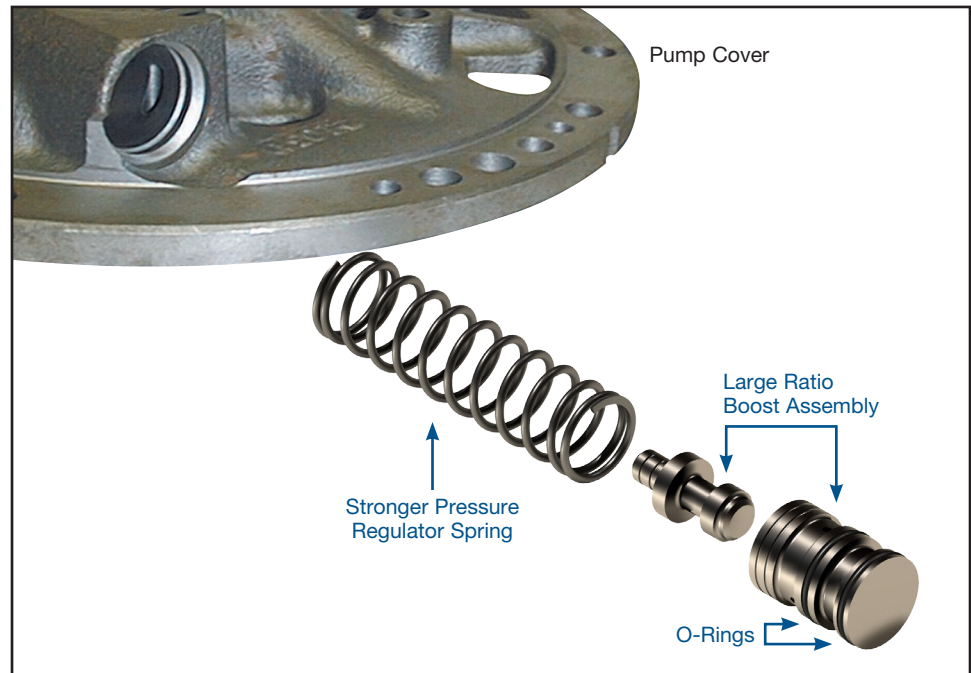


400

Line Pressure Booster Kit

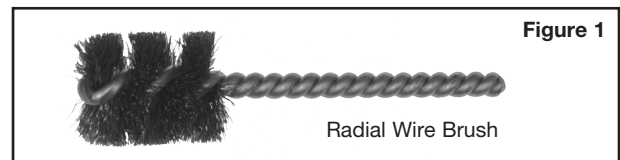
Part No.
400-LB1

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



1. Disassembly

Discard the original boost sleeve and valve, pressure regulator spring and horseshoe-shaped shim. Retain the OE pressure regulator valve, spring seat and retaining ring.



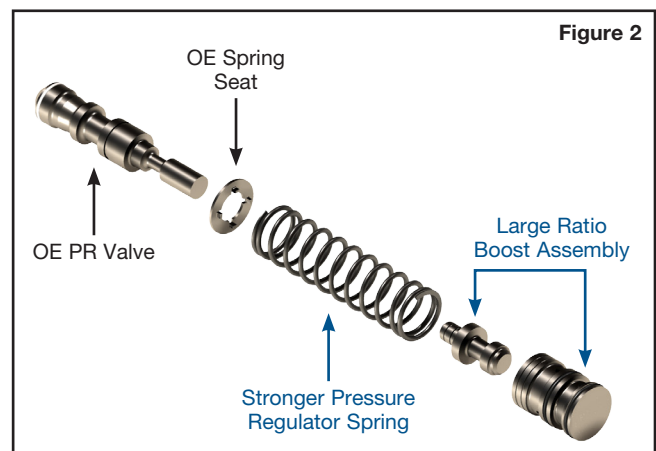
2. Bore Preparation

The O-rings included in this kit provide extra insurance toward preventing cross leaks and always should 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 1**) works best, but the bore always should be thoroughly cleaned after any de-burring.
- 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.

3. Installation

- Install the pressure regulator valve, spring seat and pressure regulator spring. Do not install horseshoe shim.
- Carefully push the sleeve assembly into the pump body, just deep enough to install the retaining ring.

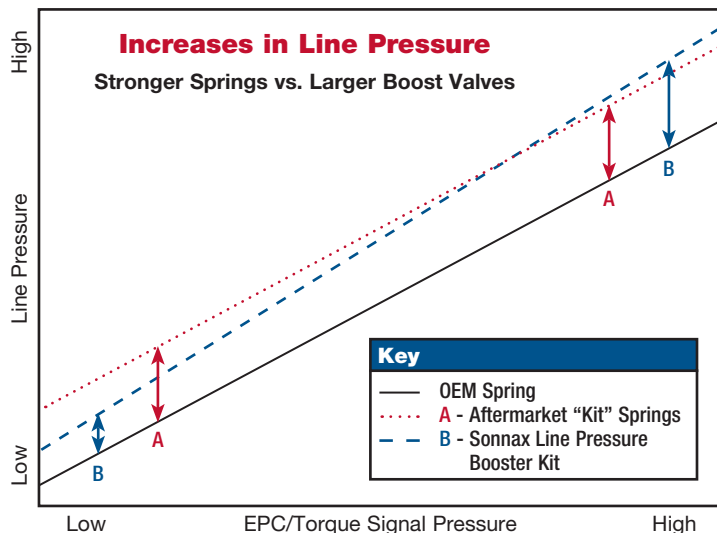


The Prescription for Optimum Pressure

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.



Pump Tech

Good Pressure Depends on a Good Pump

Figure 3

Verify Pump Specifications

Excess clearance equals low pump volume and pressure.

Gear Pocket Clearance	.0007" to .0026" Check with feeler gauge and straight edge over pump face, or with Plastigauge and bolt complete pump together.
Outer Gear to Pump Body	.005" max.

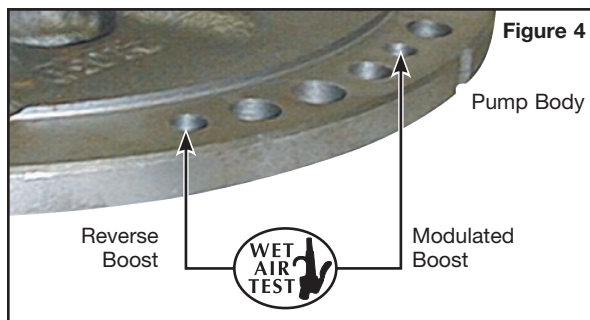
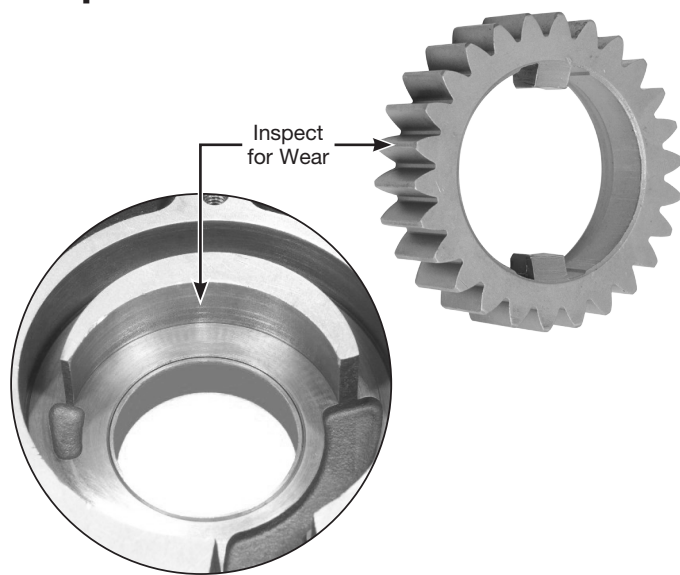
Check for Wear

Wear on tips of inner gear teeth or on the crescent means low pressure. Inspect inside of crescent, area between suction and discharge ports and tips of gear teeth, for wear (**Figure 3**). Wear and excess clearance reduces pump efficiency.

Perform Wet Air Test

Pump Housing Flatness	.001"
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It is a good idea to perform the wet air test again (**Figure 4**) after installing the Sonnax line pressure booster kit. Continued leakage after replacing the boost valve and sleeve indicates cross leakage between the pump halves, which may be warped. Replace or resurface the pump halves to eliminate the remaining leakage, or use Loctite #518 gasket eliminator on the circuit from feed to boost sleeve.



Optional Shift Tech

Too Much of a Good Thing Causes Problems

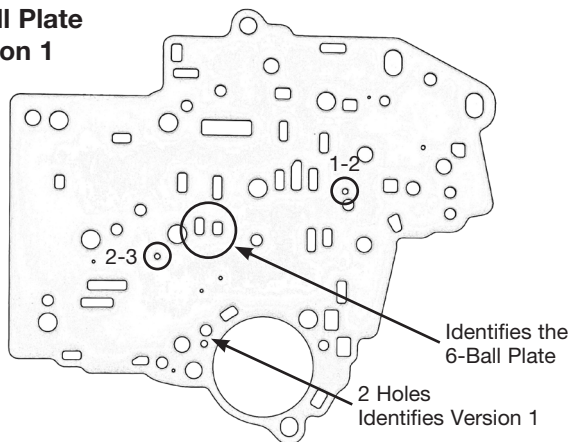
Most times when a feed orifice is enlarged, the change in shift feel is far greater than intended and results in nuisance harsh shifts which many customers do not like. Sonnax kits raise line pressure in a progressive way so the biggest increase in pressure is at higher pressure ranges when it is needed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

Sonnax does 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.

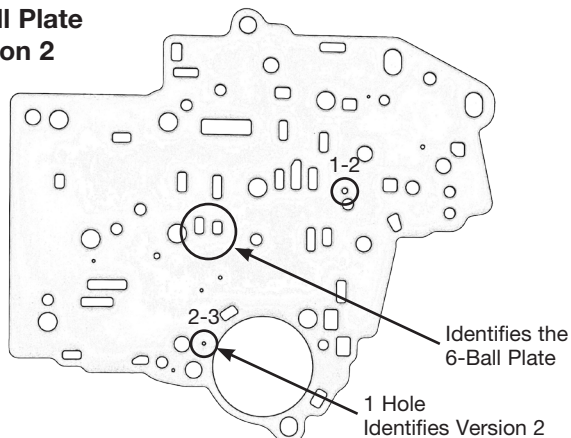
Orifice Feed Holes

There are three different plates for the 400: the '89-later seven-ball plate and two versions of the six-ball plate. The difference between the six-ball plates is the location of the 2-3 hole.

6-Ball Plate Version 1



6-Ball Plate Version 2

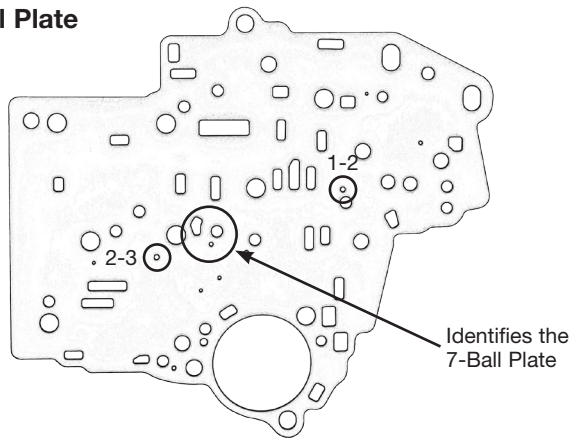


Orifice Feed Hole Guidelines

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				Aggressive →
	+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

7-Ball Plate



Recommended Sonnax Products

Part No.	Unit
Hydraulic Booster Kits	
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	A0DE, 4R70W, 4R75W
Electronic Booster Kits	
44957-LB1	68RFE
44957-LB2	45/545RFE

*Early-style pump **Late-style pump

Pump Bushing 34034T-01



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.

Pump Bushing

34034T-01

Worn babbit pump bushings in GM Powerglide, 350, 400 and Allison® AT540 units allow the converter hub and inner pump gear to move off-center, causing damage to the pump gears and pump housing crescent. Sonnax pump bushing **34034T-01** is a direct replacement part that is better fitting than OE. Extremely wear-resistant, this Teflon® (PTFE)-lined Kryptonite™ bushing helps maximize the life of these older and increasingly rare pumps.

PR Valve Kit 34910-03K



Pressure Regulator Valve Kit

34910-03K

High-mileage vehicles with a 400 often experience poor line pressure control due to a worn pressure regulator bore. This will result in high cooler pressure and converter, crankshaft, and/or friction element failure. This bore wear can be verified by testing line pressure and wet air testing the pump. This hardened steel valve continuously oscillates within the cast-iron pump bore, resulting in wear. Balance line pressure is then allowed to leak past the valve and exhaust to the sump. This prevents the pressure regulator valve from moving completely to the lower line pressure position. The Sonnax PR valve kit **34910-03K** eliminates these problems.

Forward Clutch Hub 34322-01



Forward Clutch Hub

34322-01

Replacement forward clutch hub **34322-01** fits the GM 400, 425 and 4L80-E forward clutch assembly. This hub is made from an AISI 1045 steel forging.

No Walk-Out Oversized Case Bushing 34006-SP



No Walk-Out Oversized Case Bushing

34006-SP

The OE case bushing in vehicles with a 400 or 4L80-E transmission tends to “walk out” of the housing bore. This allows the bushing to wander into the extension housing, leaves the output shaft unsupported, and may ruin the governor gear and cause case damage. The Sonnax no walk-out oversized case bushing **34006-SP** is specially designed to remain in the case bore.