

# **1989 - 1990 Corvette: Service Bulletin: Transmission Exchange Program 6 Speed M/T (ML9)**

**Subject:** TRANS. EXCHANGE PROGRAM 6 SPEED M/T (ML9)

**Model and Year:** 1989-91 CORVETTE ZF 6-SPEED MANUAL  
TRANSMISSION WITH ML9 OPTION

**Source:** Chevrolet Service Bulletin

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## **TO: ALL CHEVROLET DEALERS**

THIS BULLETIN CANCELS AND SUPERSEDES DEALER SERVICE BULLETIN NO. 90-156-7B, DATED FEBRUARY 1990. THE 1991 MODEL YEAR HAS BEEN ADDED, CHANGES IN SERVICE MANUAL PAGE NUMBER UNDER A, ADD A 'CAUSE' IN 'A', DELETE A 'CONDITION' IN 'D', ADD A PROCEDURE IN 'E', ADD A 'NOTE' IN 'F' AND BILLING CHARGE UNDER 'G'. ALL COPIES OF 90-156-7B SHOULD BE DISCARDED.

To gain helpful product feedback on the new ZF 6-speed manual transmission, an exchange program is now in effect and will continue until further notice.

The exchange program will be administered by the Chevrolet Technical Assistance Network (T.A.N.).

The following explains all requirements regarding diagnosis, serviceable and non-serviceable items, warranty claims processing procedures and shipping instructions. This information should be filed in the "Special Exchange Policy Procedures" manual.

In the event your dealership receives a comment on a 1989-91 ZF 6-speed, follow the procedure listed below. Your cooperation in adhering to the following procedures will greatly improve the effectiveness of the program.

## A. PRELIMINARY DIAGNOSTIC PROCEDURE

Condition and Remedy - external causes of condition

Condition Cause Remedy

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Cannot shift

a) Clutch does not Check clutch operation-repair into gears disengage as necessary per Service Manual Section 7C

b) Internal cause Exchange transmission

Noisy in all a) Oil fluid level Refill transmission oil accord- gears, neutral, too low (Part ing to specification. Determine forward and number 1052931) Determine cause of low oil level; i.e., repair as necessary.

b) Transmission Correct oil level overheats due to excessively low or high oil fluid level

c) Internal cause Exchange transmission

Transmission

a) Low speed Normal condition first gear parking lot growl maneuver

Noise on

a) Dual mass Normal condition engine flywheel shut-down resonance

Noise in

a) Bell-housing Loosen bolts for transmission all gears transmission bell housing and support beam (growl or misalignment Retorque starting with bell gear whine) housing to engine, transmission to bell housing and support beams to transmission. Bolt torque sequence should be horizontal then vertical in increments of 5 - 10 ft. lbs. Refer to page 4A-5 for driveline support alignment procedure in the 1990 or 1991 Corvette Service Manual.

B. ON-VEHICLE SERVICE (without exchange)

Corrections to perform while transmission is installed in vehicle:

Condition Cause Remedy

Transmission

a) Extension Housing Replace extension housing rear leaks Rear Oil Fluid Seal oil seal. (Kent Moore special Leaks. (See tool #J21359-A required.) illustration Page 1 0.)

b) Reverse idler cover Replace gasket (See leaks. (See Illustration). NOTICE: Illustration Page Reverse Idler Shaft can change 10.) its position. After removing cover, screw in Reverse Idler Shaft bolt to hold shaft in position.

c) Oil drain plug Check for tight fit. leaks. (See Illustration.)

d) Backup lamp switch Check for tight fit; leaks. (See replace as necessary. Illustration Page 10.)

e) Breather tube leaks. Check for tight fit; (See Illustration.) replace as necessary.

f) Speed Sensor leaks Replace o-ring.

#### Leakage and

a) Computer aided Check for tight fit other damage Gear Select (25 Nm or 18 lbs. ft.). Solenoid. (See Replace solenoid assembly as Illustration Page necessary. 10.)

### C. OUT-OF-VEHICLE REPAIR (without exchange)

Correction while transmission is removed but without disassembling the transmission.

#### Condition Cause Remedy

##### Transmission

a) Input shaft leaks Replace input shaft bearing leaks retainer assembly, o-ring and gasket. Front input bearing endplay should be checked and re-shimmed if necessary, per procedure in shop manual. (See Illustration Page 10.) Kent Moore special tool #J38126 needed for o-ring replacement. NOTICE: Bearing retainer for L98 and LT5 engine is interchangeable.

b) Countershaft seal Replace countershaft seal (See leaks Illustration). Kent Moore Special tool #J29381 required.

### D. LIST OF POSSIBLE COMMENTS - CAUSE AND REPAIR

Below are some other possible transmission conditions which are not listed in A, B, or C above.

#### Condition Cause Remedy

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Cannot shift

- a) Gearshift Linkage Exchange transmission into gear
- b) C.A.G.S. solenoid Inspect solenoid sticks pin and sleeve

Transmission

- a) Transmission Exchange transmission leaks case leaks

Reverse bind a) Reverse blockout Repair per T.A.N. instructions. or blockout set screw loose (cannot get into gear)

## E. EXCHANGE PROCEDURE

Once the above preliminary diagnosis and/or repairs are made and an exchange unit is still deemed necessary, call Chevrolet T.A.N. and request a transmission specialist. The ML9 is not available from GM Service Parts Operations (GMSPO). Please be prepared to provide gearbox number from original transmission tag, vehicle delivery date and dealer shipping address.

Also, be prepared to provide the necessary information by filling out the reporting form (example attached, reproduce locally) prior to calling.

Chevrolet Technical Assistance Network will arrange to ship an exchange unit to your dealership and provide your dealership with a T.A.N. reference number. This number must be written on the return transmission case cover before returning the unit to ZF of North America, Inc.

To increase the effectiveness of the program, the removed transmission unit must be returned immediately (not later than 1 week after date of receipt of replacement unit). Under no circumstances may the removed transmission be retained or purchased by the dealer,

The removed transmission must be returned complete, including shifter assembly, as removed from the vehicle without examination of the unit other than as described in paragraphs A, B, C, or D above. Dealerships returning units that have been even partially disassembled will be judged as violating this procedure and as such will be subject to being billed for all materials furnished.

The exchange unit will have an envelope attached to it. This envelope will contain:

Return shipping label Reporting form Leak identification charts Identification tag explanation chart

**NOTE: FOR CORVETTE OWNERS WHO WISH TO RETAIN ORIGINAL TRANSMISSION CASE IN VEHICLE, ZF OF NORTH AMERICA MUST BE ALLOWED FIVE (5) WORK DAYS TO REPAIR ORIGINAL UNIT, PLUS SHIPPING TIME (APPROXIMATELY 3 TO 5 WORKING DAYS). If after inspection of the original transmission, it is determined to be non-repairable, the dealer will be notified through the Chevrolet Technical Assistance Network (T.A.N.) and a replacement transmission will be shipped from ZF within twenty-four (24) hours of authorization from T.A.N.**

#### F. PREPARATION FOR SHIPPING

Drain oil transmission fluid from the concerned unit. Replace the drain plug. Disconnect and retain speed sensor and remove transmission.

**NOTE: Do not remove transmission shifter.**

Remove all plastic shipping plugs and covers from the exchange unit and install them on the removed unit.

**NOTE: Compare input shaft length to original or refer to chart on Page**

## 10.

Complete the information on the complaint tag. Refer to the identification tag explanation chart.

If transmission leaks (see illustrations attached), clean leak areas, powder, and mark leak area on transmission. Mark area of leakage on illustrations with red pen. Write the T.A.N. reference number on the leak identification forms.

Fold the report form, staple it to the complaint tag and secure the tag to the clutch housing bolt hole of the removed unit. Fold and staple the leak identification forms to the same tag.

Write the T.A.N. reference number on the case cover of the removed transmission and on the Warranty Information Reporting Form.

Repack the removed unit into the original shipping container.

Place leak identification charts, and copy of repair order in original envelope and attach to original transmission.

## G. SHIPPING INSTRUCTIONS

Place the shipping label on the original shipping container.

Dealer should complete a bill of lading with attached sample information (prepaid, third party billing - see Page 9) so that freight bill will be charged directly to Chevrolet Motor Division. The third billing address (Charge To:) must be completed exactly as shown on sample.

The removed transmission is to be shipped Truck Freight to:

ZF of North America, Inc. 1810 Industrial Drive Libertyville, IL 60046

To increase the effectiveness of the program, the removed unit should be returned IMMEDIATELY. Failure to return the removed unit will result in the dealership being billed \$3,000.00 for the unit furnished, plus an Administrative Charge.

## H. WARRANTY CLAIMS PROCESSING PROCEDURE

Upon completion of the repair, a warranty claim is to be submitted to Chevrolet for only the labor for the Removal and Replacement of the exchange transmission and the transmission fluid (Part #1052931).

Labor Operation Number: K2720

Other Hours: 0.2 Administrative time allowed

DMN: Applicable and Transmission Fluid Charge.

YOUR COOPERATION IS GREATLY APPRECIATED. PROMPT OF THE REMOVED TRANSMISSION WILL INCREASE THE EFFECTIVENESS OF THIS PROGRAM. IF YOU HAVE ANY QUESTIONS REGARDING THE EXCHANGE PROGRAM ADMINISTRATIVE PROCEDURES, PLEASE CONTACT THE CHEVROLET TECHNICAL ASSISTANCE NETWORK (TRANSMISSION GROUP).

REFER TO FIGURE 2

[1] FLANGE, MAIN DRIVE GEAR BEARING RETAINER TUBE [2] O-RING, MAIN DRIVE GEAR BEARING RETAINER [3] TUBE, MAIN DRIVE GEAR BEARING RETAINER [4] SEAL, MAIN DRIVE GEAR [5] GASKET, MAIN DRIVE GEAR BEARING RETAINER [6] GEAR, MAIN DRIVE [7] PLUG, FILL [8] TUBE, VENT [9] BOLT, TRANSMISSION CASE [10] HOUSING, EXTENSION [11] SEAL, EXTENSION HOUSING REAR OIL [12] SENSOR, SPEED [13] GASKET, REVERSE IDLER GEAR



COVER [14] COVER, REVERSE IDLER GEAR [15] STUD, REVERSE IDLER GEAR COVER [16] BOLT, REVERSE IDLER GEAR COVER [17] BOLT, REVERSE IDLER GEAR SHAFT [18] SEAL, REVERSE IDLER SHAFT RETAINING BOLT [19] SOLENOID. COMPUTER AIDED GEAR SELECT [20] PLUG, GEARSHIFT SHAFT DETENT [21] PLUG. DRAIN [22] SWITCH, BACKUP LAMP [23] SEAL COUNTERSHAFT [24] BOLT. MAIN DRIVE GEAR BEARING RETAINER [38] SHIM. SELECTIVE

[19] SPRING TRANSMISSION COMPUTER AIDED GEAR SELECT SOLENOID [20] PIN TRANSMISSION COMPUTER AIDED GEAR SELECT SOLENOID [21] SEAL TRANSMISSION COMPUTER AIDED GEAR SELECT SOLENOID [22] SOLENOID TRANSMISSION COMPUTER AIDED GEAR SELECT [23] SLEEVE TRANSMISSION COMPUTER AIDED GEAR SELECT SOLENOID PIN

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