Allison Transmission

DRIVING TRANSMISSION TECHNOLOGY™

MECHANIC'S TIPS

1000/2000 PRODUCT FAMILIES

ALLISON 4th GENERATION CONTROLS

MT4007EN

TECHNICAL PUB

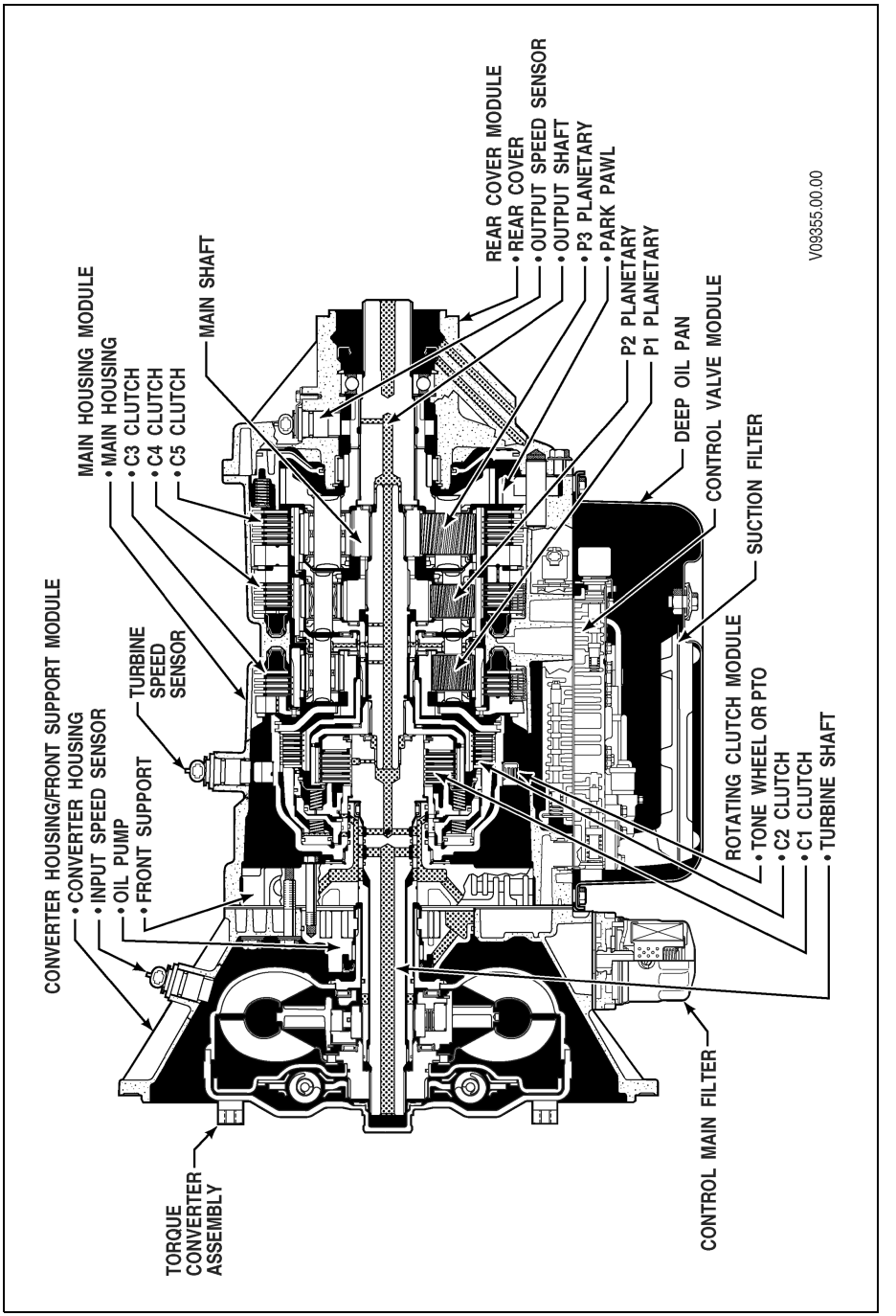

Figure 1–3. 2000 Product Family—Cross Section (with Park Pawl)

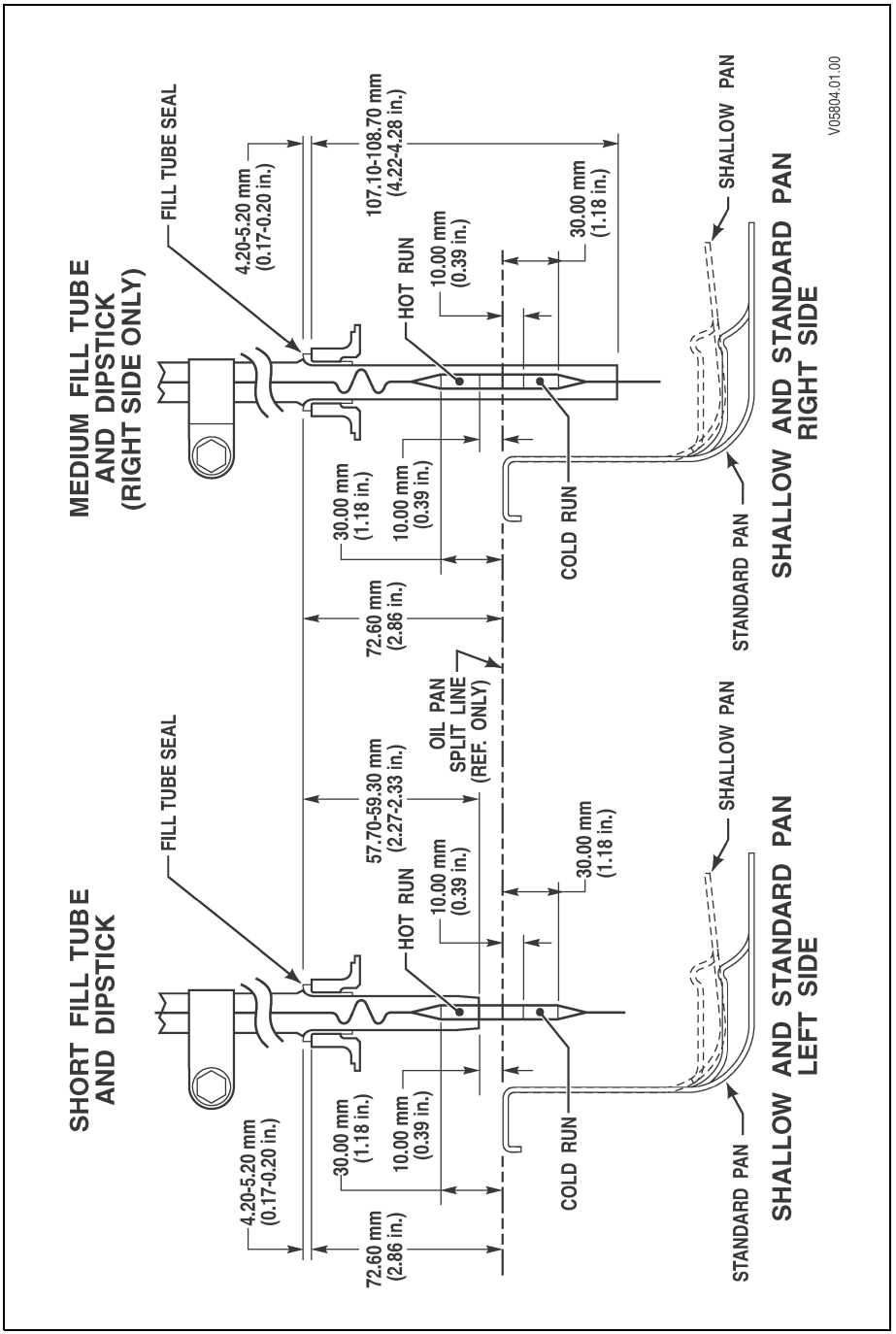

Figure 2–1. Short and Medium Fill Tube and Dipstick Requirements

c. Fluid Analysis. Transmission protection and fluid change intervals can be optimized by monitoring fluid oxidation according to the tests and limits shown in Table 2–5. Consult your local telephone directory for fluid analysis firms. To make sure of consistent and accurate fluid analysis, use only one fluid analysis firm. Refer to GN2055EN, Technician's Guide for Automatic Transmission Fluid for additional information.

Table 2–5. Fluid Analysis Measurement Limits

Test	Limit
Viscosity	±25 percent change from new fluid
Total Acid Number	+3.0* change from new fluid
	(Ref. SIL 17-TR-96)
*mg of potassium hydroxide (KOH) to neutralize a gram of fluid	

2–8. TRANSMISSION FLUID CONTAMINATION

a. Fluid Examination. At each fluid change, examine the drained fluid for evidence of dirt or water. A normal amount of condensation (not to exceed 0.2 percent) will appear in the fluid during operation.

b. Water. Obvious water contamination of the transmission fluid or transmission fluid in the cooler (heat exchanger) water indicates a leak between the water and fluid areas of the cooler. Inspect and pressure test the cooler to confirm the leak. Replace leaking coolers.

NOTE: Cooler water can also be contaminated by engine oil; be sure to locate the correct source of cooler water contamination.

c. Engine Coolant.

CAUTION: Engine coolant in the transmission hydraulic system requires immediate action to prevent malfunction and possible serious transmission damage. Completely disassemble, inspect, and clean the transmission. Remove all traces of the coolant and varnish deposits resulting from engine coolant contamination (ethylene glycol).

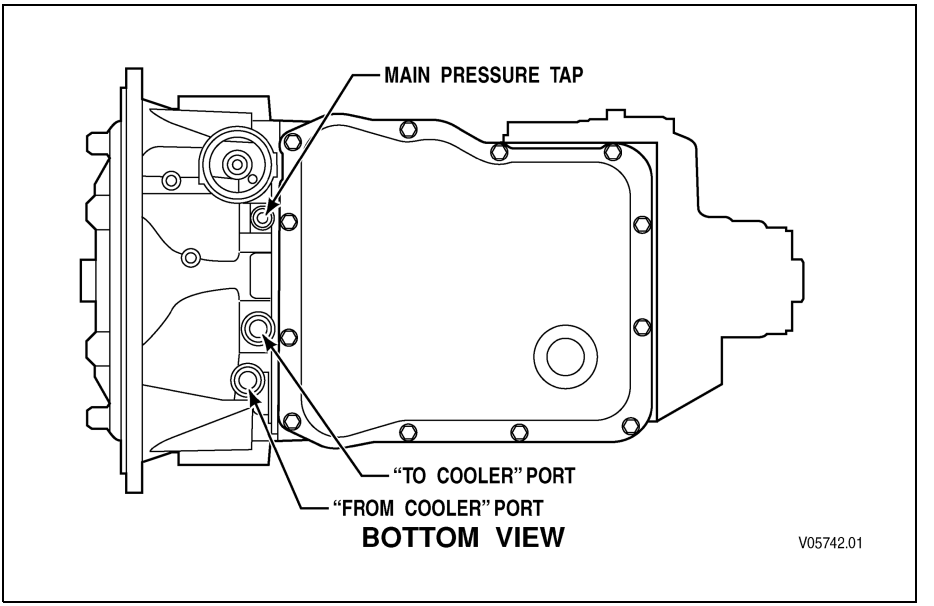

Figure 4–1. Cooler Port and Main Pressure Tap Location

g. Crankshaft Hub Pilot or Adapter Concentricity. The crankshaft hub pilot or the hub adapter pilot concentricity cannot exceed 0.25 mm (0.010 inch) TIR.

h. Flexplate Bolt Hole Flatness. Flexplate flatness must be 0.76 mm (0.030 inch) TIR, or less, when measured at 292 mm (11.5 inch) diameter.

i. Torque Converter Axial Location. This is controlled by the engine physical adaptation. Using a depth gauge, measure from the face of the engine flywheel housing to the face at the 292.1 mm (11.50 inches) diameter. The torque converter axial location should measure:

- No. 3 Housing—40.15–44.21 mm (1.581–1.741 inches)
- No. 2 Housing—30.50–34.56 mm (1.201–1.361 inches)

5–2. CHECKING FLEXPLATE DRIVE ASSEMBLY

a. Flexplate Inspection. Check the flexplate for cracks, distortion, or elongated bolt holes. Replace a worn or damaged flexplate.

b. Engine Crankshaft End Play. Make sure engine crankshaft end play is within the engine manufacturer's specifications.

NOTE: When assembling the flexplate to the crankshaft hub or hub adapter, make sure the outer flexplate bolt holes are aligned.

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c. Flexplate Assembly Installation. Install the flexplate onto the engine crankshaft hub using the bolts and torque values specified for that engine. Refer to Figure 5–1, Figure 5–2, or Figure 5–3 for the proper position of an installed flexplate.

5–3. CHASSIS AND DRIVELINE INSPECTION

Inspect the chassis and driveline components for the following conditions, and correct them as appropriate.

- Transmission mounts—broken or worn-out
- Bolts and other hardware—damaged, missing, or incorrect
- Isolators (rubber mounts)—damaged or missing

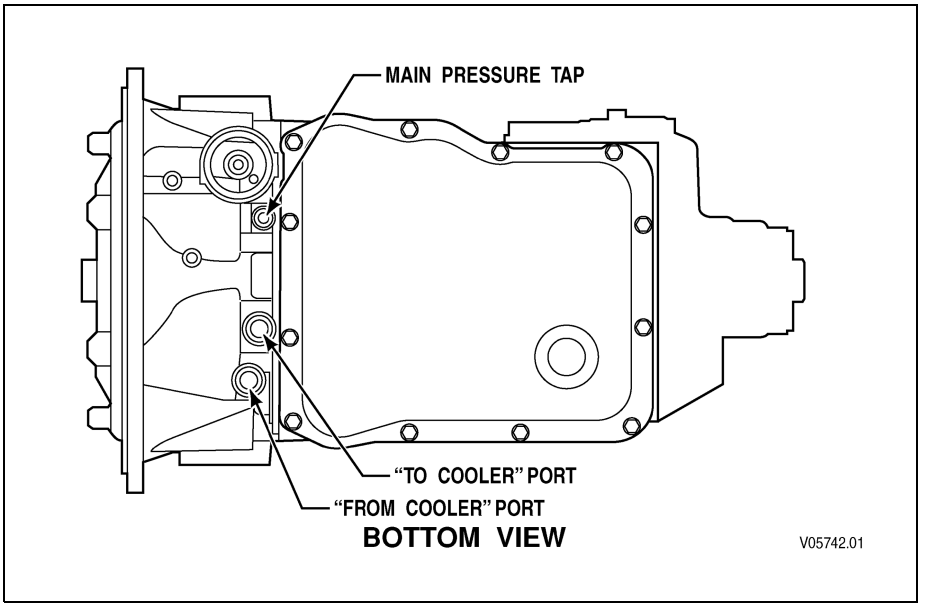

Figure 6–2. Cooler Port Location

1. The transmission has a sump fluid thermistor on the pressure switch manifold. Actual temperature readings may be viewed using the PC-based diagnostic tool. Consult the users manual furnished with the Allison DOC™ For PC–Service Tool.
2. A temperature gauge may be installed in the "To Cooler" line. If equipped for them, install a temperature probe, capillary tube and bulb or a thermocouple.
    a. If equipped with a capillary tube and bulb:
        (1) Tighten the adapter tight enough to prevent leakage.
        (2) Install the bulb into the adapter and tighten the nut.
        (3) Check the capillary tube for interference with other parts that might chafe or damage the tube. Long tubes may require support clips or brackets.
    b. If equipped with a thermocouple:
        (1) Install the thermocouple and connect the leads.

6–8. CONNECTING CONTROLS

1. Remove any protective covering from the wiring harness connectors. Connect the external wiring harness to the main electrical connector and the engine, turbine, and output speed sensors (Figure 1–4 and Figure 1–5). Keep dirt and debris out of the connector.