

2005 > A5HF1 >

**Specifications**

Automatic transaxle type		A5HF1
Recommended transaxle oil		Diamond ATF SP III or SK ATF SP III
Oil quantity		10.9 Liter (Only for the reference)
Oil inspection and supplement		Every one year or every 20,000 km
Replacement	Private use (Normal use)	Every 100,000 km
	Private use (Severe use)	Every 40,000 Km in severe use(1~4)
	Business use	1. Driving on rough road(bumpy road, gravel road, snowy road, unpaved road etc.) 2. Driving on mountain road, ascent/descent 3. Repetition of short distance driving 4. More than 50% operation in heavy city traffic during hot weather above 32°C 5. Police, Taxi. Commercial type operation
Gear ratio	1st	3.789
	2nd	2.064
	3rd	1.421
	4th	1.034
	5th	0.728
	Reverse	3.808
	Final reduction gear ratio	3.333

Service Standard

Item	Value (mm/inch)
Input shaft end play	0.7~1.45 / 0.0276~0.0571
Low & Reverse brake pressure plate end play	1.65~2.11 / 0.0650~0.0831
Reaction plate snap end play	0~0.16 / 0~0.0063
2ND brake pressure plate end play	1.09~1.55 / 0.0429~0.0610
Underdrive sun gear end play	0.25~0.45 / 0.0098~0.0177
Differential bearing spacer end play	0.045~0.105 / 0.0018~0.0041
Underdrive clutch snap ring end play	1.6~1.8 / 0.0630~0.0709
Direct clutch reaction plate snap ring end play	0.6~0.8 / 0.0236~0.0315
Reverse clutch snap ring end play	0~0.09 / 0~0.0035
Overdrive clutch snap ring end play	1.0~1.2 / 0.0394~0.0472
Reverse clutch reaction plate snap ring end play	1.5~1.7 / 0.0591~0.0669

Tightening Torques

Item	Nm	Kgf.cm	lb-ft
Transfer drive gear	31.4~36.3	320.0~370.0	23.1~26.8
Rear cover	19.6~25.5	200.0~260.0	14.5~18.8

Anchor plug	83.4~112.8	850.0~1150.0	61.5~83.2
Oil pump pipe	9.8~11.8	100.0~120.0	7.2~8.7
Oil pump	19.6~25.5	200.0~260.0	14.5~18.8
Torque converter housing	42.0~54.0	428.0~551.0	31.0~39.9
Valve body	9.8~11.8	100.0~120.0	7.2~8.7
VFS reservoir	9.8~11.8	100.0~120.0	7.2~8.7
Detent spring	4.9~6.9	50.0~70.0	3.6~5.1
Valve body cover	9.8~11.8	100.0~120.0	7.2~8.7
Vehicle speed sensor	3.9~5.9	40.0~60.0	2.9~4.3
Inhibiter switch	9.8~11.8	100.0~120.0	7.2~8.7
Manual control lever	17.7~24.5	180.0~250.0	13.0~18.1
Input/Output speed sensors	9.8~11.8	100.0~120.0	7.2~8.7
Reduction brake piston rod fixing nut	14.7~24.5	150.0~250.0	10.8~18.1
Sub frame bracket	88.3~107.9	900.0~1100.0	65.1~79.6
Valve body inside separating plate	4.9~6.9	50.0~70.0	3.6~5.1
Valve body cover separating plate	9.8~11.8	100.0~120.0	7.2~8.7
Direct planetary carrier lock nut	156.9~176.5	1600.0~1800.0	115.7~130.2

Sealants

Rear Cover Liquid Gasket	Specified Sealant
Rear cover liquid gasket	Threebond 1281B or LOCTITE FMD-546
Torque converter housing liquid gasket	
Valve body liquid gasket	

Snap Rings, Spacers, Thrust Washers& Races And Pressure Plates For Adjusting

Part name	Part No.	Thickness[mm(inch)]	Identification
Thrust washer (for input shaft end play)	45544-39180	1.8 (0.0709)	
	45544-39200	2.0 (0.0787)	
	45544-39220	2.2 (0.0866)	
	45544-39240	2.4 (0.0945)	
	45544-39260	2.6 (0.1024)	
	45544-39280	2.8 (0.1102)	
	45849-39883	0.83 (0.0327)	83
	45849-39886	0.86 (0.0339)	86
	45849-39889	0.89 (0.0350)	89
	45849-39892	0.92 (0.0362)	92
	45849-39895	0.95 (0.0374)	95
	45849-39898	0.98 (0.0386)	98
	45849-39801	1.01 (0.0398)	01
	45849-39804	1.04 (0.0409)	04

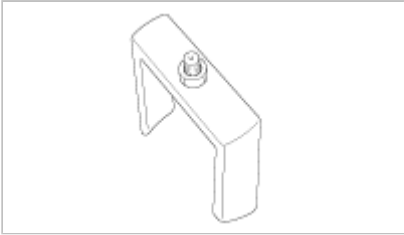
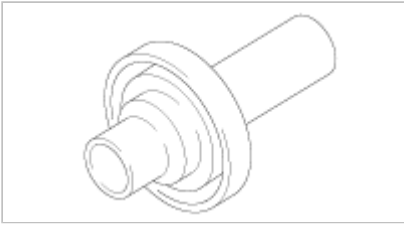
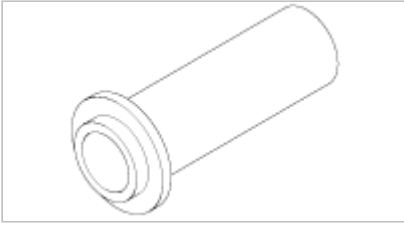
Spacer (for differential bearing end play)	45849-39807	1.07 (0.0421)	07
	45849-39810	1.10 (0.0433)	10
	45849-39813	1.13 (0.0455)	13
	45849-39816	1.16 (0.0457)	16
	45849-39819	1.19 (0.0469)	19
	45849-39822	1.22 (0.0480)	22
	45849-39825	1.25 (0.0492)	25
	45849-39828	1.28 (0.0504)	28
	45849-39831	1.31 (0.0516)	31
	45849-39834	1.34 (0.0528)	34
	45849-39837	1.37 (0.0539)	37
Snap ring (for underdrive clutch snap ring end play)	45427-39520	2.0 (0.0787)	
	45427-39521	2.1 (0.0827)	
	45427-39522	2.2 (0.0866)	
	45427-39523	2.3 (0.0906)	
	45427-39524	2.4 (0.0945)	
	45427-39525	2.5 (0.0984)	
	45427-39526	2.6 (0.1024)	
	45427-39527	2.7 (0.1063)	
	45427-39528	2.8 (0.1102)	
	45427-39529	2.9 (0.1142)	
	45427-39530	3.0 (0.1182)	
	45427-39519	1.9 (0.0748)	
	45427-39516	1.6 (0.0630)	
	45427-39517	1.7 (0.0669)	
	45427-39518	1.8 (0.0709)	
Snap ring (for direct clutch snap ring end play)	45556-39520	2.0 (0.0787)	
	45556-39521	2.1 (0.0827)	
	45556-39522	2.2 (0.0866)	
	45556-39523	2.3 (0.0906)	
	45556-39524	2.4 (0.0945)	
	45556-39525	2.5 (0.0984)	
	45556-39526	2.6 (0.1024)	
	45556-39527	2.7 (0.1063)	
	45556-39528	2.8 (0.1102)	
	45556-39529	2.9 (0.1142)	
	45556-39530	3.0 (0.1182)	
	45556-39519	1.9 (0.0748)	
Snap ring	45443-39148		
	45853-39153		

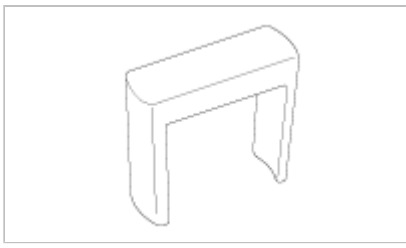
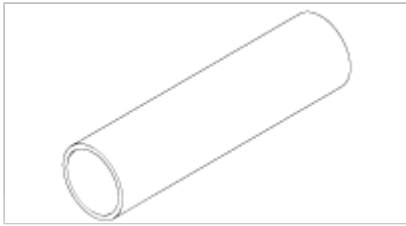
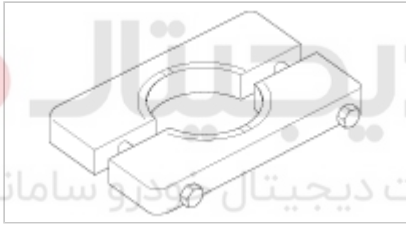
(for reverse clutch snap ring end play)	45459-39158		
	45853-39163		
Snap ring (for overdrive clutch snap ring end play)	45427-39520	2.0 (0.0787)	
	45427-39521	2.1 (0.0827)	
	45427-39522	2.2 (0.0866)	
	45427-39523	2.3 (0.0906)	
	45427-39524	2.4 (0.0945)	
	45427-39525	2.5 (0.0984)	
	45427-39526	2.6 (0.1024)	
	45427-39527	2.7 (0.1063)	
	45427-39528	2.8 (0.1102)	
	45427-39529	2.9 (0.1142)	
	45427-39530	3.0 (0.1182)	
	45427-39519	1.9 (0.0748)	
	45427-39516	1.6 (0.0630)	
	45427-39517	1.7 (0.0669)	
	45427-39518	1.8 (0.0709)	
	45432-39518	1.8 (0.0709)	
	45432-39517	1.7 (0.0669)	
	45432-39516	1.6 (0.0630)	
	45432-39519	1.9 (0.0748)	
	45432-39528	2.8 (0.1102)	
Snap ring (for reverse clutch reaction plate snap ring end play)	45432-39527	2.7 (0.1063)	
	45432-39526	2.6 (0.1024)	
	45432-39525	2.5 (0.0984)	
	45432-39524	2.4 (0.0945)	
	45432-39523	2.3 (0.0906)	
	45432-39522	2.2 (0.0866)	
	45432-39521	2.1 (0.0827)	
	45432-39520	2.0 (0.0787)	

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Special Service Tools

Tool (Number and name)	Illustration	Use
09453-3A110 Spring compressor		- Removal and installation of one way clutch inner race snap ring
09431-39000 Oil seal installer		- Installation of differential bearing output race
09456-39100 Clearance dummy plate		- Installation of brake pressure plate
09454-3A110 Reduction socket		- Adjustment of reduction brake piston rod
09452-21200 Oil pump oil seal installer		- Installation of oil seal in a oil pump
09453-24000 Snap ring compressor		- Removal and installation of under drive clutch snap ring
09453-4C400 Spring compressor		- Removal and installation of direct clutch snap ring - Removal and installation of reverse&over drive clutch spring retainer snap ring

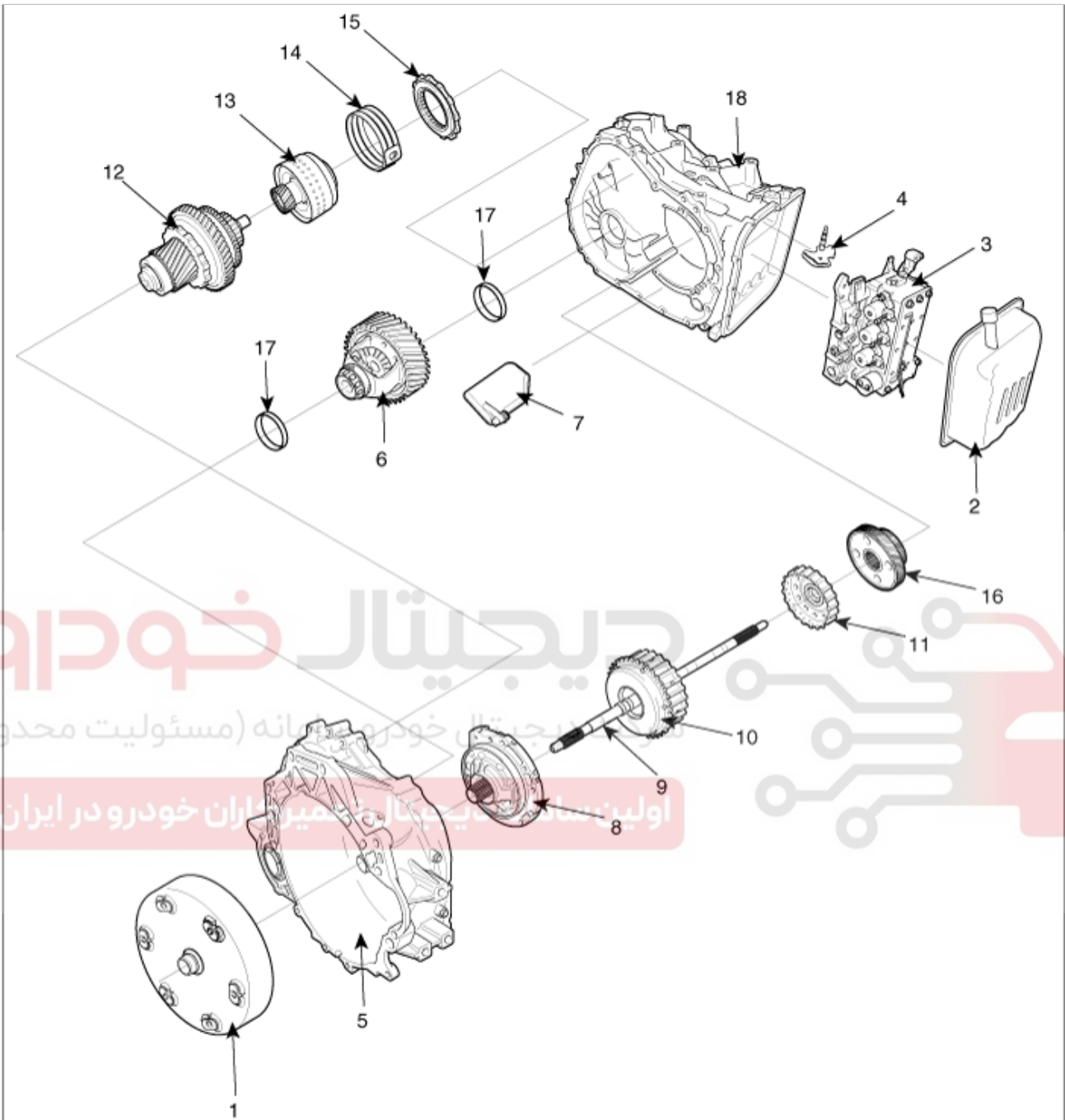
		
09215-3C000 Oil fan remover		- Removal of valve body cover
09455-21100 Bearing installer		- Installation of the ball bearing and the transfer drive gear
09457-22000 Removing plate		- Removal of the differential bearing, the transfer shaft bearing and drive gear bearing

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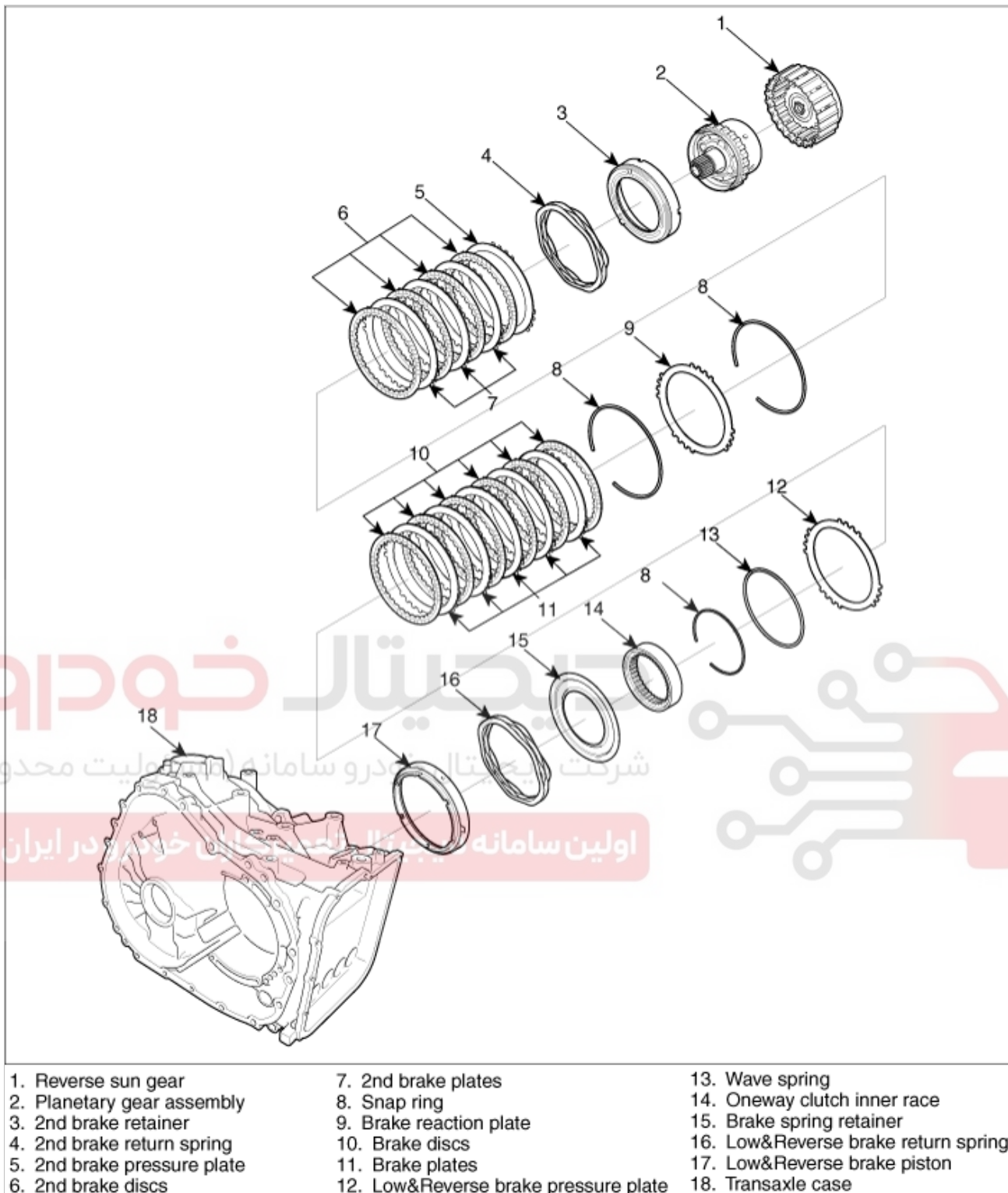


Components(1)



- | | | |
|----------------------------------|---------------------------------------|-------------------------------|
| 1. Torque converter | 7. Main oil filter | 13. Direct clutch assembly |
| 2. Valve body cover | 8. Oil pump | 14. Reduction brake bend |
| 3. Valve body assembly | 9. Input shaft | 15. One way clutch |
| 4. Manual control shaft assembly | 10. Underdrive clutch assembly | 16. Transfer drive gear |
| 5. Converter housing | 11. Underdrive clutch hub | 17. Differential bearing race |
| 6. Differential assembly | 12. Direct planetary carrier assembly | 18. Transaxle case |

Components(2)



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Disassembly

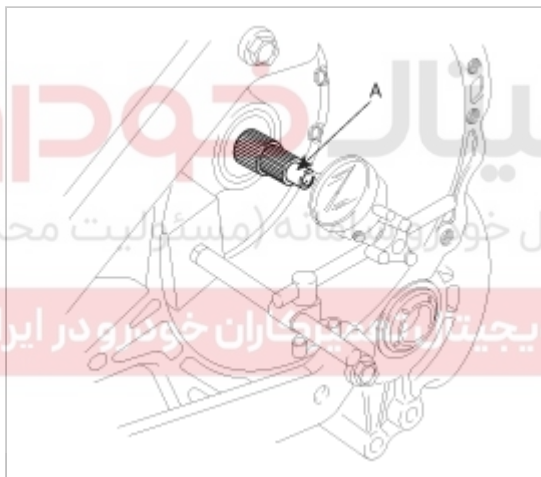
CAUTION

- Automatic transaxles consist of delicate parts. Be careful not to damage them in disassembly and assembly.
- Spread a rubber mat on a workbench and keep it clean.
- Do not use cotton or muslin fiber. Use nylon fabric or paper towel.
- Cleanse the disassembled components. Clean metal parts with a general cleaning agent or dry them with a blower.
- Clean clutch discs, thrust plates made of resin, and rubber parts with automatic transaxle fluid and keep them dust free.
- If transaxle body has been damaged, disassemble and clean cooler system.

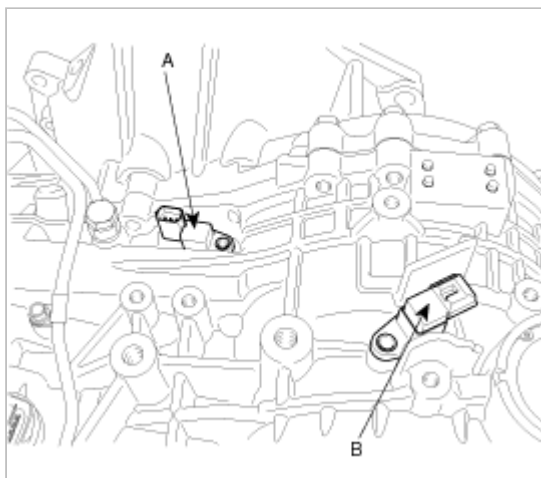
1. Remove the torque converter.
2. Measure the input shaft(A) end play using a dial gauge.

Input shaft end play :

0.7~1.45mm(0.0276~0.0571 inch)



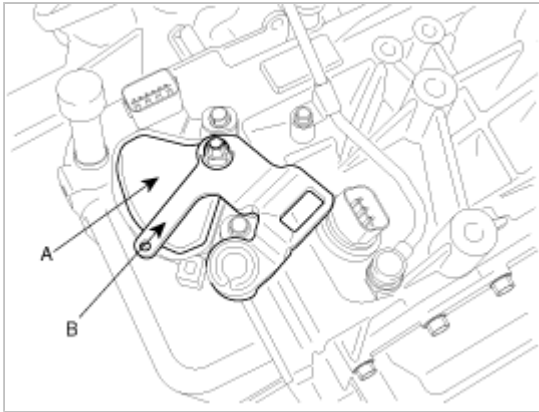
3. Remove the fluid level gauge.
4. Remove the input(A) and the output speed sensor(B).



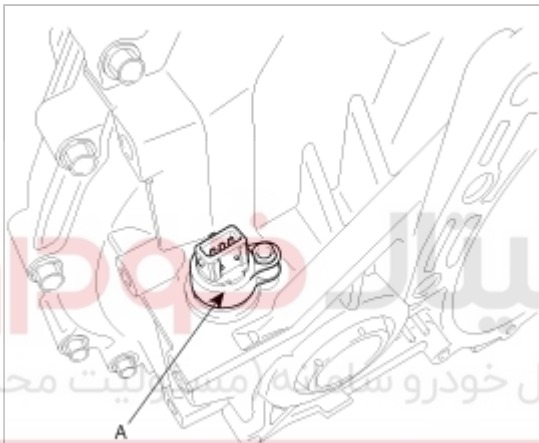
5. Remove the eyebolt, the gasket, and the fluid cooler feed tube.
6. Remove the manual control lever(B) and the transaxle range switch(A).

CAUTION

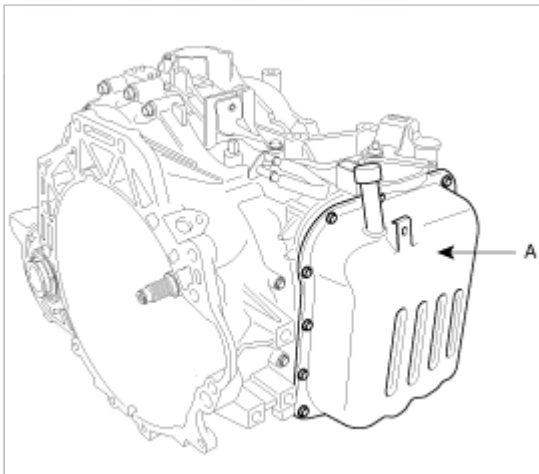
Remove the transaxle range switch(A) with the valve body installed.



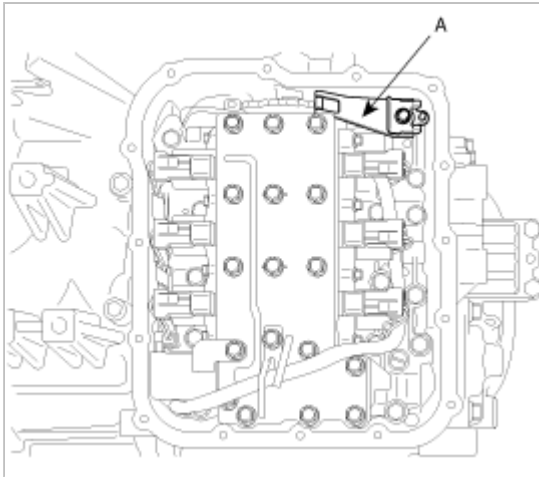
7. Remove the speedometer gear(or vehicle speed sensor(A)).



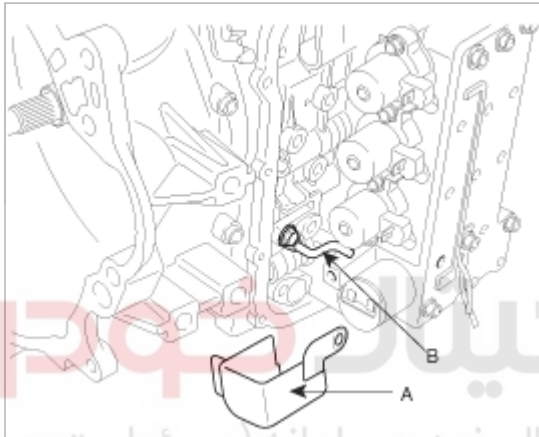
8. Using the SST(09215-3C000), remove the valve body cover(A).



9. Remove the manual control shaft detent spring(A).

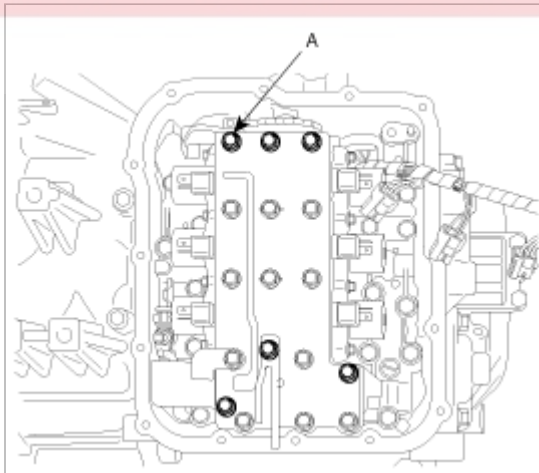


10. Remove the VFS(variable force solenoid) reservoir(A) and tube assembly(B).



11. Disconnect the harness connector from the valve body.

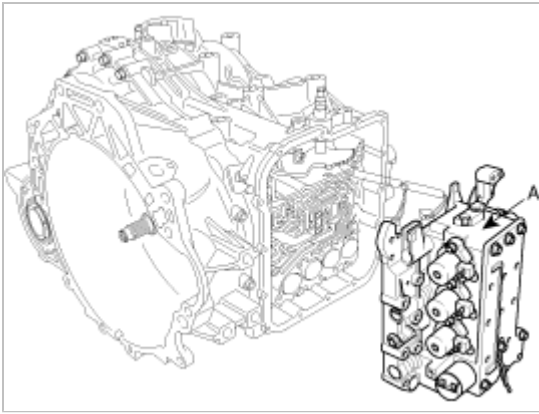
12. Remove the valve body mounting bolts(26EA), except those bolts(A) marked on illustration.
(6X45-1EA, 6X75-1EA, 6X106-10EA, 6X38-9EA, 6X20-2EA, 6X25-2EA, 6X30-1EA)



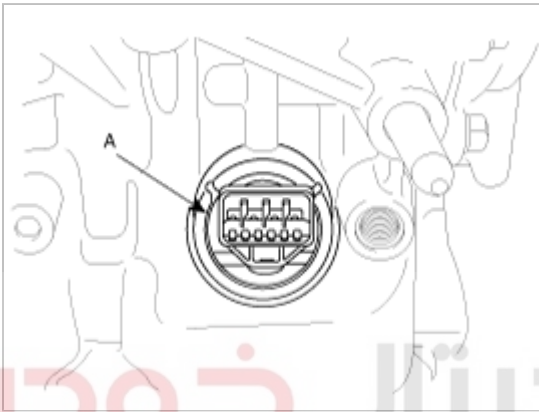
13. Remove the valve body(A) and the steel balls(2EA).

CAUTION

Be careful not to lose the steel balls.

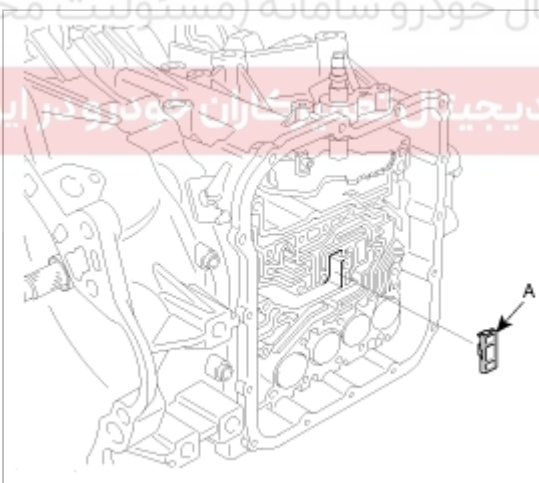


14. Remove the solenoid valve harness snap ring(A).



15. Remove the solenoid valve harness.

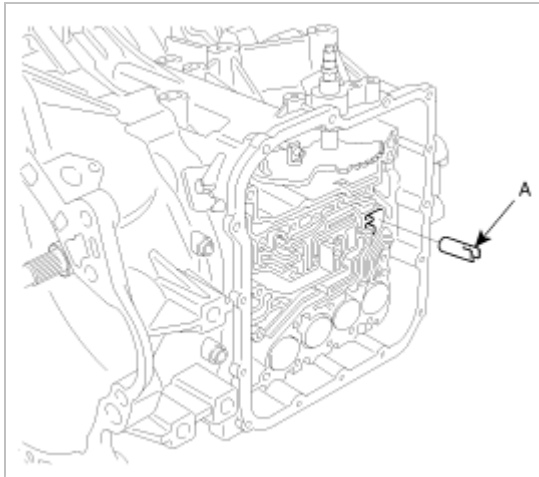
16. Remove the strainer(A).



17. Remove the 2ND brake retainer oil seal(A).

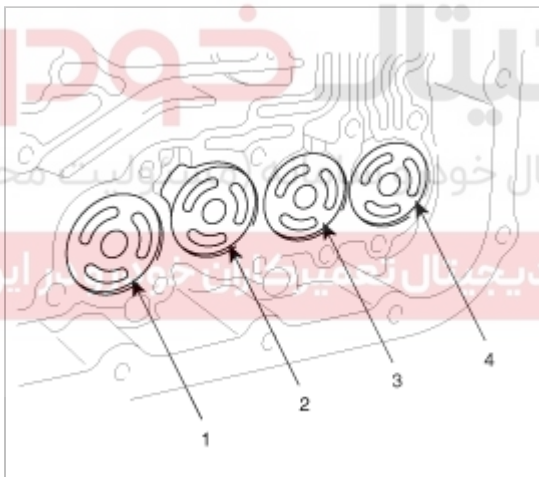
CAUTION

If the 2ND brake retainer oil seal is not removed, it may be damaged when removing and installing the second brake piston.

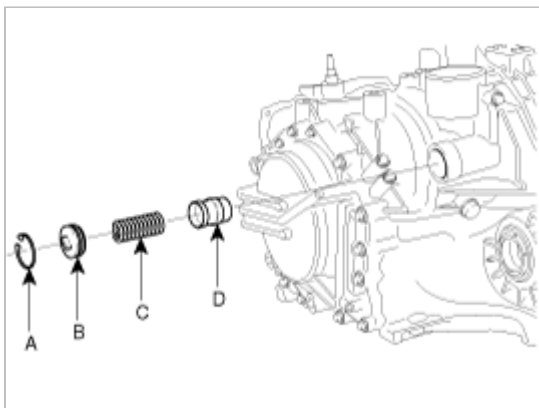


18. Remove each accumulator piston and spring.

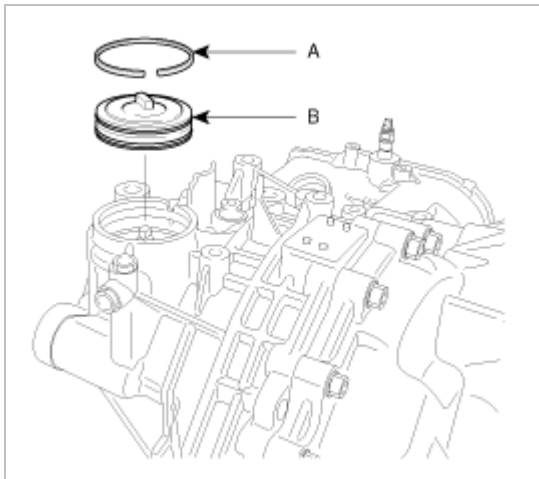
No.	Name
1	Low&Reverse brake
2	Under drive clutch
3	Second brake
4	Over drive clutch



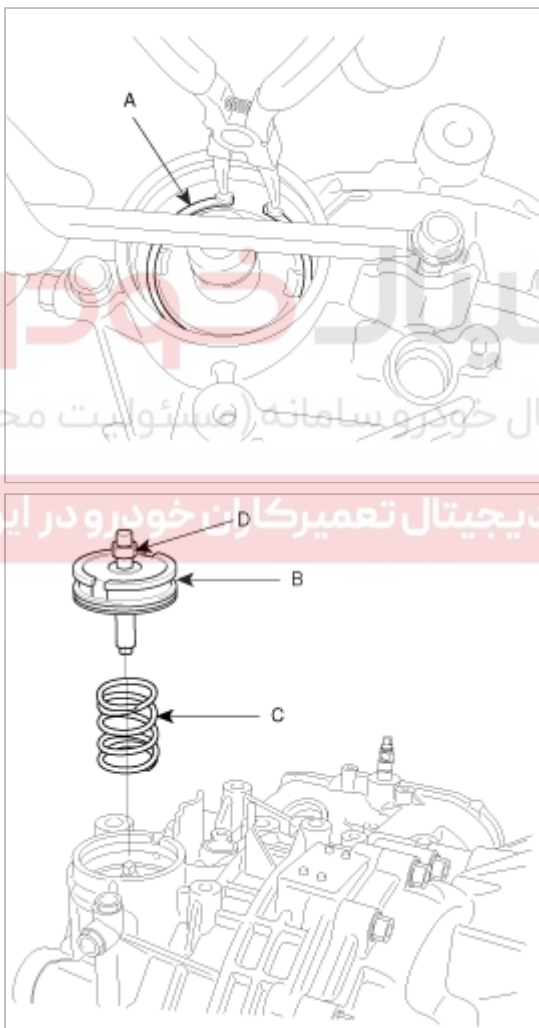
19. Remove the snap ring(A), the piston(B) and reduction brake accumulator(D) and the spring(C).



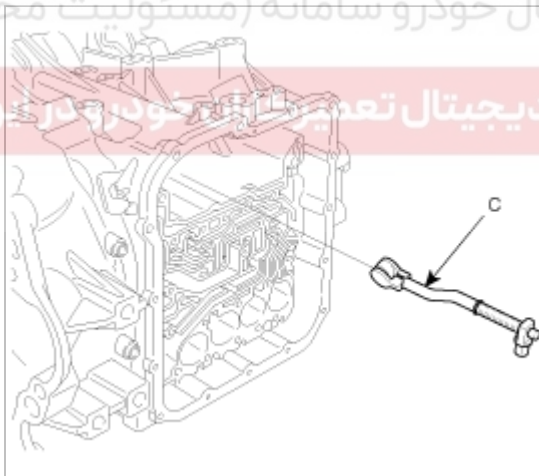
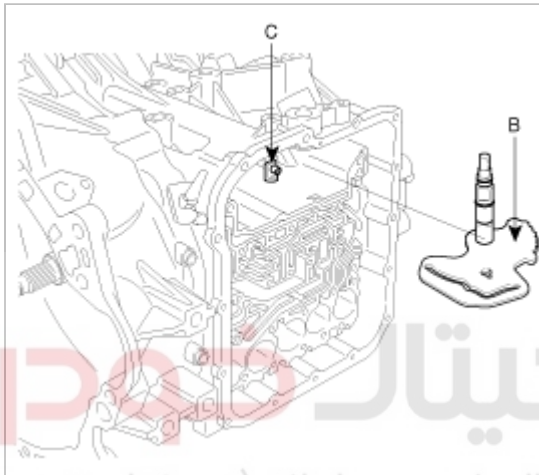
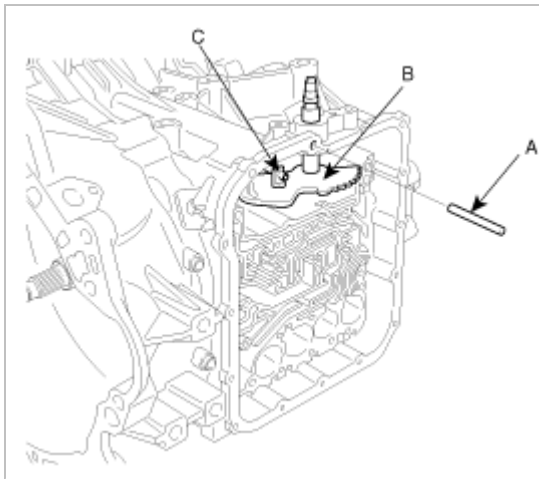
20. Remove the snap ring(A) and the reduction brake piston(B).



21. Remove the snap ring(A) inside first. Afterwards, remove the nut(D), the reduction brake piston(B) and the spring(C).

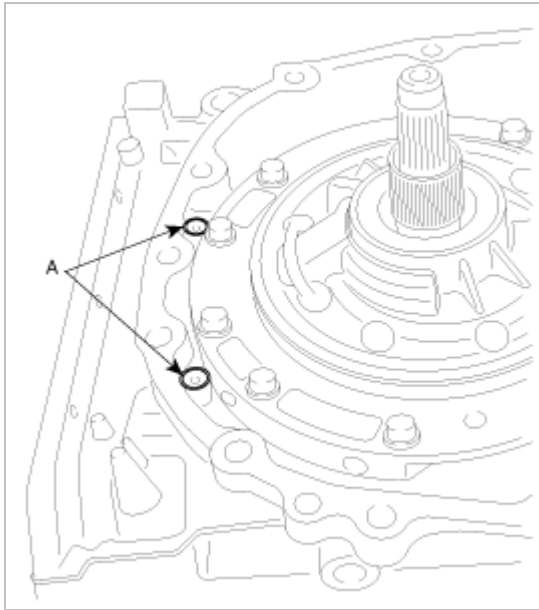


22. After pulling out the roller pin(A), remove the manual control shaft assembly(B) and the parking roller rod assembly(C).

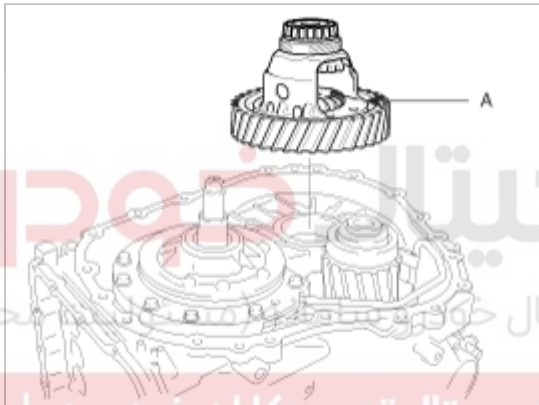


23. Loosen the torque converter housing mounting bolts(20EA) and remove the torque converter housing.

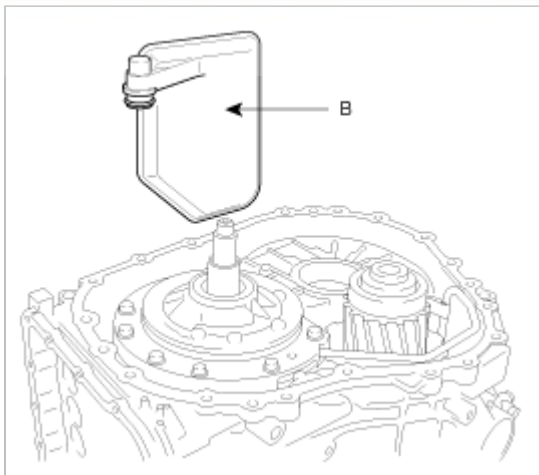
24. Remove the two O-rings(A)(2EA).



25. Remove the differential assembly(A).



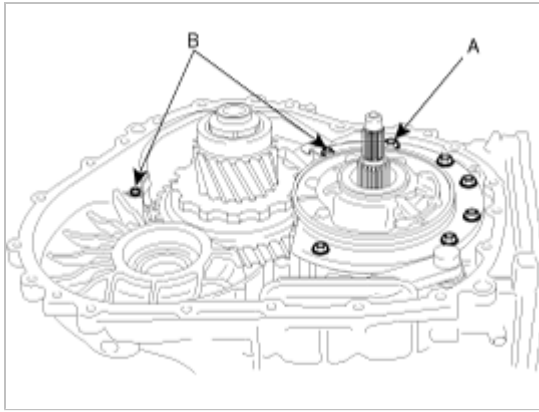
26. Remove the main oil filter(B).



27. Release the oil pump mounting bolts(A)(6EA) and the oil pump pipe mounting bolts(B)(2EA).

CAUTION

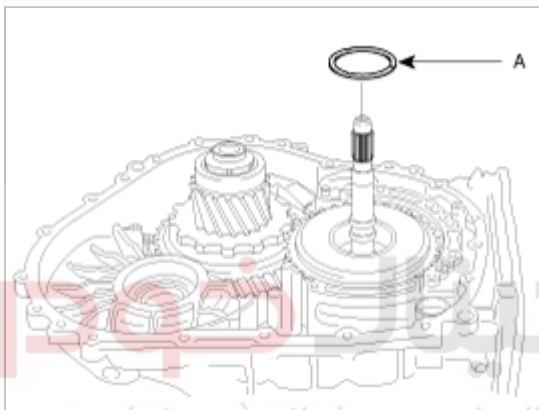
Do not disassemble the oil pump. Misalignment during assembly may damage the pump and the transaxle.



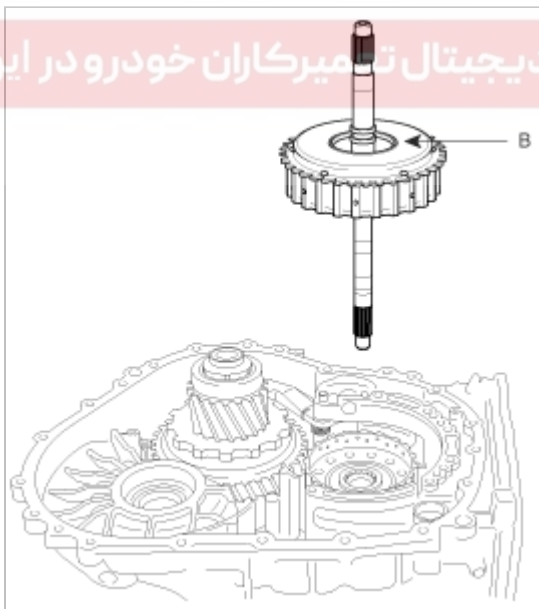
28. Remove the oil pump and the oil pump gasket.

29. Separate the oil pump pipe from the oil pump.

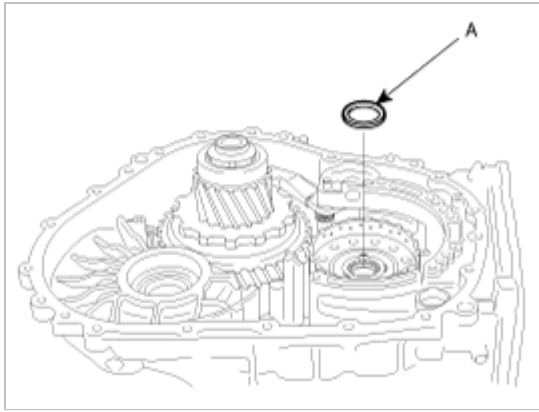
30. Remove the thrust washer(A).



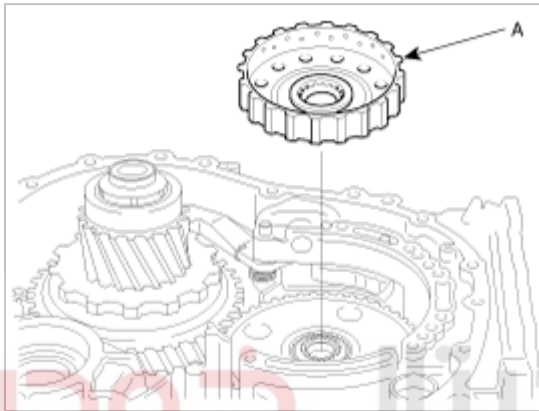
31. Hold the input shaft with a hand and remove the underdrive clutch(B).



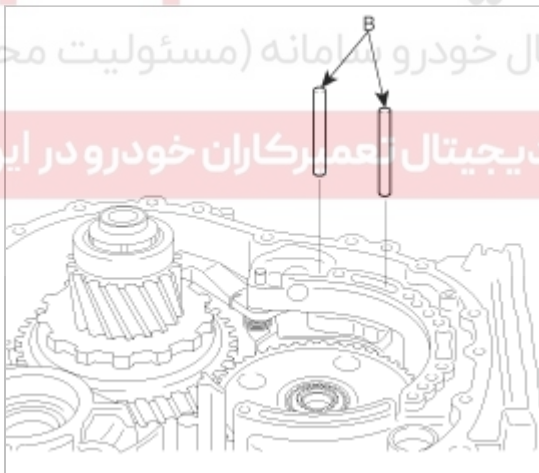
32. Remove the thrust bearing(A).



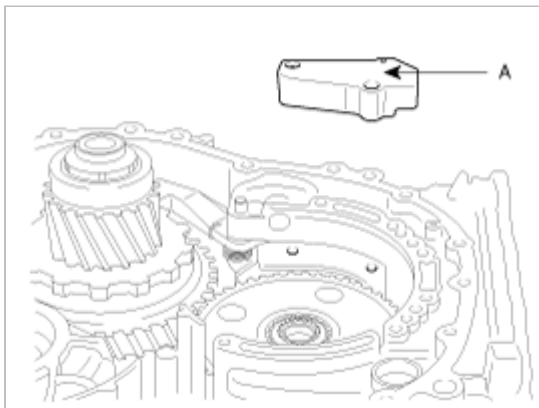
33. Remove the underdrive clutch hub(A).



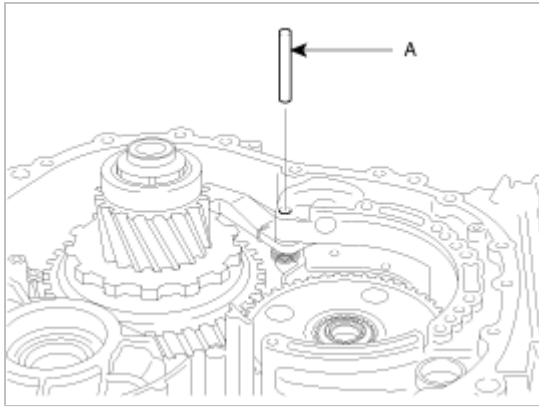
34. Remove the parking roller supporting shafts(B)(2EA).



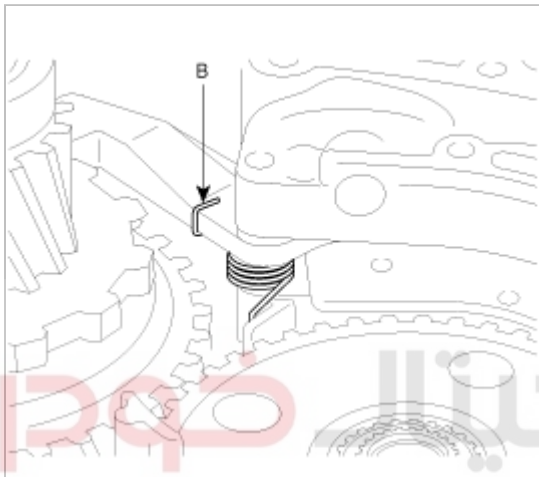
35. Remove the parking roller support(A).



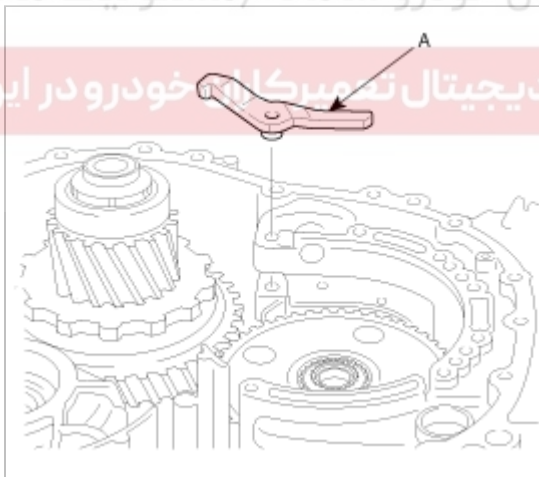
36. Remove the parking sprag shaft(A).



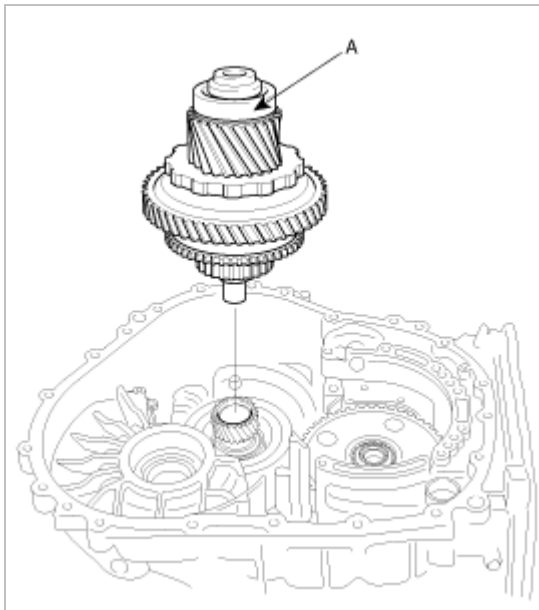
37. Remove the parking sprag spring(B).



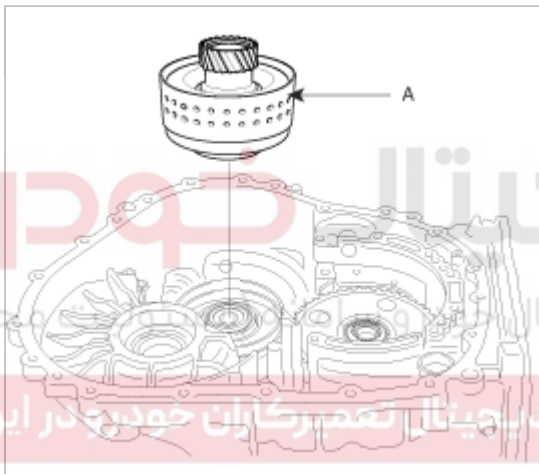
38. Remove the parking sprag(A).



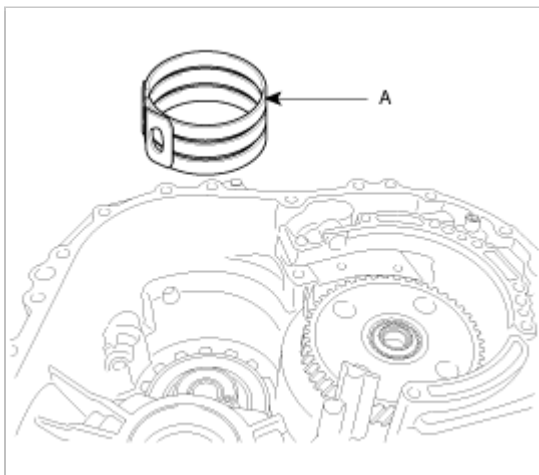
39. Remove the direct planetary carrier assembly(A).



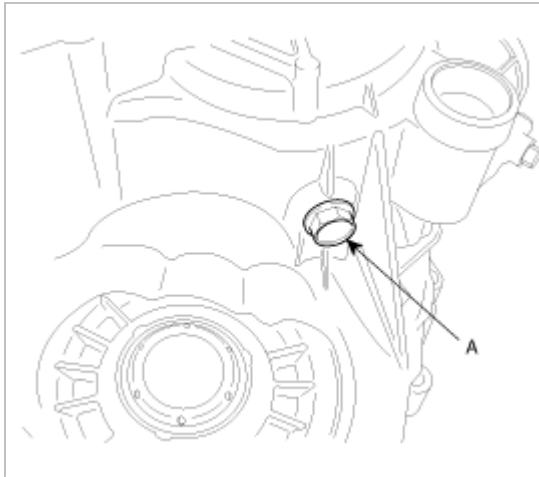
40. Remove the direct clutch assembly(A).



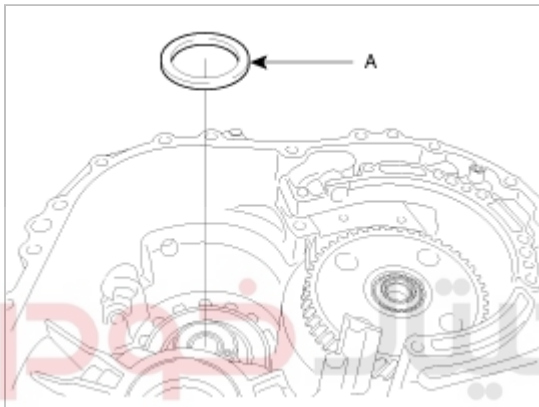
41. Remove the reduction brake band(A).



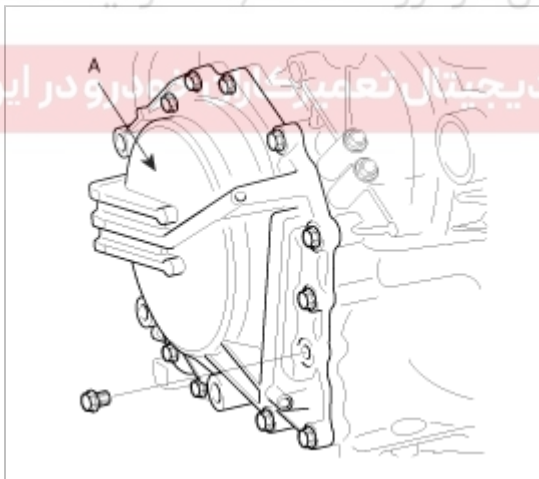
42. Remove the anchor plug(A) and a O-ring.



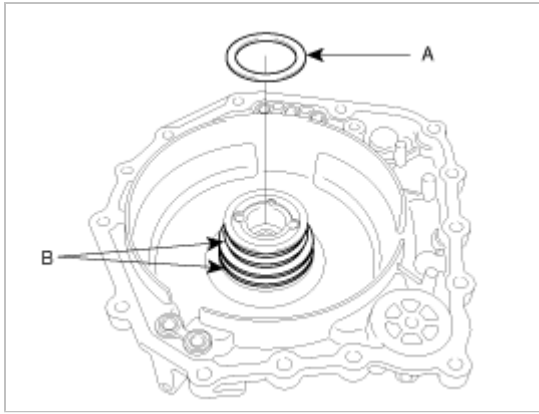
43. Remove the thrust bearing(A) and race.



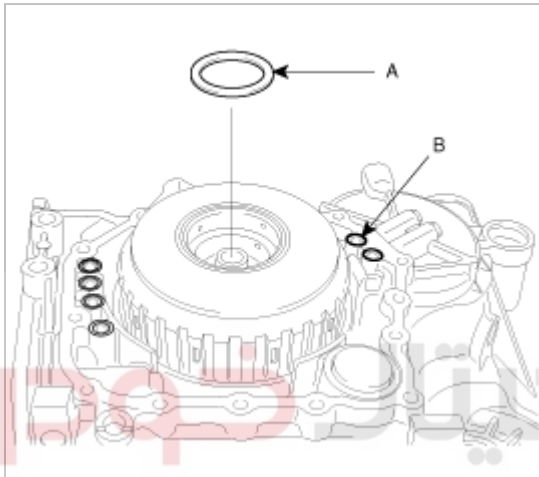
44. Remove the rear cover(A).



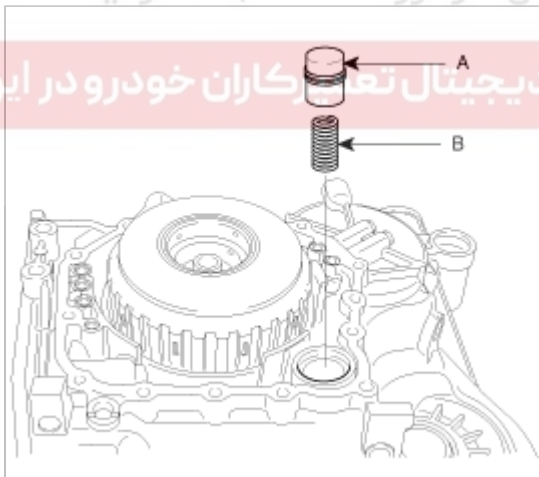
45. Remove the thrust race(A) and the seal rings(B)(4EA).



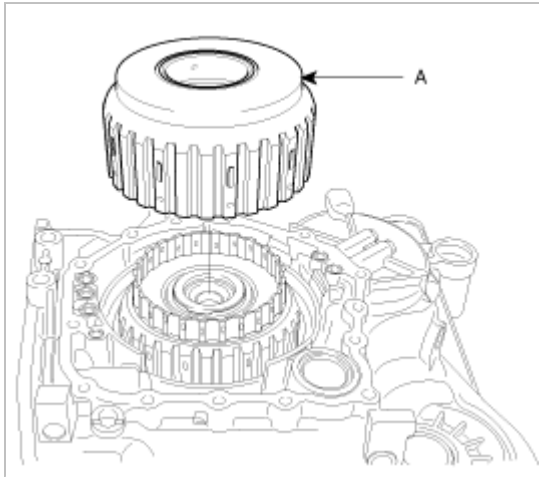
46. Remove the thrust bearing(A) and the O-rings(B)(6EA).



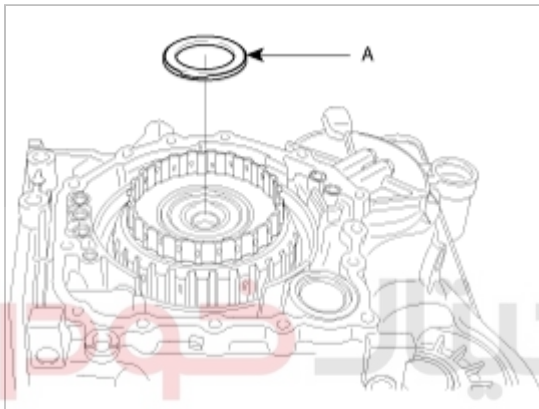
47. Remove the direct accumulator piston assembly(A) and the coil spring(B).



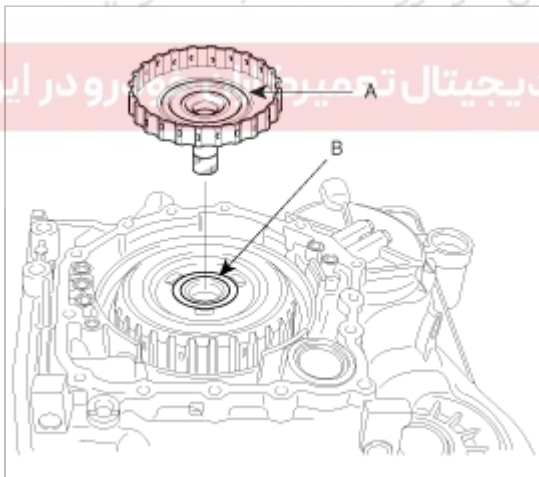
48. Remove the reverse and overdrive clutch(A).



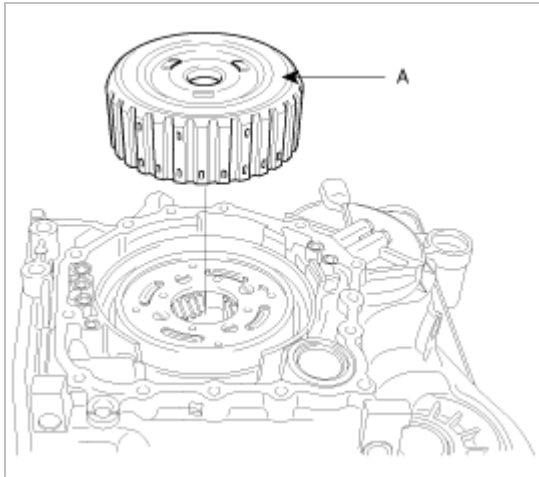
49. Remove the thrust bearing(A).



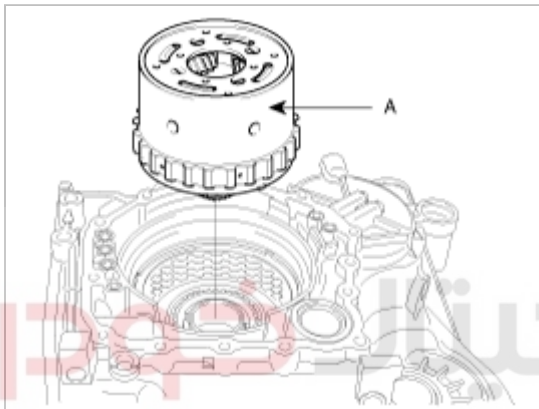
50. Remove the overdrive clutch hub(A) and the thrust bearing(B).



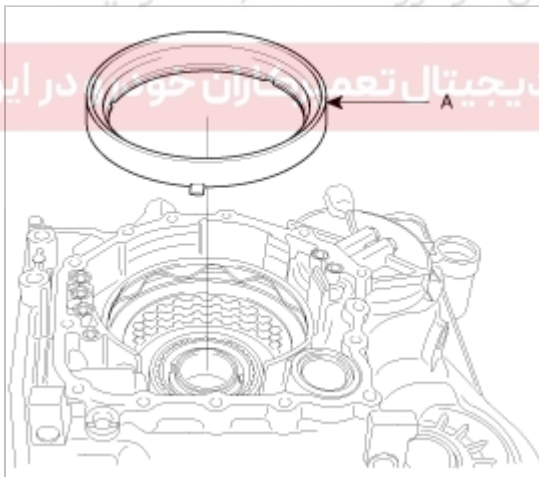
51. Remove the reverse sun gear(A).



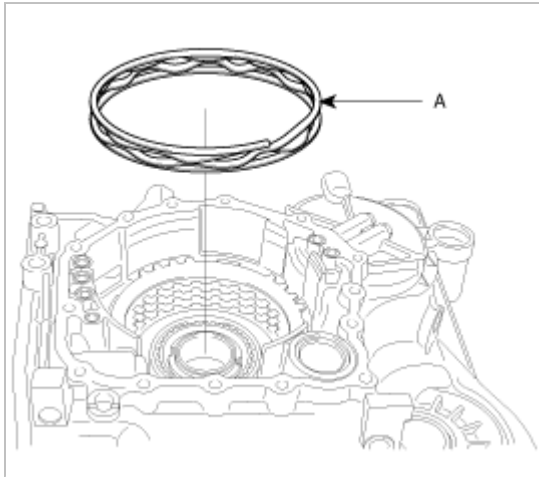
52. Remove the planetary gear assembly(A).



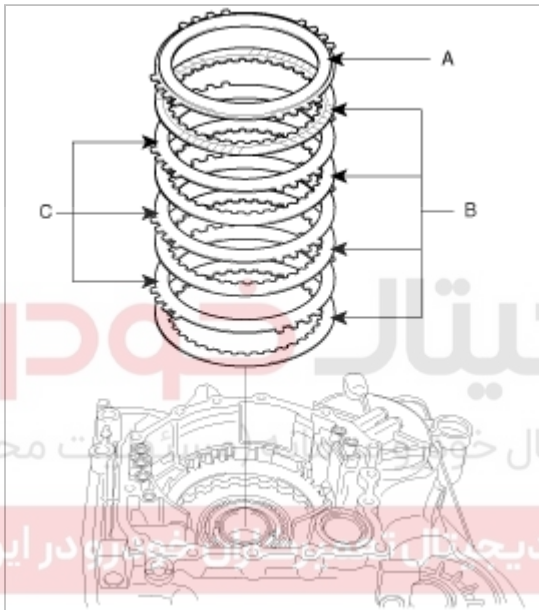
53. Remove the second brake snap ring and retainer(A).



54. Remove the second brake return spring(A).

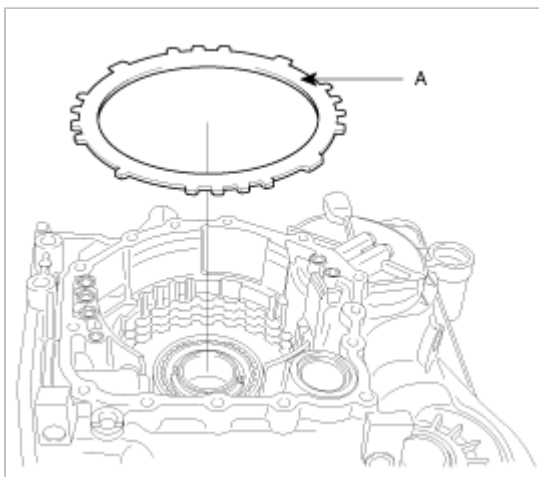


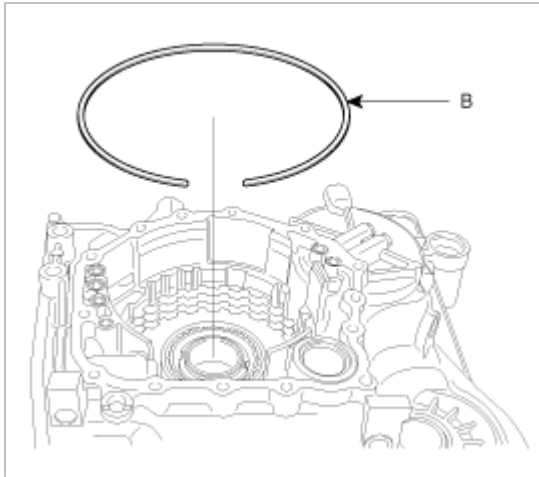
55. Remove the second brake pressure plate(A), brake discs(B)(4EA) and plates(C)(3EA).



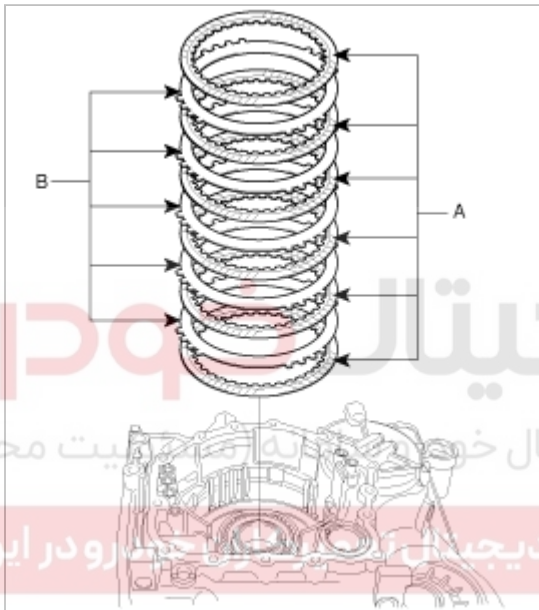
56. Remove a snap ring.

57. Remove the brake reaction plate(A) and snap ring(B).

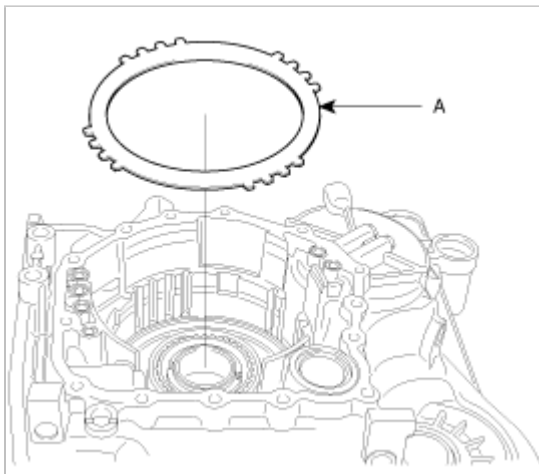




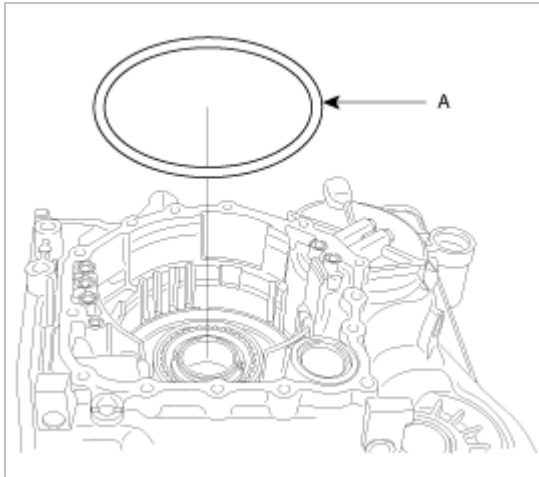
58. Remove the brake discs(A)(6EA) and plates(B)(5EA).



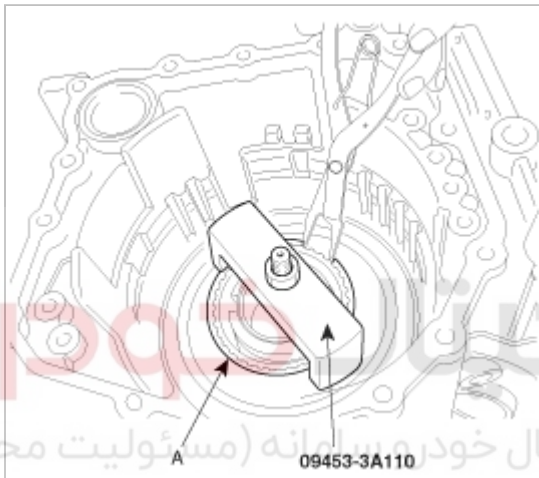
59. Remove the LR brake pressure plate(A).



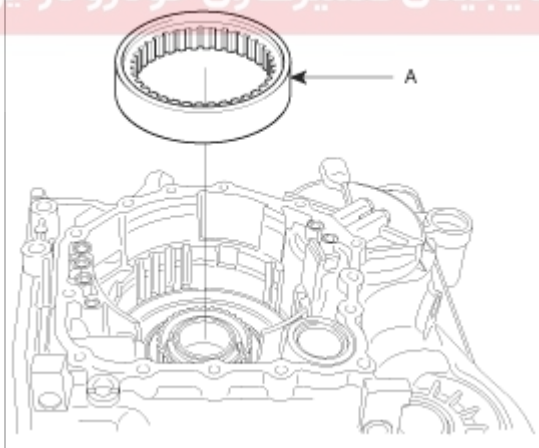
60. Remove the wave spring(A).

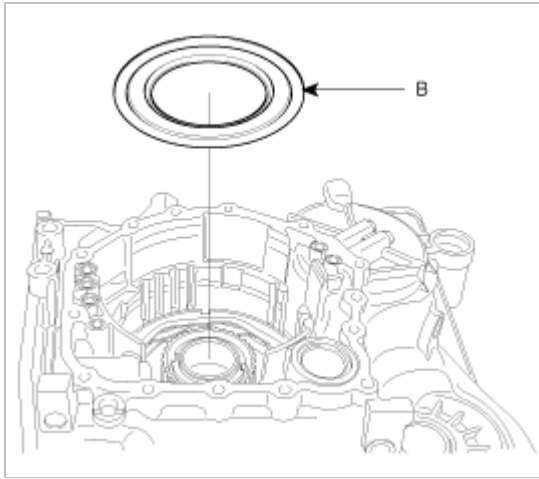


61. Remove the snap ring(A) using SST(09453-3A110).

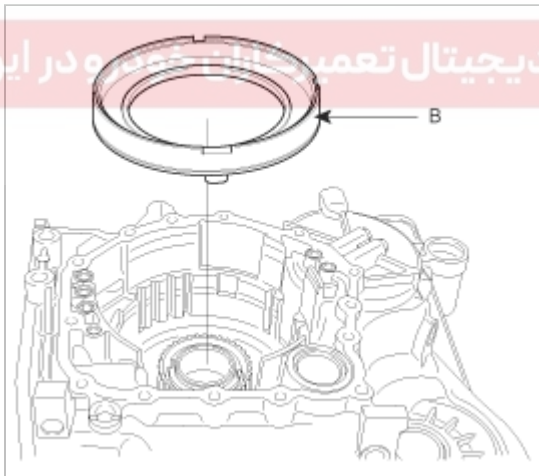
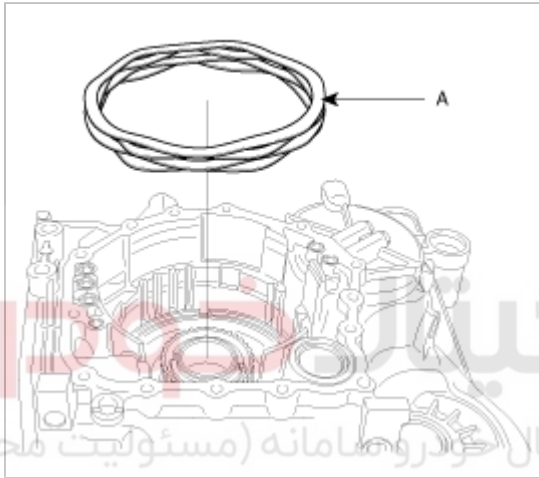


62. Remove the one way clutch inner race(A) and brake spring retainer(B).

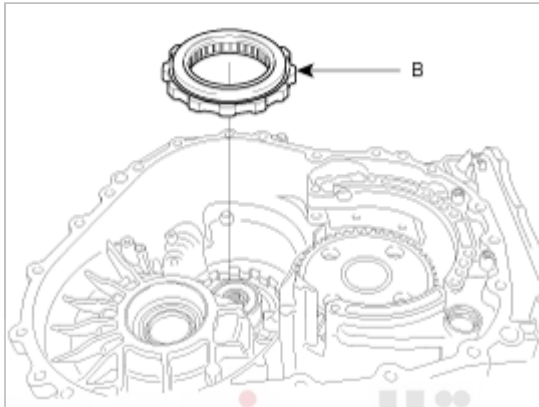
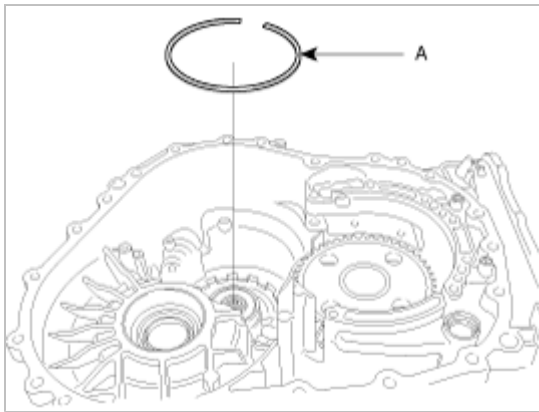




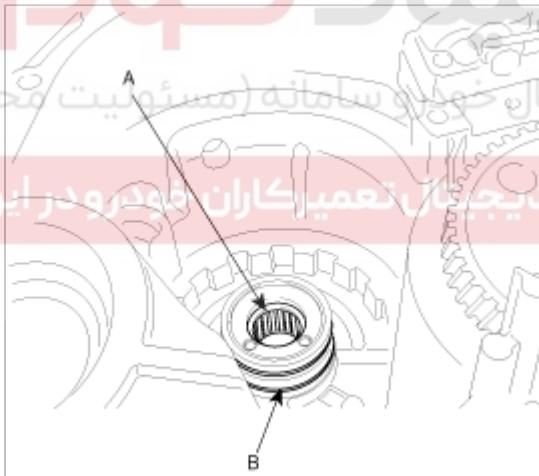
63. Remove the LR brake return spring(A) and piston(B).



64. After removing the snap ring(A) fixing the one way clutch, take off the one way clutch(B).



65. Remove the seal rings(B)(2EA) and needle roller bearing(A).



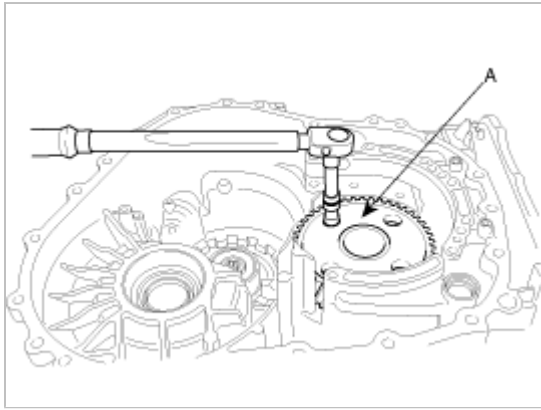
NOTICE

Do not replace the rear bearing if there's no fault after checking because the transaxle case may be damaged in replacing the rear bearing.

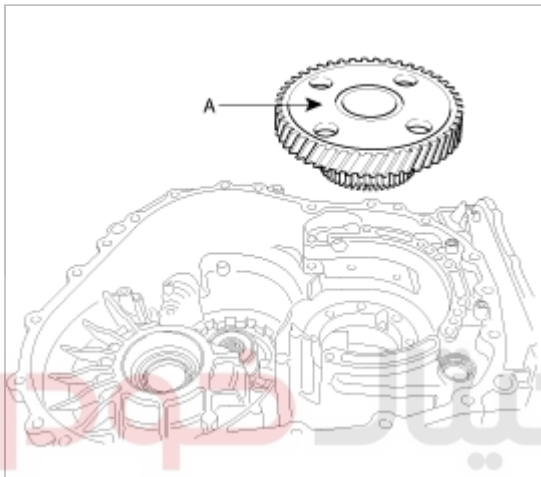
66. Release the transfer drive gear(A) mounting bolts(8EA).

NOTICE

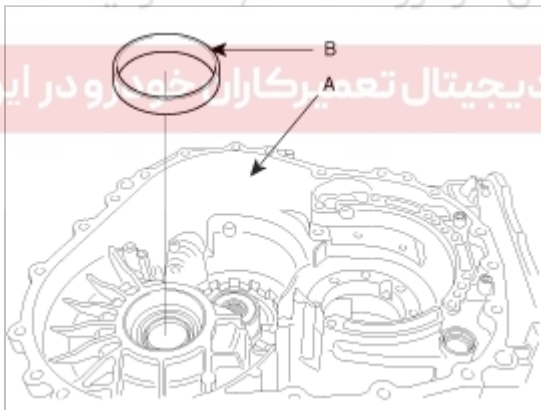
After releasing the four bolts, first, find the others by revolving the gear.



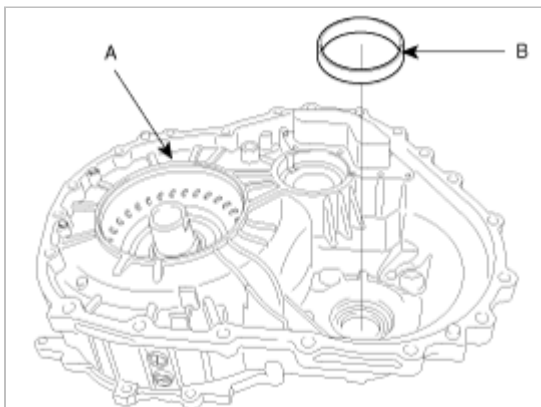
67. Remove the transfer drive gear(A).



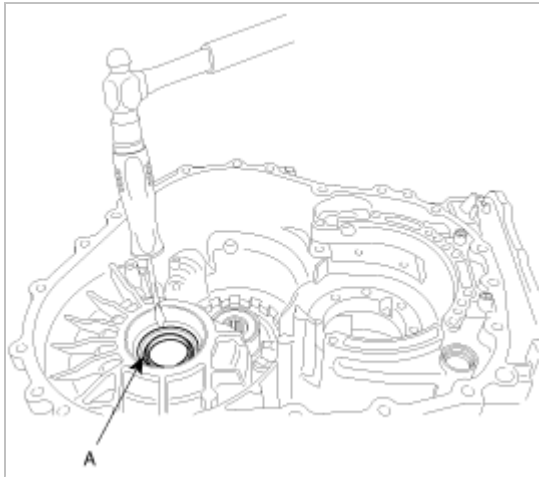
68. Remove the differential bearing outer race(B) from the transaxle case(A).



69. Remove the differential bearing outer race(B) and spacer from the converter housing(A).



70. Remove the differential oil seal(A).

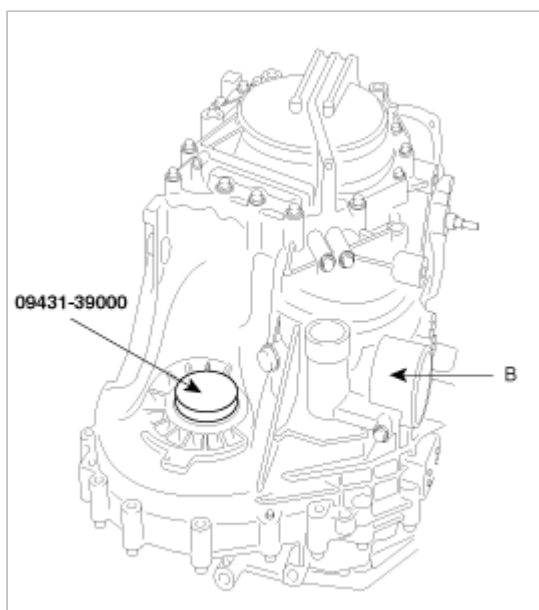


Reassembly

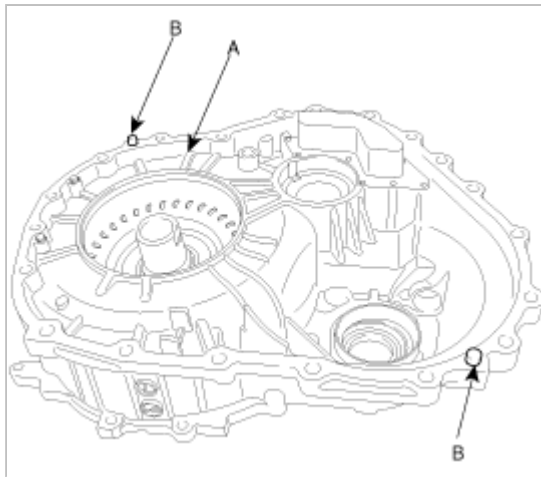
CAUTION

- Keep the workbench and parts always clean and dirt free.
- Do not use cotton gloves. Use paper towel and nylon rag. Do not use nappy fabric.
- Do not use grease at any place otherwise specified. Use white vaseline or blue mineral oil if necessary.
- Insert each snap ring firmly into the seat. Do not use deformed rings.
- Do not allow dirt to remain on the surface to apply liquid gasket during reassembly.
- Oil pump gasket, valve body mounting bolts(6X25) and oil seals shall not be used again, and use the new ones in assembly.
- New clutch and brake discs shall be dipped in ATF for 2 hours or more before use.
- In reassembly, replace ATF and cleanse its filter thoroughly. Replace the damaged filter element with a new one.
- Apply required minimum quantity of white vaseline, blue mineral oil, or ATF on each of the bearing part, the thrust facemoving part, the oil pump moving part, the seal ring, and the O-ring.
- Do not replace the ATF in the fluid cooler.
- Be careful not to allow dirt to come through the transaxle openings before transaxle mounting onto the vehicle. (including electronic part connector)

1. Using SST(09431-39000), install the driveshaft oil seal on the transaxle case(B).



2. Apply ATF on the torque converter housing(A) and install 2 guide(dowel) pins(B).



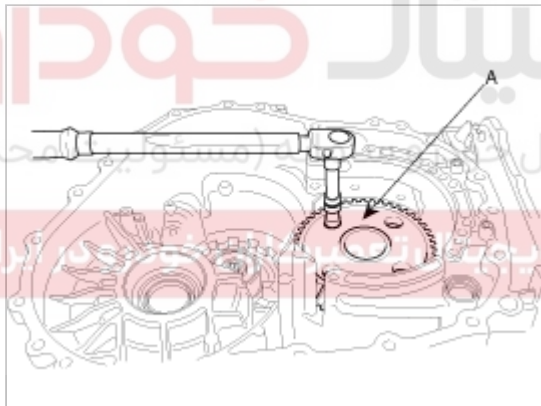
3. Install the transfer drive gear(A). Tighten the transfer drive gear mounting bolts(8EA) with the specified torque below.

Tightening torque :

31.4~ 36.3 Nm(320~370 Kgf.cm, 23.1~26.8 lb-ft)

NOTICE

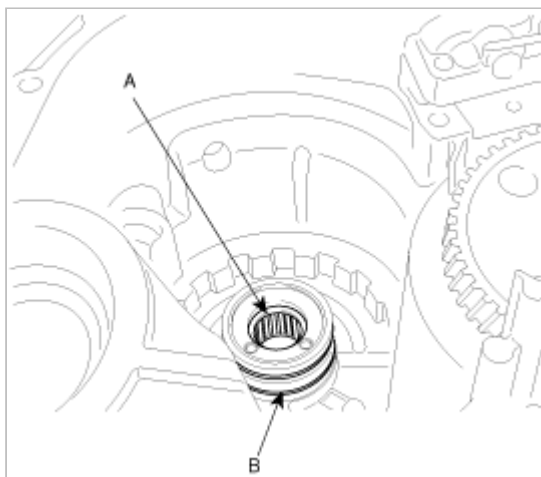
Turn the transfer drive gear one revolution and ensure no interference with bolts.



4. Install the two seal rings(B) and needle roller bearing(A).

NOTICE

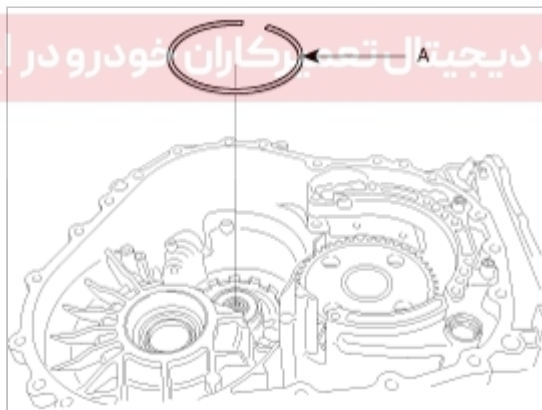
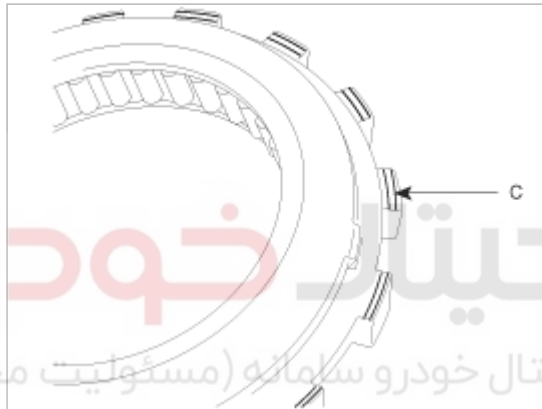
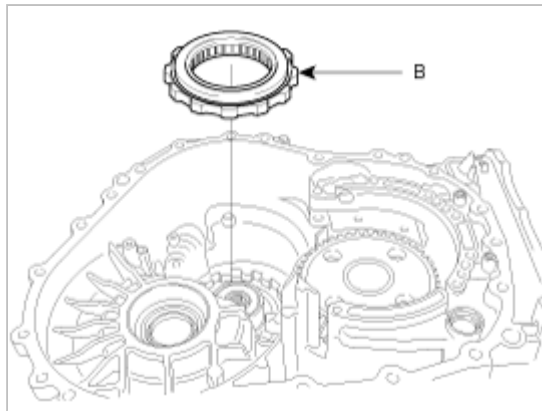
Do not replace the rear bearing if there's no fault after checking because the transaxle case may be damaged in replacing the rear bearing.



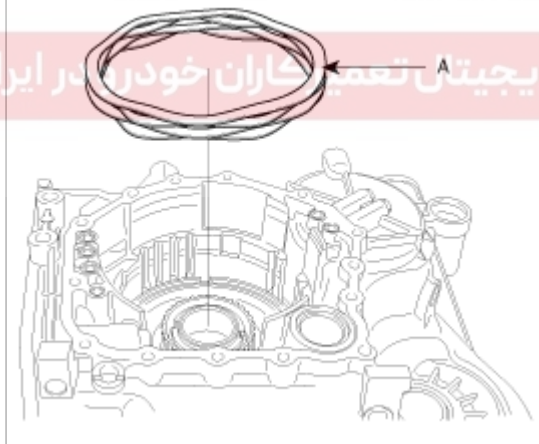
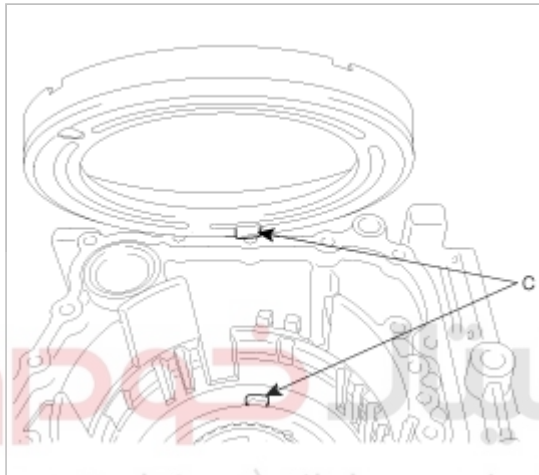
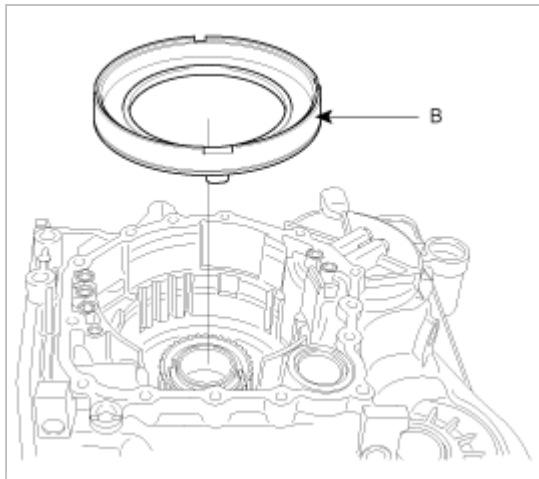
5. Install the one way clutch(B) and hold it with a snap ring(A).

NOTICE

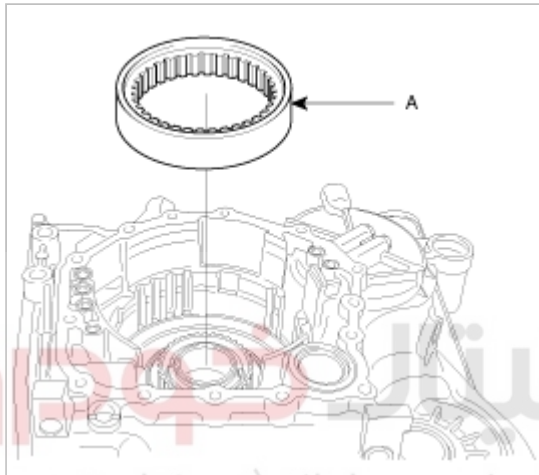
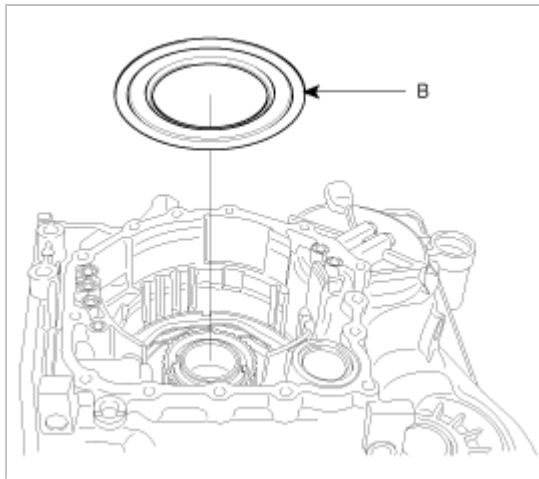
Be cautious to the direction of the one way clutch. Line marked side(C) shall be located forward. (see figure).



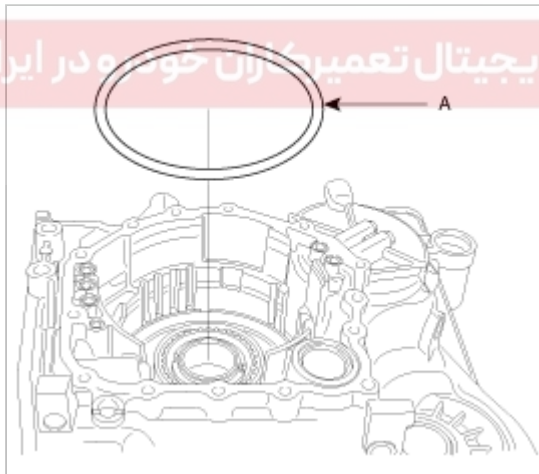
6. After applying grease, install the low&reverse brake piston(B) and the return spring(A). When installing the piston, align the grooves(C).



7. Install the spring retainer(B), the one way clutch inner race(A) and a snap ring.



8. Install the wave spring(A).



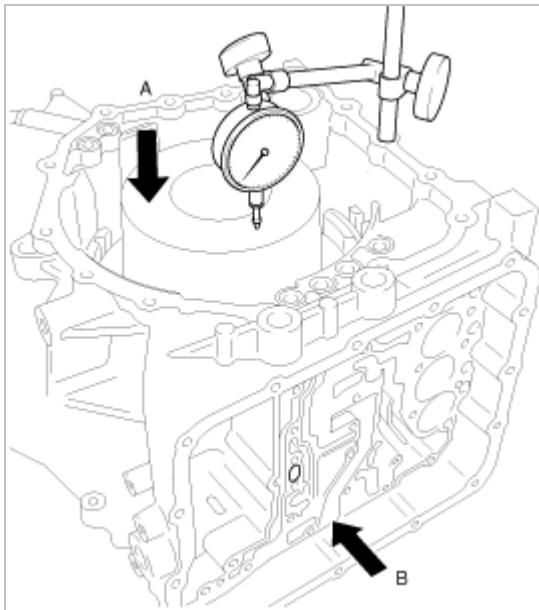
9. Install the brake discs and plates in the sequence below in order to decide the acceptive brake pressure plate satisfying LR brake end play.

[UP] SST(09456-39100)→ Disc 2EA→ Plate→ Disc→ Plate→ Disc→ Plate→ Disc→ Plate→ Disc→ Plate

[DOWN]

10. After installing the brake reaction plate, fix the snap ring (thickness:2.3mm) upon it. (It is fine that there is no snap ring under the plate ONLY when measuring.)

11. Applying 49N(5Kgf,11lbf) weight(A) on the plates and discs and 245.17kPa(2.5 Bar, 35.56psi) pressure(B) through the valve body line, measure the end play with a dial gauge.

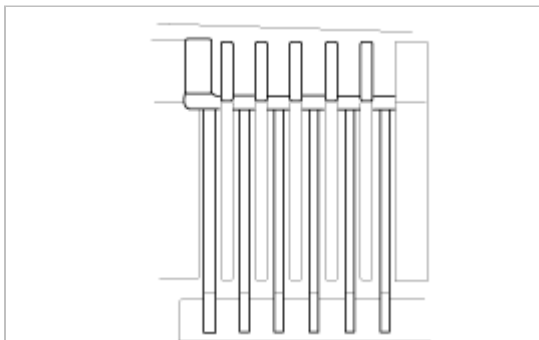


12. With the formula and the table below, select the adequate low&reverse pressure plate.
Equation: Pressure plate thickness = Travel(A)+SST thickness(1.9mm)-End play

End play : 1.65 ~ 2.11mm(0.0650~0.0831inch)

Part No.	Thickness (mm/inch)
45643-39516	1.6/0.0630
45643-39518	1.8/0.0709
45643-39520	2.0/0.0787
45643-39522	2.2/0.0866
45643-39524	2.4/0.0945
45643-39526	2.6/0.1024
45643-39528	2.8/0.1102
45643-39530	3.0/0.1182

13. After disassembling the SST(09456-39100), snap ring, brake reaction plate and brake plates(5EA)&discs (6EA) again, install the low&reverse pressure plate selected above.
14. Install the brake plates(5EA)&discs(6EA), snap ring and reaction plate in order below.
[UP] Reaction plate→ Snap ring(thickness: 2.0mm)→ Disc→ Plate→ Disc→ Plate→ Disc→ Plate→ Disc→ Plate→ Disc [DOWN]



15. Afterwards, measuring the gap of reaction plate, select and install the proper snap ring which satisfy the end play condition below.

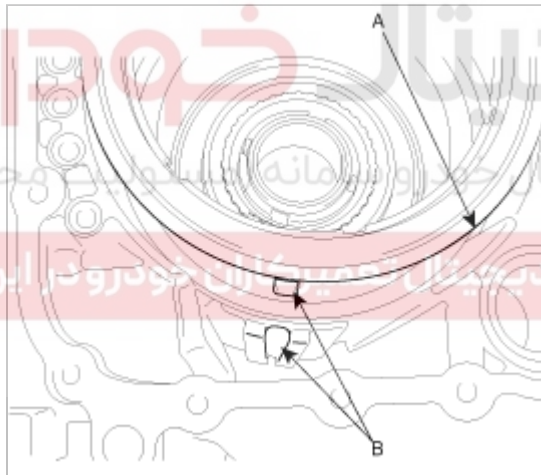
End play : 0 ~ 0.16mm(0~0.0063inch)

Part No.	Thickness(mm/inch)
45665-39500	2.0/0.0787
45665-39522	2.2/0.0866
45665-39523	2.3/0.0906
45665-39524	2.4/0.0945
45665-39525	2.5/0.0984

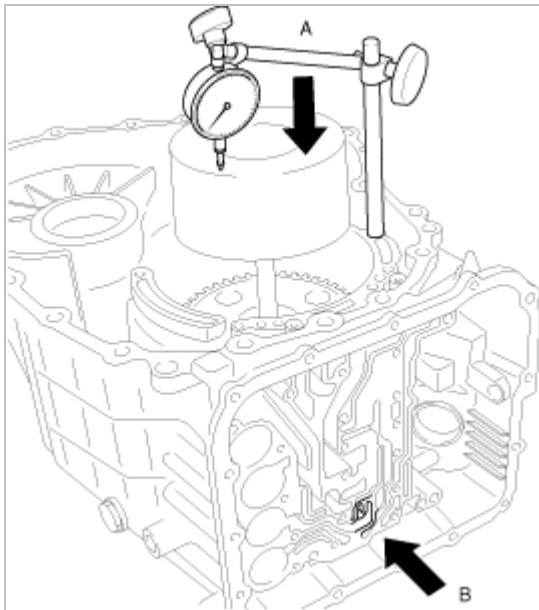
16. Disassemble the selected snap ring temporarily.
17. In order to select the brake pressure plate which satisfy the 2ND brake end play, install the brake discs&plates in order below.
 [UP] Disc(Inner disc plate)→ Dual side plate(Brake disc)→ Two plates(Outer disc plates(no.2): 2EA)→ Disc (Inner disc plate)→ Discriminating grooved plate(Outer disc plate(no.1))→ Disc(Inner disc plate)→ SST (09456-39100) [DOWN]
18. Install the 2ND brake return spring, piston(A) and snap ring.

NOTICE

When installing, align the grooves(B) and check up for the 2nd pressure pipe seal(valve body side).



19. Applying 49N(5Kgf,11lbf) weight(A) on the plates and discs and 245.17kPa(2.5 Bar, 35.56psi) pressure(B) through the valve body line, measure the end play with a dial gauge.

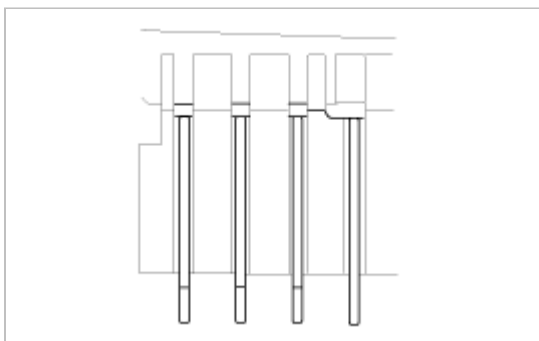


20. With the formula and the table below, select the adequate 2nd brake pressure plate.
Equation: Pressure plate thickness = Travel(A)+SST thickness(1.9mm)-End play

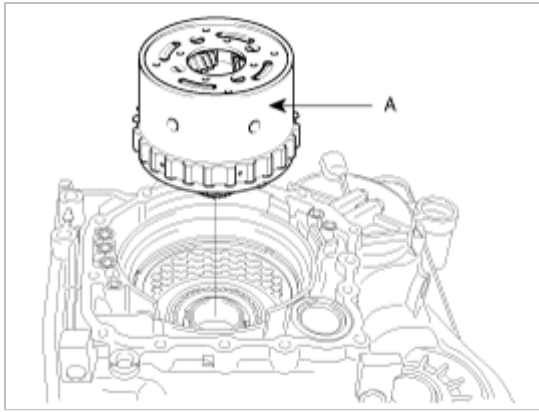
End play : 1.09 ~ 1.55mm(0.0429~0.0610inch)

Part No.	Thickness(mm/inch)
45643-39243	2.4/0.0945
45643-39263	2.6/0.1024
45643-39283	2.8/0.1102
45643-39303	3.0/0.1181
45643-39323	3.2/0.1260
45643-39343	3.4/0.1339

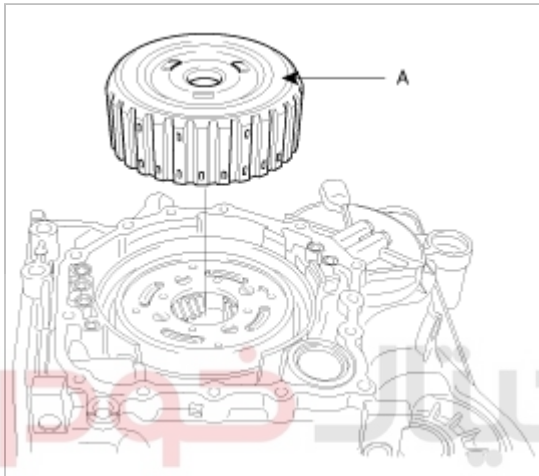
21. After disassembling the snap ring, 2ND brake piston, return spring, brake disc set(discs and plates) and SST (09456-39100) again, install the 2ND brake pressure plate selected above.
22. Install the brake plates&discs, 2nd brake piston, return spring and snap ring in order below.
[UP] Snap ring→ 2nd brake piston→ Return spring→ 2nd brake pressure plate→ Dual side plate(Brake disc)→ Plate(Outer disc plate(no.2))→ Disc(Inner disc plate)→ Plate(Outer disc plate(no.2))→ Disc(Inner disc plate)→ Discriminating grooved plate(Outer disc plate(no.1))→ Disc(Inner disc plate)→ Selected snap ring→ Brake reaction plate [DOWN]



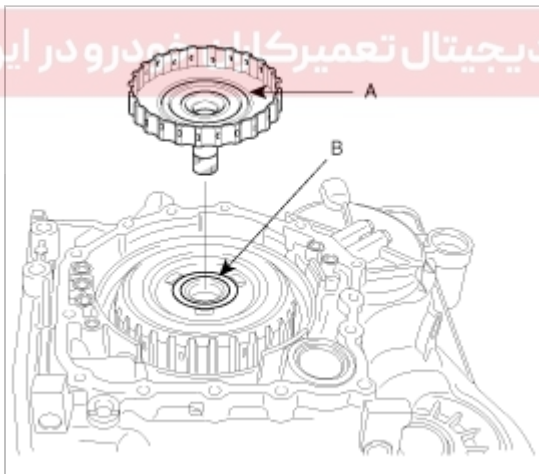
23. Install the low&reverse annulus gear assembly(A).



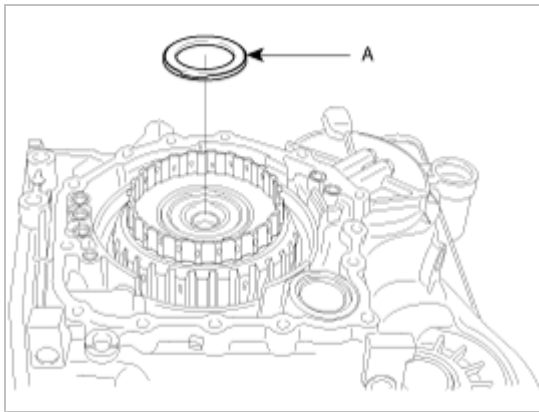
24. Install the reverse sun gear assembly(A).



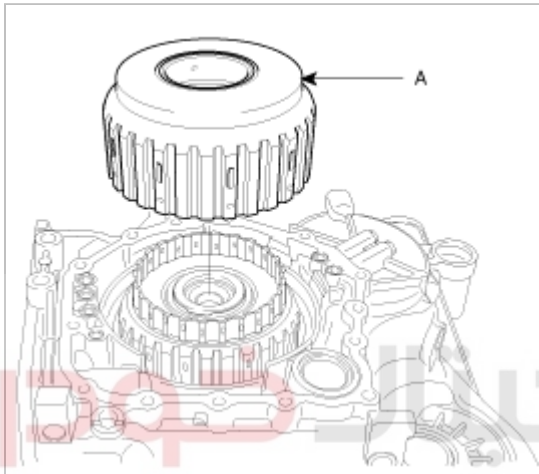
25. Assemble the overdrive clutch hub(A) and the thrust bearing(B) into the reverse&overdrive clutch. Be careful not to reverse the direction of the thrust bearing.



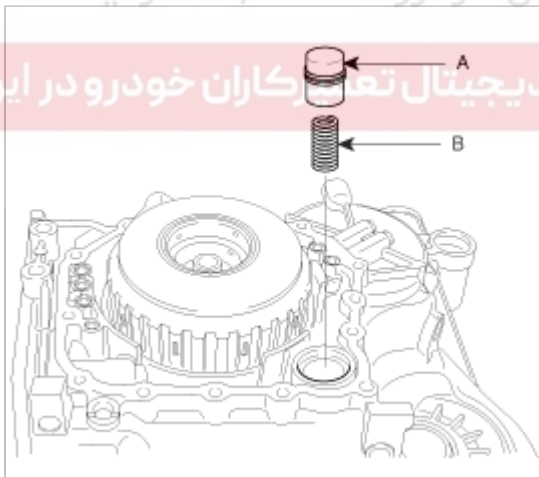
26. Install the thrust bearing(A). Be careful not to reverse the direction of the thrust bearing.



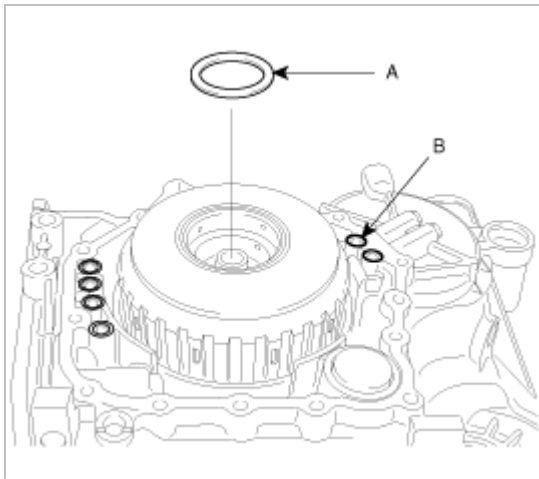
27. Install the reverse&overdrive clutch assembly(A).



28. Install the direct accumulator piston assembly(A) and coil spring(B).



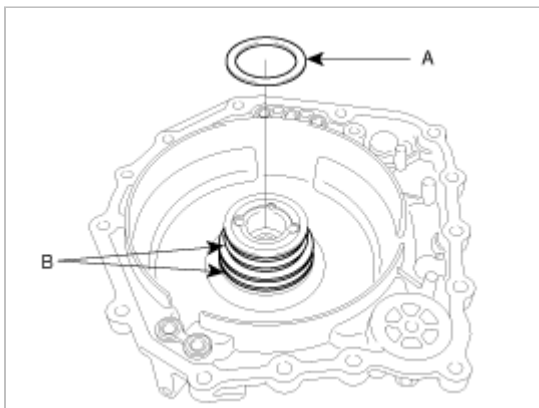
29. Assemble the thrust bearing(A) and six O-rings(B), Being careful not to reverse the direction of the thrust bearing.



30. In order to select the thrust race, install a dial gauge on the rear cover mounting surface and measure the depth(A) to the thrust race contacting surface and the height(B) to the thrust bearing in the reverse&overdrive clutch assembly.

Part No.	Thickness (mm/inch)	A-B(mm/inch)
45459-39168	1.6/0.0630	1.9~2.0/0.0748~0.0787
45853-39178	1.7/0.0669	2.0~2.1/0.0787~0.0827
45459-39188	1.8/0.0709	2.1~2.2/0.0827~0.0866
45853-39198	1.9/0.0748	2.2~2.3/0.0866~0.0906
45459-39208	2.0/0.0787	2.3~2.4/0.0906~0.0945
45853-39218	2.1/0.0827	2.4~2.5/0.0945~0.0984
45459-39228	2.2/0.0866	2.5~2.6/0.0984~0.1024
45853-39238	2.3/0.0906	2.6~2.7/0.1024~0.1063
45459-39248	2.4/0.0945	2.7~2.8/0.1063~0.1102
45853-39258	2.5/0.0984	2.8~2.9/0.1102~0.1142
45853-39260	2.8/0.1102	2.9~3.0/0.1142~0.1181

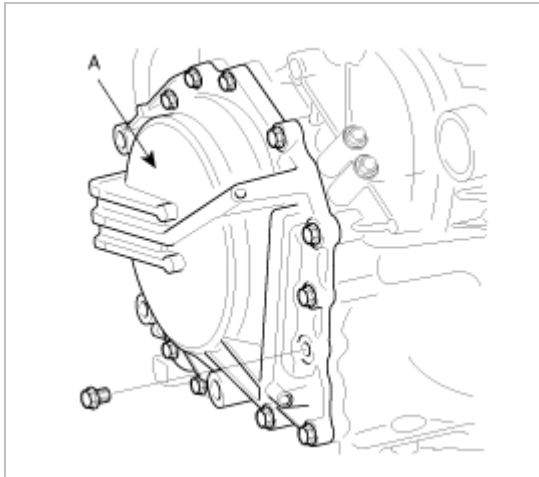
31. Assemble the thrust race(A) and the four seal rings(B).



32. Insert the used thrust bearing and install the rear cover(A).

Tightening torque :

19.6~ 25.5 Nm(200~260 Kgf.cm, 14.5~18.8 lb-ft)

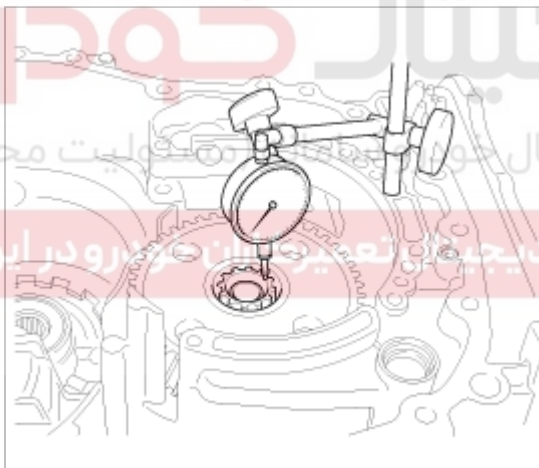
**NOTICE**

Rear cover will be installed in order to check the underdrive sun gear gap.

33. Measure the underdrive sun gear end play and check if the installed thrust race satisfies the end play condition below.

End play :

0.25 ~ 0.45mm(0.0098~0.0177inch)

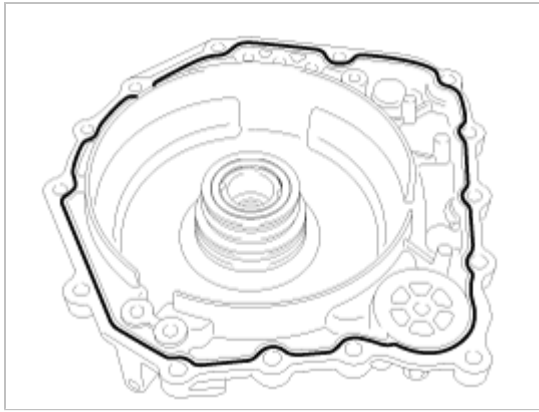


34. Apply liquid gasket with 1.6mm thickness on the rear cover surface without a pause and tighten the rear cover.

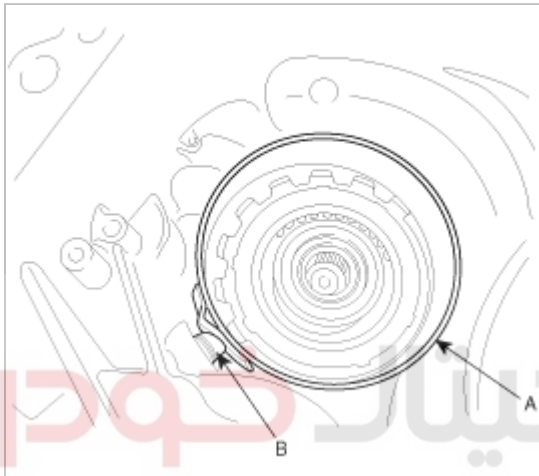
Tightening torque :

19.6~ 25.5 Nm(200~260 Kgf.cm, 14.5~18.8 lb-ft)

Liquid gasket : Threebond 1281B or LOCTITE FMD-546



35. Insert the anchor plug(B) with a hand matching into the reduction brake band hole(A).

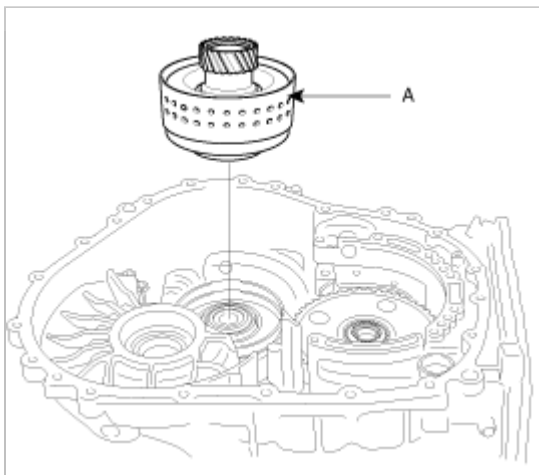


36. Assemble the thrust race.

37. Install the direct clutch(A) with a thrust bearing applied grease.

NOTICE

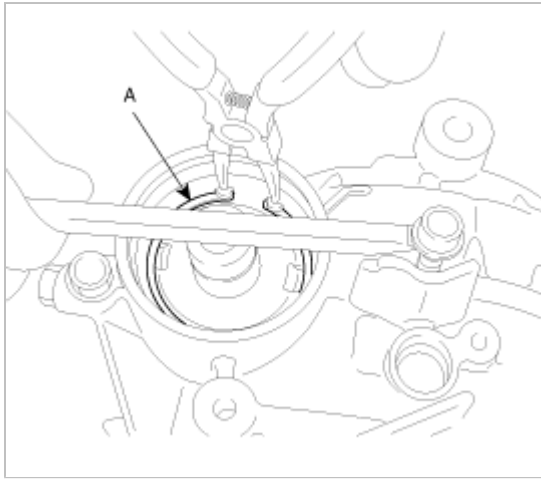
Install the direct clutch(A), turning it counterclockwise.



38. After tightening the anchor plug with the specified torque below, assemble the reduction brake piston with a snap ring(A)(inner side).

Tightening torque :

83.4~112.8Nm(850~1150 Kgf.cm, 61.5~83.2 lb-ft)



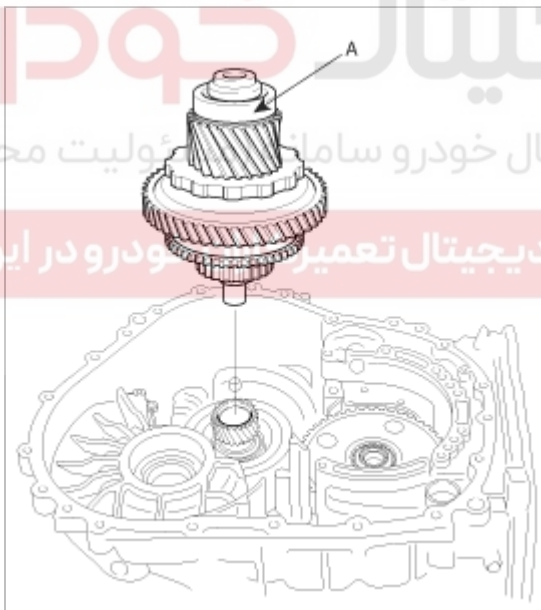
39. Install the direct planetary carrier assembly(A).

NOTICE

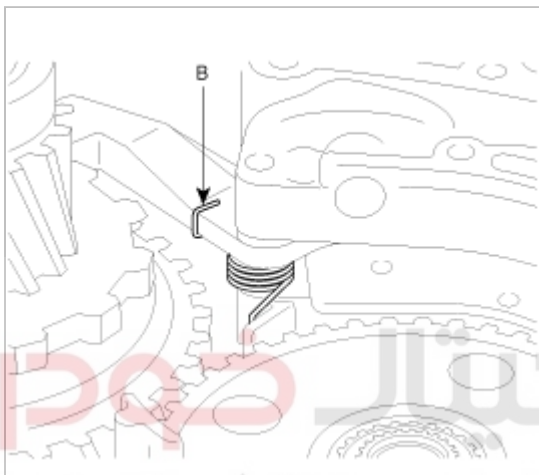
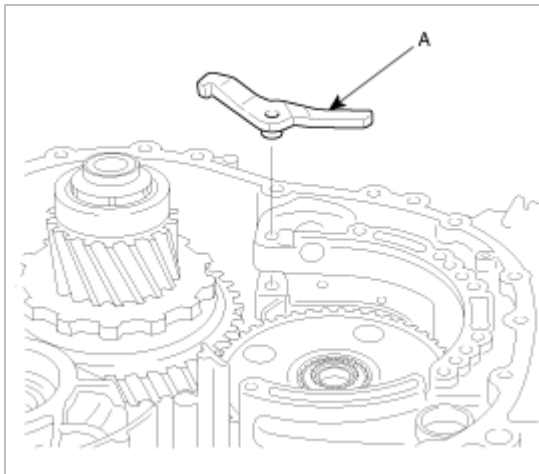
Look into the hole where the output speed sensor will be installed, in order to check if the direct planetary carrier assembly is seated correctly.

CAUTION

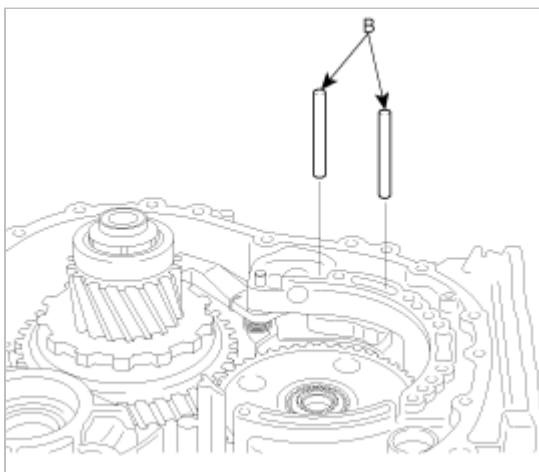
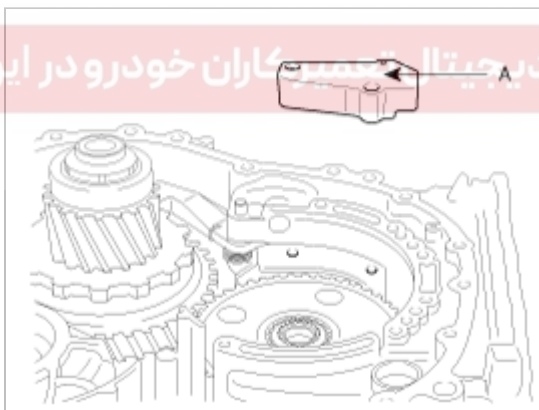
On moving the transaxle case, be careful that the direct clutch assembly will not slide out.



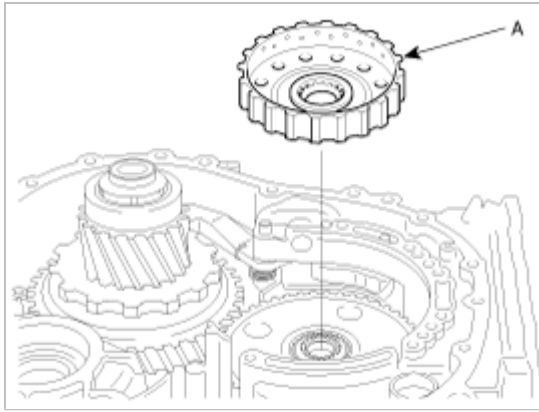
40. Install the parking sprag(A), spring(B) and then the parking sprag shaft.



41. Install the parking roller support(A) and the roller shafts(B)(2EA).



42. Install the underdrive clutch hub(A).



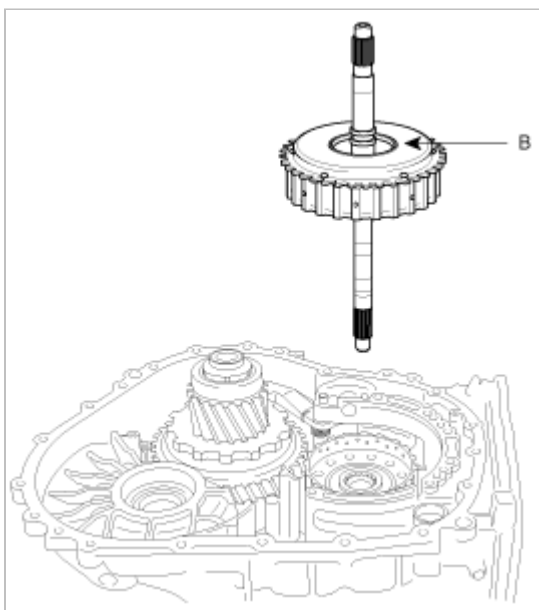
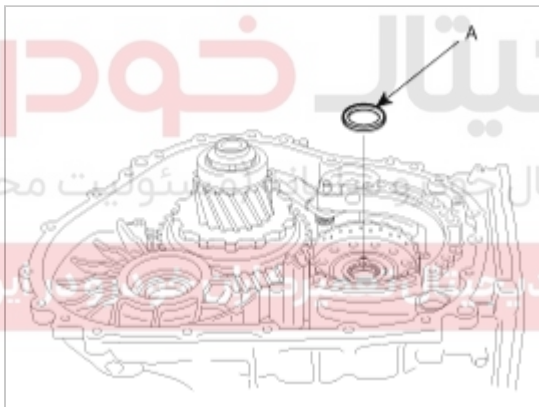
43. Assemble the thrust bearing(A) and install the underdrive clutch(B) with the input shaft.

CAUTION

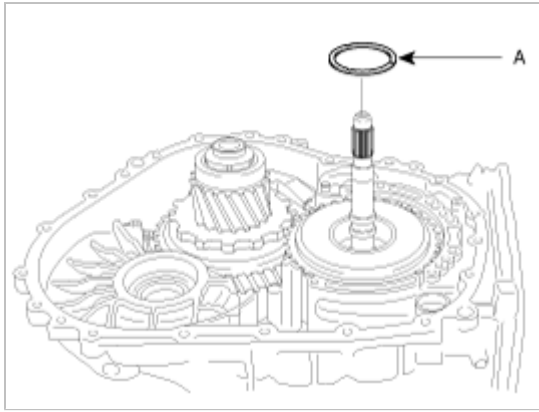
Be careful not to reverse the direction of the thrust bearing.

NOTICE

Look into the hole where the input speed sensor will be installed, in order to check if the underdrive clutch is seated correctly.



44. Install the used thrust washer(A).



45. Connect the pipe to the oil pump and install the oil pump with a new oil pump gasket.

Tightening torque :

9.8~11.8Nm(100~120 Kgf.cm, 7.2~8.7 lb-ft)

CAUTION

Do not reuse the used gasket.

46. Tighten the oil pump mounting bolt(A) with the TORQUE.

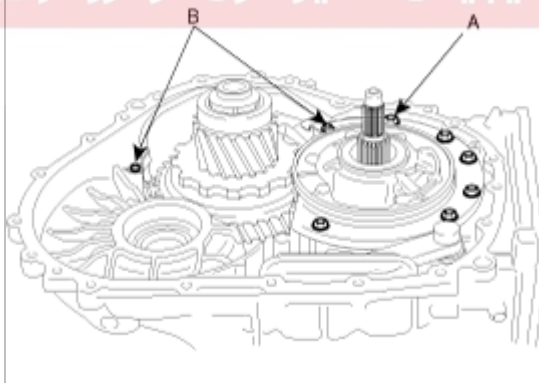
Tightening torque :

19.6~25.5Nm(200~260 Kgf.cm, 14.5~18.8 lb-ft)

Tighten the oil pump pipe mounting bolt(B) with the TORQUE.

Tightening torque :

9.8~11.8Nm(100~120 Kgf.cm, 7.2~8.7 lb-ft)

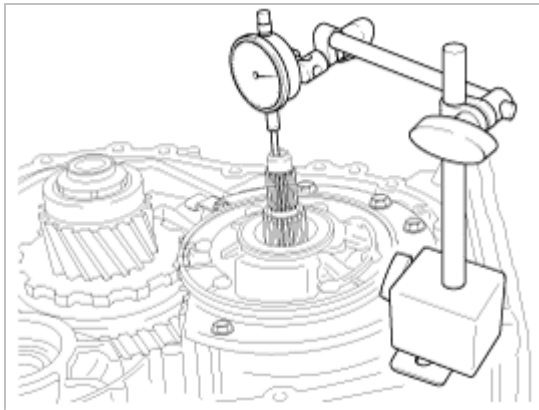


47. Check the input shaft end play and replace the thrust washer which was installed in the step 43 with the appropriate thrust washer from the table below.

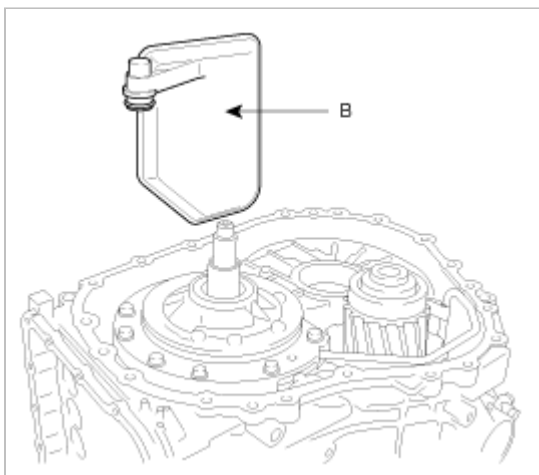
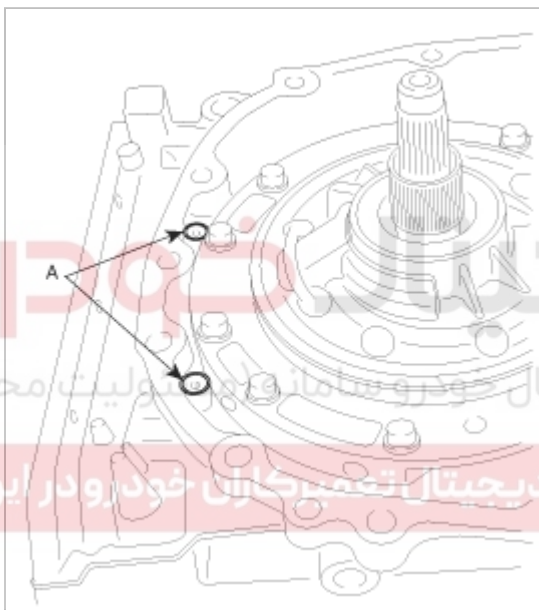
End play : 0.70 ~ 1.45mm(0.0276~0.0571inch)

Part No.	Thickness (mm/inch)
45544-39180	1.8/0.0709
45544-39200	2.0/0.0787
45544-39220	2.2/0.0866
45544-39240	2.4/0.0945

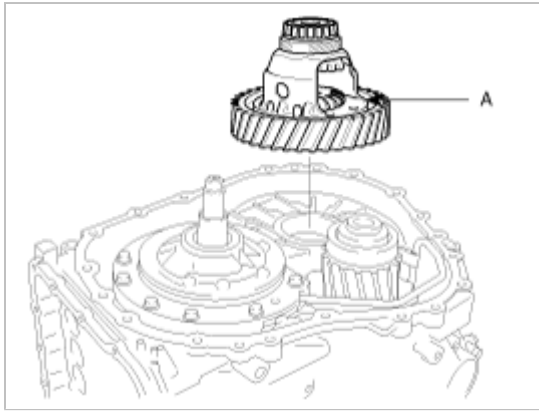
45544-39260	2.6/0.1024
45544-39280	2.8/0.1102



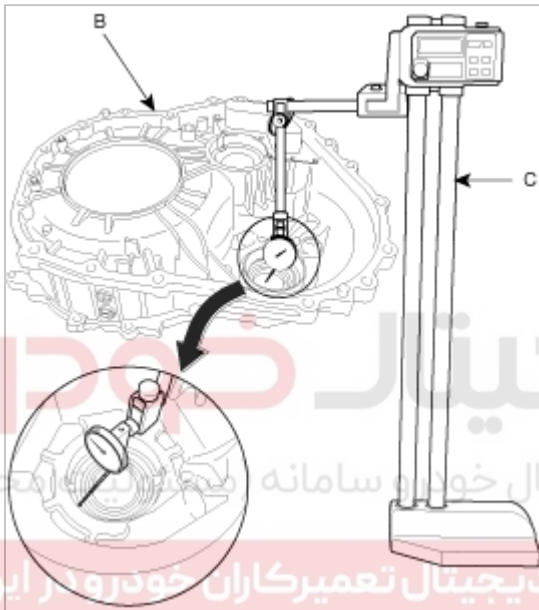
48. Install the two O-rings(A) and the main oil filter(B).



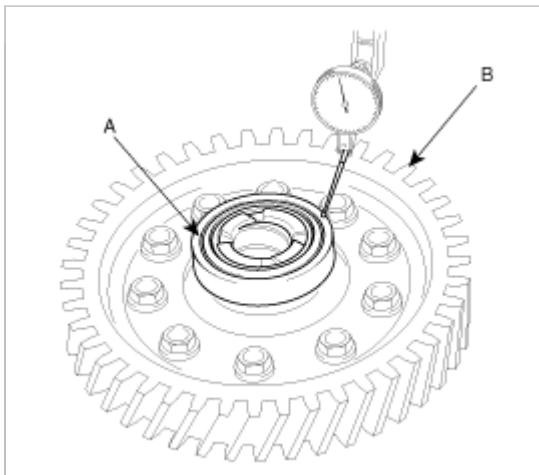
49. Install the differential assembly(A).



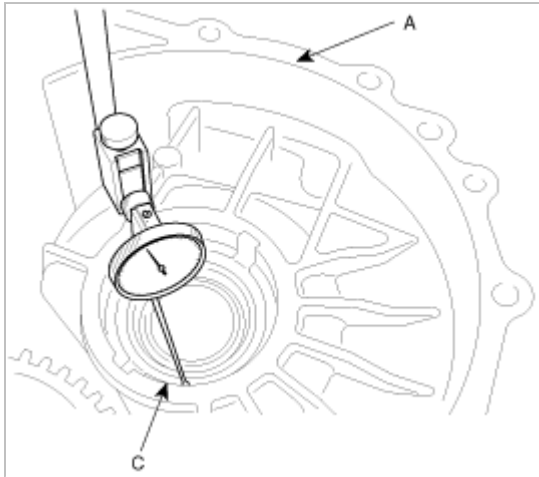
50. With a dial gauge(C), set the torque converter housing mounting surface(B) as its zero point and measure the depth(A') to the differential spacer contacting surface.



51. After installing the differential outer races(A)(2EA-both sides), measure the total differential(B) length(C').



52. Measure the depth(B') from the transaxle case mounting surface(A) to the differential outer race contacting surface(C).



53. With the measured data(A',B' and C') in the steps 49~51, select the appropriate differential bearing spacer by the equation below.

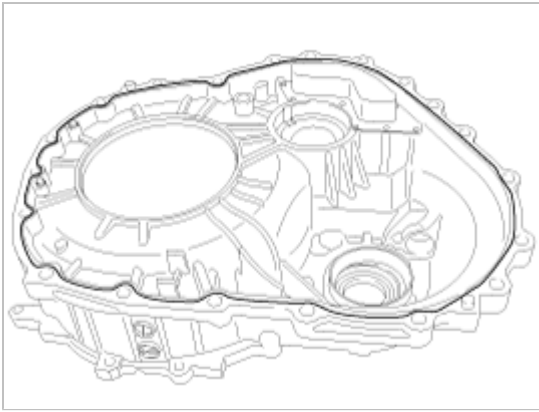
Equation: Spacer thickness = A'+B'-C' + End play

End play : 0.045 ~ 0.105mm(0.0018~0.0041inch)

Part No.	Thickness(mm/inch)	Identification mark
45849-39883	0.83/0.0327	83
45849-39886	0.86/0.0339	86
45849-39889	0.89/0.0350	89
45849-39892	0.92/0.0362	92
45849-39895	0.95/0.0374	95
45849-39898	0.98/0.0386	98
45849-39801	1.01/0.0398	01
45849-39804	1.04/0.0409	04
45849-39807	1.07/0.0421	07
45849-39810	1.10/0.0433	10
45849-39813	1.13/0.0455	13
45849-39816	1.16/0.0457	16
45849-39819	1.19/0.0469	19
45849-39822	1.22/0.0480	22
45849-39825	1.25/0.0492	25
45849-39828	1.28/0.0504	28
45849-39831	1.31/0.0516	31
45849-39834	1.34/0.0528	34
45849-39837	1.37/0.0539	37

54. Apply liquid gasket at the torque converter housing at Ø1.6mm thickness as the figure without a pause.

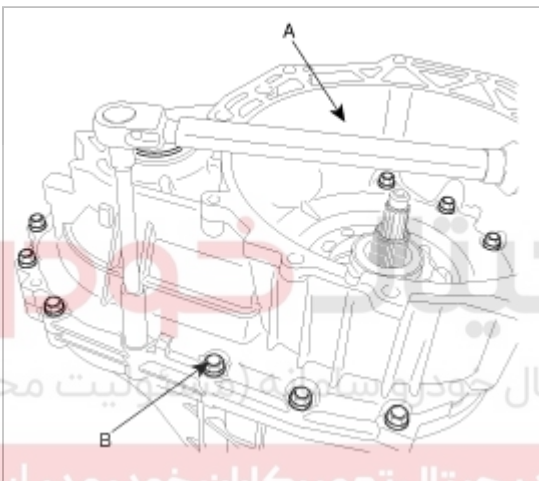
Liquid gasket : Threebond 1281B or LOCTITE FMD-546



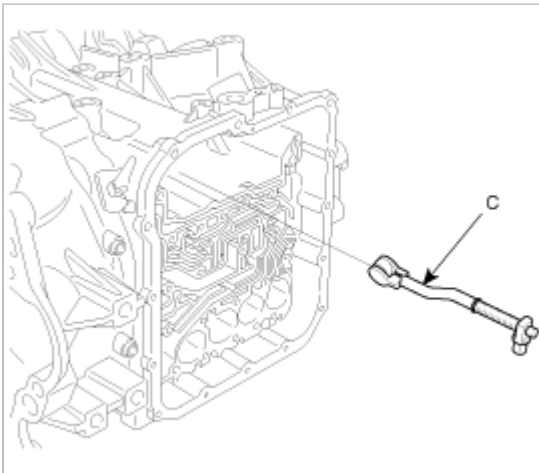
55. Install the torque converter housing(A) and tighten the connecting bolts(B)(20EA) with the TORQUE.

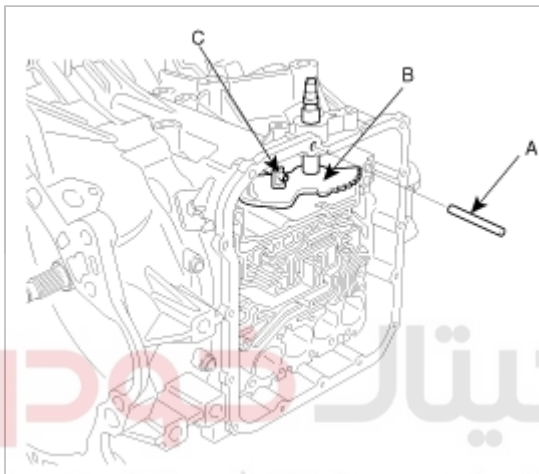
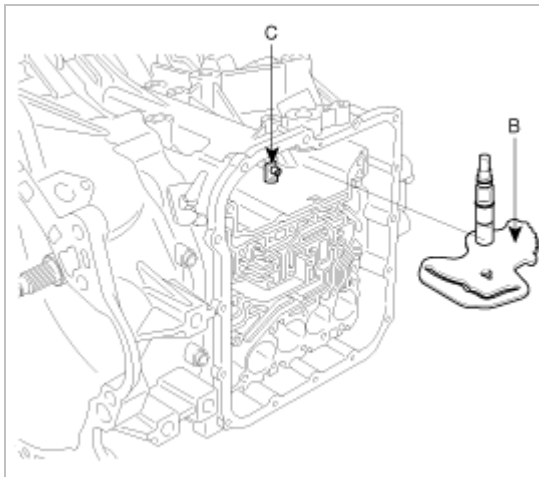
Tightening torque :

42~54Nm(428~551 Kgf.cm, 31.0~39.9 lb-ft)

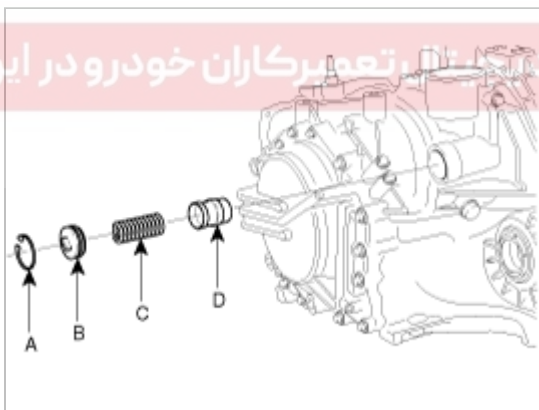


56. Applying grease to the O-rings(2EA) of the manual control shaft(B), install the parking roller rod(C), manual control shaft(B) and the shaft(A).





57. Install the reduction brake accumulator(D), spring(C), piston(B) and then the snap ring(A).



58. Install each accumulator piston, a new seal ring, and the spring.

NOTICE

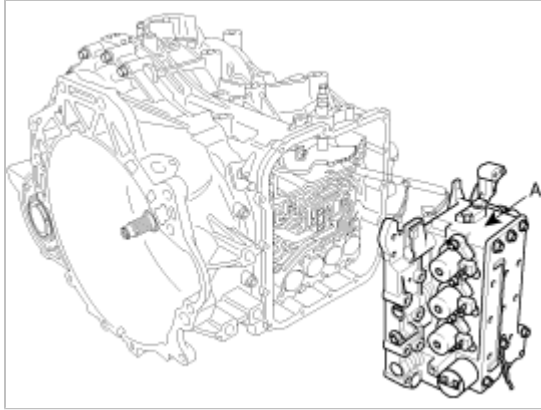
Accumulator spring identification.

No.	Use	I.D.Color
1	LR brake	Colorless
2	UD clutch	Yellow
3	2ND brake	White
4	OD clutch	Colorless

59. Install the strainer and the second brake retainer oil seal.
60. Install the solenoid valve harness and the snap ring around the connector tightly.
61. Install the valve body(A) and tighten the mounting bolts(28EA).

Tightening torque :

9.8~11.8Nm(100~120 Kgf.cm, 7.2~8.7 lb-ft)



62. Install the VFS(variable force solenoid) reservoir.

Tightening torque :

9.8~11.8Nm(100~120 Kgf.cm, 7.2~8.7 lb-ft)

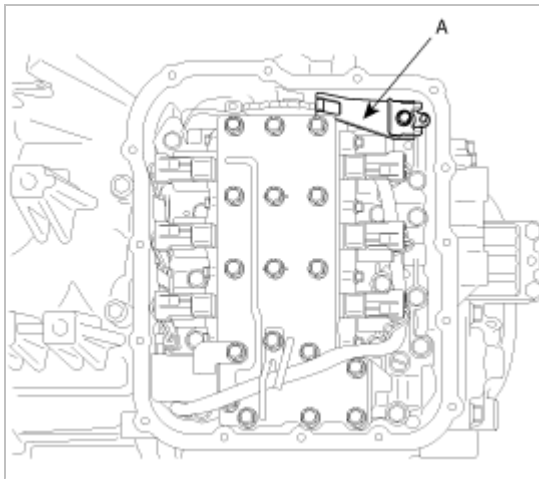
63. Enlink the connector harness to the connector and the oil temperature sensor of the valve body.

No.	Connecting point	Wire color	Connector housing color
1	OD solenoid valve	Orange, Red	Black
2	UD solenoid valve	White, Red, Red	Black
3	LR solenoid valve	Brown, yellow	Milky white
4	2nd solenoid valve	Green, Red, Red	Milky white
5	RED solenoid valve	Brown, Yellow, Yellow	Black
6	DCC solenoid valve	Blue, Yellow, Yellow	Black
7	VFS	Brown, Orange	Black
8	Temperature sensor	Black, Red	Black

64. Install the manual control shaft detent spring(A).

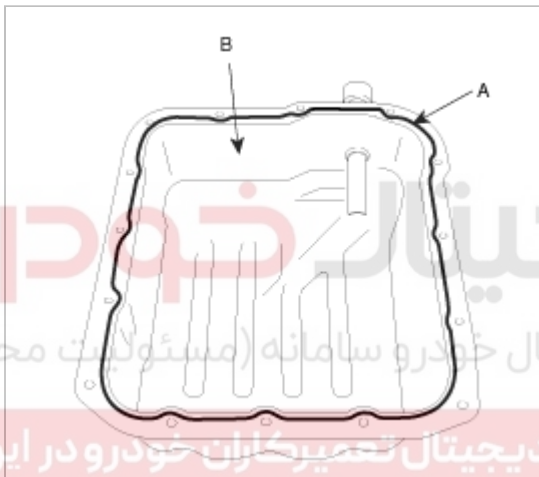
Tightening torque :

4.9~6.9 Nm(50~70 Kgf.cm, 3.6~5.1 lb-ft)



65. Apply liquid gasket(A) at the valve body cover(B) at 2.5mm thickness as the figure without a pause.

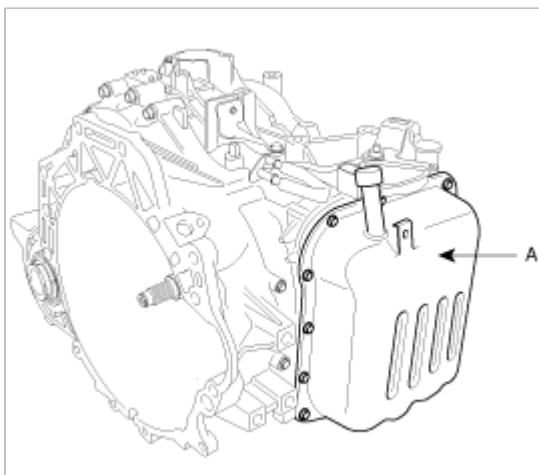
Liquid gasket : Threebond 1281B or LOCTITE FMD-546



66. Install the valve body cover(A) and tighten the mounting bolts with the TORQUE.

Tightening torque :

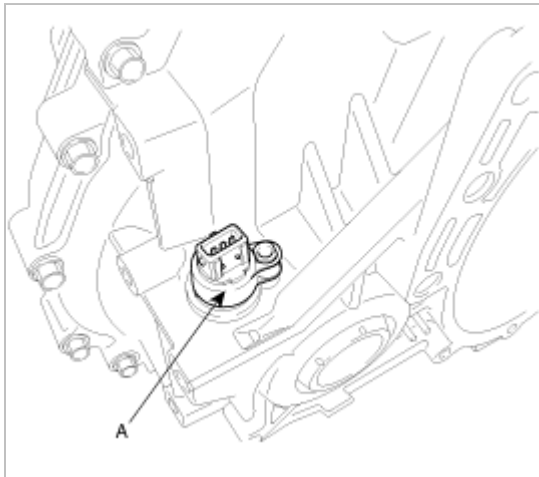
9.8~11.8Nm(100~120 Kgf.cm, 7.2~8.7 lb-ft)



67. Install the vehicle speed sensor(A).

Tightening torque :

3.9~5.9Nm(40~60 Kgf.cm, 2.9~4.3 lb-ft)



68. Install the inhibitor switch(A) and the manual control lever(B).

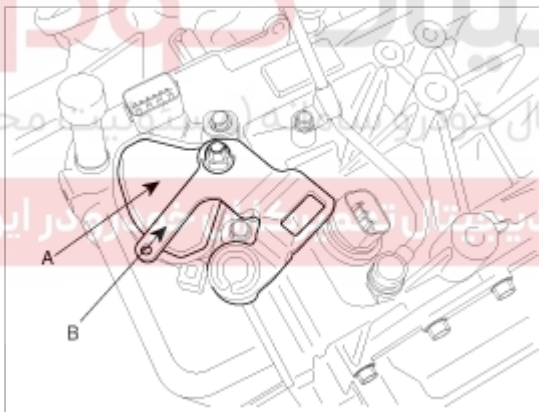
Tightening torque :

9.8~11.8Nm(100~120 Kgf.cm, 7.2~8.7 lb-ft) - A

17.7~24.5Nm(180~250 Kgf.cm, 13.0~18.1 lb-ft) - B

CAUTION

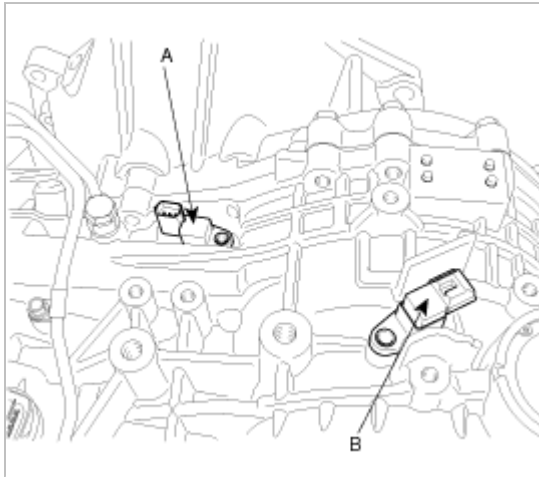
The inhibitor switch should be installed with the valve body installed as it was.



69. Install the input(A) and the output speed sensors(B).

Tightening torque :

9.8~11.8Nm(100~120 Kgf.cm, 7.2~8.7 lb-ft)



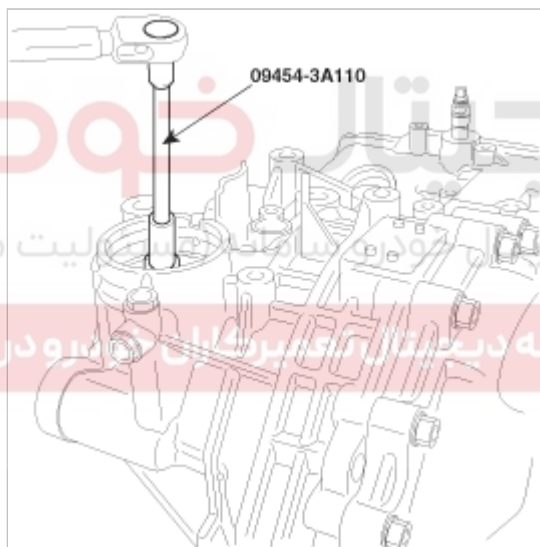
70. Install the eyebolt, a new gasket and the oil cooler feed tube.

71. Install the oil level gauge.

72. Install each bracket.

73. Adjust the reduction brake band by the reduction brake piston which was installed in the step 37.

- (1) Fix the reduction brake piston not to rotate. Using the SST(09454-3A110), tighten/ release the adjusting rod with the specified torque(9.8Nm(100Kgf.cm, 7.2lb-ft)) twice.



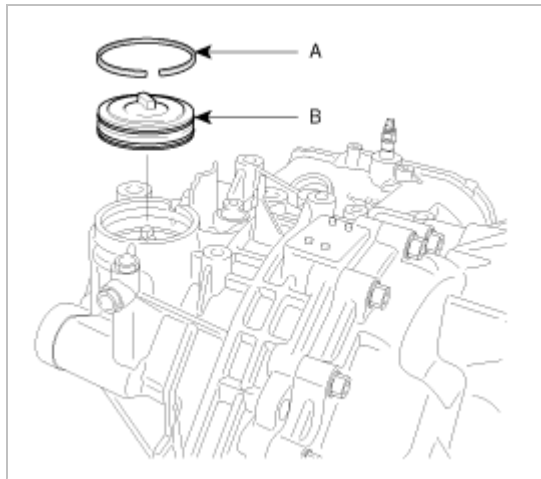
- (2) Tighten it with the specified torque (4.9Nm(50Kgf.cm, 3.6lb-ft)) and turn it to loose until its 5.5~5.75 revolution.

- (3) Tighten the reduction brake piston rod fixing nut with the specified torque.

Tightening torque :

14.7~24.5Nm(150~250 Kgf.cm, 10.8~18.1 lb-ft)

74. Insert the outer reduction brake piston(B) and the snap ring(A).



دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

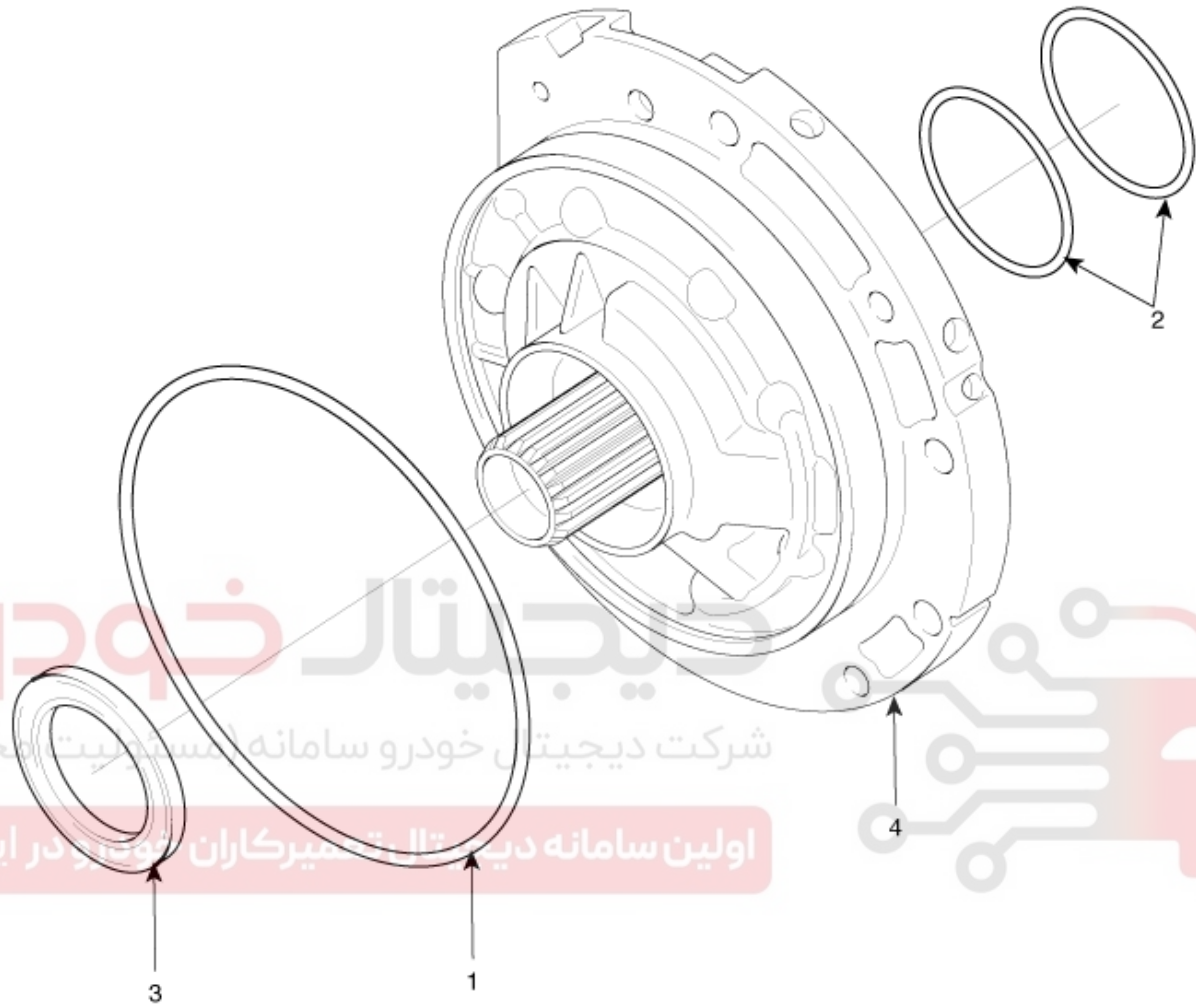
اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



2005 > A5HF1 >



Components



1. O-ring
2. D-ring

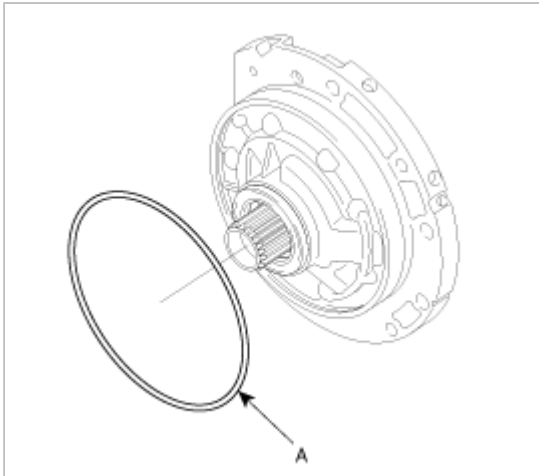
3. Oil seal
4. Oil pump

2005 > A5HF1 >

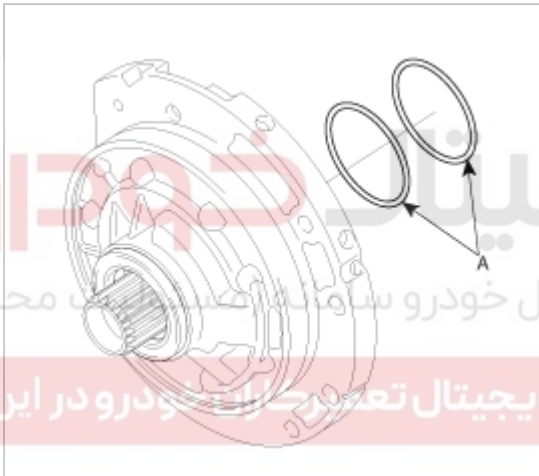


Disassembly

1. Separate the O- ring(A).



2. Separate the seal rings(A)(2EA).



3. Separate the oil seal.

Reassembly

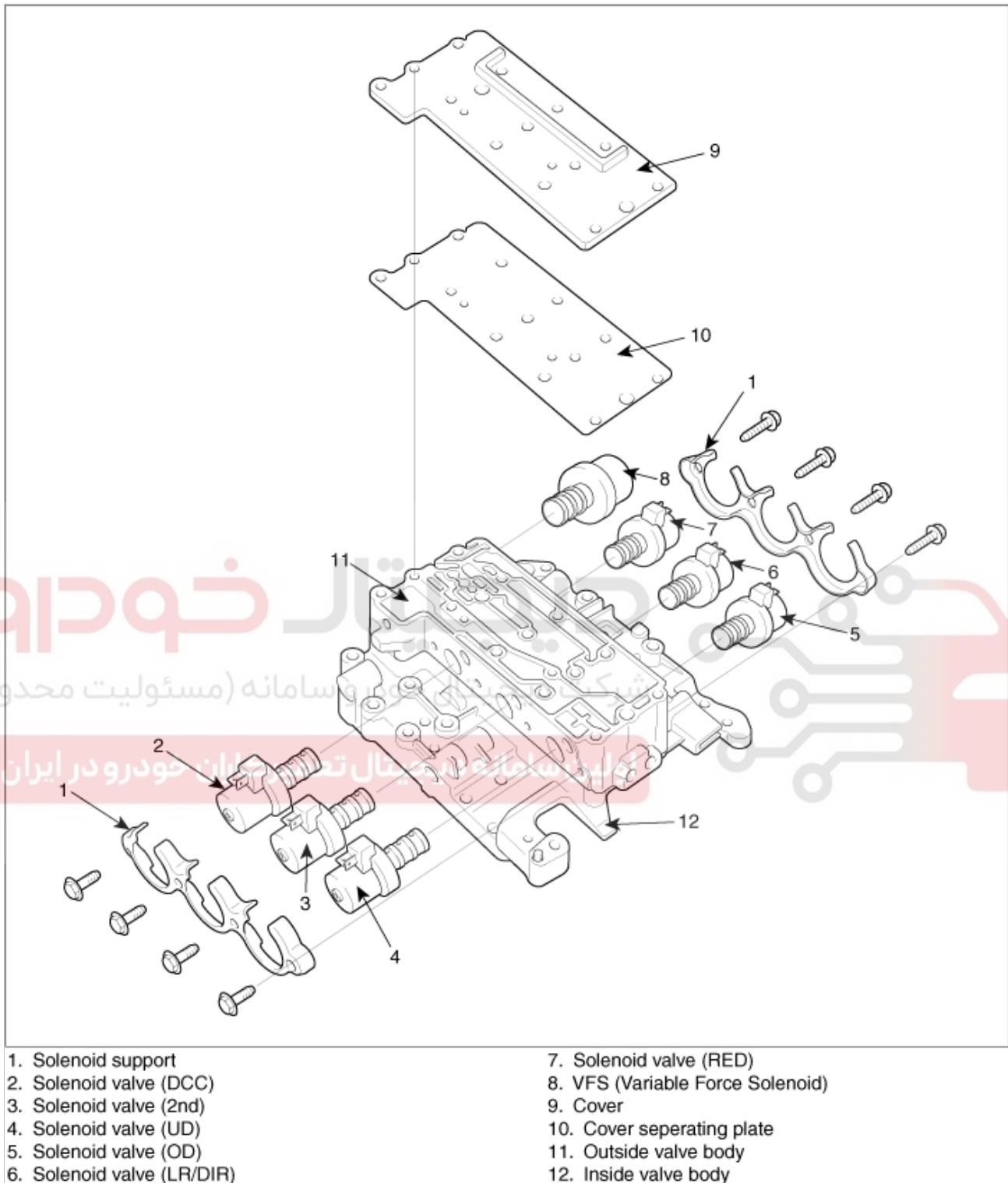
Reassembly is in the reverse order of disassembly. O-rings, seal rings or oil seals should be replaced with new ones.

At oil seal installation, take care so that leakage occurrence may not happen using SST(09452-21200).

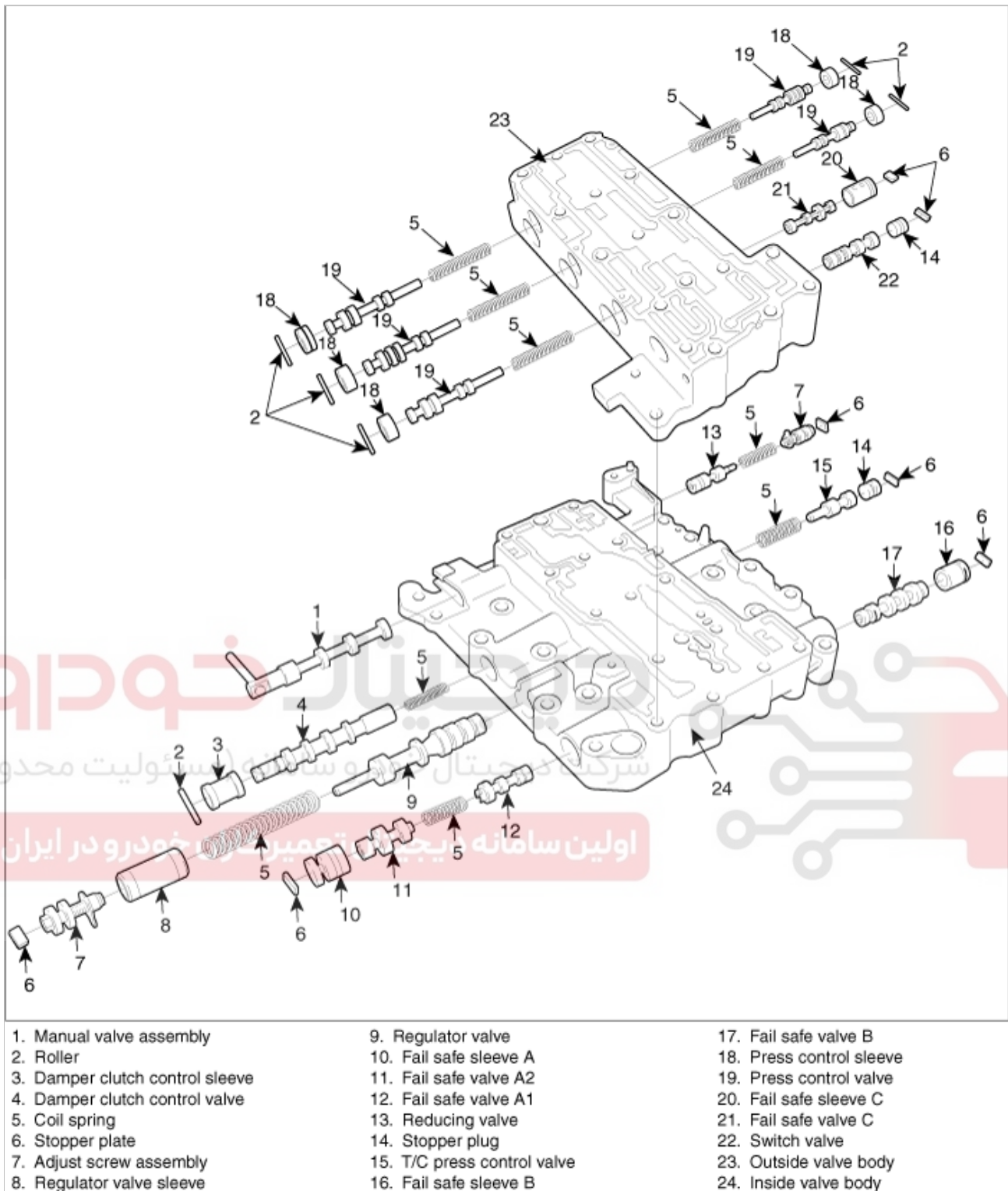
2005 > A5HF1 >



Components(1)



Components(2)

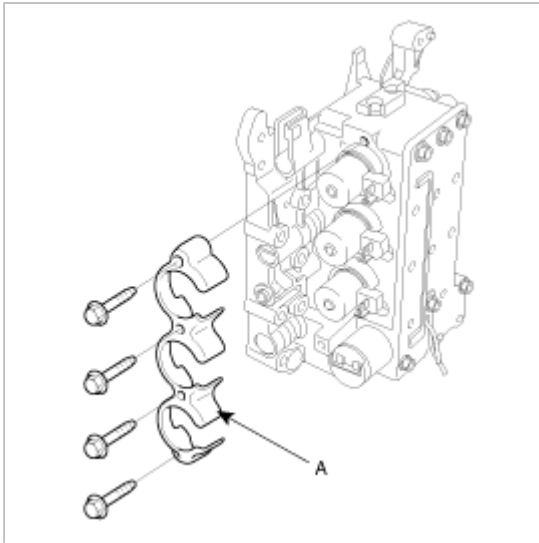


2005 > A5HF1 >

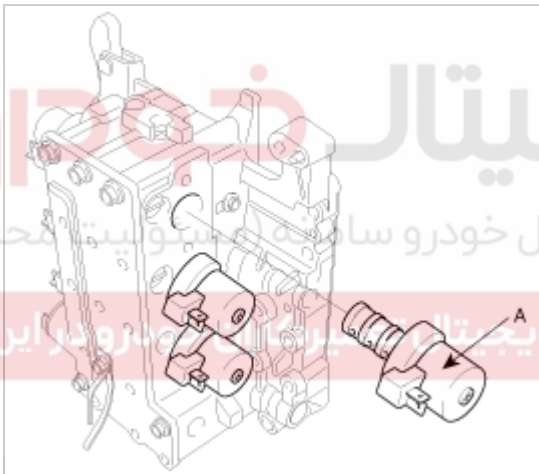


Disassembly

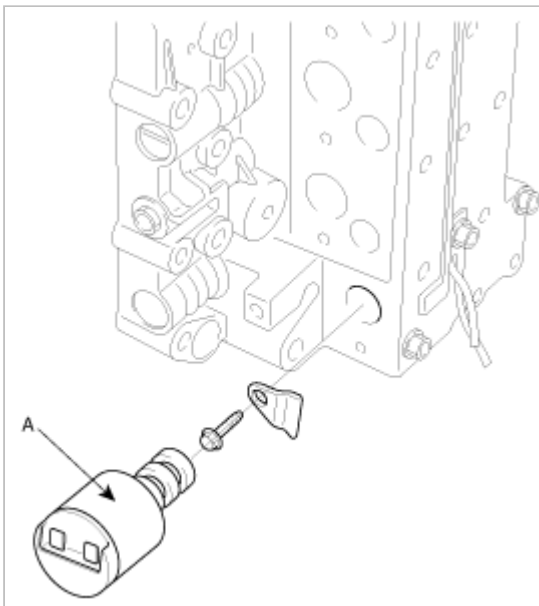
1. Remove the solenoid support(A).



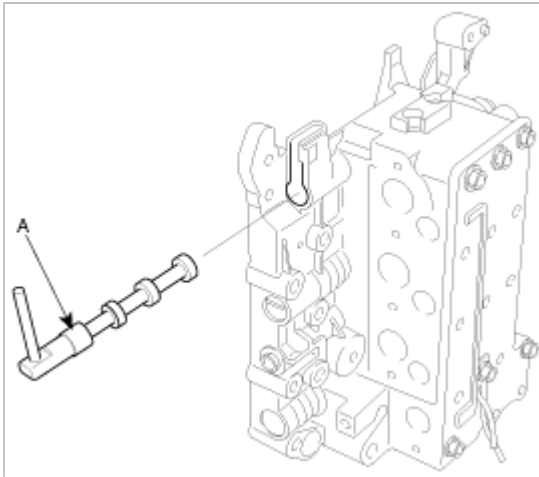
2. Remove the solenoid valve(A).



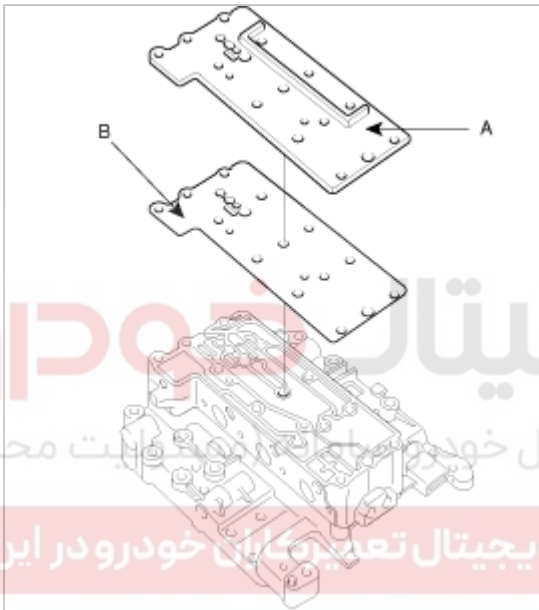
3. Remove the VFS(Variable Forced Solenoid)(A).



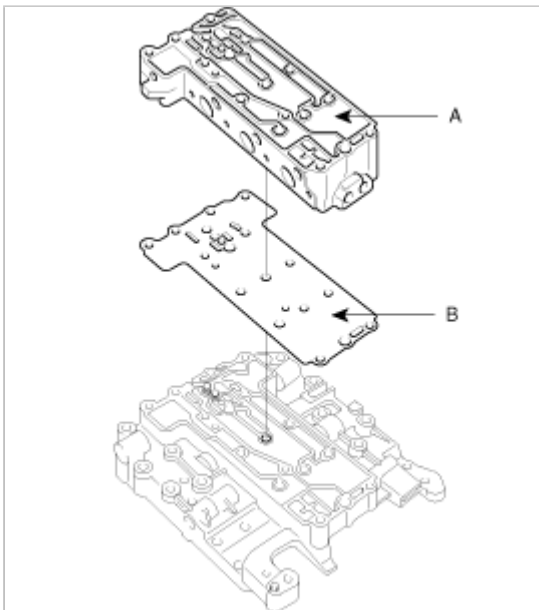
4. Remove the manual valve(A).



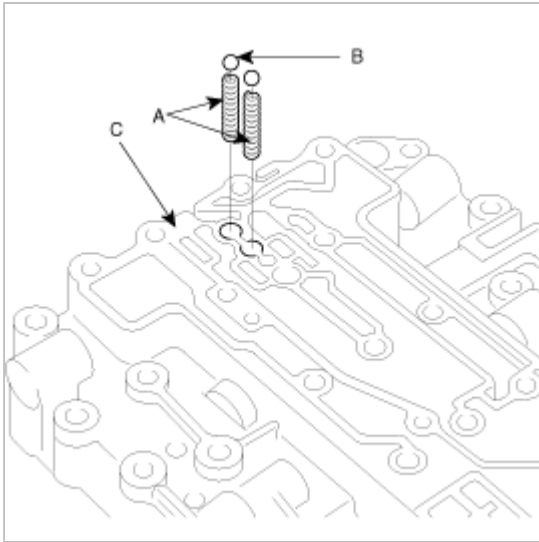
5. Loosening the bolts and remove the cover(A) and the cover seperating plate(B).



6. Remove the outside valve body(A) and the outside seperating plate(B).



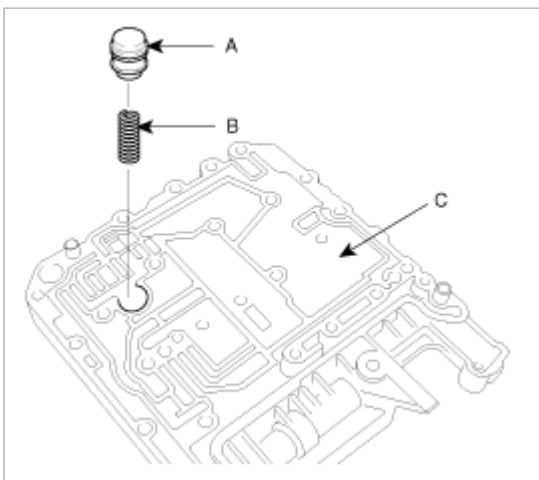
7. Take out the steel balls(B) and UD/ OD clutch coil springs(A)(2EA) from the inside valve body(C).



8. Loosening the bolts(A), remove the inside separating plate(B).

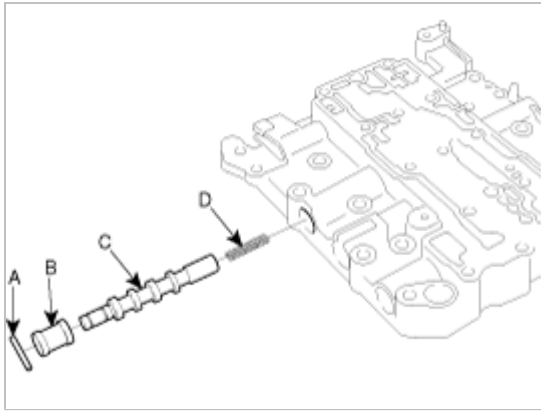


9. Remove the damping valve(A) and coil spring(B) from the inside valve body(C).

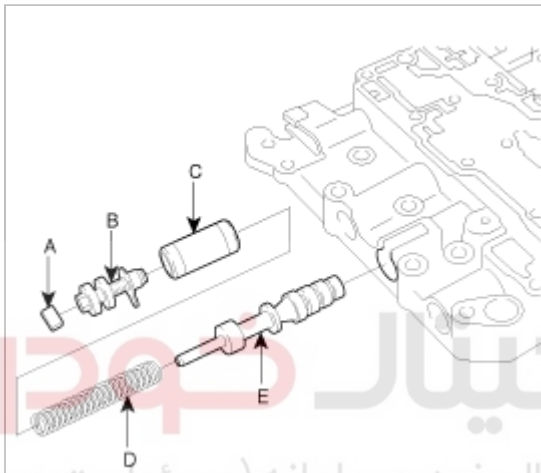


10. Remove the underdrive/overdrive steel ball, coil spring, reverse clutch steel ball and coil spring.

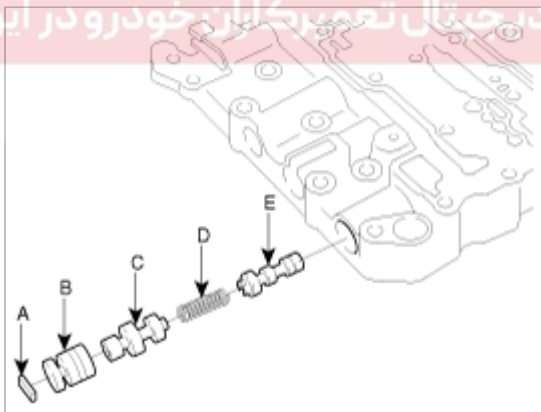
11. After taking out the roller(A), remove the damper clutch control sleeve(B), valve(C) and coil spring(D).



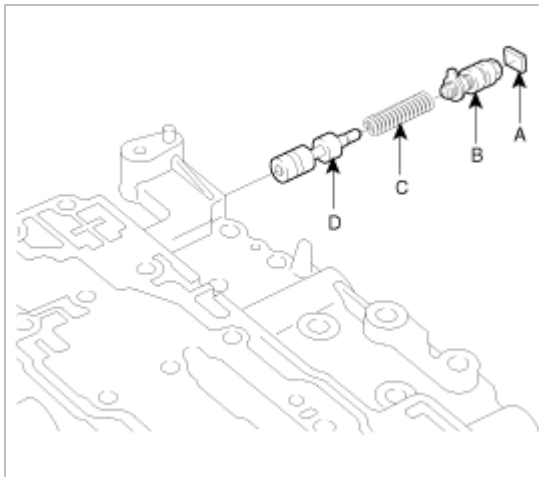
12. After pulling out the stopper plate(A), remove the adjusting screw(B), regulator valve sleeve(C), coil spring(D) and regulator valve(E) in this order.



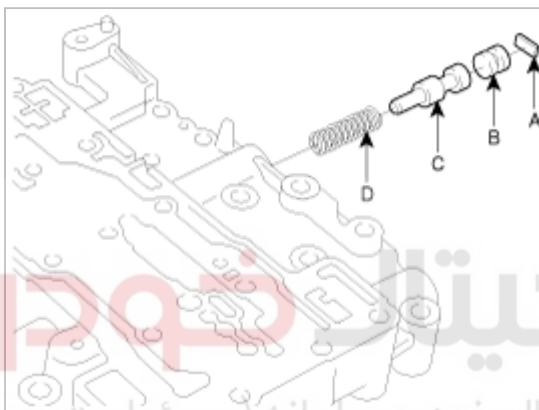
13. After drawing out the stopper plate(A), remove the fail safe sleeve A(B), fail safe valve A2(C), coil spring(D) and fail safe valve A1(E) in this order.



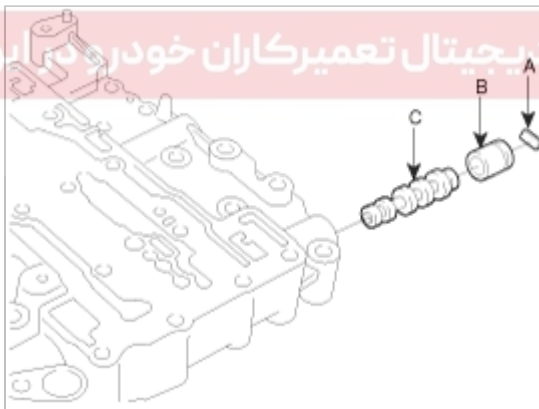
14. After picking out the stopper plate(A), remove the adjusting screw(B), coil spring(C) and reducing valve(D) in this order.



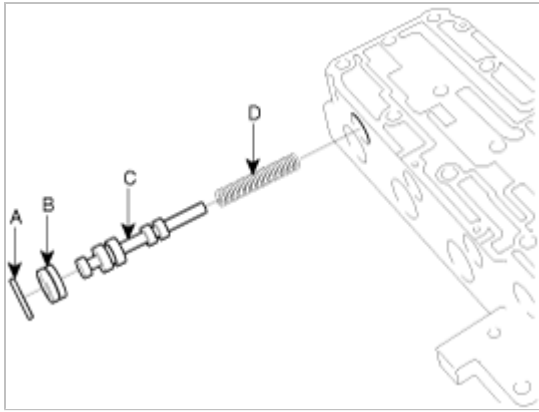
15. After picking out the stopper plate(A), remove the stopper plug(B), torque converter control valve(C) and spring(D) in this order.



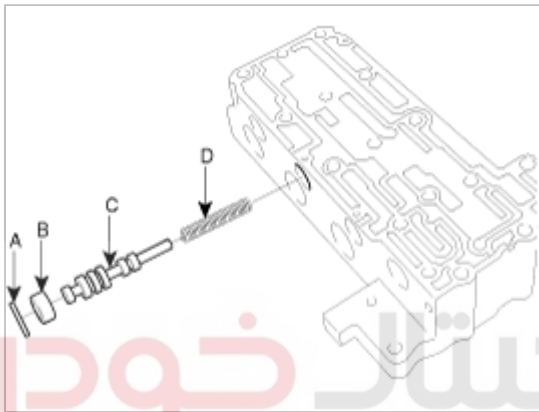
16. After taking the stopper plate(A), separate the fail safe sleeve B(B) and the fail safe valve B(C) in order.



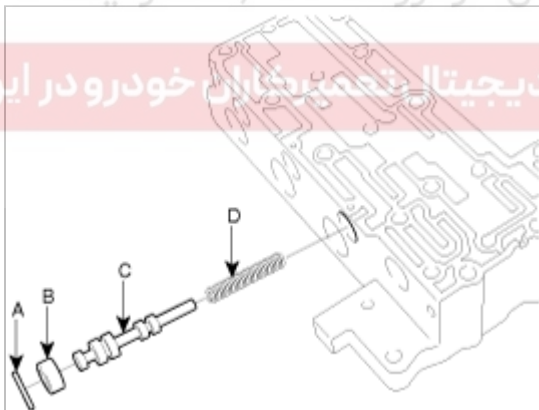
17. After taking the roller(A), separate the over drive pressure control sleeve(B), pressure control valve(C) and coil spring(D).



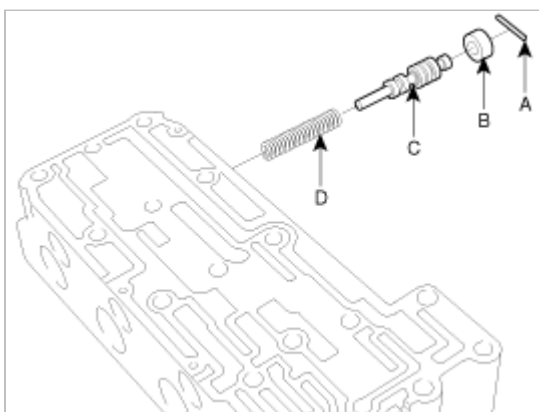
18. After taking the roller(A), separate the LR/direct pressure control sleeve(B), pressure control valve(C) and coil spring(D).



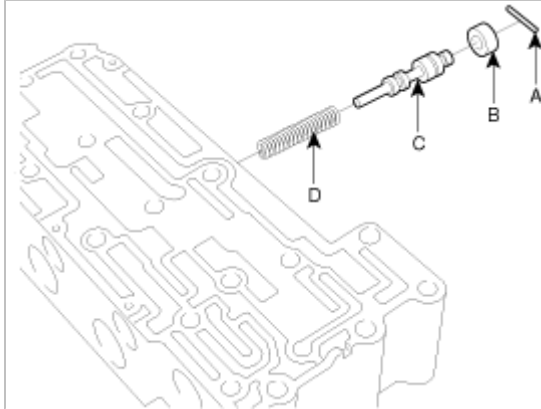
19. After taking the roller(A), separate the reduction pressure control sleeve(B), pressure control valve(C) and coil spring(D).



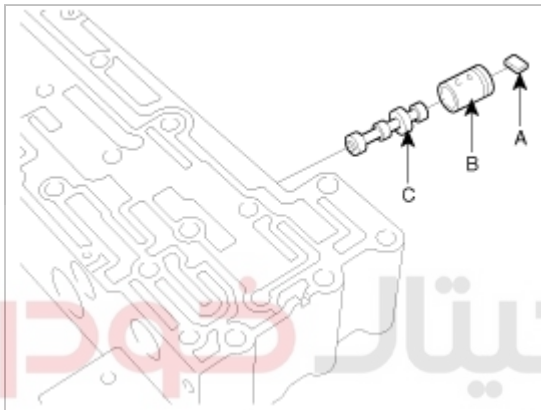
20. After taking the roller(A), separate the underdrive pressure control sleeve(B), pressure control valve(C) and coil spring(D).



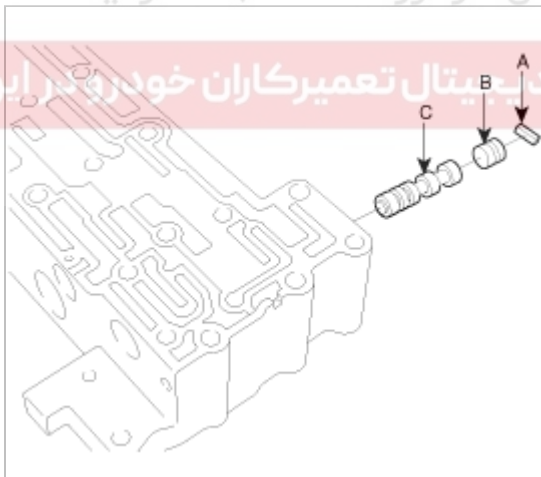
21. After taking the roller(A), separate the 2nd pressure control sleeve(B), pressure control valve(C) and coil spring(D).



22. After taking out the stopper plate(A), separate the fail safe sleeve C(B) and fail safe valve C(C) in order.



23. After taking the stopper plate(A), separate the stopper plug(B) and switch valve(C) in order.

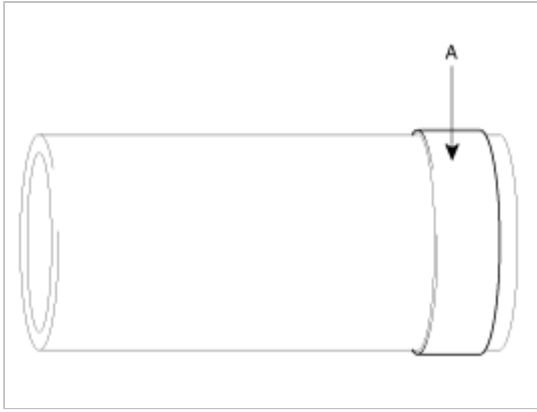


Reassembly

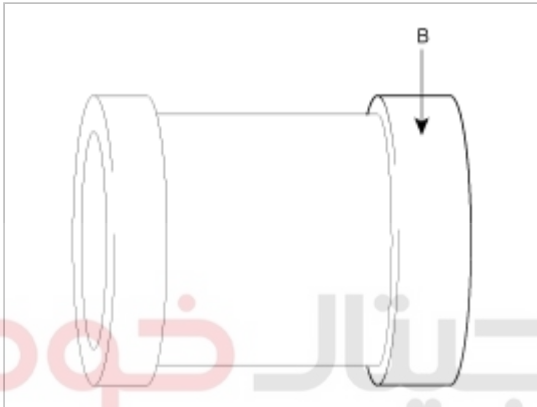
1. Assemble the valves to the valve body with the springs and sleeves etc. Observe the caution below.

CAUTION

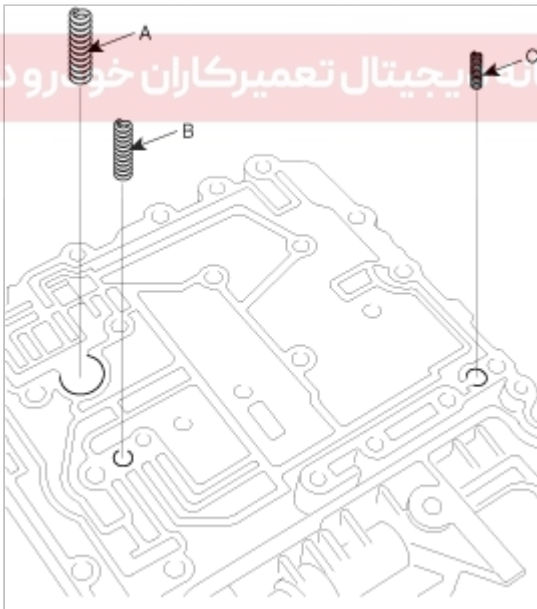
- When assembling the regulator valve sleeve, turn the sparking segment(A) as follows to face the valve body side.



- When assembling the damper clutch control sleeve, turn the thick identification band segment(B) as follows to face the valve body side.



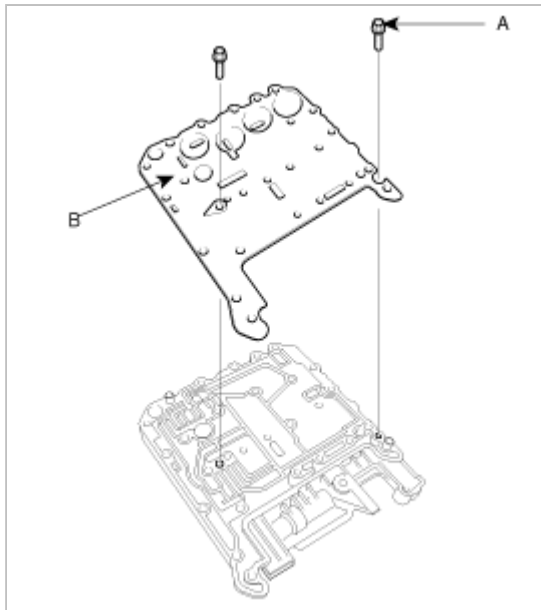
- Observe at assembly of the damping valve coil spring(A), coil spring(B) and reverse clutch coil spring (C) because size differs each.



2. Install the inside separation plate(B) by the bolts(A).

Tightening torque :

4.9~6.9Nm(50~70 Kgf.cm, 3.6~5.1 lb-ft)



3. After inserting the steel balls and coil springs(each 2EA) in the inside valve body, install the outside valve body and separation plate.
4. Install the cover separation plate and cover. Tighten the bolts.

Tightening torque :

9.8~11.8Nm(100~120 Kgf.cm, 7.2~8.7 lb-ft)

5. After installing the manual valve, VFS, and each solenoid controlled valve, fit the solenoid support.

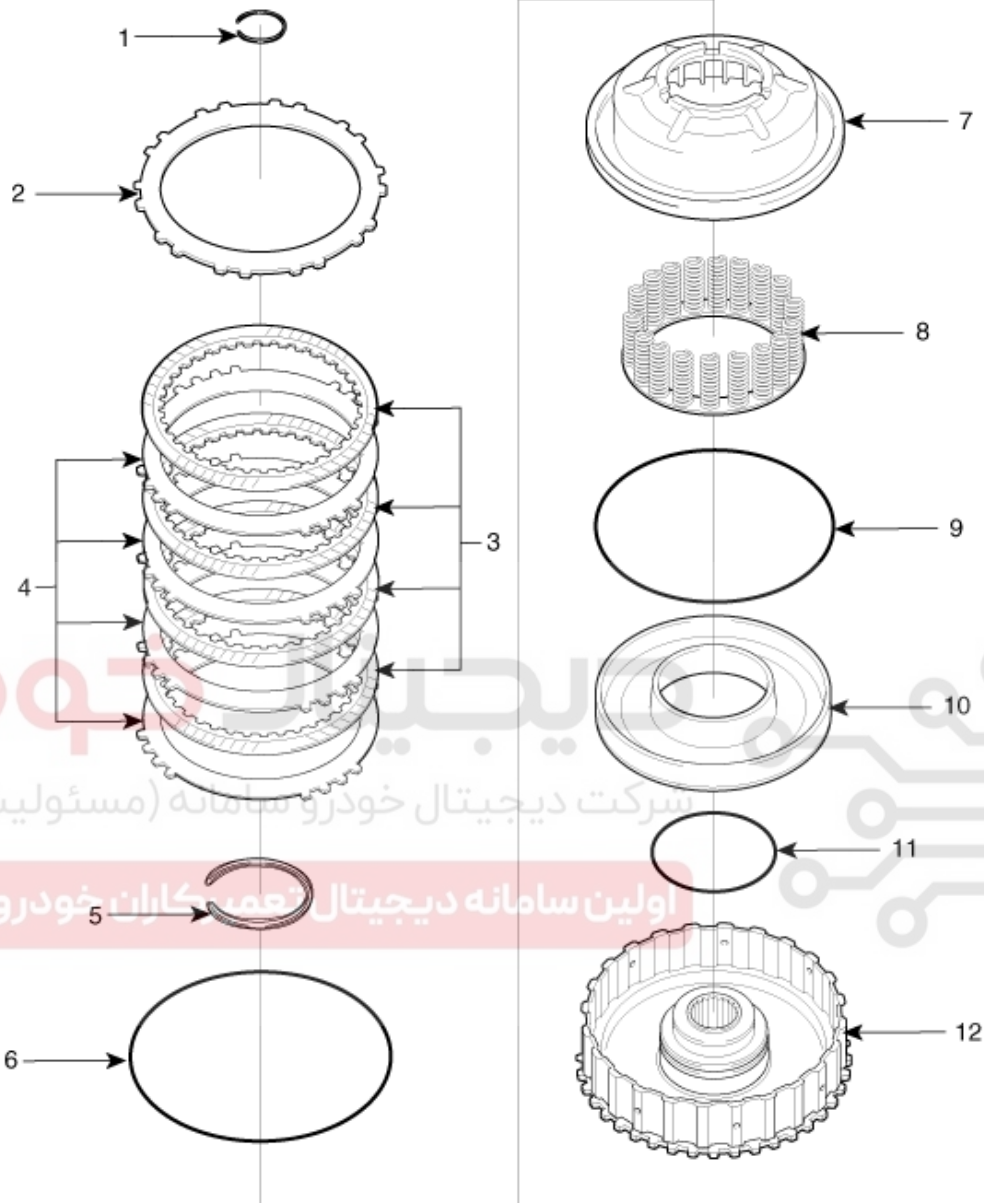
NOTICE

Spread ATF or white vaseline on O- ring and assemble lest should be damaged.

2005 > A5HF1 >



Components



1. Snap ring
2. Clutch reaction plate
3. Clutch discs
4. Clutch plates
5. Snap ring
6. D-ring

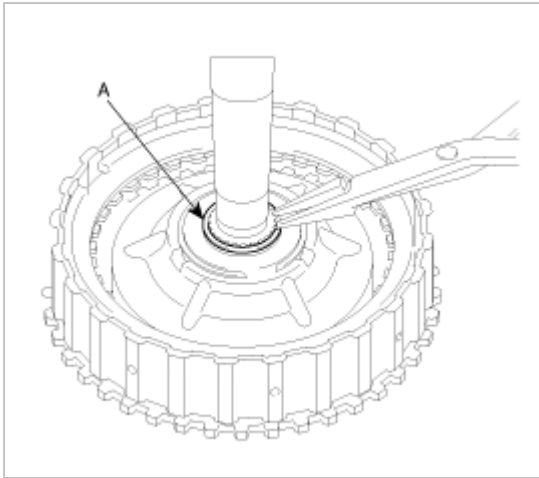
7. Underdrive clutch spring retainer
8. Return spring
9. D-ring
10. Underdrive clutch piston
11. D-ring
12. Underdrive clutch retainer

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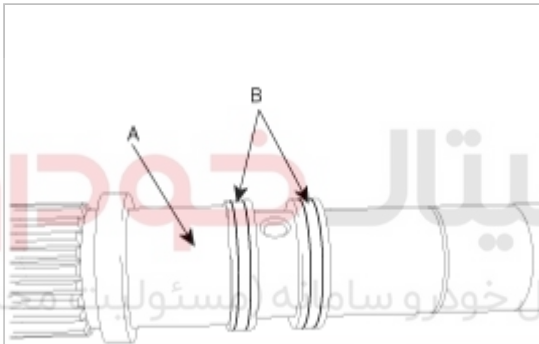


Disassembly

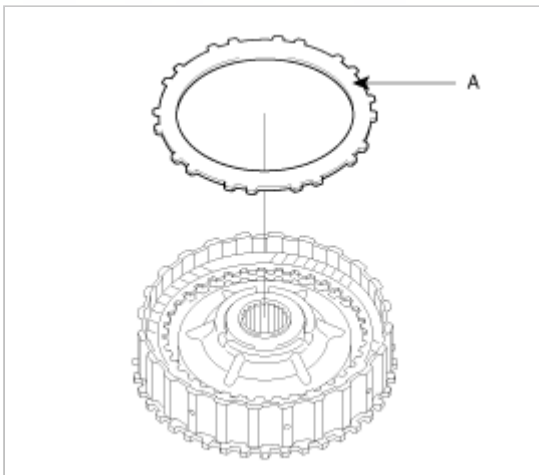
1. Take out the input shaft snap ring(A).



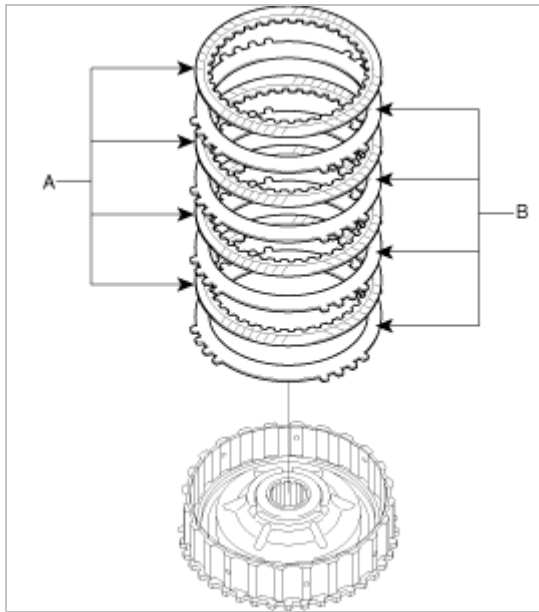
2. After removing the input shaft(A), take two seal rings(B).



3. After removing the clutch reaction plate snap ring, take the plate(A).



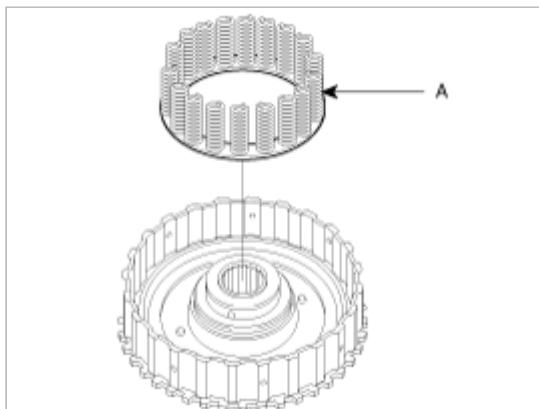
4. Separate the clutch discs(4EA)(A) and the plates(4EA)(B).



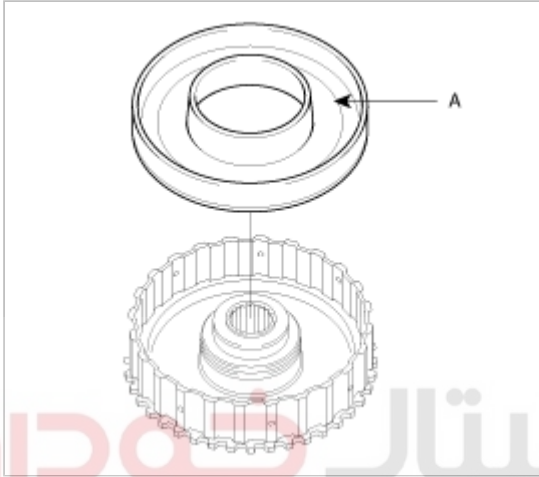
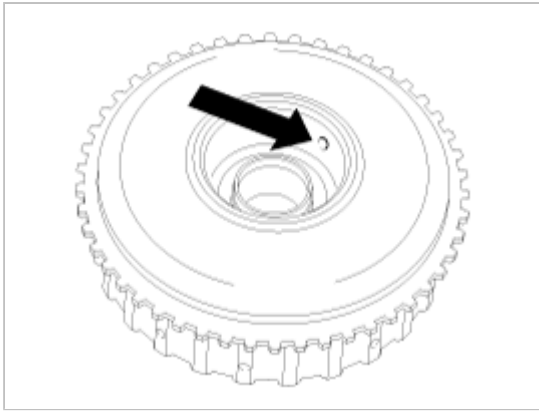
5. After pushing the underdrive clutch spring retainer with the SST(09453-24000) and a press machine, take the snap ring.
6. Remove the clutch spring retainer(A) with the D-ring.



7. Remove the clutch return spring(A).



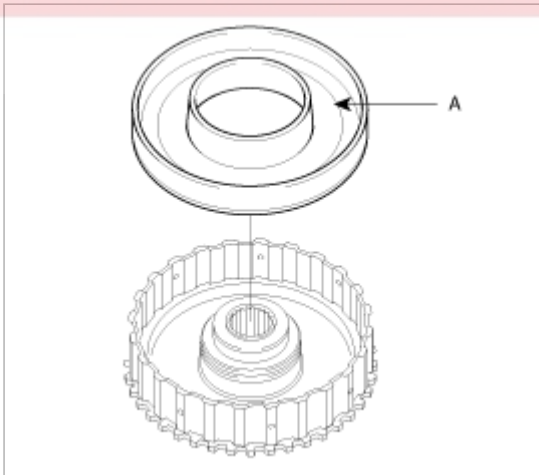
8. Remove the underdrive clutch piston(A) by using compressed air.



9. Remove the D-rings(2EA).

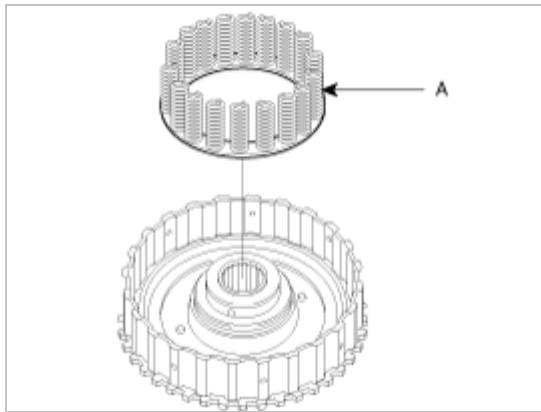
Reassembly

1. Install the D-rings(2EA).
2. Install the underdrive clutch piston(A).

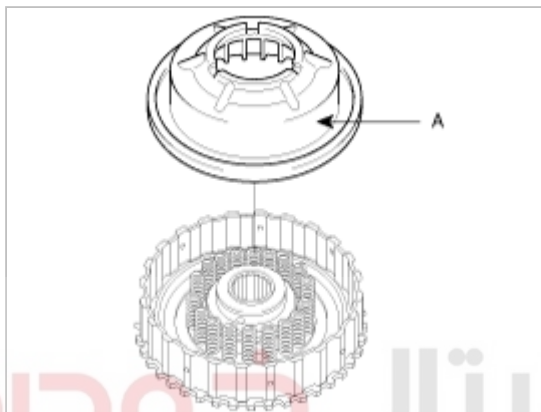


3. Install the clutch return spring(A).



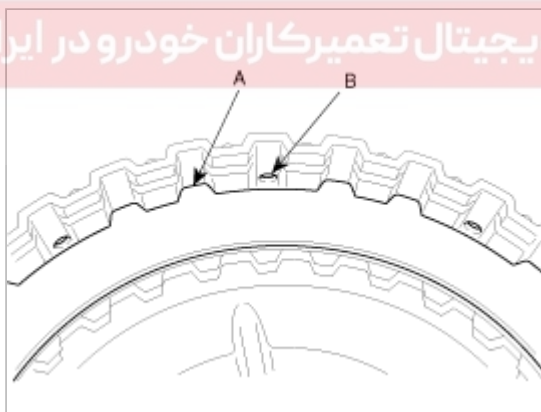


4. Install the clutch spring retainer(A) with the D-ring.



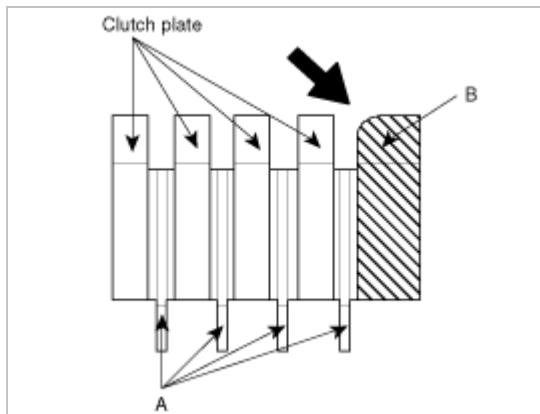
5. After pushing the underdrive clutch spring retainer with the SST(09453-24000) and a press machine, fix the snap ring.

6. Align the teeth(A) of the clutch plate, clutch disc and clutch reaction plate with the hole(B) of the underdrive clutch as shown below.



CAUTION

- Dip the clutch discs(A) in ATF sufficiently before assembly.
- Insert the clutch reaction plate(B) to the direction such as the picture below.



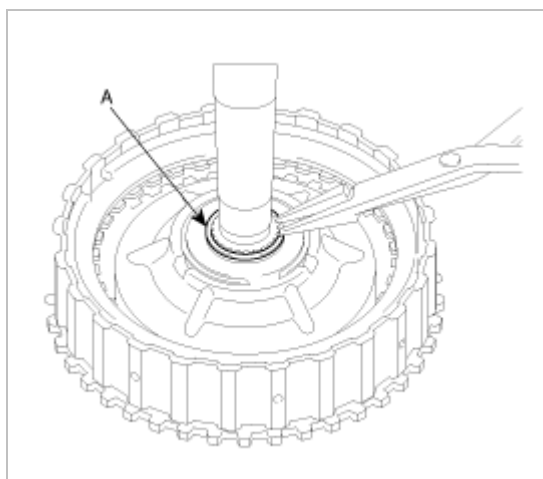
7. Install the snap ring.
8. Check the end play between the snap ring and the reaction plate with $1500 \pm 50\text{N}$ ($150 \pm 5\text{Kgf}$, $337.2 \pm 11.2\text{lb}$) weight and $350 \pm 25\text{kPa}$ ($3.5 \pm 0.25\text{kgf/cm}^2$, $50.76 \pm 3.62\text{psi}$) air pressure applied.

End play : 1.6 ~ 1.8mm(0.0630~0.0709 inch)

9. If the end play deviates from the standard value above, choose a proper snap ring from the table below.

Part No.	Thickness(mm/inch)
45427-39520	2.0 (0.0787)
45427-39521	2.1 (0.0827)
45427-39522	2.2 (0.0866)
45427-39523	2.3 (0.0906)
45427-39524	2.4 (0.0945)
45427-39525	2.5 (0.0984)
45427-39526	2.6 (0.1024)
45427-39527	2.7 (0.1063)
45427-39528	2.8 (0.1102)
45427-39529	2.9 (0.1142)
45427-39530	3.0 (1.1181)
45427-39519	1.9 (0.0748)
45427-39516	1.6 (0.0630)
45427-39517	1.7 (0.0669)
45427-39518	1.8 (0.0709)

10. Make the input shaft pass through the underdrive clutch assembly and fix it with a snap ring(A).



دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

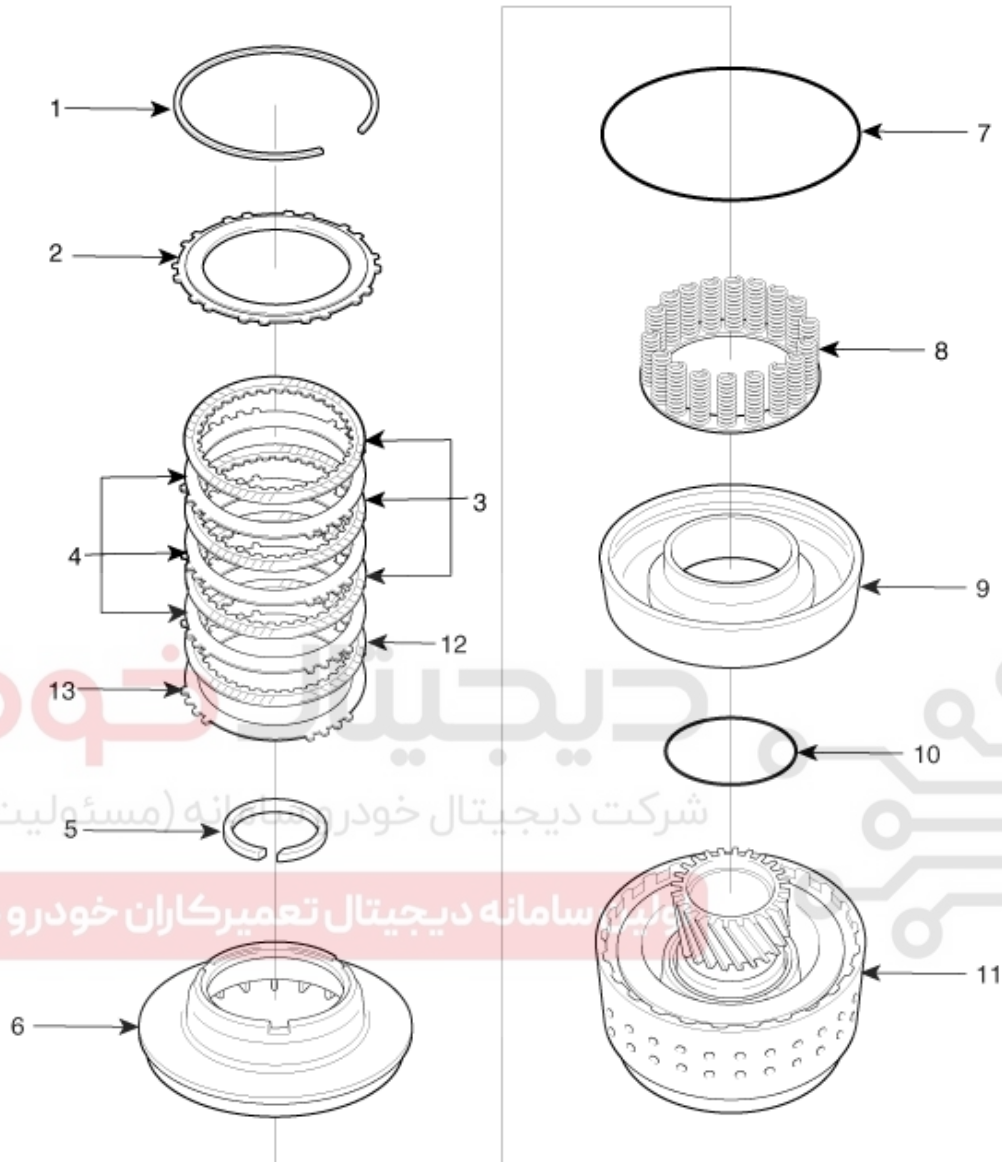
اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



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Components



1. Snap ring
2. Clutch reaction plate
3. Clutch disc
4. Clutch plates
5. Snap ring
6. Direct spring retainer

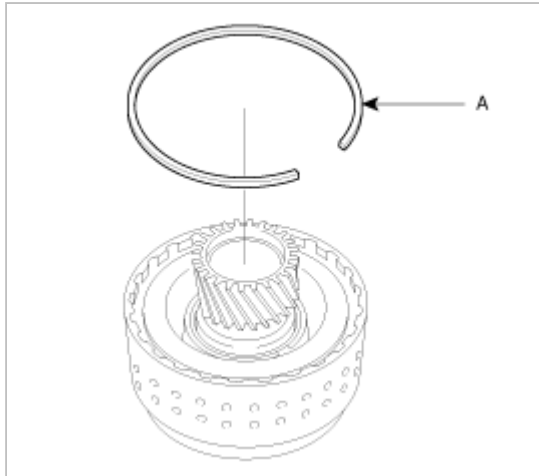
7. D-ring
8. Return spring
9. Direct clutch piston
10. D-ring
11. Direct clutch retainer
12. Cushion plate
13. Pressure plate

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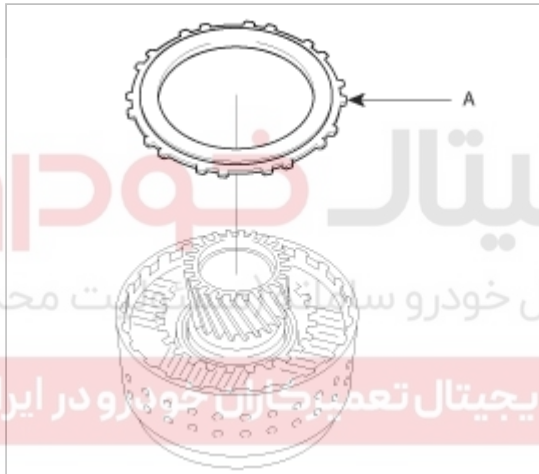


Disassembly

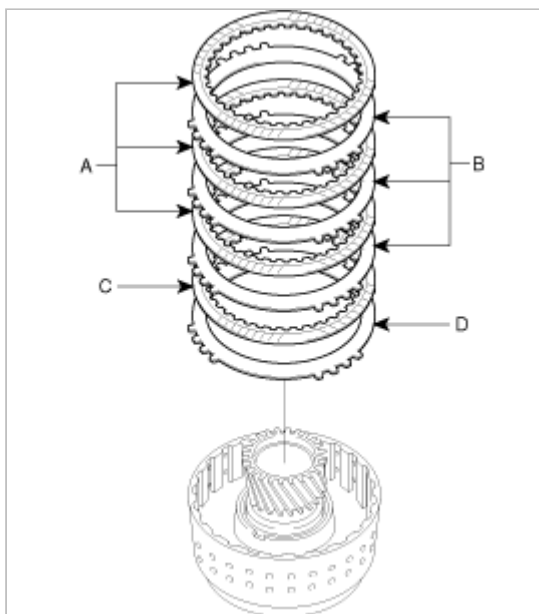
1. Remove the direct clutch snap ring(A).



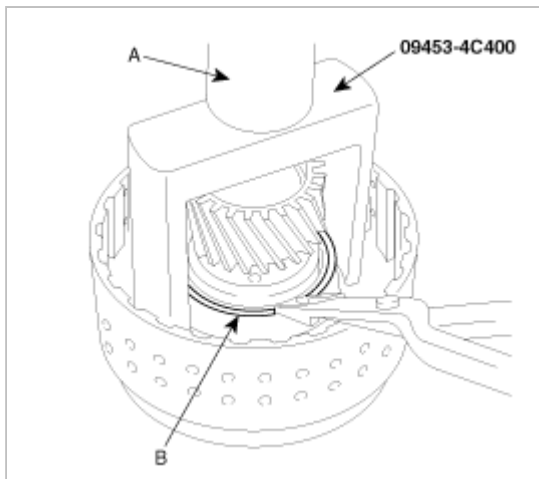
2. Remove the clutch reaction plate(A).



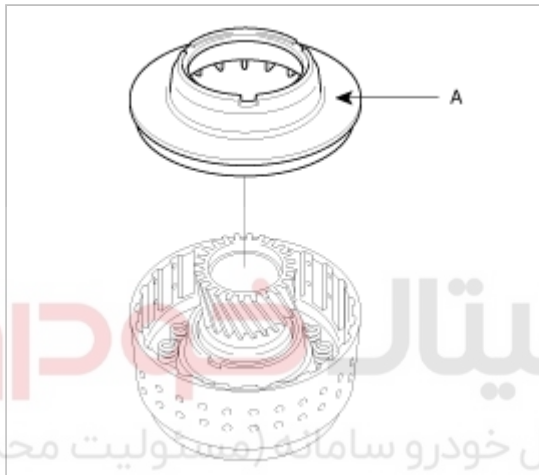
3. Remove the clutch discs(A-3EA), plates(B-3EA), cushion plate(C-1EA) and pressure plate(D-1EA).



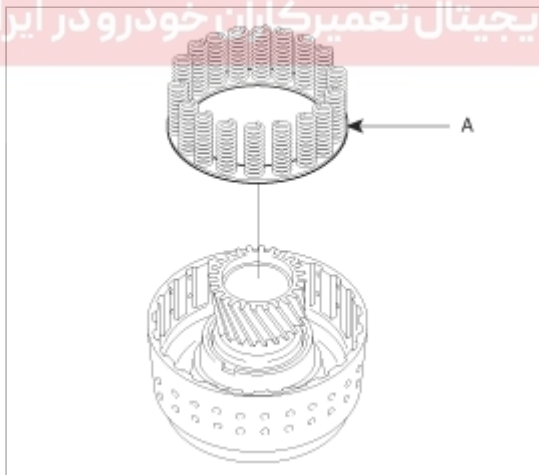
4. Using the SST(09453-4C400) and a press machine(A), remove the snap ring(B).



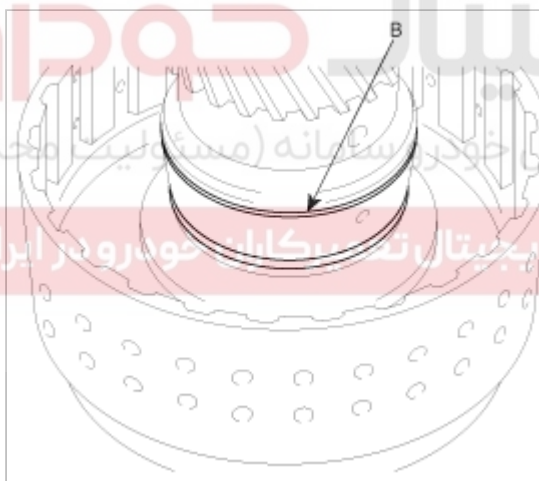
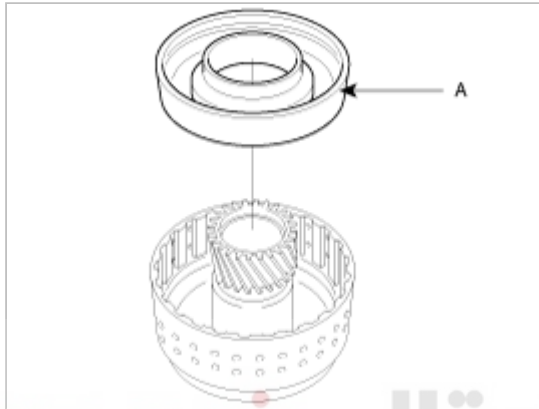
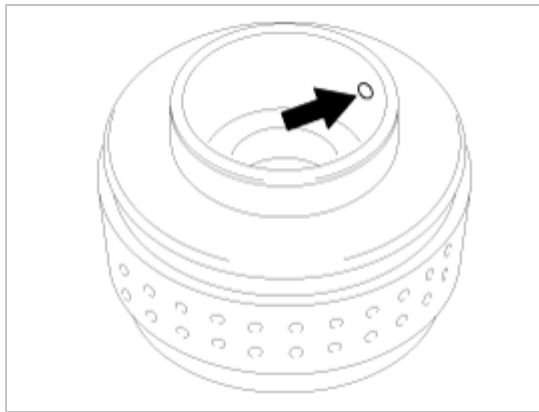
5. After removing the direct spring retainer(A), separate the D-ring from the retainer(A).



6. Remove the return spring(A).

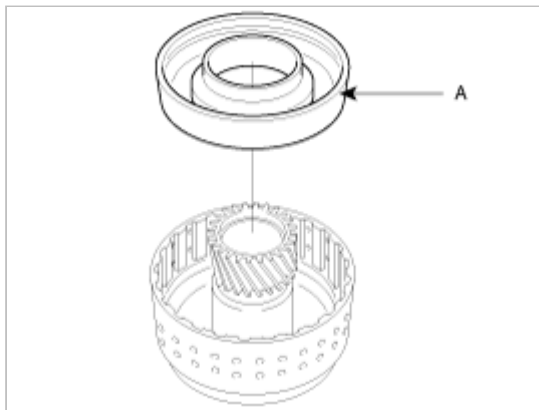


7. Inflict air pressure as follows and remove the direct clutch piston(A) and the D- rings(B-2EA).

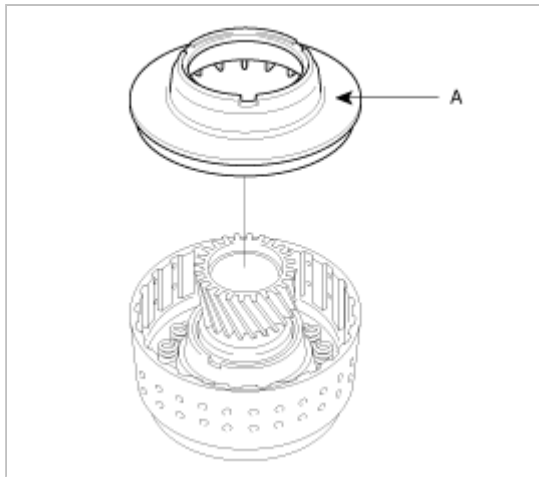


Reassembly

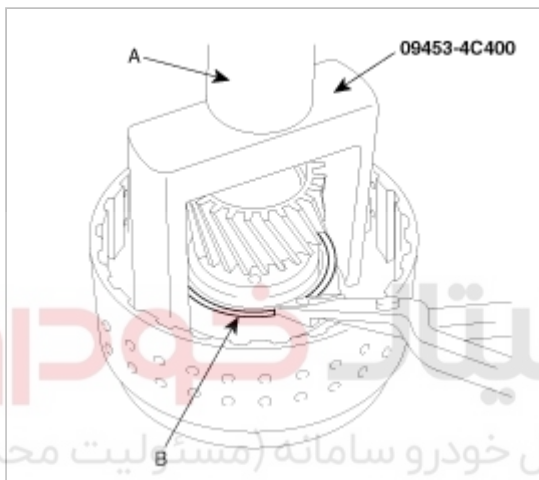
1. Inserting the D- rings to the direct clutch retainer and piston(A), install the piston inside the retainer.



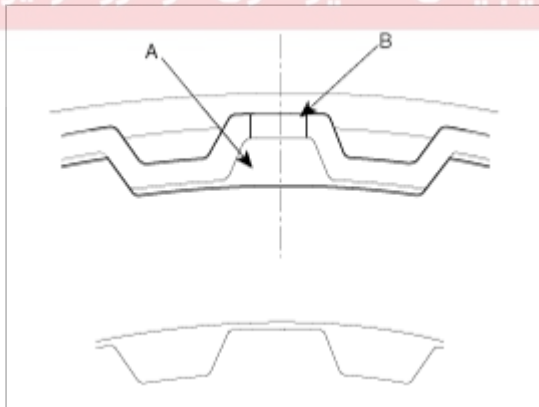
2. Putting the D- ring in the spring retainer(A), install the return spring and the retainer.



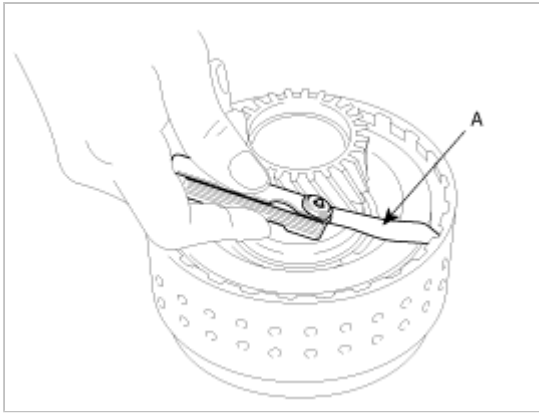
3. Using the SST(09453-4C400) and a press machine(A), fix the snap ring(B).



4. Assemble the department(A) of the clutch plate, clutch disk and clutch reaction plate with the direct clutch retainer hole(B).



5. Applying 49N(5Kgf,11lbf) weight on the direct clutch reaction plate and 245.17kPa(2.5 Bar, 35.56psi) pressure through the hydraulic line, measure the end play with a thickness gauge(A).



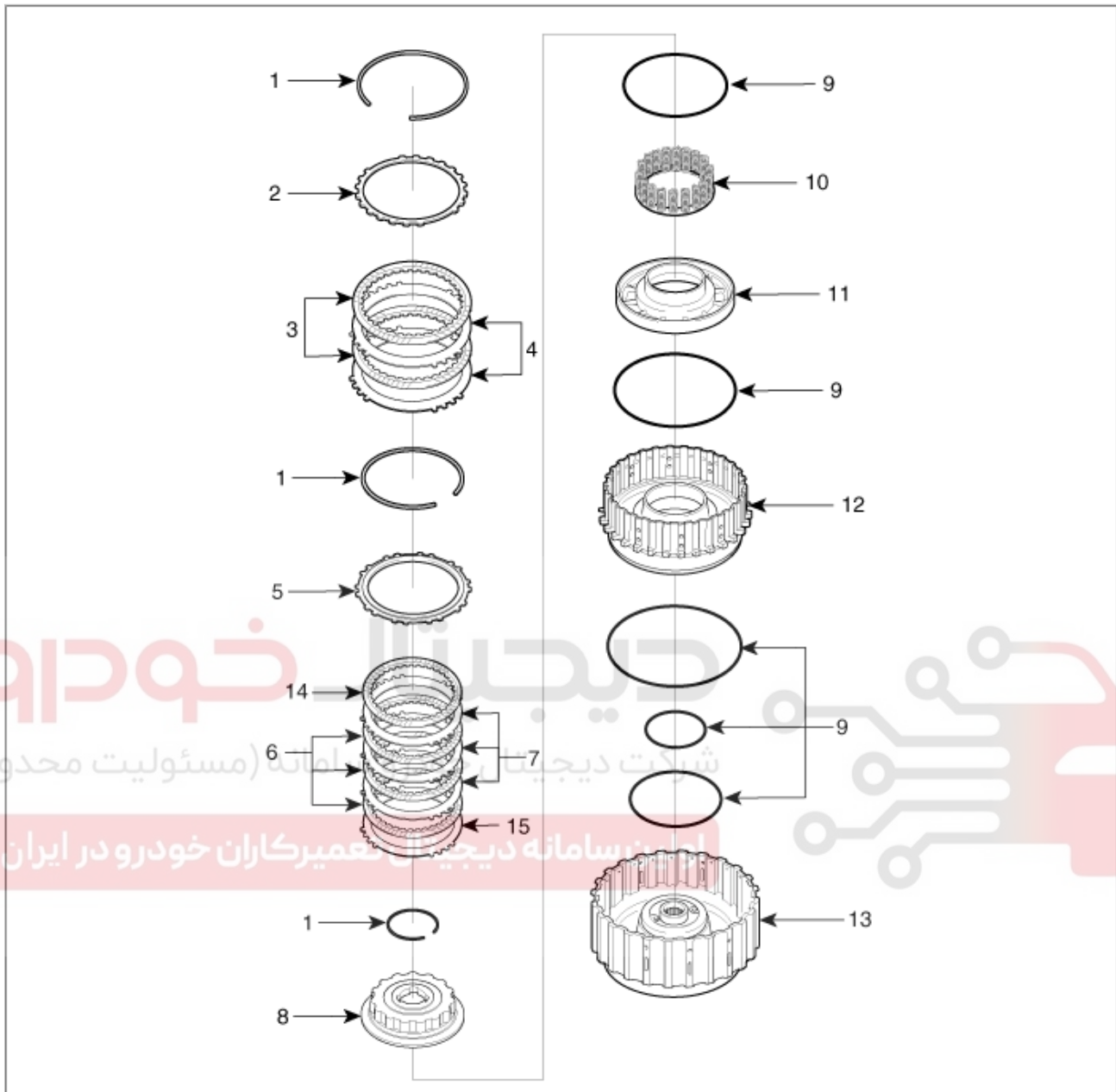
End play : 0.6 ~ 0.8mm(0.0236~0.0315inch)

Part No.	Thickness(mm/inch)
45556-39520	2.0 (0.0787)
45556-39521	2.1 (0.0827)
45556-39522	2.2 (0.0866)
45556-39523	2.3 (0.0906)
45556-39524	2.4 (0.0945)
45556-39525	2.5 (0.0984)
45556-39526	2.6 (0.1024)
45556-39527	2.7 (0.1063)
45556-39528	2.8 (0.1102)
45556-39529	2.9 (0.1142)
45556-39530	3.0 (1.1181)
45556-39519	1.9 (0.0748)

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Components



1. Snap ring
2. Reverse clutch reaction plate
3. Reverse clutch discs
4. Reverse clutch plates
5. Overdrive reaction plate
6. Overdrive clutch disc (Inner-single side)
7. Overdrive clutch disc (outer-single side)
8. Overdrive clutch spring retainer

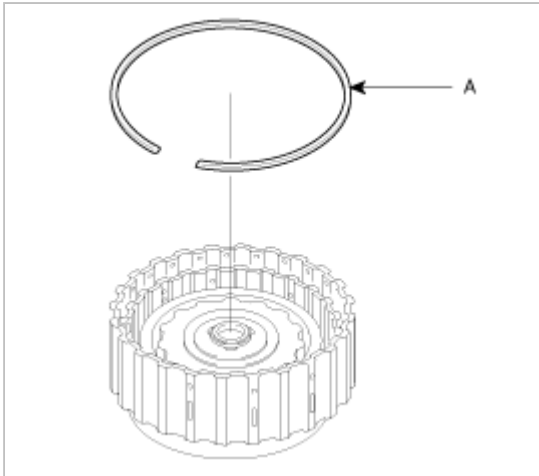
9. D-ring
10. Clutch return spring
11. Reverse clutch piston
12. Overdrive clutch piston
13. Reverse clutch retainer
14. Double side overdrive clutch disc
15. Overdrive clutch plate

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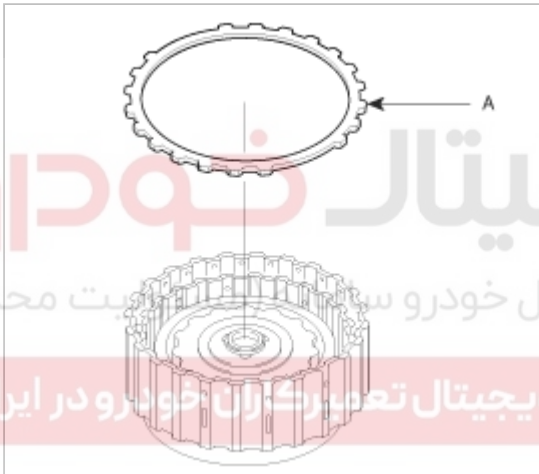


Disassembly

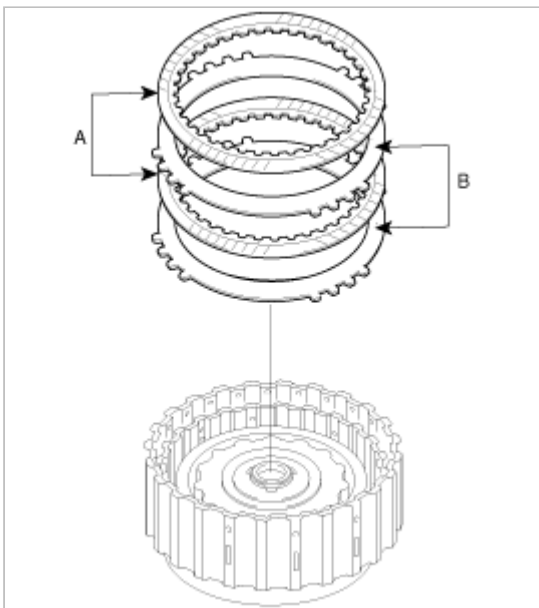
1. Remove the reverse clutch reaction plate snap ring(A).



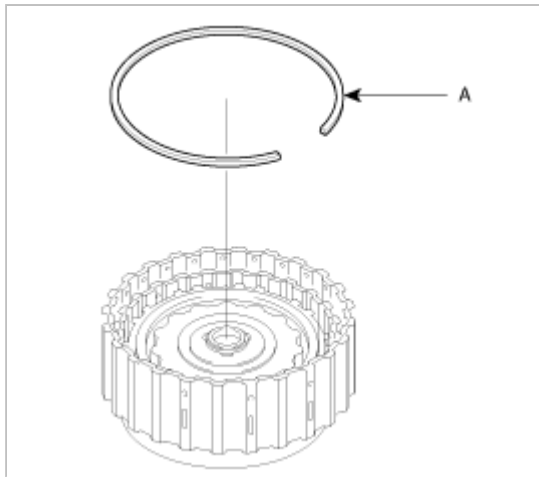
2. Remove the reverse clutch reaction plate(A).



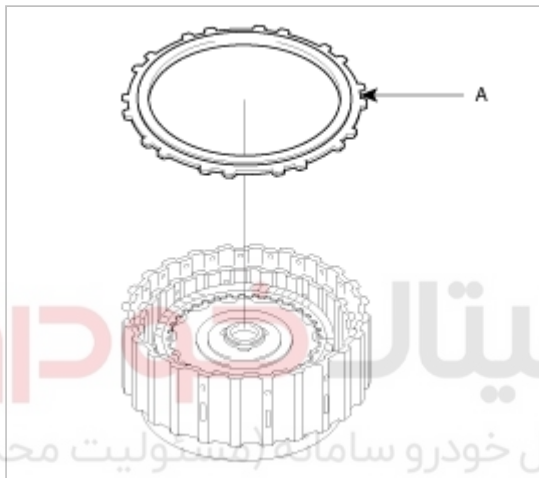
3. Remove the reverse clutch discs(A-2EA) and plates(B-2EA).



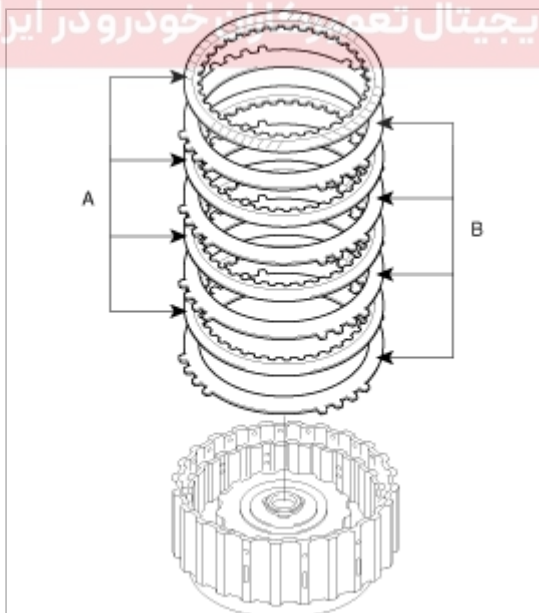
4. Remove the overdrive clutch reaction plate snap ring(A).



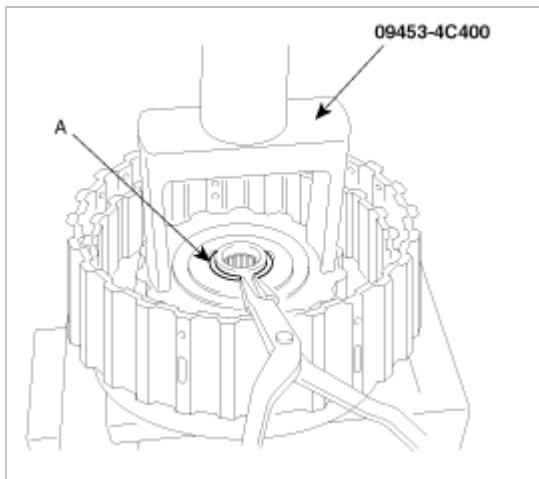
5. Remove the overdrive clutch reaction plate(A).



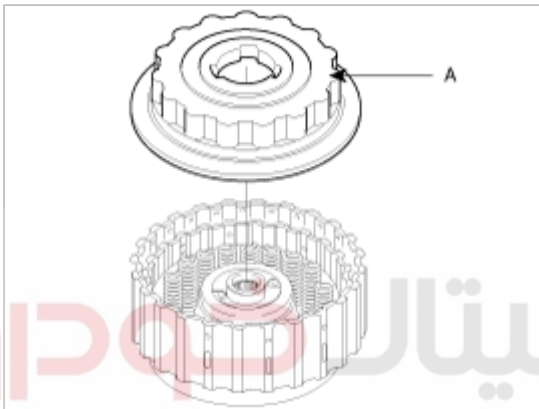
6. Remove the overdrive clutch discs(A-4EA) and the plates(B-4EA).



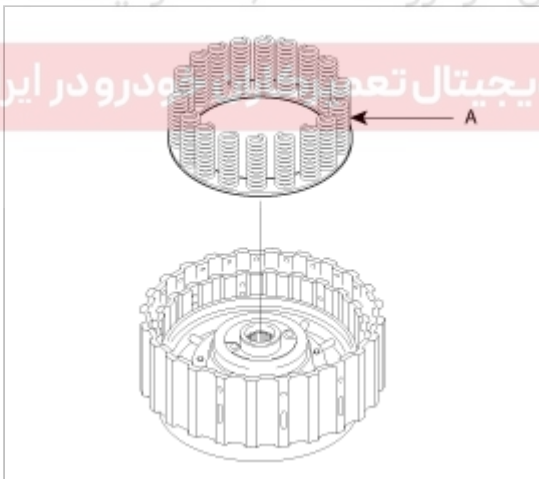
7. Using the SST(09453-4C400), remove the clutch spring retainer snap ring(A).



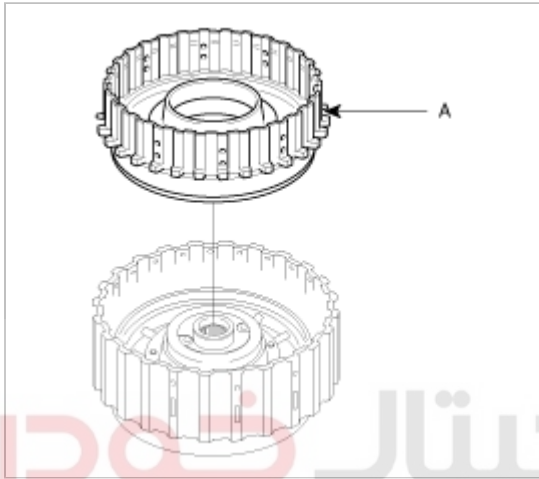
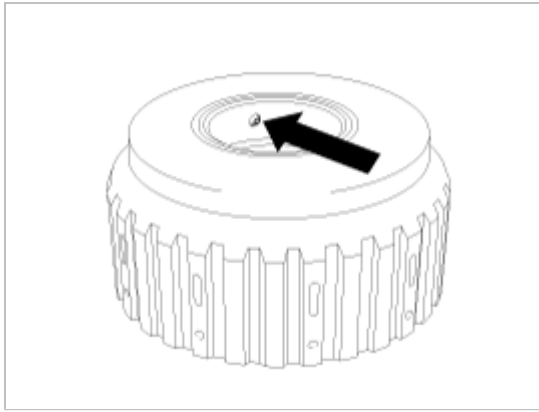
8. After removing the overdrive clutch spring retainer(A), separate the D-ring from the retainer(A).



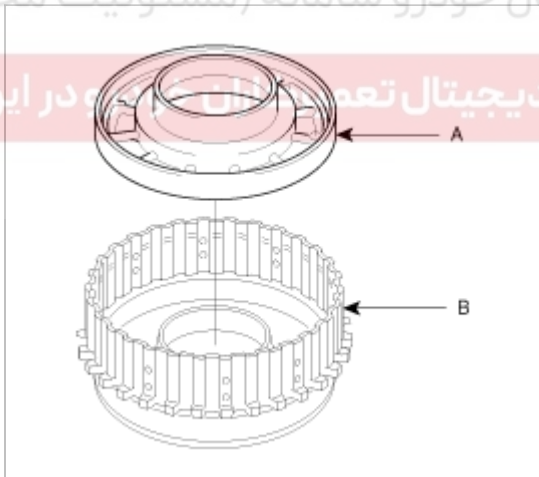
9. Remove the clutch return spring(A).



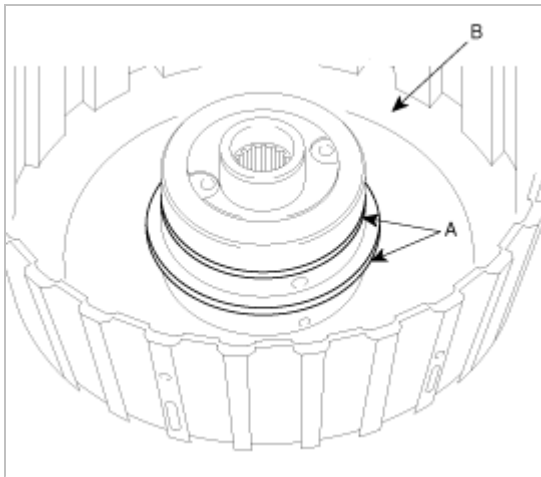
10. Remove the reverse and overdrive clutch piston(A) using compressed air. Separate the D-ring from the piston, then.



11. Separate the reverse clutch piston(A) from the overdrive clutch piston(B) and take the D-rings out of the reverse clutch piston(A).

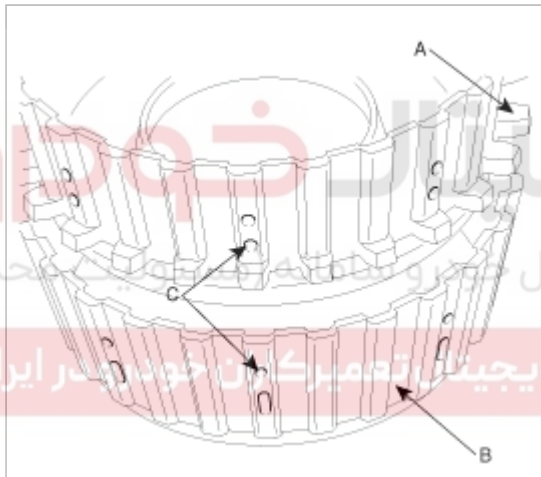


12. Remove the D-rings(A-2EA) from the reverse clutch retainer(B).

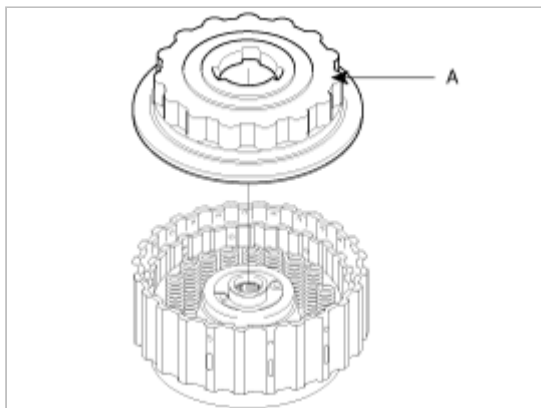


Reassembly

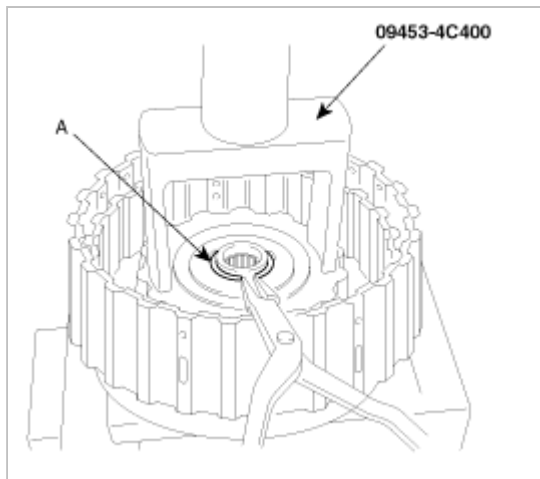
1. Attach each D- ring to reverse clutch retainer, reverse clutch piston, over drive clutch piston, over drive clutch spring retainer.
2. When attaching the overdrive clutch piston(A) to the reverse clutch retainer(B), align the position of holes(C) as follows.



3. Install the reverse clutch piston to the overdrive clutch piston.
4. After installing clutch return spring, attach over drive clutch spring retainer(A).



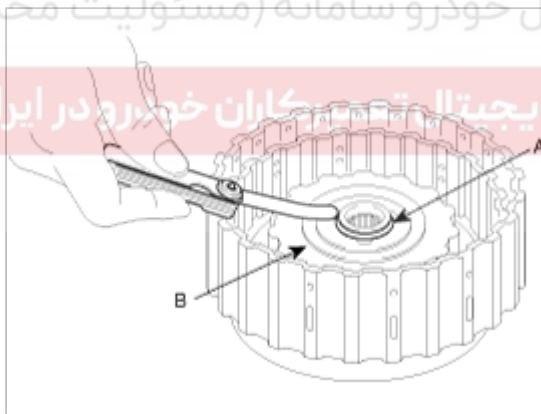
5. Using the SST(09453-4C400), install the clutch spring retainer snap ring.



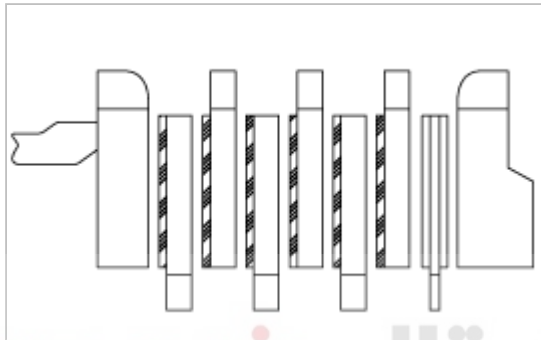
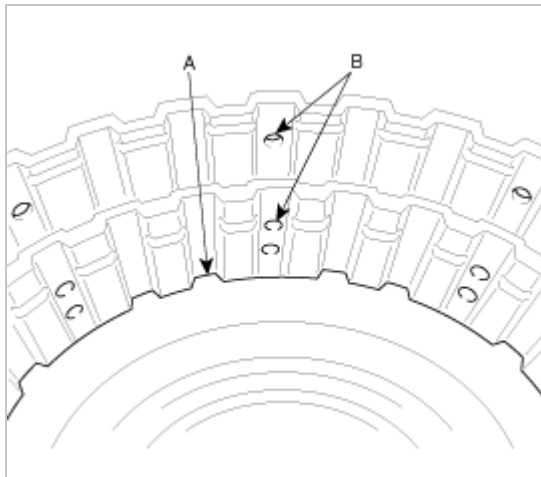
6. Applying 49N(5kgf, 11lb) weight on the return spring retainer, measure the gap between the snap ring(A) and the retainer(B). If the gap deviates from the end play value below, select an appropriate snap ring from the table.

End play : 0T ~ 0.09L mm(0~0.0035inch)

Part No.	Type
45443-39148	Snap ring 1
45853-39153	Snap ring 2
45459-39158	Snap ring 3
45853-39163	Snap ring 4



7. Aligning the teeth(A) of the overdrive clutch discs(4EA), plates(4EA) and clutch reaction plate with the holes (B) of the reverse clutch retainer as shown below, install them.



8. Install the overdrive clutch reaction plate snap ring(A).



9. Applying 539.4~637.4N(55~65Kgf, 121.3~143.3lb) on the overdrive clutch reaction plates and 215.75~264.78kPa(2.2 ~ 2.7Bar, 31.29~38.40psi) air pressure through the inside hole after the installation of the snap ring, measure the endplay.

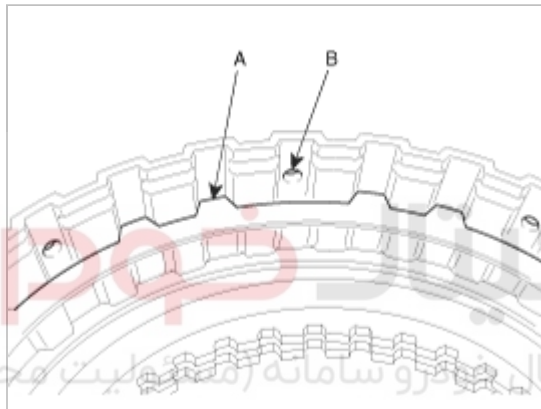
When the end play exceeds the standard value, select an appropriate snap ring from the table below.

End play : 1.0 ~ 1.2mm(0.0394~0.0472inch)

Part No.	Thickness(mm/inch)
45427-39520	2.0 (0.0787)
45427-39521	2.1 (0.0827)
45427-39522	2.2 (0.0866)
45427-39523	2.3 (0.0906)
45427-39524	2.4 (0.0945)

45427-39525	2.5 (0.0984)
45427-39526	2.6 (0.1024)
45427-39527	2.7 (0.1063)
45427-39528	2.8 (0.1102)
45427-39529	2.9 (0.1142)
45427-39530	3.0 (1.1181)
45427-39519	1.9 (0.0748)
45427-39516	1.6 (0.0630)
45427-39517	1.7 (0.0669)
45427-39518	1.8 (0.0709)

10. Aligning the teeth(A) of the reverse clutch discs(2EA)&plates(2EA) and clutch reaction plate with the holes(B) of the reverse clutch retainer as shown below.



11. After installing the reverse clutch reaction plate snap ring and applying the weight, 1422.0~1520.0N (145~155Kgf, 319.7~341.7lb) on the clutch disc set and 313.81~362.84 kPa(3.2 ~ 3.7Bar, 45.51~52.63psi) air pressure through the inside hole, measure the end play. If the end play exceeds the standard value, select an appropriate snap ring from the table below.

End play : 1.5 ~ 1.7mm(0.0591~0.0669inch)

Part No.	Thickness (mm/inch)
45432-39518	1.8 (0.0709)
45432-39517	1.7 (0.0669)
45432-39516	1.6 (0.0630)
45432-39519	1.9 (0.0748)
45432-39528	2.8 (0.1102)
45432-39527	2.7 (0.1063)
45432-39526	2.6 (0.1024)
45432-39525	2.5 (0.0984)
45432-39524	2.4 (0.0945)
45432-39523	2.3 (0.0906)
45432-39522	2.2 (0.0866)
45432-39521	2.1 (0.0827)

45432-39520

2.0 (0.0787)

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

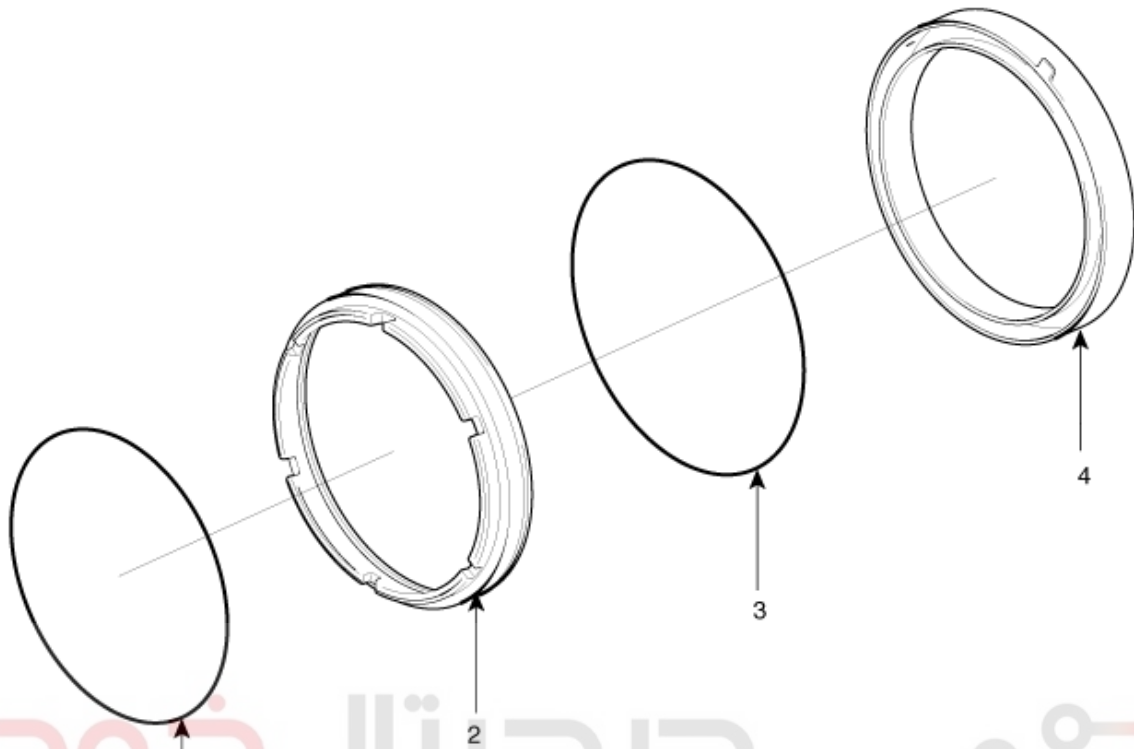
اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



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Components



1. D-ring

2. 2nd brake piston

3. D-ring

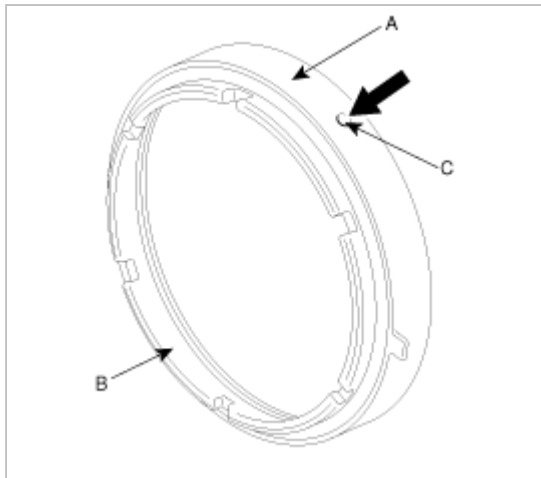
4. 2nd brake retainer

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Disassembly

1. Applying compressed air to the hole(C) of the 2nd retainer(A), remove the piston(B).



2. Remove the D-rings(2EA) from the 2nd brake piston.

Reassembly

Reassembly is in the reverse order of disassembly. All the D-rings should be replaced with new ones and inserted with care after applied ATF or white vaseline on.

دیجیتال خودرو
شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

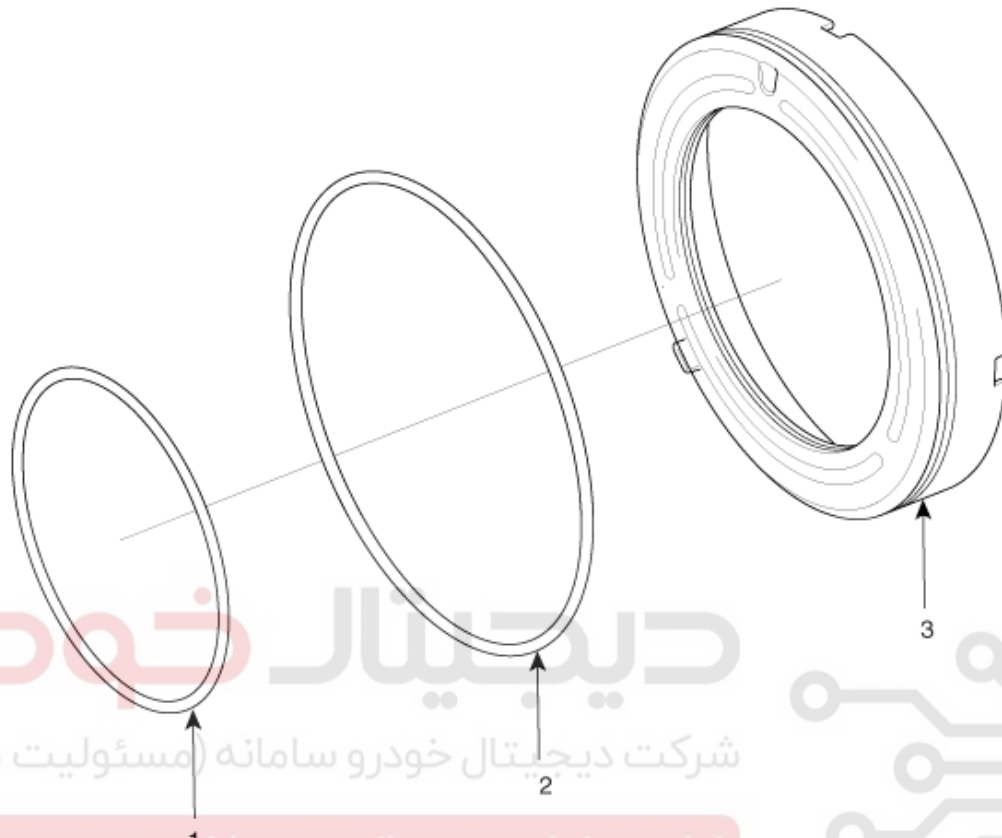
اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



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Components



1. D-ring(inner)
2. D-ring(outer)
3. Low & Reverse brake piston

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**Disassembly**

1. Remove the D-rings(2EA) from the inner and outer surface of the low&reverse brake.

Reassembly

1. Apply ATF or white vaseline on the D-rings in order not to be damaged.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

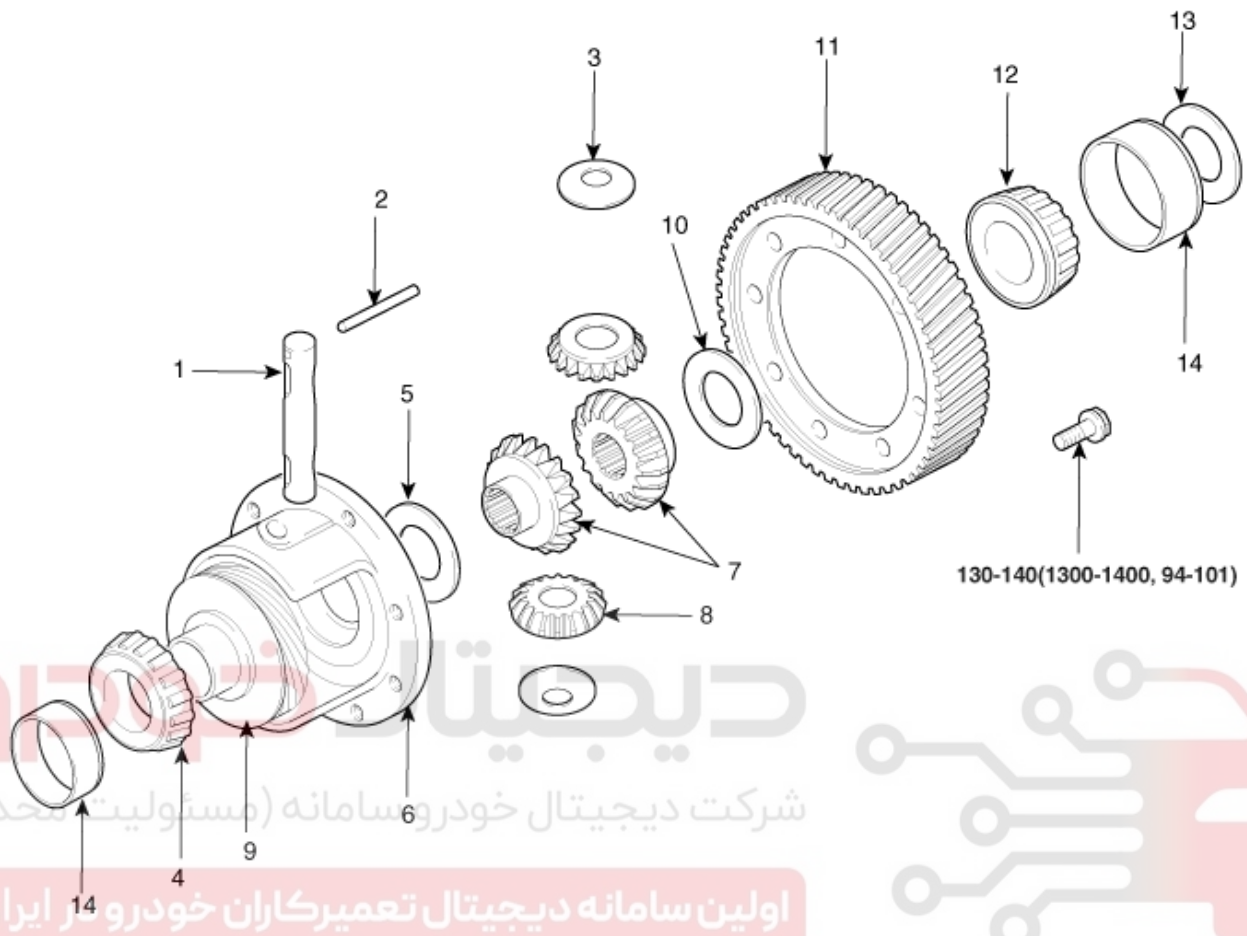
اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



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Components



TORQUE : Nm (kgf.cm, lb-ft)

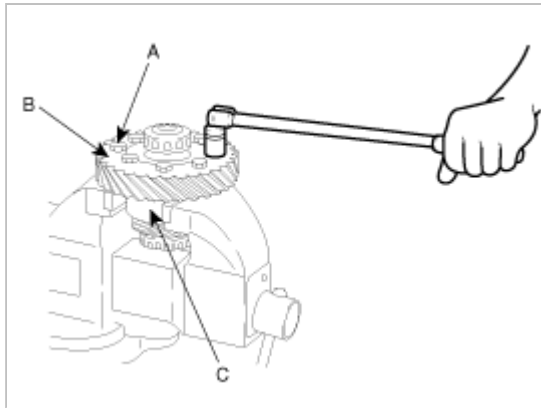
- | | |
|-------------------------|-----------------------------|
| 1. Pinion shaft | 8. Pinion gear |
| 2. Lock pin | 9. Speedometer drive gear |
| 3. Washer | 10. Spacer |
| 4. Taper roller bearing | 11. Differential drive gear |
| 5. Spacer | 12. Taper roller bearing |
| 6. Differential case | 13. Spacer |
| 7. Side gear | 14. Outer race |

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Disassembly

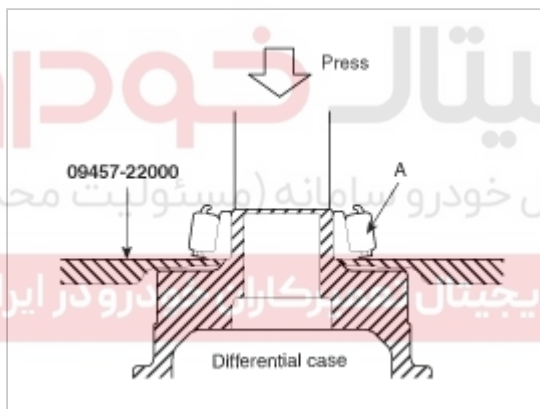
1. Clamp the differential case in a vise.
2. Remove the differential drive retaining bolts(A) and remove the differential drive gear(B) from the case(C).



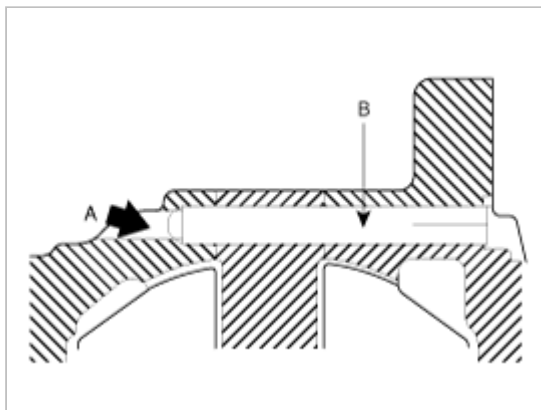
3. Remove the taper bearing(A) using the sst(09457-22000).

CAUTION

Do not reuse the bearing removed from the shaft.



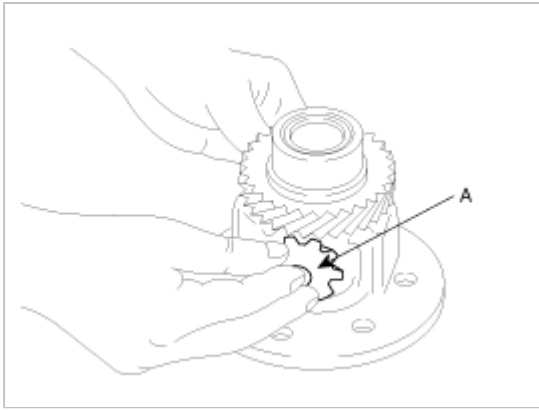
4. Drive out the lock pin(B) from the hole A using a punch.



5. Drive out the pinion shaft.
6. Remove the pinion gear, washers, side gear and spacers.

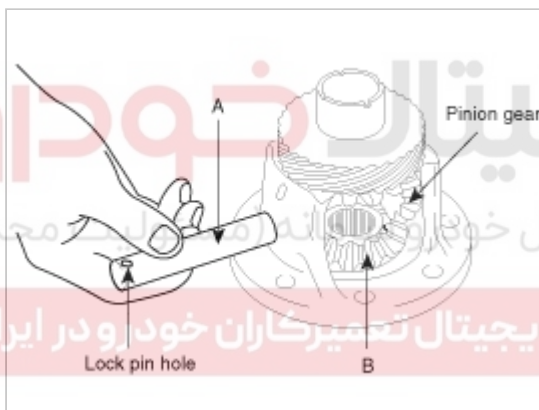
Reassembly

1. Install the spacer on the back of the side gear and then install the pinion gear(A) in the differential case.

**CAUTION**

- When installing a new side gear, use a spacer of medium thickness [0.83-0.92 mm (0.33-0.036 in.)].
- Do not reuse the lock pin.
- The lock pin head must be sunk below the flange surface of the differential case.

- Set the washer on the back of each pinion and insert the two pinions to specified position while engaging them with the side gears(B) by turning them.
- Insert the pinion shaft(A).



- Measure the backlash between the side gears and pinions.

Standard value :

- If the backlash is out of specification, disassemble and install the correct spacer, reassemble and remeasure.

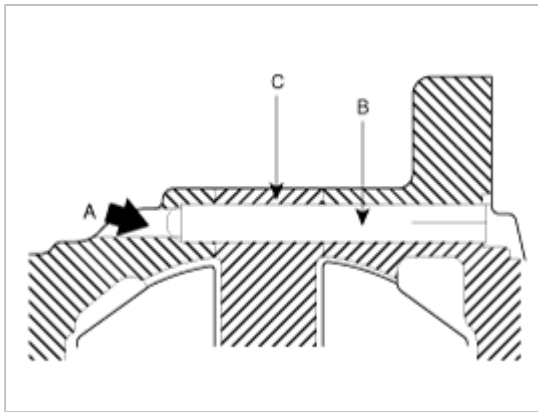
CAUTION

Adjust the backlash of both side gears to the same specification.

- Align the pinion shaft(C) lock pin hole with the case lock pin hole and insert the lock pin(B).

CAUTION

- Do not reuse the lock pin.
- The lock pin head must not protrude more than 3 mm (0.0118 in.).



7. Install the tapered roller bearing on both sides of the differential case using the special tool (09455-21100).

CAUTION

When press-fitting the bearing, press on the inner race only.

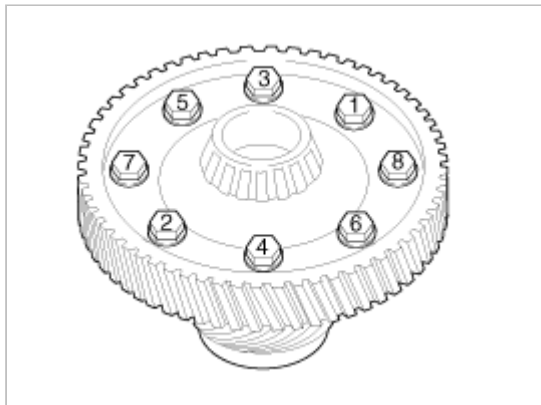


8. Apply specified sealant to the entire threads of the bolts. Tighten to specifications using the sequence shown in the illustration.

Specified sealant : BM stud locking No.2471

CAUTION

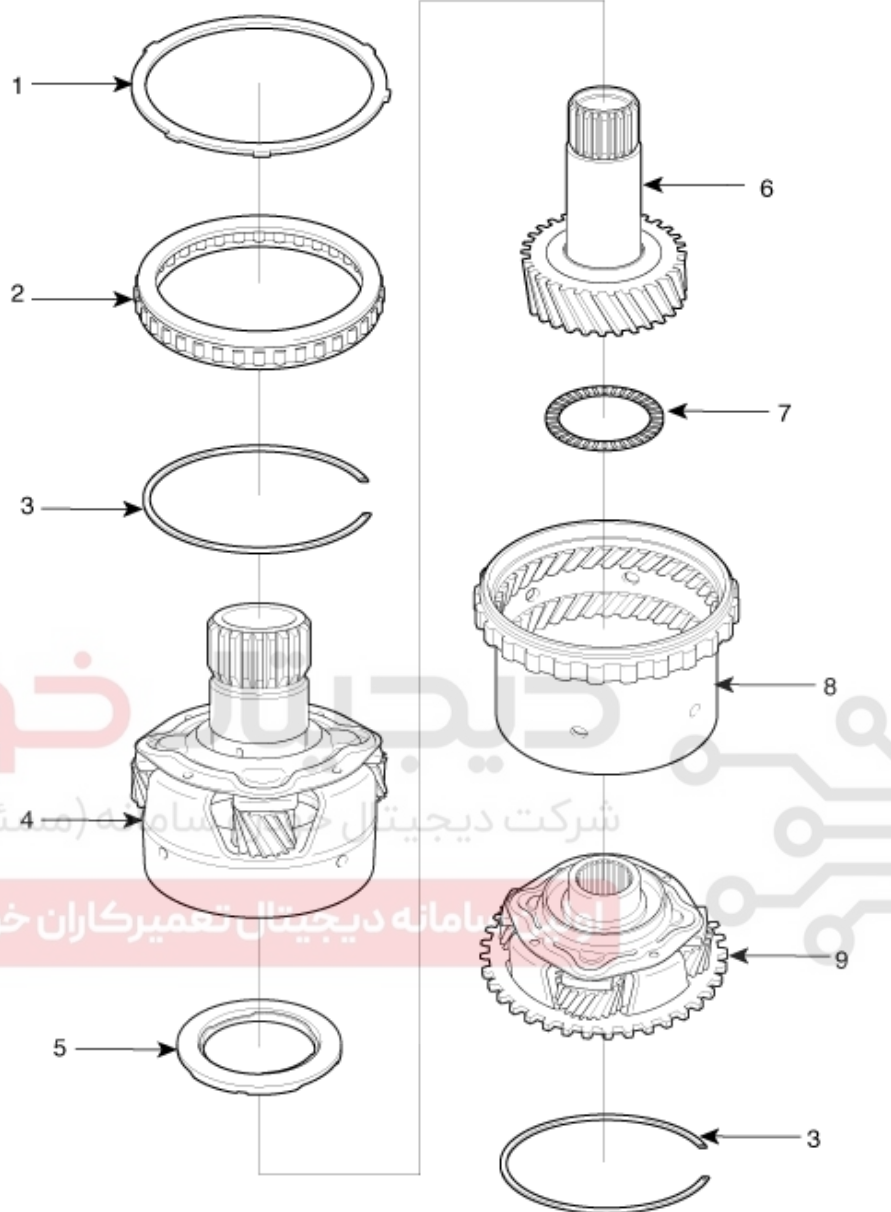
If a bolt is reused, remove the old sealant from the threads.



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Components



1. Stopper plate
2. Oneway clutch
3. Snap ring
4. Output planetary carrier assembly
5. Thrust bearing

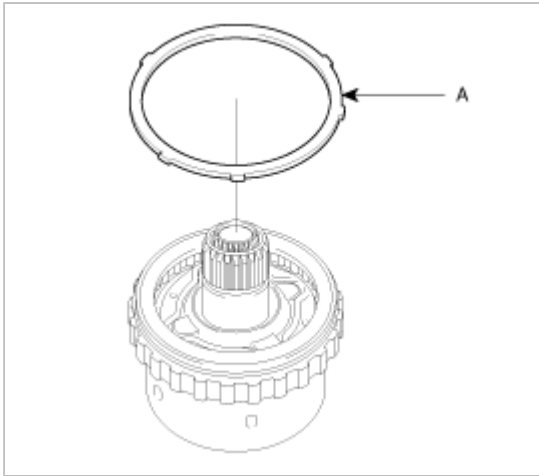
6. Under drive sun gear
7. Thrust bearing
8. Low&Reverse annulus gear
9. Overdrive planetary carrier assembly

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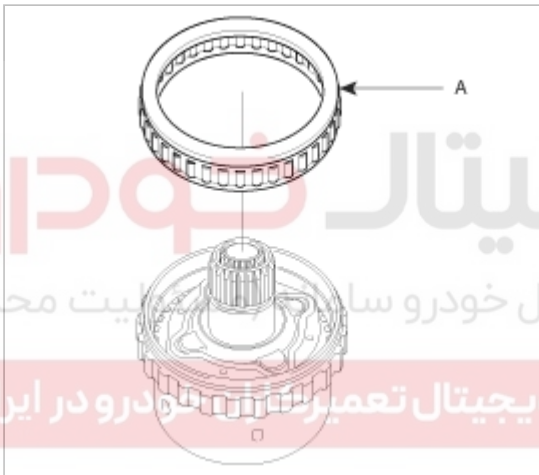


Disassembly

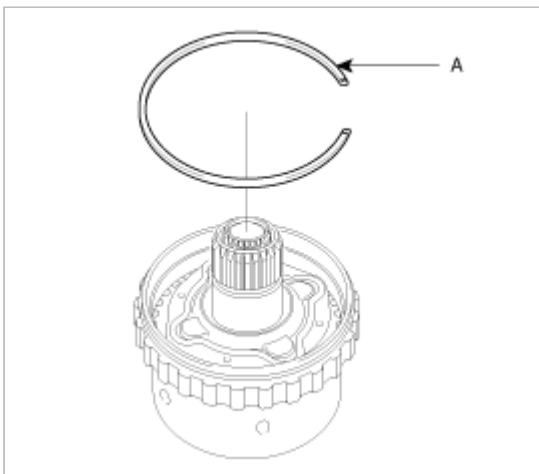
1. Remove the stopper plate(A).



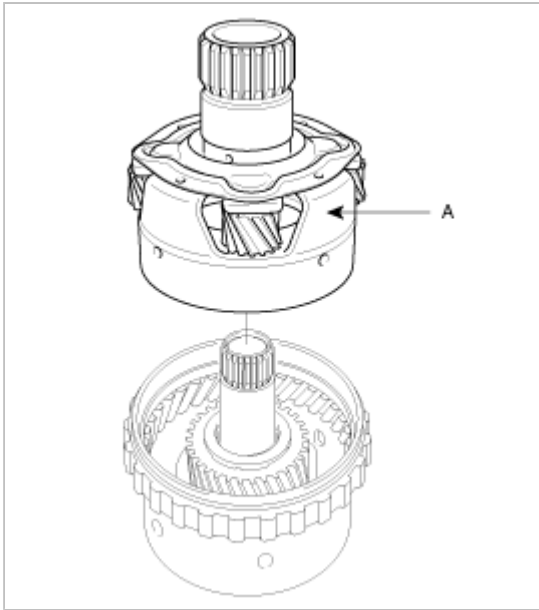
2. Remove the one way clutch(A).



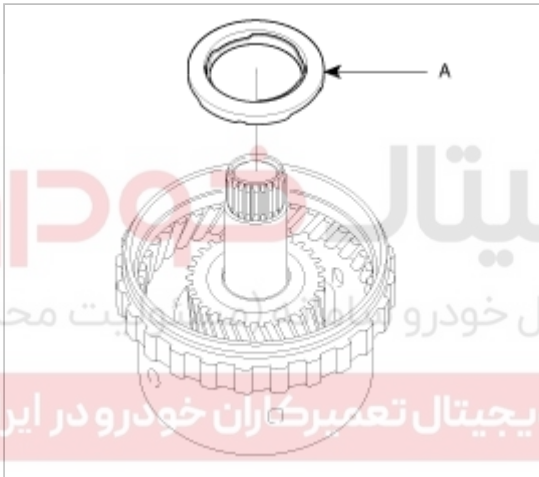
3. Remove the snap ring(A).



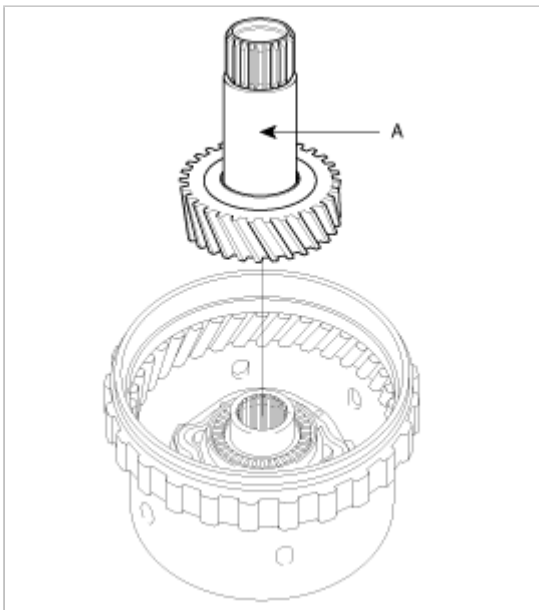
4. Remove the output planetary carrier assembly(A).



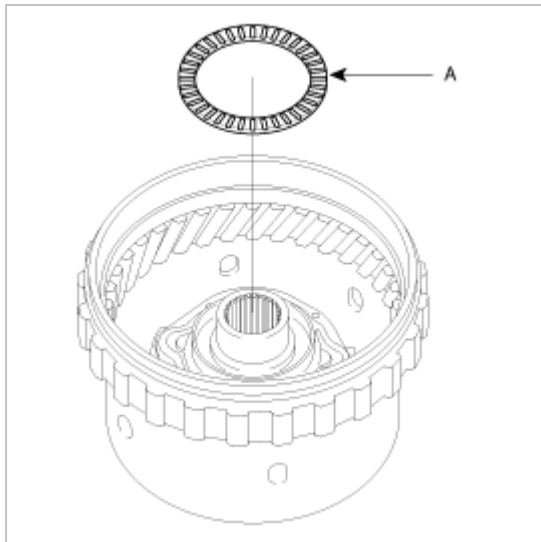
5. Remove the thrust bearing(A).



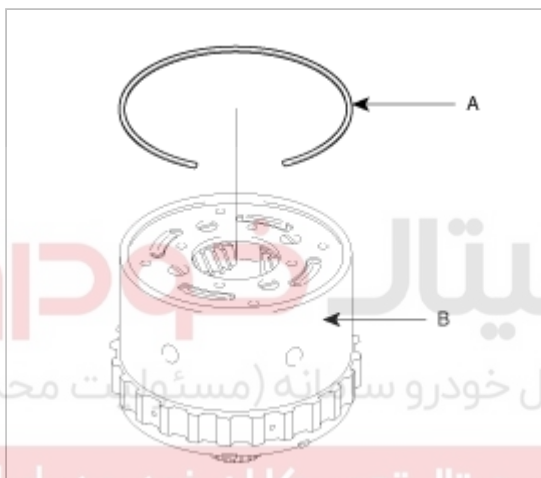
6. Remove the underdrive sun gear(A).



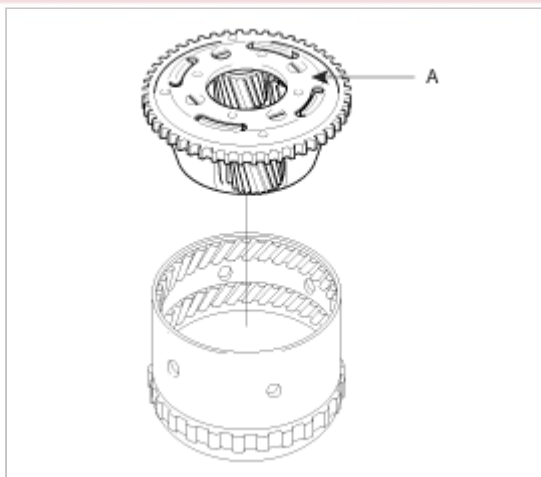
7. Remove the thrust bearing(A).



8. Take out the snap ring(A) from the back side of the low&reverse annulus gear(B).

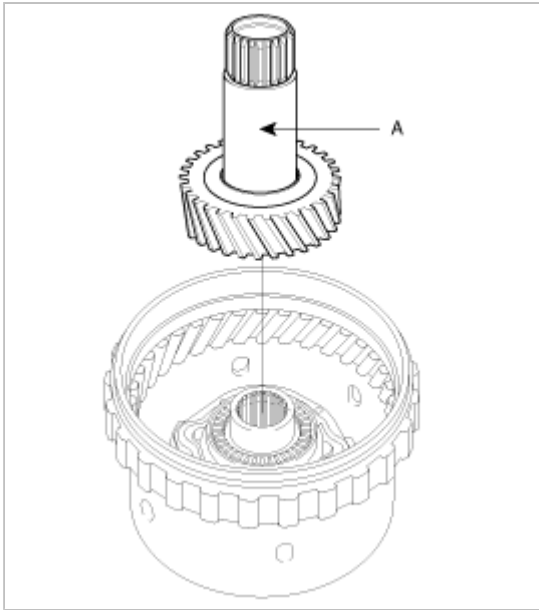


9. Remove the overdrive planetary carrier assembly(A).



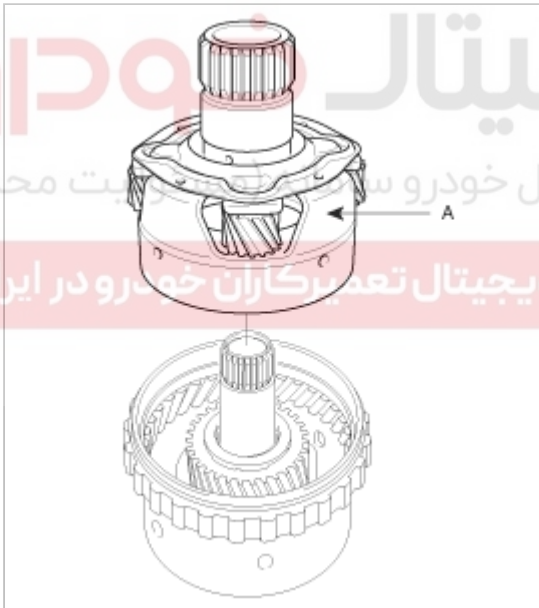
Reassembly

1. After inserting the snap ring to the back side of the low&reverse planetary gear assembly, install the overdrive planetary carrier assembly.
2. Install the thrust bearing and the underdrive sun gear(A).

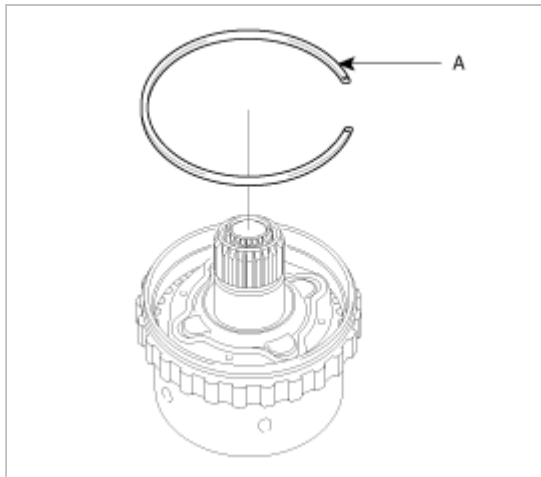
**NOTICE**

Pay attention to the direction of the thrust bearing when installing it.

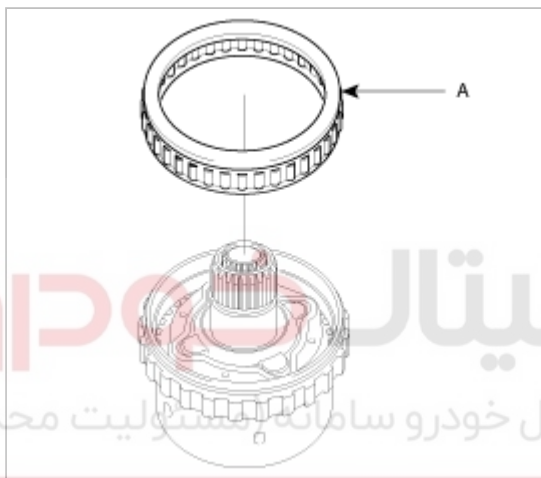
3. Install the thrust bearing and the output planetary carrier assembly(A).



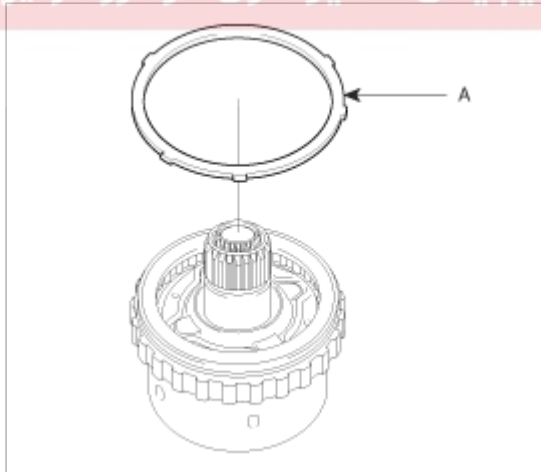
4. Insert the snap ring(A).



5. Apply ATF on the inner/outer surface of the one way clutch(A) end bearing and assemble the bearing with the arrow mark on the inner race facing to rear.



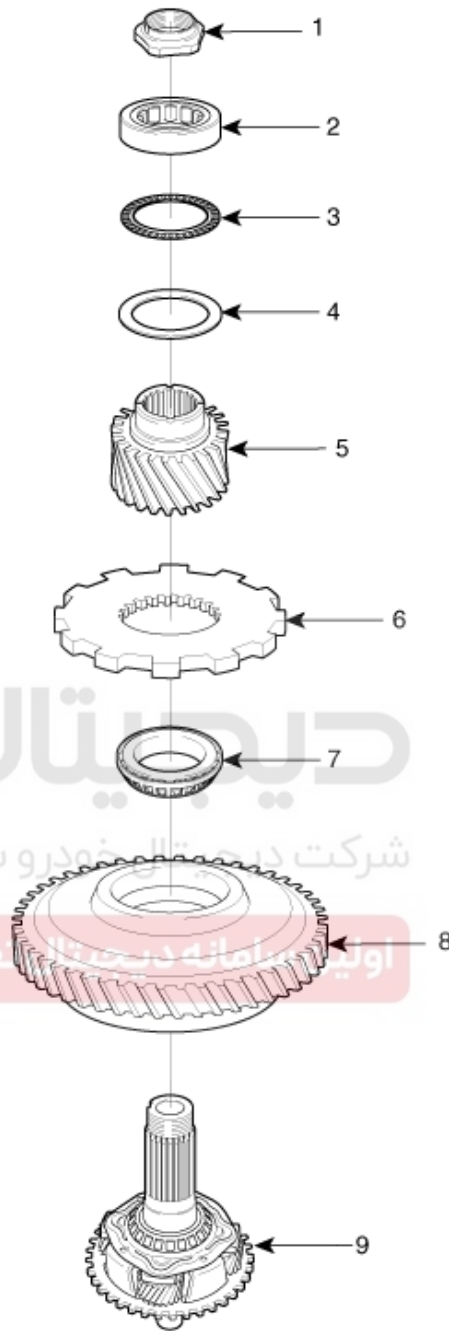
6. Install the stopper plate(A).



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Components



1. Lock nut
2. Roller bearing
3. Thrust bearing
4. Thrust race
5. Output gear

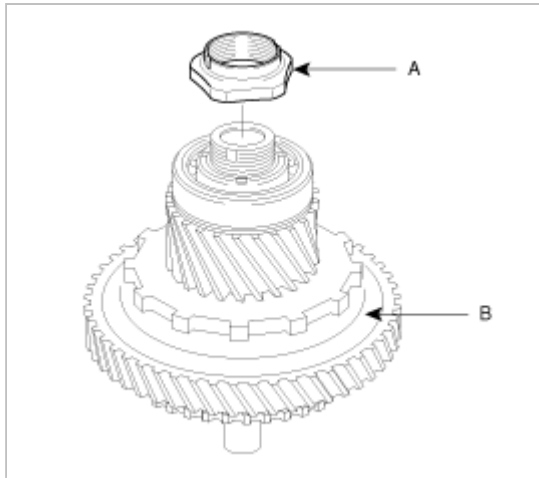
6. Parking gear
7. Taper roller bearing
8. Transfer driven gear
9. Direct planetary carrier

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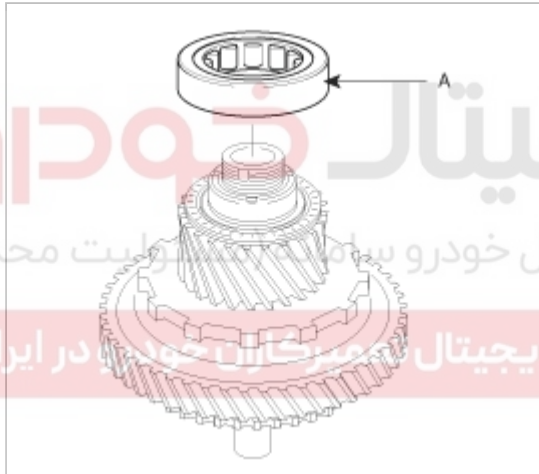


Disassembly

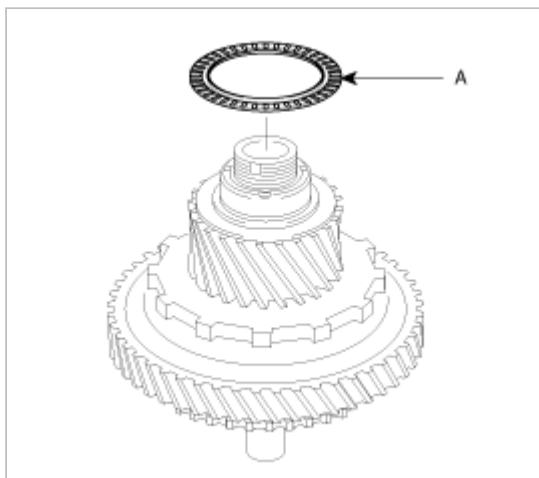
1. Unfold the bent part of the nut.
2. After fixing gear assembly(B) in a vise, remove the lock nut(A).

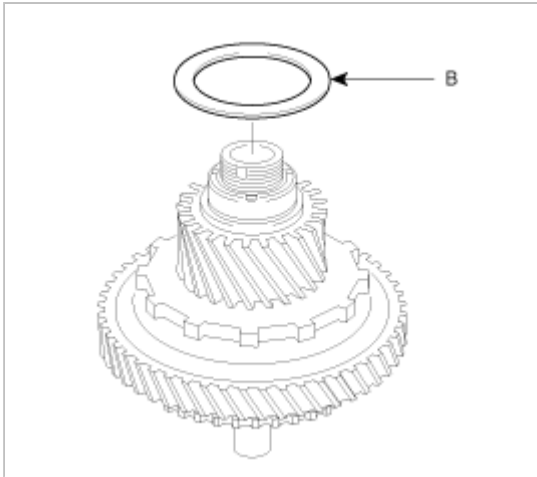


3. Remove the roller bearing(A).



4. Remove the thrust bearing(A) and race(B).

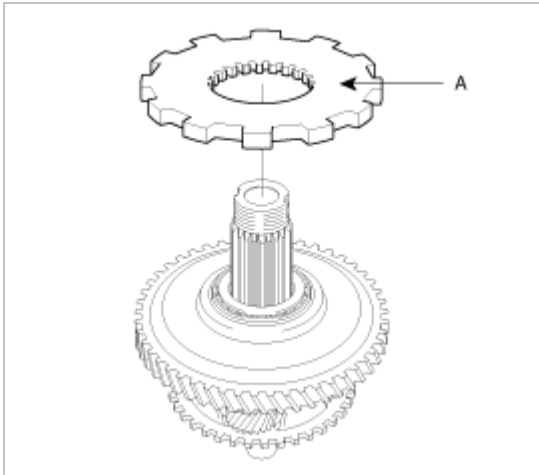




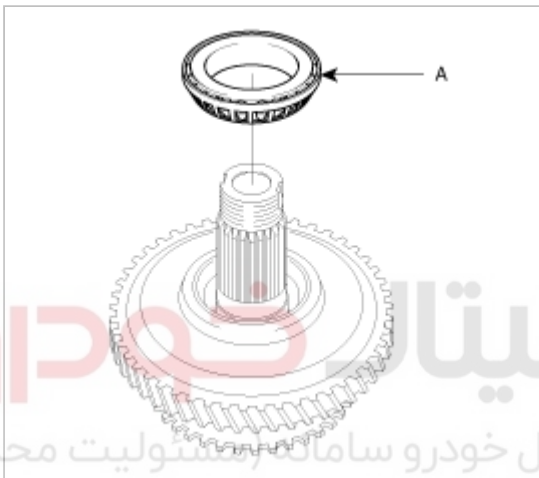
5. Engage the transfer driven gear(C) to a press machine(A), inflict pressure and take the output gear(B).



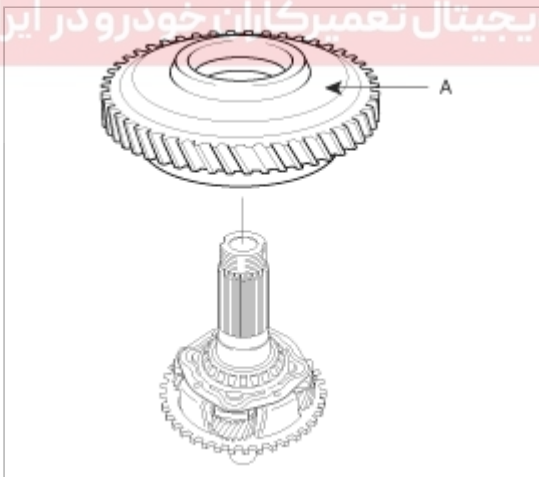
6. Remove the parking gear(A).



7. Remove the taper roller bearing(A).

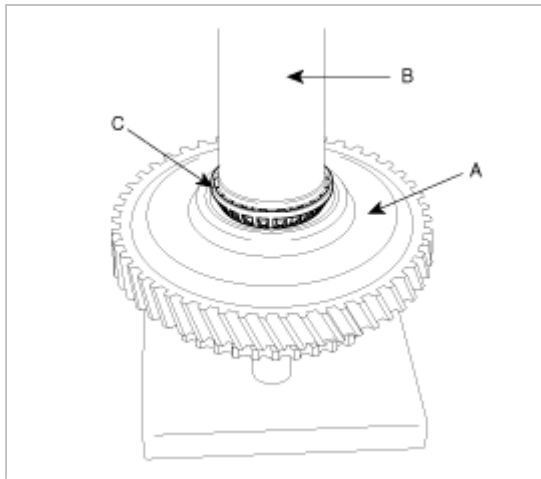


8. Remove the transfer driven gear(A).

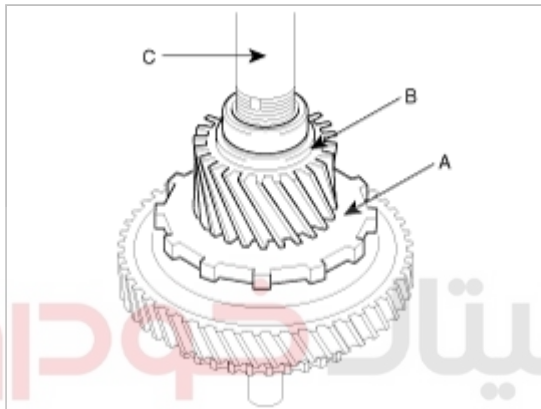


Reassembly

1. After inserting the transfer driven gear(A), install the taper roller bearing(C) by using a press machine(B).



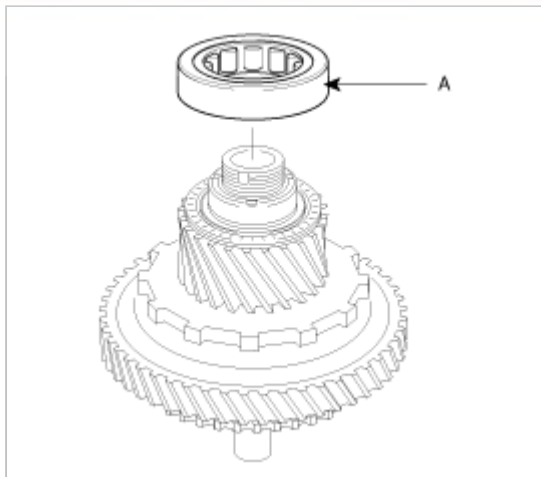
2. After inserting the parking gear(A) and the output gear(B), install them with a press machine(C).



NOTICE

At the parking gear's assembly, the grooved surface heads lower part.

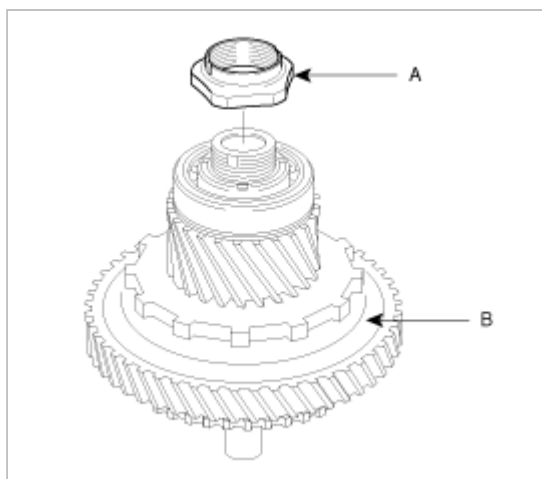
3. After installing the thrust race and bearing, install the roller bearing(A).



4. After fixing the gear assembly(B) in a vise, tighten the lock nut(A) and apply caulking.

Tightening torque :

156.9~176.5Nm(1600~1800 Kgf.cm, 115.7~130.2 lb-ft)



دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

