ISUZU & BMW
4L30-E
PARTIAL ENGINE STALL / TORQUE CONVERTER FAILURE

COMPLAINT: After overhaul, 2000 and up vehicles equipped with the 4L30-E transmissions, may exhibit a partial stalling condition when the vehicle is placed into gear, or discoloring and/or premature torque converter failure, with an eventual P1870 code, TCC slip.

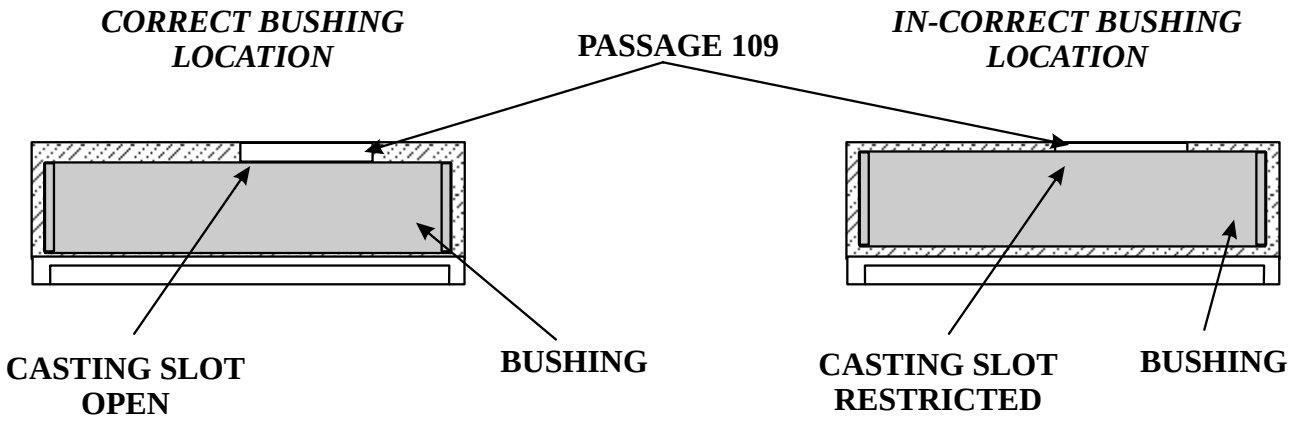
CAUSE: The Cause may be, that during bushing installation, a THM 350 bushing was used and was placed too deep into the bellhousing, as shown in Figure 1. When this happens, and the Torque Converter Clutch is commanded "Off, " the bushing will partially block the passage that is connected "To Cooler", which will act as a cooler restriction, creating the partial engine stall. See Figure 3 For a partial hydraulic circuit diagram of TCC OFF. When the Torque Converter Clutch is commanded "On," the "Converter Apply circuit" is restricted creating low apply pressure and premature Torque Converter Failure as well as discoloring of the Torque Converter. Refer to Figure 4 for a partial hydraulic circuit of TCC ON. Refer to Figures 1 and 2 to see the dimensional difference between the Sonnax bushing and the THM 350 bushing and to identify the previously mentioned passage in the bellhousing. One other cause may be a partially stuck Converter Clutch Control Valve, as shown in Figure 5.
NOTE: The hydraulic circuit diagrams and pump references are for the 4 valve pump versions, Passport, Rodeo and Catera do not have this version pump.

CORRECTION: Replace the bushing with the Sonnax Bellhousing bushing or when using a THM 350 bushing use a die grinder to remove the excess material to ensure no restrictions in the passage shown in Figures 1 and 2. ***Note: a babbit 727 pump bushing has also be used.***
Refer to Figure 5 and ensure the Converter Clutch Control Valve is not sticking in the pump.

SERVICE INFORMATION:

SONNAX BELLHOUSING BUSHING.....54253-01

BELLHOUSING BUSHING LOCATION
CROSS-SECTIONAL VIEW



NOTE: The Sonnax 54253-01 Bellhousing bushing width is .560"
The THM 350 Bellhousing bushing width is .610"
Passage 109 slot is .095" from the top of the bushing to the mating surface of the pump when the bushing is installed correctly.

Figure 1

BELL HOUSING
"4 VALVE PUMP"

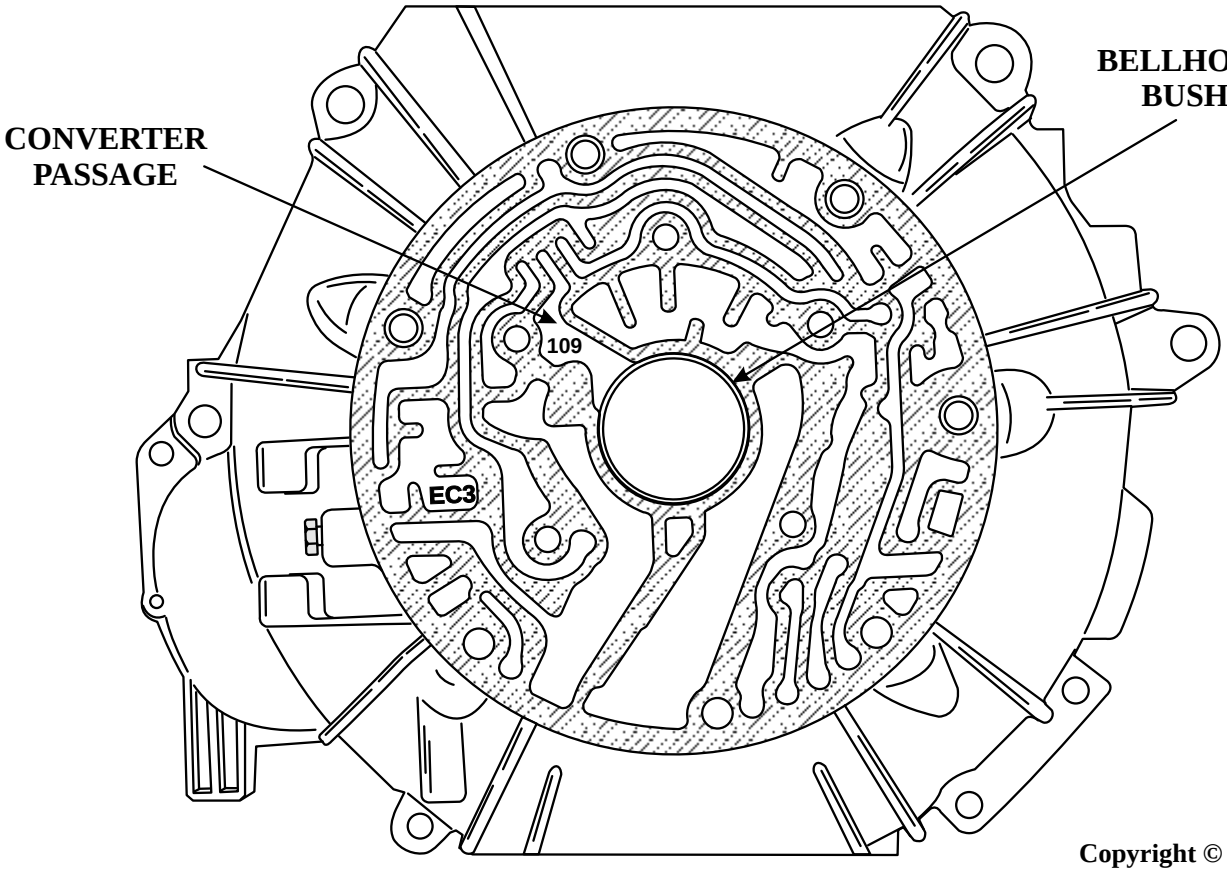


Figure 2

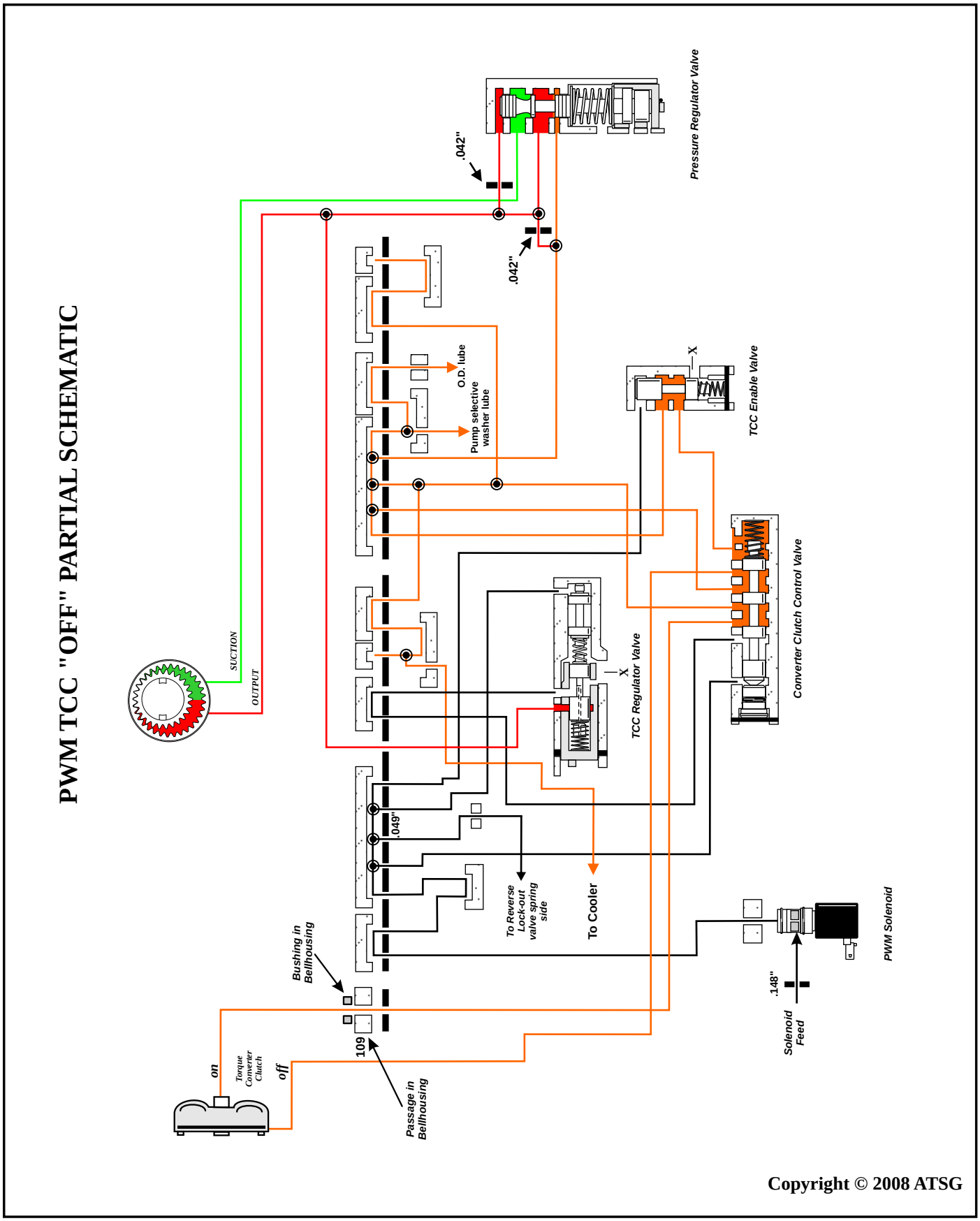

PWM TCC "OFF" PARTIAL SCHEMATIC
Pressure Regulator Valve
.042"
.042"
O.D. lube
Pump selective washer lube
X
TCC Enable Valve
Converter Clutch Control Valve
X
TCC Regulator Valve
SUCTION
OUTPUT
.049"
To Reverse Lock-out valve spring side
To Cooler
Bushing in Bellhousing
PWM Solenoid
.148"
Solenoid Feed
109
Passage in Bellhousing
on
Torque Converter Clutch
off
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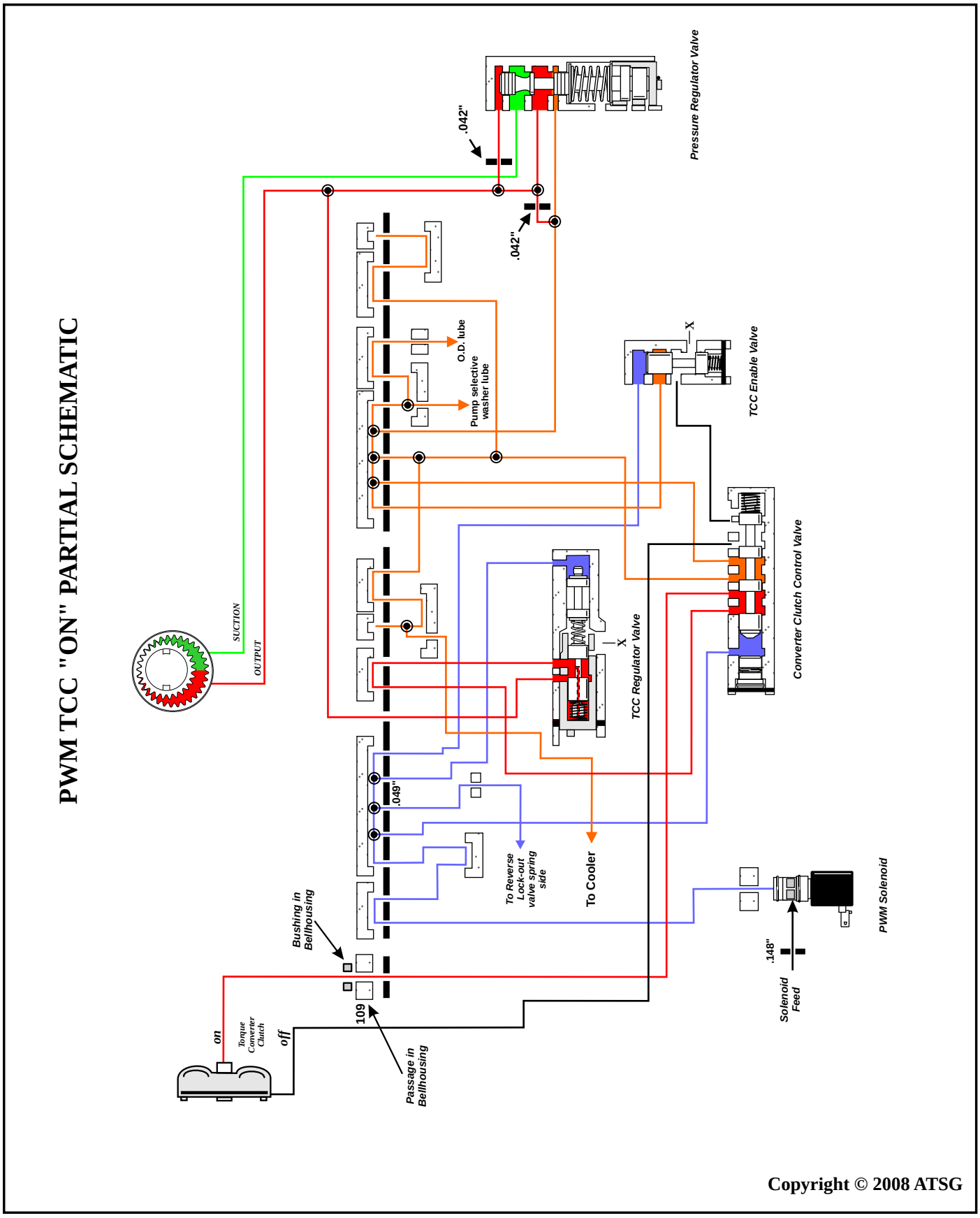
Figure 3


PWM TCC "ON" PARTIAL SCHEMATIC
Pressure Regulator Valve
.042"
.042"
O.D. lube
Pump selective washer lube
TCC Enable Valve
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Converter Clutch Control Valve
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SUCTION
OUTPUT
.049"
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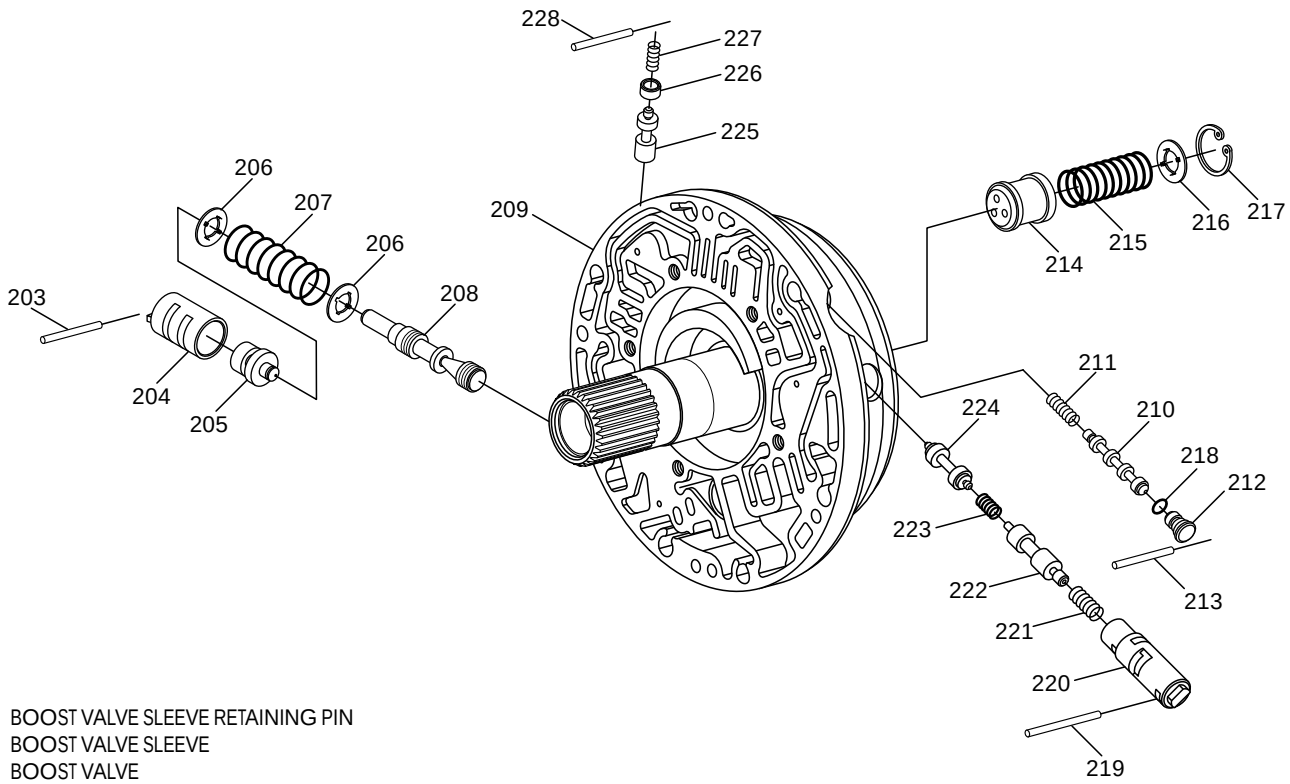
To Cooler
PWM Solenoid
.148"
Solenoid Feed
Bushing in Bellhousing
109
Passage in Bellhousing
on
Torque Converter Clutch
off
Copyright © 2008 ATSG

Figure 4

EXPLODED VIEW
"4 VALVE PUMP"



203 BOOST VALVE SLEEVE RETAINING PIN
204 BOOST VALVE SLEEVE
205 BOOST VALVE
206 PRESSURE REGULATOR VALVE SPRING SEAT (2)
207 PRESSURE REGULATOR VALVE SPRING
208 PRESSURE REGULATOR VALVE
209 OIL PUMP ASSEMBLY
210 CONVERTER CLUTCH CONTROL VALVE
211 CONVERTER CLUTCH CONTROL VALVE SPRING
212 CONVERTER CLUTCH CONTROL VALVE BORE PLUG
213 TCC CONTROL VALVE BORE PLUG RETAINING PIN
214 THROTTLE SIGNAL ACCUMULATOR PISTON
215 THROTTLE SIGNAL ACCUMULATOR PISTON SPRING
216 THROTTLE SIGNAL ACCUMULATOR SPRING SEAT
217 THROTTLE SIGNAL ACCUMULATOR SNAP RING
218 TCC CONTROL VALVE BORE PLUG "O" RING
219 TCC REGULATOR VALVE SLEEVE RETAINING PIN
220 TCC REGULATOR VALVE SLEEVE
221 TCC REGULATOR VALVE SPRING
222 TCC REGULATOR VALVE
223 TCC ISOLATOR VALVE SPRING
224 TCC ISOLATOR VALVE
225 TCC ENABLE VALVE
226 TCC ENABLE VALVE SPRING
227 TCC ENABLE VALVE SLEEVE
228 TCC ENABLE VALVE RETAINING PIN

NOTE: Some valve nomenclature is ATSG interpretations by valve function. Some manuals list all of the TCC related valves the same name.

Figure 5