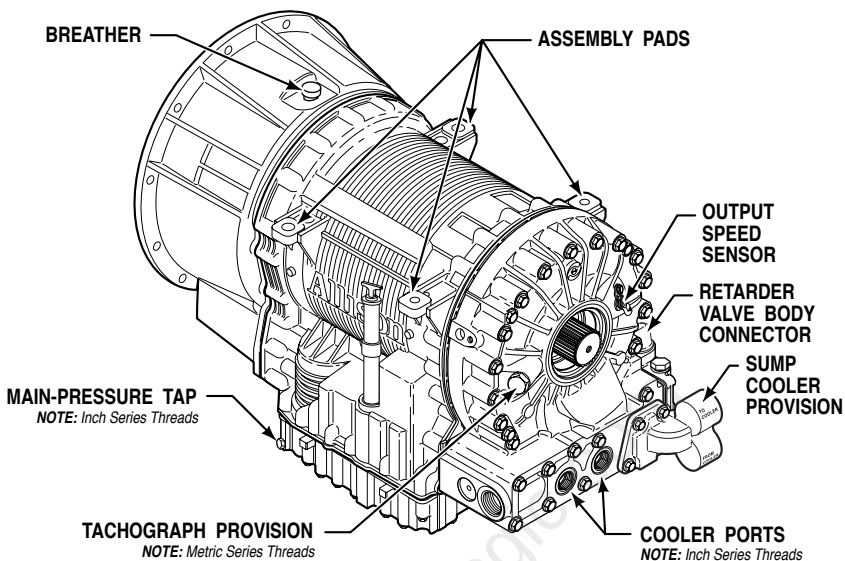


Allison 4th Generation Controls

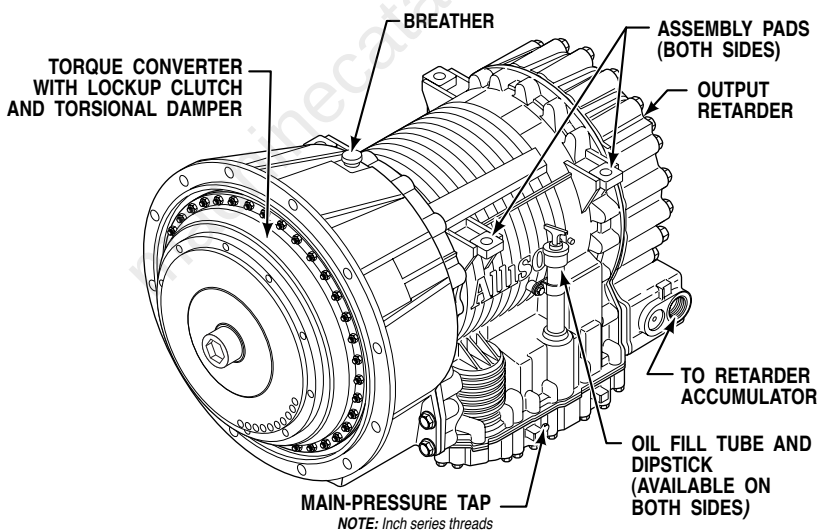
Mechanic's Tips

3000 and 4000 Product Families

MT4015EN



LEFT-REAR VIEW



LEFT-FRONT VIEW

V07401.01.00

**Figure 1-7. 3000 Product Family
(With Retarder)**

b. Abnormal Conditions. Transmission fluid must be changed whenever there is evidence of dirt in the fluid or the fluid is discolored, which indicates a high temperature condition. Fluid analysis will also reveal a high temperature condition. Local conditions, severity of operation, or duty cycle may require more or less frequent fluid or filter changes.

c. Fluid Analysis. Transmissions used in high cycle rate applications should use fluid analysis to make sure fluid is changed as soon as needed. Transmission protection and fluid change intervals can be optimized by monitoring fluid oxidation according to the tests and limits shown in Table 2–7. 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 the Technician’s Guide for Automatic Transmission Fluid, GN2055EN, for additional information.

Table 2–7. Fluid Oxidation Measurement Limits

Test	Limit
Viscosity	±25 percent change from new fluid
Total Acid Number	+3.0 change from new fluid
Solids	2 percent by volume maximum

2–7. 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 will appear in the fluid during operation.

b. Water. Obvious water contamination of the transmission fluid or transmission fluid in the 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 actual source of cooler water contamination.

c. Engine Coolant. 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).

Any trace of glycol or greater than 0.2 percent water contamination requires complete disassembly and clean up of the transmission and replacement of seals, gaskets, clutch plates, and bearings. Solenoid resistance should be measured and

- Fluid pressure gauge tubing:
 - damage
 - kinks
 - improper routing

b. Throttle Position Sensor (TPS) Adjustment—Using Diagnostic Tool. When properly installed by the equipment manufacturer, the TPS should not require adjustment. Confirm that the throttle sensor has been installed to manufacturer's specifications (refer to Figure 5–6) before adjusting the throttle position sensor. The idle position should be approximately 8.9 mm or 0.97 volts or higher, and full throttle position should be approximately 35.7 mm or 3.889 volts or lower. The TPS is self-calibrating, meaning there is no optimum closed position or wide open position. As long as the travel is within 8.5–35.7 mm range the TPS is set properly. A total stroke of 15.2–22.9 mm **must be maintained**.

Watch the TPS movements as the controls move it through a full stroke. Be sure the following conditions do not exist:

- Misalignment or obstruction to smooth movement through the full stroke.
- Idle and full throttle positions are not within an error zone (refer to Figure 5–5).

Error codes occur if the idle position is less than 2.5 mm, or when the full throttle position is more than 40.6 mm. When idle or wide open throttle positions are in the error zones, the TCM will log a code. When a TPS code is logged, the TCM assumes a default throttle setting which will negatively effect shift quality.

c. Hitch-Pin Throttle Position Sensor Installation.

- Install the throttle sensor body as follows:
 1. Clamp cable end using clamp and shims (refer to Figure 5–6).
 2. Secure the sensor body using the mounting holes provided.
 3. Install a heat shield if any part of the throttle sensor is near the exhaust manifold, turbochargers, or any other heat source.
- Adjust the throttle sensor as follows:
 1. The engine fuel lever must be at the closed throttle position.
 2. Install the hitch pin cable end of the sensor to the engine fuel lever with brackets so that at the idle position the cable end is 11–17 mm (0.44–0.67 inch) from its fully retracted position, and at wide open throttle the cable end is pulled 15.2–22.9 mm (0.60–0.90 inch) from the idle position.
 3. Check the stroke distance of the throttle sensor, from closed to wide open. Stroke distance must be from 15.2–22.9 mm (0.60–0.90 inch).

Full Version Available

Allison 3000 + 4000 Transmission Service Manual

Allison 3000, 4000 transmission service manual with removal, installation, checks and adjustments procedures. English PDF, 78 pages. Instant PDF download.

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