

4L80E D321 AUTOSHIFT TRANSBRAKE

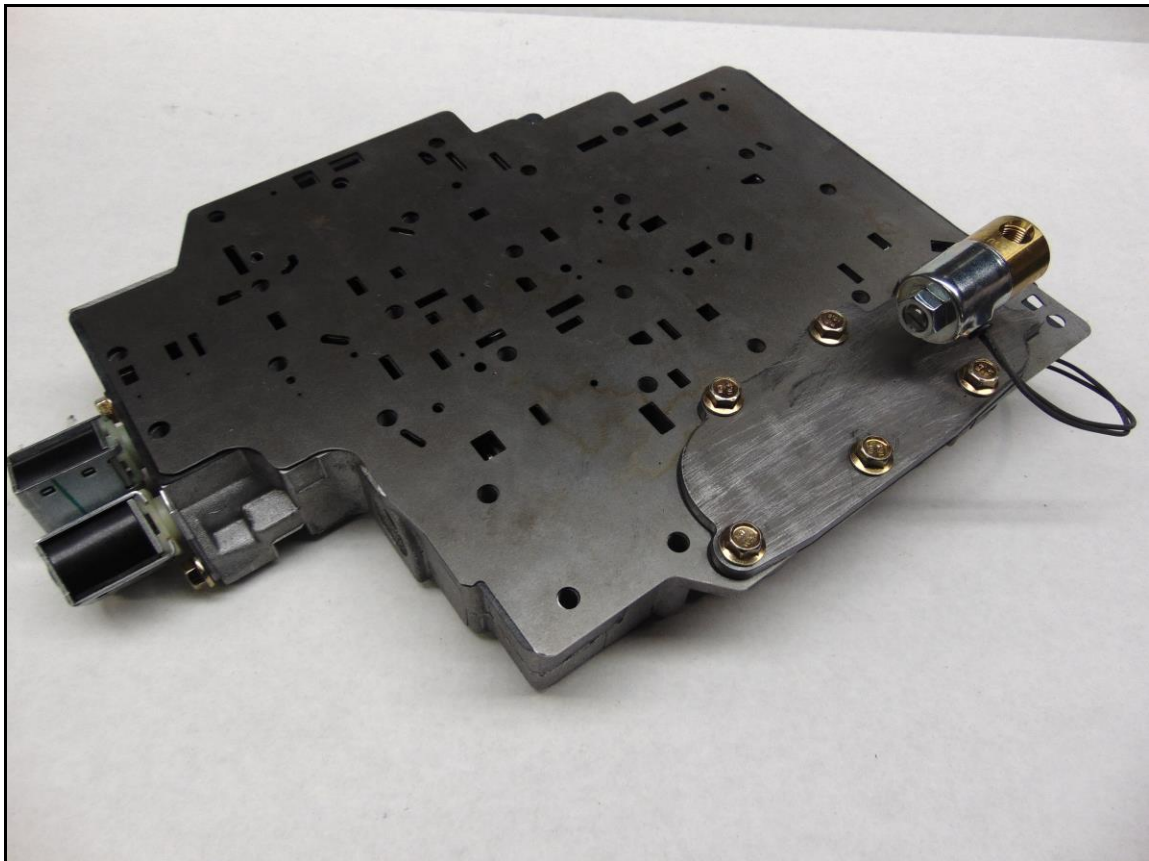
PART # 4L8VB/ASTB

This product is for competition usage only. This product should be installed by a professional transmission mechanic who is fluent with servicing the GM4L80E transmission. This product has been designed, engineered and tested to meet the highest quality standards obtainable for performance, consistency and durability. Exclusive fluid release design uses pressurized oil to release the brake valve. No lazy solenoid orifice dependent brake valve scheduling. Re-engineered second gear circuitry vastly improves intermediate clutch durability. Beyond the 1000 horsepower/750 foot pounds of torque power level, consider the use of an aftermarket input shaft, forward clutch hub, 36 element sprag and drum, intermediate pressure plate, and/or mainshaft. Read information presented here before attempting product installation or service. If something does not make sense be sure to contact us for clarification or additional consultation/advice.

Transmission Brake activation is necessary for Reverse Gear engagement. When Reverse Range is selected and the Transmission Brake is activated, apply oil flows to both the rear band and direct clutch pack, engaging Reverse Range. When Transmission Brake is de-activated in the Reverse Range, apply oil to both the friction elements is blocked. Under these conditions, with the friction elements released, the transmission is effectively in Neutral Range. If activation of Transmission Brake for Reverse Gear engagement is an issue, the power supply to the reverse lights can be spliced into the transmission brake power supply wire, between the button and the transmission case, to engage Reverse Range without depressing the button. Installing a diode in line between the reverse light power supply and the splice will eliminate the illumination of the reverse lights when Transmission Brake is activated. When the D3 Range is selected and the Transmission Brake is activated, apply oil flows to both the rear band and direct clutch pack, locking the transmission. When Transmission Brake is de-activated in the D3 Range, the transmission will start in First Gear Range and automatically shift to Second and Third Gear Ranges. When activating the Transmission Brake in the D3 Range or Reverse Range, it is required that the transmission produce a steady and smooth line pressure of between 190 and 215 psi. at and above 1000 rpm. How we generate this required pressure depends mainly on the functionality and tune-ability of the Engine Control Module or Powertrain Control Module in use. Ideally, an ECM or PCM that can recognize that the D3 Range has been manually selected by the driver and drop EPC solenoid voltage to obtain the required psi. is the simplest way to accomplish this. Gear range selection by the driver is converted to an electrical signal thru the use of the internal Pressure Manifold or external PRNDL switch. Another method is to have a separate tune stored for Transmission Brake operation. In most cases running a fixed line pressure works well with this product. A fixed line pressure bypasses the need for computer control of the EPC solenoid and furnishes the required pressure required for Transmission Brake activation as long as the engine is running. To convert the hydraulic system to fixed line pressure simply disconnect the electrical connector to the EPC solenoid. The

loss of voltage schedules the solenoid to its max pressure position, resulting in the required hydraulic pressure. When this is done the computer may throw a trouble code or put the transmission in failsafe mode. These concerns are taken care of thru module programming. Fixed line pressure can cause the engine to stall when idling in gear, either warm or hot, with a lock-up torque converter, depending on its design. We are currently preparing a modified pressure regulator valve to reduce these concerns. Torque converter clutch application is no longer PWM with this valve body. It is simply On/Off for a major increase in torque capacity.

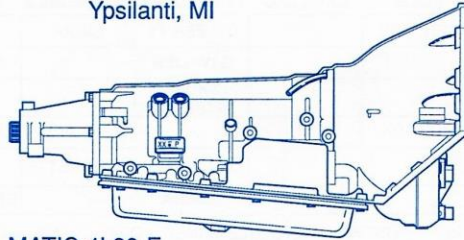
INSTALLERS: BE SURE THE “ADDITIONAL IMPORTANT INFORMATION” OUTLINED AT THE END OF THESE INSTALLATION INSTRUCTIONS IS PASSED ON TO YOUR CUSTOMER TO AVOID ANY SAFETY HAZARDS, MECHANICAL PROBLEMS, OR OTHER CONCERNS THAT MAY RESULT DUE TO THEIR FAILURE TO UNDERSTAND PROPER USAGE OF THIS PRODUCT.



HYDRA-MATIC 4L80-E TRANSMISSION

RPO CODE MT1

Produced at: Willow Run
Ypsilanti, MI



HYDRA-MATIC 4L80-E
(4-SPEED)

Vehicles used in:

C/K	PICK-UP & CHASSIS CAB
G	VAN, SPORTVAN, SCHOOL BUS, HI-CUBE / CUTAWAY VAN
P	CHASSIS, VAN, SCHOOL BUS, MOTOR HOME CHASSIS
R/V	LIGHT CHASSIS CAB, SUBURBAN

BASIC SPECIFICATIONS

Current Vehicle Platforms

Trucks: C/K, G, RV
Special Applications: Motor Home,
School Bus

Transmission Fluid Capacity (Approximate)

Bottom Pan Removal: 7.3L (7.7 QTS)
Dry: 12.8L (13.5 QTS)

Current Engine Range

4.3L to 7.4L Gas
6.2L Diesel

Transmission Fluid Type

Dexron II®

Transmission Drive

Rear Wheel Drive
4-Wheel Drive

Transmission Weight

Dry: 107 Kg (236 LBS)
Wet: 118 Kg (260 LBS)

Transmission Type

4 = Four Speed
L = Longitudinal Mount
80 = High Torque Capacity
E = Electronically Controlled

Converter Sizes Available

310mm - 4 Element (Dual Stators)
- 3 Element (Single Stator)

Automatic Overdrive with Torque Converter Clutch Assembly.

Gear Ratios

1st	2.482
2nd	1.482
3rd	1.000
4th	0.750
REV	2.077

7 Position Quadrant

(P, R, N, OD, D, 2, 1)

Pressure Taps Available

Line Pressure

Maximum Trailer Towing Capacity

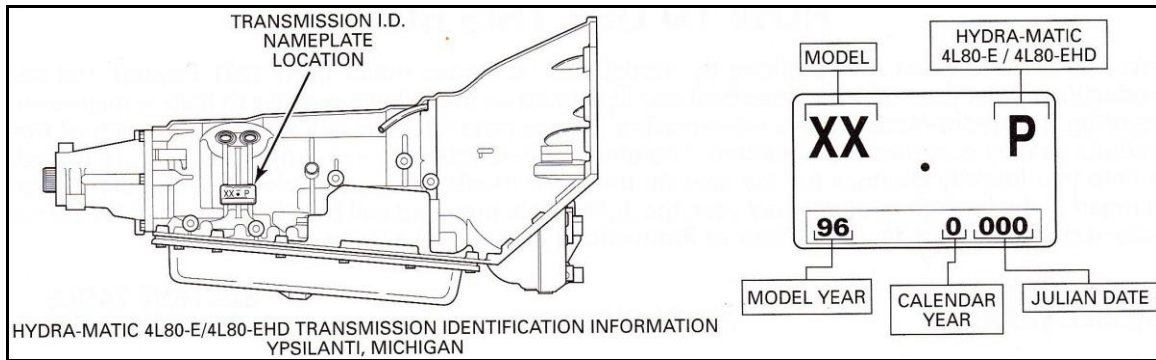
9,072 Kg (20,000 LBS)

Case Material

Die Cast Aluminum

Maximum Gross Vehicle Weight

7,484 Kg (16,500 LBS)



KIT CONTENTS

- 1 Transmission Brake Valve Body Assembly**
- 1 .250" Cup Plug**
- 1 .375" Cup Plug**
- 3 .250" Torlon Checkballs**
- 1 Rear Servo Spring**
- 1 Intermediate Clutch Backing Plate Snap Ring**
- 16 Direct Clutch Apply Release Springs**
- 1 Wiring Harness Retaining Bracket**
- 2 Wiring Harness Retaining Bracket Bolts**

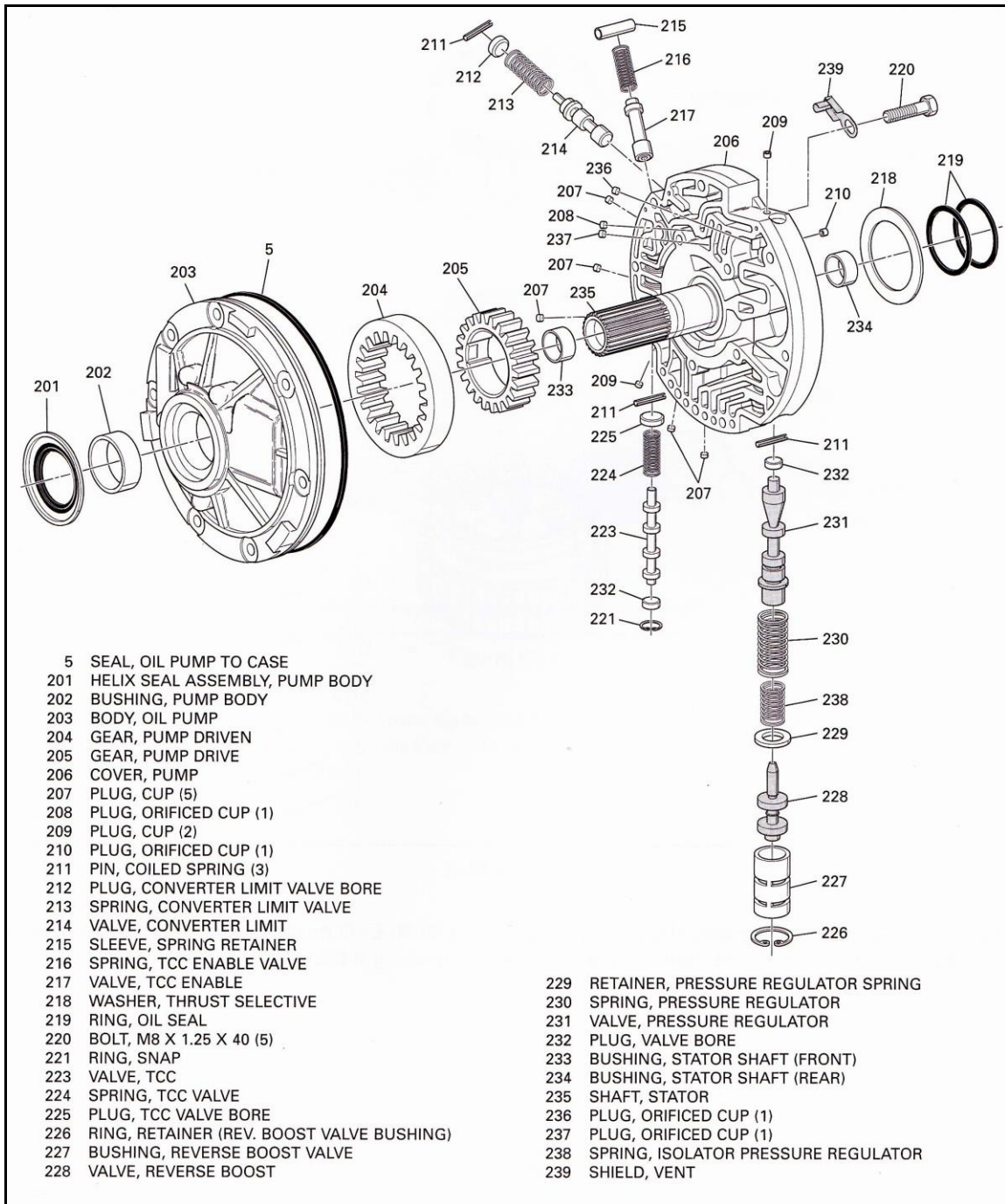
When available the valve body assembly is fit with new AC Delco A Shift Solenoid, B Shift Solenoid and Pressure Manifold, Rostra Lock Up Solenoid and Internal Wiring Harness. Actuator Feed Valve Bore is reamed oversize and fit with Trans-Go Actuator Feed Valve. OEM lock up valve and spring replaced with Trans-Go Lock-Up Valve. EPC bore is fit with aluminum Bore plug. Occasionally things need to be substituted based on availability. Unfortunately this is the new world order.

These instructions have recently been revised. Revision date 3.2023.

INSTALLATION INSTRUCTIONS

Oil Pump Modifications

Use schematic as a guide for performing the upgrades/modifications outlined to the oil pump assembly.



4L80E OIL PUMP COVER ASSEMBLY SCHEMATIC

Remove retaining ring (226), boost bushing (227), boost valve (228), spring retainer (229), isolator spring (238), regulator spring (230), and regulator valve (231) from the pump cover (206). See schematic. Grind a flat @ .500" wide on the large land of the reverse boost valve. Locate pump cover passage "R". With pump cover situated as in Figure 2 it is the third passage from the left. Drill passage out with .375" drill to a depth of @ .500". Avoid making the hole oversize. Install the supplied .388" cup plug in the passage just below flush. A dab of Loctite on the o/d of the plug prior to installation is recommended. Deck the machined surface

perpendicular to the passage with a whetstone to remove any burrs raised during drilling and plugging operations.

NOTE: We do not recommend using pump cover with traditional “line to lube” modification performed. in conjunction with this product. It does not work well with the fixed line pressure system this product furnishes. This mod will tend to reduce pressure regulator system efficiency. If the cover has been drilled already, plug orifice or replace cover. Drilled cover works fine with applications that utilize a functional EPC solenoid.



FIGURE 1

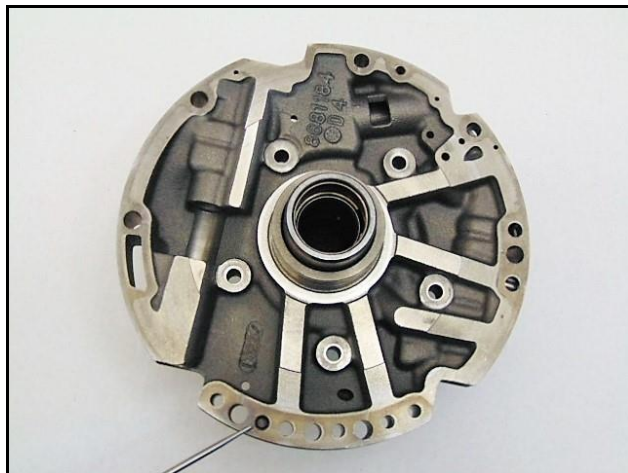


FIGURE 2

All Applications with LOCK-UP Torque Converters:

Install the supplied .250” cup plug into the passage shown in Figure 3. Drill .125” orifice thru the plug. Remove all chips from the passage by blowing thru with compressed air in both directions. This modification will help keep locked up torque converter pressures down and help keep pump drive gear from eating the pump cover.

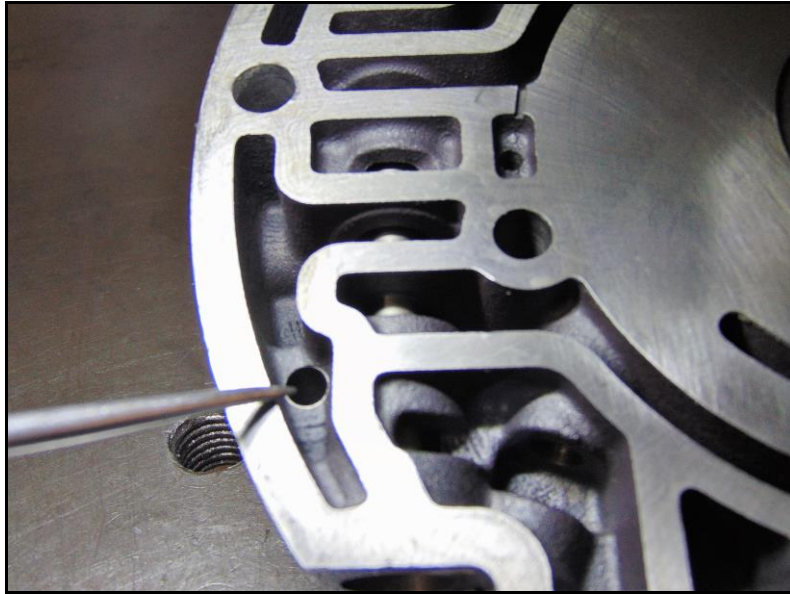


FIGURE 3

All Applications with NON LOCK-UP Torque Converters:

Oil pump fluid circuitry must be corrected. Installation of Trans-Go 4L8-CCV is required with all NON LOCK-UP torque converters.

The diameter of the seal drain back hole in the pump cover is too small for a fixed line pressure application and can result in front seal blow out. To eliminate seal blowout, enlarge the drain back hole with a .250" drill. See Figure 4 .



FIGURE 4

Direct Clutch Housing Modifications

Remove/do not install the center lip seal from the direct clutch housing. See Figure 5. Drill a .055" hole at a 45-degree angle through the side of the drum beginning at the location shown in Figure 6 and exiting at the rear of the housing. This location is the 90-degree corner/machined surface immediately below the point where bottom edge of the clutch piston outer lip seal would be. Due to the difficulty of drilling thru the housing with a .055" drill bit, it is recommended to start the hole with a slightly larger bit and then finish the hole and break thru with the .055" bit.

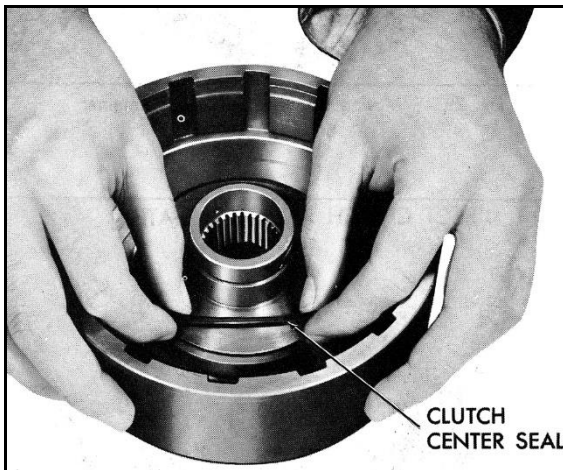


FIGURE 5



FIGURE 6

Replace the direct clutch apply/release springs with supplied apply/release springs. See Figure 7. Carefully separate the OEM apply/release spring retainer assembly and replace the springs. Use caution as to not damage the assembly. The use of an OEM TH400 direct clutch piston and apply/release spring retainer is an

excellent upgrade for the OEM components. See Figure 7. Waffle pattern grooved clutch plates are recommended to improve clutch apply, release, and transmission efficiency. Set clutch pack end clearance at .040" to .060".

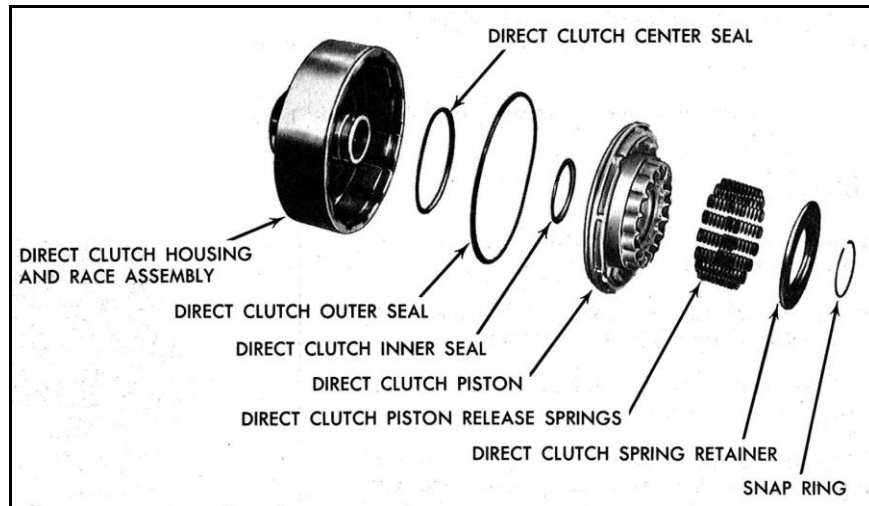


FIGURE 7

Rear Servo Modifications

Remove the rear servo assembly from the transmission case. Remove the rear accumulator piston and spring from the rear servo. See Figure 8. The rear accumulator piston and spring will be replaced with the supplied rear servo spring. See Figure 9. Correct rear servo adjustment is critical to proper reverse/transbrake operation. Be certain to check and adjust properly if transmission is being overhauled or rear band is replaced.

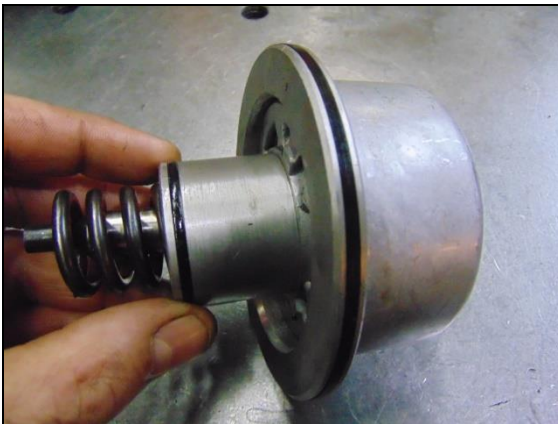


FIGURE 8

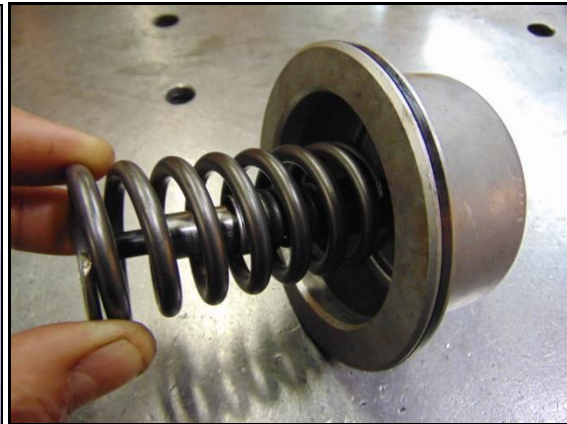


FIGURE 9

Transmission Case Checkball Locations

Install 3 supplied Torlon checkballs at locations 1, 3, and 10 in the transmission case. Delete all others. See Figure 10. When fitting the valve body to the

transmission case be extremely careful not to pinch the power supply wire to the transmission brake solenoid. Torque the valve body assembly retaining bolts to 120-125 inch pounds.

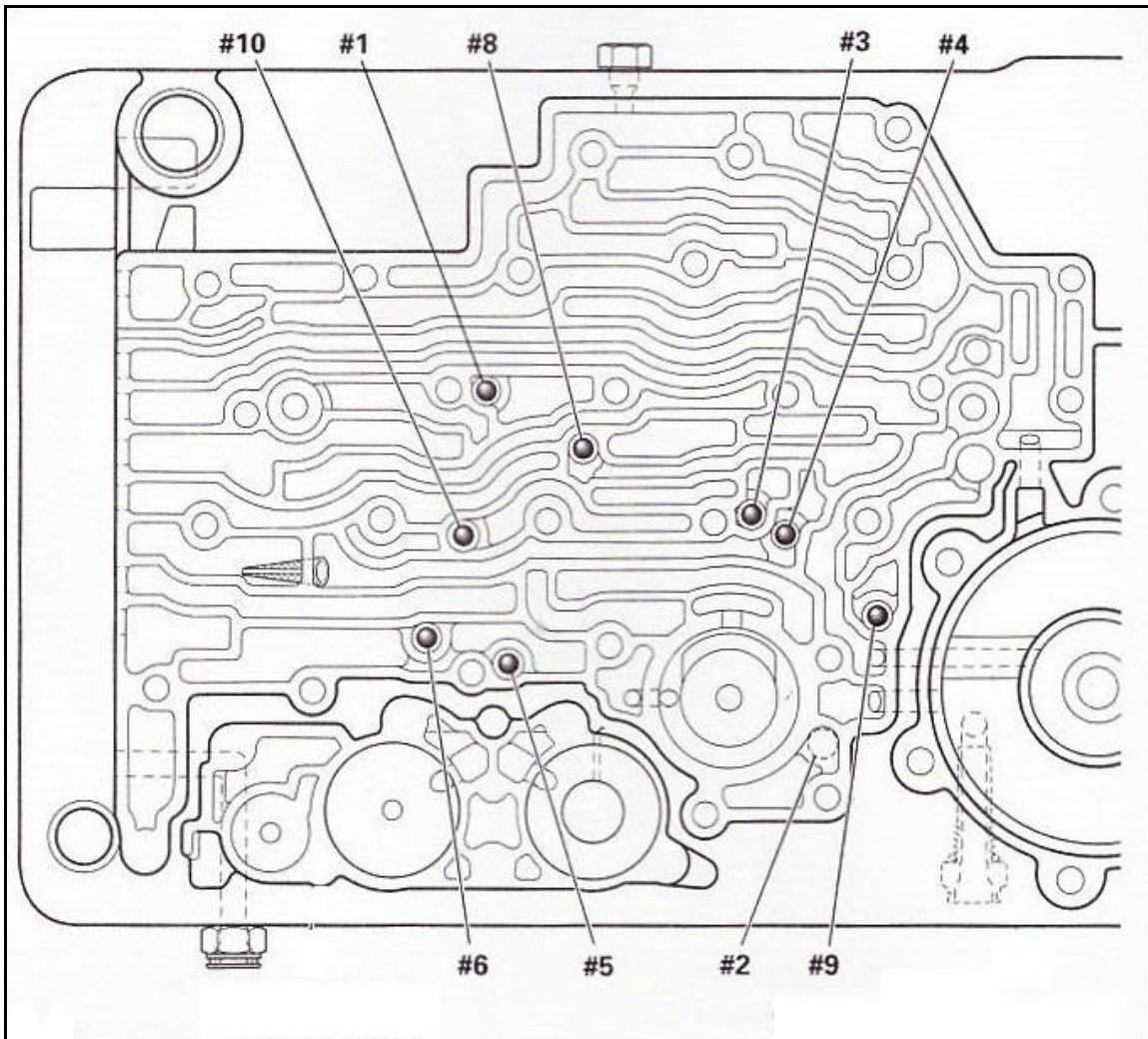


FIGURE 10

Wiring Instructions and Additional Information

For fixed line pressure applications the wire that will be used to supply voltage to the internal transbrake solenoid with this product is found in Plug Wire Location 3

of the OEM Wiring Harness to Case Connector. This wire was previously used as the EPC solenoid power supply wire, which will no longer be used for that purpose. Plug Wire Location 3 is located in the top row of the OEM Wiring Harness to Case Connector. The top row contains four wires and it is the third wire from the left side. This wire is normally, but not always, red with a black tracer. Cut this wire between the ECM and connector, leaving a minimum of three inches of wire extending out from the connector. Attach a "Hot in Run" 12 volt / 20 amp fused power supply to the momentary switch to activate the transmission brake and on to Plug Wire Location 3 where it extends out of the connector. When activated the current will now flow thru the connector and internal harness and on to the internal transmission brake solenoid for activation. With proper service tooling the wire and pin can be removed from the connector and a service repair pin and wire installed attached so original wiring remains undisturbed. If ECM control of the EPC solenoid is desired, source a pass thru connector to supply power to the internal Transmission Brake solenoid. Pay close attention to wire routing to avoid nonsense. Do not activate transmission brake with the vehicle in motion. Do not engage the transmission brake for more than 5-7 seconds at a time to avoid overheating the transmission. If the desired stall speed cannot be reached within this time frame, the torque converter or engine tune must be evaluated. This valve body does not have engine braking in Manual Low Range, eliminating the chance of engine overspeeding and loss of vehicle control that can result if the transmission is downshifted to Manual Low Range at high vehicle speed. With OEM direct clutch drum NEVER shift the transmission to Neutral position at the end of a run or at high engine speed. This can result in a transmission explosion causing possible personal injury or death. Do not overlook any of this important safety information. This device is not a toy and its proper usage should be understood and respected.

In the event gaskets need replacement, one new hole has been added to both gaskets. To generate holes lay gasket down under plate on a steel surface and trace passage in plate with a sharp scribe.

Any questions or concerns regarding this product should be directed to us @ www.CKPERFORMANCE.COM. Thank you for purchasing our products.