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# The New Honda 6-Speed Transmission: Bigger Is Better!



Figure 1

**H**onda has brought out a few new transmissions in recent years. All of these units carry on the tradition of “a stick shift built inside an automatic” transmission style.

Honda now has a 6-speed transaxle, and this very large unit carries on that tradition (figure 1). The new 6-speed is standard equipment on several Acura models and the 2014 Odyssey.

In this edition of *Fun with Transmissions*, we’ll take a ride through this unit and check out what separates

it from its predecessors. These units, while unique, aren’t something to be afraid of. Parts are readily available for them, and, when done correctly, they can be very profitable.

The first and most obvious difference from past units is the solenoid body (figure 2). This body houses seven solenoids: four permanently mounted PWM solenoids and three replaceable on/off solenoids. There are also three pressure switches on the solenoid body. These green-colored switches close

when pressure rises to 36 PSI and open back up when pressure drops to 31 PSI. They’re used as an input to the computer to control shift timing.

The PWM solenoids are clutch pressure control (CPC) solenoids A, B, C and D. These solenoids control shift and lockup feel. This unit doesn’t have CPC valves of any kind. Clutch apply and release oil flow through the clutch pressure control solenoids directly to the clutches, much like a 41TE.

The on/off solenoids are shift solenoid A, shift solenoid B and the line pressure solenoid A.

This is the first Honda transmission ever to incorporate a line pressure control solenoid of any kind. The line pressure control solenoid *doesn't* control the line pressure rise, but rather line pressure reduction. The line pressure solenoid turns on to reduce pressure during low engine load conditions. The purpose of lowering line pressure is to reduce friction in the unit and increase fuel mileage.

In addition to the solenoids and switches, the solenoid body has 11 short feed pipes connecting the solenoid body to the main control body. These tubes also have screens that face into the

solenoid body and must be clean and free of all debris for proper transmission operation. The end with the O-ring closest to the end of the tube faces out.

Failure to install the tubes correctly could lead to an improper seal in the bores (figure 3).

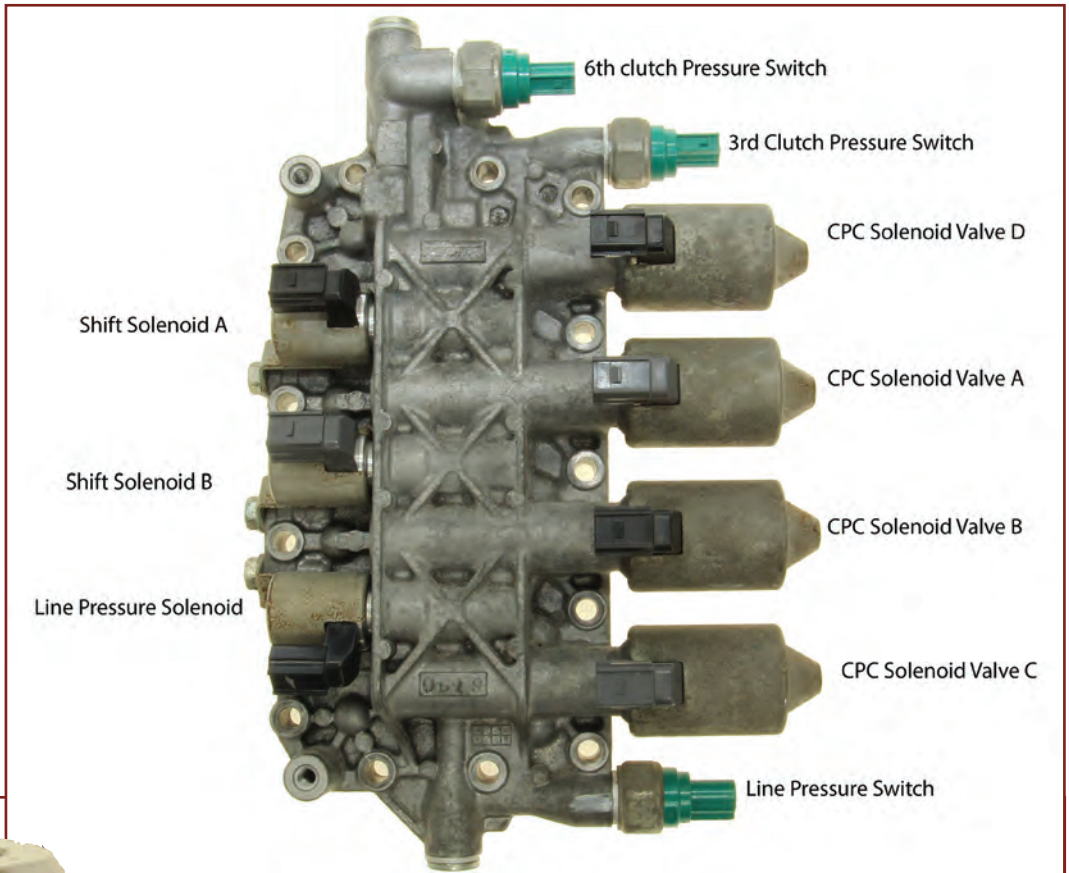


Figure 2

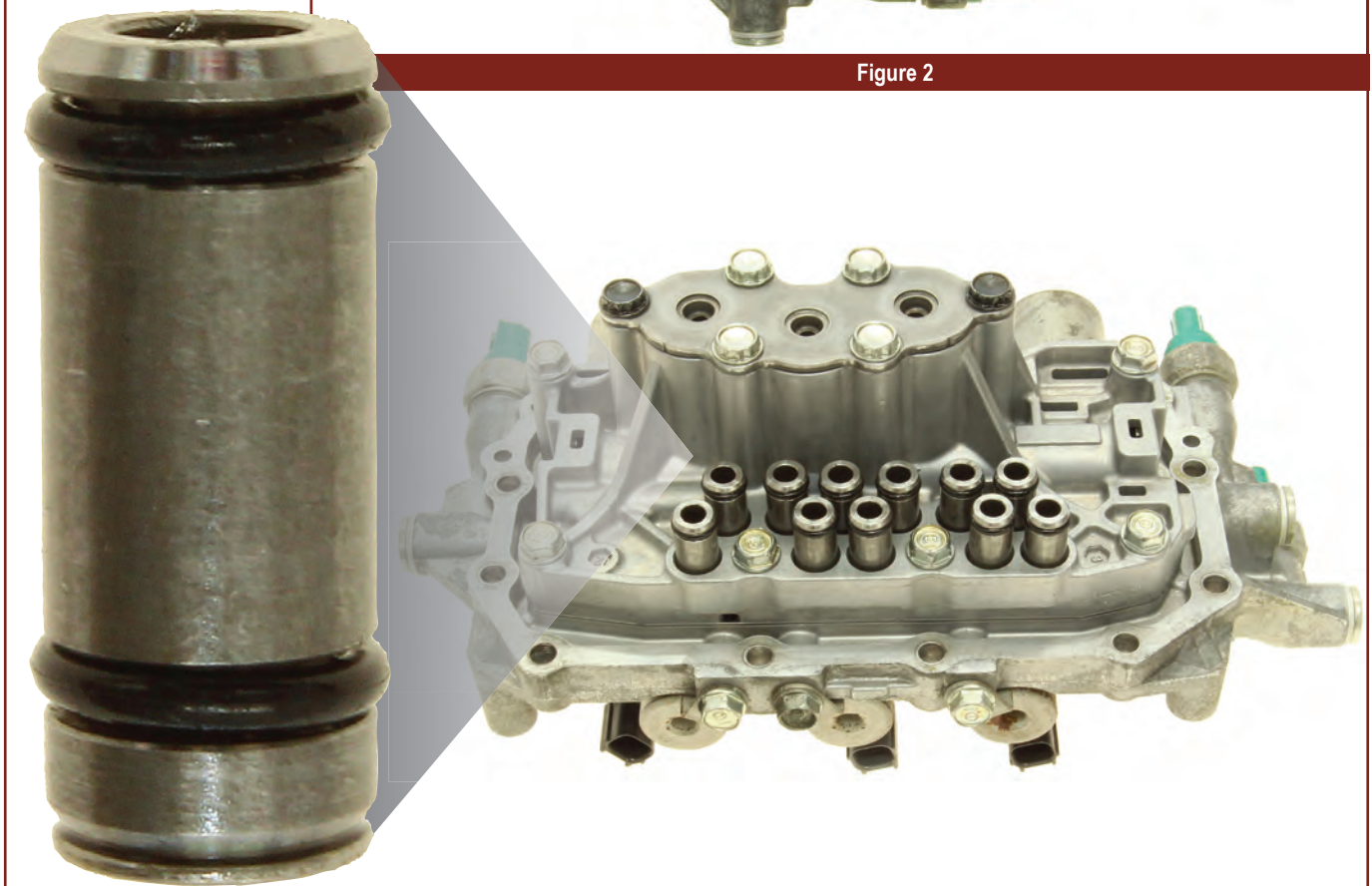


Figure 3



Figure 4

## Rebuild Techniques

After removing the main case from the bellhousing, the first thing to notice is the very large oil baffle (figure 4). This baffle keeps oil up on the gears where it belongs to prevent the lack-of-lube damage that has plagued other Honda units in the past.

It's extremely important to use the correct pullers to remove the bearings from the shafts. Pulling on the gear to remove the bearing will cause gear tooth damage every time (figure 5).

## As Easy as 1-2-3-4

Once the baffle is out of the way and the bearings are removed you can start to remove gears and shafts. Now, if you follow the factory manual for the next step, you'd have to have two people — and possibly a third — to lift the mainshaft, countershaft, secondary shaft, and the idler gear shaft out of the case at the same time. But there's a better solution:



Figure 5A



Figure 5B

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The shafts in this unit *don't* have to be removed from the main case together as the factory manual instructs. Instead, you can remove the shafts in four easy steps:

**Step one** — remove the second gear from the countershaft.

**Step two** — remove the mainshaft.

**Step three** — remove the third shaft.

**Step four** — remove the 2<sup>nd</sup> and 5<sup>th</sup> clutch drum from the secondary shaft (figure 6).

Now all that's left to do is grab the secondary shaft and countershaft and — *Viola!* — out of the case they come, along with the idler gear shaft. All the shafts are out of the case, with no strained muscles or busted knuckles.

### One Small Valve Body Note

The valve bodies are pretty standard Honda stuff, with fewer valves in the bodies. What makes the 6-speed different is that it's the first Honda to have a separate sleeve for the mainshaft sealing rings to ride in. This sleeve has always been part of the pressure regulator valve body (figure 7).

### New Style Torque Converter

In the past, Honda has used a torque converter clutch disc that's welded to the impeller and is held away from the cover by converter charge oil. The 6-speed unit is the first Honda to use a clutch drum (figure 8) much like a Mercedes converter clutch setup.

The converter is a pretty stout build. The clutch drum is part of the cover, and the piston has splines to prevent the piston from spinning in the housing (figure 9). There are two high-energy friction plates and two steel plates. There are no seals or sealing rings in the converter to seal the input shaft to the converter; instead, there are bushings in the cover to handle the

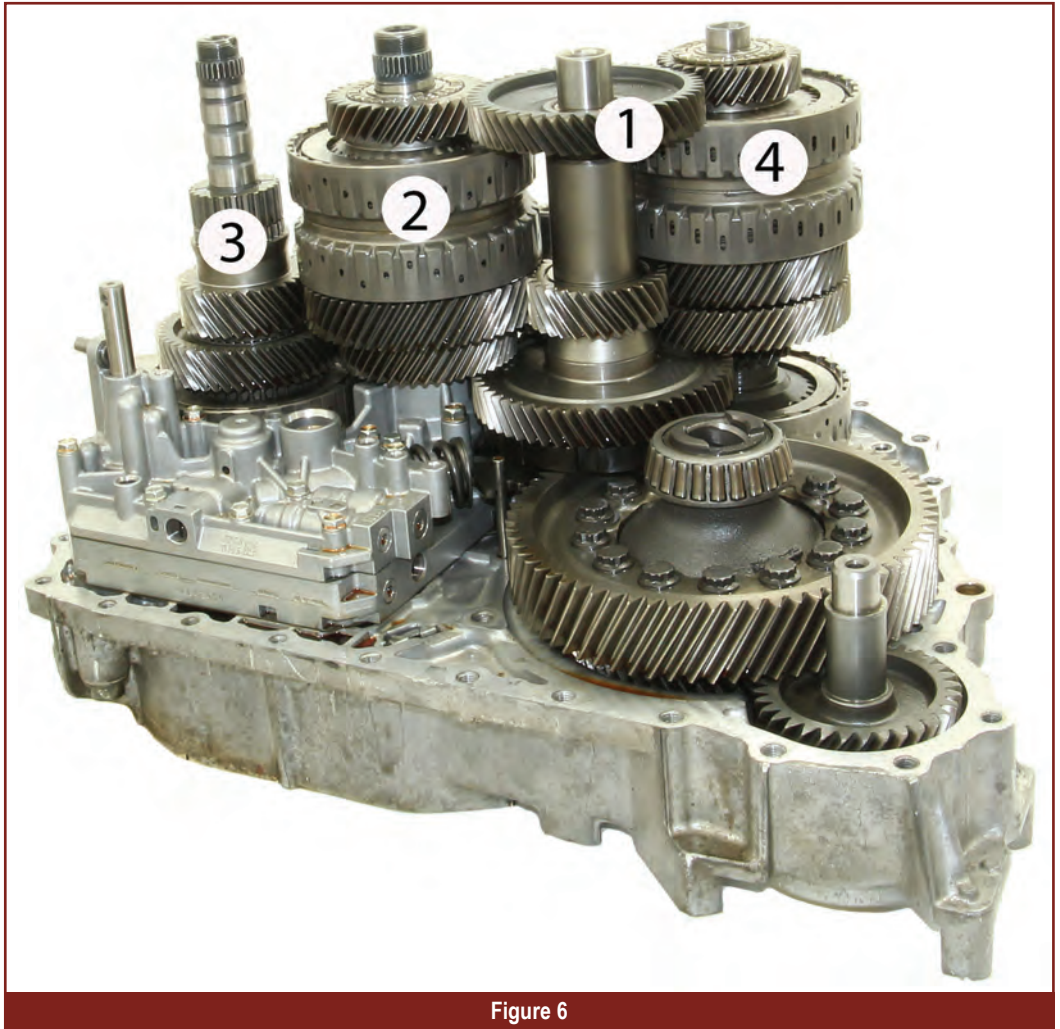


Figure 6

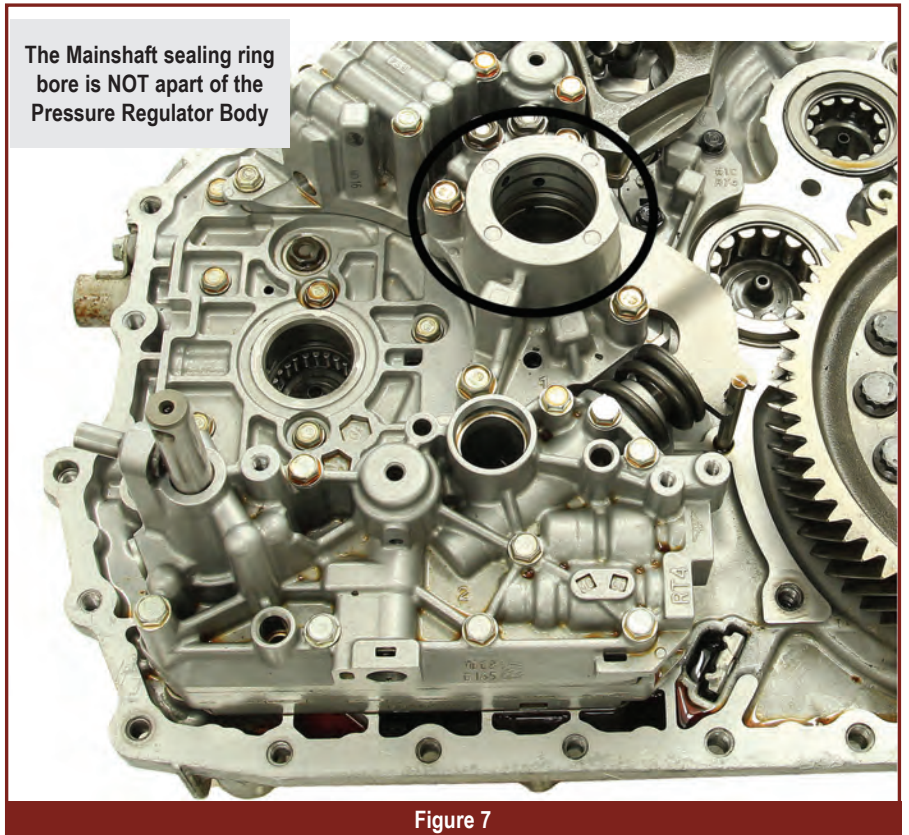
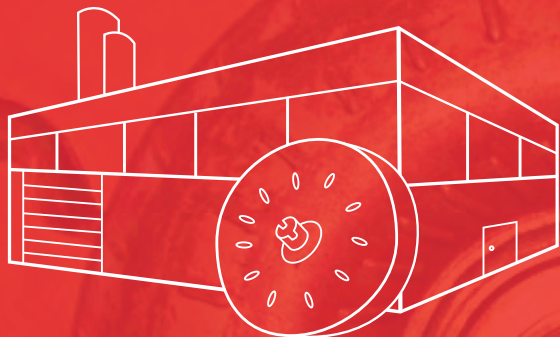


Figure 7

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input shaft sealing duties.

A note to torque converter rebuilders: The aftermarket has rebuild kits available, with clutches, steels, and O-rings for these converters. Pressure plates, bearings, and other hard parts are going to have to come from good used cores until further notice.

The solenoid body is radically different from anything Honda has done in the past with its permanently mounted solenoids, pressure switches, and valves. The good news is that Honda has kept them reasonably priced, so replacing the valve bodies will be fairly painless when that time comes.

The disassembly and assembly of the unit is much like its 5-speed predecessors; this unit just has more shafts to deal with. The removal of these shafts is as simple as 1-2-3-4. This is another case of working smarter, not harder, to save yourself from strained muscles and busted knuckles.

The Honda torque converter and torque converter slip codes have been a real issue for the industry lately. The new 6-speed torque converter, with its clutch drum design, is a stoutly built unit and should reduce the number TCC slip complaints that we've seen in the past.

All together, these designs add up to make a well-built unit. There'll be

plenty of opportunities to rebuild them, as they'll be starting to come out of warranty soon. These units will find their way into your shop in the not-so-distant future and now you'll be ready for the challenge.

The new Honda 6-speed is a big unit: More shafts, more clutches, more clutch drums, more gears, more of just

about everything. Even with more of everything, this 6-speed unit is just like most Hondas you've seen before. If you pay attention to the details and some of the key features of this unit, you can rebuild them profitably. And, let's face it: When you're making money, it's hard *not* to have *fun with transmissions!*



Figure 8



Figure 9



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