

Sonnax Technical Bulletin

E4OD & 4R100 **Work Hard PLAY HARDER**

This is the motto of many owners of E4OD- and 4R100-equipped trucks. Whether it's a work truck or favorite toy, the rule is, "Push it to the limit." Push the frame, tires, suspension, engine and, yes, your E4OD or 4R100 rebuild, to the max. How can you protect your rebuild, your reputation and your wallet against the perils of heavy-duty use?

Weak links always deserve attention. Seemingly small details can play large roles.

Replacing the front lube drainback valve can often prevent overdrive planetary failures. The OEM valve assembly has a plastic ball seat and stop, and these can melt at high fluid temperatures, restricting flow to the front lube oil feed circuit. The end result: overdrive planetary

failure. You can avoid this problem entirely by replacing the OEM assembly with a Sonnax valve (**36425-01K**) made of high-quality aluminum components that won't melt under high temperature.

An upgraded, one-piece rear case bushing helps prevent premature wear and bushing failure. The OEM rear case bushings tend to wear prematurely due to lack of lubrication, excessive journal clearance, too much load for a given bearing area, or all of the above. You can replace a spun-out bushing and save replacing the expensive case by using a Sonnax replacement part (**36008B** or **36008D**) with increased bearing surface area and superior lubrication characteristics.

Our Sure Lock™ OD piston spiral snap rings (**36744-01**) can stop the

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PRODUCT SPOTLIGHT

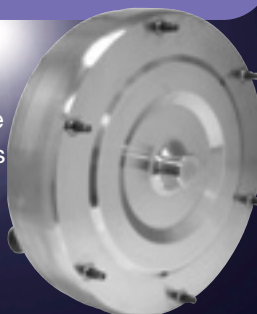
Remember to specify forged E4OD and 4R100 covers from your converter rebuilder. Distortion and ballooning of the cover can cause the clutch lining to fail and block the lube circuit, which can cause planetary and other lube-related failures. OEM covers are prone to leakage from cracking.

The machined covers designed by Sonnax can dra-

E4OD/4R100 CONVERTER FRONT COVERS

FIX THESE COMMON COMPLAINTS:

- Planetary failure
- Blocked coolers
- TCC slip codes
- Performance problems



matically strengthen the clutch surface and reduce cracking and leakage around the mounting studs. The E4OD and 4R100 covers are available for the 4- or 6-stud gas and diesel applications. The newest forged covers available use the latest high torque multi-plate clutches and a grob-style cover.

catastrophe of exploding overdrive pistons. Both the E4ODs and the 4R100s include an overdrive piston retaining ring that is notorious for popping out of groove. This can cause overdrive failure in the E4OD and catastrophic failure in the 4R100. The solution is our patent pending retaining ring with tabs that mechanically lock the ring into place so it cannot come out.

Installing an improved center support gasket to prevent forward clutch failure and carefully selecting your endplay shims (**36402-Z**) are both small steps that can make a big difference. The center support system in the E4OD is particularly problem-prone. An insufficient number of mounting screws, surface finish flaws and defects in flatness all contribute to potential leakage between the center support and the hub, which can cause forward clutch failure and poor lube oil flow. The solution may be as simple as installing a Sonnax center support gasket (**36743G**) that makes use of a printed silicone bead to fill in any gaps between the two components.

The heart of your rebuild is the pump and its flow.

High-quality replacement pump gears (**36438A-01K**) restore that much needed pump output. Coupled with a finish-in-place pump bushing to reduce loss of output (**36002-01**), you can maintain required flow. We also suggest you add a boost valve and sleeve (**36424-01K**), which reduces loss of EPC and reverse boost oil and helps cure problems with low line rise and soft shifts.

The spool line-up of the OEM pressure regulator valve is often the culprit when diagnosing converter overheat, high line pressure and Code 62. In this case, the OEM valve can shut down the cooler circuit. It's such a frequent problem that rebuilders have developed a fix of their own: Drill a line-to-lube orifice in the pump casting wall to allow full-time flow to the cooler circuit. There's only one drawback to this fix: It also allows converter drainback, which causes delayed engagement. The solution? A Sonnax replacement valve (**36424-04K**) that includes an encapsulated check valve to maintain full-time flow to the cooler circuit while preventing converter drainback. The Sonnax valve will also help the balance circuit to overcome EPC pressure.

Overall shift firmness can be tailored to the truck use and customer's driving habits. Choose from four available line pressure modulator valve kits ranging from the V6/Small V8 pressure of a .331" valve (**36948-03K**) to the High Performance only .500" version (**96948-05K**). Sonnax also offers kits for large 8-cylinder applications with a .372" valve



(**36948-05K**) and a .427" valve for heavy duty/high performance applications (**96948-01K**). Wear and tear on the line pressure modulator sleeve allows EPC oil to leak past the valve, or causes the valve to stick. You can get longer life out of your replacement parts by using a Sonnax valve and o-ringed sleeve that provide additional protection against leakage at the sleeve bore.

Adjust to the situation.

Tailor individual shifts by selecting and shimming individual accumulator control valves, properly mated to either OEM or performance-rated accumulator springs. The OEM accumulator control valves can shut off flow to the clutches. Under hard applications the valve is allowed to stroke too far, which causes the valve to hang up: This can lead to loss of 2nd, 3rd or 4th gear, soft shifts or premature clutch failure. The fix is a Sonnax accumulator control valve kit (**36948-09K** for the 3-4 location; **36948-13K** for the 1-2 and 2-3 accumulator) that includes a stiffer retaining clip to prevent overstroking and an annular groove to keep the valve centered. And for that little extra performance, install our performance-rated springs (**36948-18K**).

Torque converters should be up to the task.

Whether you build your own or buy from a favored supplier, you're the one who gets the blame if the converter smokes. The customer's truck is tough. You built up a rugged tranny. Even a well-built stock converter may not be up to the task. Hardened hubs, high-quality bearings, lockup pistons and heavy-duty forged front covers are upgrades that should not be overlooked. You can find a complete listing of all our torque converter rebuilding components online at www.sonnax.com or call us to receive your own copy of the Sonnax 2003 Torque Converter Parts Catalog.