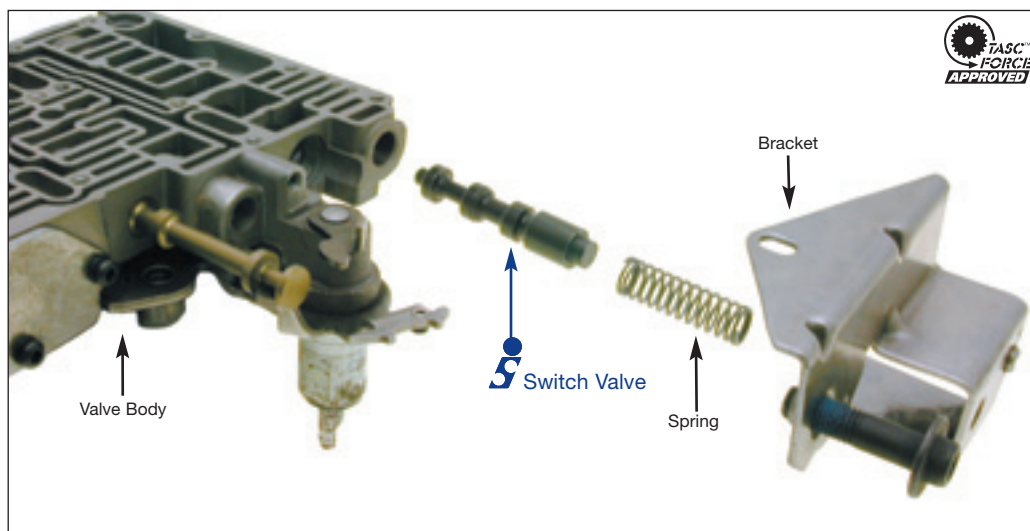


4-Spooled Switch Valve

22771A-01

1 Switch Valve



Installation Instructions

1. Remove the OEM switch valve and spring.
2. Install new switch valve, reusing the OEM spring.
3. Modify separator plate per instructions on following page.

Boost Valve (identified by the auxiliary tube and triangular plate on top of body)

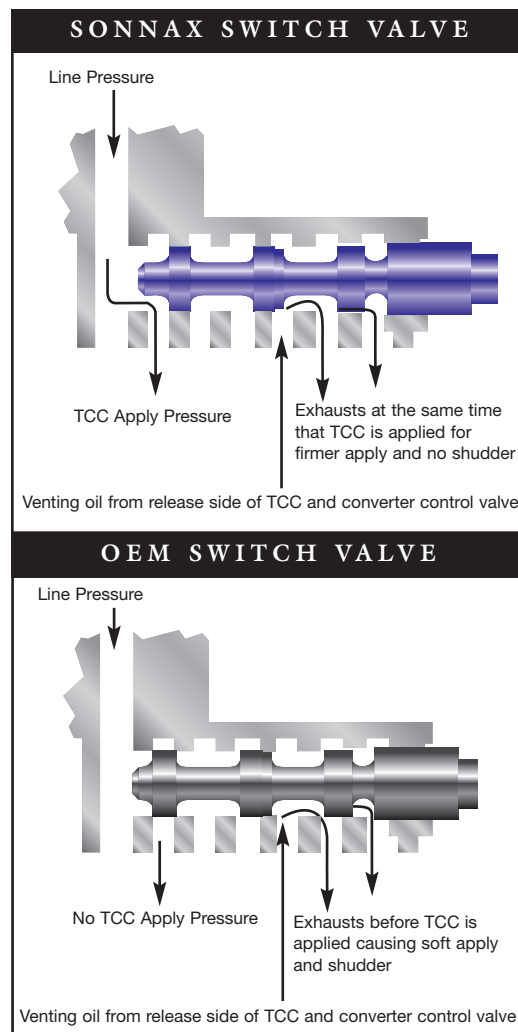
Make sure this cover is flat and does not leak. The tube must be tight also.

Line pressure raises 8-10 lbs. (with no TV influence) on TCC apply and 3-4 shift by way of the boost valve. Line pressure at TCC apply and 4th gear can increase as much as 40% over the idle setting with heavy throttle. If a very strong pressure regulator spring or setting is used, line in 4th and TCC apply have been recorded up to 200 psi. Valve body warpage, hydraulic bind-up or converter damage can occur at this level. We strongly suggest installing pressure gauges and checking line pressure at idle in drive.

Note: All '93 production used the boost valve. The converters built prior to this '93 design are not suggested by OEM to be used with this boosted apply pressure.

Valve Body Preparation

Resurface all the cast-aluminum pieces until flat to avoid cross leaks. Verify that the pressure regulator reducing sleeve (opposite end of the spring on pressure regulator) is not badly worn. Use an inch lb. torque wrench set to 40 inch lbs. when tightening valve body bolts. Torque the valve body to case bolts at 110 inch lbs.



PART NUMBER 22771A-01

Separator Plate Modifications Information

Open the exhaust port/slot cut in the plate. The exhaust should be .350"-.400" wide on Gas or .450"-.500" wide on Diesel.

The wider the slot, the faster the release oil exhausts and a firmer apply is felt.

Open the TRE orifice that was originally .042" to .062". This is the .042" orifice inboard of the slot mentioned above.

Going larger than .062" will create a bump on TCC apply.

Pressure Regulator Spring Adjustment

Each full clockwise turn of the adjuster will distance the plate by .050". Adjust to obtain a distance of .300"-.350" (see illustration).

Adjust the pressure regulation spring to obtain a setting of 60-65 psi at idle in drive. Verify by installing gauge into line pressure tap (passenger side, middle of case, between accumulators). Line pressure will be boosted at TCC apply and 4th gear. Use caution adjusting the spring or high pressure will create bind-ups from cross leaks and increase throttle sensitivity. Distance measurement for spring setting will approximate correct line pressure only if black OEM spring (.062" wire gauge) is used. Aftermarket springs will require pressure gauge reading and subsequent readjustment of the distance setting to obtain the correct line pressure.

Pump and cooler flow quality are critical

There are many problems with restricted lines, drain back valves and contaminated coolers. If a previous converter failed, the remains will end up in the radiator.

From the return line (rear of case) cooler flow must be at least 1 quart in 20 seconds (.8 gpm), in drive at idle. The SonnaFlow™ is the best tool to isolate a restricted radiator. Good SonnaFlow™ readings are: 7-.9 idle drive, 1.8 at 45 mph TCC off, a rapid rise to 2.1-2.2 gpm with TCC apply.

Make sure pump circuits are tight. The suction circuit has been found to pull in air through the separator plate at the front case surface. Verify this by pressurizing the filter suction hole, with selector in reverse. Look for leakage at the plate surfaces. Pulling air into the suction circuit will create poor engagement, acceleration and converter slippage. Many concerns of sealing ring leakage at the turbine shaft to pump area. This creates trapped release oil between the cover and piston, which reduces TCC clamping pressure.

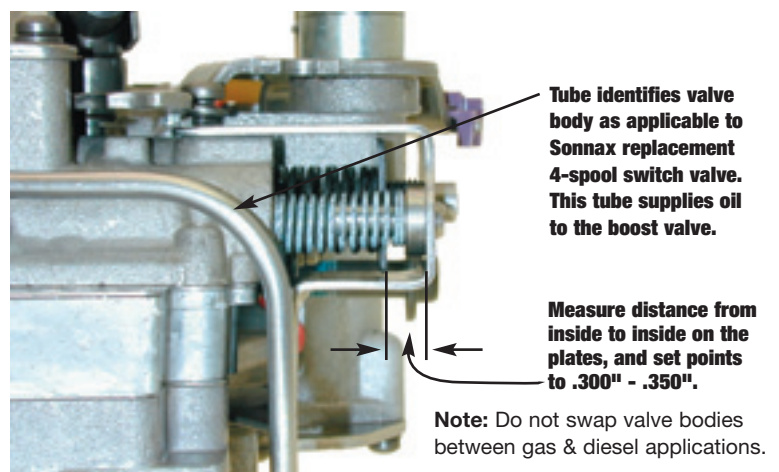
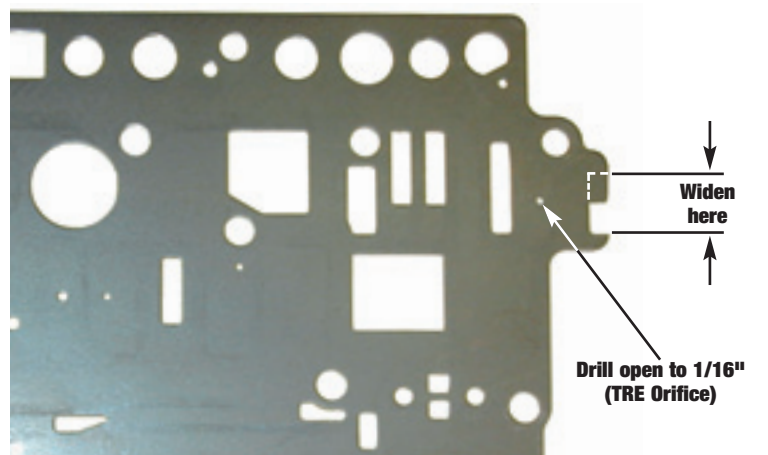
Switch Valve Design

Valve end stops, or their stems, control the position of a valve when at rest and after stroked into shifted position. The distance between the spools controls oil circuit flow and timing. The OEM valve "at rest" position had spools which did not align with the body casting, and at full stroke the TCC release exhaust was restricted (see Sonnax switch valve and OEM switch valve drawings on page 2).

The Sonnax valve was designed because of complaints of low mileage friction and repeated TCC damper spring failure. The stem length, spool spacing and exhaust timing have been improved to ensure quick stroke, reduce valve bounce and allow total exhaust of TCC release oil between the piston and cover.

Switch Valve Operation

Tapping into the release oil circuit (at valve body) and graphing the release pressure timing of a poorly sequenced switch valve often reveals a very unbalanced control. Instead of a drop in release pressure, as the TCC solenoid calls for apply, there is an oscillating affect.



Note: Do not swap valve bodies between gas & diesel applications.