■ATF COOLING SYSTEM

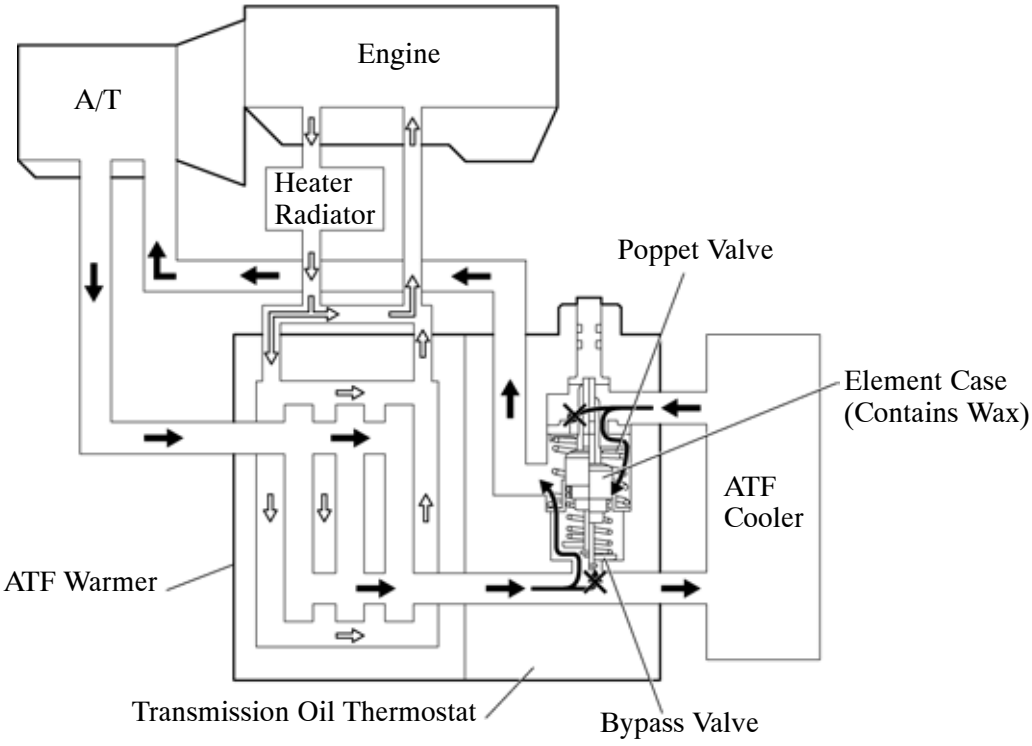
1. General

- This automatic transmission uses an ATF warmer that increases the rate at which the ATF warms up, and an ATF cooler that cools down the ATF.
- When the ATF is at a low temperature, it is warmed up by the engine coolant in the ATF warmer.
- When the ATF is at a high temperature, it flows to the ATF warmer and then to the ATF cooler, thus it is cooled down.

▶ ATF and Engine Coolant Circuit ◀

⬅ : ATF flow

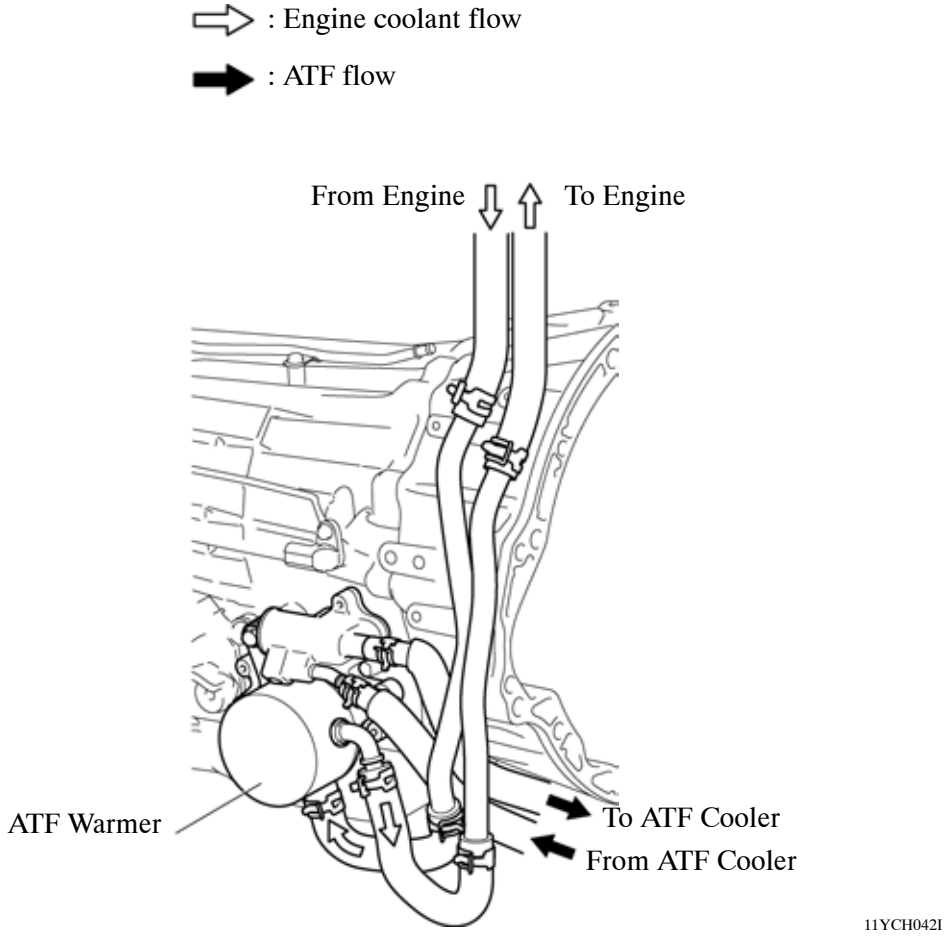
⇦ : Engine coolant flow



2. ATF Warmer

General

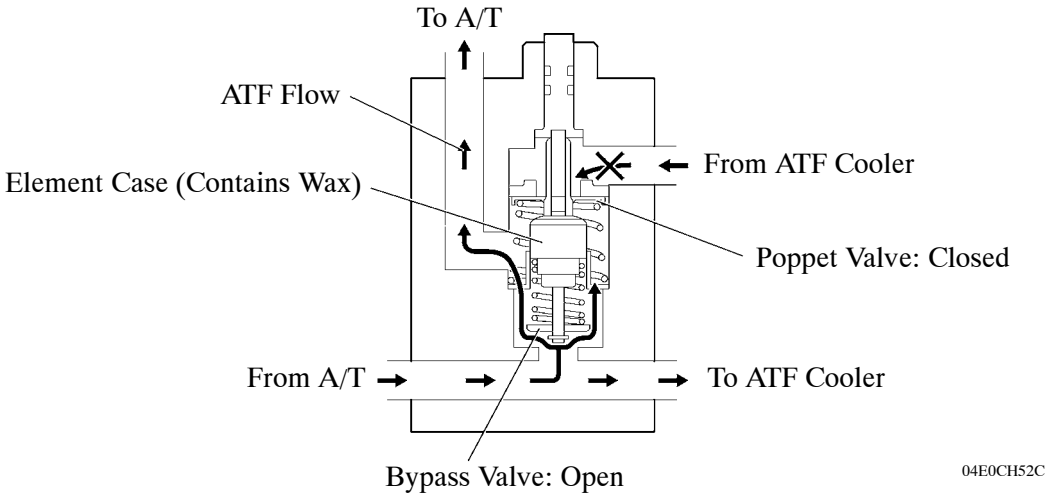
- The ATF warmer uses engine coolant to warm up the ATF quickly and keep the ATF temperature higher (within limits). Consequently, the friction losses of the automatic transmission are quickly reduced, thus improving fuel economy.
- A transmission oil thermostat is used to switch the ATF passages.



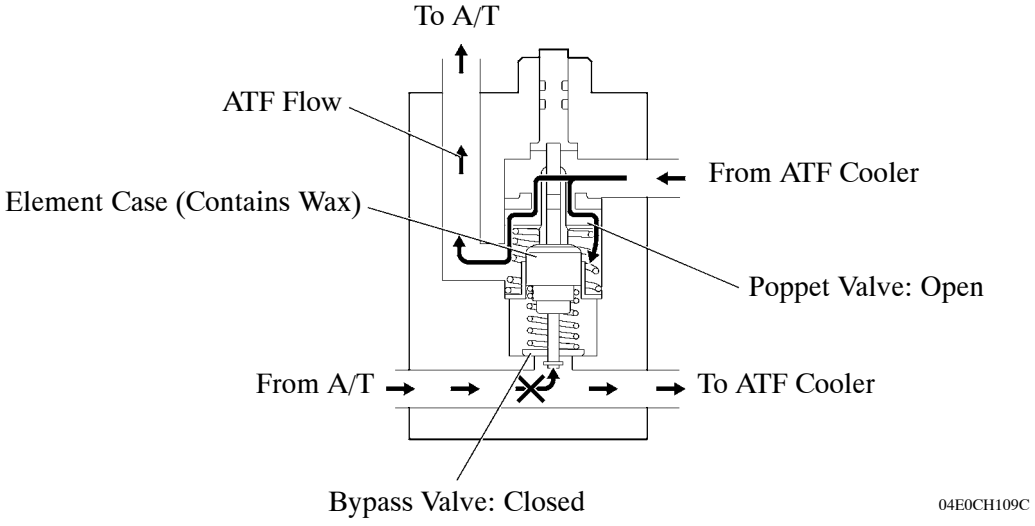
Transmission Oil Thermostat

The transmission oil thermostat consists of the poppet valve, bypass valve and element case (contains wax). When the ATF temperature changes from low to high, the wax will expand to start to open the poppet valve and close the bypass valve, thus switching the ATF passages.

▶ ATF Temperature: Low ◀



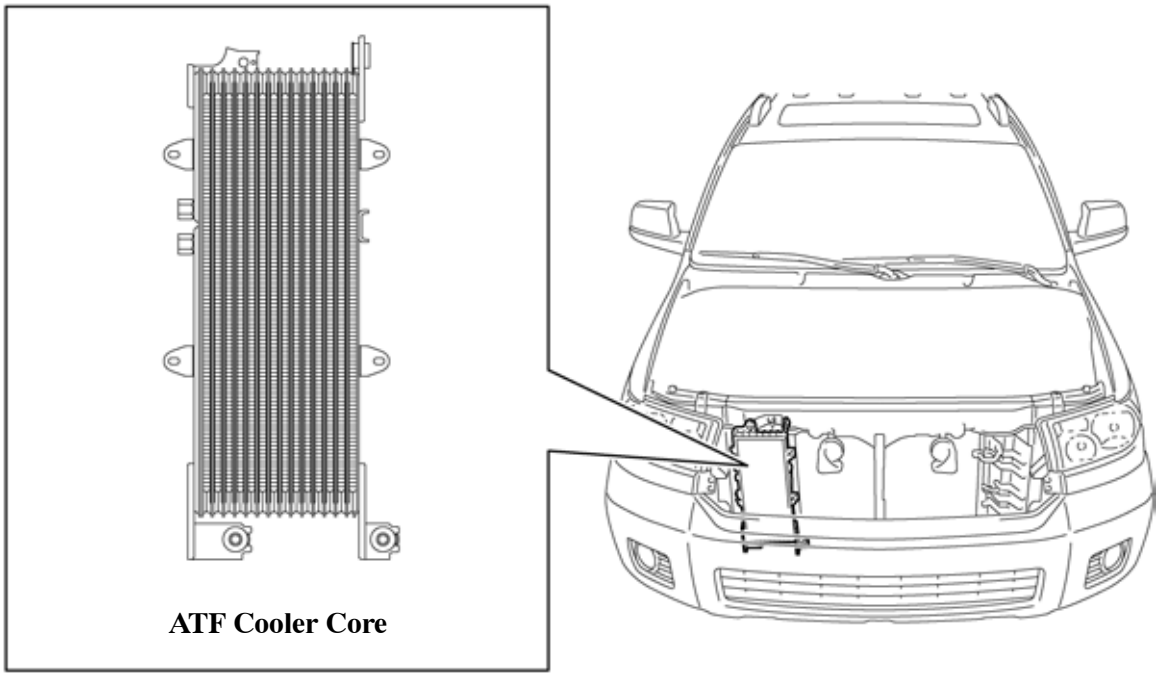
▶ ATF Temperature: High ◀



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3. ATF Cooler

An air-cooled type ATF cooler is used to maintain ATF cooling performance under high loads.



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