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# GM BOOST VALVES PROBLEMS & SOLUTIONS

***As the wise man says, "Line rise is very important!"***

The boost valve is a critical component of the line pressure control of any transmission. This is not a part to shortcut by overlooking wear or using poor-quality parts. Without a good pressure regulator boost valve, your rebuilt transmission will not work as well or last as long as it could.

- More line boost oil pressure = more line pressure
- Change to a larger diameter boost valve = more line pressure and faster line rise

**Problems with worn boost valves fall into 2 categories:**

1. Leaks of an oil circuit to exhaust
2. Crossleaks from one oil circuit into another

Depending on the transmission model, line boost oil from the modulator, throttle valve or EPC oil circuits pushes on the end of the boost valve. The job of a boost valve is to react against the pressure regulator valve and have a direct effect on regulated line pressure.

With a worn-out boost valve sleeve, line boost oil leaks past the wear areas, reducing effective line pressure increase.

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## PRODUCT SPOTLIGHT

It is common in Chrysler 3-speed FWD units to have 2nd gear starts and no upshift complaints caused by a sticking governor weight. The industry has tried to address this by using a spring on the inside but it interferes with the weight and causes it to bind, jamming between the weight and the bore.

**A413, A404, A470 & A670 GOVERNOR BRACKET & SPRING KIT**

**PART #: 32204-03K** (Patent Pending)

**FIX THESE COMMON COMPLAINTS**

- 2nd Gear Starts
- No Upshifts
- No Kickdown
- Repeated Governor Hangup

Sonnax has developed an externally mounted spring and bracket kit, 32204-03K, to assist the return of the primary weight to its at-rest position without binding the weight. The use of the Sonnax bracket and spring kit will also provide slightly increased shift timing. A complete shift timing chart is included with each instruction package.

Symptons include low line rise, soft shifts, slips or flares. Low line pressure can also cause harsh shifts when a clutch does not fully apply before the accumulator bottoms, causing a shift with an "end bump." When this happens, raising line pressure with a new boost valve can bring back smooth OE shifts.

How can one bad boost valve cause both low AND high line pressure in the same transmission? High line pressure in reverse on a 4L80-E transmission is known to wreak havoc, causing loose band anchors, broken bands, cases, direct drums and pistons, and even engine stalling. Runaway high line pressure results when reverse oil cross leaks into the EPC area of the boost valve. This allows the reverse boost oil (line pressure) to react on five times the valve area it is supposed to. When this happens line pressure can spike to more than 400 psi!

**Figure 1** **SONNAX 4L80E BOOST VALVE - 34200-10K** (Patent Pending)

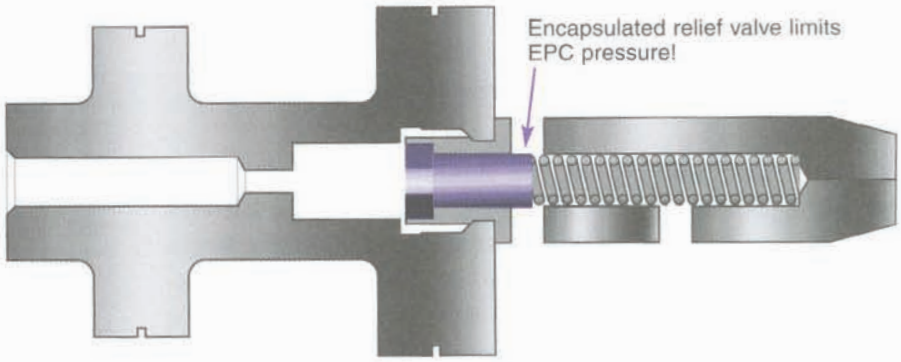
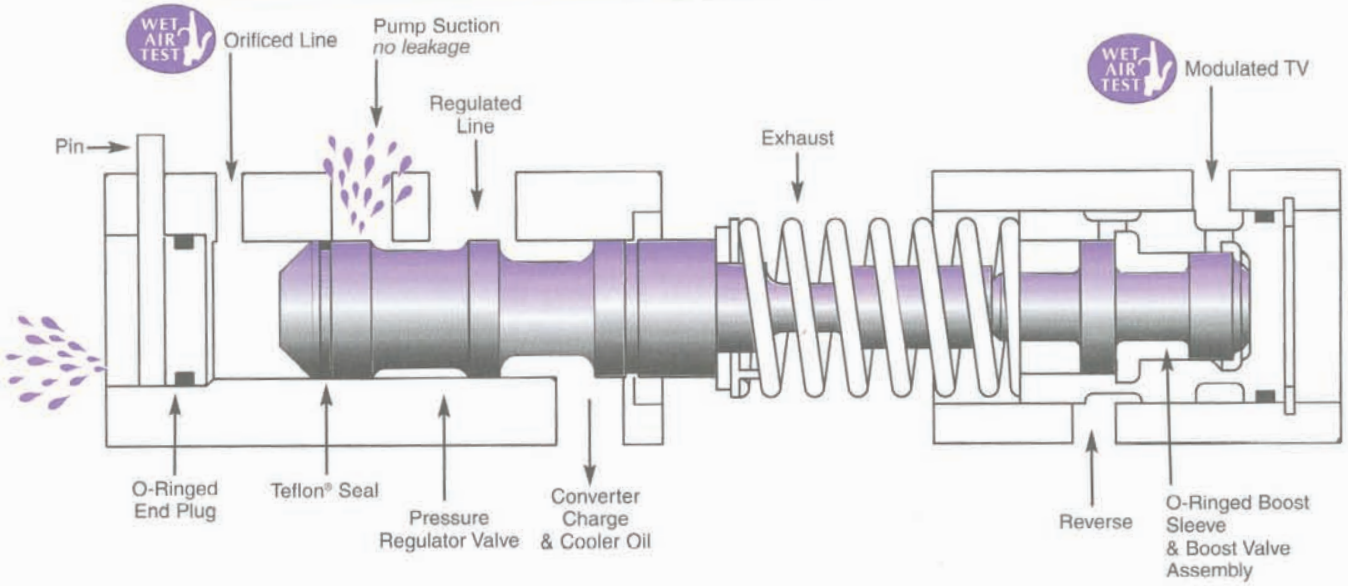



**Figure 2** **SONNAX 400 PRESSURE REGULATOR VALVE - 34910-03K**



Sonnax 4L80-E boost valve **34200-10K** has a built-in pressure relief to prevent runaway high line pressure. *(See illustration on Page 2.)*

700-R4 units can have a complaint of unwanted upshift into 2nd with the shifter in manual low range. D-2 oil pressure leaking at the reverse boost valve reduces the amount of L-1 oil pressure available to keep the 1-2 shift valve from moving. This is fixed by replacing the reverse boost valve. *(See Page 5.)*

Don't forget the opposite end of the PR valve. The "balanced end" of the PR valve keeps the valve regulating correctly. Wear or leaks here cause high line pressure. On 200, 400, 200-4R/4L60&E and 4L80-E units, inspect for valve/bore wear and end plug leaks. Sonnax has oversized valves, valves with seals, and o-ringed end plugs as solutions to the balance end leaks. *(See illustration on Page 2.)*

**Sonnax boost valves are improvements not just replacements because:**

Leaks and crossleaks are minimized by:

1. Wider valve lands
2. Better surface finish
3. O-rings on sleeves
4. Better tolerances & precise clearances
5. Better materials that maintain critical clearances as parts heat up

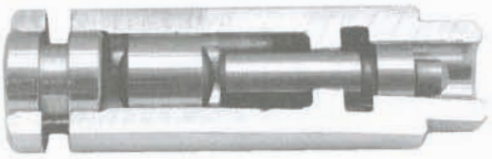
Wear is minimized by:

1. Better surface finish
2. Better materials
3. Wider valve lands
4. Oil grooves
5. Anodizing

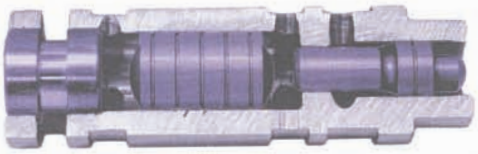
*(See Figure 3)*

Figure 3 **4T65-E BOOST VALVE ASSEMBLY COMPARISION**

**OEM VALVE ASSEMBLY**



**SONNAX VALVE ASSEMBLY**
**84754-30K**
(Patent Pending)



- Wider valve lands
- Anodized aluminum
- Radial grooves
- Better sleeve material