

# TORQUE

## Converter Tech Tips

### 2002-Up 5R55N/S/W Converter Noise: One Shop's Solution

By Ed Lee

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Converter shops around the country are seeing an increase in complaints about the late-model 5R55N/S/W converters; more specifically, the noise they make. These noises are described as a clattering sound, often compared with the sound made by the early E4OD multi-clutch converters. The sounds seem to be made by metal-to-metal contact, and all disappear when the TCC is applied.

Inside the converter are two points where metal contacts metal, each a possible point of origin for the noise. One contact point is between the four stands of the clutch and the damper assembly. The second contact point is between the teeth on the TCC piston and the mating teeth in the cover. When the converter is rotating, the four stands of the clutch are held against one side of the damper-cushion springs and do not move.

The piston-to-cover contact area, on the other hand, is suspended by six anti-rattle springs and is subject to impact.

The peened contact area on the teeth is more evidence that this is where the noise is originating (see Figure 1). Mark Mustard from Branting Industries in Colorado noticed that the noisy converters had little or no drag when he put an input shaft into the turbine splines and rotated the assembly. The angle of the contact between the six anti-rattle springs on the piston and the cover exerts a forward force on the piston. Over time, as the springs weaken, the drag on the clutch becomes less (see Figure 2).

Mark found that bending the springs back into shape increased drag and decreased the noise. Unfortunately, this is a short-term fix, because the springs soon return to their weakened state.

Another shop even had a way of predicting whether a converter would make noise. A torque wrench reading in pound-inches was attached to an input shaft. When the input shaft was inserted into the turbine splines and rotated, the drag on the clutch could be measured. If the drag was 15 lb.-in. or more, the converter probably would not make noise. If the drag was less than 15 lb.-in., the possibility that the converter would be noisy increased as the drag decreased.

Steve Barr from Pat's Converters decided that the best solution was to eliminate the piston-to-cover tooth contact altogether. He removed the 5R55N/S/W damper from the turbine by removing the 10 rivets from the turbine hub. Then he replaced the damper assembly with one salvaged from a three-tab AX4S/N converter. This allowed him to use the AX4S/N

Figure 1



Impact loads raise an edge on the teeth.

Figure 2



The six anti-rattle springs become weak over time.

**Figure 3**

piston, which does not rely on spline contact with the cover to prevent rotation. The AX4S/N piston rotates with the damper assembly. The bore of the AX4S/N piston had to be machined to the dimension of the 5R55N/S/W piston to mate to the 5R55N/S/W turbine hub. Steve then bonded a 0.070-inch-high carbon friction ring to the piston (see Figure 3).

The larger diameter of the AX4S/N piston gave extra clamping force to the piston.

For an extra measure of holding power, the original lockup surface was removed from the cover and the

**Figure 4**

cover was machined for an even wider clutch surface (see Figure 4).

To date, Steve has been doing this modification for more than four months without a single problem or complaint. **TD**

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