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# Kia Now Has a Trans All Its Own



Figure 1

**T**he A6LF1 transaxle is the first six-speed automatic transmission manufactured by Kia (figure 1). Kia now joins Mercedes Benz as the only other import company to develop and manufacture its own automatic transmission.

According to Kia, the company secured 300 patents during the development of this transmission. The 6-speed automatic transmission, applied to the

new Sorento in Korea, has 62 fewer parts, is 41mm (1.6") shorter, and 12kg (26.5 pounds) lighter than the 5-speed. It's one of the most compact six-speed automatic transmissions found in today's market.

The new 6-speed transmission improves gas mileage 10%, is 14% faster accelerating zero to 100 km/h (0 to 62 MPH; 10.0 seconds), and has 24% quicker passing performance 60

km/h to 100 km/h (37 to 62 MPH; 5.0 seconds). These figures were obtained from a Sorento diesel R-2.2 2WD.

The 6-speed automatic transmission will also be available in the Mohave (Borrego), Opirus (Amanti) and Grand Carnival (Sedona) models. Based on Engine size there are three versions of this transmission: the A6LF1/2/3, A6MF1/2 and A6GF1.

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The cutaway view of the transmission (figure 2) shows the clutch layout.

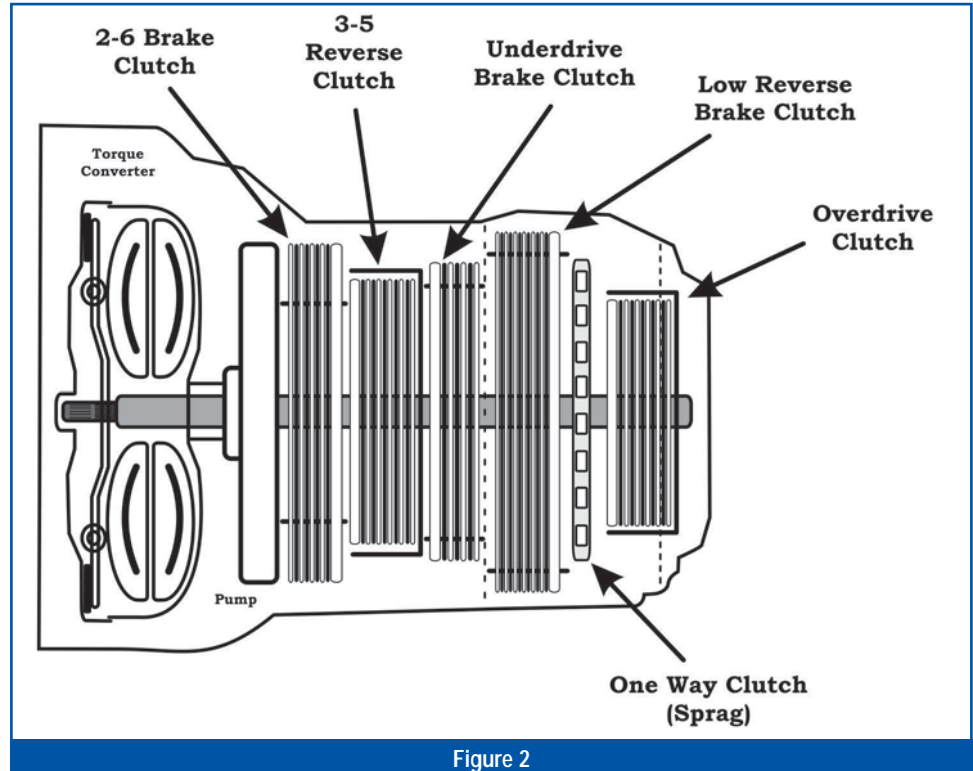


Figure 2

The cutaway view of the transmission (figure 2) shows the clutch layout. When used with the application chart, it allows you to determine which clutches apply through all six speeds (figure 3).

Although this transmission is just now hitting the shops, one known problem is the inner underdrive piston lip seal wears prematurely (figure 4). This causes a delay or slip in drive. This is similar to low clutch lip seal wear found in the 1999-on Subaru 4EAT Phase II, except this drum may be too rough to sand and must be replaced (figures 5 and 5A page 22).

There are 8 solenoids used in the A6LF1 transmission. They consist of:

- 2 normally low, variable force solenoids
- 4 normally high, variable force solenoids
- 2 on/off normally low solenoids

Gear	Clutch		Brake			O.W.
	35R	O/D	2-6	U/D	L/R	Low
P/N					X	
R	X				X	
D1				X	O	X
D2			X	X		
D3	X			X		
D4		X		X		
D5	X	X				
D6		X	X			

O = Speeds below 5 km/h (3 mph)

Figure 3

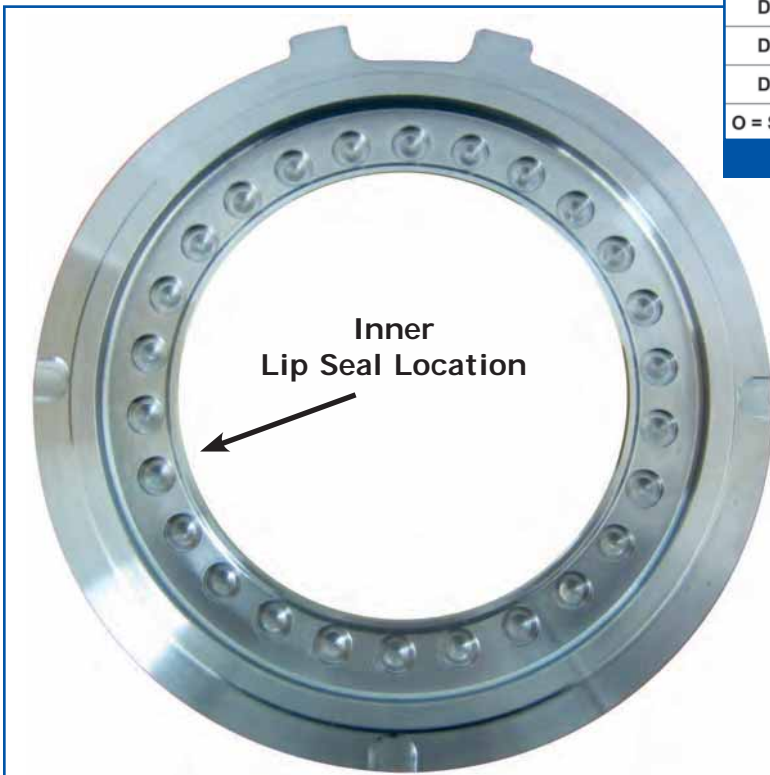


Figure 4

Although this transmission is just now hitting the shops, one known problem is the inner underdrive piston lip seal wears prematurely (figure 4).

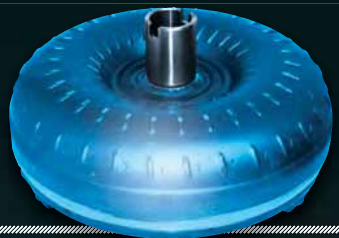
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Figure 5



Figure 5A

**IMPORTANT: Many of the variable force solenoids — both normally low and normally high — have the same color connector.**

Shift solenoid A (SSA) and shift solenoid B (SSB) are the on/off, normally low (N/L) solenoids. When the solenoid is off, pressure in the circuit is low. When the solenoid is energized (system voltage), pressure in the circuit is high (71 PSI). The solenoid resistance is about 10–11 ohms. Look for solenoid identification and solenoid apply chart in figures 6 and 7.

IMPORTANT: Many of the variable force solenoids — both normally low and normally high — have the same color connector. But each solenoid has a specific part number stamped into them. To avoid crossing the solenoids, mark each solenoid location prior to removal, so you can be sure to get them back in their original locations. If you have your cell phone handy, take a picture of the solenoid locations for reference during reassembly.

Stay tuned for future articles and seminars on Kia's very first transmission that's all its own.

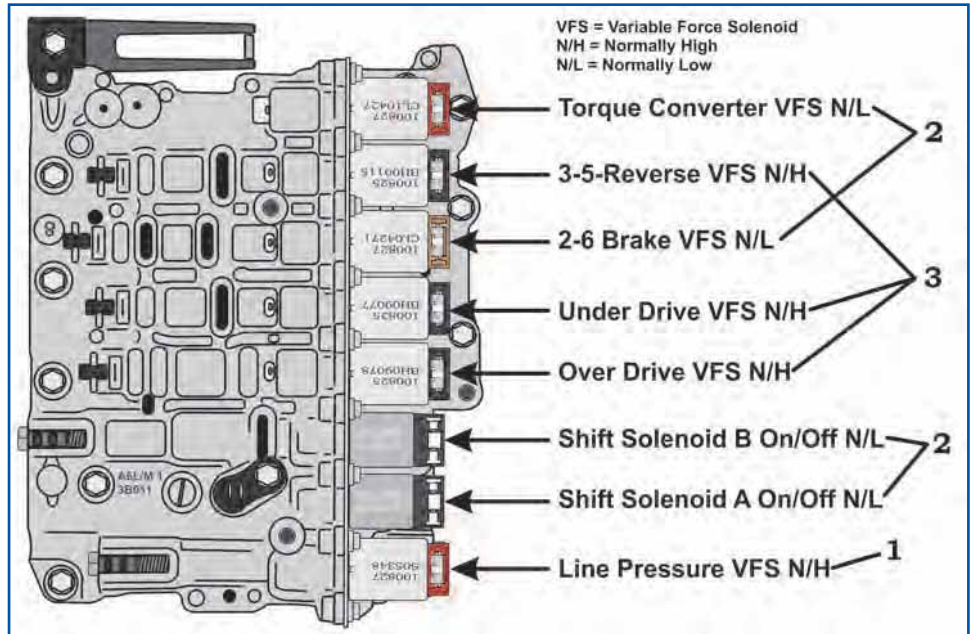


Figure 6

Solenoid Gear	SS A On/Off	SS B On/Off	UD VFS N/H	OD VFS N/H	35R VFS N/H	2-6 VFS Brake N/L	Lockup N/L	Line Pressure N/H
N / P	X		X		X			Varying
1	O			O	X			Varying
2				X	X	X	Varying	Varying
3		X		X			Varying	Varying
4					X		Varying	Varying
5		X	X				Varying	Varying
6			X		X	X	Varying	Varying
L	X				X			Varying
R	X	X	X					Varying

O = Vehicle speeds above 8 km/h (5 mph)

Figure 7

# General Specifications

Torque Converter type: 3 element, 1 stage,  
2 phase type.  
Torque Converter size: 236 mm (9.3")  
Oil pump system: Fixed rotor design;  
trademarked by Kia as Parachoid  
Friction elements: 2 clutches; 3 brakes;  
1 one-way clutch  
Planetary gears: 3  
Fluid pressure balance pistons: 3  
Accumulators: 4  
Solenoid valves: 8 (6 variable force; 2 on/off)  
Shift lever positions: 4 ranges (P, R, N, D)

Oil filter: 1 internal (no external access; the  
transmission case has to come apart to reach the  
filter).  
Transaxle fluid type: SK ATF SP-IV, MICHANG ATF  
SP-IV, NOCA ATF SP-IV, Hyundai Genuine ATF SP-IV  
or other brands meeting Kia's specifications.  
Transaxle fluid capacity: 7.8L (2.06 U.S. gallons,  
8.24 U.S. quarts, 6.86 Imperial quarts)  
Sealant: rear cover, torque converter housing and  
valve body cover: LOCTITE FMD 546 or THREE-  
BOND TB1281B

## Applications

### Hyundai

2009-12 Avante/HD/MD FWD L4 1.6L/1.8L .....	A6GF1
2010-12 Avante/MD F/AWD L4 2.0L .....	A6MF1
2011-12 Azera FWD V6 3.3L.....	A6LF1
V6 3.8L.....	A6FL2
2012 Elantra FWD L4 1.6L.....	A6GF1
F/AWD L4 2.0L.....	A6MF1
2009-12 Grandeur FWD L4 2.4L V6 2.7L .....	A6MF1/2
V6 3.0L/3.3L/3.5L/3.8L.....	A6LF1/2/3
2011-12 i30 FWD L4 1.2L/1.6L/1.8L/2.0L .....	A6MF1
2010-12 ix35 FWD L4 2.0L/2.4L .....	A6MF1
2009-12 Santa Fe F/4X4 L4 2.0L V6 3.3L/3.5L .....	A6LF2/3
L4 2.4L/2.7L.....	A6MF1/2
2009-12 Sonata FWD L4 2.0LV6 3.5L .....	A6LF2
F/AWD L4 2.0I/2.4L.....	A6MF1/2
2009-12 Tucson ix F/4X4 L4 2.0L .....	A6FL1/2
L4 2.0L/2.4L .....	A6MF1
2011-12 Veracruz F/4X4 V6 3.0L .....	A6FL3
2011-12 Verna FWD L4 1.6L.....	A6MF1

### Kia

2011-12 Carens FWD L4 1.7L/2.0L.....	A6MF1/2
L4 1.6L .....	A6GF1
2011-12 Forte FWD L4 1.6L.....	A6GF1
L4 1.8L/2.0L/2.4L .....	A6MF1/2
2010-12 K5/K7 FWD L4 2.0L/2.4L V6 2.7L.....	A6MF1/2
2010 Lotze FWD L4 2.0L/2.4L .....	A6MF1/2
V6 3.5L.....	A6LF2
2009-11 Opirus (Amanti) FWD V6 2.7L .....	A6MF2
V6 3.3L/3.8L.....	A6LF1/2
2010-12 Optima F/AWD L4 2.0L/2.4L.....	A6MF1
2012 Pride FWD L4 1.6L.....	A6GF1
2009-12 Sorento F/4X4 L4 2.0L/2.2L V6 3.3L/3.5L .....	A6LF1/2/3
L4 2.4L V6 2.7L.....	A6MF2
2011-12 Soul FWD L4 1.6L/2.0L.....	A6MF1 or A6GF1
2010-12 Sportage F/4X4 L4 2.0L/2.4L.....	A6MF1
L4 2.0L .....	A6LF1/2

