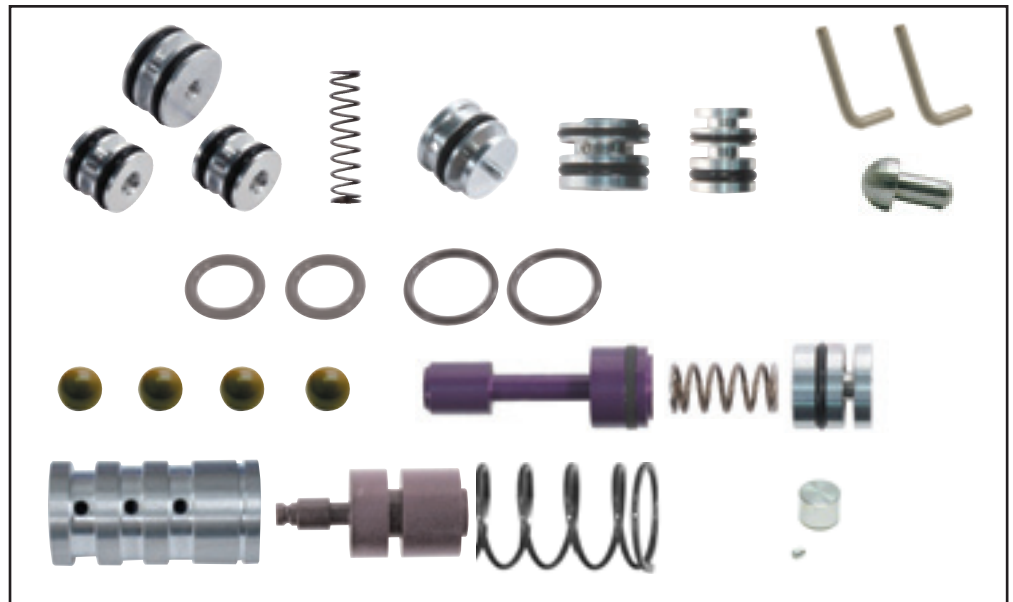


37947-EZ Kit Instructions

Baseline Rebuilding Kit

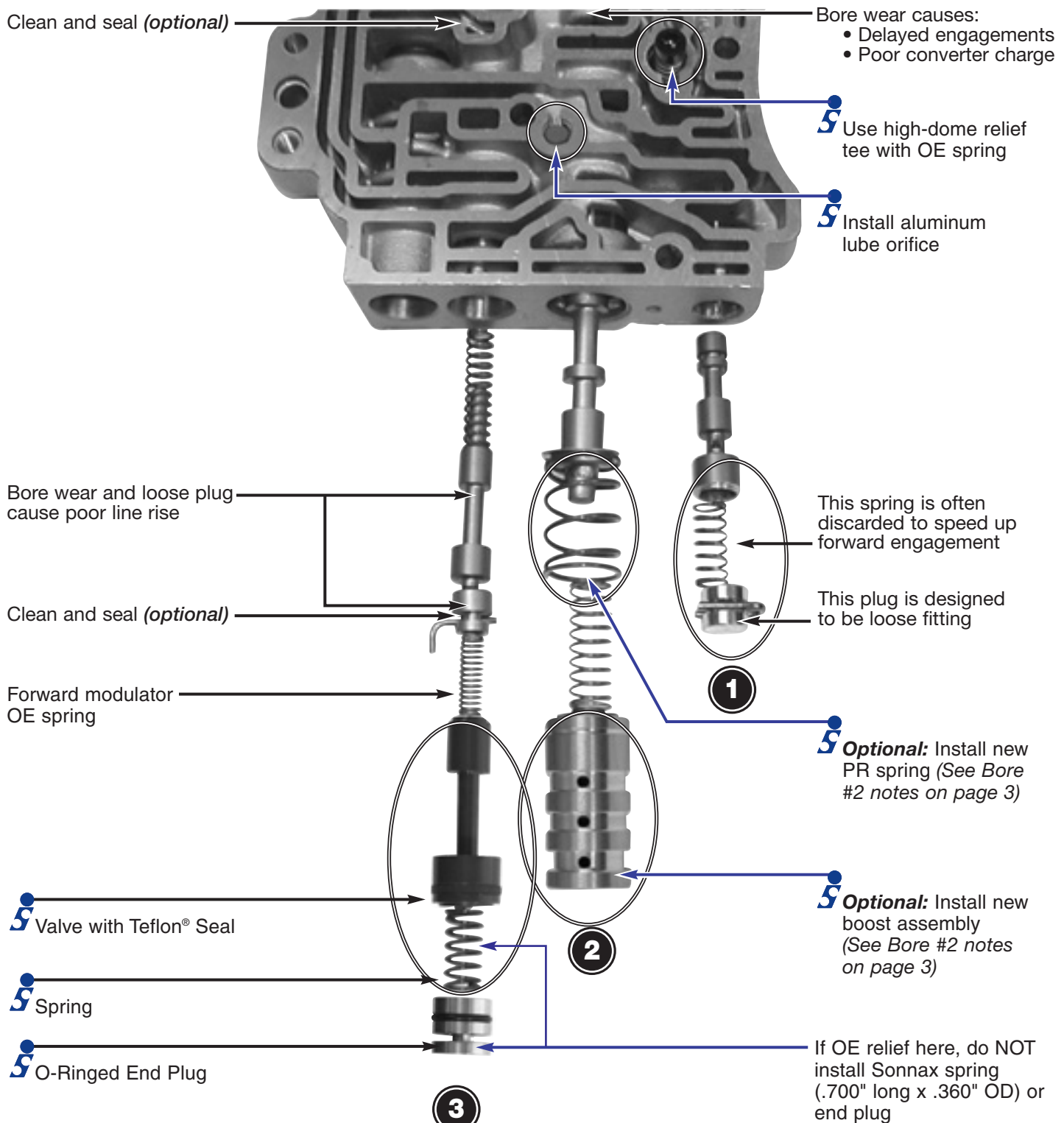
37947-EZ

- 1 Increased Ratio Boost Assembly
- 1 Elevated PR Spring
- 1 Forward Engagement Control Valve with Teflon Seal
- 1 Forward Engagement O-Ringed End Plug with Spring
- 6 Valve Bore O-Ringed End Plugs
- 1 Lube Orifice Disc
- 4 Torlon Checkballs
- 2 "L" Retaining Pins
- 1 High-Domed EPC Relief Tee
- Lube/TCC Modification Parts & Info.
- Extra O-Rings



Prior to installing this kit it is highly recommended that you inspect the valve body for wear beyond the scope of this kit. In the event of excessive wear in these critical locations, this kit should be used in conjunction with the appropriate Sonnax valve kit. Inspection and testing procedures can be found on pages 106-109 of Sonnax Transmission Specialties Volume 6 or online at www.sonnax.com.

Installation Guide

Figure 1


Parts circled are addressed in this kit.

1 Circled numbers indicate bore number.

Installation Steps

Bore number refers to an OE exploded view.

Bore 1: Optional

The spring can be removed for quicker forward engagement. With this kit, we suggest the spring be left in, unless delayed forward is a complaint. To prevent having to pull the valve body to remove the U retainer, the plug can be retained by a .125" spring roll pin, drilled from the bottom up. The end plug is loose by design to allow for exhaust.

Bore 2:

Optional installation of elevated boost assembly and Sonnax PR spring.

To restore OEM line pressure, reuse the OEM spring and boost assembly.

For firmer forward and reverse engagement, and slightly firmer upshifts, install the Sonnax elevated PR spring. Reuse the OEM boost assembly.

For firmer engagements and firm up- and downshifting, install the Sonnax elevated PR spring and Sonnax elevated boost assembly.

REMINDER: These elevated versions should not be used if using the 37947-11K in conjunction with this kit.

Bore 3:

Remove end plug by prying up on both legs of the retainer at the same time.

Remove the large forward modulator valve and its spring. If you position the manual valve furthest into the bore, air pressure can be used to blow the modulator valve out.

If there is any visible wear or ridge in the bore, buff this area with Scotchbrite™ placed on a twisted wire and inserted into drill.

Seal L pin circuit: Optional, but suggested

If time does not allow, skip both sealant processes, as cure time is required.

Using brake cleaner or No. 24163 Permatex, Klean and Prime or similar fluid, clean the middle plug/L pin area from both sides and through the open bore.

Air dry, then drip small amount of Loctite™ 609, 3M™ No. 08732, Permatex sleeve retainer or similar product into the L pin opening. This must have a cure time to hold properly. Epoxy is not suggested, as it is permanent. Loctite™ can be heated to allow removal.

The intent is to reduce leakage between the EPC booster valve and plug

Install the Teflon® seal onto the Sonnax valve. Invert the valve and bore size the Teflon® seal. After sizing the seal, install OE forward modulator spring into the end of the Sonnax valve. Install valve using same process as OEM.

Note: If the OEM end plug has a relief valve in it, do NOT install the Sonnax end plug or the spring.

If the OEM end plug was solid, replace with the Sonnax end plug. The installation of the Sonnax spring (.700" long x .360" OD) is optional. Installation of the spring will result in shorter intermediate servo and direct clutch apply (firmer 1-2 and 2-3 shifts on a 4R44/55E; firmer 2-3 and 3-4 shifts on a 5R44/55E).

To install the Sonnax end plug and spring, insert the spring into the end plug cavity. Install one large o-ring on the end plug. Install the end plug with the OEM retainer.

Some OEM units had a similar end plug and lighter-weight spring in this location. This may be reused to restore OEM shifts.

 L-pin locations

★ Sonnax spring is supplied in case OE is damaged.

Installation Steps

Bore 5:

Seal L pin circuit: Optional, but suggested

Without removing the L pin, use cleaner as referenced in Bore 3 instructions to clean, then seal the plug. The L pin cavity can be filled level full. Allow cure time.

If the large .564" end plug is loose, run a tubing cutter around the spools to seal it.

Bore 6:

Install the longest plug with bracket groove. This uses two small o-rings. Don't forget the U retainer that holds the plug into the casting.

Bore 7:

Remove the plug between the EPC solenoid and 2-3, 3-4 shift valve. The plug may not come out after removing the U retainer from Bore 7. A rod (.125" OD) can be inserted into Bore 13 to drive out the plug in Bore 7.

After the plug is removed, push the shift valve to the bottom of the bore and retain it with a screwdriver.

Install the small OE valve into the Sonnax o-ring plug. Pre-lube two medium o-rings. A mixture of 50/50 STP and ATF works well for o-ring lube. Use a screwdriver to twist and insert into position. The widest U retainer in this body is inserted over the casting bridge and into the groove of the plug.

Bore 8:

Inspection: Make sure the L pin and long spacer are installed properly. Remove the solenoid. Measurement from the end of the casting to end of the spacer should be 1.720".

Bore 9:

A new converter regulator valve plug with one large o-ring is supplied.

Removal: Pull out the L pin near the solenoid. The OE plug can be difficult to remove. Try this first: With a strong needle-nose pliers, turn the plug and hit it with the tip of your pliers. Continue this until the spring drives out the plug. Install with needle nose pliers holding the nub. Twist insert until the o-ring is inboard of the L pin.

If the OE plug will not come out, you must also remove the inner L pin retainer. You will then have to drill an access hole to drive out the valves (see Figure 3).

A new spring is supplied for inner coast clutch valve if damaged.

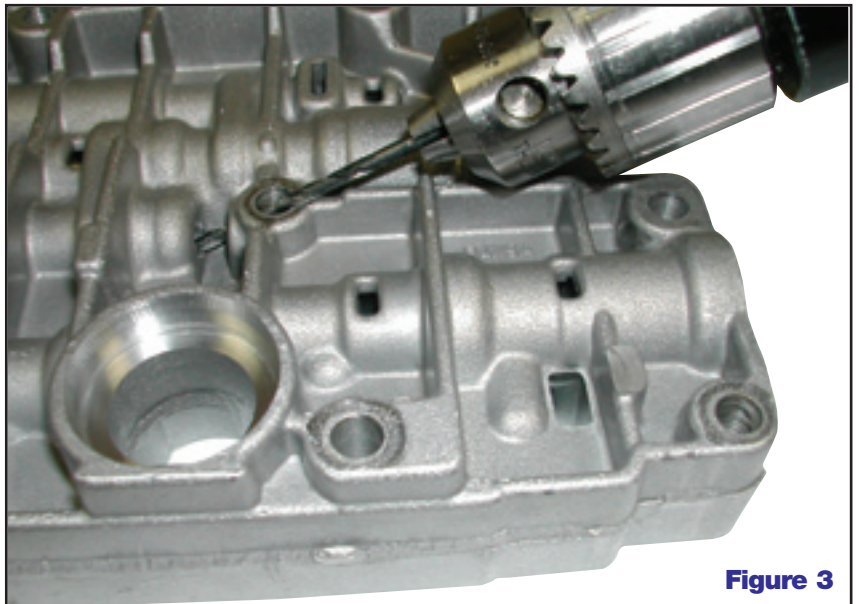


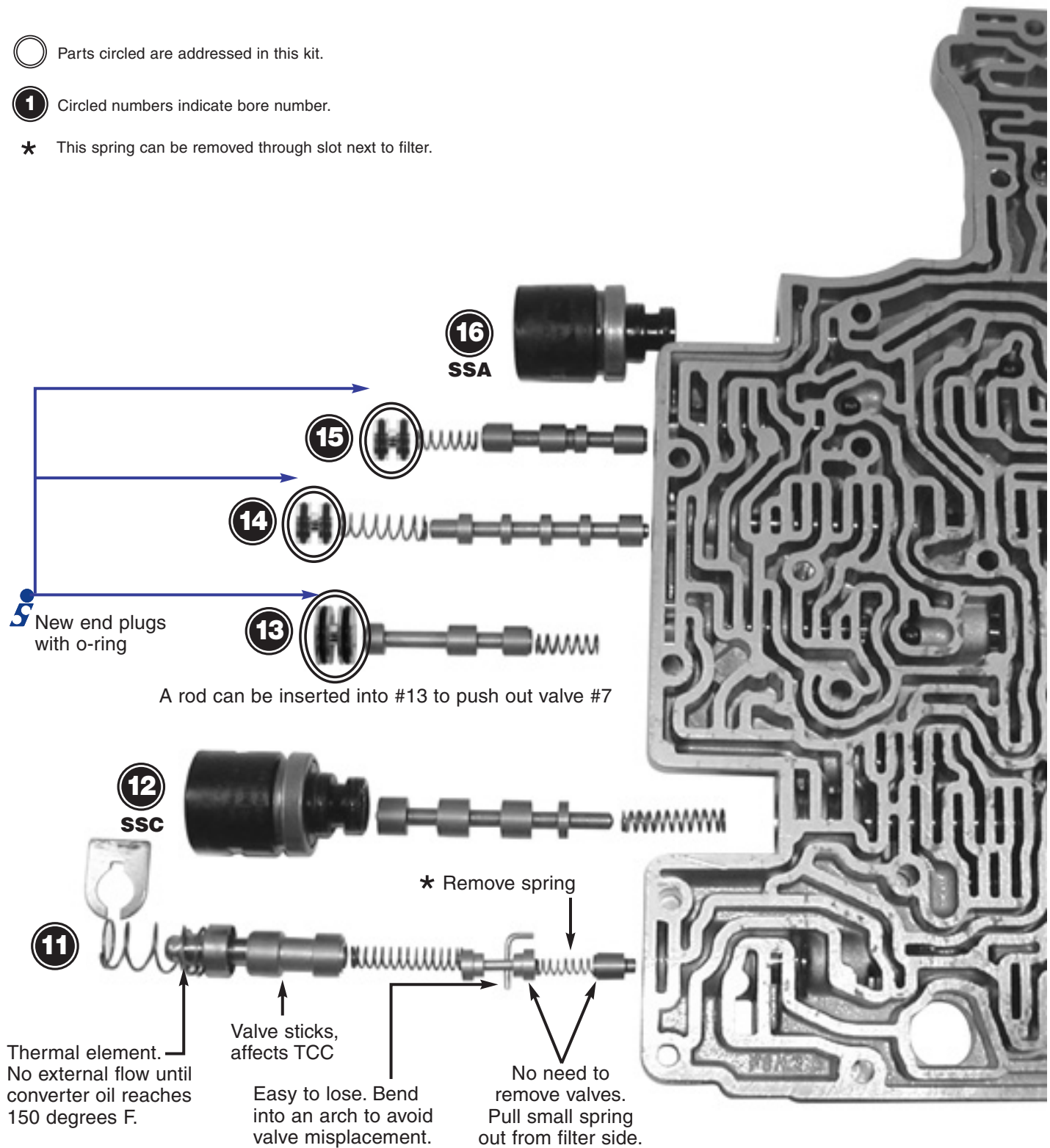
Figure 3

For Bore 9 valve removal drill .110" hole, entering at bolt and exiting into spring pocket of Bore 9. This allows rod to drive out the valve.

Installation Guide

Figure 4

- Parts circled are addressed in this kit.
- ① Circled numbers indicate bore number.
- ★ This spring can be removed through slot next to filter.



Installation Steps

Bore 11:

Removal: The smallest spring in this bore should be removed and discarded. Valves do NOT require removal. Spring can be caught and turned out of the slot next to the filter hole. Removal will shorten TCC apply time and reduce slip.

Inspection: The L pin falls out easily. It must hold the barbell-shaped valve. If out of place, the overdrive servo will not apply.

Bore plugs 13, 14 & 15:

There are three end plugs that seal shift solenoid oil. The two smallest end plugs in the kit require four small o-rings. The larger end plug is .630" OD, which requires two large o-rings.

Miscellaneous Valve Body Rebuilding Info:

To remove plugs once Loctite™, Permatex, 3M™, etc., has been used:

Heat the area until the sealant melts, then air dry.

Flat stone the valve body surface and clean well to remove surface imprints.

Sonnax Spring Identification Chart

Bore	Valve Springs	O.D	Wire Dia.	Free length	Coils	Color
2	Pressure Regulator Outer	.748"	.055"	1.1"	5	Plain
9	Coast Clutch Bottom Bore	.220"	.022"	.875"	10	Plain
3	Outboard Forward Modulator	.360"	.038"	.700"	4.5	Plain

OEM Spring Identification Chart

Bore	Valve Springs	O.D	Wire Dia.	Free length	Coils	Color
1	Forward Control	.338"	.032"	.665" - .775"	6.5	White
2	Pressure Regulator Outer	.745"	.055"	1.065"	4	Plain Or Lt. Purple
2	Pressure Regulator Inner	.412"	.032"	1.135"	9.5	Lt. Green
3	Forward Modulator	.236"	.026"	0.738"	14	White
3	EPC Boost	.293"	.040"	1.210"	12	Orange
5	Reverse Modulator Outer	.210"	.018"	1.080"	10.5	Plain
5	Reverse Modulator Inner	.210"	.018"	1.080"	10.5	Plain
6	2-3/3-4 Shift	.275"	.030"	1.052"	13	Plain
7	1-2/2-3 Shift	.284"	.033"	0.730"	7	Lt. Purple
8	Solenoid Regulator	.218"	.030"	0.830"	8.5	Yellow
9	TCC Regulator, Inner	.187"	.028"	0.720"	12	White
9	TCC Regulator, Outer	.285"	.040"	0.787"	9.5	Orange
9	Coast Clutch Bottom Bore	.222"	.023"	0.840"	9.5	Red
10	TCC Modulator	.238"	.023"	1.230"	11.5	White Or Yellow
11	Thermal Outer, Big	.575"	.042"	1.045"	4.5	White
11	Thermal Middle	.264"	.026"	1.232"	13.5	Lt. Green
11	Inner Limit (smallest)	.200"	.018"	0.840"	12	Blue
12	3-4/4-5 Shift	.280"	.032"	1.162"	12	Plain
13	Throttle Downshift	.263"	.028"	0.700"	6.5	Orange
14	Manual Low	.320"	.032"	0.985"	7.5	Yellow
15	Kickdown	.262"	.028"	0.670"	7	Orange
N/A	Steel EPC Relief Tee	.292"	0.04"	0.982"	13.5	Plain
N/A	Plastic TCC Relief Tee	.292"	0.04"	0.982"	13.5	Plain

Plate Identification & Modifications

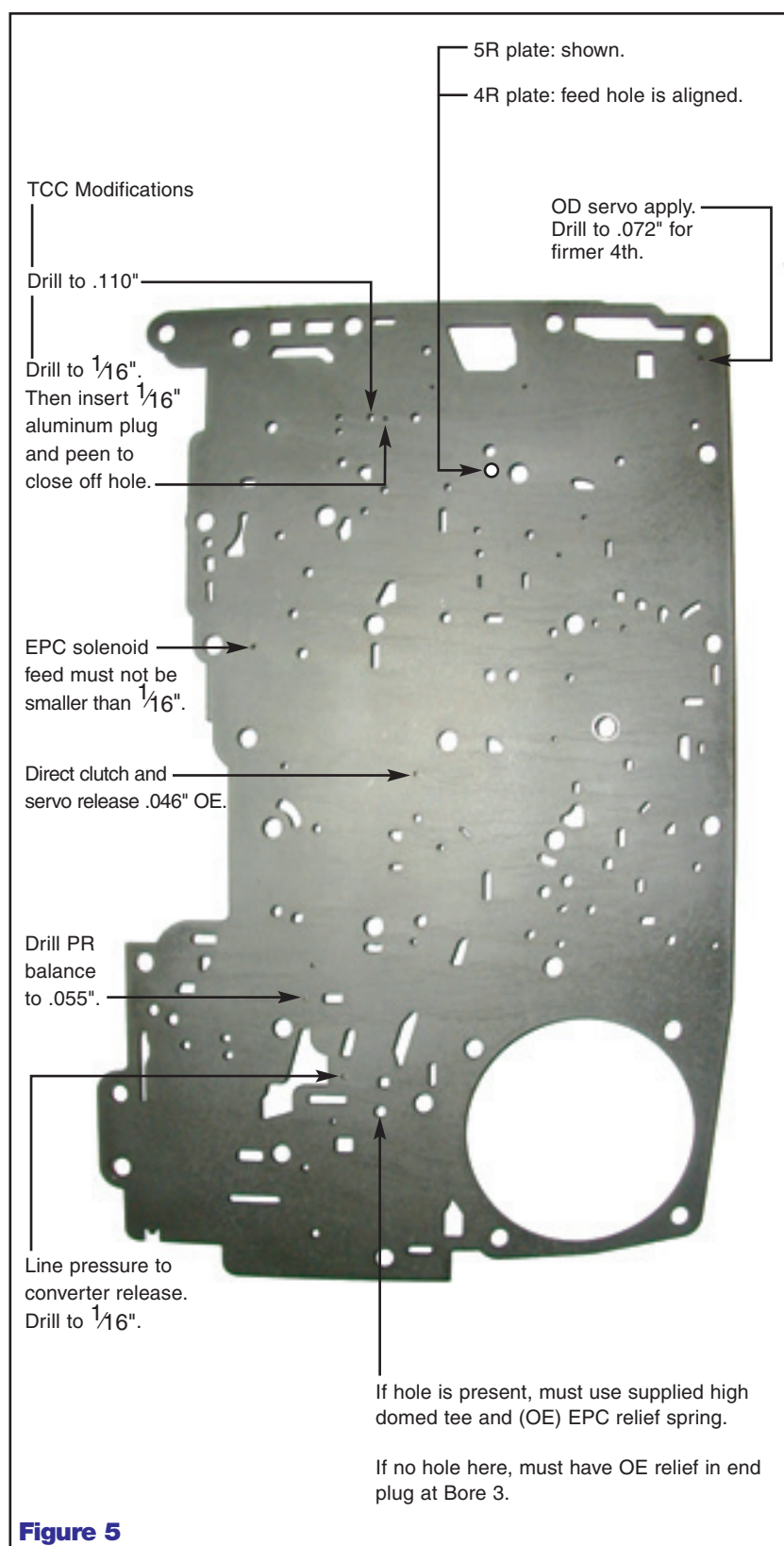


Plate Identification & Modification:

To reduce TCC slip and code 741:

- Drill the TCC exhaust hole to .110".
- Predrill the neighboring hole to 1/16".
- Plug and peen with 1/16" pin supplied.
- Remove the smallest spring from Bore 11. This spring is pulled out from the lower side through the slot next to the filter inlet.

The direct clutch/servo release and EPC solenoid feed holes have been identified. They DO NOT have to be altered, unless you want to increase flow. Having too large a hole at EPC feed could flood the solenoid. Too large at direct/servo release can result in firm 2-3 or flare 2-3 on a 4R.

Drill pressure regulator balance orifice to .055". (Drill is supplied.) To prevent flashing, start the drill on one side, then finish from the opposite. It's always best to taper the orifice holes when done with a larger drill.

Drill line pressure circuit to converter feed orifice in the plate to 1/16" or .062". Late-model 5R55E units are already this size. (Drill is supplied.)

For firmer 4th in 4R or firmer 5th and 2nd in a 5R unit: Drill the OD servo apply to .072". Later 5R55E units are already this size.

4R and 5R plate identification: Plate pictured is a 5R55E plate with an EPC relief spring hole.

If the plate was a 4R, the hole pictured would be lowered to the circle indicated.

EPC relief hole: The hole identified near the servo cover area is where the Sonnax domed relief will rest. The OE spring will be reused in the valve body casting. The TCC relief and the EPC relief springs are interchangeable.

If no hole exists here, the plate is designed for an OE relief valve in the No. 3 bore end plug. That OE valve number is 3L5Z-7M203-JA.

You cannot use that end plug relief if the plate has a hole, as pictured here. Delayed forward, reverse and low line pressure result.

Combining Modifications:

- Do not combine aftermarket parts or procedures with this kit.
- Do not drill line to lube through the casting at the pressure regulator valve.
- Do not use a stronger pressure regulator spring or shim than the ones supplied here.
- Do not remove springs or block reverse engagement control valve.