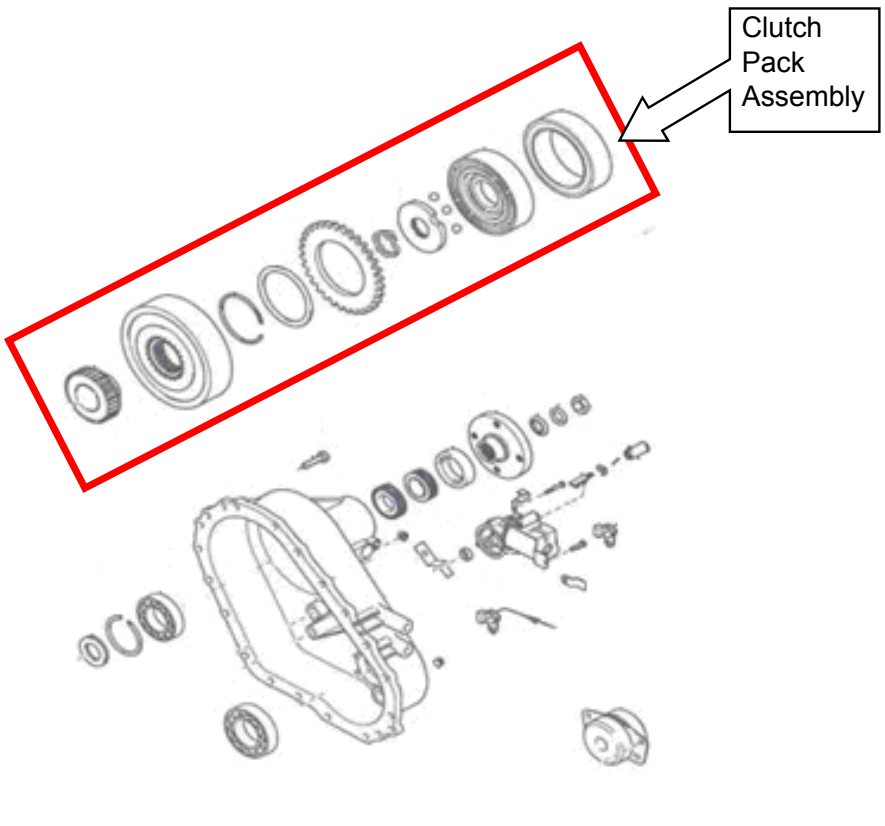
KIA MOTORS	VOLUME 3	GROUP **Trans/Drive**	MODEL **Sorento (BL)**
		NUMBER **022**	DATE **November 2008**

TECHNICAL SERVICE BULLETIN

SUBJECT:

2003-2006 SORENTO (BL) TORQUE ON DEMAND (TOD) TRANSFER CASE

This service bulletin provides information related to replacing the internal transfer case clutch pack assembly and related parts. Some 2003~2006 MY Sorento vehicles equipped with Torque On Demand (TOD) may experience a light shudder condition (when the vehicle is cold in the AM and/or late PM) during tight parking maneuvers while accelerating. To correct the customer concern, please follow instructions exactly as described in this service information. ***Do not use Dexron in the transfer case*. Use only P/N: UB080 CH031.**



Partial exploded view of Transfer Case Assembly

File Under: Body

Circulate To: [X] **General Manager** [X] **Service Manager** [X] **Parts Manager**

[X] **Service Advisor(s)** [X] **Technician(s)** [X] **Body Shop Manager** [X] **Fleet Repair**

SUBJECT:

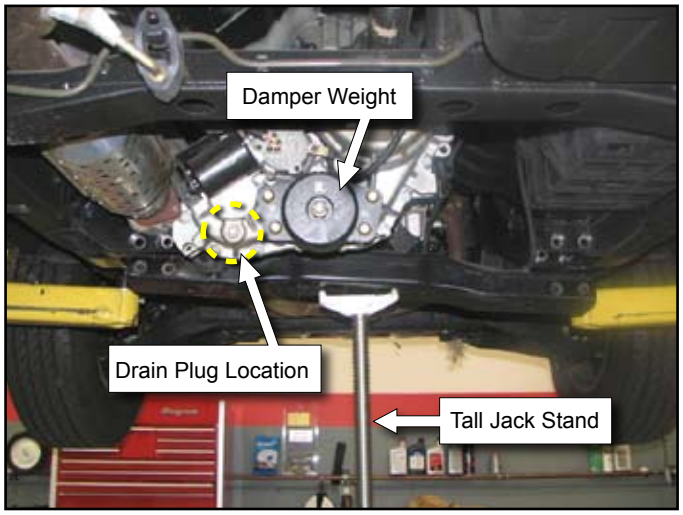
2003-2006 SORENTO (BL) TORQUE ON DEMAND (TOD) TRANSFER CASE

1. Disconnect the battery negative battery cable.

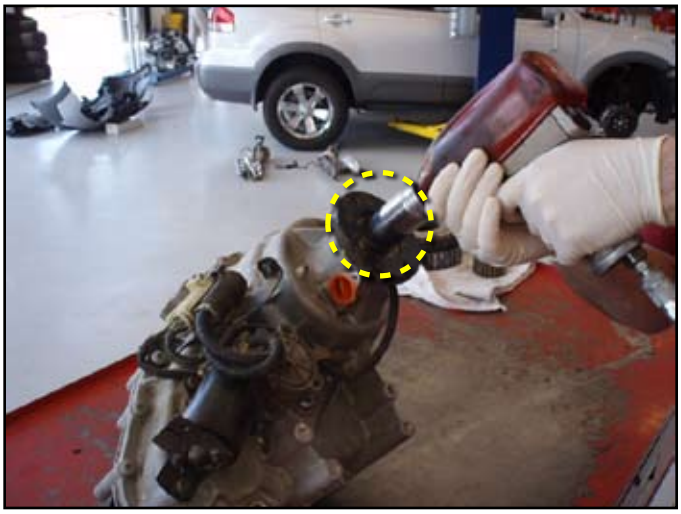
2. Raise and properly support the vehicle.

3. Remove the transfer case drain plug and discard. Drain the transfer case fluid.

   a) Use the appropriate electronic service information for transfer case removal.



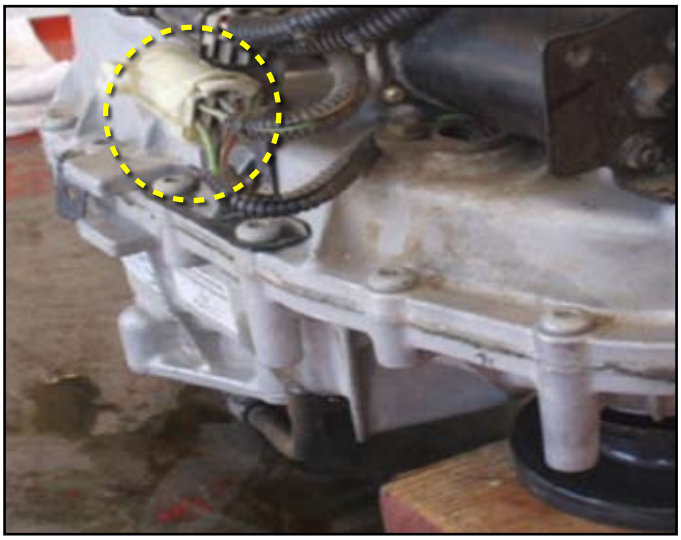
4. Remove the 30mm rear hub flange retaining nut.



***NOTICE**

Use a clean working surface when opening the transfer case assembly to prevent foreign debris from entering which may cause lubrication surface damage and may be subject to warranty chargeback.

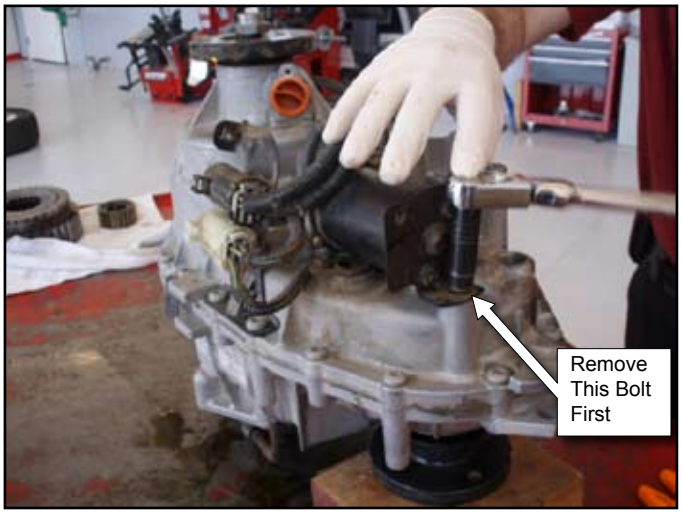
Note location of wire harness bracket for re-assembly purposes.



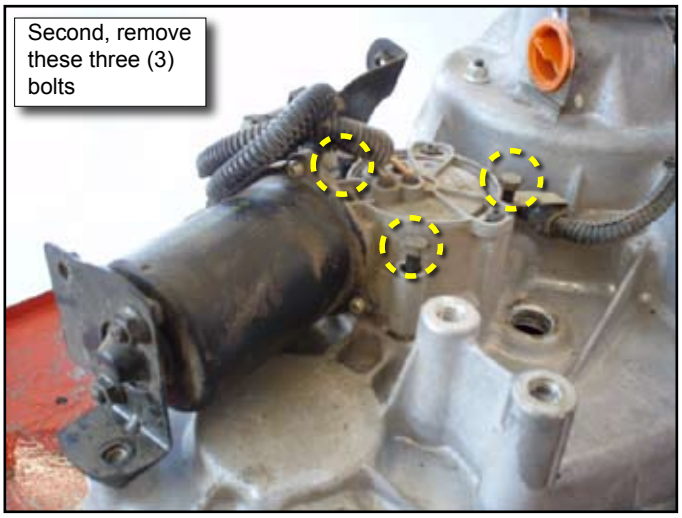
5. Using a 4X4 piece of wood, the transfer case can be serviced as shown on a flat surface.

6. Remove transfer case motor assembly:

   a) Loosen and remove the 6 mm bolt on the retaining bracket on the shift motor assembly.



7. Remove the three (3) bolts around the head area of the shift motor.



8. After removing the four (4) retaining bolts, gently pry the motor straight-up from the transfer case.

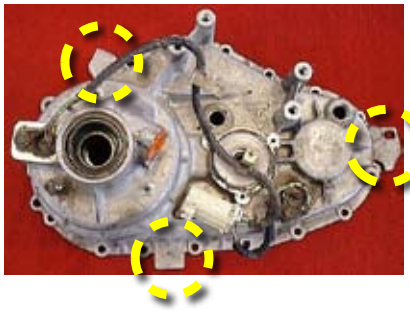
   a) After the motor is removed clean the RTV from the shift motor mating surfaces.

9. Remove all the torx bolts from the transfer case mating area.

10. Remove the flange washer and O-ring seal.

11. Remove the output shaft flange from the transfer case. Remove rear damper weight if necessary.

12. Gently pry the case halves apart using the designed separation tabs as shown.



Three (3) designated pry areas

13. Carefully lift the case half straight upward to separate the case assembly.

⚠ CAUTION

<u>Do not twist or add side-way pressure</u> to the case during separation as shaft damage can occur requiring shift shaft replacement.

Lower pin can break if instructions are not followed.

13. *(Continued)* Case assembly is now separated.

14. Remove the output shaft bearing.

***NOTICE**

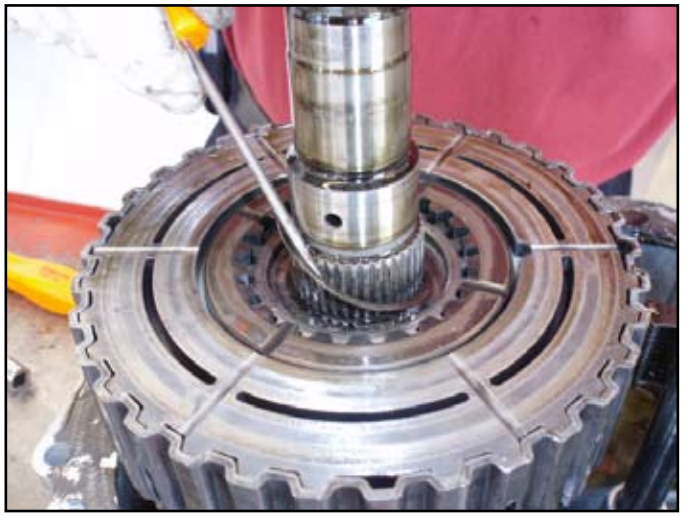
Note the direction of the bearing.

15. Remove the cam coil housing cover.

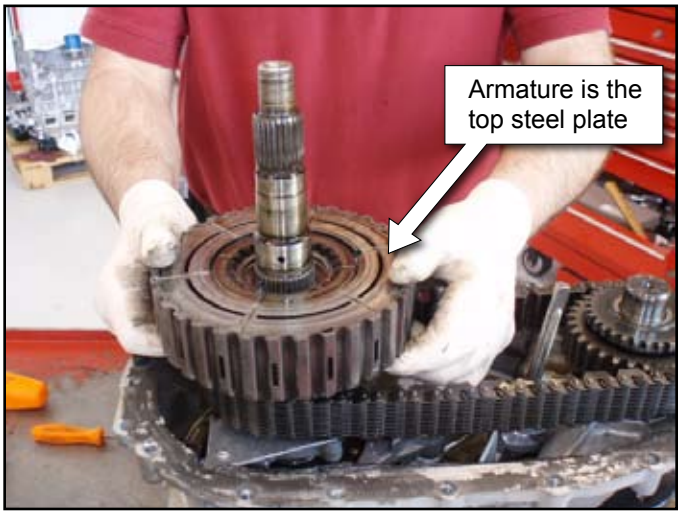
16. Remove the cam and three (3) steel balls.

17. Remove the wave-spring.

18. Remove and discard the snap-ring as shown.



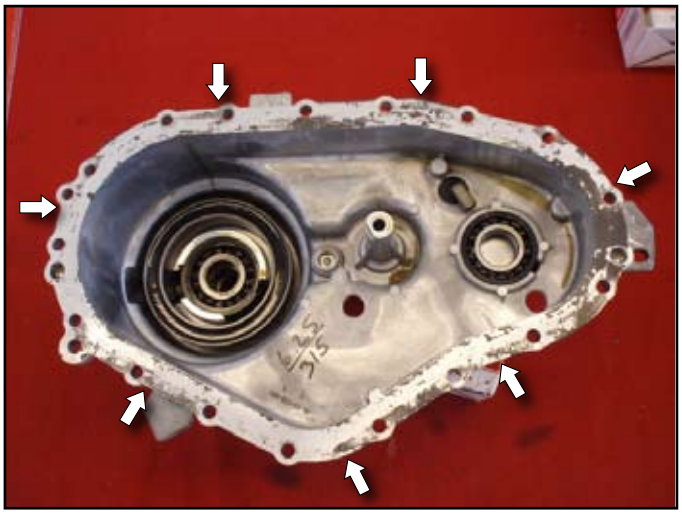
19. Lift and remove the clutch pack assembly from the transfer case.



***NOTICE**

The armature will need to be transferred to the new replacement clutch pack.

20. Clean the two (2) transfer case mating halve surfaces; keep all RTV debris from entering the case during the cleaning process.



***NOTICE**

Do NOT use solvents to clean inside the case; the use of clean shop towels to wipe the debris should be sufficient.

⚠ WARNING

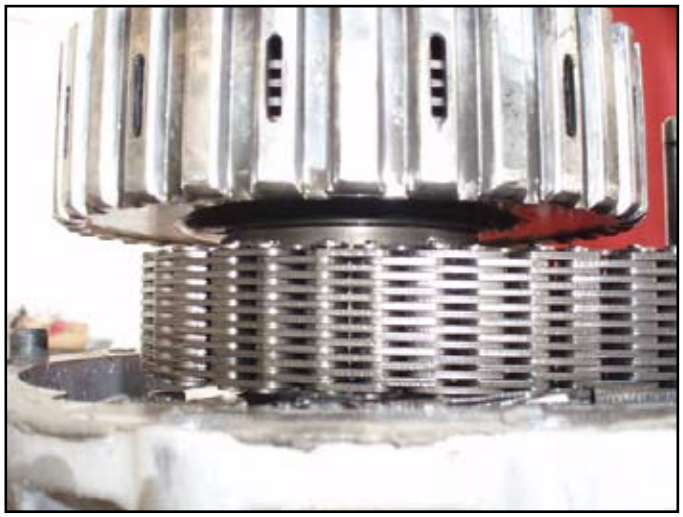
The use of surface conditioning disc can cause oil leaks. The sealing surface must maintain a slight rough sealing surface for the RTV to adhere too. The preferred method is to use slow speed cordless drill with wire wheel attachment. Repeat oil leaks can be subject to warranty charge-backs.

⚠ WARNING

Do NOT use this style surface conditioner, as damage could result.

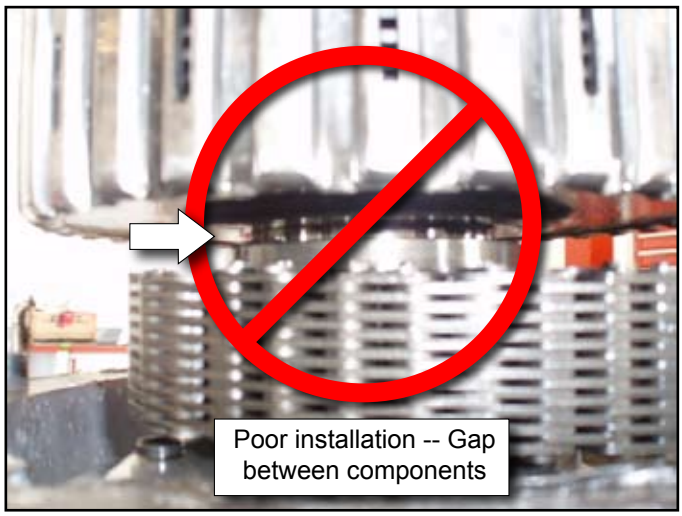
21. Install the new replacement clutch pack assembly.

This photo shows <u>proper</u> installation.



This photo shows improper installation;

Rotate shaft until proper mesh can occur and drum aligns with gear.



22. Install new replacement snap-ring.

***NOTICE**

The armature plate should be 'Flush' with the outside drum surface. If the armature plate is not flush, the clutch pack assembly is assembled incorrectly. Refer to clutch pack configuration on page 13.

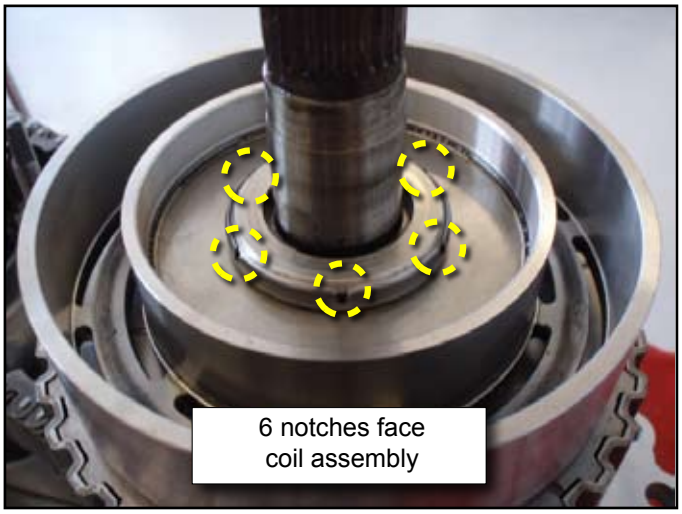
23. Install the wave-spring.

24. Install the cam with three (3) steel balls.

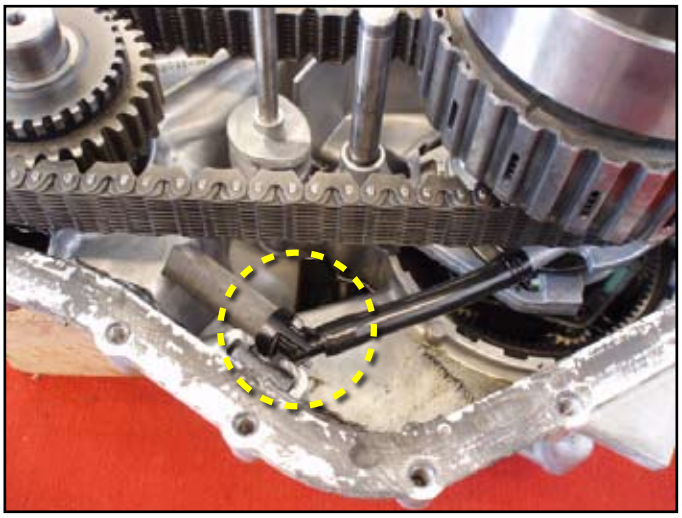
25. Install the cam coil housing and install bearing with notches pointing upward. Spin housing until it rests in the center location.

Lower bearing side

Upper bearing side - 6 notches around circumference as identification: faces up toward electrical coil.

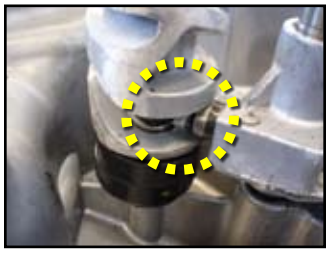


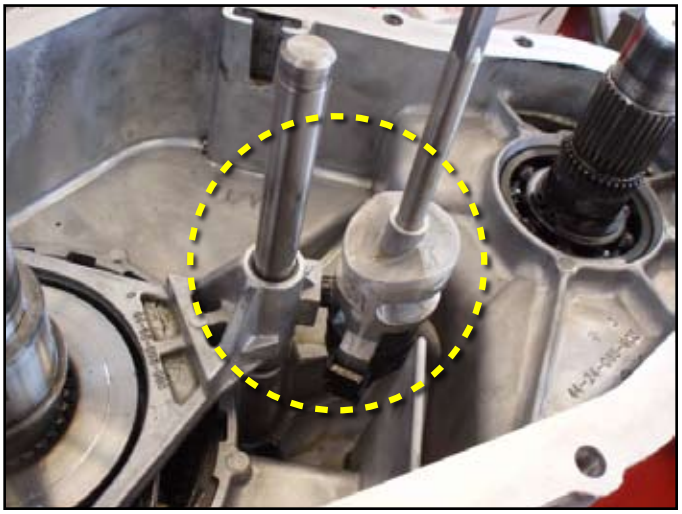
26. Clean internal oil pump screen and magnet from debris.



***NOTICE**

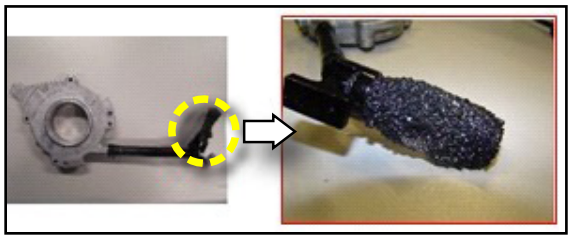
Check the orientation of the Shift Fork to Shift Shaft before installing the case covers. Failure to do so may cause the 4WD low selection to be inoperative.





27. Apply the RTV to the case sealing surface area as shown using a 2.5~3.0 mm bead; do not use excessive sealant which can block the filter screen causing lack of lubrication. Complete case half assembly.

a) Install the torx bolt retaining the case halves, tighten to 19~25 ft. lbs. (25.7~33.8 Nm). Install the electrical harness bracket.



Do not use RTV around bolt holes, apply as shown. Use a 2mm drill bit to pierce hole in RTV Tube.

28. The shift motor must be installed in several steps to prevent shift motor bind.

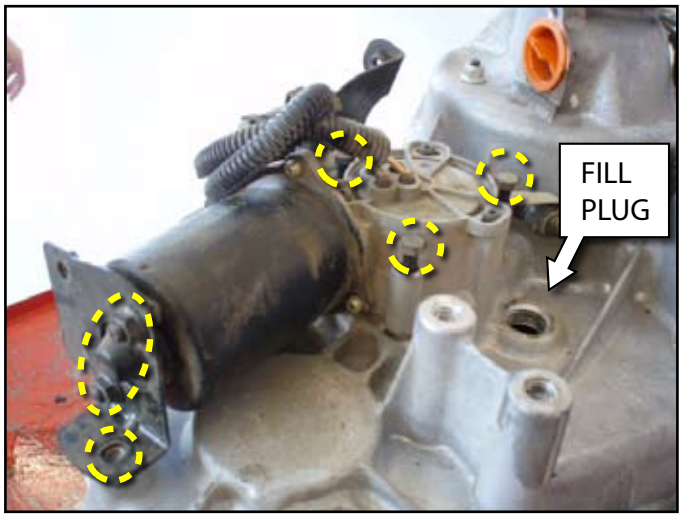
<u>Apply RTV to the sealing surface</u> - shift motor to transfer case as shown in Step 9a.

a) Loosen the two nuts on the rear mounting bracket

b) Install the three long bolts in the head area of shift motor, torque to 72 inch lbs. (8~11 Nm).

c) Install the rear bolt on the mounting bracket, torque to 72 inch lbs. (8~11 Nm).

d) Install and tighten the two nuts on the shift motor bracket, torque to 72 inch lbs. (8~11 Nm).



29. Install the remainder of components:

a) Rear output flange

b) Replacement O-ring seal

c) Steel washer

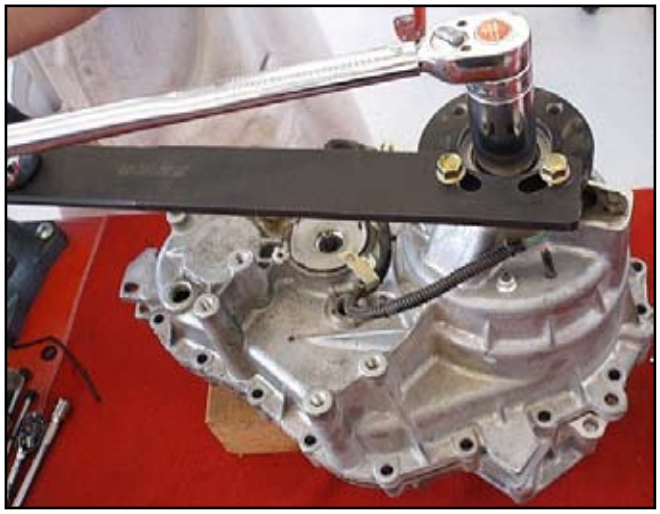
d) New replacement retaining nut.

e) New replacement magnetic drain plug

f) Fill the transfer case with 1.5 qts. of Transfer case oil ***(Shell Donax TG only)*** on the bench before installing transfer case into the vehicle.

g) Install the damper weight if removed, torque to 25 ft. lbs. (33 Nm).

30. Tighten the flange retaining nut to 150 ft. lbs. (203 Nm), using SST-K95B- 5009-D (Companion Flange Holder) to hold flange while torquing to specification. Stake the nut to the shaft using a flat chisel.



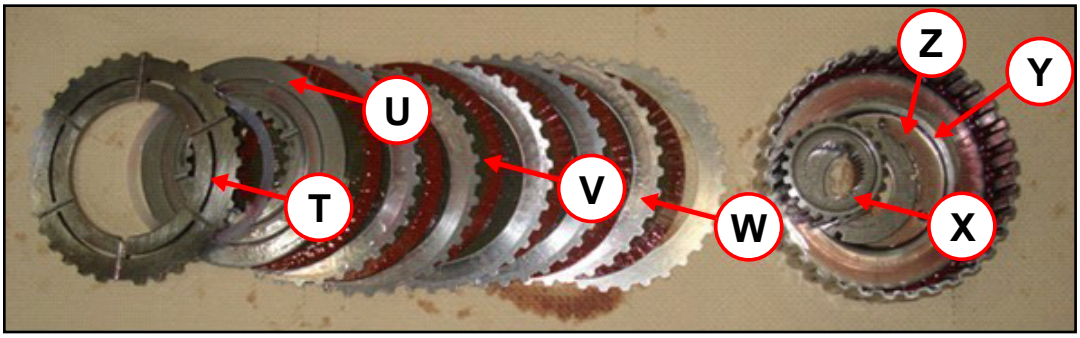
***NOTICE**

Do not use impact gun. Bearing damage can result.

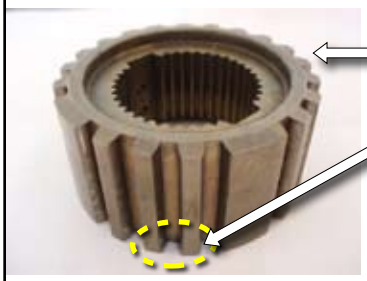
31. Replace the transfer case to transmission gasket and install transfer case into vehicle.

32. Road test and check 4-wheel drive for proper operation and fluid leaks when complete.

Component Configuration of Clutch Pack



Item Callout	Component
T	Armature
U	Pressure Plate
V	Friction Disk
W	Separator Plates
X	Hub
Y	Clutch Housing
Z	Support Plate



Assembly Tip:

- **Chamfer faces upward**
- **Step on bottom of gear faces downward**

SUBJECT:

2003-2006 SORENTO (BL) TORQUE ON DEMAND (TOD) TRANSFER CASE

AFFECTED PRODUCTION RANGE:

2003-2006 Sorento (BL) models equipped with with Torque On Demand (TOD)

PARTS INFORMATION:

Part Name	Part Number	Quantity	Comments
Clutch Pack Kit	47368 H1000KKT	1	See contents below
Gasket-Adaptor	45739 4A566	1	2003~2004 MY
	45739 4C566	1	2005~2006 MY
Transfer Case Fluid	UB080 CH031	1.5 qts.*	Order from Kia Chemicals

** Sorento transfer case fluid (Shell Donax TG) is sold in cases of 12 qts.*

Clutch Pack Kit (47368 H1000KKT) includes the following:

- 47368 H1000 - Clutch Pack
- 47319 H1000 - Snap-ring
- 47314 H1000 - Seal-Oil (Rear flange seal)
- 47387 4C000 - Magnetic Drain Plug
- 47394 H1000 - Hub Flange Retaining Nut
- Small Tube of RTV Sealant

WARRANTY INFORMATION:

Claim Type	Causal P/N	Qty.	N Code	C Code	Repair Description	Labor Op Code	Time	Related Parts	Qty
W	47300 3C100	0	N30	C31	Transfer Clutch Pack Replacement	47346F00	2.5*	47368 H1000KKT	1
								45739 4A566 **or** 45739 4C566	1
								UB080 CH031	2

**Includes R&R of transfer case from vehicle*

Transfer Case Maintenance:

Kia Sorento Transfer Case Fluid Information
Lubricant Type: Shell Donax TG
Fluid Capacity: 1.50 US Quarts (1.42L)

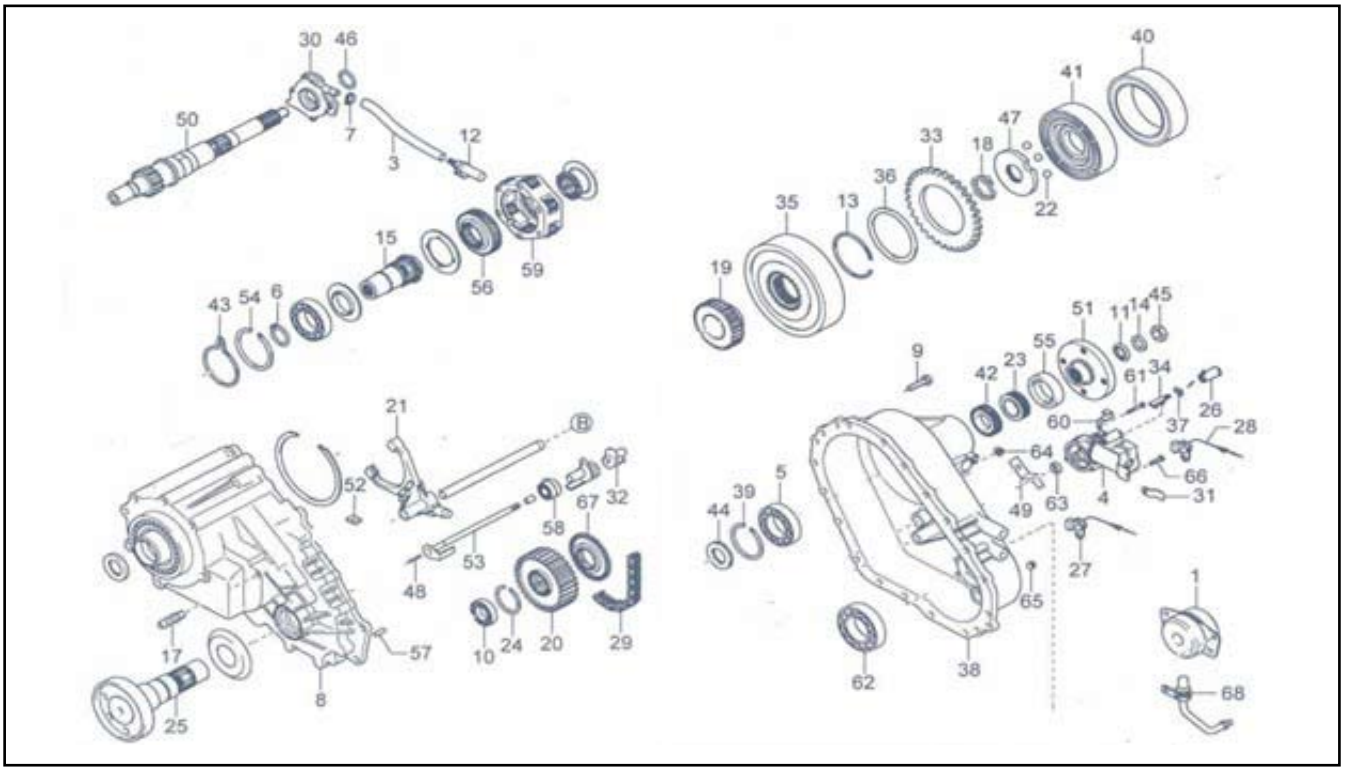
Normal Usage: 22k, 45k, 67k, 90k, needs replacement every 23K miles

Severe usage: 15k, 30k, 45k, 60k, needs replacement every 15K miles

SUBJECT:

2003-2006 SORENTO (BL) TORQUE ON DEMAND (TOD) TRANSFER CASE

EXPLODED VIEW OF INTERNAL BORG-WARNER TRANSFER CASE COMPONENTS



No.	Part Name	No.	Part Name	No.	Part Name
1	Damper - Dynamic	25	Output Shaft- Assembly	52	Magnet
3	Hose Oil Pump	26	Connector	53	Shaft Accessory
4	Motor Assembly	28	Sensor Assembly Speed	54	Retaining Ring
5	Bearing-Rear Case	29	Chain	55	Oil Seal - Rear Case
6	Wire Clip	30	Pump Assembly	58	Shaft Assembly Spring
7	Clamp Hose	32	Cam	59	Carrier Assembly
8	Case-Front Assembly	33	Armature	62	Bearing-Rear Case
11	Seal - F/Circular	35	Clutch Pack Assembly	67	Wheel-Tone
12	Filter-Oil	36	Washer Insulator	68	Breather Assembly
13	Snap Ring	38	Cover-Rear Assembly		
14	Washer	39	Snap Ring		
15	Shaft	40	EMC Coil Assembly		
17	Breather	41	Cam Coil Housing		
18	Spring-Wave	43	Snap Ring		
19	Gear Sprocket	44	Bearing-Thrust		
20	Sprocket Lower	45	Nut - F/Circular		
21	Fork Assembly Shift	46	Thrust Washer		
22	Ball-Cam	47	Cam-Apply		
23	Gear Speed	50	Shaft-Main Assembly		
24	Ring-Retaining	51	Flange Circular		