



Technical Service Information

FORD AX4S NEW INTERNAL COOLER BYPASS CIRCUIT

CHANGE: Beginning at the start of production for 1999 models, Ford Motor Company introduced a new Internal Cooler Bypass Hydraulic Circuit into the Valve body assembly.

REASON: For better durability in the event of a plugged cooler.

PARTS AFFECTED:

- (1) MAIN SPACER PLATE AND GASKETS - The Main Spacer Plate and gaskets changed to accommodate the new hole configurations to connect to the Internal Cooler Bypass Circuit. See Figure 1 for a comparison of previous design to new design.
- (2) MAIN VALVE BODY - The Main Valve body had casting changes and redesigned relief valves and springs to accommodate the Cooler Bypass Circuit. See Figures 2 and 3 for the previous and new design valve body castings. ***Note: notice that the spring for Relief Valve #1 is "weaker" than the spring for Relief Valve #2.***
- (3) CHANNEL PLATE - The Channel Plate also had worm track changes to accommodate the valve body and spacer plate changes. The new design Channel Plate can be identified with the Rough Forging number of "YF2P," as shown in Figure 4.

HOW DOES IT WORK?

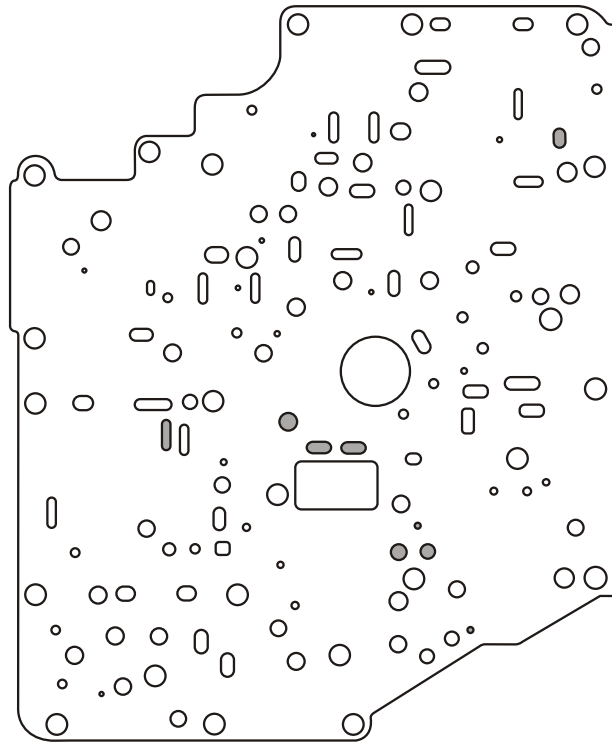
See Figure 5 for a Partial Hydraulic Circuit Diagram showing normal cooler flow with the New Cooler Bypass Circuit.

See Figure 6 for a Partial Hydraulic Circuit Diagram showing the New Internal Cooler Bypass Circuit in use.

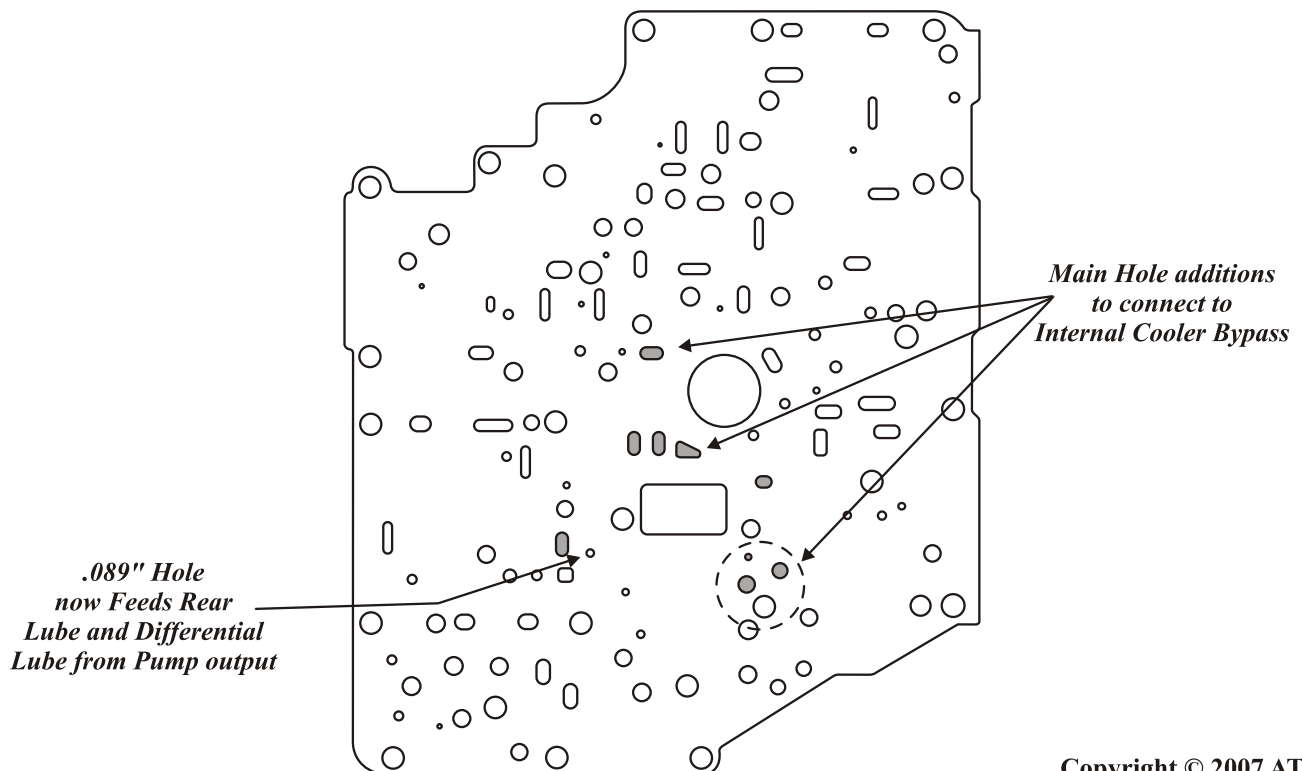
INTERCHANGEABILITY:

None of the new design parts will interchange with the previous design parts.

PREVIOUS SPACER PLATE IDENTIFICATION



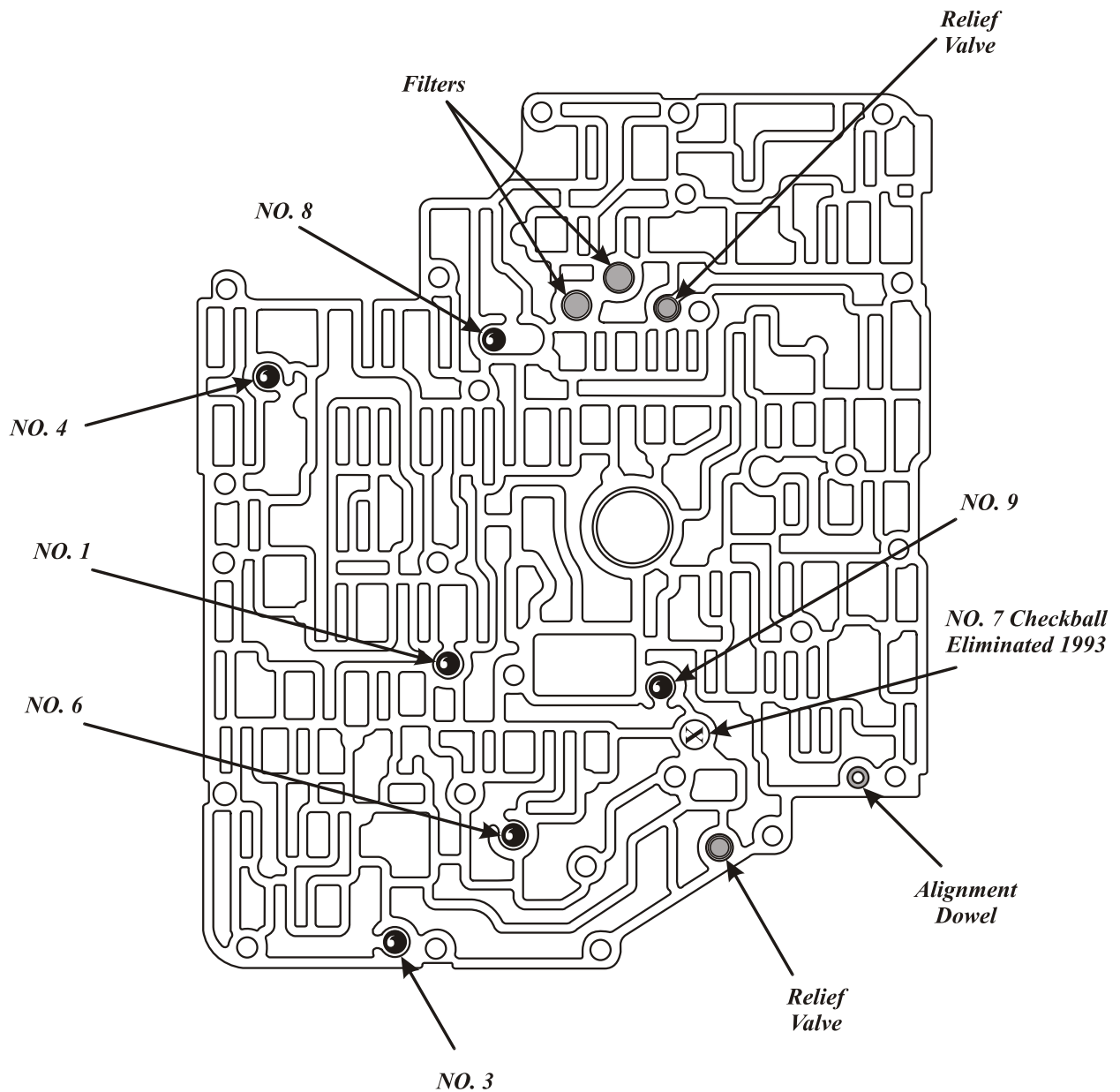
NEW DESIGN SPACER PLATE IDENTIFICATION



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Figure 1

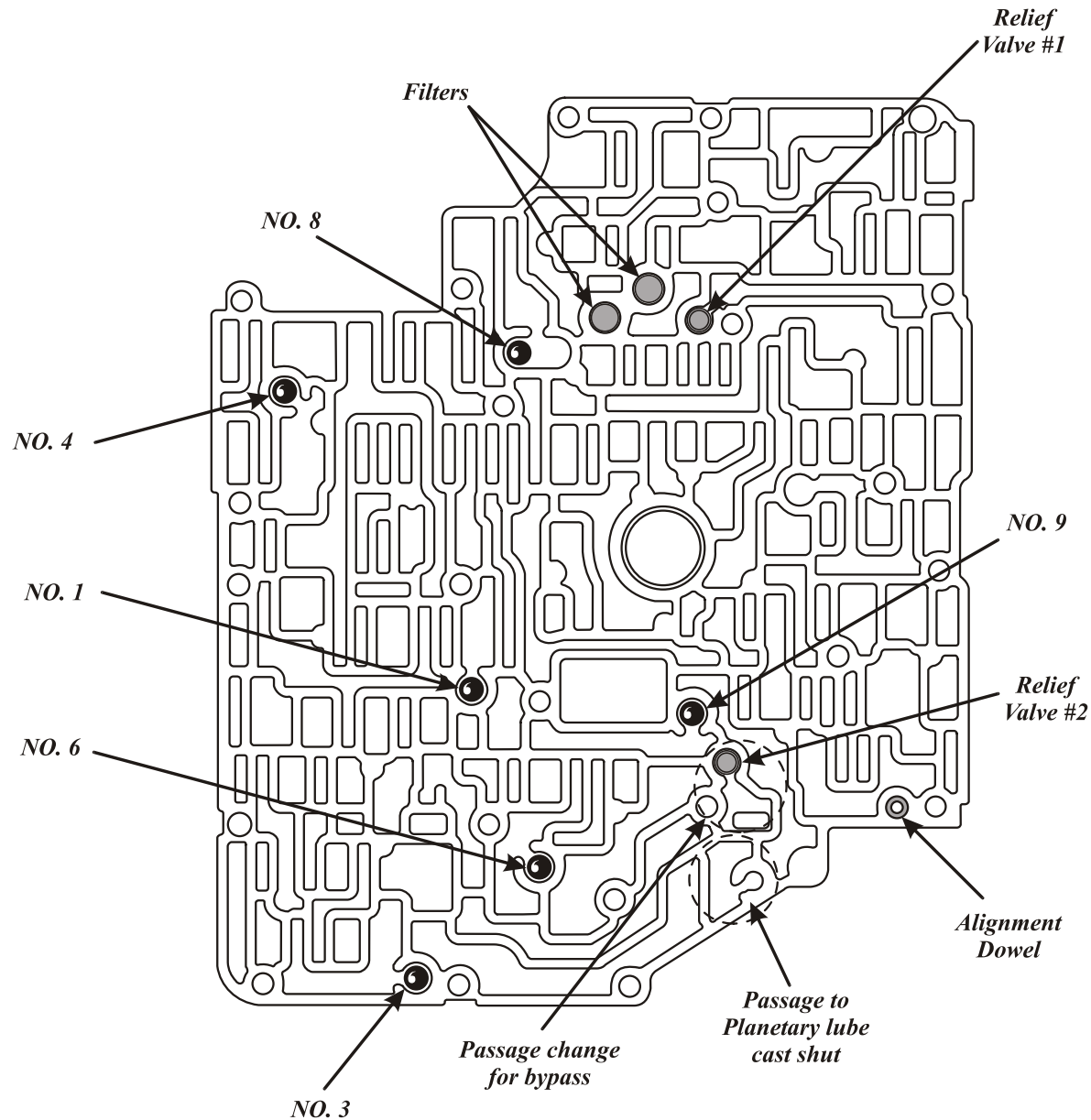
AXODE (AX4S) 1993-1998 CHECKBALL AND RELIEF VALVE LOCATIONS



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Figure 2

AX4S 1999 & UP CHECKBALL AND RELIEF VALVE LOCATIONS



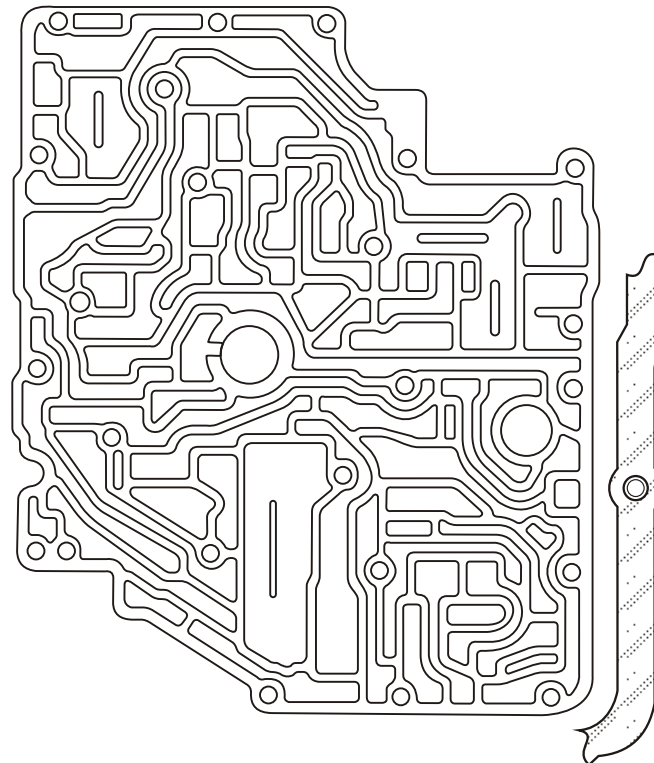
Relief Valve #1 spring dimensions - Overall Length .530"- Wire Diameter.018"

Relief Valve #2 spring dimensions - Overall Length .580"- Wire Diameter.030"

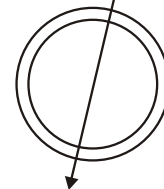
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Figure 3

PREVIOUS DESIGN CHANNEL PLATE PASSAGES

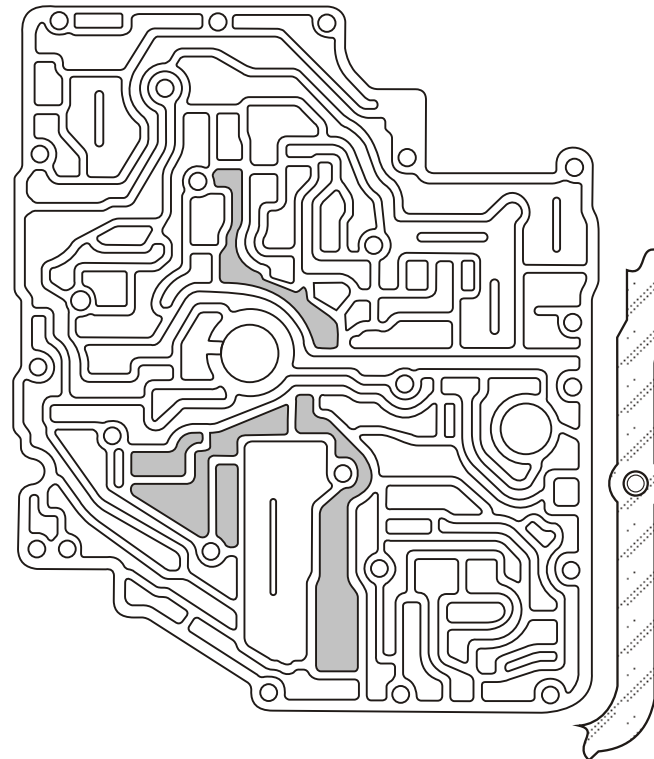


*Channel plate I.D.
(F6DP)*

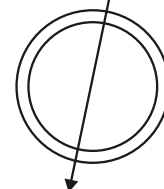


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NEW DESIGN CHANNEL PLATE PASSAGES



*Channel plate I.D.
(YF2P)*



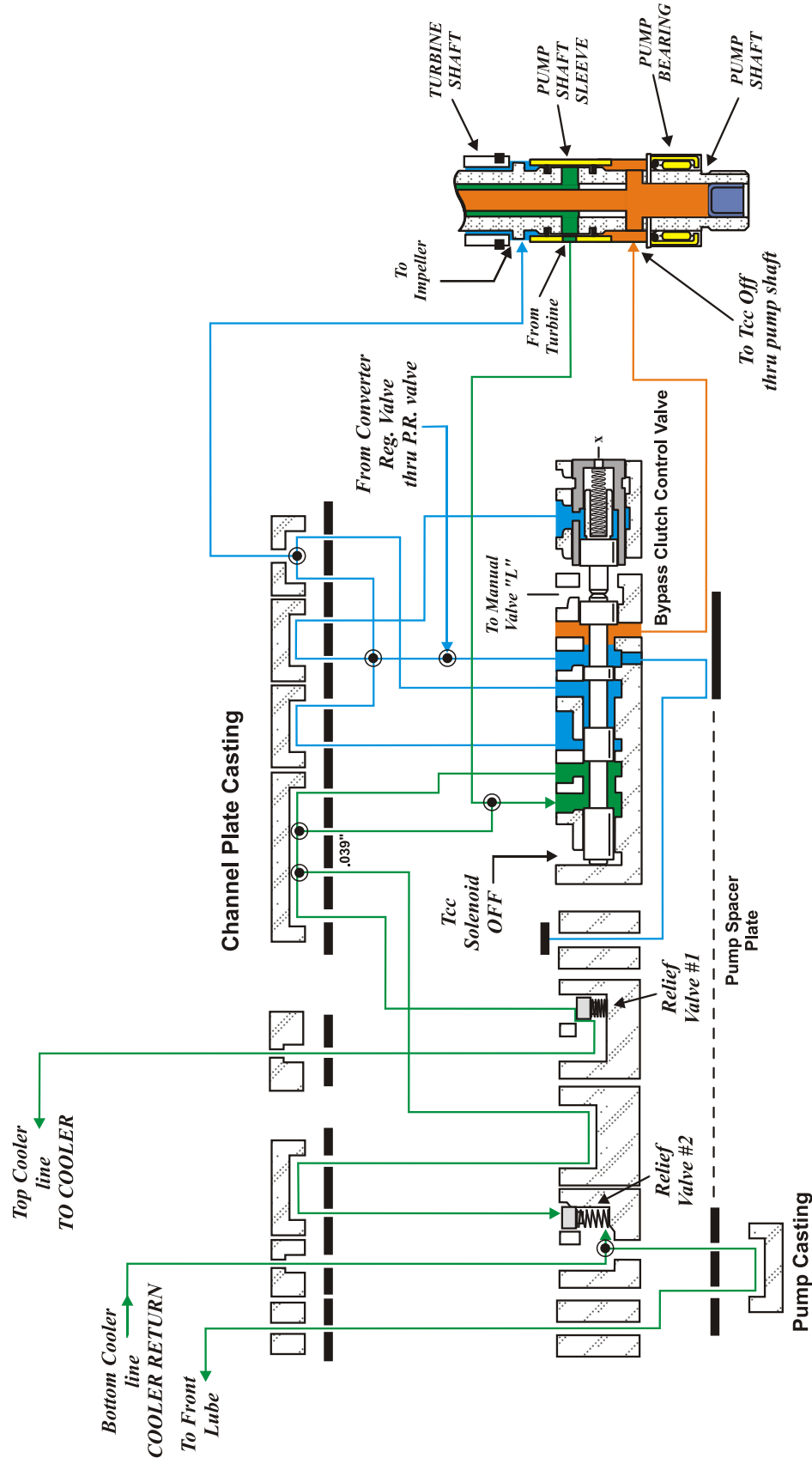
RF-YF2P-7G234AA

Passage changes are highlighted in grey

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Figure 4

COOLER BYPASS PARTIAL SCHEMATIC (Not in use)

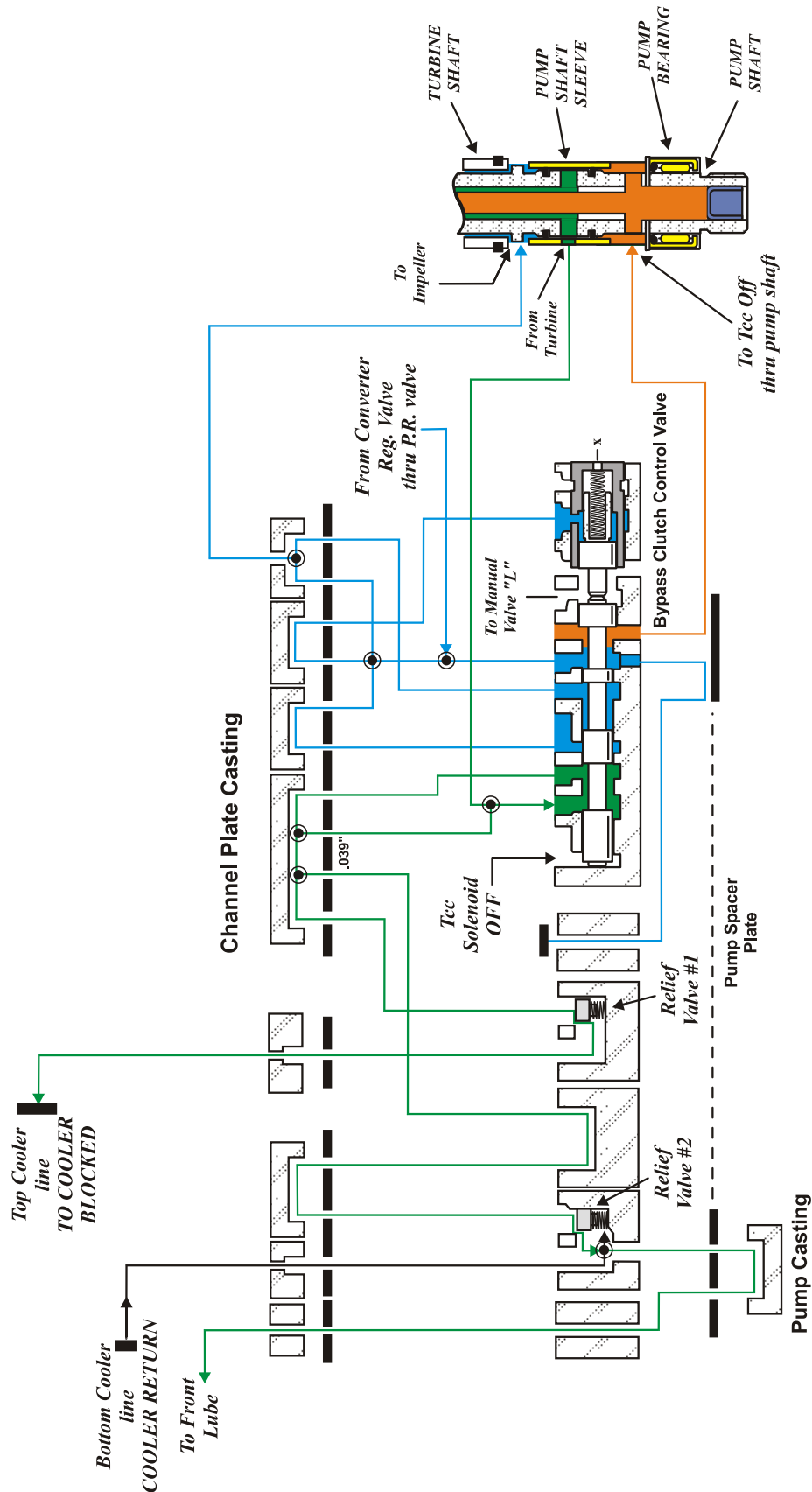


Summary: To Cooler oil comes from the Turbine Circuit in the torque converter, flows thru the Bypass Clutch Control Valve and strokes Relief Valve #1 against its spring then travels thru the Top cooler line to the Cooler. This same Cooler oil comes back thru the bottom cooler line, seats Relief Valve #2 against the spacer plate and enters the Front Lube Circuit.

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Figure 5

COOLER BYPASS PARTIAL SCHEMATIC (In use)



Summary: To Cooler oil comes from the Turbine Circuit in the torque converter, flows thru the Bypass Clutch Control Valve and strokes Relief Valve #1 against its spring then travels thru the Top cooler line to the Cooler. If the Cooler is blocked, this same Cooler oil builds up and strokes Relief Valve #2 against its spring connecting To Cooler to the Front Lube Bypassing the Cooler.

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Figure 6