

## GM 4L60-E, 4L65-E, 4L70-E

### Line Pressure Booster Kits

#### Part No.

**4L60E-LB1**

- Large Ratio Boost Assembly Long
- Stronger Pressure Regulator Spring
- O-Rings (2)

Patent No. 6,619,323

**NOTE:** Fits early-style pump.

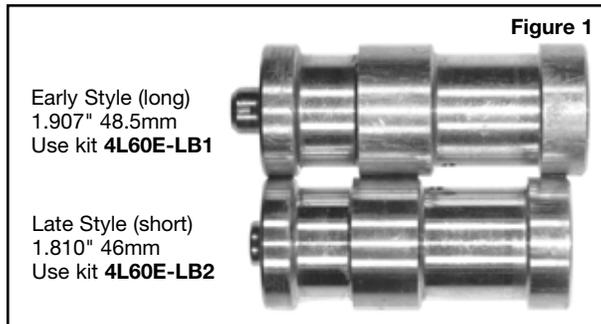
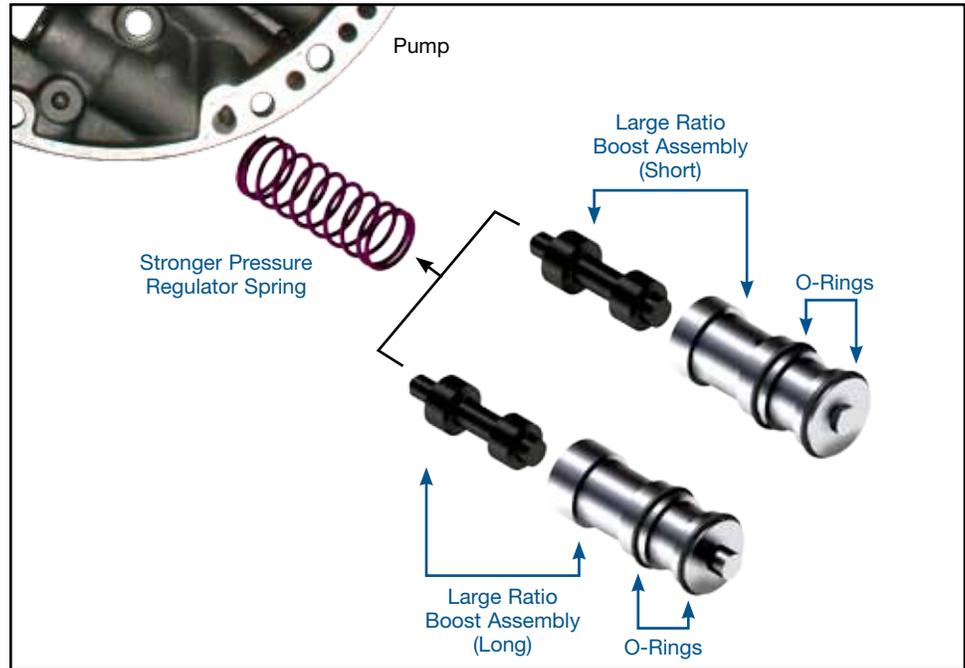
#### Part No.

**4L60E-LB2**

- Large Ratio Boost Assembly Short
- Stronger Pressure Regulator Spring
- O-Rings (2)

Patent No. 6,619,323

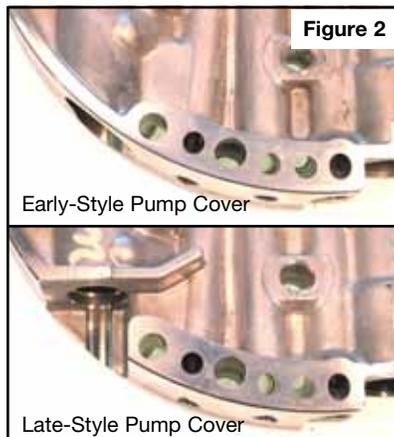
**NOTE:** Fits late-style pump.



### 1. Verify Correct Boost Valve Application

Before installing the line pressure booster kit, compare the length of the OE boost sleeve to the Sonnax sleeve. Overall lengths must be the same. Most early-style pump bodies will use the long, 1.907" 48.5mm boost assembly (**4L60E-LB1**). Some late production, early-style pumps will use the short boost assembly (**4L60E-LB2**), even though the casting number and all other features are identical. In most circumstances, comparing the original boost sleeve to the replacement is all that is required for verification. **See Figures 1 and 2**

If you have a pump cover that is missing the boost sleeve it is possible to verify which length sleeve belongs in the bore by measuring from the very inner point of the main pressure regulator valve bore to the inner edge of the retaining ring groove. The distance for the long boost assembly is 4.740", and for the short boost assembly is 4.643".



### 2. Disassembly

Remove and discard OE boost valve and sleeve, and large diameter pressure regulator spring. Retain the OE pressure regulator valve, bumper spring and retaining clip.

### 3. Bore Preparation

The O-rings included in this kit provide extra insurance toward preventing cross leaks and should always be installed.

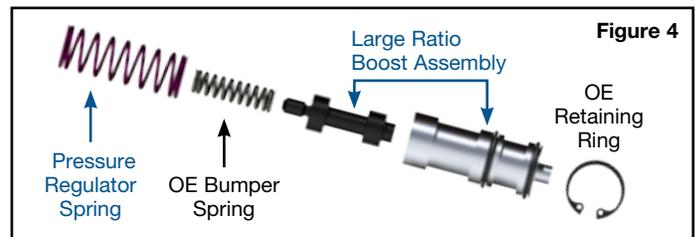
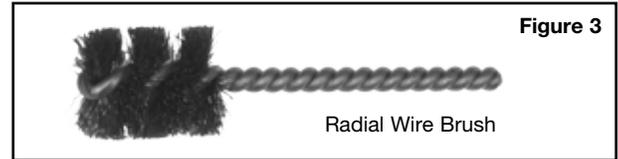
- Carefully inspect snap ring grooves, feed holes or bore edges and de-burr if necessary to reduce cutting. A non-abrasive tool such as a radial wire brush (**Figure 3**) works best, but the bore should always be thoroughly cleaned after any de-burring.

### 3. Bore Preparation (Continued)

- b. Place the two O-rings into the grooves on the boost sleeve, roll sleeve over bench to resize the O-rings, then pre-lube the O-rings. Sonnax Slippery Stick™ (O-LUBE) or Door Ease® are ideal for this purpose.

### 4. Installation

- a. Install the OE small bumper spring and the new Sonnax pressure regulator spring.
- b. With the open end toward the two springs, carefully push the sleeve assembly into the pump cover, but only deep enough to reinstall the retaining ring.
- c. Install the retaining ring into the pump cover.

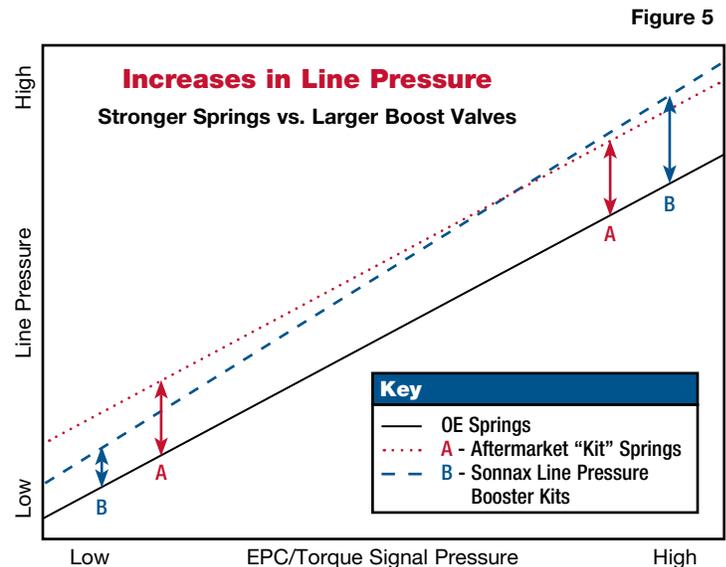


### The Prescription for Optimum Pressure

Stronger pressure regulator springs raise pressure equal amounts at idle and maximum pressure. Many aftermarket “kit” springs are a compromise, raising pressure too much at idle and not enough at maximum pressures (A in graph). Larger boost valves, on the other hand, have a progressive effect on pressure, changing the rate of pressure increase (B in graph).

The Sonnax large ratio boost valves and stronger pressure regulator springs are designed to work together. This is an ideal combination: smooth engagements and lower load on the pump at idle, but a greater increase in pressure as the transmission is worked harder.

For a more in-depth look at raising line pressure, read *The Prescription for Optimum Pressure* in the Sonnax online technical library at [www.sonnax.com](http://www.sonnax.com).



## Pump Tech

### Good Pressure Depends on a Good Pump

#### Verify Pump Specifications

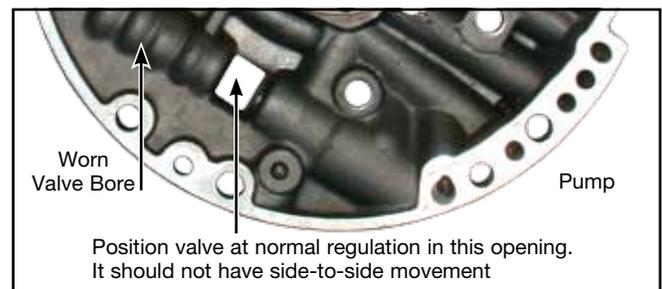
Excess clearance equals low pump volume and pressure.

##### Rotor, slide and vanes

.0005" to .002"

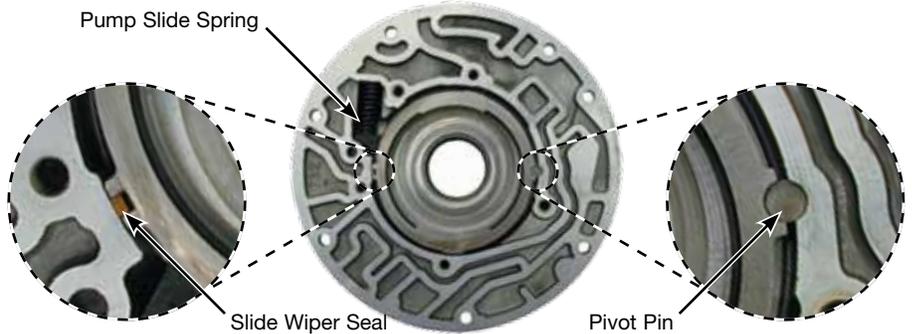
Check with feeler gauge and straight edge over pump face, or with Plastigauge and bolt complete pump together.

Too Loose = low pressure. Too Tight = no line rise, slide is stuck. To check, remove all pump parts and seals, assemble halves with just the pump slide and shake. You should hear pump slide moving inside.



**Check for Wear**

- If pivot is worn, replace with Sonnax pivot pin **65797**.
- If vane has visible wear, replace with Sonnax pump vane **1280**.



**Optional Shift Tech**

**Too much of a good thing causes problems**

Most times when a feed orifice is enlarged, the change in shift feel is far greater than intended and results in nuisance harsh shifts which many customers do not like. Sonnax kits raise line pressure in a progressive way so the biggest increase in pressure is at higher pressure ranges when it is needed most. This has an overall positive effect on shift feel without generating complaints.

We do not recommend drilling feed holes in all transmissions or recommend specific drill sizes because there are so many different original calibrations and what works well in one may not work well in another. If you do wish to enlarge feed orifices, we have provided these guidelines to help you determine what drill size corresponds with a specific percentage increase in orifice area so you are less likely to cause problems.

**Orifice Feed Holes**



**Orifice Feed Hole Guidelines**

Do not drill feed holes too large. A small change in diameter can make a big change in the area of the hole the oil flows through. Use this chart to determine drill diameter for any increase in orifice area that you think best suits the vehicle.

Original Orifice Diameter	Enlarged Diameter				
	← Conservative				Agressive →
	+10% area	+ 20% area	+ 30% area	+ 40% area	+ 50% area
0.040	0.042	0.044	0.046	0.047	0.049
0.045	0.047	0.049	0.051	0.053	0.055
0.050	0.052	0.055	0.057	0.059	0.061
0.055	0.058	0.060	0.063	0.065	0.067
0.060	0.063	0.066	0.068	0.071	0.073
0.065	0.068	0.071	0.074	0.077	0.080
0.070	0.073	0.077	0.080	0.083	0.086
0.075	0.079	0.082	0.086	0.089	0.092
0.080	0.084	0.088	0.091	0.095	0.098
0.085	0.089	0.093	0.097	0.101	0.104
0.090	0.094	0.099	0.103	0.106	0.110
0.095	0.100	0.104	0.108	0.112	0.116
0.100	0.105	0.110	0.114	0.118	0.122
0.105	0.110	0.115	0.120	0.124	0.129
0.110	0.115	0.120	0.125	0.130	0.135
0.115	0.121	0.126	0.131	0.136	0.141
0.120	0.126	0.131	0.137	0.142	0.147
0.125	0.131	0.137	0.143	0.148	0.153
0.130	0.136	0.142	0.148	0.154	0.159
0.135	0.142	0.148	0.154	0.160	0.165
0.140	0.147	0.153	0.160	0.166	0.171
0.145	0.152	0.159	0.165	0.172	0.178
0.150	0.157	0.164	0.171	0.177	0.184

## Recommended Sonnax Products

Part No.	Unit
<b>Hydraulic Booster Kits</b>	
4R100-LB1	E40D, 4R100
4L60E-LB1	4L60-E, 4L65-E, 4L70-E*
4L60E-LB2	4L60-E, 4L65-E, 4L70-E**
700R4-LB1	4L60 (700-R4), 200-4R
400-LB1	400
4L80E-LB1	4L80-E, 4L85-E
4T65E-LB1	4T65-E
350-LB1	350
4R70W-LB1	AODE, 4R70W, 4R75W
<b>Electronic Booster Kits</b>	
44957-LB1	68RFE
44957-LB2	45/545RFE

\*Early-style pump \*\*Late-style pump

TCC Regulator Valve Kit 77754-04K



### Line Pressure Booster Kits

**Hydraulic Booster Kits** Sonnax hydraulic line pressure booster kits contain stronger pressure regulator springs and large ratio boost valves designed to work together to provide progressive pressure increases as driving conditions become more demanding. Sonnax springs are approximately 10% stronger than OE and more conservative in impact than other aftermarket "kit" springs.

**Electronic Booster Kits** Chrysler 45RFE, 545RFE and 68RFE units are unique because they utilize a true closed-loop pressure control system: the computer reads line pressure at all times through a full range pressure sensor. This means traditional methods of raising line pressure will have no effect because the computer simply re-adjusts the pressure until the voltage signal from the pressure sensor matches what the computer wants to see. Sonnax electronic line pressure boosters alter the pressure signal sent to the computer, causing the computer to raise line pressure. These kits are ideal for heavy duty and modified vehicles and even stock transmissions when a little extra pressure is desired. The booster installs easily between the pressure sensor and vehicle harness using OE-style sealed connectors.

### TCC Regulator Valve Kit

#### 77754-04K

No 'drop in' valve or modification to the TCC regulator valve can maintain correct TCC operation, maintain correct TCC apply pressure, and prevent line pressure leakage due to a worn bore. Line pressure leakage at the TCC regulator bore is related to band and 3-4 clutch failure. The only solution that solves all of these issues is Sonnax TCC regulator bore sleeve 77754-04K. Requires reamer.

SmartShell™ 77749-02K



### SmartShell™

#### 77749-02K

The Sonnax SmartShell 77749-02K is a heavy duty reaction shell kit with revised thrust load paths. Stripped or cracked shells are a problem in 4L60/E units, however an equally common problem is a failed rear planet captured bearing. The SmartShell is the only heavy duty shell to address both issues. The SmartShell is made of thicker material and the hub area is strengthened further with a steel collar that is precision welded to the shell. The splines are heat treated with a tested process to ensure strength and longevity. The lugs that engage the reverse drum are heat treated as well to avoid flaring. By replacing the black plastic washer with a thrust bearing and controlling the height of the modified OE race, the SmartShell reroutes thrust loads away from the captive planet bearing and sun gear. The rerouted end play/thrust loads pass through the new thrust bearing and modified roller clutch race directly to the rear planet carrier, completely bypassing the vulnerable captive planet bearing.

AFL Valve Kit 77754-09K



### Actuator Feed Limit Valve Kit

#### 77754-09K

The AFL valve is a solenoid feed regulator valve that feeds the EPC solenoid and shift solenoids. The OE AFL valve has a large reaction area and is highly affected by side loading, which wears the valve body bore. The EPC solenoid oscillates the torque signal and AFL oil, which increases valve action. As the bore wear increases, oil pressure is reduced to the shift solenoids, which causes solenoid and ratio codes, and lower line pressure.