

# AUTOMATIC TRANSMISSION

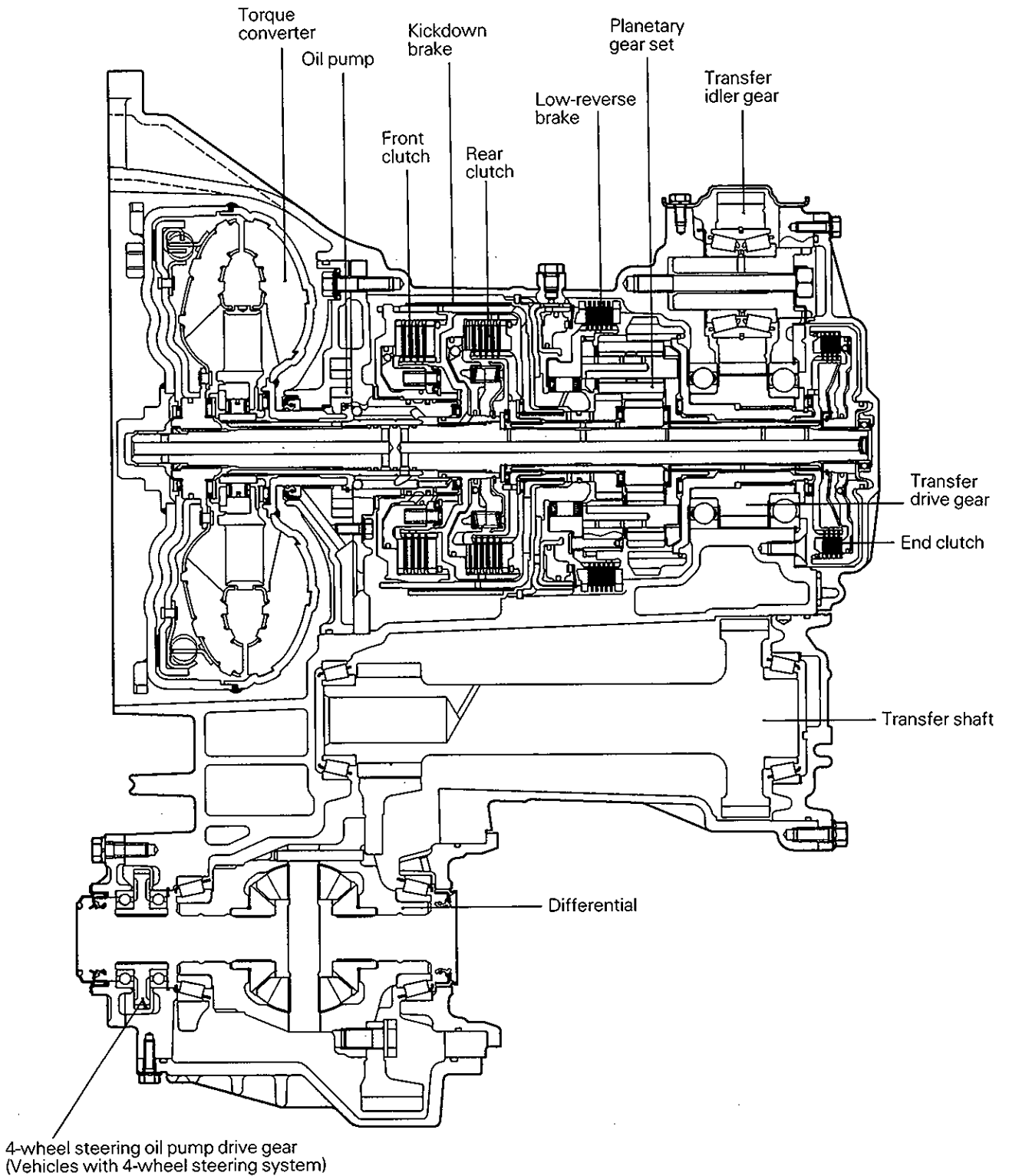
## F4A33, W4A32, W4A33

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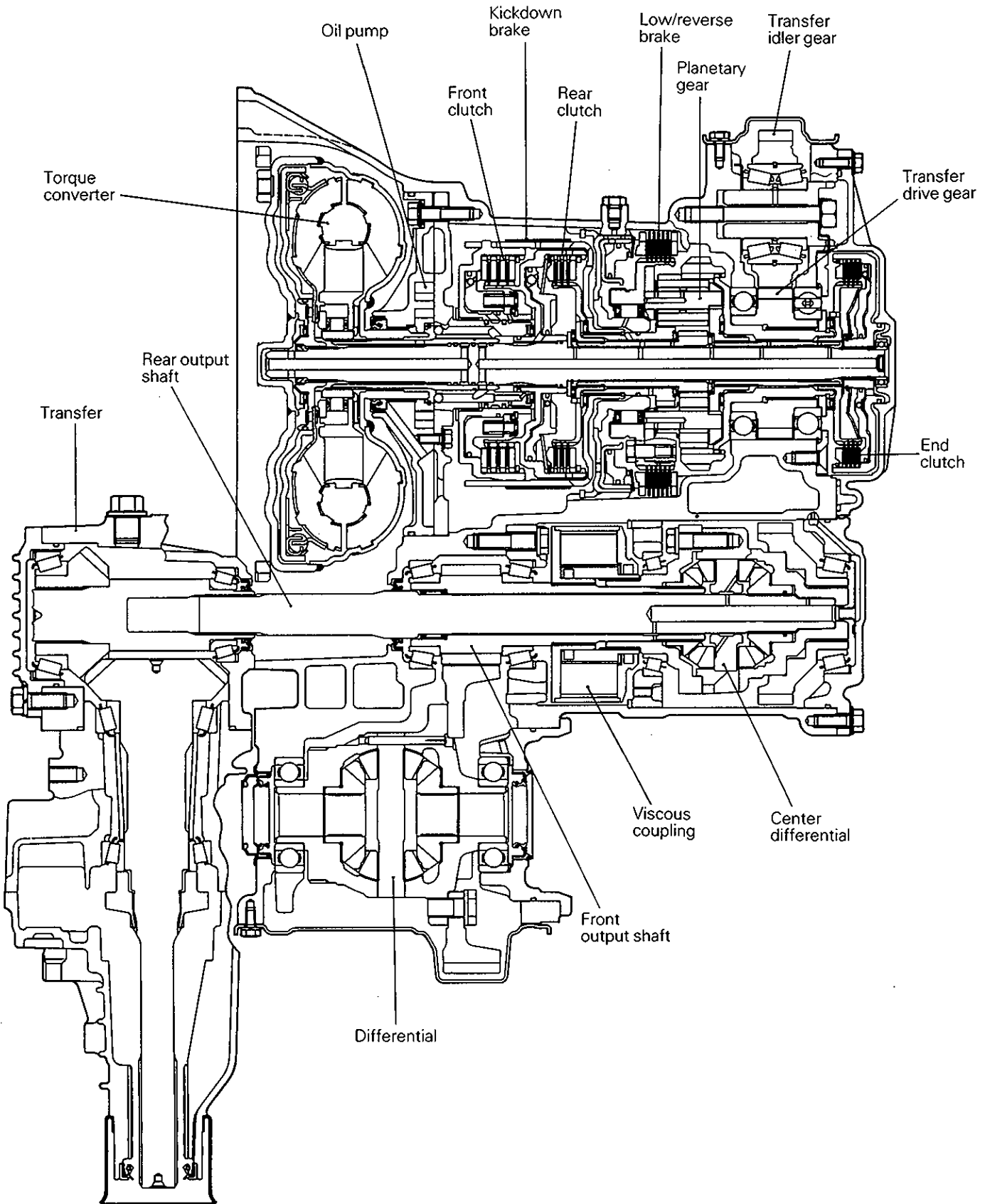
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**GENERAL INFORMATION**

**SECTIONAL VIEW – F4A33 <Up to MODEL 1992>**



SECTIONAL VIEW – W4A32



**TRANSMISSION MODEL TABLE – MODEL 1994**

Transmission model	Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC F4A32-1-WPF	B	29/36	4.750	N43W	4G63
EXP F4A33-1-MNQ3	A	28/36	3.958	F16A	6G72
F4A33-1-MNQ4	A	28/36	3.958	F16A	6G72-DOHC
F4A33-1-MNQ5*	A	28/36	3.958	F16A	6G72-DOHC
F4A33-1-WNQ1	A	28/36	4.750	F26A	6G72-DOHC

**TRANSMISSION MODEL TABLE – MODEL 1995**

Transmission model	Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC F4A33-1-UNQ5	A	28/36	4.367	F16A	6G72-DOHC
F4A33-1-UNQ6	A	28/36	4.367	F16A	6G72-DOHC
F4A33-1-UNQ7	A	28/36	4.367	F16A	6G72
W4A32-1-LPF	B	29/36	4.668	N43W	4G63
EXP F4A33-1-MNQ3	A	28/36	3.598	F16A	6G72
F4A33-1-MNQ4	A	28/36	3.598	F16A	6G72-DOHC
F4A33-1-MNQ5*	A	28/36	3.598	F16A	6G72-DOHC
F4A33-1-MNQ8	A	28/36	3.598	F16A	6G72

**TRANSMISSION MODEL TABLE – MODEL 1996**

Transmission model	Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC W4A32-1-LPF	B	29/36	4.668	N43W	4G63
EXP F4A33-1-MNQ3	A	28/36	3.598	F16A	6G72
F4A33-1-MNQ4	A	28/36	3.598	F16A	6G72-DOHC
F4A33-1-MNQ5*	A	28/36	3.598	F16A	6G72-DOHC
F4A33-1-MNQ8	A	28/36	3.598	F16A	6G72

**NOTE**

DOHC: Double overhead camshaft

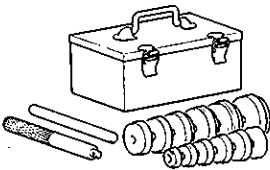
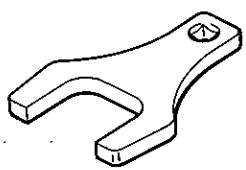
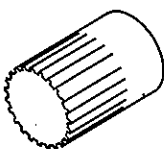
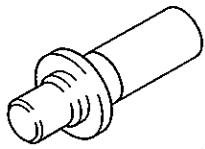
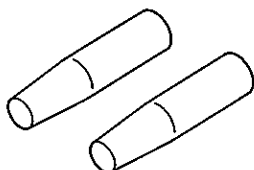
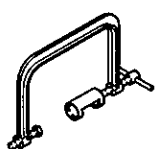
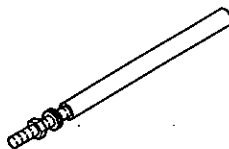
\*: Model with 4-wheel steering

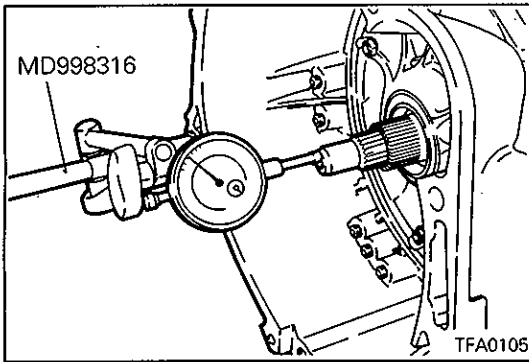
**GEAR RATIO TABLE**

	A	B
1st	2.551	2.846
2nd	1.488	1.581
3rd	1.000	1.000
4th	0.685	0.685
Reverse	2.176	2.176

Part name	Thickness mm (in.)	Identification symbol	Part No.
Spacer – F4A33 ..... (For adjustment of differential case preload)	0.83 (0.0327)	83	MD720937
	0.86 (0.0339)	86	MD720938
	0.89 (0.0350)	89	MD720939
	0.92 (0.0362)	92	MD720940
	0.95 (0.0374)	95	MD720941
	0.98 (0.0386)	98	MD720942
	1.01 (0.0398)	01	MD720943
	1.04 (0.0409)	04	MD720944
	1.07 (0.0421)	07	MD720945
	1.10 (0.0433)	J	MD710454
	1.13 (0.0445)	D	MD700270
	1.16 (0.0457)	K	MD710455
	1.19 (0.0469)	L	MD710456
	1.22 (0.0480)	G	MD700271
	1.25 (0.0492)	M	MD710457
	1.28 (0.0504)	N	MD710458
	Spacer – W4A32, W4A33 ..... (For adjustment of differential case end play)	1.31 (0.0516)	E
1.34 (0.0528)		O	MD710459
1.37 (0.0539)		P	MD710460
1.01 (0.0398)		01	MD720943
1.10 (0.0433)		J	MD710454
Spacer ..... (For adjustment of differential gear and pinion backlash)	1.19 (0.0469)	L	MD710456
	1.28 (0.0504)	N	MD710458
Spacer ..... (For adjustment of differential gear and pinion backlash)	0.75 – 0.82 (0.0295 – 0.0323)	–	MD722986
	0.83 – 0.92 (0.0327 – 0.0362)	–	MD722985
	0.93 – 1.00 (0.0366 – 0.0394)	–	MD722984
	1.01 – 1.08 (0.0398 – 0.0425)	–	MD722982
	1.09 – 1.16 (0.0429 – 0.0457)	–	MD722983
	Spacer – W4A32, W4A33 ..... (For adjustment of center differential front side gear end play)	0.53 – 0.60 (0.0209 – 0.0236)	28
0.85 – 0.92 (0.0335 – 0.0362)		32	MD727932
1.01 – 1.08 (0.0398 – 0.0425)		34	MD727934
1.17 – 1.24 (0.0461 – 0.0498)		41	MD727941

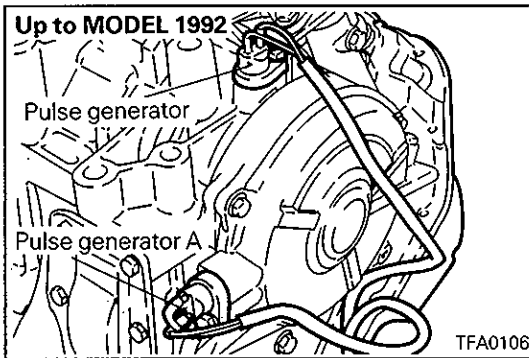
## 2. SPECIAL TOOLS

Tool	Number	Name	Use
	MB990925	Bearing and oil seal installer	Installation of bearing outer race
	MB991013	Special spanner	Installation and removal of drive bevel gear lock nut (W4A32, W4A33)
	MB991144	Side gear holding tool	Measurement of transfer drive gear drive torque (W4A32, W4A33)
	MD998200	Front bearing retainer oil seal installer	Installation of rear output shaft oil seal (W4A32, W4A33) Installation of transfer case oil seal (W4A32, W4A33)
	MD998266	Guide pin	Reassembly of valve body
	MD998303	Valve spring compressor	Removal and installation of kickdown servo
	MD998316	Dial gauge support	Installation of dial gauge

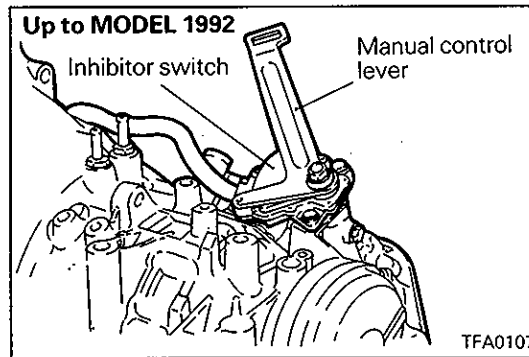
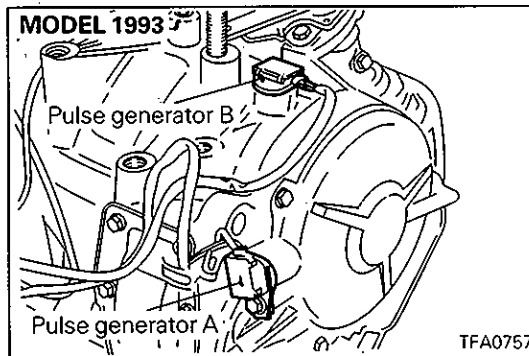


**DISASSEMBLY**

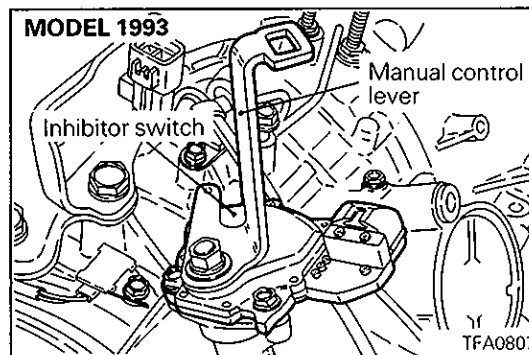
1. Clean away any sand, mud, etc. if present around the transmission.
2. Place the transmission assembly on the workbench with the oil pan down.
3. Remove the torque converter.
4. Use the special tool to fix the dial gauge on the transmission case and measure the end play of the input shaft.

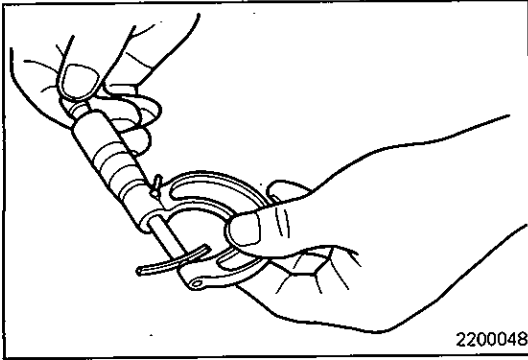


5. Remove pulse generators "A" and "B".



6. Remove the manual control lever, then remove the inhibitor switch.

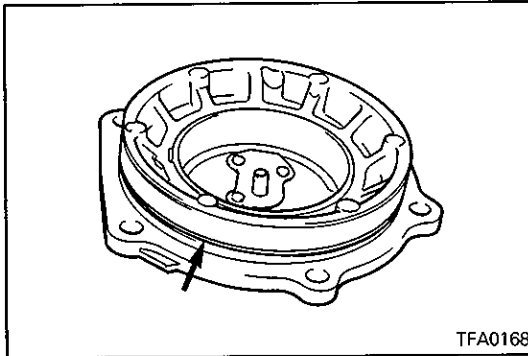




7. Remove the outer race from the output bearing retainer and remove the solder. If the solder is not crushed, repeat steps 4 – 6, using a 3 mm (0.12 in.) diameter solder. Measure the thickness of the crushed solder with a micrometer and select a spacer with a thickness that will provide the standard preload value.

**Standard value: 0.075 – 0.135 mm (0.003 – 0.0053 in.)**

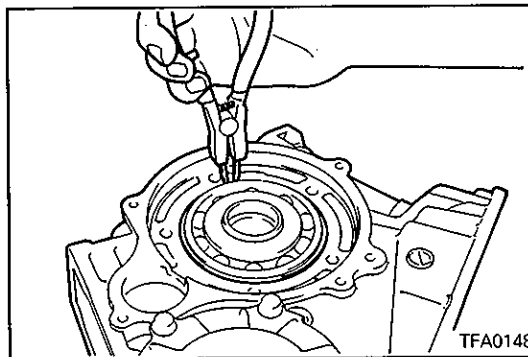
8. Install the selected spacer and the outer race on the output bearing retainer.



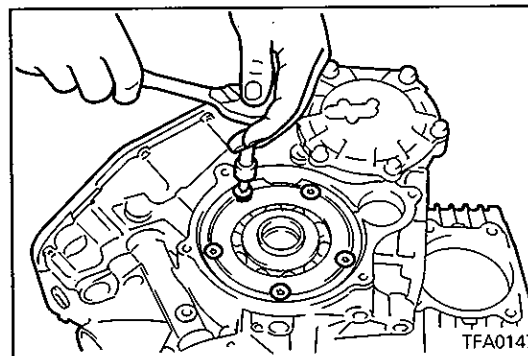
9. Install a new O-ring on the outer circumference of the outer bearing retainer.

10. Coat the O-ring with automatic transmission fluid and tighten the output bearing retainer mounting bolts to the specified torque.

**Output bearing retainer mounting bolts:  
24Nm (2.4 kgm, 18 ft.lbs.)**

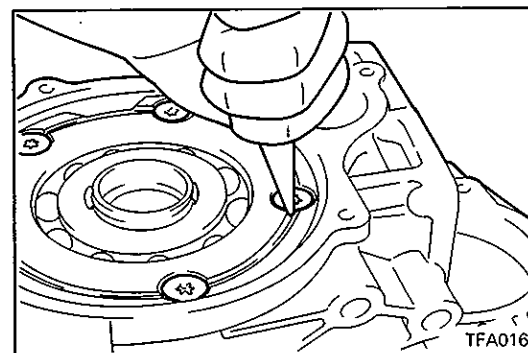


11. Insert the output flange into the case and install the snap ring around the bearing.



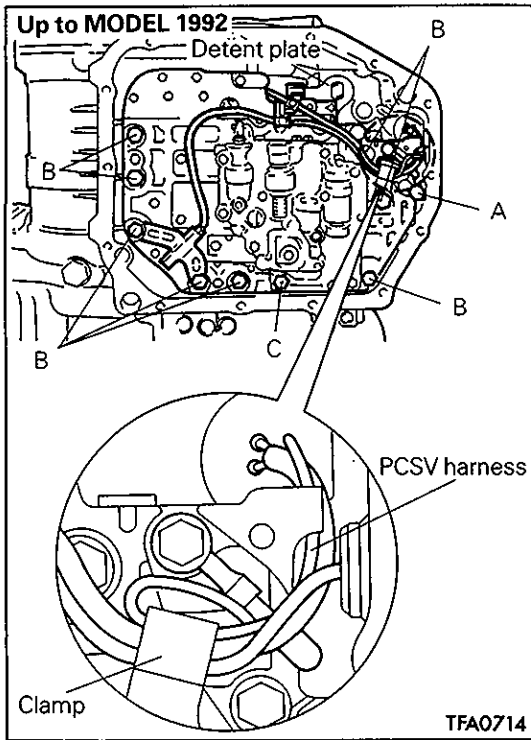
12. Install the bearing retainer using new bolts.

**Bearing retainer mounting bolts:  
20 Nm (2.0 kgm, 15 ft.lbs.)**



13. Caulk the head of each bolt.





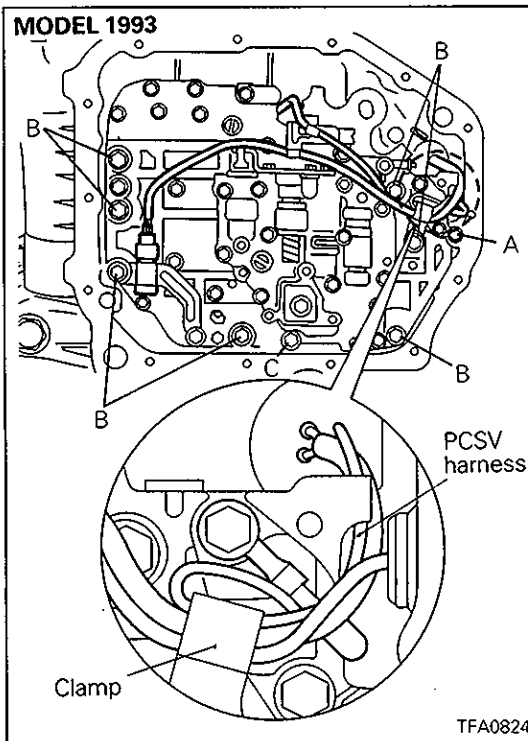
67. Insert the knock pin of the valve body into the case, keeping the detent plate pin in the manual valve groove. Temporarily install the valve body, install the oil temperature sensor and holder; then tighten the mounting bolts to the specified torque.

- A bolt: 18 mm (0.709 in.)
- B bolt: 25 mm (0.984 in.)
- C bolt: 40 mm (1.575 in.)

**Valve body assembly mounting bolts:**  
**11 Nm (1.1 kgm, 8 ft.lbs.)**

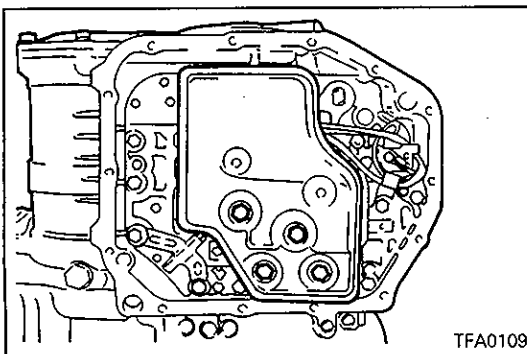
**Caution**

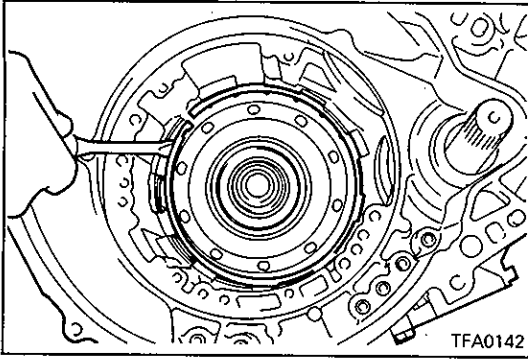
- **Firmly fasten the solenoid valve and the oil temperature sensor harness at the position shown in the illustration.**  
**Especially, the pressure control solenoid valve (PSCV) harness, which is separated from other harness should be routed and clamped as shown in the illustration. Failure to fasten it may result in contact with the detent plate or parking rod.**



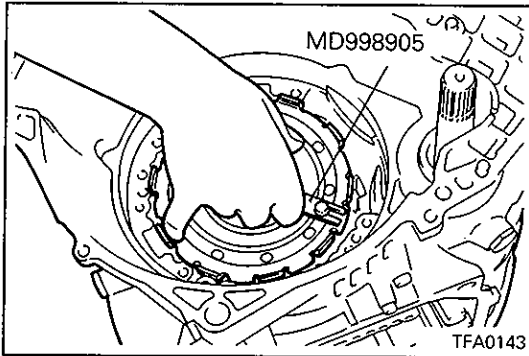
68. Install the oil screen.

**Oil screen mounting bolts: 6 Nm (0.6 kgm, 5 ft.lbs.)**

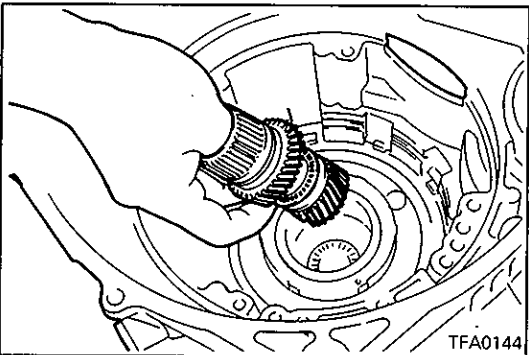




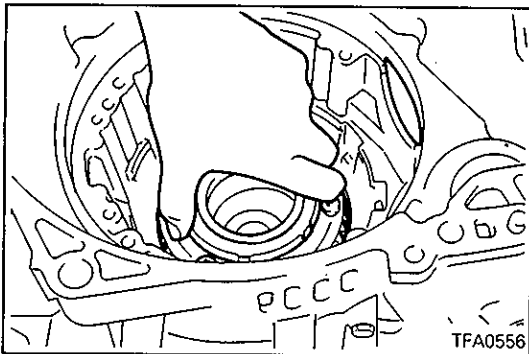
44. Remove the snap ring.



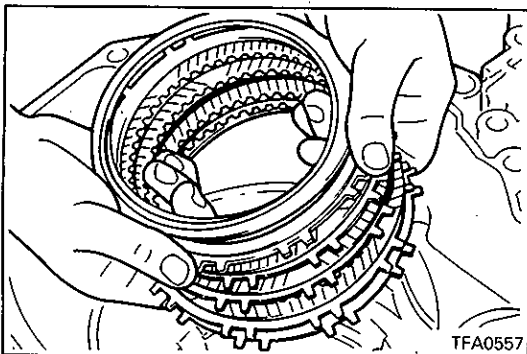
45. Using the special tool, remove the center support.



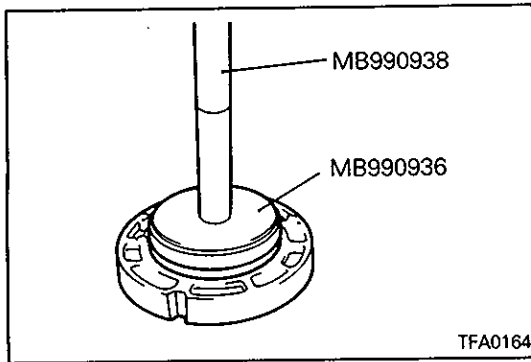
46. Remove the reverse and forward sun gears together.



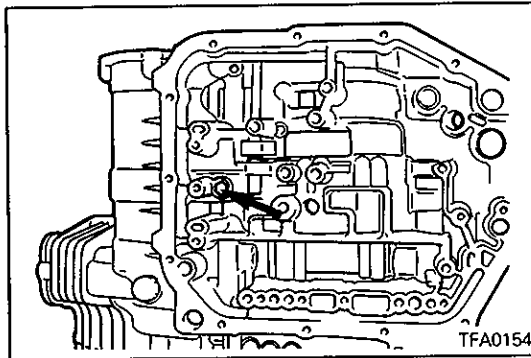
47. Remove the planet carrier assembly.



48. Remove the wave spring, return spring, reaction plate, brake discs, and brake plates.

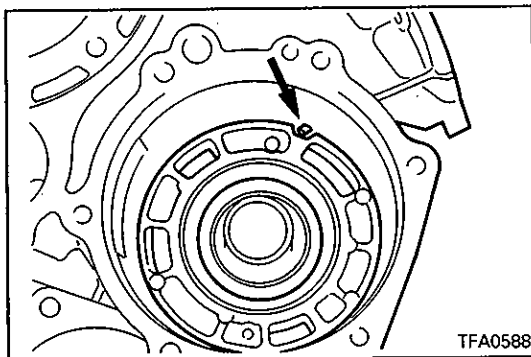


12. Using the special tool, install the outer race in the center bearing retainer.

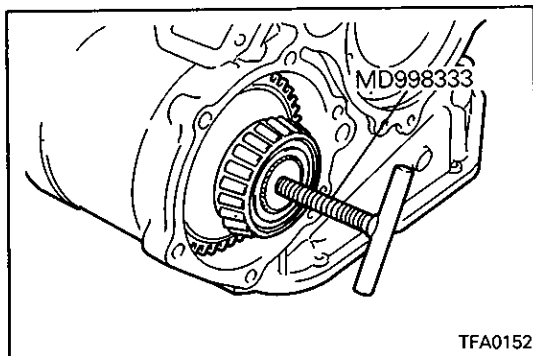


13. Install the center bearing retainer stopper bolt.

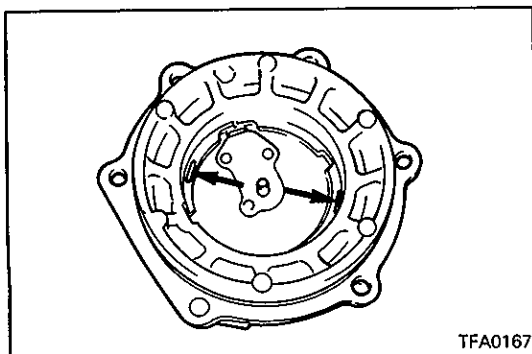
**Center bearing retainer stopper bolt:  
5 Nm (0.5 kgm, 4 ft.lbs.)**



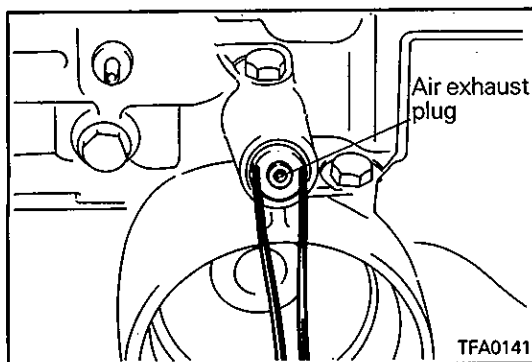
14. Install the center bearing retainer so that the stopper bolt fits in the groove of the center bearing retainer.



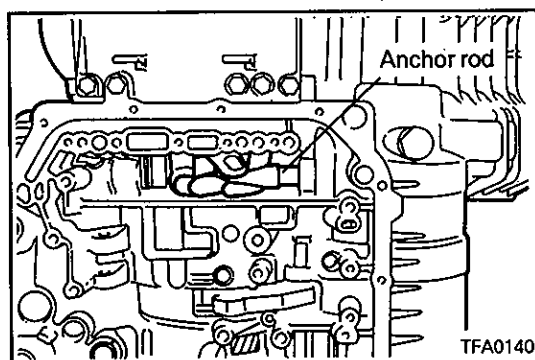
15. Install the special tool in the center differential and install the center differential in the transmission case.



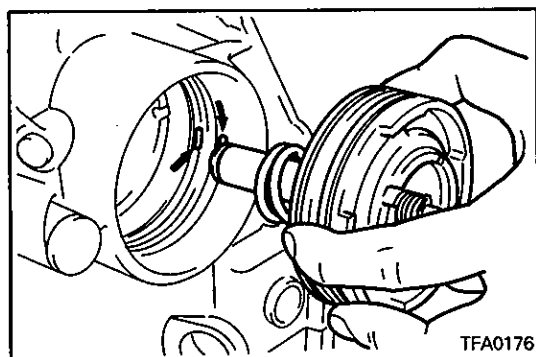
16. Place two pieces of approx. 10 mm (0.39 in.) long, 1.6 mm (0.06 in.) diameter solder on the output bearing retainer at the positions shown in the diagram and install the outer race.



36. Install the air exhaust plug, and then install the plug.  
**Air exhaust plug: 33 Nm (3.3 kgm, 24 ft.lbs.)**



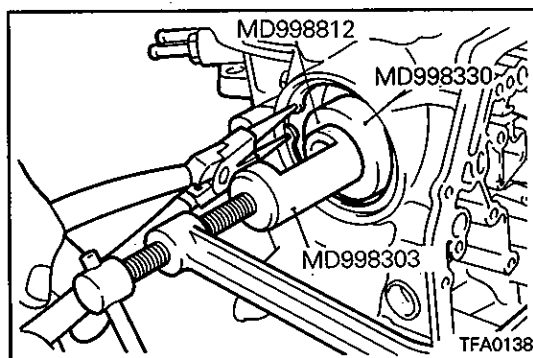
37. Install the anchor rod.



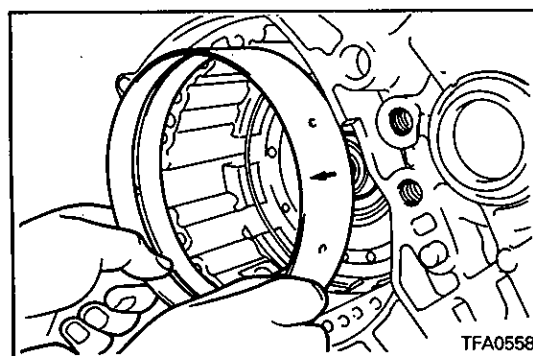
38. Install the kickdown servo spring, piston and sleeve.

**Caution**

- The seal ring alignment hole in the kickdown servo piston must not overlap the oil filler ports (indicated by the arrows in the diagram).



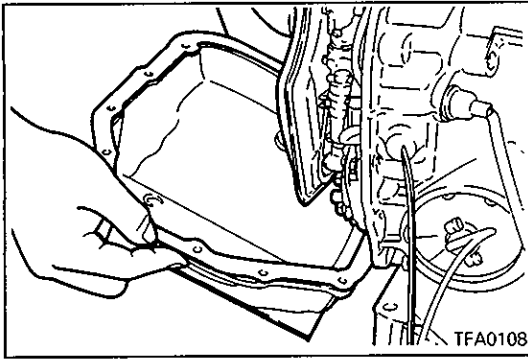
39. Use the special tool to hold the kickdown servo piston and sleeve pressed, and install the snap ring.



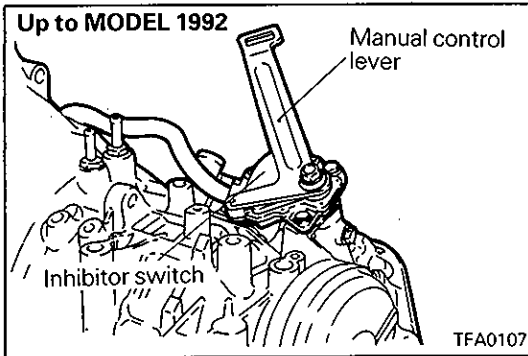
40. Install the kickdown band.

**Caution**

- Install with the arrow mark pointing to the front.



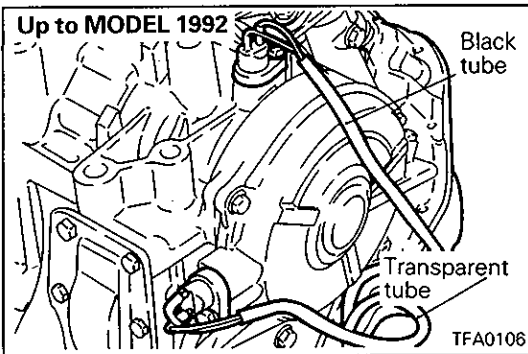
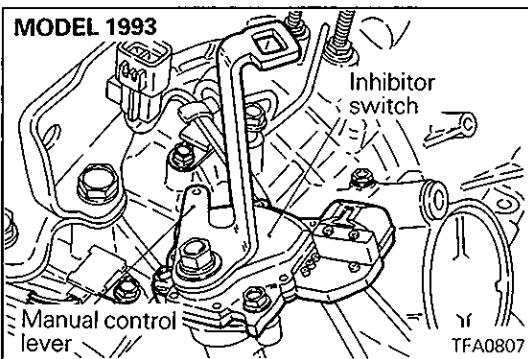
81. Install the magnets in the oil pan and install the oil pan.  
**Oil pan mounting bolts: 11 Nm (1.1 kgm, 8 ft.lbs.)**



82. Install the inhibitor switch and the manual control lever.  
**Inhibitor switch mounting bolts:  
 11 Nm (1.1 kgm, 8 ft.lbs.)**  
**Manual control lever mounting bolt:  
 19 Nm (1.9 kgm, 14 ft.lbs.)**

83. Install the speedometer gear assembly.

**Speedometer gear locking plate mounting bolt:  
 5 Nm (0.5 kgm, 4 ft.lbs.)**



84. Install pulse generators A and B.

**Pulse generator mounting bolts:  
 11 Nm (1.1 kgm, 8 ft.lbs.)**

**Caution**

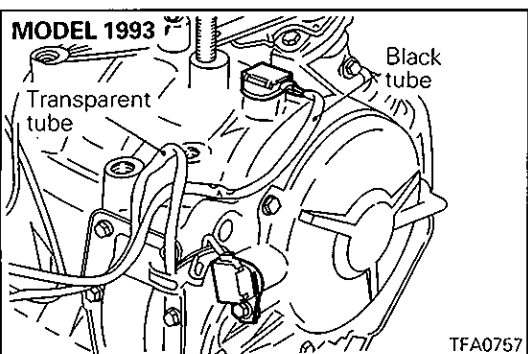
- Install the black tube on the output gear side and the transparent tube on the end clutch side.

85. Install the oil filler tube and insert the level gauge.

**Oil filler tube mounting bolt:  
 24 Nm (2.4 kgm, 18 ft.lbs.)**

86. Install the brackets.

**Transmission mounting bracket bolts:  
 70 Nm (7.0 kgm, 51 ft.lbs.)**



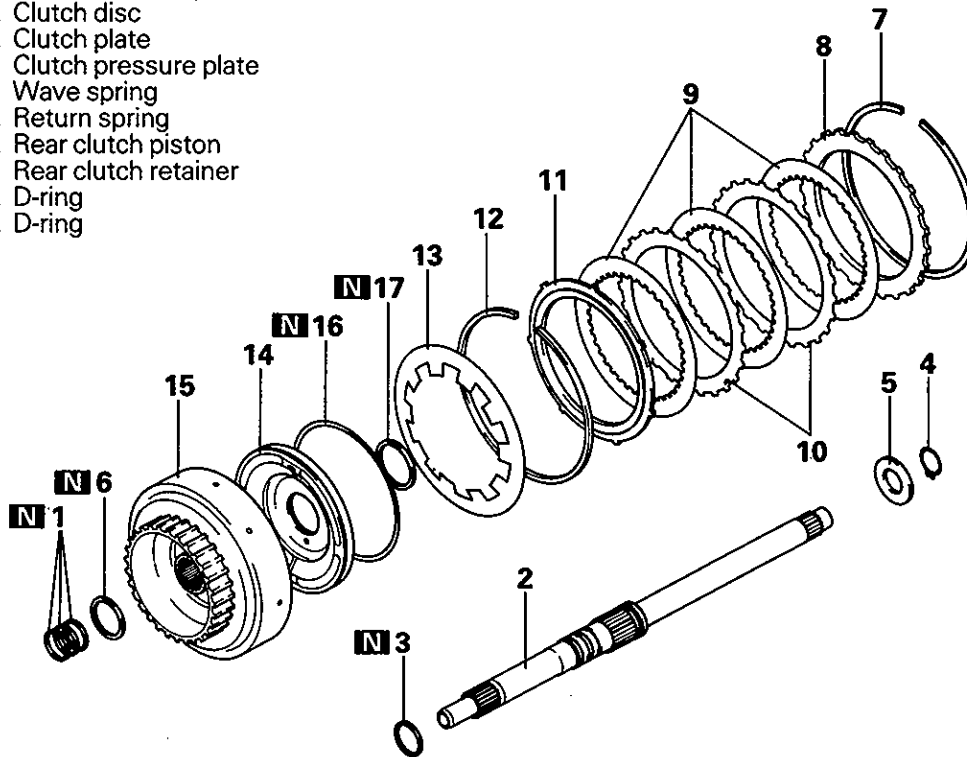
# 7. REAR CLUTCH

**W4A32**

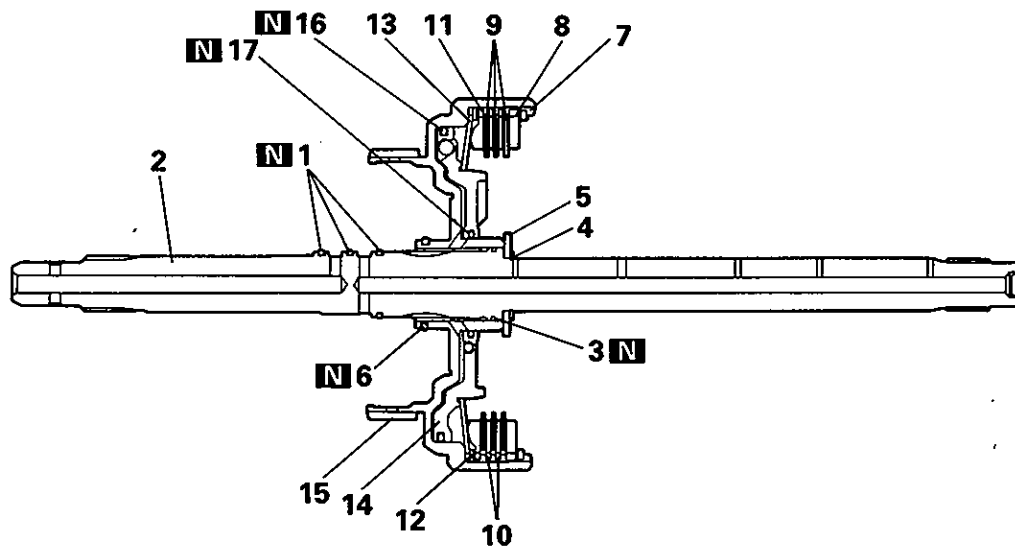
## DISASSEMBLY AND REASSEMBLY

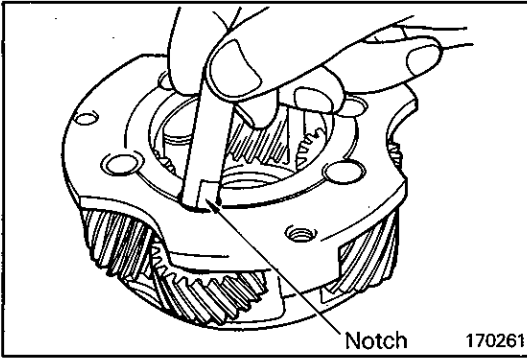
### Disassembly steps

- 1. Seal ring
- ⦿E⦿ 2. Input shaft
- 3. O-ring
- 4. Snap ring
- 5. Thrust race
- 6. Seal ring
- ⦿D⦿ 7. Snap ring
- ⦿C⦿ 8. Clutch reaction plate
- 9. Clutch disc
- ⦿C⦿ 10. Clutch plate
- ⦿C⦿ 11. Clutch pressure plate
- ⦿A⦿ 12. Wave spring
- 13. Return spring
- 14. Rear clutch piston
- 15. Rear clutch retainer
- 16. D-ring
- 17. D-ring

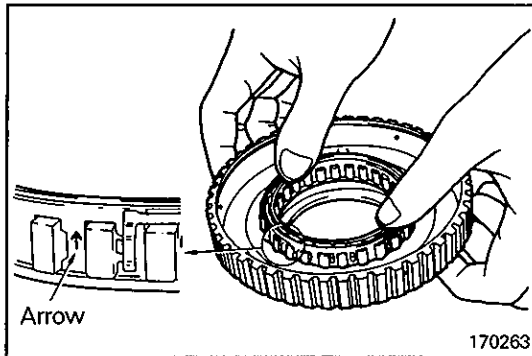


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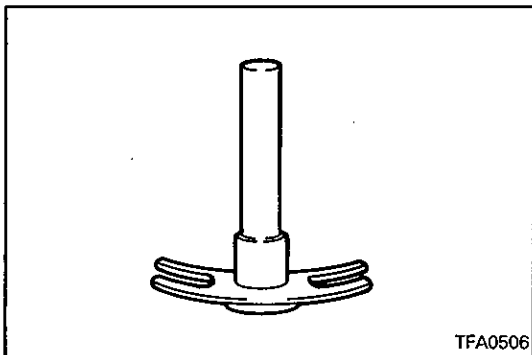


- (5) Insert the pinion shaft. Make sure that the flattened end of pinion shaft is correctly fitted in the hole of the rear thrust plate when the pinion shaft is inserted.



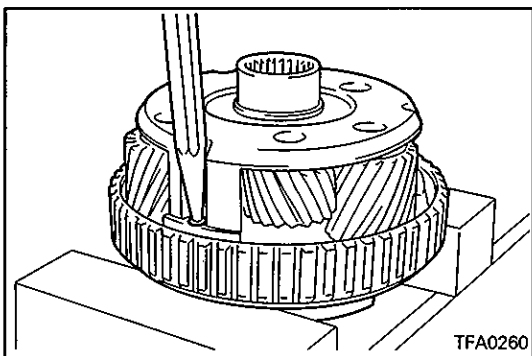
#### ◆B◆ INSTALLATION OF ONE-WAY CLUTCH

- (1) Push the one-way clutch into the outer race. Make sure that arrow on the outside circumference of cage is pointing upward as shown in the illustration when the one-way clutch is pushed in.



#### ◆C◆ INSTALLATION OF WAVE WASHER

- (1) Fit the wave washer on the rivet so that its concave side will face the outer race side.



#### ◆D◆ INSTALLATION OF RIVET

- (1) Stake the rivet using a punch and press.

##### NOTE

- (1) Use a punch with a 60° tip angle.  
 (2) Stake the rivet with a load of 11,000 – 13,000 N (1,100 – 1,300 kg, 2,425 – 2,866 lbs.).