to 2 more times. If the test fails after 3 attempts, refer to the DTC P20EE service procedure in the Service Information.

For additional information, refer to #PIP5510B in the Service Information.

#### ( Thanks to John Stempnik

# New Global Electronic Parts Catalog Release Delivers Better Results

The latest update to the GM Global Electronic Parts Catalog (EPC) includes several new features that make it easier and more convenient to search for parts and to quickly find the right parts information. GM dealerships can access the EPC through the GM GlobalConnect Parts Workbench.

# **Search Results in Main Window**

One new feature included in the latest release is a single screen in which to search for a part, view an illustration, and add the part to the shopping list — all within the main content area of the EPC. The search results include the same accurate data, but with the results right in the main EPC screen, it's easy to quickly change vehicles, VINs, or groups without closing the window.

From the search screen, the search can be refined by using the drop-down menu for the make/year/model & Group information.

A new search using the same VIN can be performed by selecting the Reset button at the top of the screen. All previously identified parts and the Noun / Part Number, Group and Without search terms are cleared, but the entered VIN is retained. To remove the VIN, select All Makes from the Within drop-down menu, or enter a new VIN.



A. Switch vehicles with the drop-down menu.

B. Select Reset to perform a new search, reset criteria or close search results.

# **Graphic-Driven Navigation**

To search using part illustrations, set the Catalog Navigation Style to "Graphical." With the Graphic-Driven Navigation selected, graphical shortcuts can be used when searching to jump right to a particular location. Navigation can be done manually or with a VIN.



Flashing "I" Note Icon

When viewing an illustration of a part, any important notes will appear with a yellow paper icon above the illustration. Illustration RPO notes are identified with a plain yellow paper icon. If an illustration has a note other than RPO list items, such as user notes or distributor notes, the yellow paper note will appear with flashing "I" on the note icon. Select the icon to view the additional information.

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Select the flashing "I" paper note icon to view additional illustration notes.

# **MyPriceLink® Portal**

The latest release also includes a new button above the shopping lists that enables all part numbers to be copied, up to 100 part numbers. The copied part numbers can be easily entered into the MyPriceLink portal when pricing parts.

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Copy up to 100 part numbers using the new Copy button.

After entering the necessary MyPriceLink information in the Vehicle and Payer section, click the Part Number section and right-click to paste the copied part numbers. Select the Get Price button and follow the normal procedures to continue in the portal.

# Launch ACDelco Catalog from Any Screen

The ACDelco catalog also can now be launched directly from any screen in the EPC. Click the ACDelco icon at the top right of the screen to access the catalog.



The ACDelco icon is at the top right of any EPC screen.

For assistance or technical support on using any features of the Global Electronic Parts Catalog, send an email to gmpartscatalog@gm.com or contact the GM EPC Technical Support help desk at 1-888-994-6372.

S Thanks to Mary Daly

# Tamper-Proof Drive Bit Set for Emissions Components

The Positive Crankcase Ventilation (PCV) system and other components that affect emissions, but do not turn on the Check Engine lamp if there is a malfunction, are required by the Air Resource Board (ARB) to have tamper-proof fasteners to prevent removal or modification. During service, the fasteners are destroyed if they must be removed, and new tamper-proof fasteners must be installed.

Tamper-proof fasteners can be found on 2016-2018 GM models equipped with the following engines:

- 1.4L Gas engine (RPO LE2, LV7)
- 1.5L Gas engine (RPO LFV, L3A, L3G)
- 2.0L Gas engine (RPO LTG)
- 6.6L Duramax diesel engine (RPO LGH, LML, L5P)

# **Tamper-Proof Drive Bits**

**Service Examples** 

An example of where tamper-

the air cleaner outlet duct on

a 2017 Spark equipped with the 1.4L gas engine (RPO

LV7). The Service Informa-

tion instructs to remove the air cleaner outlet duct by

using a suitable tool to cut a

slot in the tamper-resistant

PCV bolt heads (1) and re-

move them with a flat-bladed

tool. Discard the bolts after

removal. Installing a new air

cleaner outlet duct with the

PCV tube and valves to the

engine requires using the

EN-50956 tamper-proof

On 6.6L Duramax diesel

engines, a tamper-proof

PCV oil separator.

fastener can be found on the

Thanks to Chuck Berecz

and Michael Adamczyk

drive bit.

proof fasteners are used is

The GR-6 bits in the Tamper-Proof Drive Bit Set (EN-50956-A) will install a fastener only, making it ARB compliant. The set includes three tamper-proof bits, and replaces the single bit (EN-50956) previously released.

The tamper-proof fasteners were originally used only on diesel engines, but gasoline applications have been added recently. The tamper-proof fasteners are used to attach various emission-related components, such as the oil separator to the valve cover, the oil drain pipe to the front cover on diesel engines, and components in the intake and PCV systems on gasoline engines.



Current EN-50956 bit



Tamper-resistant PCV bolts on the air cleaner outlet duct



Tamper-resistant bolt on the PCV oil separator



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