

DOCTOR DOCTOR...It hurts When I Shift



by Randall Schroeder

Dodge's AS68RC; the New Kid in Town

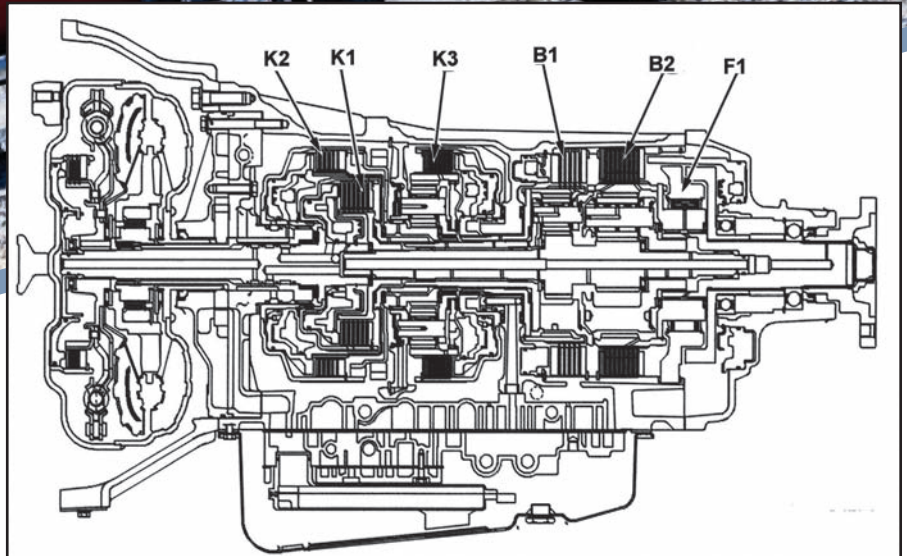
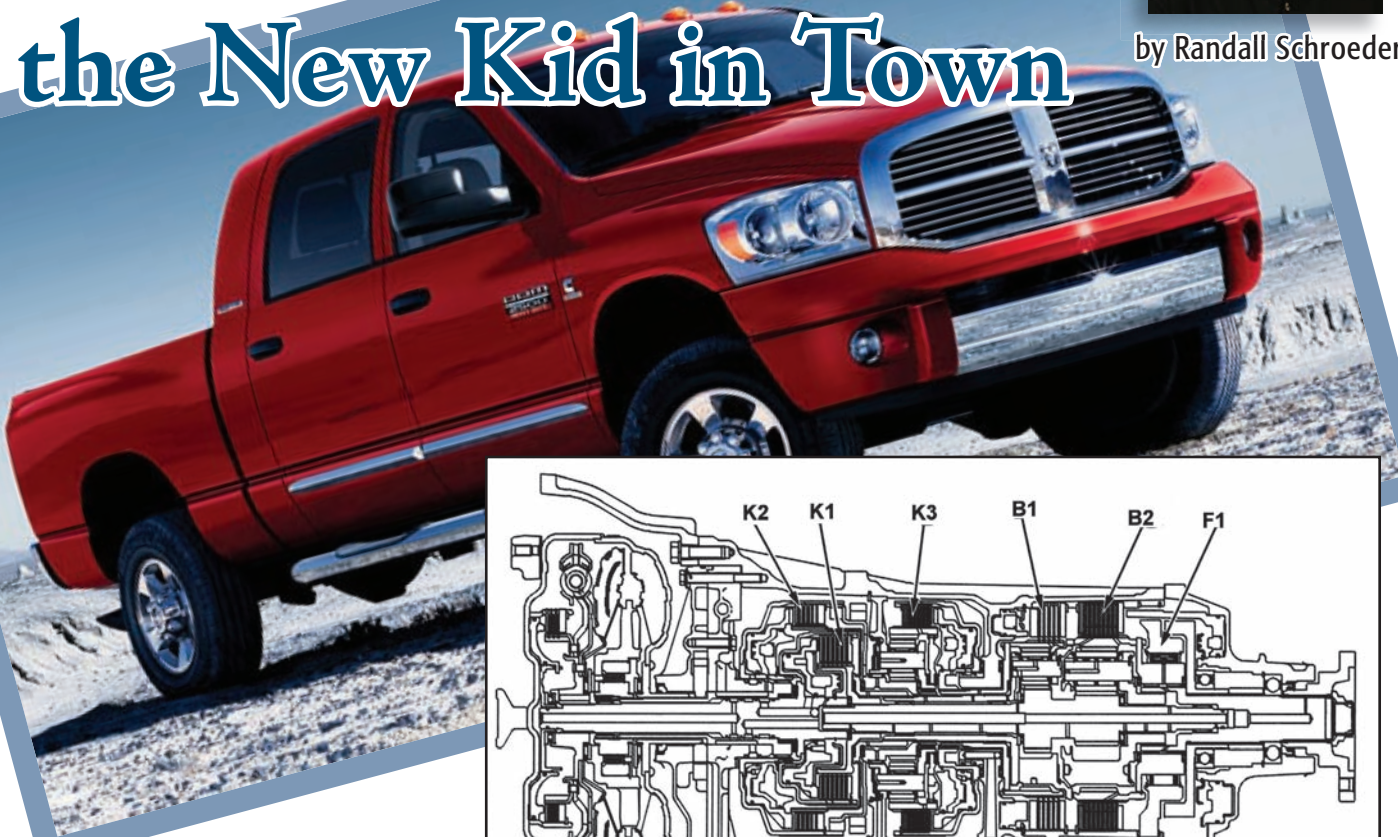


Figure 1

When the gene pool changes in the Dodge truck line, it's important to keep up with how the current model trucks are driving those big loads down the road. The RE transmissions have become a part of history as of 2008. The passenger and work truck lineup that Dodge now uses have two different automatic transmission packages:

- AS68RC — Used in the cab and chassis field only (3500 series and larger)
- 68RFE — Used in the 1500 and 2500 series trucks

In this issue of *Doctor, Doctor*,

we'll look at the AS68RC, and we'll discover some important points to keep in mind when dealing with this massive new unit.

Here's the model designation for this unit: See Chart 1 below.

So the AS68RC is a 6-speed, rear wheel drive automatic transmission, with a 26,000 lb. gross capacity rating. With a rating this high, the torque

converter and gear train have to be extremely heavy duty. This unit is capable of standing up to 730 lbs. of input torque, although Dodge rates the 3500 truck for 565 lbs. of input torque.

When we say heavy duty, let's keep it simple: The unit weighs in at 400 lbs. without the torque converter. With the torque converter loaded and full of oil, it adds about another 100 lbs.

AS68RC				
AS	6	8	R	C
Aisin Seiki	Six Forward Speeds	Relative indication of torque capacity (0 is low, 9 is high)	Rear Wheel Drive	Commercial Application

Chart 1

Which means be careful when you get this unit on the bench!

Similar to its smaller, rear wheel drive partner (RFE), the AS68RC is, for the most part, a clutch-to-clutch shifted transmission. But in drive range 1st gear, it does use a one-way sprag (F1) to launch. For engine braking while in 1st gear range, you'll need to place the shifter in manual 1. In manual 1, the B2 brake applies to provide engine braking, and the extra strength needed to prevent damage to the F1 sprag. The B2 brake prevents the sprag from freewheeling.

All other shifts (2nd, 3rd, 4th, 5th and 6th) are clutch-to-clutch shifts and will automatically provide a form of engine braking in each range. The mechanical components of this transmission consist of (figure 1):

- Three sets of driving clutch packs — K1, K2 and K3
- Two sets of holding brake packs — B1 and B2
- A one-way clutch — F1
- Three planetary gearsets — P1, P2 and P3
- An oil pump
- A torque converter with multi-disc lockup clutch (apply clutch pack, similar to the NAG1/722.6)
- A valve body
- Linear solenoids
- On/Off solenoids

The AS68RC has a standalone module (TCM) located inside the cab, to the left of the steering column (figure 2). Communication between the engine control module (ECM) and the totally integrated power module (TIPM) with the TCM is done through the CAN-C Bus. To diagnose, your scan tool must be equipped with the latest software.

Let's look at the ranges of shift operation. Each position of the shifter has specific functions: See Chart 2 at right.

Here are the clutch applications and gear ratios: See Chart 3 at right.

This unit also includes Tow/Haul and O/D Cancel features. The button to signal or control these features is mounted onto the end of the column shifter (figure 3). One press of the button and you're in the Tow/Haul mode. Two presses and you've canceled over-

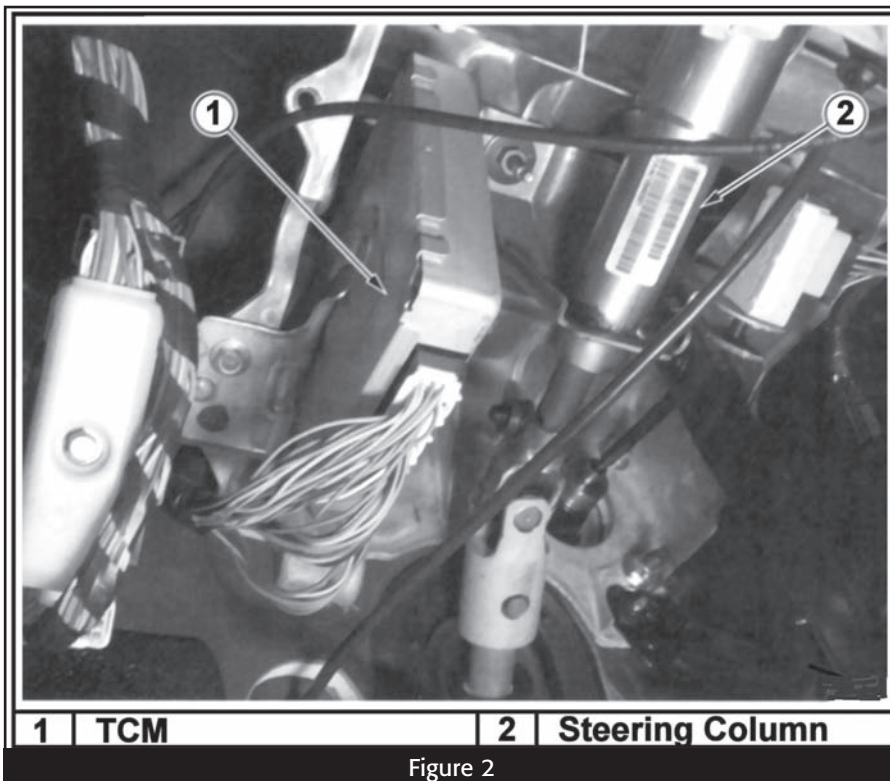


Figure 2

Shift Lever Position	Description
P	Park and starting
R	Reverse gear
N	Neutral and starting. No power transmission takes place. The vehicle can be moved freely. Allows starting engine with the vehicle in motion.
D	All six forward gears are available (O/D not canceled and Tow/Haul not requested, off)
3	Upshifts only to 3 rd gear. Provides engine braking.
2	Upshifts only to 2 nd gear. Provides engine braking.
1	Drives only in 1 st gear. Provides maximum engine braking.

Chart 2

Shift Lever Position		Gear Ratio	Driving Clutches K1 K2 K3			Holding Clutches B1 B2 F1		
P	Park						A	
R	Reverse	3.54			A		A	
N	Neutral						A	
D	1 st	3.74	A					A
	2 nd	2.00	A			A		
	3 rd	1.34	A		A			
	4 th	1.00	A	A				
	5 th	0.77		A	A			
	6 th	0.63		A		A		
Man 1	1 st Engine Braking		A				A	A

Chart 3

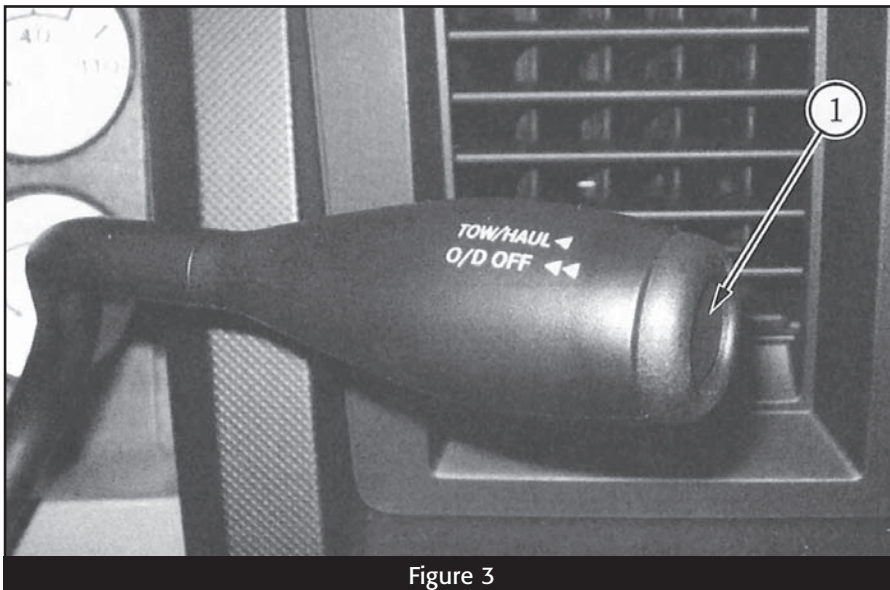


Figure 3

The factory recommendation for service intervals is every 30,000 miles. The torque converter on the AS68RC fills in both park and neutral, so it'd be a good idea to fill it with the selector in park, to prevent any unexpected movement.

drive ranges.

Tow/Haul Mode: 6th gear is disabled and upshifts are delayed. Shifts into 5th gear are still allowed under steady cruise conditions. Closed throttle downshifts (for improved engine braking) may occur during steady braking. Simply put, if you're going down a grade, and you lift the throttle or are even braking slightly, the computer may downshift the transmission on its own, to help slow the vehicle.

O/D Off Mode: Prevents shift-

ing into 5th and 6th gear (no overdrive ratios). This switch defaults to 6-speed operation: Whenever you cycle the ignition switch off and back to run, the system defaults to 6-speed operation. To activate Tow/Haul or O/D Off modes, you'll need to press the switch each time you start the engine.

Servicing the Transmission

The AS68RC requires a special

blend of fluid that's designed specifically for this unit. The bottles are clearly marked as Mopar AS68RC Automatic Transmission Fluid. It's available in quarts and gallons, and is the only fluid that should be used in this transmission (figure 4). Here are the fluid capacities:

- Overhaul Capacity — 14.2 liters (15.0 quarts)
- Service Fill — 6.8 liters (7.2 quarts)

The factory recommendation for

service intervals is every 30,000 miles. The torque converter on the AS68RC fills in both park and neutral, so it'd be a good idea to fill it with the selector in park, to prevent any unexpected movement.

One of the nice features of the AS68RC is that it's equipped with a dipstick for checking the fluid level. But it does require a temperature-compensated checking procedure. Here's how to check and adjust the fluid level:

- Vehicle must be on level surface, in park, with the engine running.
- Cycle the shift lever through all gear ranges, pausing in each range for a few seconds.
- Use a scan tool to check the transmission temperature.
- Adjust fluid level as necessary.

Use the chart (figure 5) to determine proper fill. Best results are obtained at temperatures above 60°C (140°F).

The AS68RC is a unit that's been proven to hold up under extreme stress and load conditions. Make sure you attend the class that David Skora will be presenting featuring rebuild and diagnostic procedures on the AS68RC at this year's Expo, October 30th through November 2nd at the Las Vegas Hilton.

Keep your eyes open to watch for the many changes taking place in this industry. These are exciting times for transmission rebuilders: The powertrain and transmission side of this industry are experiencing unprecedented technical evolution. Until next time, keep those transmissions in good working health!

The Doctor...

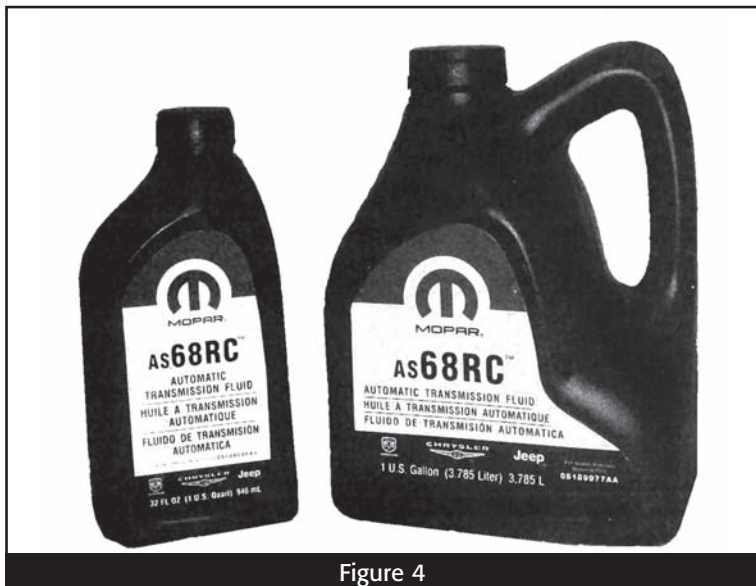


Figure 4

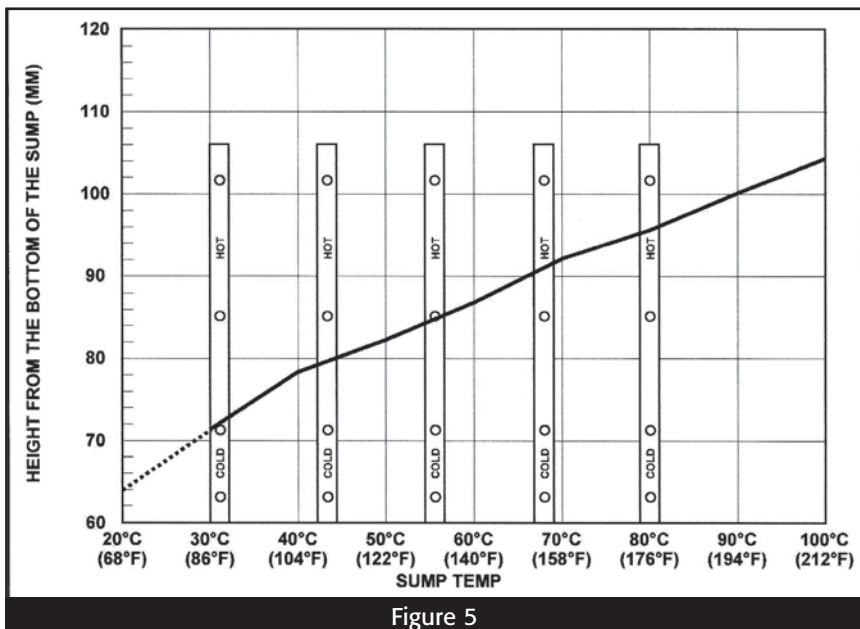


Figure 5



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