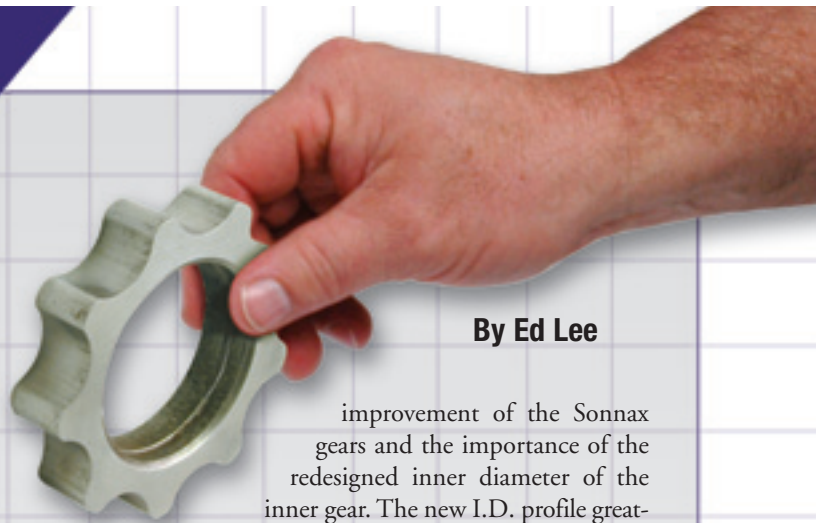


A few things we forgot to tell you

The Sonnax Transmission Specialties® catalogs have become a valuable resource for the transmission industry, containing a wealth of educational information and new products for our customers. We hope our latest catalog, Volume 7, will prove to be as much of an asset as our previous catalogs have been. We at Sonnax work hard to present and explain the individual items throughout the catalog, to ensure our customers are aware of just how good these products really are. But sometimes we understate our case. Here we will look at a few products in greater detail, expanding on some of their lesser-known features and benefits.

One part that comes to mind is the oversized pump gears for the E4OD/4R100, **36438AX-01K**. If you look at the “Features and Benefits” section, you’ll find the statement, “Improves fit and durability of pump-to-torque converter interface.” This statement understates a really major



By Ed Lee

improvement of the Sonnax gears and the importance of the redesigned inner diameter of the inner gear. The new I.D. profile greatly enhances the contact area between the flats on the converter impeller hub and the pump inner (drive) gear for greatly improved wear resistance (*see Figure 1*). The point contact of the original design is notorious for causing wear to both the inner gear and the impeller hub (*see Figure 2*).

Another product that comes to mind is the manual valve **22771-09** that fits the 1978 and later rear-wheel-drive Chrysler transmissions. The catalog will tell you that the manual valve “allows converter charge in park.” Keep in mind that after filling the converter, this same oil continues through the cooler and returns to the transmission as lube oil. This is especially beneficial to vehicles that idle in park and even more helpful if the vehicle is idling in park with the air conditioner turned on. This was the major cause of the failures in Chrysler police cars during the '80s and remains important today.

In the past, after installing an overhauled unit and filling with fluid in park, your R&R person may have noticed the feel of the vehicle drifting forward against the parking pawl. This indicates the forward clutch is dragging on, and for these transmissions it's a sign something is wrong. The Sonnax manual valve eliminates this concern with a unique control spool that provides charge oil in park while also isolating and exhausting forward clutch oil.

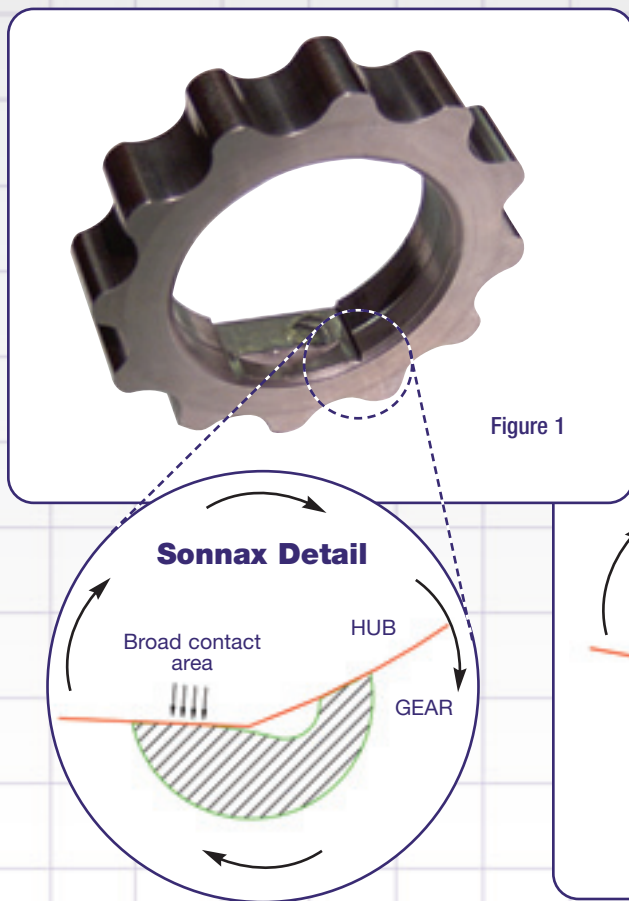


Figure 1

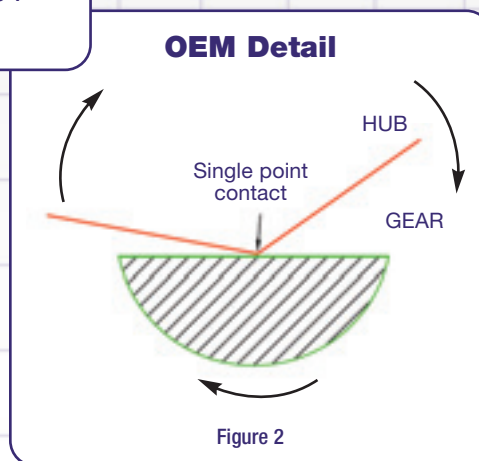


Figure 2

The added step at the rear land effectively creates an orifice in the circuit feeding reverse, and virtually eliminates band breakage and the reverse band struts bending.

Another lesser-known feature is the tight tolerances for the two lands that straddle the manual lever. The reduced tolerance between

these two lands provides more positive positioning of the manual valve, and eliminates most of the back-and-forth movement that accelerates bore wear.

Another major improvement in the manual valve is its diameter. The Sonnax manual valve is larger in diameter than the OEM valve that it replaces. This larger diameter helps to eliminate any line pressure leaks and cross leaks at the valve. You can see these improvements for yourself with a simple test. Place a pressure gauge on the accumulator port on the side of the transmission and check line pressure in any forward range. Record your original pressure for a base line. Then replace the OEM manual valve with the **22771-09** valve and recheck the pressure. The increase in pressure is the amount of line pressure that was leaking past the valve. We have seen increases of up to 40 psi with just this one change.

Another understated product is the upgraded piston retainers for the rear-wheel-drive Chrysler overdrive transmissions. Part number **12962N-01K** fits the 42RH/RE transmissions and **22754N-01K** fits the 46-47-48RH/RE transmissions. Due to space constraints, the aluminum retainer I.D. and O.D. surfaces serve as bushing journal surfaces for the intermediate shaft and reverse drum. Since a thin layer of oil is all that prevents metal-to-metal contact between these parts, the lubrication circuit is very critical. On the OEM retainer, lube oil leaks where the retainer fits through the case. The Sonnax retainers seal this critical area with an o-ring seal. The OEM retainer distributes oil to the bottom side of the journal, where the reverse drum rides. Since gravity is pushing the reverse drum down, the top of the journal carries most of the load and that is where the scoring is often found. On start-up, the reverse drum must travel half a revolution before oil is carried to the load area. The Sonnax retainer distributes lube oil via two oil delivery grooves to the top and bottom of this journal. The I.D. of the OEM retainer has two holes to distribute oil to the two journals of the intermediate shaft. The Sonnax retainer has two oil delivery grooves that run the full length of the load-bearing surface.

Another part that is sometimes overlooked is the split ring retainer for the 230 and 240 series New Process transfer cases (see Figure 3). Sonnax offers **100420-01K** for the smaller diameter shafts and **100420-02K** for the larger diameter shafts. The up-and-down movement of the rear suspension of the vehicle puts a back-and-forth force on the output shaft splines of the transfer case. On the forward thrust, the output shaft retaining ring is forced against the output shaft bearing located in the case. It's not the thrust load that breaks the retaining ring, it's the flexing of the retaining ring that

leads to breakage and pop-out. The retaining ring flexes because the only contact point with the OEM bearing is the chamfer of the inner race. The rear of the retainer is pushed on by the output shaft on its inner diameter, while the front of the retainer contacts only on the outer part of the ring. This uneven loading of the retaining rings allows flex with every movement of the suspension.

Any conventional retaining ring in this location will flex, leading to breakage and this is the No. 1 cause of failure in these units. The OEM manufacturers offered a revised bearing with larger contact area to reduce high stress load on the edge of the ring. Sonnax's split ring retainer is a cost-effective way to fix this problem: It doesn't require replacing the output bearing and it's the only solution that eliminates retaining ring flexing, pop-out and breakage.

There are many subtle improvements in Sonnax products. Sometimes a small relief or contour will improve flow or timing. A broader land will improve valve stability or longevity. Other times an annular groove will eliminate side loading, or added material will make a part stronger. You can rely on Sonnax to go the extra distance to improve your parts, even if we forgot to tell you. ■

New Process Transfer Case Rear Output Shaft Bearing

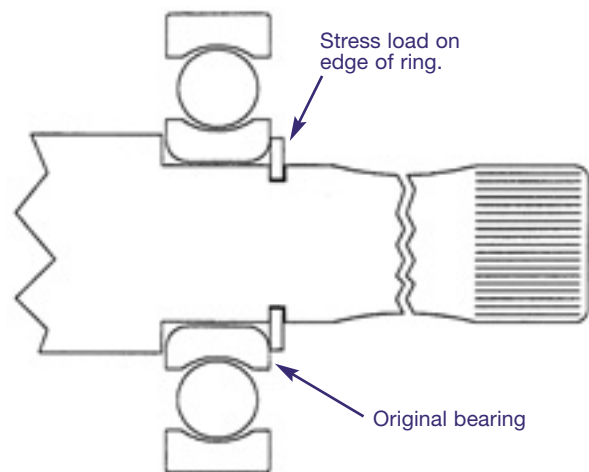


Figure 3