



# Interchanges for the E4OD and 4R100



Figure 1



Figure 2

Interchanges are a fact of life for transmission repair. Maybe you can't get the original part anymore; maybe you just can't wait for it to be delivered. Or maybe the new part just costs too much, and you've got a perfectly good one sitting on your shelf, with only a little difference in one of the passageways.

But interchanges create two very distinct problems for transmission rebuilders:

- Will the part you have fit the unit you're working on?
- Is the part in the unit original, or has it been interchanged by someone who's been there before?

Either of these situations can cause a major failure... and a major

comeback.

The trick is being able to identify the parts that were made for that specific unit, and getting to know which ones will work, and which ones won't. That could be easier said than done, especially on a family of transmissions such as the E4OD and the 4R100: two almost identical units that have gone through several changes over the years.

Will the major components from one work in the other? Absolutely... if you identify which ones you have, and match them properly to the rest of the unit.

In this issue's edition of *Street Smart*, we'll examine the major components in the E4OD and the 4R100. We'll discover how to identify the various components, learn which ones *will* interchange... and which ones *won't*.

## The Pump

Interchanging the E4OD/4R100 pump is pretty up front, but there are some differences you must be familiar with.

All E4OD pumps are completely interchangeable. In 1998, Ford introduced the 4R100; one of the four pumps made for this unit is interchangeable with the E4OD pump — *as a complete assembly*.

Check the rough forge codes first (figures 1 and 2); that'll tell the *first year* the casting went into production. The first digit denotes the decade, the second denotes the year of that decade. For example, F means 1990, so F5 means 1995. The casting didn't change in 1996 and '97 so they'll also have an RF number that begins with F5. In our example, the pump is from 1995, while the stator support is from 1998, so the two don't match. This doesn't mean

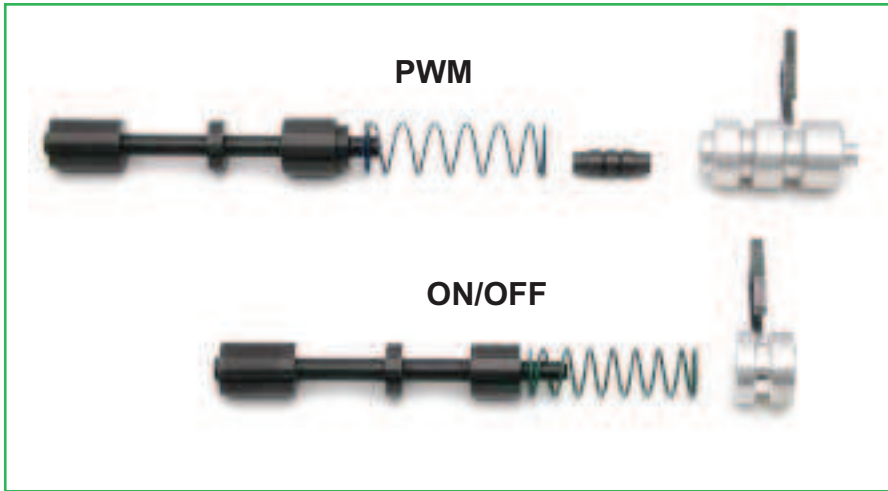


Figure 3

that all pumps and stator supports must have the same two digits from the rough forged number, but for these pumps 1998 was a key year.

In 1998, all of the pump assemblies used the same pump body, but the stator supports varied, so you can't use the rough forge numbers to indicate which pump assembly goes with which transmission. Instead, you must use the specific stator support differences for identification.

You can identify the differences in these pump assemblies by looking at two different areas:

1. Whether the TCC valve is designed for standard On/Off or pulse-width modulated operation (figure 3).
2. The bushing placement in the coast clutch drum has changed. The position of the drum bushing changed, so the journal on the stator support moved (figures 4A and 4B).

### Solenoid Body Updates and Changes

There are two new solenoid bodies for the E4OD: one to service 1989-94 vehicles, and the other for 1995-98 vehicles.

The 1989-94 solenoid body (Ford part number E9TZ-7G391-A) has these features:

- Molded lead frame with a clear cover. The new frame replaces the circuit board.
- Updated shift solenoids.
- A new harness connector, without the aluminum bushing (Ford part number F2PZ-14A464-B).
- A redesigned EPC solenoid, which resists clogging.

The 1995-97 (and 1998 non-PWM) solenoid body (Ford part number F81Z-7G391-BA) has all of the features listed for the earlier solenoid body, plus:

- The molded frame has a black cover.
- A new connector, with the seal moved to the vehicle harness.



Figure 4A: 4R100



Figure 4B: E4OD

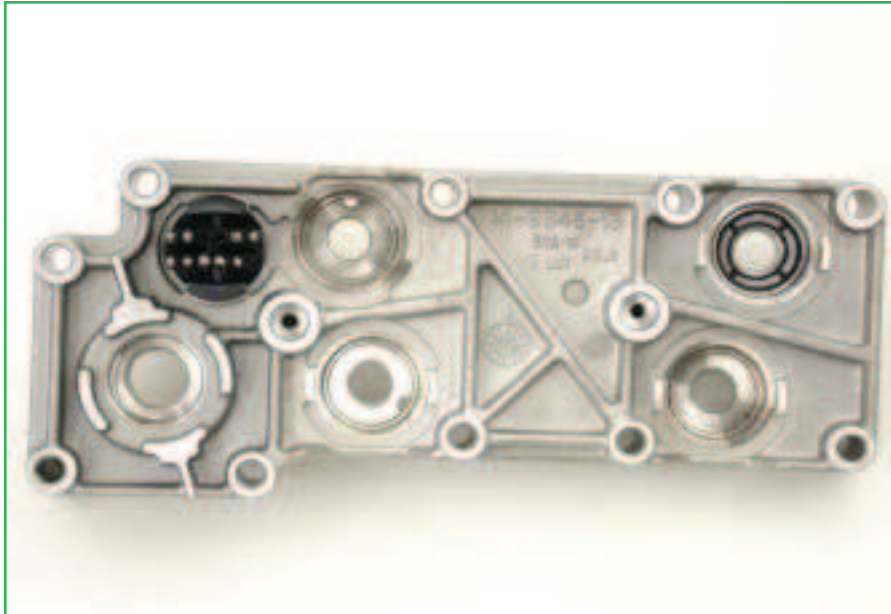


Figure 5



Figure 6

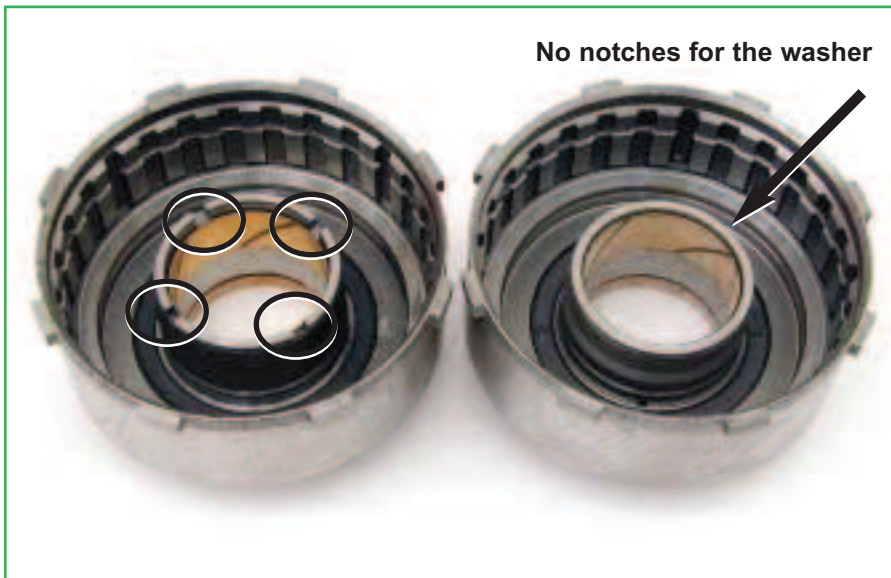


Figure 7A

- The EPC protection diodes were moved from the solenoid body to the ECM.

Never try to interchange these solenoid bodies directly; the harnesses are different, and the 1995-and-later bodies don't have spike suppression (clamping) diodes. However, you can use the 1989-94 solenoid body on a 1995-98 vehicle (1998 non-PWM only), as long as you change the vehicle harness to the earlier design.

The 4R100 transmission for diesel applications was changed to a pulse width modulated (PWM) torque converter clutch in 1998. The remaining gas applications became pulse width modulated in 1999.

There were two main changes to the PWM solenoid body (Ford part number F81Z-7G391-CB):

- The TCC solenoid is 10-20 ohms rather than 20-30 ohms.
- A filter was added to the solenoid body to help keep the TCC solenoid from becoming contaminated. This screen isn't serviceable. If the screen becomes clogged or damaged, you'll have to replace the solenoid body (figure 5).

### Low/Reverse Clutch Assembly

The low/reverse clutch assembly can be replaced with E4OD parts (figure 6). These parts include:

- Low one-way roller clutch
- Reverse hub assembly
- Inner race assembly
- Low/reverse clutch return spring
- Reverse ring gear and hub
- Reverse planetary assembly
- Clutches and steel plates

You can interchange these components as a complete set, but never try to interchange individual components.

### Direct Drum and Mechanical Diode One-Way Clutch

As of 2000, the direct drum no longer uses the #8 thrust washer (figure 7A). The sun shell was also redesigned to accommodate this change so it could



Figure 7B

As of 2000, the direct drum no longer uses the #8 thrust washer. The sun shell was also redesigned to accommodate this change so it could support the direct drum (figure 7B).

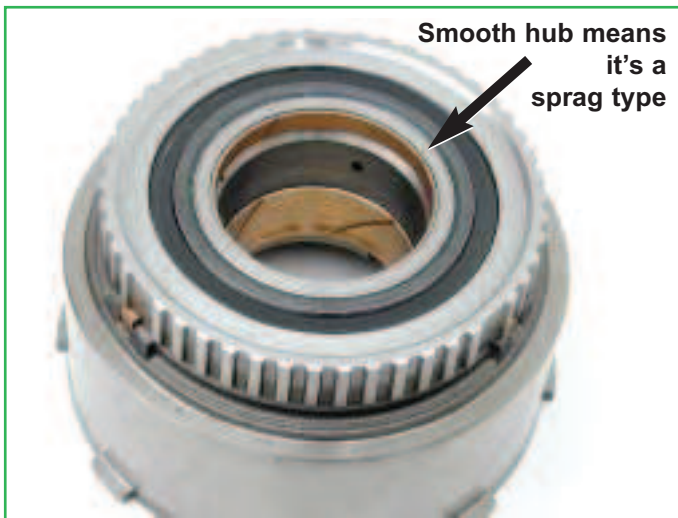


Figure 8A



Figure 8B

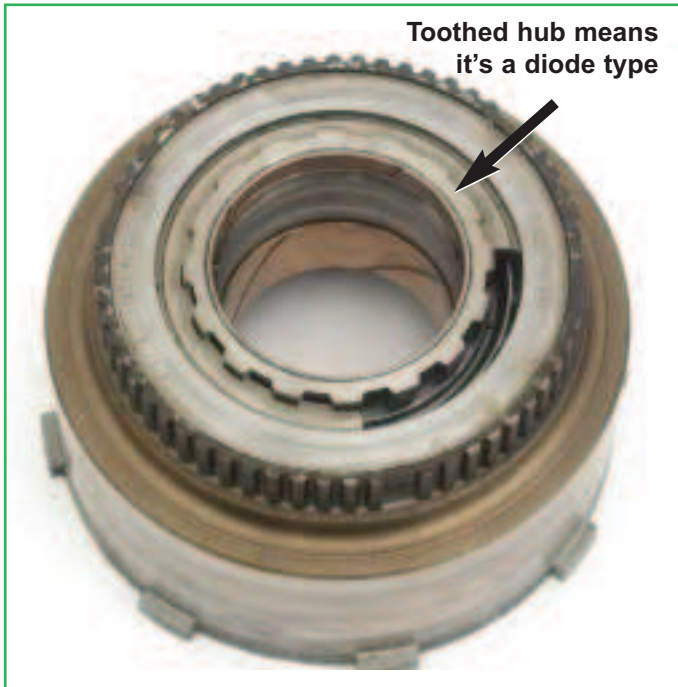


Figure 8C: Diode failure is not uncommon

support the direct drum (figure 7B). Soon after, they introduced a mechanical diode for the intermediate clutch. Figures 8A, B, and C show the differences.

The sun shell and drum designed to use a washer are different from the ones designed without a washer. As a set, they're interchangeable; but never mix parts that use a #8 thrust washer with parts that don't.

The diode-type drum only comes for use without the washer, so use the shell that goes with it. But here's the catch: the diode didn't work too well and was short-lived. Bottom line? Use the sprag-type assembly.

### Separator Plate and Valve Body Matching

Between 1989 and 2002 there have been a number of changes in separator plates, gaskets and valve bodies. Figure 9 is an identification chart for matching separator plates and valve bodies.

### Accumulator Bodies

The 1989-95 E4OD accumulator bodies aren't interchangeable with the 1996-and-later E4OD or the 4R100.

**Figure 9 provides an identification guide for matching separator plates and valve bodies.**

YEAR	ENGINE	V/B	SEP PLATE
1989	7.3/7.5/5.8	E9TZ-A E9TZ-B	E9TZ-A
1990-95	4.9/5.0/5.8/7.3/7.5	F0TZ-J F3TZ-G	F4TZ-A
1990-95	4.9/5.0/5.8/7.3/7.5	F5TZ-A F3TZ-G	F5TZ-A
1990-95	4.9/5.0/5.8/7.3/7.5	F6TZ-D F6TZ-A*	F6TZ-B*
1990-95	4.9/5.0/5.8/7.3/7.5	F6TZ-B F6TZ-A*	F5TZ-B*
1996	4.9/5.0/5.8/7.3/7.5	F6TZ-D F6TZ-A	F6TZ-B
		F6TZ-C	F7TZ-AA
1997	6.8	F6TZ-C	F7UZ-AA
		F6TC-C	F8UZ-CA
		F6TC-C	F81Z-EA
	4.2/4.6/5.4/7.3	F6TZ-C	F7TZ-AA
1998	6.8/7.3 4R100	F81Z-AA NON-PTO	F8UZ-AA
E4OD	6.8	F81Z-AA	F8UZ-BA
1998-2000	4.2/4.6/5.4	F6TZ-C	F7TZ-AA
2000-2001	H/J/L/M/K	F81Z-BA PTO	F81Z-BA
1999-2001	A/B/C/D/E/F	F81Z-AA NON-PTO	F81Z-DA

\*Replacement valve body as an assembly only

Figure 9

1996-and-later accumulator bodies have only three exhaust slots; earlier bodies have four.

If you install a 1995, four-slot accumulator body on a later unit, reverse oil will exhaust through the line modulator exhaust slot, causing a slip in reverse (figure 10).

Interchanges are a way of life for the transmission professional. Whether those interchanges cause you headaches or make you profits depends on you having the *Street Smarts* to recognize what works... and what won't.

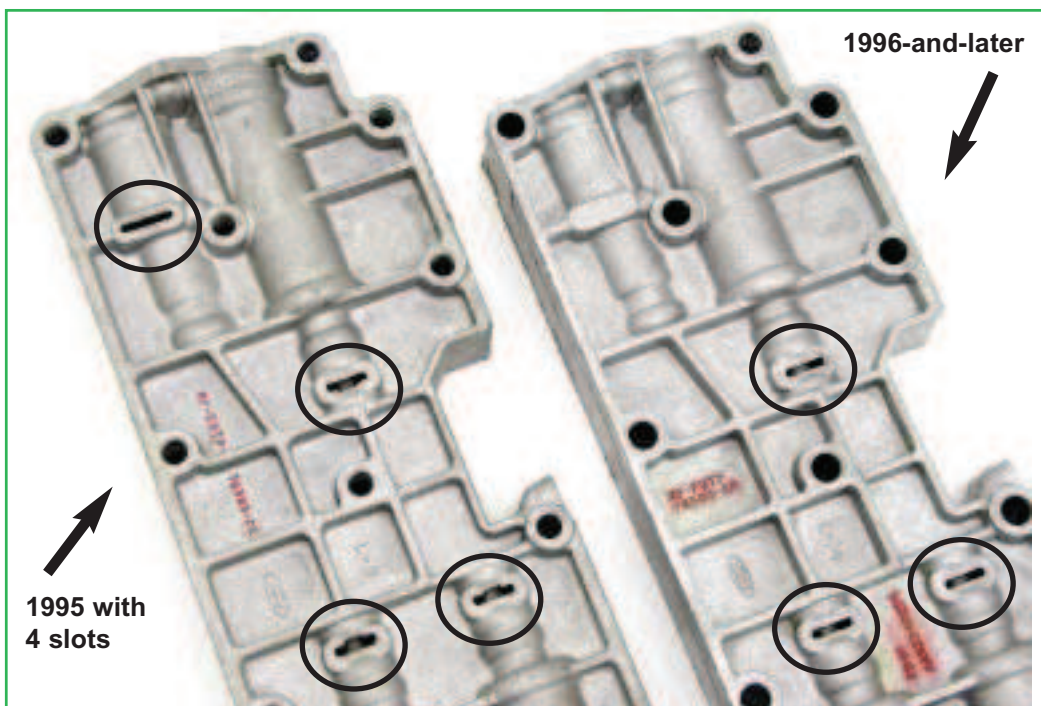


Figure 10