AUTOMATIC TRANSAXLE

F4A33, W4A32, W4A33

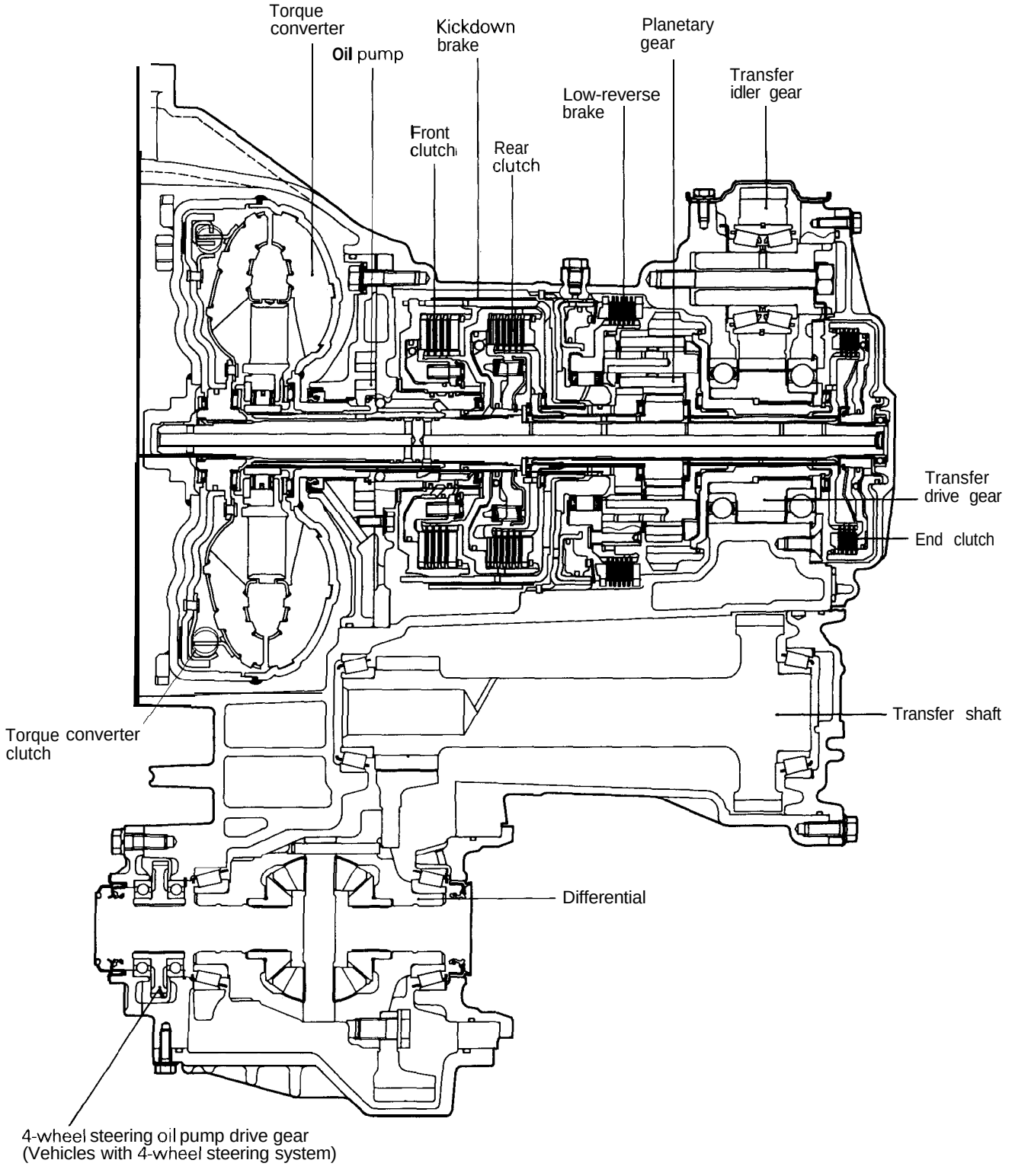
CONTENTS

GENERAL INFORMATION

Precautions to be taken when disassembling and reassembling the transaxle

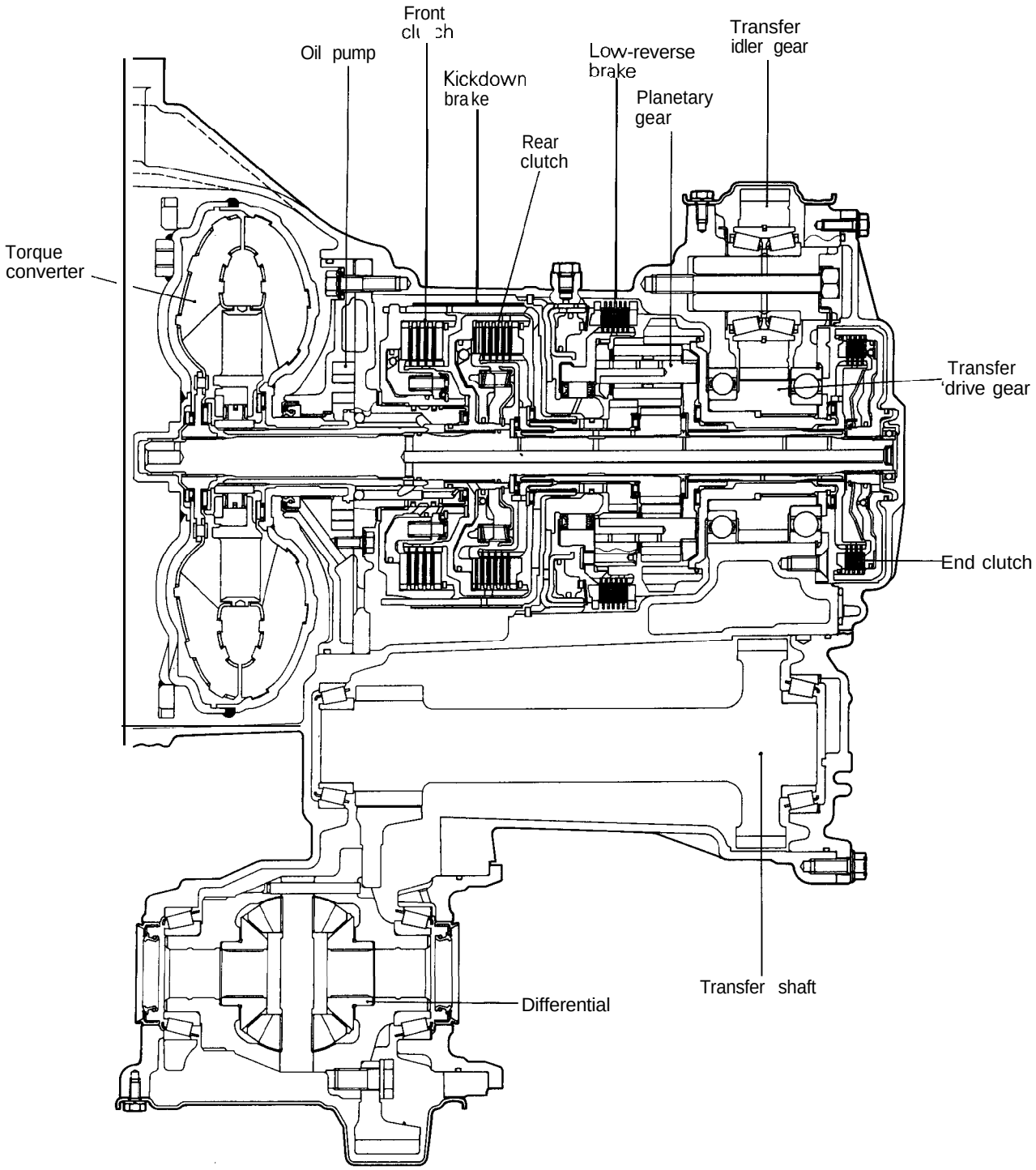
- Because the automatic transaxle is composed of component parts of an especially high degree of precision, these parts should be very carefully handled during disassembly and assembly so as not to scar or scratch them.
- A rubber mat should be placed on the workbench, and it should always be kept clean.
- During disassembly, cloth gloves or shop towels should not be-used. If such items must be used, either use articles made of nylon, or use paper towels.
- All disassembled parts must be thoroughly cleaned.
  Metal parts may be cleaned with ordinary detergents, but must be thoroughly air dried.
- Clean the clutch disc, resin thrust plate and rubber parts by using ATF (automatic transaxle fluid), being very careful that dust, dirt, etc. do not adhere to them.
- Do not reuse gaskets, oil seals, or rubber parts.
  Replace such parts with new ones at every reassembly. The O-ring of the oil level gauge need not be replaced.
- Do not use grease other than petrolatum jelly.
- Apply ATF to friction components, rotating parts, and sliding parts before installation.
- A new clutch disc should be immersed in ATF for at least two hours before installation.
- Do not apply sealer or adhesive to gaskets.
- When a bushing must be replaced, replace the assembly in which it is incorporated.
- If the transaxle main unit is damaged, also disassemble and clean the cooler system.

SECTIONAL VIEW – F4A33 with torque converter clutch



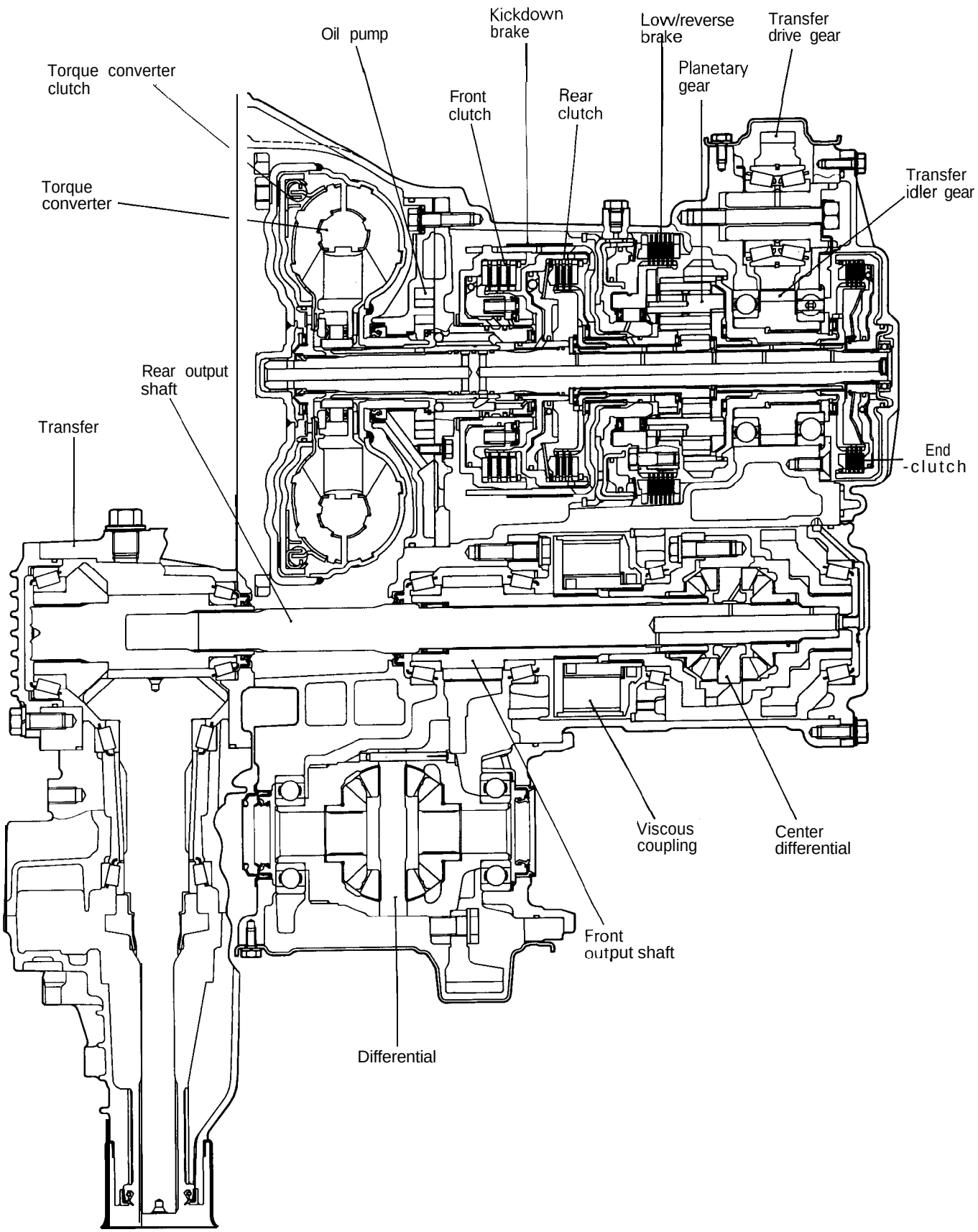
TFA0547

SECTIONAL VIEW – F4A33 without torque converter clutch



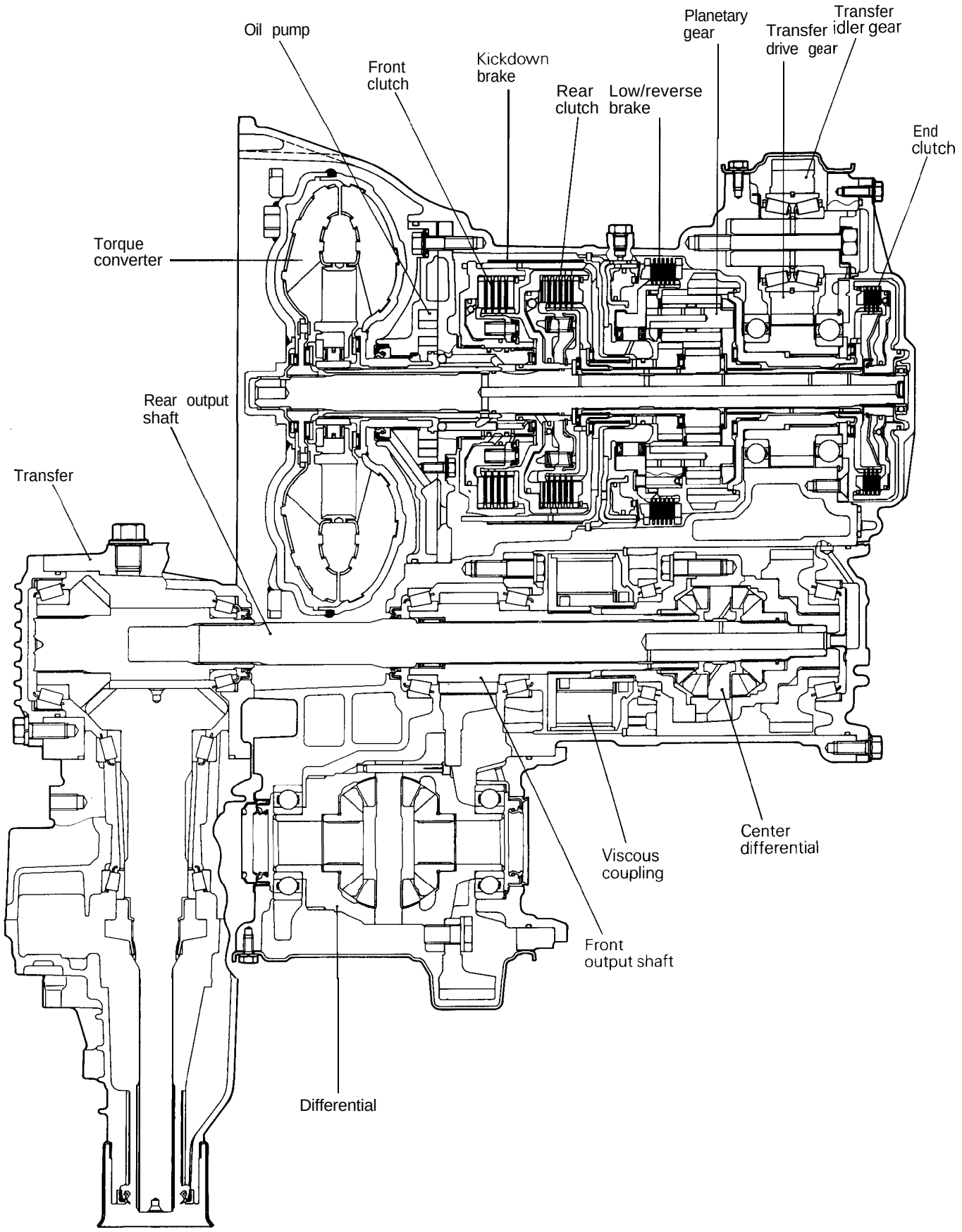
TFA0101

SECTIONAL VIEW – W4A32 with torque converter clutch



TFA0103

SECTIONAL VIEW – W4A33 without torque converter clutch



TFA0102

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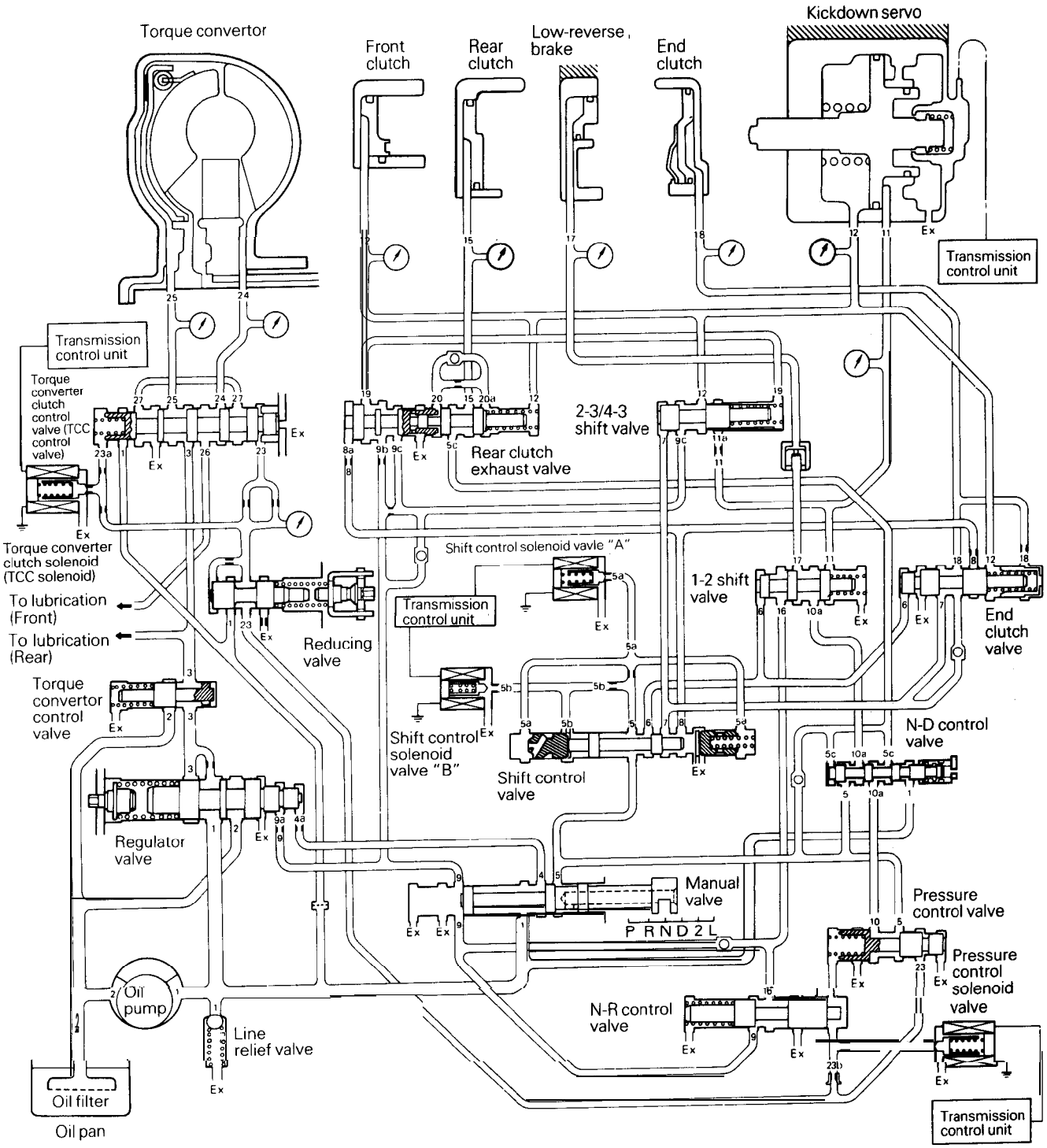
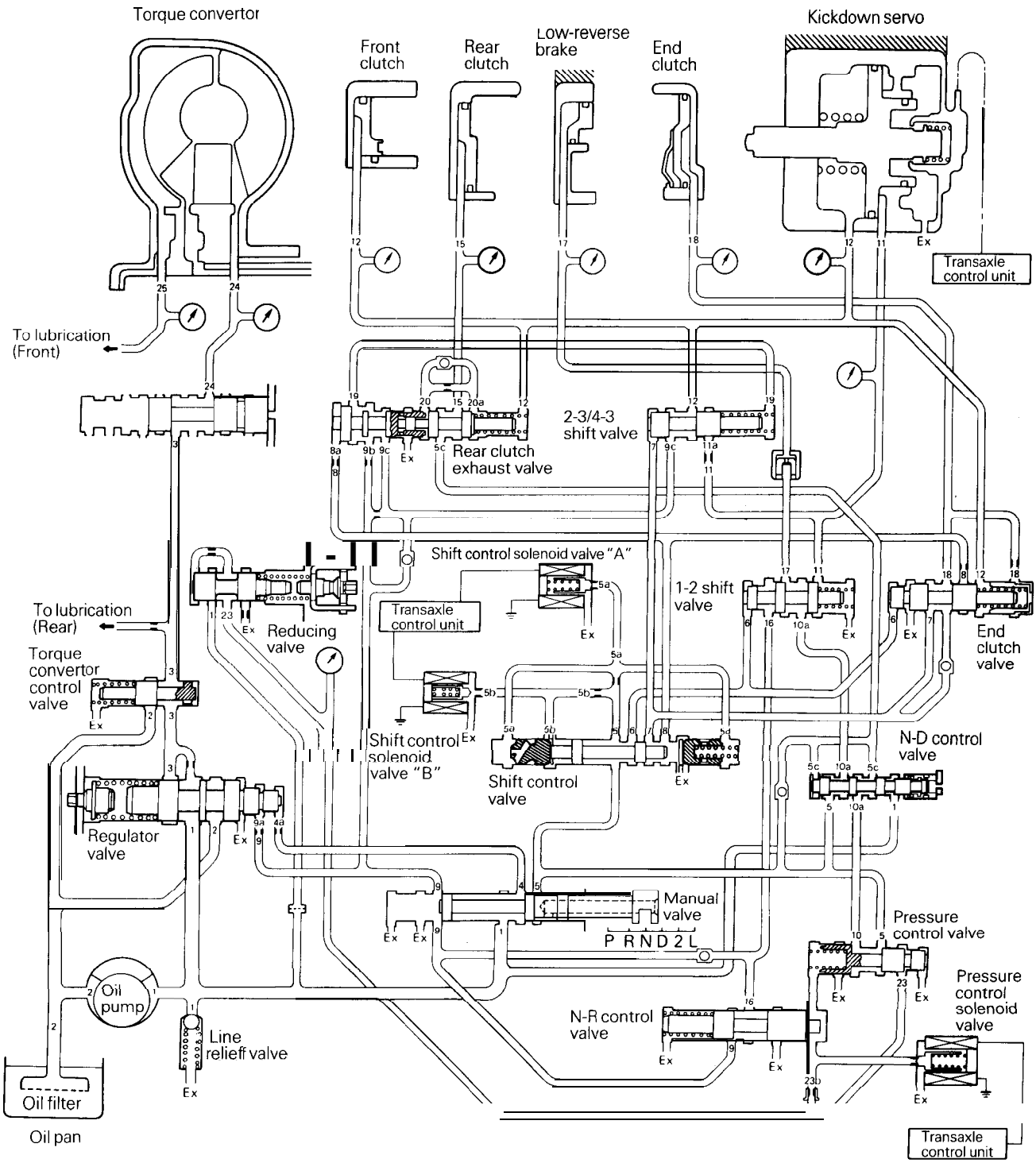
HYDRAULIC CONTROL SYSTEM (With torque converter clutch)



TFA0070

HYDRAULIC CONTROL SYSTEM (Without torque converter clutch)



TFA0078

SPECIFICATIONS

TRANSAXLE MODEL TABLE – MODEL 1992

Transaxle model	Gear ratio type	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
F4A33-1-UP61*1	A	29/36	***4.376***	D22A	4G63-DOHC ***TIC***
MNP2	A	28/36	***3.958***	Z11A	6G72-DOHC
MNN3	A	28/36	***3.958***	F16A	6G72
MNN4	A	28/36	***3.958***	F16A	6G72-DOHC
MNN5*2	A	28/36	***3.958***	F16A	6G72-DOHC
W4A32-1-UNN	A	28/36	***4.422***	N44W	4G64
WNA	B	28/36	***4.750***	N21W	4G93
UQA2	B	30/36	***4.422***	E38A	4G63-DOHC
W4A33-1-UP6*1	A	29/36	***4.422***	D27A	4G63-DOHC ***TIC***

TRANSAXLE MODEL TABLE – MODEL 1993

Transaxle model	Gear ratio type	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
F4A33-1-UP61*1	A		***4.376***	D22A	4G63-DOHC T/C
MNP8	A	29/3628/36	***3.958***	Z11A	6G72-DOHC
MNP9	A		***3.958***	F16A	6G72
MNPC	A	28/3628/36	***3.958***	F16A	6G72-DOHC
MNPE*2	A	28/36	***3.958***	F16A	6G72-DOHC
W4A32-1-UNQ	B	28/36	***4.422***	N24W, N44W	4G64
WNF1	A	29/3628/36	4.750	N21W	4G93
W4A33-1-UP61*1			***4.422***	D27A	4G63-DOHC ***TIC***

NOTE
*1: Model without torque converter clutch (TCC)
*2: Model with 4-wheel steering oil pump drive gear

GEAR RATIO TABLE

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

SERVICE SPECIFICATIONS

mm (in.)

Item	Standard
Transfer driven gear preload (Center differential case preload)	0.075 – 0.135 (.0030 – .0053)
Low-reverse brake end play	1.0 – 1.2 (.0394 – .0472)
Input shaft end play	0.3 – 1.0 (.0118 – .0394)
Differential case preload – F4A33	0.075 – 0.135 (.0030 – .0053)
Front differential case end play – W4A32, W4A33	0.045 – 0.165 (.0018 – .0065)
Differential gear and pinion backlash	0.025 – 0.150 (.0010 – .0059)
Oil pump side clearance	0.03 – 0.05 (.0012 – .0020)
Output flange bearing end play	0 – 0.09 (0 – .0035)
Front clutch end play – F4A33, W4A33	0.8 – 1.0 (.0315 – .0394)
– F4A32	0.7 – 0.9 (.0276 – .0354)
Rear clutch end play – F4A33, W4A33	1.0 – 1.2 (.0394 – .0472)
– F4A32	0.4 – 0.6 (.0157 – .0236)
End clutch end play	0.60 – 0.85 (.0236 – .0335)
Transfer drive gear end play	0 – 0.09 (0 – .0035)
Front output shaft preload – W4A32, W4A33	0.055 – 0.115 (.0022 – .0045)
Center differential side gear end play- W4A32, W4A33	0.01 – 0.03 (.0004 – .0012)
Bevel gear set backlash – W4A32, W4A33	0.08 – 0.13 (.0031 – .0051)
Driven bevel gear turning drive torque – W4A32, W4A33 Nm (ft.lbs)	1.0 – 1.7 (.72 – 1.23)
Drive bevel gear shaft turning drive torque – W4A32, W4A33 Nm (ft.lbs)	1.7 – 2.5 (1.23 – 1.81)

VALVE BODY SPRING IDENTIFICATION CHART

mm (in.)

Part name	Wire diameter	Outside diameter	Length	No. of turns
Regular valve spring	1.4 (.055)	15 (.59)	52 (2.05)	11.5
1-2 shift valve spring	0.6 (.024)	7.6 (.299)	26.6 (1.047)	13.5
Pressure control valve spring	0.45 (.0177)	7.6 (.299)	21.3 (.839)	8.5
Rear clutch exhaust valve spring	0.7 (.028)	6.8 (.268)	27.4 (1.079)	12.5
End clutch valve spring	0.6 (.024)	6.6 (.260)	24.4 (.961)	15.5
2-3 shift valve spring	0.8 (.031)	7.0 (.276)	27.5 (1.083)	15.5
N-R control valve spring	**0.7** (.028)	9.2 (.362)	32.1 (1.264)	8.5
Reducing valve spring	1.2 (.047)	8.9 (.350)	29.5 (1.161)	12.5
Line relief spring	1.0 (.039)	7.0 (.276)	17.3 (.681)	10
Torque converter valve spring	1.3 (.051)	9.0 (.354)	22.6 (.890)	3.5
Shift control valve spring	0.5 (.020)	5.7 (.224)	26.8 (1.055)	22
Torque converter clutch control valve spring	0.7 (.028)	6.2 (.244)	14.2 (.559)	3.5

ADJUSTMENT PRESSURE PLATE, SNAP RINGS AND SPACERS

Part name	Thickness mm (in.)	Identification symbol	Part No.
Pressure plate – F4A33, W4A33 (For adjustment of low-reverse brake end play)	5.9 (.232)	A	MD731 736
	6.0 (.236)	0	MD731 737
	6.1 (.240)	1	MD731 738
	6.2 (.244)	2	MD731 739
	6.3 (.248)	3	MD731740
	6.4 (.252)	4	MD731 588
	6.5 (.256)	5	MD731 741
	6.6 (.260)	6	MD731 742
	6.7 (.264)	7	MD731743
	6.8 (.268)	8	MD731 744
	6.9 (.272)	9	MD731 745
Pressure plate – W4A32 (For adjustment of low-reverse brake end play)	5.6 (.220)	Y	MD731 720
	5.7 (.224)	Z	MD731721
	5.8 (.228)	8	MD727801
	5.9 (.232)	9	MD731000
	6.0 (.236)	0	MD727802
	6.1 (.240)	1	MD731001
	6.2 (.244)	2	MD727803
	6.3 (.248)	3	MD731 002
	6.4 (.252)	4	MD727804
	6.5 (.256)	5	MD731003
	6.6 (.260)	6	MD727805
	6.7 (.264)	7	MD731 004
	6.8 (.268)	X	MD731 005
	6.9 (.272)	A	MD734766
	7.0 (.276)	B	MD734767
Snap ring – F4A33, W4A33 For adjustment of front clutch and rear clutch end play)	1.3" (.051)	None	MD731747
	1.4" (.055)	Blue	MD731748
	1.5 (.059)	Brown	MD731749
rear clutch only	1.6 (.063)	None	MD731750
	1.7 (.067)	Blue	MD731 751
	1.8 (.071)	Brown	MD731 752
	1.9 (.075)	None	MD731 753
	2.0 (.079)	Blue	MD731 754
	2.1 (.083)	Brown	MD731 755
	2.2 (.087)	None	MD731 756
	2.3 (.091)	Blue	MD731 757
	2.4 (.094)	Brown	MD731 758
Snap ring For adjustment of end clutch end play)	1.05 (.0413)	White	MD71 5800
	1.30 (.0512)	Yellow	MD715801
	1.55 (.0610)	None	MD71 5802
	1.80 (.0709)	Green	MD71 5803
	2.05 (.0807)	Pink	MD720849

Part name	Thickness mm (in.)	Identification symbol	Part No.
Snap ring – W4A32 (For adjustment of front clutch and rear clutch end play)	1.6 (.063)	None	MD955630
	1.7 (.067)	Brown	MD730930
	1.8 (.071)	Blue	MD955631
	1.9 (.075)	None	MD730931
	2.0 (.079)	Brown	MD955632
	2.1 (.083)	Blue	MD730932
	2.2 (.087)	None	MD955633
	2.3 (.091)	Brown	MD730933
	2.4 (.094)	Blue	MD955634
	2.5 (.098)	None	MD730934
	2.6 (.102)	Brown	MD955635
	2.7 (.106)	Blue	MD730935
	2.8 (.110)	None	MD955636
	2.9 (.114)	Brown	MD730936
	3.0 (.118)	Blue	MD955637
Spacer – F4A33 (D22A), W4A32, W4A33 (For adjustment of transfer driven gear preload)	0.62 (.0244)	62	MD737444
	0.65 (.0256)	65	MD737445
	0.68 (.0268)	68	MD737446
	0.71 (.0280)	71	MD737447
	0.74 (.0291)	74	MD728802
	0.77 (.0303)	77	MD728803
	0.80 (.0315)	80	MD728804
	0.83 (.0327)	83	MD728805
	0.86 (.0339)	86	MD728806
	0.89 (.0350)	89	MD728807
	0.92 (.0362)	92	MD728808
	0.95 (.0374)	95	MD728809
	0.98 (.0386)	98	MD728810
	1.01(.0398)	01	MD728811
	1.04 (.0409)	04	MD728812
	1.07 (.0421)	07	MD728813
	1.10 (.0433)	10	MD728814
	1.13 (.0445)	13	MD728815
	1.16 (.0457)	16	MD728816
	1.19(.0469)	19	MD728817
	1.22 (.0480)	22	MD728818
	1.25 (.0492)	25	MD728819
	1.28 (.0504)	28	MD728820
	1.31 (.0516)	31	MD728821

Part name	Thickness mm (in.)	Identification symbol	Part No.
Spacer – F4A33 (Z11A, F16A) (For adjustment of transfer driven gear preload)	0.62 (.0244)	62	MD740866
	0.65 (.0256)	65	MD740867
	0.68 (.0268)	68	MD740868
	0.71 (.0280)	71	MD740869
	0.74 (.0291)	74	MD740870
	0.77 (.0303)	77	MD740871
	0.80 (.0315)	80	MD740872
	0.83 (.0327)	83	MD740873
	0.86 (.0339)	86	MD740874
	0.89 (.0350)	89	MD740875
	0.92 (.0362)	92	MD740876
	0.95 (.0374)	95	MD740877
	0.98 (.0386)	98	MD740878
	1.01(.0398)	01	MD740879
	1.04 (.0409)	04	MD740880
	1.07 (.0421)	07	MD740881
	1.10 (.0433)	10	MD740882
	1.13 (.0445)	13	MD740883
	1.16 (.0457)	16	MD740884
	1.19 (.0469)	19	MD740885
	1.22 (.0480)	22	MD740886
	1.25 (.0492)	25	MD740887
	1.28 (.0504)	28	MD740888
	1.31 (.0516)	31	MD740889
Snap ring For adjustment of output flange bearing end play)	1.76 (.0693)	Brown	MD733314
	1.82 (.0717)	None	MD722538
	1.88 (.0740)	Blue	MD721014
	1.94 (.0764)	Brown	MD721015
	2.00 (.0787)	None	MD721016
	2.06 (.0811)	Blue	MD721017
	2.12 (.0835)	Brown	MD722539
	2.18 (.0858)	None	MD733315

Part name	Thickness mm (in.)	Identification symbol	Part No.
Spacer – F4A33 (D22A) (For adjustment of differential case preload)	0.71 (.0280)	71	MD754475
	0.74 (.0291)	74	MD727660
	0.77 (.0303)	77	MD754476
	0.80 (.0315)	80	MD727661
	0.83 (.0327)	83	MD720937
	0.86 (.0339)	86	MD720938
	0.89 (.0350)	89	MD720939
	0.92 (.0362)	92	MD720940
	0.95 (.0374)	95	MD720941
	0.98 (.0386)	98	MD720942
	1.01 (.0398)	01	MD720943
	1.04 (.0409)	04	MD720944
	1.07 (.0421)	07	MD720945
	1.10 (.0433)	J	MD710454
	1.13 (.0445)	D	MD700270
	1.16 (.0457)	K	MD710455
	1.19 (.0469)	L	MD710456
	1.22 (.0480)	G	MD700271
	1.25 (.0492)	M	MD710457
	1.28 (.0504)	N	MD710458
	1.31 (.0516)	E	MD706574
	1.34 (.0528)	0	MD710459
	1.37 (.0539)	P	MD710460
Spacer – F4A33 (Z11A, F16A) (For adjustment of differential case preload)	0.71 (.0280)	71	MD754446
	0.74 (.0291)	74	MD754447
	0.77 (.0303)	77	MD754448
	0.80 (.0315)	80	MD754449
	0.83 (.0327)	83	MD740846
	0.86 (.0339)	86	MD740847
	0.89 (.0350)	89	MD740848
	0.92 (.0362)	92	MD740849
	0.95 (.0374)	95	MD740850
	0.98 (.0386)	98	MD740851
	1.01 (.0398)	01	MD740852
	1.04 (.0409)	04	MD740853
	1.07 (.0421)	07	MD740854
	1.10 (.0433)	10	MD740855
	1.13 (.0445)	13	MD740856
	1.16 (.0457)	16	MD740857
	1.19 (.0469)	19	MD740858
	1.22 (.0480)	22	MD740859
	1.25 (.0492)	25	MD740860
	1.28 (.0504)	28	MD740861
	1.31 (.0516)	31	MD740862
	1.34 (.0528)	34	MD740863
	1.37 (.0539)	37	MD740864

Part name	Thickness mm (in.)	Identification symbol	Part No.
Spacer – W4A32, W4A33 (For adjustment of differential case end play)	1.01(.0398)	01	MD720943
	1.10 (.0433)	J	MD710454
	1.19 (.0469)	L	MD71 0456
	1.28 (.0504)	N	MD71 0458
Spacer (For adjustment of differential gear and pinion backlash)	0.75 – 0.82 (.0295 – .0323)	–	MD722986
	(.0327 – .0362)	–	MD722985
	0.93 – 1.00 (.0366 – .0394)	–	MD722984
	1.01 -1.08 (.0398 – .0425)	–	MD722982
	1.09 – 1.16 (.0429 – .0457)		MD722983
Spacer – W4A32, W4A33 (For adjustment of center differential front side gear end play)	0.53 – 0.60 (.0209 – .0236)	41	MD727941
	0.69 – 0.76 (.0272 – .0299)	34	MD727934
	0.85 – 0.92 (.0335 – .0362)	32	MD727932
	1.01 -1.08 (.0398 – .0425)	30	MD727930
	1.17-1.24 (.0461 – .0498)	28	MD727928
Spacer – W4A32, W4A33 (For adjustment of center differential rear side gear end play)	0.59 – 0.66 (.0232 – .0260)	73	MD724973
	0.75 – 0.82 (.0295 – .0323)	46	MD724946
	0.93 – 1.00 (.0366 – .0394)	81	MD720681
	1.09 – 1.16 (.0429 – .0457)	43	MD724943
	1.25-1.32 (.0492 – .0520)	72	MD724972
Spacer – W4A32, W4A33 (For adjustment of drive bevel gear mount)	1.34 (.0528)	34	MD723600
	1.37 (.0539)	37	MD723601
	1.40 (.0551)	40	MD723602
	1.43 (.0563)	43	MD723603
	1.46 (.0575)	46	MD723604
	1.49 (.0587)	49	MD723605
	1.52 (.0598)	52	MD723606
	1.55 (.0610)	55	MD723607
	1.58 (.0622)	58	MD723608
	1.61 (.0634)	61	MD723609
	1.64 (.0646)	64	MD726170
	1.67 (.0657)	67	MD726171

Part name	Thickness mm (in.)	Identification symbol	Part No.
Spacer – W4A32, W4A33 (For adjustment of drive bevel gear train preload)	1.28 (.0504)	B28	MD726167
	1.31 (.0516)	B31	MD726168
	1.34 (.0528)	B34	MD726169
	1.37 (.0539)	B37	MD724326
	1.40 (.0551)	B40	MD724327
	1.43 (.0563)	B43	MD724328
	1.46 (.0575)	B46	MD724329
	1.49 (.0587)	B49	MD724330
	1.52 (.0598)	B52	MD724331
	1.55 (.0610)	B55	MD724332
	1.58 (.0622)	B58	MD724333
	1.61 (.0634)	B61	MD724334
	1.64 (.0646)	B64	MD724335
	1.67 (.0657)	B67	MD724336
	1.70 (.0669)	B70	MD724337
	1.73 (.0681)	B73	MD724338
	1.76 (.0693)	B76	MD724339
	1.79 (.0705)	B79	MD724340
	1.82 (.0717)	B82	MD724341
	1.85 (.0728)	B85	MD724342
Spacer – W4A32, W4A33 For adjustment of driven bevel gear train preload)	1.19 (.0469)	19	MD726172
	1.22 (.0480)	22	MD722081
	1.25 (.0492)	25	MD722082
	1.28 (.0504)	28	MD722083
	1.31 (.0516)	31	MD722084
	1.34 (.0528)	34	MD722085
	1.37 (.0539)	37	MD722086
	1.40 (.0551)	40	MD722087
	1.43 (.0563)	43	MD722088
	1.46 (.0575)	46	MD722089
	1.49 (.0587)	49	MD722090
	1.52 (.0598)	52	MD722091
	1.55 (.0610)	55	MD722092
	1.58 (.0622)	58	MD722093
	1.61 (.0634)	61	MD722094
	1.64 (.0646)	64	MD722095
	1.67 (.0657)	67	MD722096
	1.70 (.0669)	70	MD722097
	1.73 (.0681)	73	MD722098
	1.76 (.0693)	76	MD722099
	1.79 (.0705)	79	MD722100
	1.82 (.0717)	82	MD722101
	1.85 (.0728)	85	MD722102
	1.88 (.0740)	88	MD722 103
	1.91 (.0752)	91	MD722104
	1.94 (.0764)	94	MD722105

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Part name	Thickness mm (in.)	Identification symbol	Part No.
Spacer – W4A32, W4A33 (For adjustment of driven bevel gear mount)	0.13 (.0051)	13	MD720353
	0.16 (.0063)	16	MD720354
	0.19 (.0075)	19	MD720355
	0.22 (.0087)	22	MD720356
	0.25 (.0098)	25	MD720357
	0.28 (.0110)	28	MD720358
	0.31 (.0122)	31	MD720359
	0.34 (.0134)	34	MD720360
	0.37 (.0146)	37	MD720361
	0.40 (.0517)	40	MD720362
	0.43 (.0169)	43	MD720363
	0.46 (.0181)	46	MD720364
	0.49 (.0193)	49	MD720365
	0.52 (.0205)	52	MD720366
Spacer – W4A32, W4A33 (For adjustment of front output bearing preload)	1.16 (.0457)	16	MD736929
	1.19 (.0469)	19	MD736751
	1.22 (.0480)	22	MD736931
	1.25 (.0492)	25	MD726166
	1.28 (.0504)	28	MD718517
	1.31 (.0516)	31	MD715818
	1.34 (.0528)	34	MD718519
	1.37 (.0539)	37	MD718520
	1.40 (.0551)	40	MD718521
	1.43 (.0563)	43	MD718522
	1.46 (.0575)	46	MD718523
	1.49 (.0587)	49	MD718524
	1.52 (.0598)	52	MD718525
	1.55 (.0610)	55	MD715826
	1.58 (.0622)	58	MD718527
	1.61 (.0634)	61	MD718528
	1.64 (.0646)	64	MD718529
	1.67 (.0657)	67	MD718530
	1.70 (.0669)	70	MD718531
	1.73 (.0681)	73	MD721959
	1.76 (.0693)	76	MD721960

SEALANTS AND ADHESIVES

<W4A32, W4A33>

Items	Specified sealants and adhesives
Transfer extension housing-Transfer adapter	MITSUBISHI Genuine Part No. MD997740 or equivalent
Front bearing retainer bolts Center differential flange bolts	3M Stud Locking Part No. 4170 or equivalent
Air breather	3M ATD Part No. 8001 or equivalent

TORQUE SPECIFICATIONS

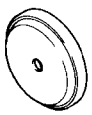
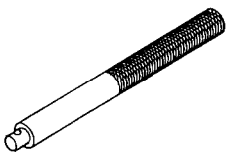
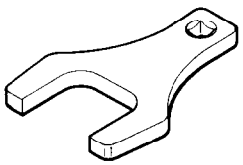
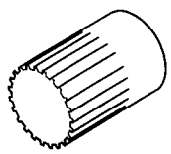
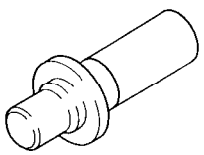
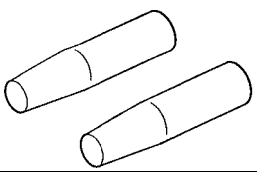
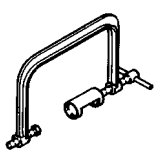
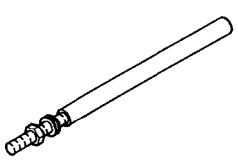
TRANSAXLE

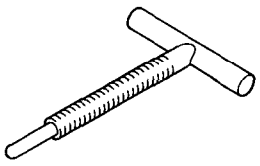
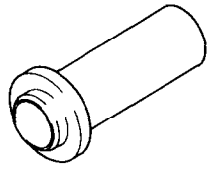
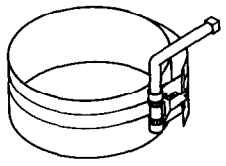
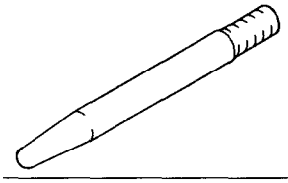
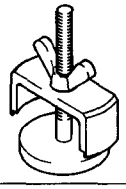
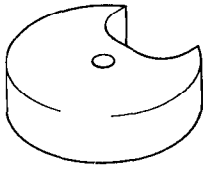
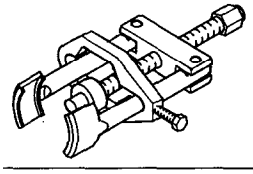
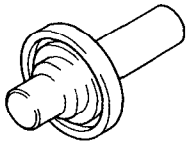
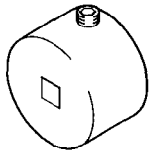
	Nm	ft.lbs.
Air exhaust plug	33	24
Differential cover bolt	11	8
Differential drive gear bolt	135	98
Differential front bearing cap bolt	70	51
Differential rear bearing retainer bolt	35	26
End clutch cover bolt	11	8
Idler gear cover bolt	11	8
Idler shaft lock bolt	38	28
Park/neutral position switch (PNP switch) bolt	11	8
Kickdown servo lock nut	29	21
Manual control lever nut	19	14
Manual control shaft set screw	9	7
Oil drain bolt	33	24
Oil filter bolt	6	5
Oil lever gauge guide bolt	24	18
Oil pan bolt	11	8
Oil pressure check plug	5	4
Oil pump assembly mounting bolt	21	16
Oil pump bolt	11	8
Output bearing retainer bolt	24	18
Output flange bearing retainer bolt	20	15
Parking rod support bolt	24	18
Pulse generator bolt	11	8
Roll stopper bracket bolt	49	35
Shift control cable bracket bolt	24	18
Speedometer gear locking plate bolt	5	4
Transaxle mount bracket bolt	70	51
Valve body assembly mounting bolt	11	8
Valve body bolt	5	4
Center bearing retainer stopper bolt – W4A32, W4A33	5	4
Center differential drive gear bolt – W4A32, W4A33	75	54
Front bearing retainer bolt – W4A32, W4A33	49	35

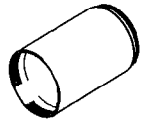
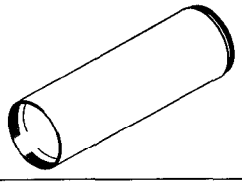
TRANSFER – W4A32, W4A33

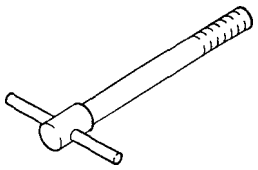
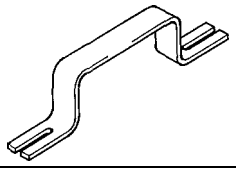
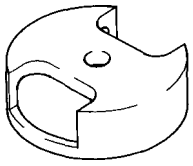
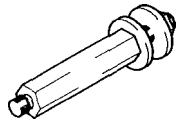
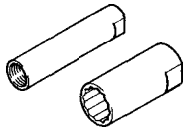
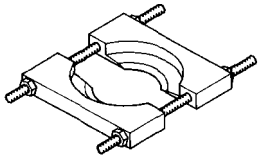
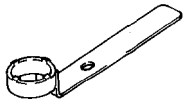
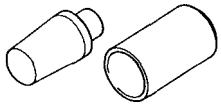
	Nm	ft.lbs.
Cover mounting bolt	5	4
Driven bevel gear lock nut	150	108
Extension housing mounting bolt	19	14
Oil drain plug	33	24
Oil filler plug	33	24
Transfer case adapter mounting bolt	39	28
Transfer cover mounting bolt	39	28

SPECIAL TOOLS

Tool	Number and tool name	Replaced by OTC tool number	Application
	MB990934 Installer adapter	MB990934-01	Installation of bearing out race
	MB990936 Installer adapter	MB990936-01	
	MB990938 Installer bar	MB990938-01	
	MB991013 Special spanner	MIT307098	Removal and installation of transfer driven bevel gear lock nut <4WD>
	MB991144 Side gear holding tool	MB991144	Measurement of transfer drive and driven bevel gears drive torque <4WD>
	MD998200 Oil seal installer	MD998200-01	Installation of rear output shaft and transfer case oil seal <4WD>
	MD998266 Guide pin	MD998266-01	Alignment of intermediate plate and valve bodies
	MD998303 Valve spring compressor	MD998341-01	Installation and removal of kickdown servo
	MD998316 Dial gauge support	MIT209038	Measurement of input shaft end play

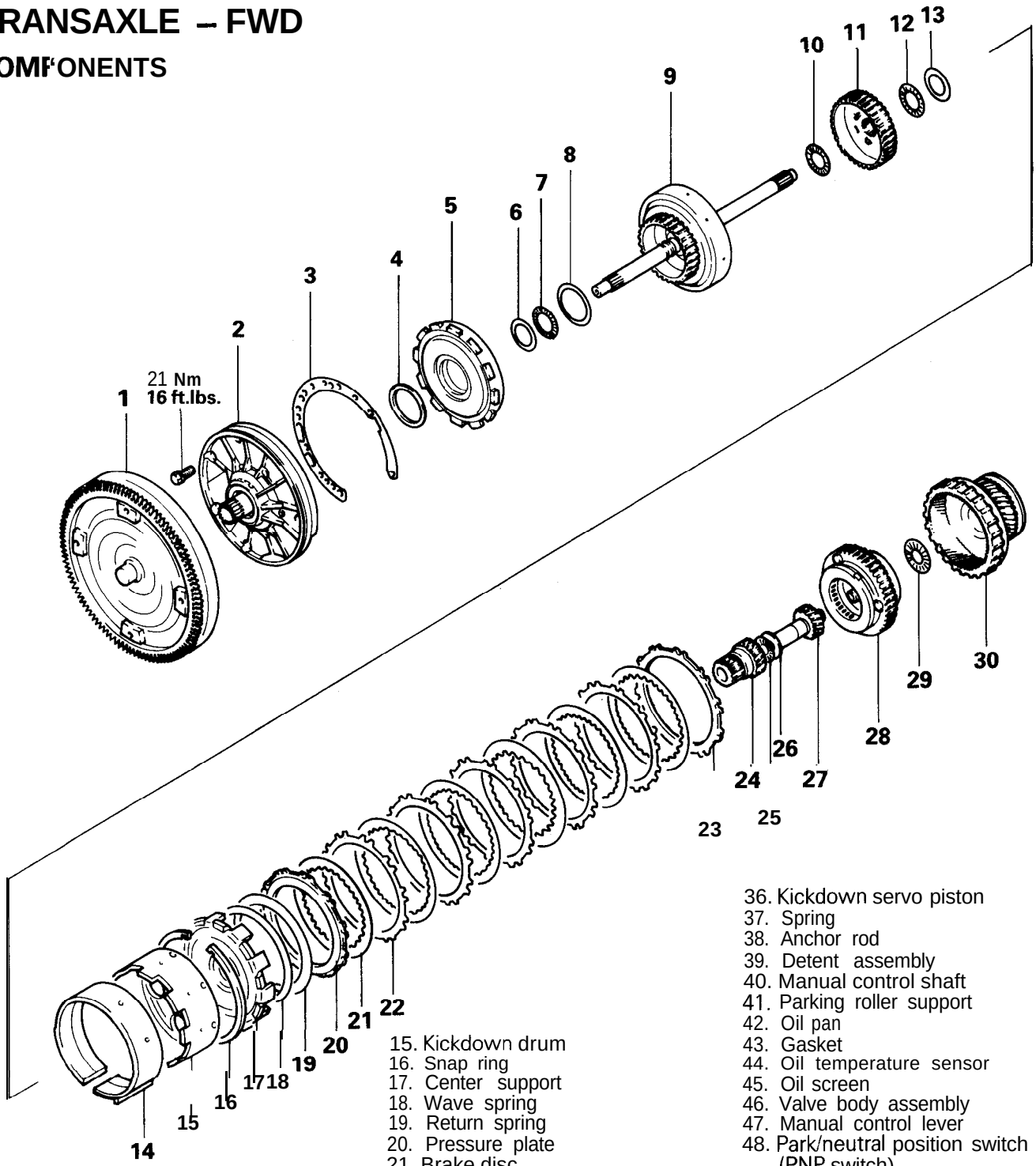
Tool	Number and tool name	Replaced by OTC tool number	Application
	MD998333 Removers	MD998333-01	Removal and installation of oil pump assembly, center differential
	MD998334 Oil pump oil seal installer	MD998334-01	Installation of oil pump oil seal
	MD998335 Oil pump band	MD998335-01	Alignment of oil pump housing and reaction shaft support
	MD998336 Guide pin	MD998336-01	Alignment of oil pump housing and reaction shaft support
	MD998337 Spring compressor	MD998907-01	Disassembly of front clutch and rear clutch
	MD998338 Spring compressor	MD998338	Disassembly and reassembly of rear clutch
	MD998348 Bearing puller	MD998348-01	Removal of bearing
	MD998800 Oil seal installer	MD998325-01	Installation of drive shaft oil seal
	MD998806 Wrench adapter	MD998806	Measurement of transfer driven bevel gear drive torque <4WD>

Tool	Number and tool name	Replaced by OTC tool number	Application
	MD998812 Installer cap	General service tool	Use with installer and adapter
	MD998813 Installer-100	General service tool	Use with installer cap and adapter
	MD998814 Installer-200	MIT304180	Use with installer cap and adapter
	MD998819 Installer adapter (40)	General service tool	Installation of each bearing
	MD998822 Installer adapter (46)	MD998822-01	
	MD998825 Installer adapter (52)	General service tool	
	MD998827 Installer adapter (56)	General service tool	
	MD998829 Installer adapter (60)	MD998829-01'	
	MD998830 Installer adapter (66)	General service tool	

Tool	Number and tool name	Replaced by OTC tool number	Application
	MD998904 Bolt	MD998904	Pull-out idler shaft
	MD998905 Handle	MD998905-01	Removal and installation of center support
	MD998907 Spring compressor	MD998907-01	Disassembly and reassembly of front clutch and rear clutch
	MD998915 Wrench adapter	MD998916-01 MD998916-1-01	Adjustment of kickdown servo
	MD998916 Socket wrench	MD998916-2-01 MD998916-3-01	
	MD998917 Bearing remover	MD998917	Disassembly and reassembly of transfer driven gear, bearing
	MD998918 Kickdown servo wrench	MD998918	Adjustment of kickdown servo
	MD998919 Snap ring installer	MD998919	Reassembly of end clutch

TRANSAXLE – FWD

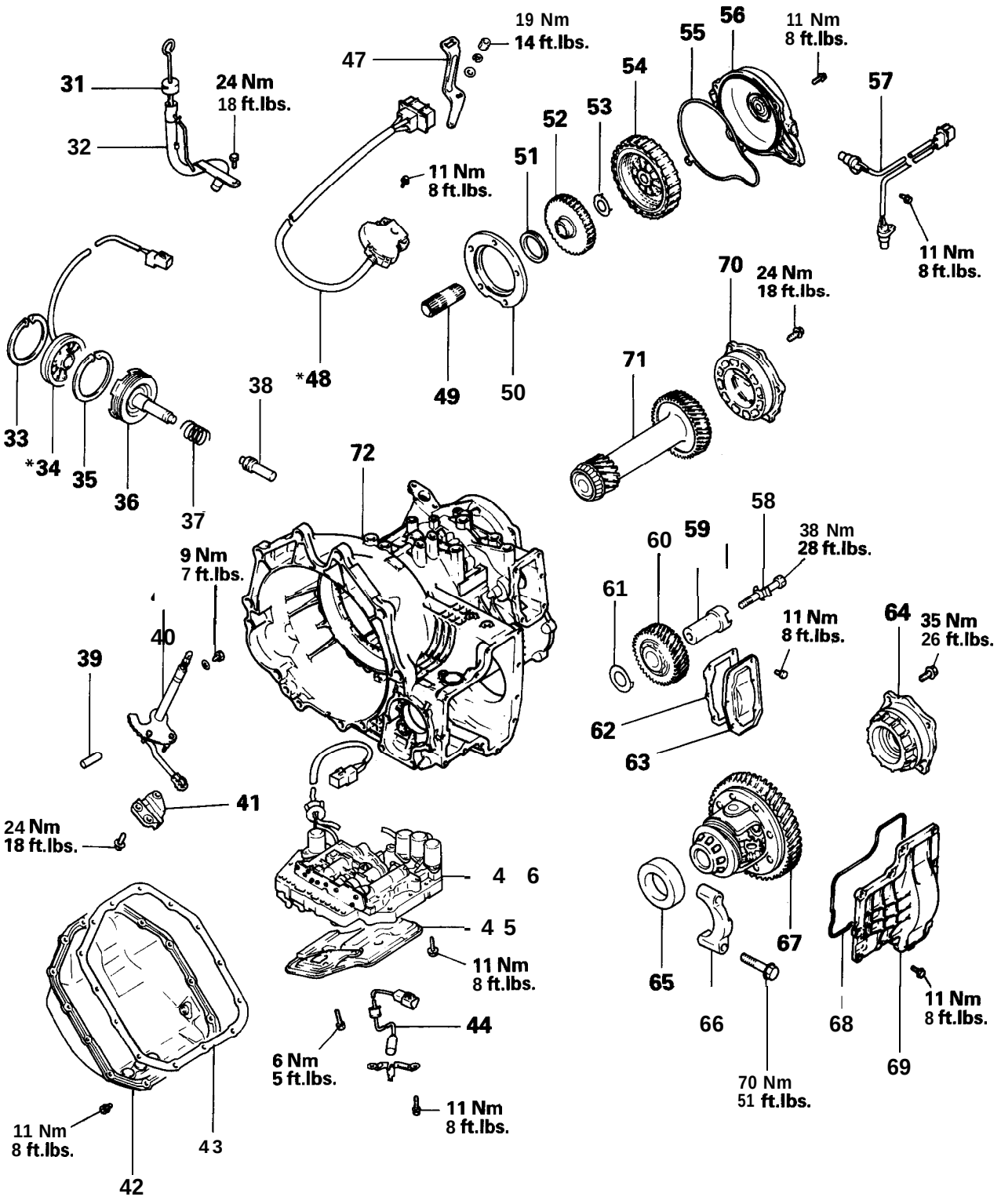
COMPONENTS



1. Torque converter
2. Oil pump assembly
3. Gasket
4. Thrust washer #1
5. Front clutch assembly
6. Thrust race #3
7. Thrust bearing #4
8. Thrust washer #2
9. Rear clutch assembly
10. Thrust bearing #5
11. Rear clutch hub
12. Thrust race #6
13. Thrust bearing #7
14. Kickdown band
15. Kickdown drum
16. Snap ring
17. Center support
18. Wave spring
19. Return spring
20. Pressure plate
21. Brake disc
22. Brake plate
23. Reaction plate
24. Reverse sun gear
25. Thrust bearing #8
26. Thrust race #9
27. Forward sun gear
28. Planetary carrier assembly
29. Thrust bearing #10
30. Output flange
31. Oil level gauge
32. Oil filler tube
33. Snap ring
34. Kickdown servo switch
35. Snap ring
36. Kickdown servo piston
37. Spring
38. Anchor rod
39. Detent assembly
40. Manual control shaft
41. Parking roller support
42. Oil pan
43. Gasket
44. Oil temperature sensor
45. Oil screen
46. Valve body assembly
47. Manual control lever
48. Park/neutral position switch (PNP switch)
49. End clutch shaft
50. Bearing retainer
51. Thrust bearing #11
52. End clutch hub
53. Thrust washer
54. End clutch assembly
55. O-ring
56. End clutch cover
57. Pulse generator
58. Lock bolt
59. Idler shaft
60. Idler gear
61. Spacer
62. Gasket

TFA0409

TSB Revision

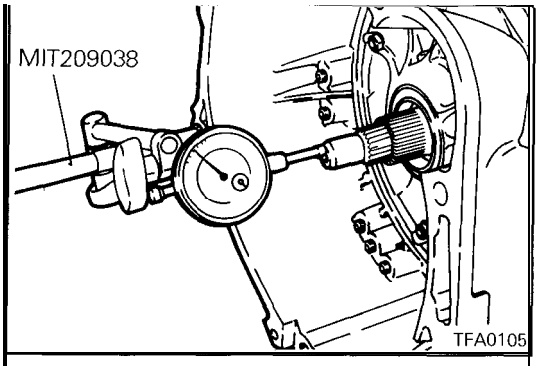


63. Idler gear cover
64. Differential bearing retainer
65. Outer race
66. Differential front bearing cap
67. Differential assembly
68. Gasket
69. Differential cover
70. Outer bearing retainer
71. Transfer shaft
72. Transaxle case

NOTE:
On 1993 and subsequent models, *-marked parts have the connecter directly attached, not via a harness.

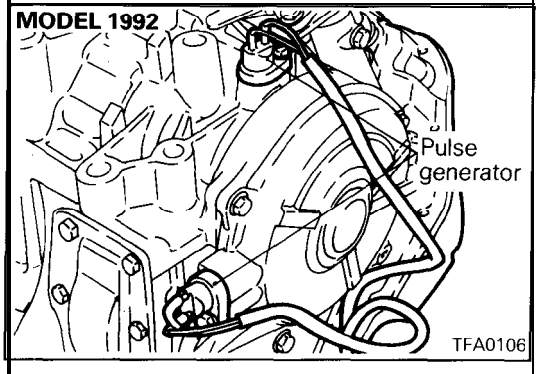
TFA0653

TSB Revision

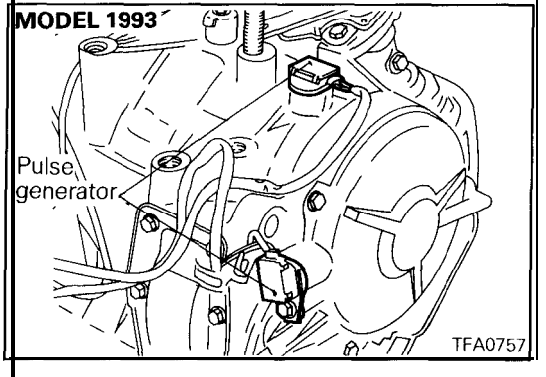


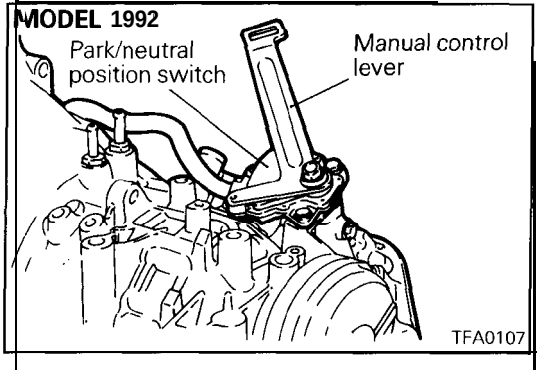
DISASSEMBLY

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

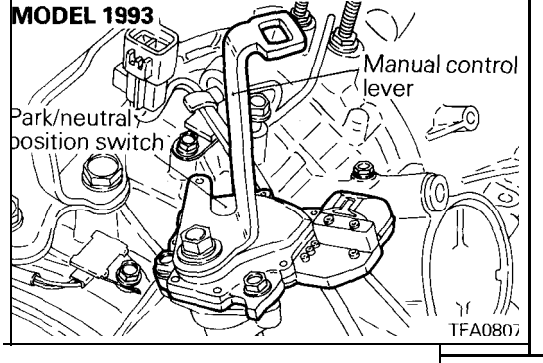


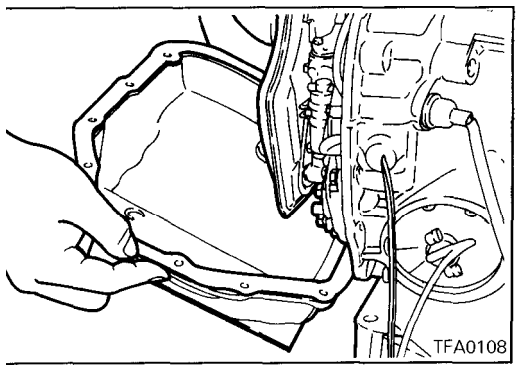
5. Remove the pulse generator ″A″ and “B”.



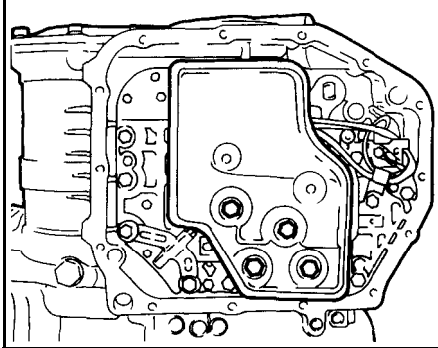


6. Remove manual control lever then remove park/neutral position switch (PNP switch).

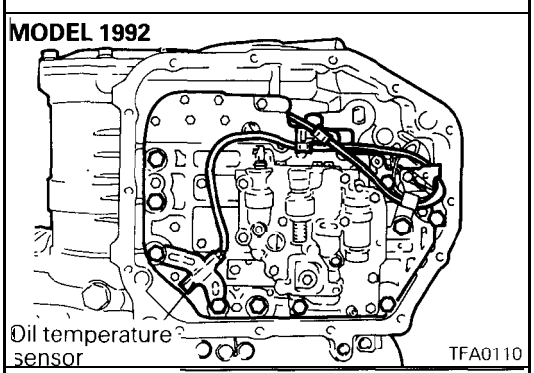




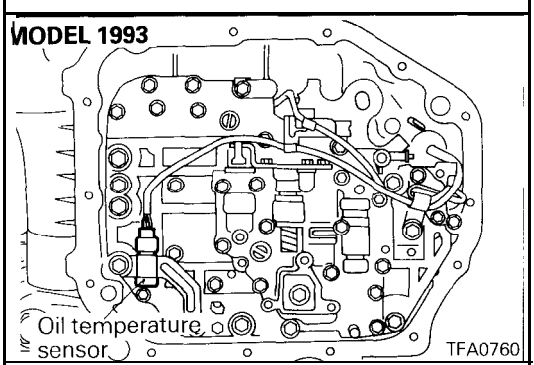
7. Remove the oil pan, magnets and gasket.

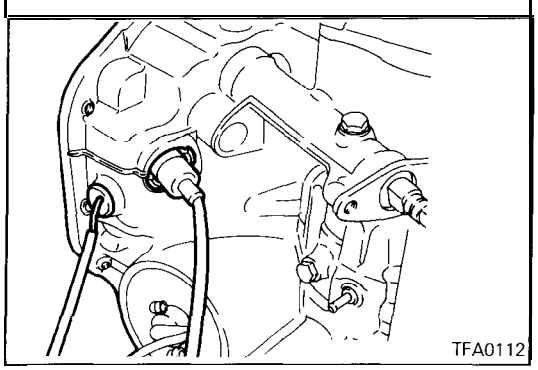


8. Remove the oil filter from the valve body.

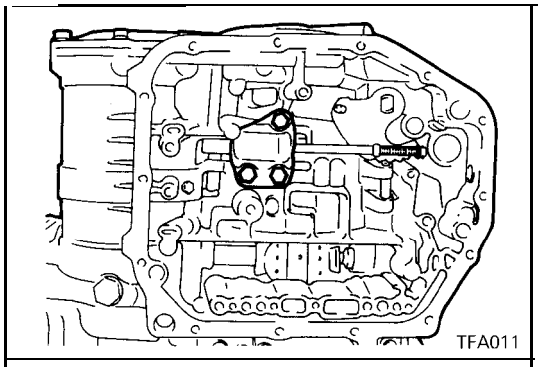


9. Remove the 10 valve body mounting bolts.
10. Remove the oil temperature sensor holder and remove the oil temperature sensor harness from the clamp.

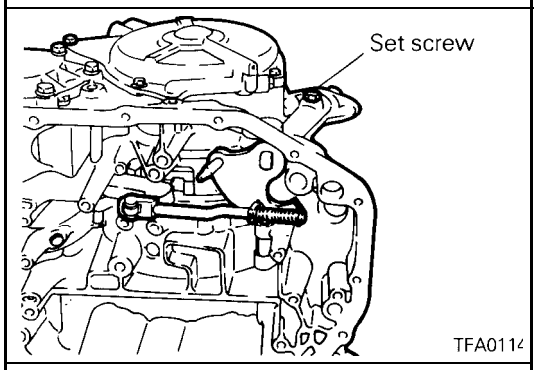




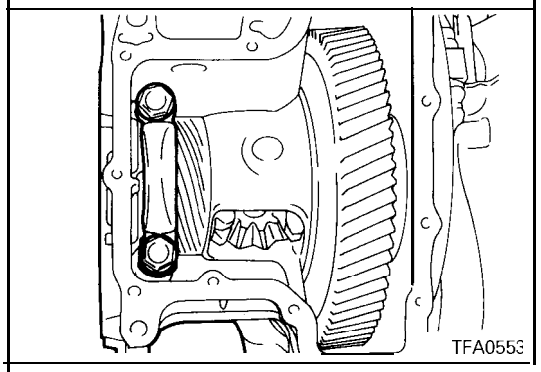
11. Press the finger of the solenoid valve harness grommet, push the grommet into the case and remove the valve body assembly.
12. Pull out the oil temperature sensor.



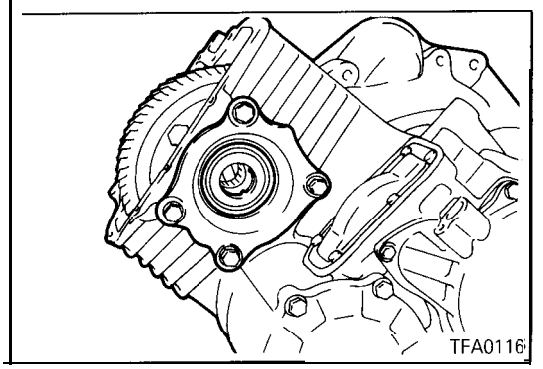
13. Remove the parking roller support.



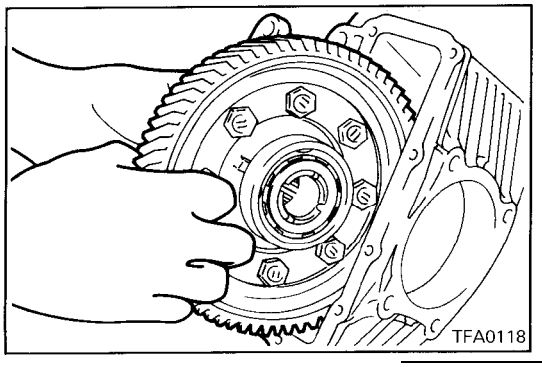
14. Remove the set screw of the manual control shaft and remove the manual control shaft assembly.
15. Remove the detent assembly.



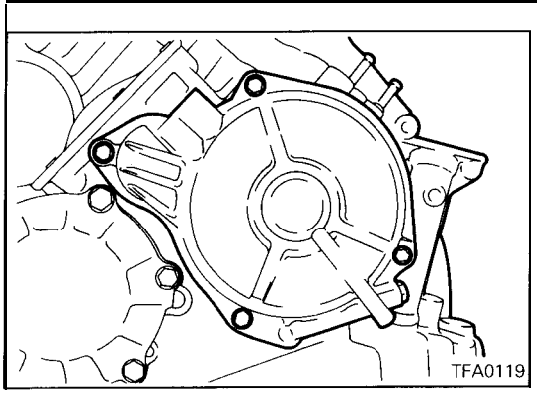
16. Remove the differential cover and gasket.
17. Remove the differential front bearing cap.



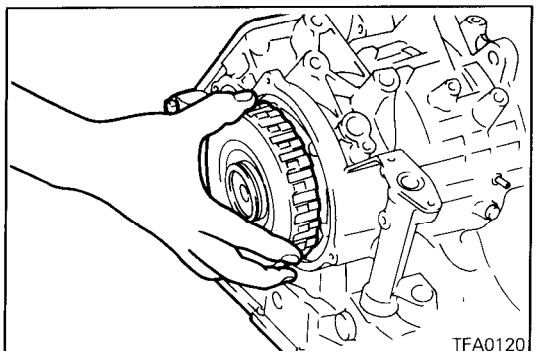
18. Remove the differential bearing retainer, spacer and outer race.



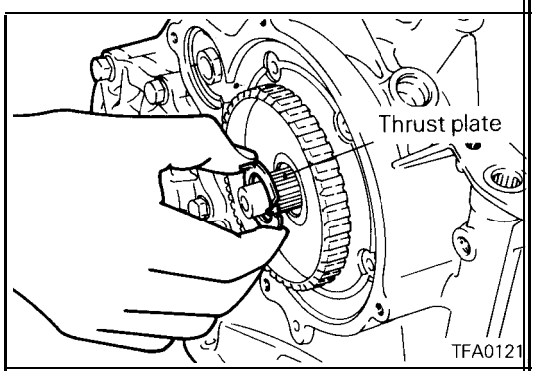
19. Remove the differential assembly.



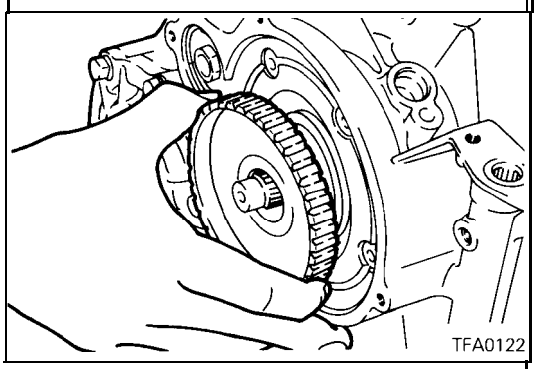
20. Take out the end clutch cover installation bolts, then remove the cover holder and end clutch cover.



21. Remove the end clutch assembly.

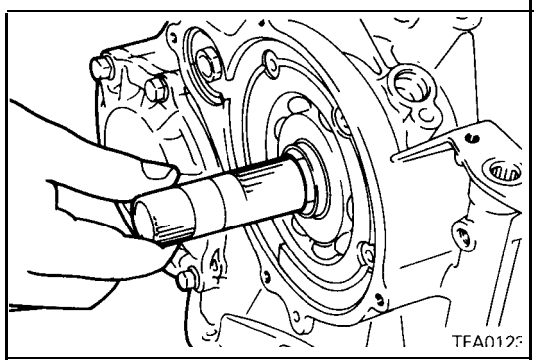


22. Remove the thrust plate.

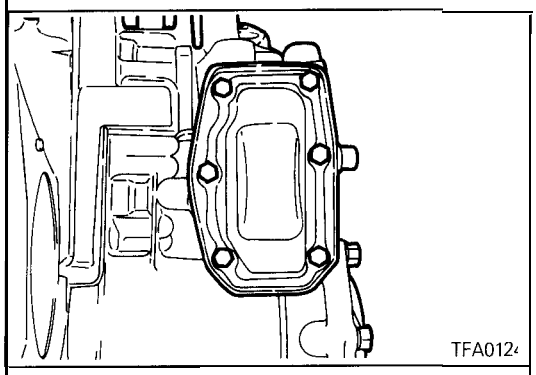


23. Remove the end clutch hub.
24. Remove the thrust bearing #11.

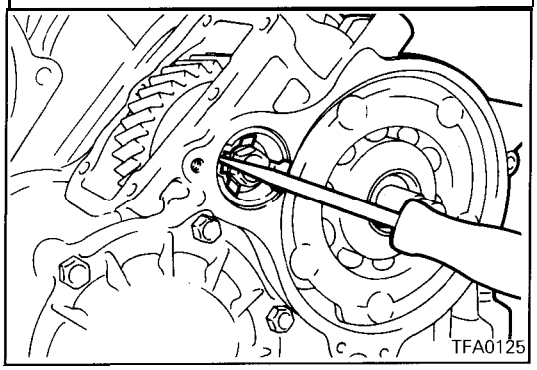
NOTE
It may be stuck to the end clutch hub.



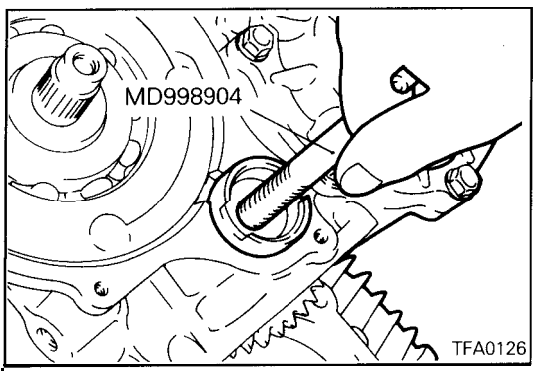
25. Pull out the end clutch shaft.



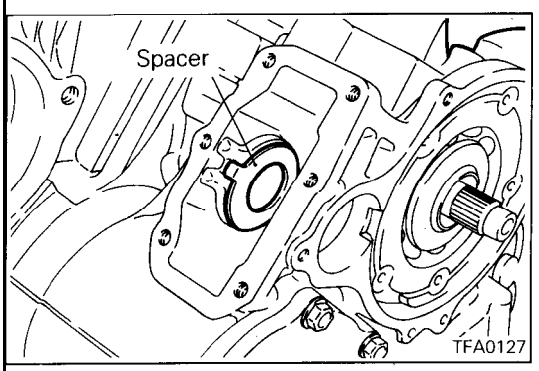
26. Remove the idler gear cover mounting bolts, then remove the idler gear cover and gasket.



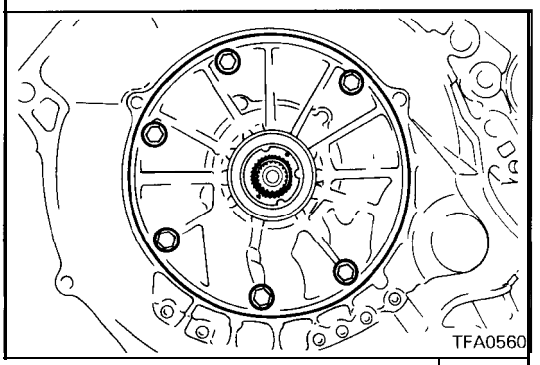
27. Disengage the bolt stopper and remove the bolt.



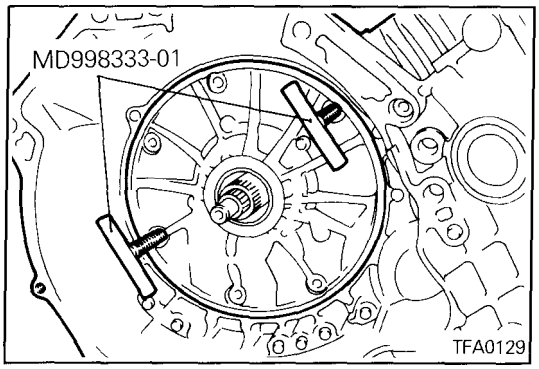
28. Using the special tool, pull out the idler shaft and then remove the idler gear and bearing inner race.



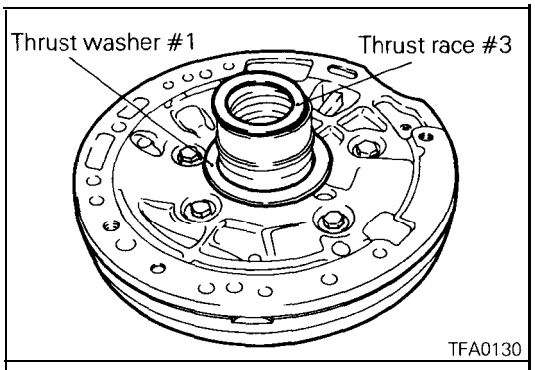
29. Remove the spacer.



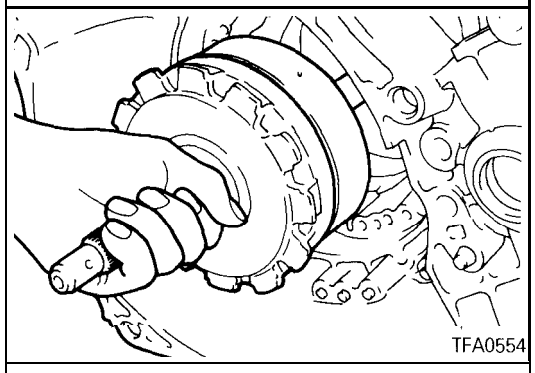
30. Remove oil pump installation bolts.



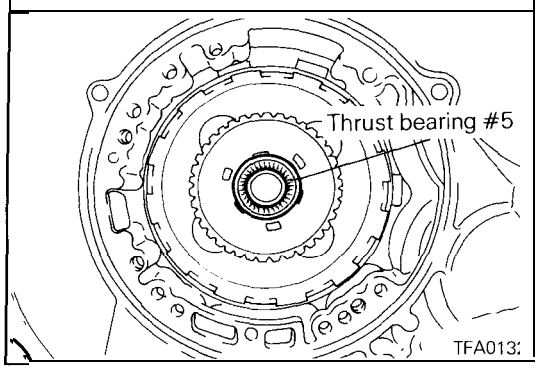
31. Use the special tool and remove the oil pump.



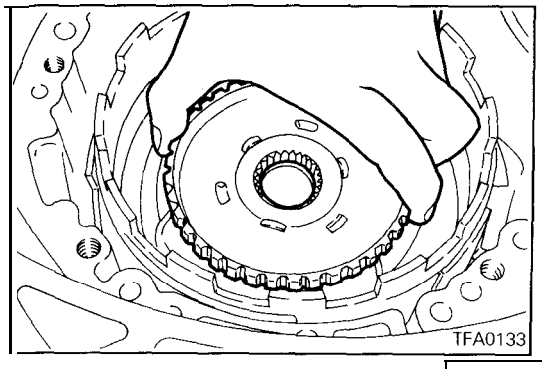
32. Remove thrust washer #1 and thrust race #3.



33. Hold the input shaft and remove the front clutch assembly and rear clutch assembly together.

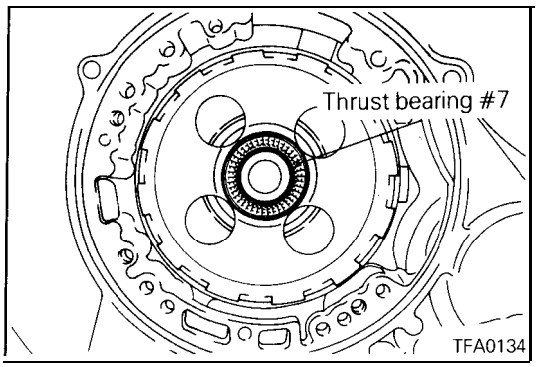


34. Remove the thrust bearing #5.

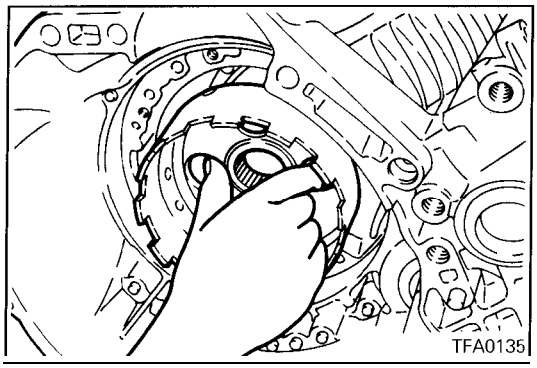


35. Remove the clutch hub.

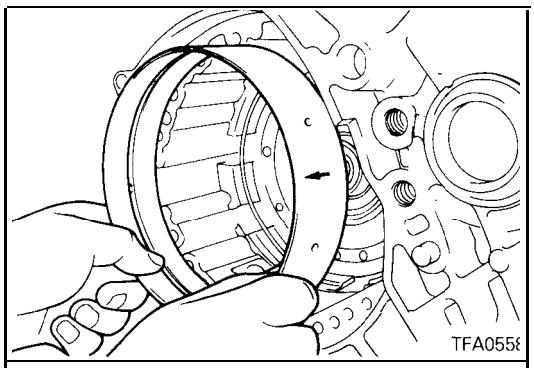
NOTE
The thrust race may be stuck to the clutch hub.



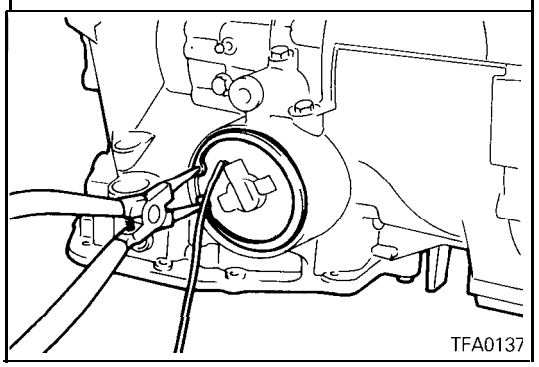
36. Remove the thrust bearing #7.



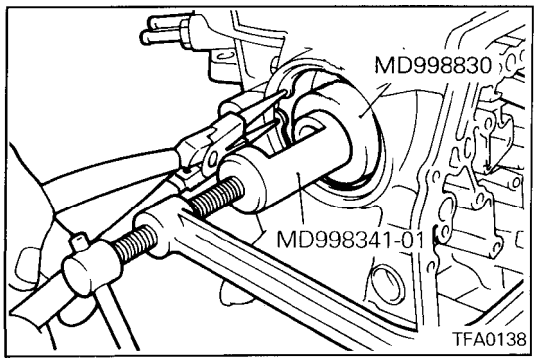
37. Remove the kickdown drum.



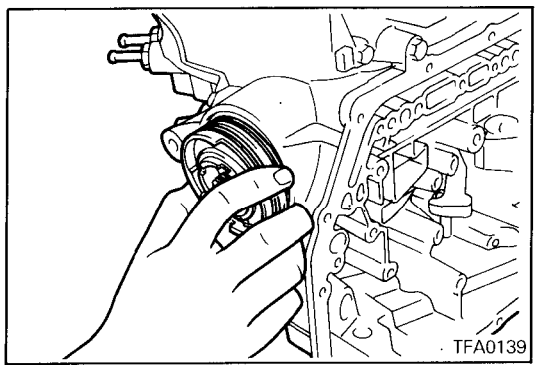
38. Remove the kickdown band.



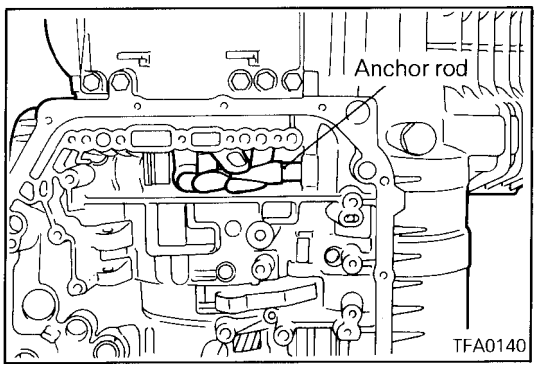
39. Remove the kickdown servo cover snap ring. Then remove the kickdown servo switch.



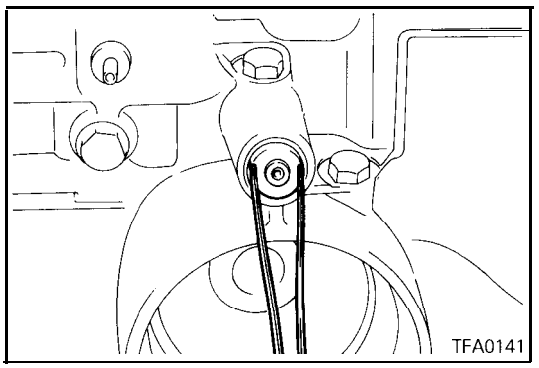
40. Using the special tool, push in the kickdown servo and remove the snap ring.



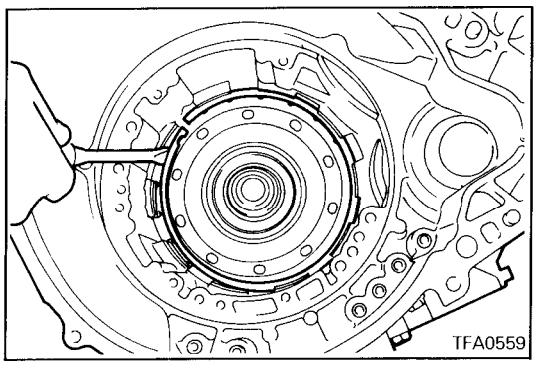
41. Remove the kickdown servo piston.



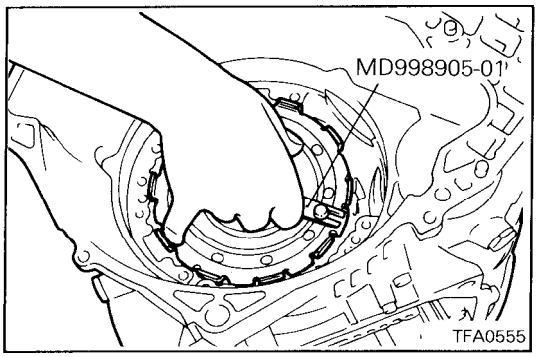
42. Remove the anchor rod.



43. Remove the plug, then remove the air exhaust plug.

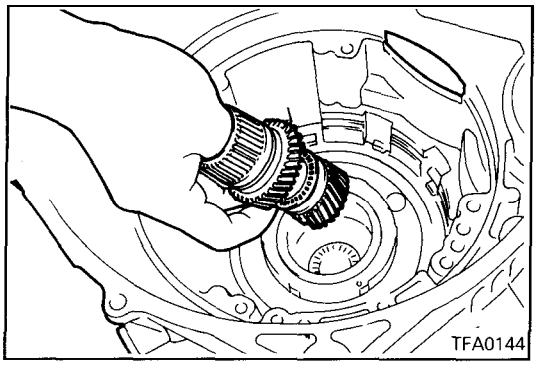


44. Remove the snap ring.

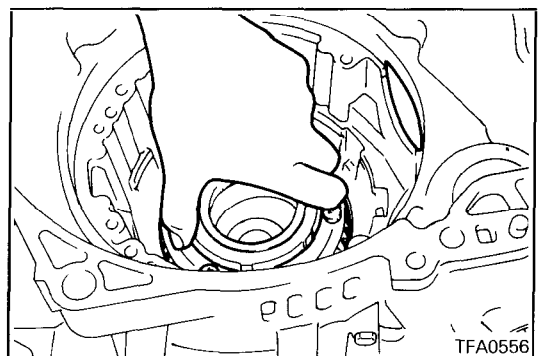


45. Using the special tool, remove the center support.

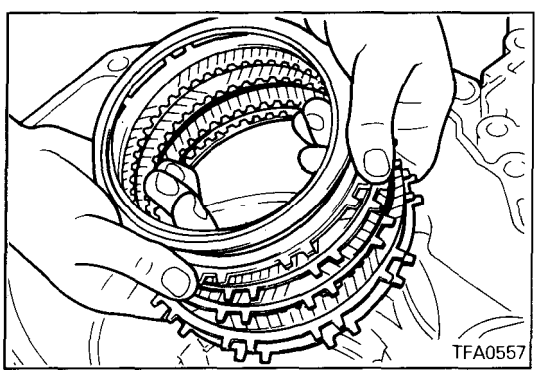
TSB Revision



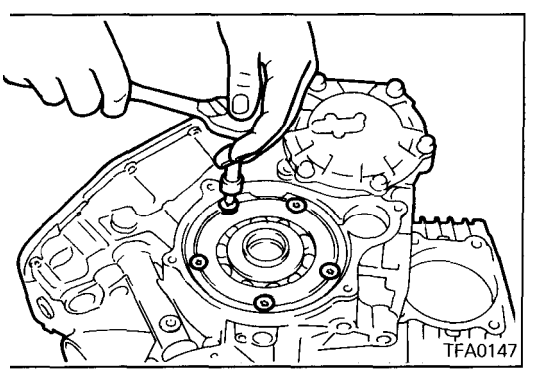
46. Remove reverse sun gear and forward sun gear together.



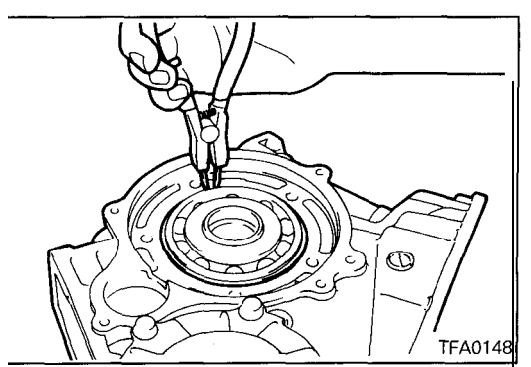
47. Remove planet carrier assembly.



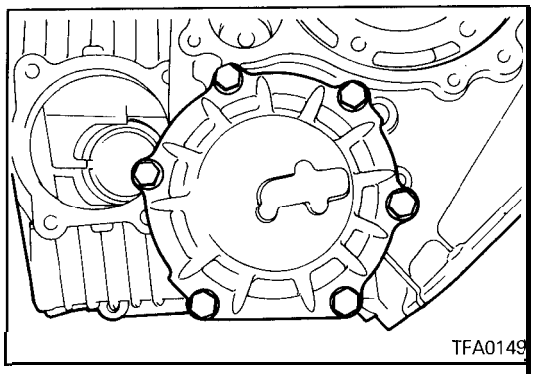
48. Remove the wave spring, return spring, reaction plate, brake discs, and brake plates.



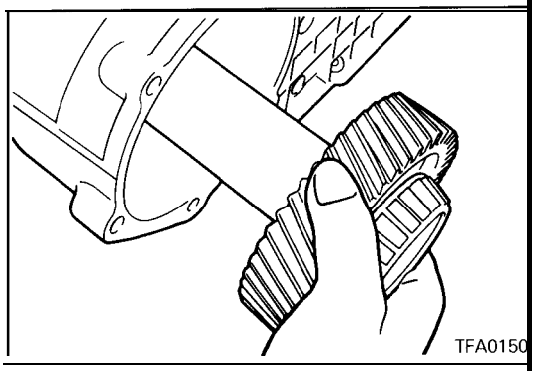
49. Remove the screws and the rear bearing retainer.



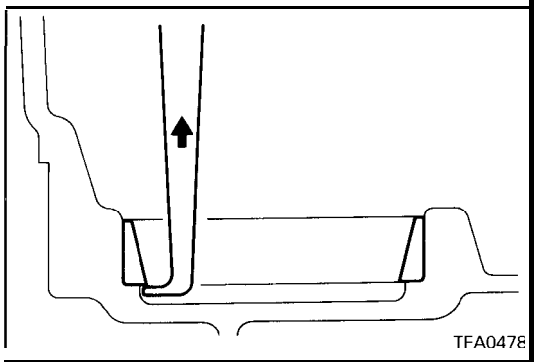
50. Remove the snap ring and then remove the output flange assembly.



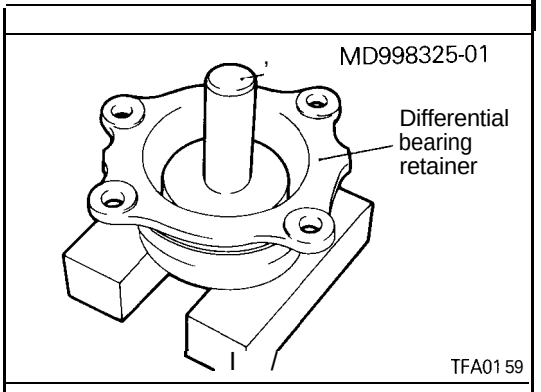
51. Remove the output bearing retainer mounting bolts and then remove the output bearing retainer and outer race.



52. Remove the transfer shaft.



53. Use a sliding hammer, etc., to remove the outer race.
54. Remove all oil seals.

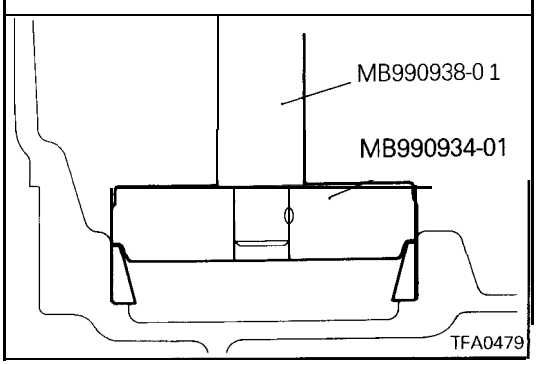


REASSEMBLY

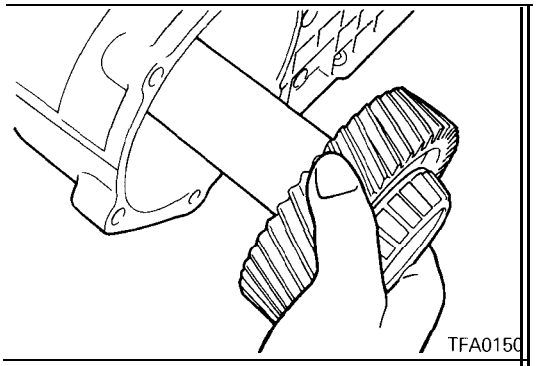
1. Using the special tool, install the oil seals to the differential bearing retainer and transaxle case.

	Special tool
Oil seal for differential bearing retainer	MD998325-01
Oil seal for transaxle case	MD998325-01 (MD998803*)

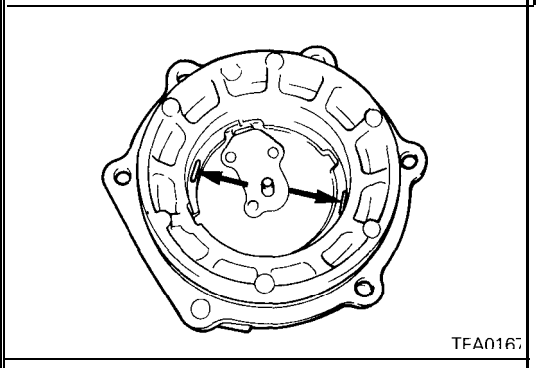
*: Vehicles with 4-wheel steering oil pump



2. Use the special tool to press fit the outer race into the transaxle case.

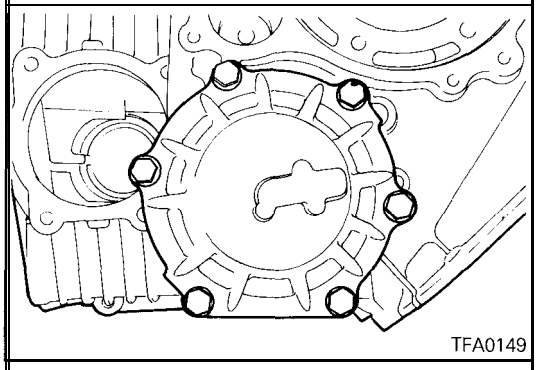

TFA0150

3. Install the transfer shaft



TFA0167

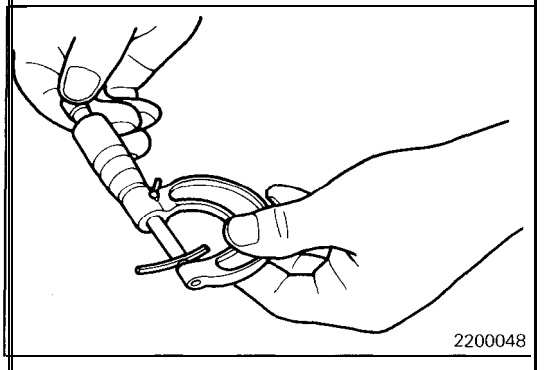
4. Place solder with a length of approximately 10 mm (.39 in.) and diameter of 1.6 mm (.06 in.) on the output bearing retainer at the position shown in the diagram and install the outer race.


TFA0149

5. Install the output bearing retainer and tighten the bolts to the specified torque.

Output bearing retainer mounting bolts: 24 Nm (18 ft.lbs.)

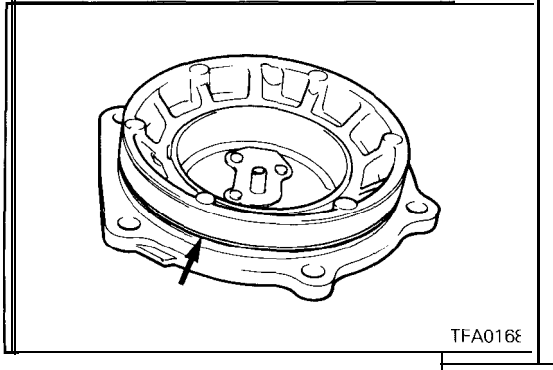
6. Loosen the bolts and remove the output bearing retainer.


2200048

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 the solder with diameter of 3 mm (.12 in.). Measure the thickness of the crushed solder with a micrometer and select a spacer with a thickness that will provide the standard value for the preload.

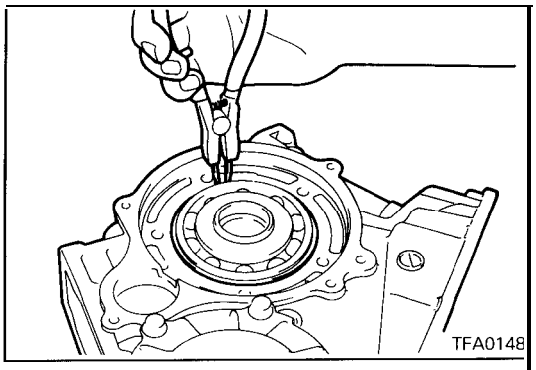
Standard value: 0.075 – 0.135 mm (.003 – .0053 in.)

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

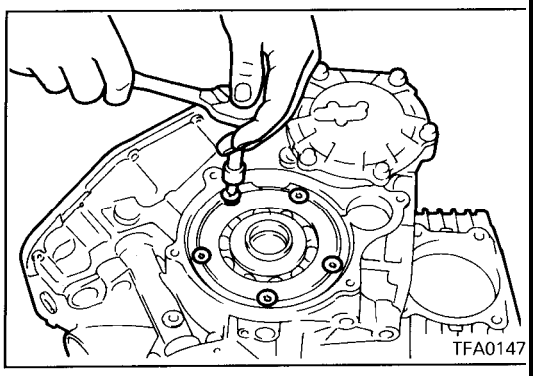

TFA0168

9. Install a new O-ring around 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.

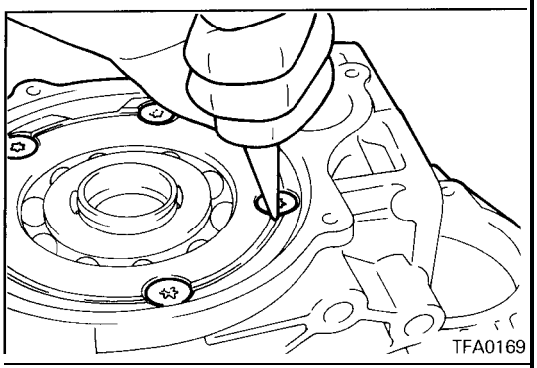
Output bearing retainer mounting bolts: 24 Nm (18 ft.lbs.)



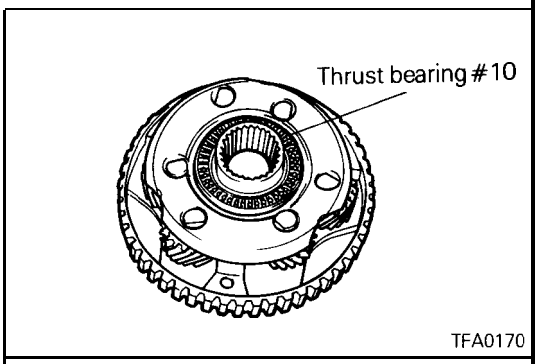
11. Insert the output flange into the case and install a snap ring around the bearing.



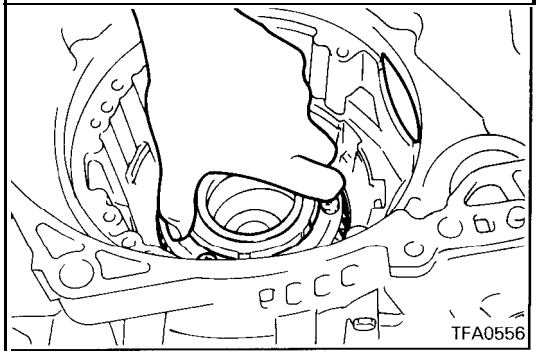
12. Install the bearing retainer using new bolts.
Bearing retainer mounting bolts: 20 **Nm (15 ft.lbs.)**



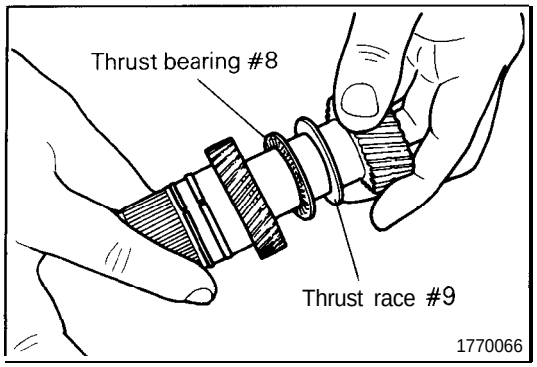
13. Caulk the heads of the bolts.



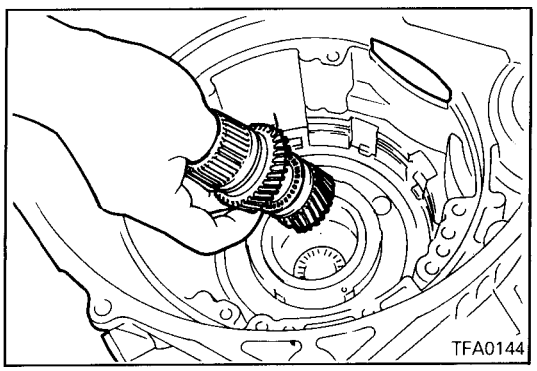
14. Apply a coating of petrolatum to thrust bearing #10 and attach to the planetary carrier.



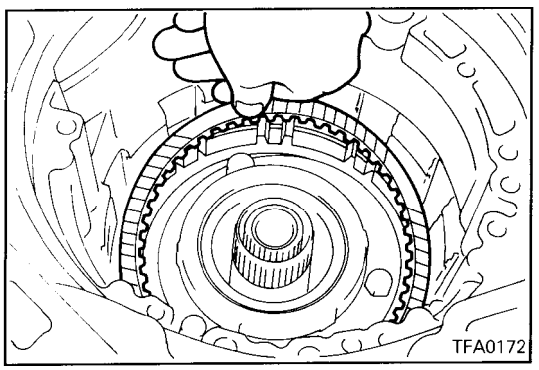
15. Assemble the planetary carrier.



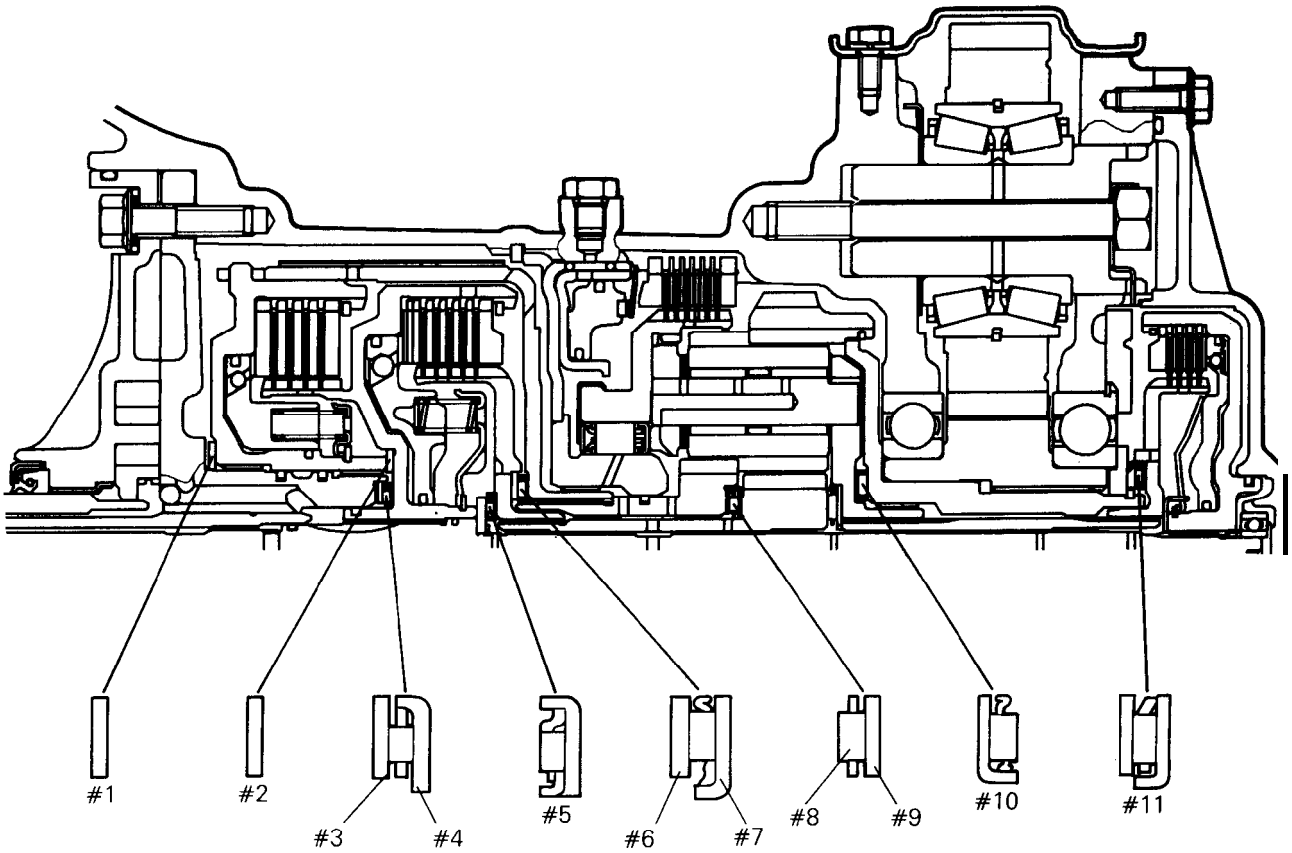
16. Assemble the forward sun gear, thrust race #9, thrust bearing #8 and reverse sun gear.



17. Install both sun gears assembled in the previous item into the planetary carrier.



18. Assemble the reaction plate, brake disc and brake plate.



TFA0243

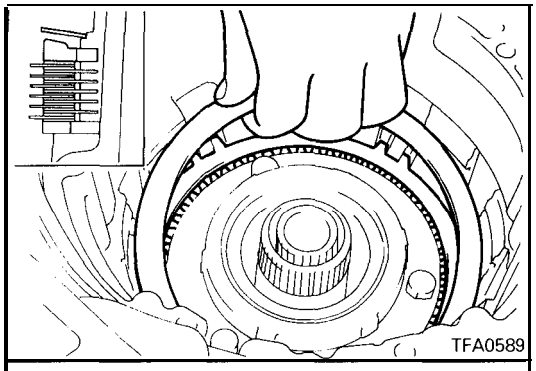
Identification of thrust bearings, thrust races and thrust washers

Unit: mm (in.)

D	d	t	Part No.	Symbol
70 (2.76)	55.7 (2.193)	1.4 (.055)	*1	#1
70 (2.76)	55.7 (2.193)	1.8 (.071)	*2	#1
70 (2.76)	55.7 (2.193)	2.2 (.087)	*3	#1
70 (2.76)	55.7 (2.193)	2.6 (.102)	*4	#1
66 (2.60)	54 (2.13)	1.8 (.071)	MD731212	#2
48.9 (1.925)	37 (1.46)	1.0 .039)	MD997854 (incl. *1	#3
48.9 (1.925)	37 (1.46)	1.2 .047)	MD997847 (incl. *1	#3
48.9 (1.925)	37 (1.46)	1.4 .055)	MD997848 (incl. *2	#3
48.9 (1.925)	37 (1.46)	1.6 .063)	MD997849 (incl. *2	#3
48.9 (1.925)	37 (1.46)	1.8 .071)	MD997850 (incl. *3	#3
48.9 (1.925)	37 (1.46)	2.0 .079)	MD997851 (incl. *3	#3
48.9 (1.925)	37 (1.46)	2.2 (.087)	MD997852 (incl. *4	#3
48.9 (1.925)	37 (1.46)	2.4 (.094)	MD997853 (incl. *4	#3

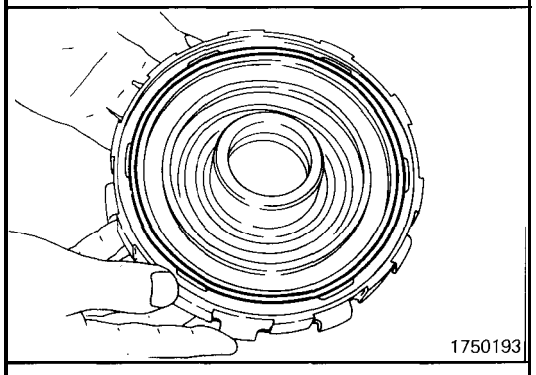
D	d	t	Part No.	Symbol
48.1 (1.894)	34.4 (1.354)	–	MD707271	#4
42.6 (1.677)	28 (1.10)	–	MD720753	#5
54 (2.13)	38.7 (1.524)	1.6 (.063)	MD704936	#6
52 (2.05)	36.4 (1.433)	–	MD720010	#7
45 (1.77)	28 (1.10)	–	MD735062	#8
46 (1.81)	31 (1.22)	0.8 (.031)	MD735063	#9
52 (2.05)	36.4 (1.433)	–	MD720010	#10
58 (2.28)	44 (1.73)	–	MD724206	#11

TSB Revision

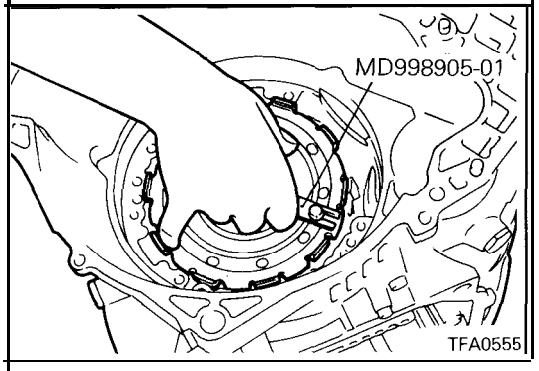


19. Assemble the pressure plate used in disassembly and install the return spring.

Caution
Position the return spring correctly when installing.

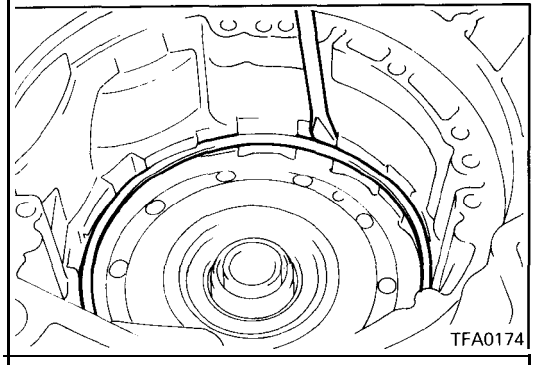


20. Apply a coating of petrolatum jelly to the wave spring and attach it to the center support.

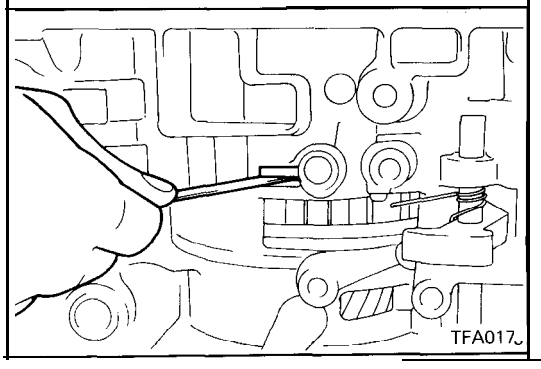


21. Mount the special tool on the center support, install 2 new O-rings and push into the transaxle case.

Caution
1. **Coat the O-rings with automatic transmission fluid and align the oil holes.**
2. **Do not move the wave spring out of position when installing.**

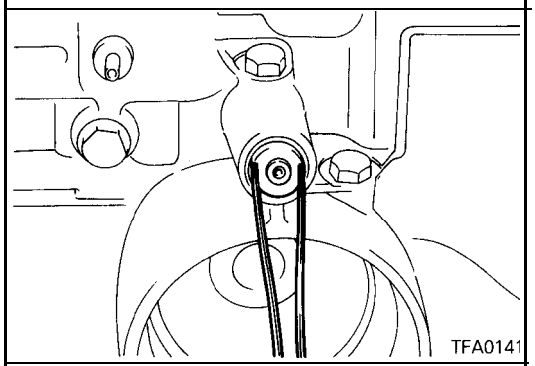


22. Install the snap ring.

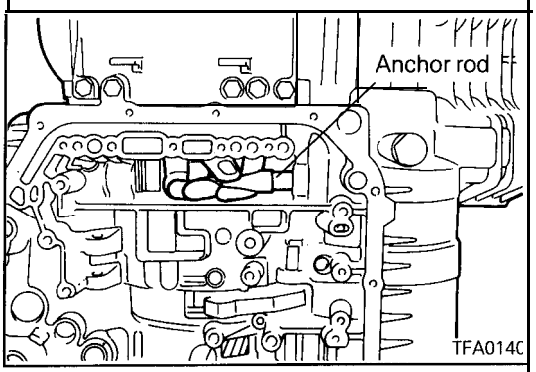


23. Use a thickness gauge and measure the end play of the low/reverse brake. Adjust to the standard value by selecting the proper pressure plate.

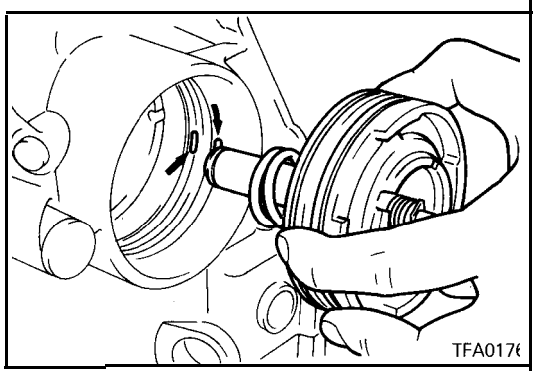
Standard value: 1.0 – 1.2 mm (.039 – .047 in.)



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

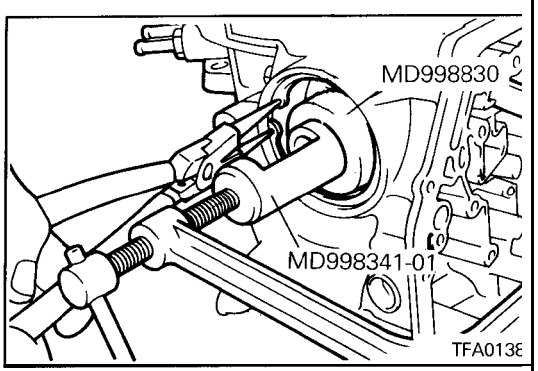


25. Install the anchor rod.

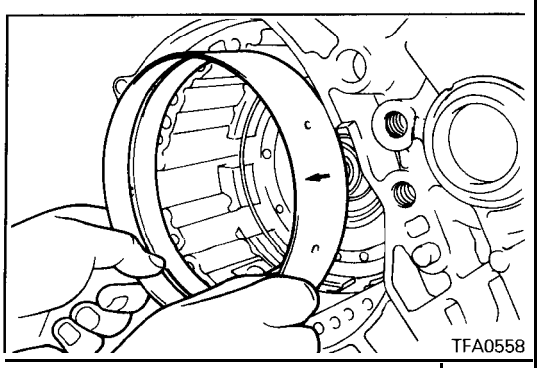


26. Install the kickdown servo spring, piston and sleeve.

Caution
The seal ring alignment hole of the kickdown servo piston must not overlap the oil filler port (indicated by the arrow in the diagram).

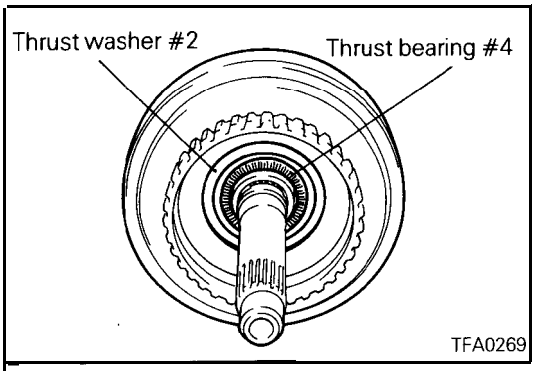


27. Use the special tool to push in the kickdown servo piston and sleeve, and then install a snap ring.

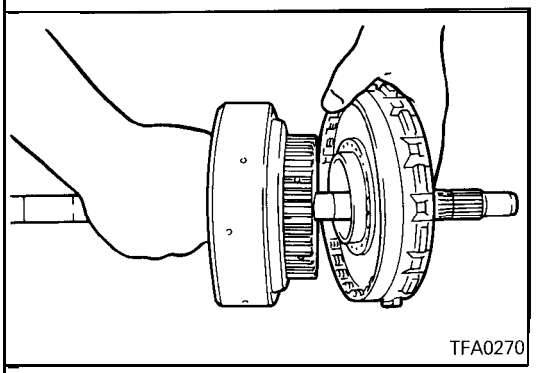


28. Install the kickdown band.

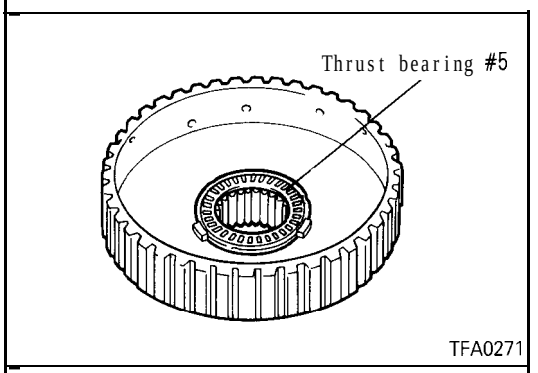
Caution
Install so the arrow mark is facing toward the front.



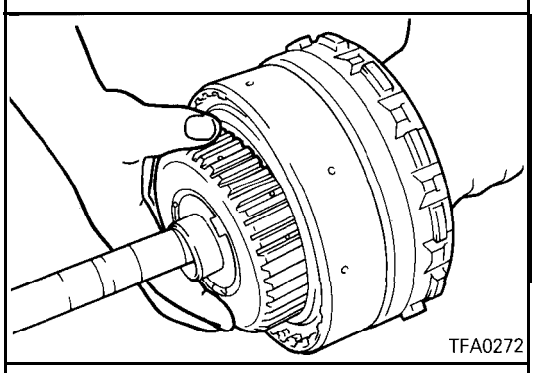
29. Install thrust bearing #4 and thrust washer #2 on the rear clutch.



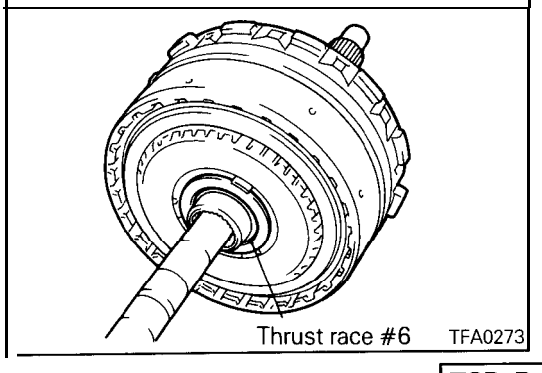
30. Combine the rear clutch assembly and the front clutch assembly.



31. Install thrust bearing #5 on the rear clutch hub.

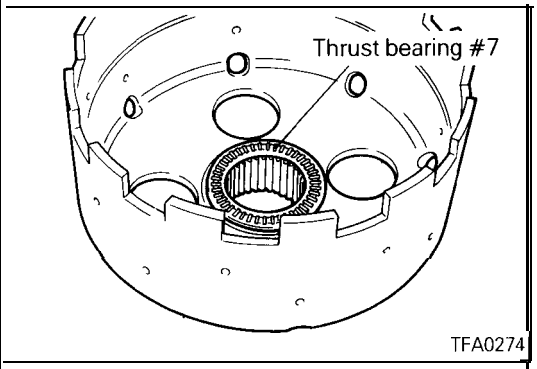


32. Install the rear clutch hub on the rear clutch.

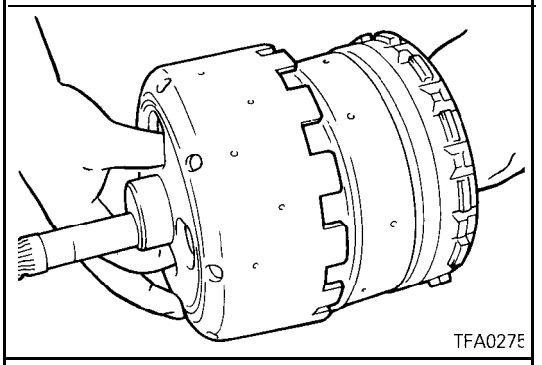


33. Install thrust race #6 on the end of the rear clutch hub.

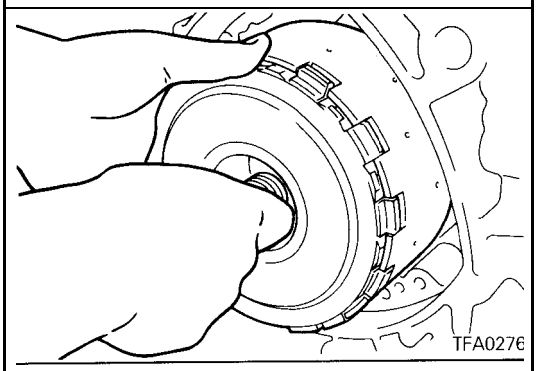
TSB Revision



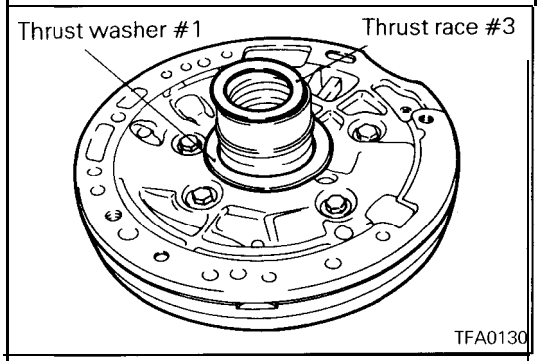
34. Install thrust bearing #7 in the kickdown drum.



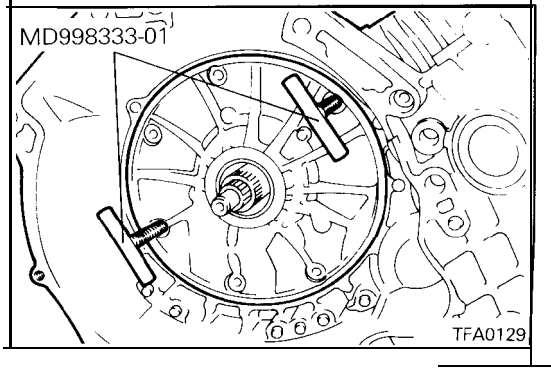
35. Install the clutch assembly in the kickdown drum



36. Install the clutch assembly and kickdown drum into the transaxle case at the same time.

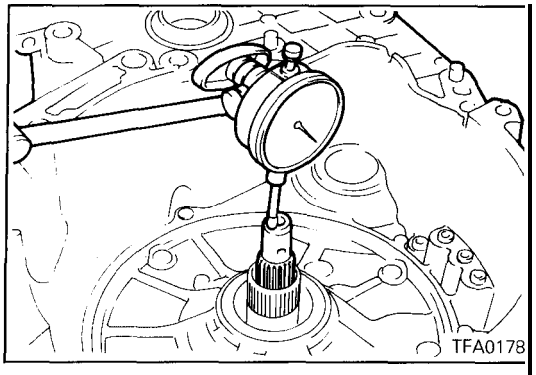


37. Adhere thrust race #3 and thrust washer #1 to the back of the oil pump with petrolatum.



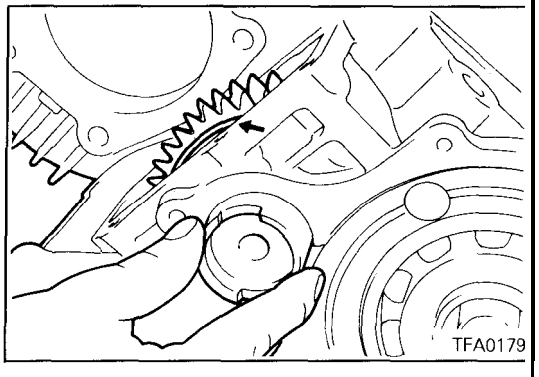
38. Use the special tool to install a new oil pump gasket and oil pump assembly.

Oil pump assembly mounting bolts: 21 Nm (16 ft.lbs.)



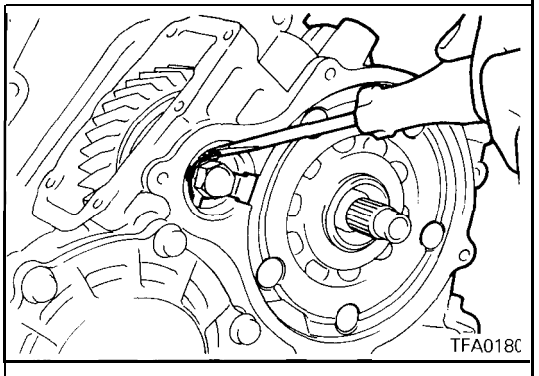
39. Measure the end play of the input shaft. If not the standard value, replace thrust race #3 and thrust washer #1 and adjust to the standard value.

Standard value: 0.3 – 1.0 mm (.012 – .039 in.)



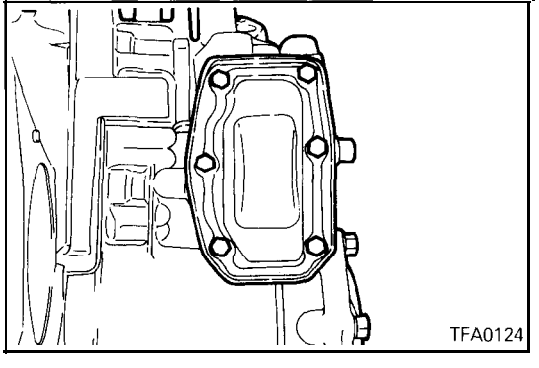
40. Install the spacer, idler gear and bearing and then insert the idler shaft.

Caution
Assemble so that the identification groove on the idler gear faces the rear.



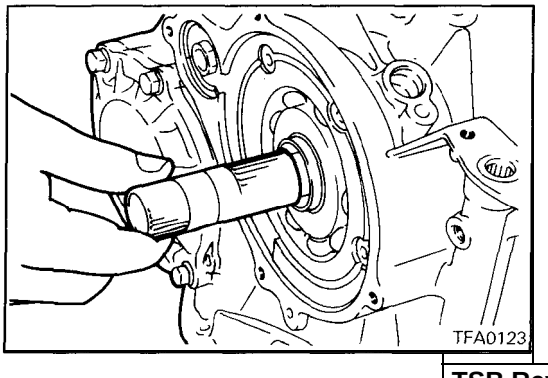
41. Tighten the idler shaft lock bolt together with the new lock plat to the specified torque. Bend the three fingers of the lock plate to prevent turning.

Idler shaft lock bolt: 38 Nm (28 ft.lbs.)

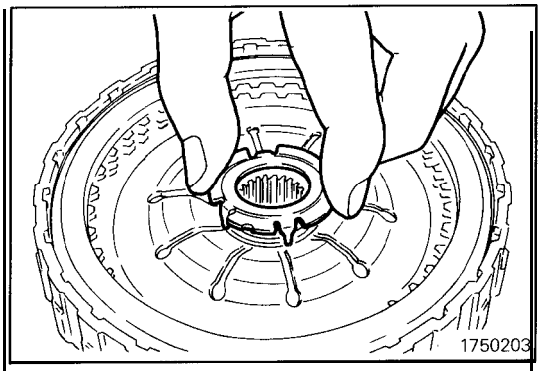


42. Install the idler gear cover and a new gasket.

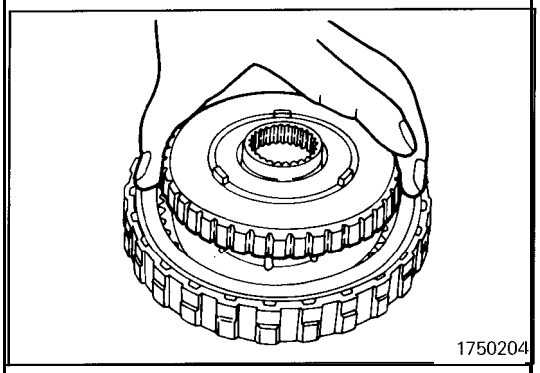
Idler gear cover mounting bolt: 11 Nm (8 ft.lbs.)



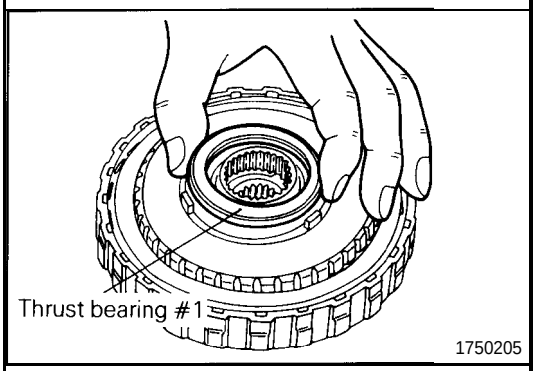
43. Insert the end clutch shaft from the end with the long spline.



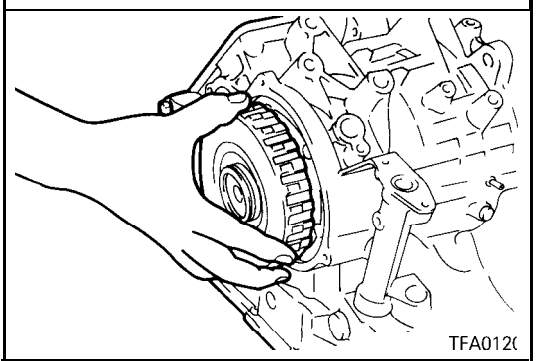
44. Fit the thrust washer on the return spring of the end clutch.



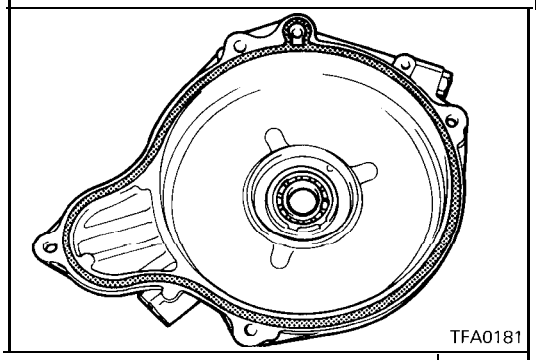
45. Install the end clutch hub on the end clutch assembly.



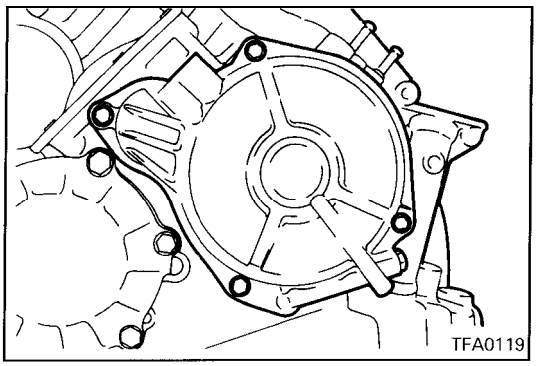
46. Adhere thrust bearing #1 to the end of the clutch hub with petrolatum.



47. Install end clutch assembly.

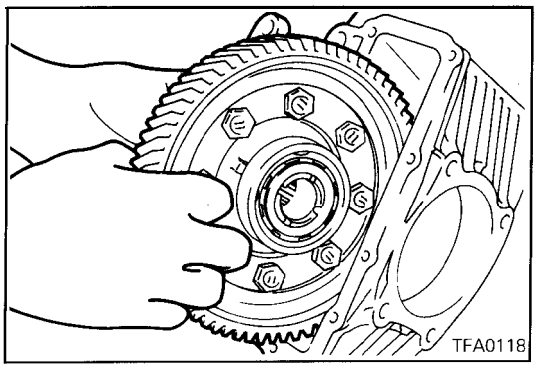


48. Attach a new O-ring to the end clutch cover

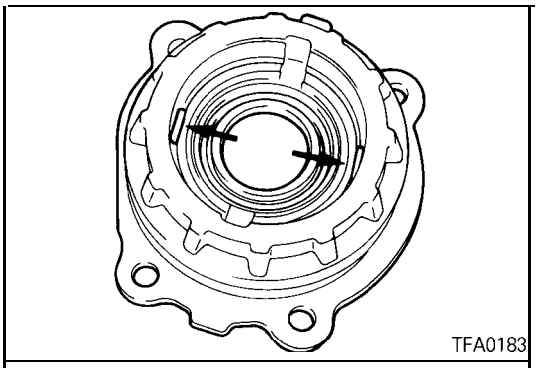


49. Install the end clutch cover and tighten the bolts to the specified torque.

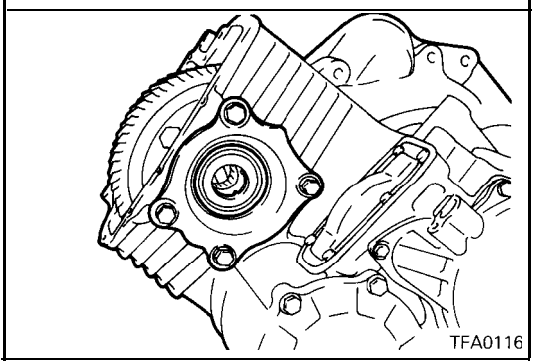
End clutch cover mounting bolts: 11 Nm (8 ft.lbs.)



50. Install the differential assembly.

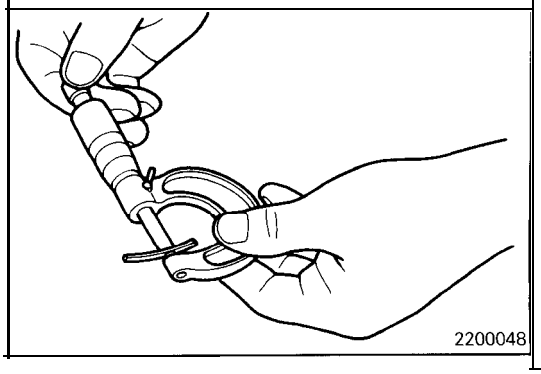


51. Place solder with a length of approximately 10 mm (.39 in.) and diameter of 1.6 mm (.06 in.) on the differential rear bearing retainer at the position shown in the diagram and install the outer race.



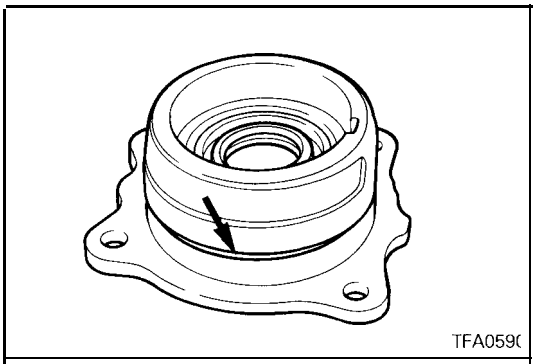
52. Install the differential rear bearing retainer and tighten the bolts to the specified torque.
53. Loosen the bolts, remove the differential rear bearing retainer and remove the solder. If the solder is not crushed, repeat steps (51) – (53). using the solder with the diameter **of 3 mm.**

Differential rear bearing retainer mounting bolts: 35 Nm (26 ft.lbs.)



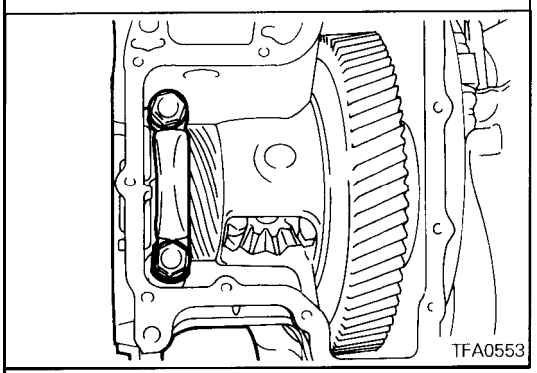
54. Measure the thickness of the crushed solder with a micrometer and adjust by selecting a spacer with a thickness that will provide the standard value for the end play and preload.

Standard value: 0.075 – 0.135 mm (.003 – .0053 in.)



55. Install a new O-ring on the differential rear bearing retainer, coat the O-ring with automatic transmission fluid; then install in the transaxle case and tighten the mounting bolts to the specified torque.

Differential rear bearing retainer mounting bolts: 35 Nm (26 ft.lbs.)

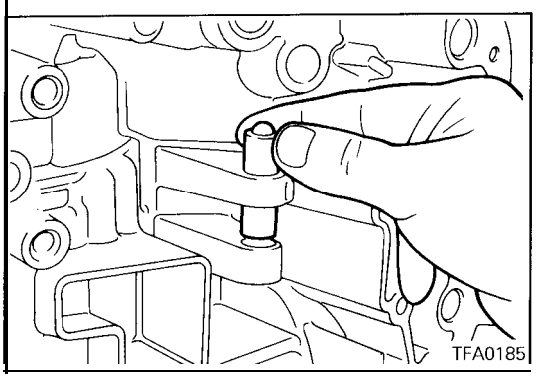


56. Install the front bearing cap and tighten the bolts to the specified torque.

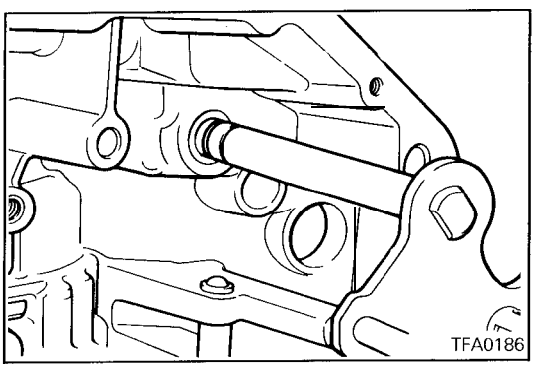
Differential front bearing cap mounting bolts: 70 Nm (51 ft.lbs.)

57. Install the differential cover and a new gasket.

Differential cover mounting bolts: 11 Nm (8 ft.lbs.)

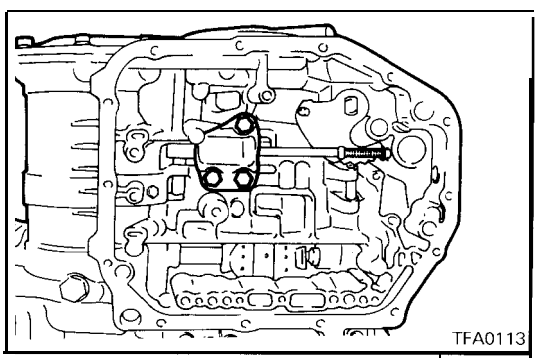


58. Install the detent assembly.



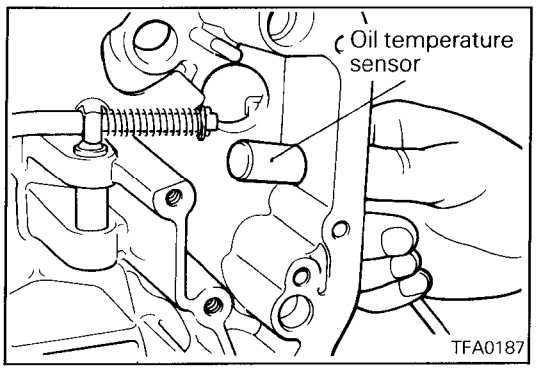
59. Install a new O-ring on the manual control shaft assembly, coat the O-ring with automatic transaxle fluid and then insert into the transaxle case.
60. Align the groove in the manual control shaft and the set screw hole; then install the set screw.

Manual control shaft set screw: 9 Nm (7 **ft.lbs.)**

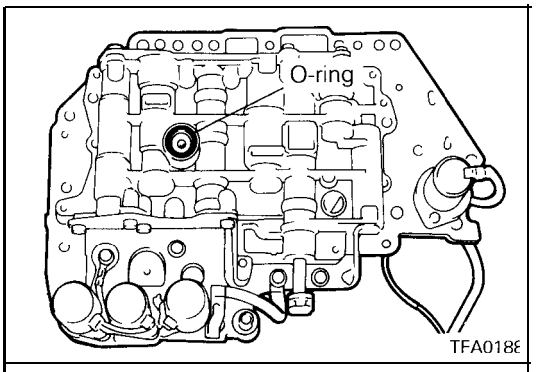


61. Install the parking roller support.

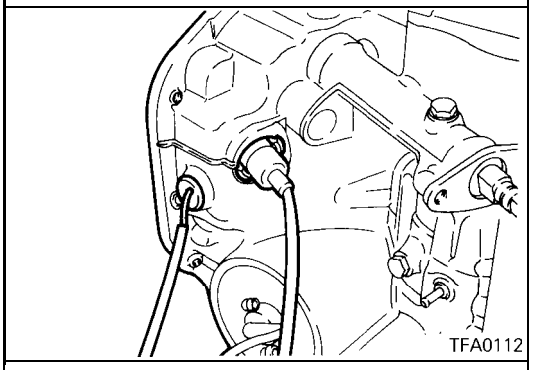
Parking roller support bolts: 24 Nm (18 ft.lbs.)



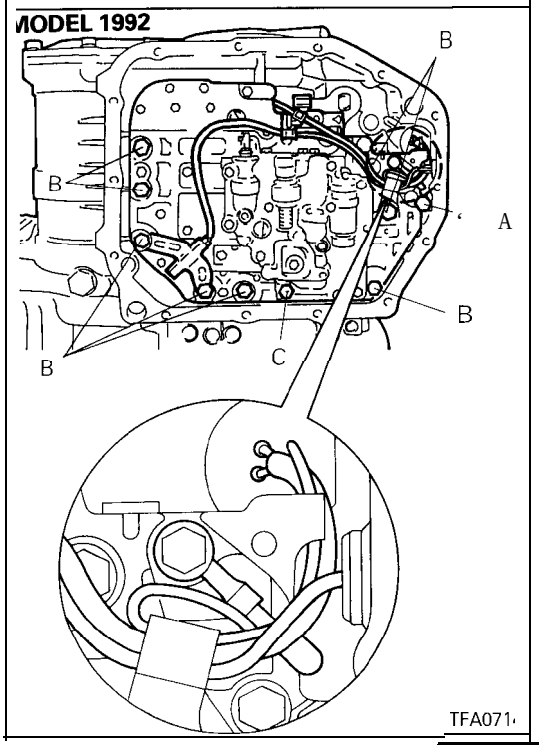
62. Insert the oil temperature sensor into the case.



63. Install an O-ring in the O-ring groove at the top of the valve body assembly.



64. Replace the solenoid valve harness grommet O-ring with a new one.
65. Pass the solenoid valve connector through the transaxle case hole from the inside.
66. Push the solenoid valve harness grommet into the case hole.



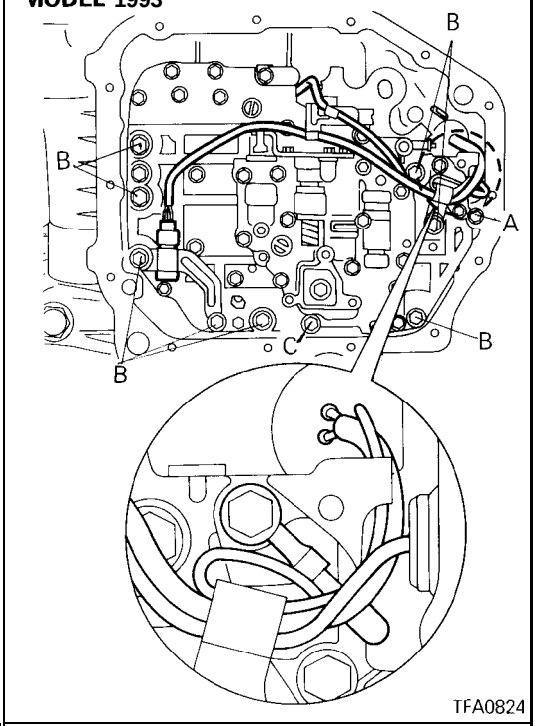
67. Insert the knock pin of the valve body into the case, keeping the detent plate pin in the manual valve groove. Temporarily install the valve body, install the oil temperature sensor and holder; then tighten the mounting bolts to the specified torque.

A bolt: 1 8 mm (.709 in.)
B bolt: 25 mm (.984 in.)
C bolt: 40 mm (1.575 in.)

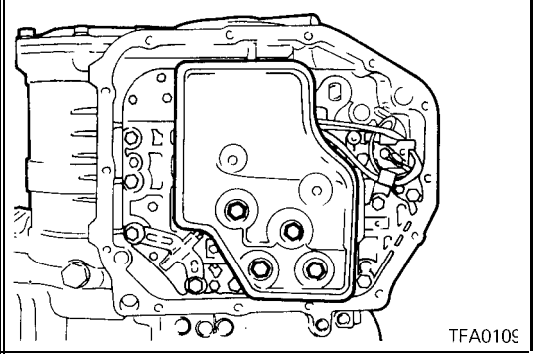
Valve body assembly mounting bolts: 11 Nm (8 ft.lbs.)

Caution
Firmly fasten the solenoid valve and oil temperature sensor harness at the position shown in the diagram. Especially, be sure to route the pressure control solenoid valve (PCSV) harness, which is separated from other harness, as shown in the diagram and fasten the harness with a clamp, Failure to fasten it may result in contact with the detent plate or parking rod.

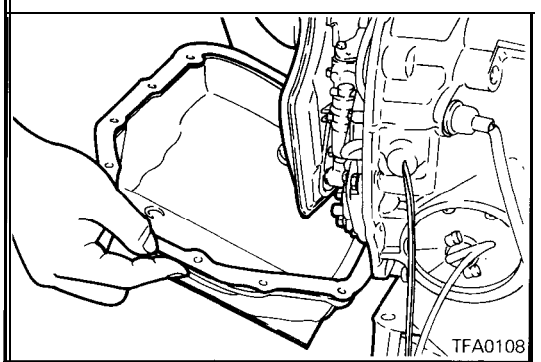
MODEL 1993



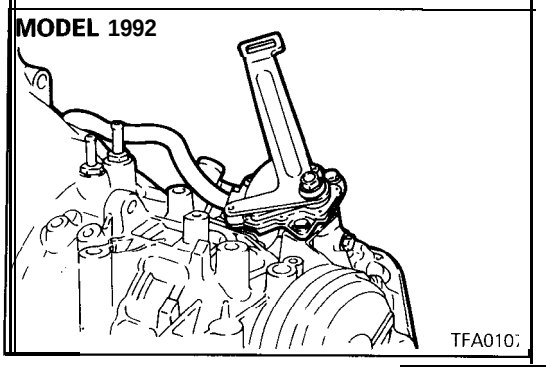
68. Install the oil screen.
Oil filter mounting bolts: 6 Nm (5 ft.lbs.)



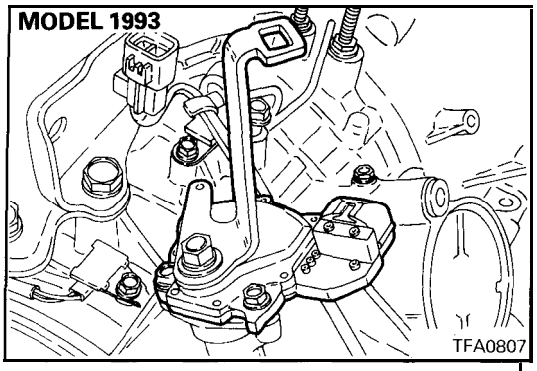
69. Install the magnets in the oil pan and install the oil pan.
Oil pan mounting bolts: 11 Nm (8 ft.lbs.)

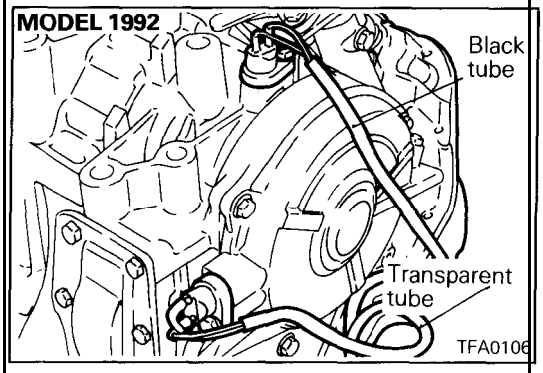


MODEL 1992



70. Install park/neutral position switch (PNP switch) and manual control lever.
Park/neutral position switch mounting bolts: 11 Nm (8 ft.lbs.)
Manual control lever mounting bolt: 19 Nm (14 ft.lbs.)
71. Install the speedometer gear assembly.
Speedometer gear locking plate mounting bolt: **5 Nm (4 ft.lbs.)**





72. Install the pulse generator A and B.

Pulse generator mounting bolts: 11 Nm (8 ft.lbs.)

Caution

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

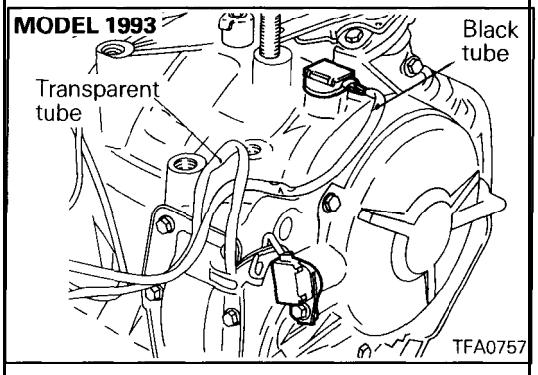
73. Install the oil filler tube and insert the level gauge.

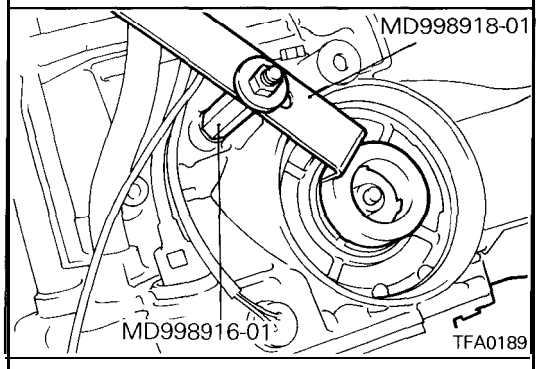
Oil filter tube mounting bolt: 24 Nm (18 ft.lbs.)

74. Install the brackets.

Transaxle mounting bracket bolts: 70 Nm (51 ft.lbs.)

75. Adjust the kickdown servo.

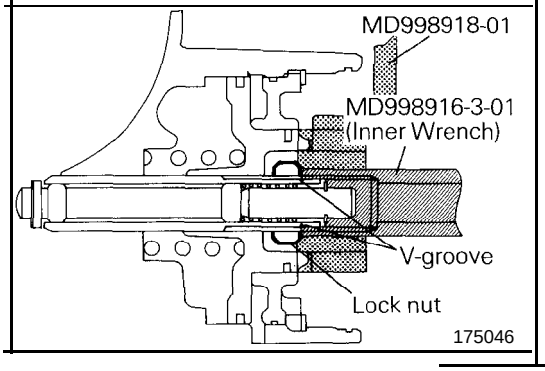




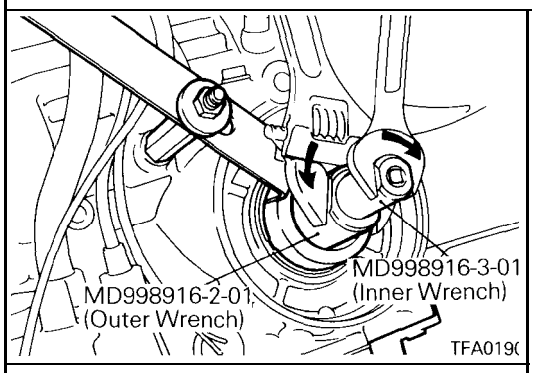
76. Adjust the kickdown servo by the following procedure:
(a) Fit the claw of the special tool in the notch of the piston to prevent the piston from turning, and use adapter to secure it as illustrated at left.

Caution

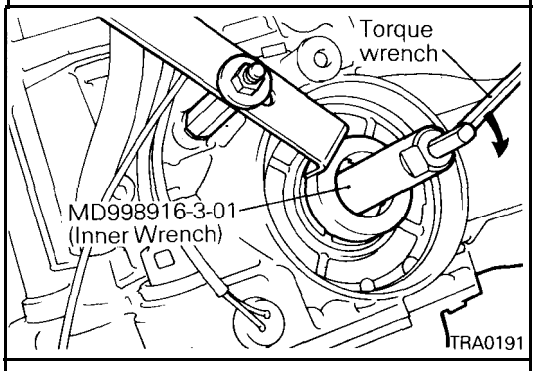
1. Do not push in the piston with the special tool.
2. **When the adapter is installed to the transaxle case, do not apply excessive torque but tighten with a hand.**



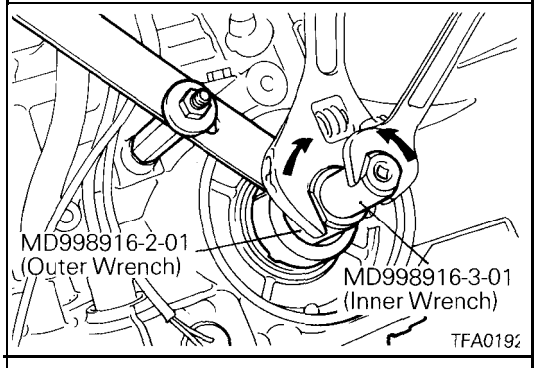
(b) Loosen the lock nut until it is about to reach the V groove in the adjusting rod. Tighten the special tool (inner) until it touches the lock nut.



(c) Fit the special tool (outer) to the lock nut. Turn the outer cylinder counterclockwise and the inner cylinder clockwise to lock the lock nut and the special tool (inner).

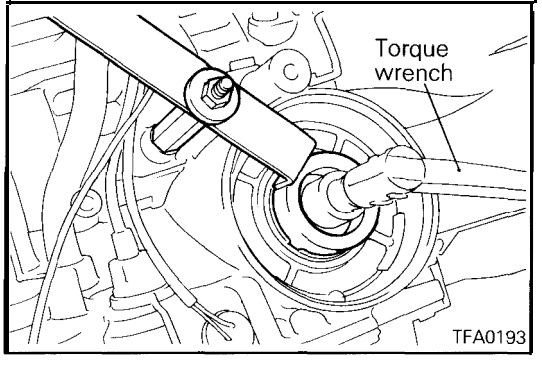


(d) Fit torque wrench to the special tool (inner) to tighten it to a torque of 10 Nm (7.2 ft.lbs.) and loosen. Repeat this sequence two times before tightening the special tool (inner) to 5 Nm (3.6 ft.lbs.) torque. Then back off the special tool (outer) 2 to 2¼ turns.



(e) Fit the special tool (outer) to the lock nut.
Turn the outer cylinder clockwise and the inner cylinder counterclockwise to unlock the lock nut and the special tool (inner).

Caution
When unlocking is carried out, apply equal force to both special tools to loosen.

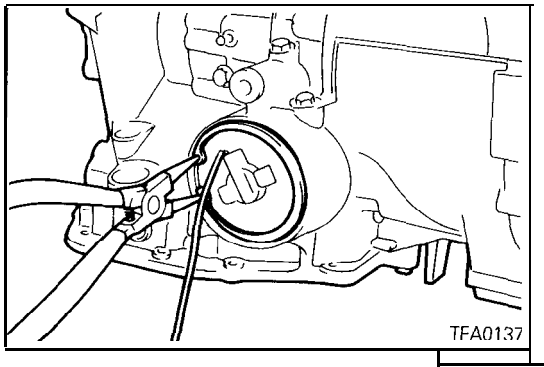


(f) Tighten the lock nut with a hand until it touches the piston.
Then, use torque wrench to tighten the lock nut to specified torque.

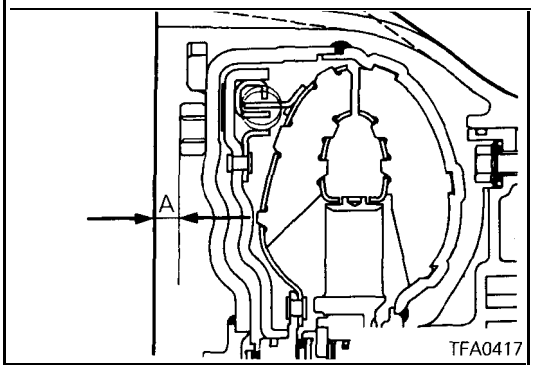
Lock nut: 29 Nm (21 ft.lbs.)

Caution
The lock nut may turn with the adjusting rod if tightened quickly with socket wrench or torque wrench.

(g) Remove the special tool for securing the piston. Install the plug to the Low/Reverse pressure outlet and tighten to specified torque.



77. Install the kickdown servo switch and fasten with a snap ring.

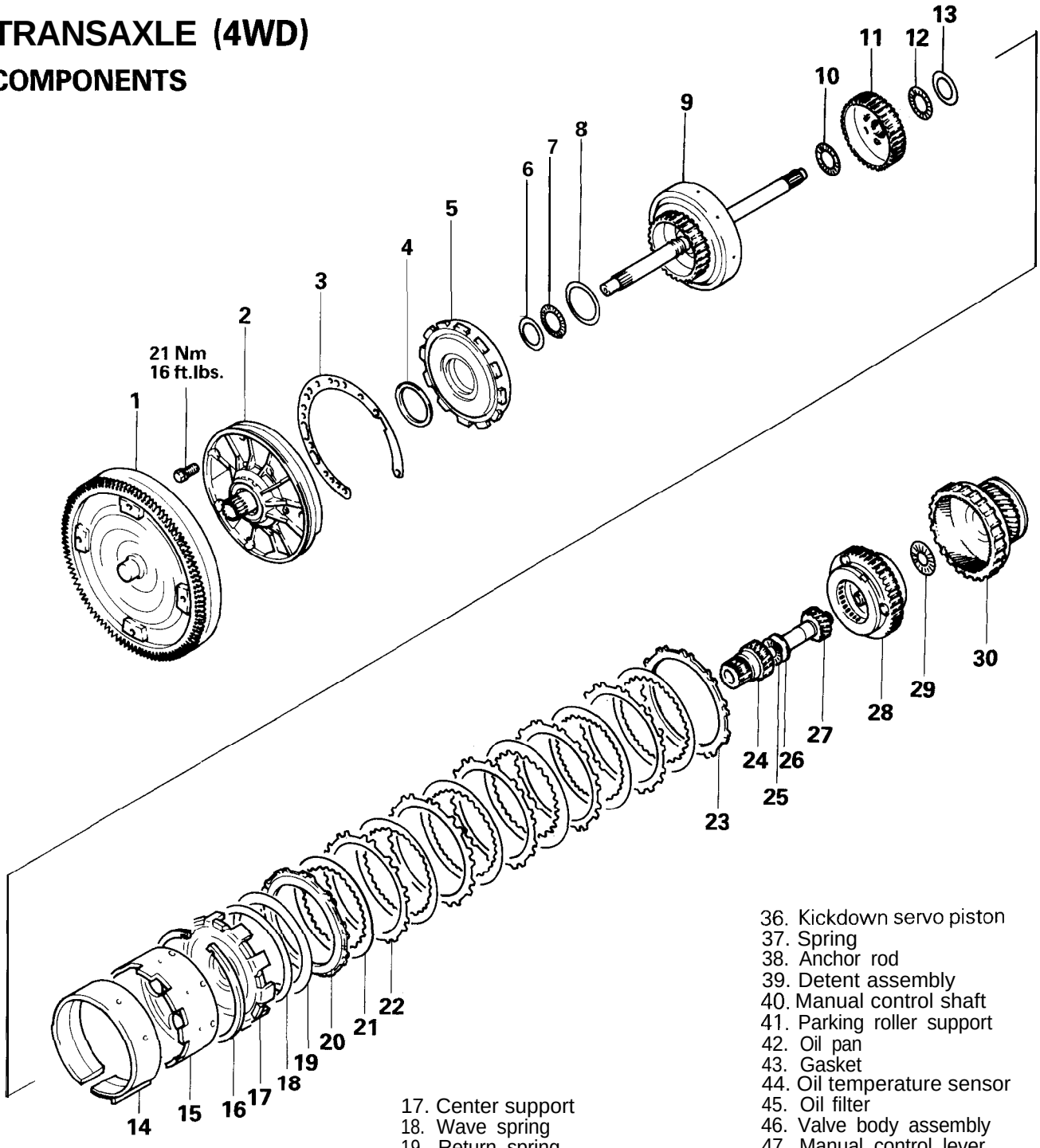


78. Coat the oil pump drive hub with automatic transmission fluid and install the torque converter. Push in firmly so that dimension A in the diagram is the standard value.

Standard value: approx. 16.3 mm (.642 in.)

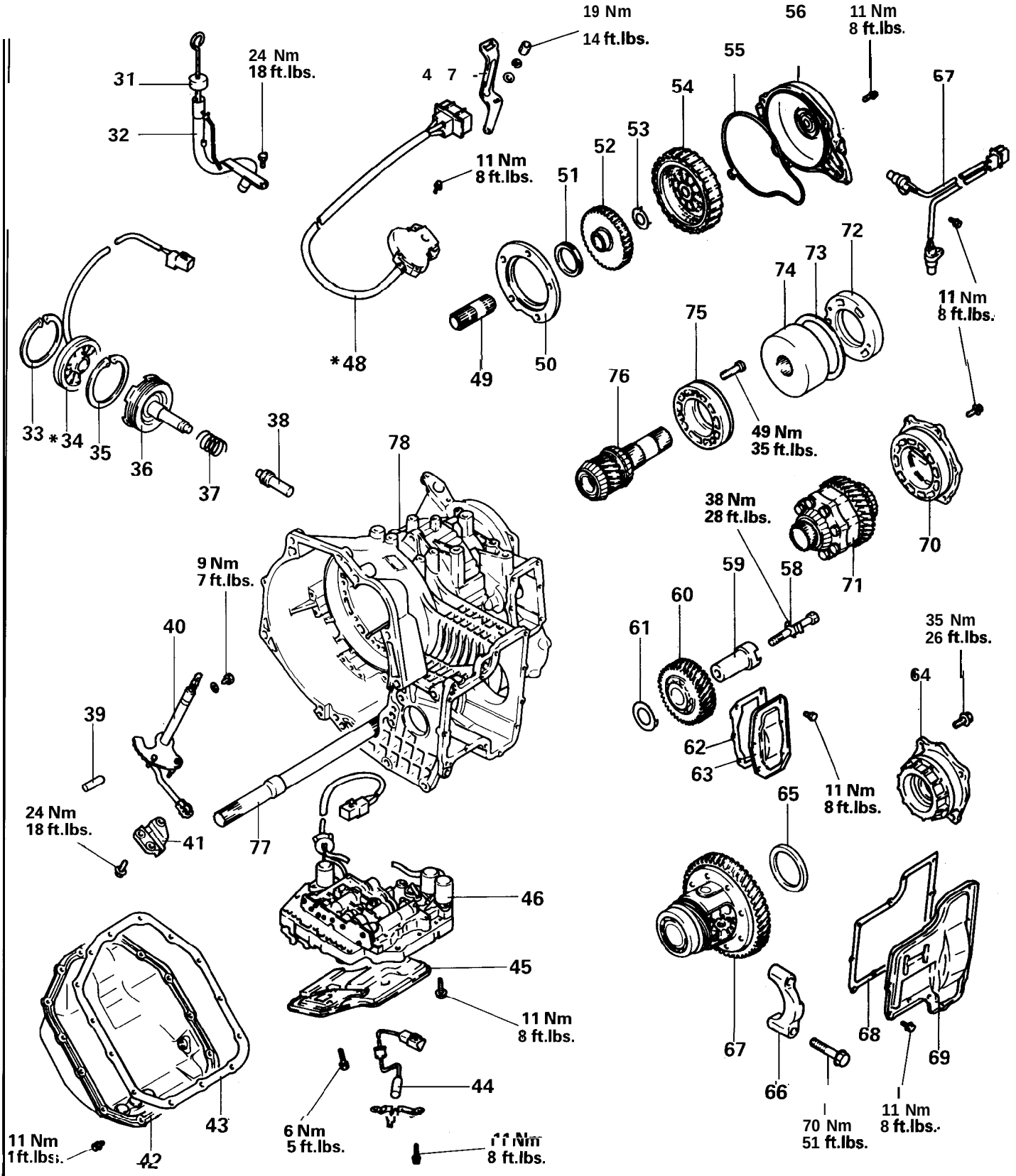
TRANSAXLE (4WD)

COMPONENTS



1. Torque converter
2. Oil pump assembly
3. Gasket
4. Thrust washer #1
5. Front clutch assembly
6. Thrust race #3
7. Thrust bearing #4
8. Thrust washer #2
9. Rear clutch assembly
10. Thrust bearing #5
11. Rear clutch hub
12. Thrust bearing #7
13. Thrust race #6
14. Kickdown band
15. Kickdown drum
16. Snap ring
17. Center support
18. Wave spring
19. Return spring
20. Pressure plate
21. Brake disc
22. Brake plate
23. Reaction plate
24. Reverse sun gear
25. Thrust bearing #8
26. Thrust race #9
27. Forward sun gear
28. Planetary carrier assembly
29. Thrust bearing #10
30. Output flange
31. Oil level gauge
32. Oil filler tube
33. Snap ring
34. Kickdown servo switch
35. Snap ring
36. Kickdown servo piston
37. Spring
38. Anchor rod
39. Detent assembly
40. Manual control shaft
41. Parking roller support
42. Oil pan
43. Gasket
44. Oil temperature sensor
45. Oil filter
46. Valve body assembly
47. Manual control lever
48. Park/neutral position switch (PNP switch)
49. End clutch shaft
50. Bearing retainer
51. Thrust bearing #11
52. End clutch hub
53. Thrust washer
54. End clutch assembly
55. O-ring
56. End clutch cover
57. Pulse generator
58. Lock bolt
59. Idler shaft
60. Idler gear
61. Spacer
62. Gasket

TFA0409

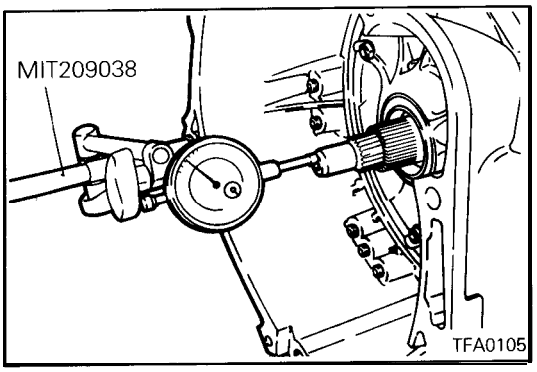


63. Idler gear cover
64. Differential bearing retainer
65. Spacer
66. Differential front bearing cap
67. Differential assembly
68. Gasket
69. Differential cover
70. Output bearing retainer
71. Center differential assembly
72. Center bearing retainer
73. Stopper ring
74. Viscous coupling unit
75. Center bearing retainer
76. Front output shaft
77. Rear output shaft
78. Transaxle case

NOTE:
On 1993 and subsequent models, *-marked parts have the connecter directly attached, not via a harness.

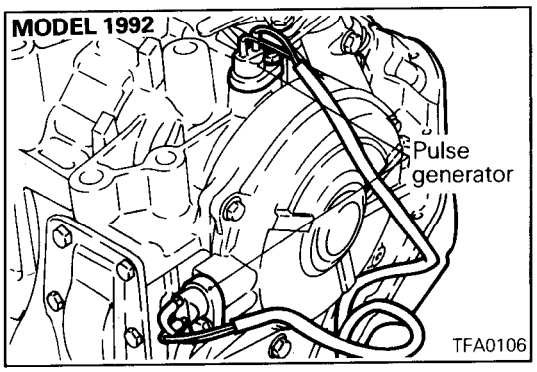
TFA0411

TSB Revision

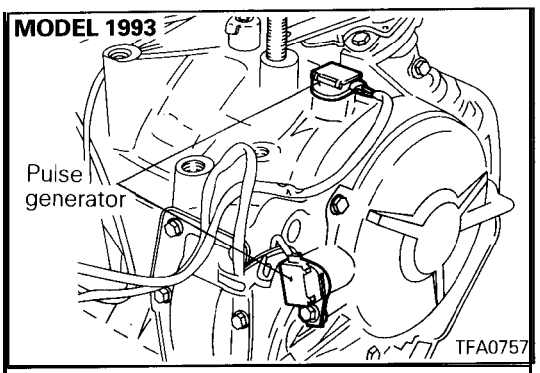


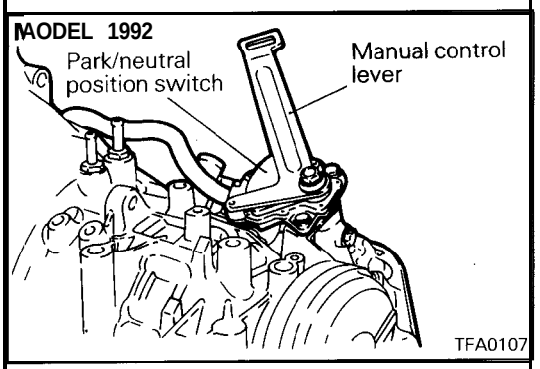
DISASSEMBLY

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

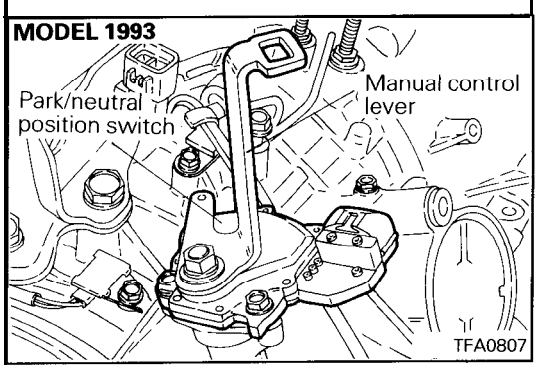


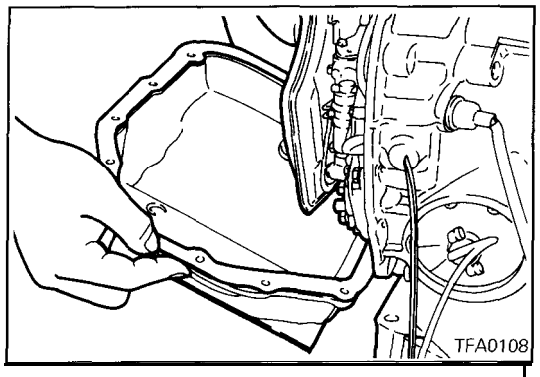
5. Remove the pulse generator “A” and “B”



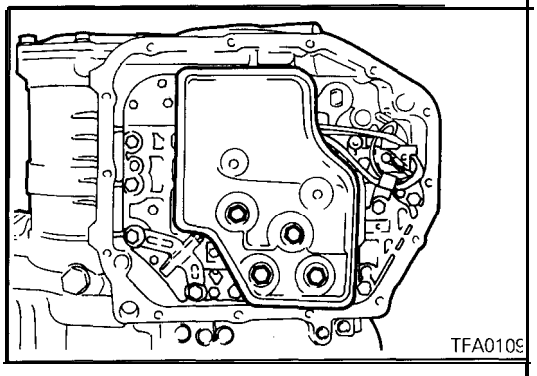


6. Remove manual control lever then remove park/neutral position switch (PNP switch).

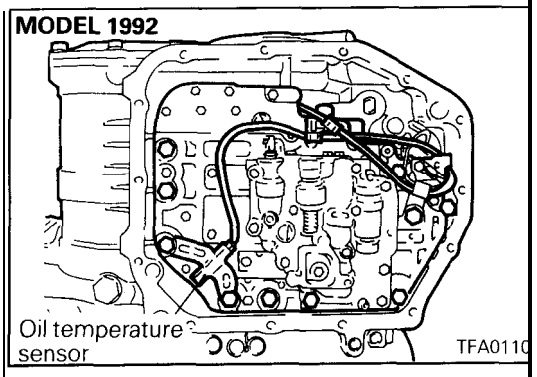




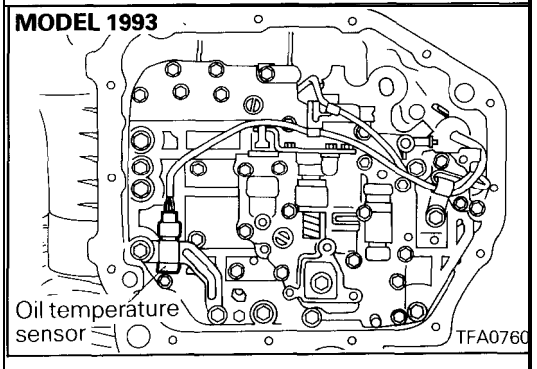
7. Remove the oil pan, magnets and gasket,

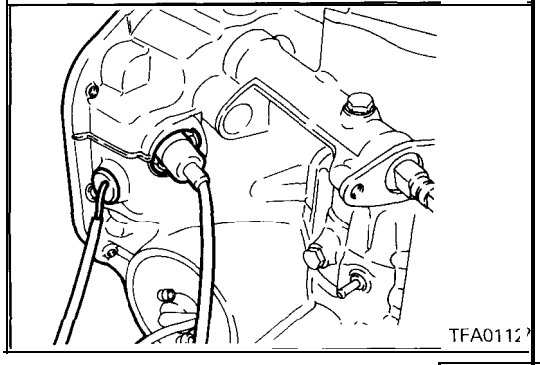


8. Remove the oil filter from the valve body.

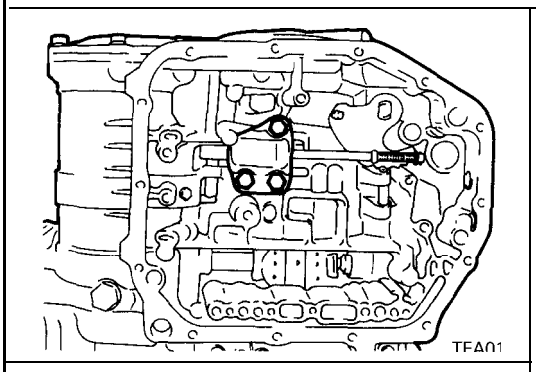


9. Remove the 10 valve body mounting bolts.
10. Remove the oil temperature sensor holder and remove the oil temperature sensor harness from the clamp.

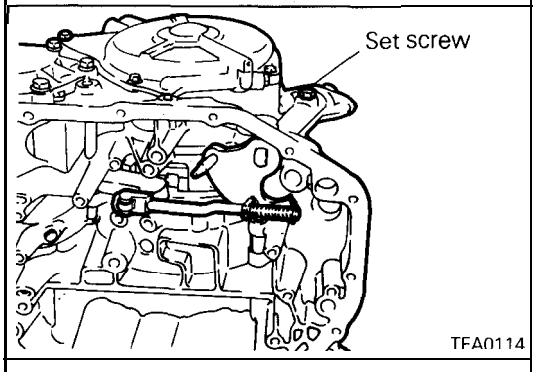




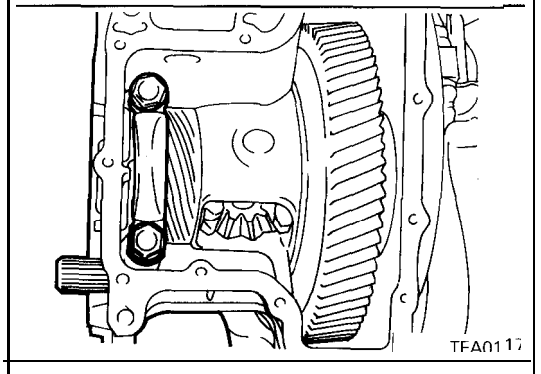
11. Press the finger of the solenoid valve harness grommet, push the grommet into the case and remove the valve body assembly.
12. Pull out the oil temperature sensor.



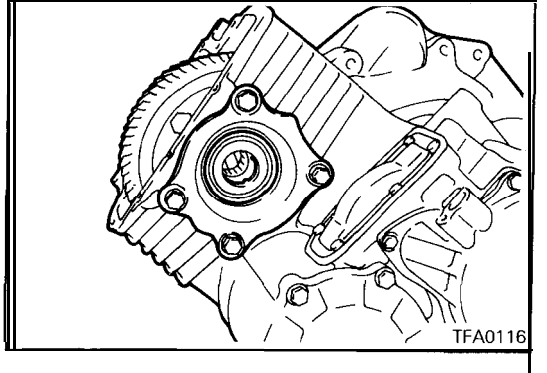
13. Remove the parking roller support.



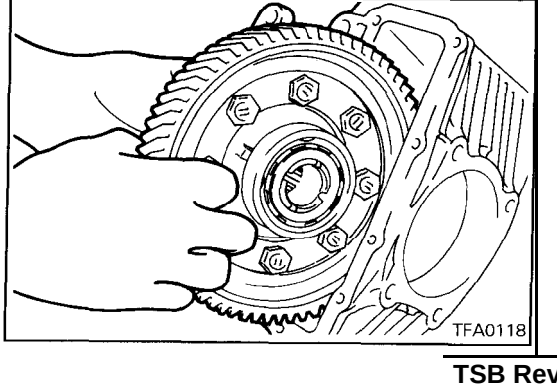
14. Remove the set screw of the manual control shaft and remove the manual control shaft assembly.
15. Remove the detent assembly.



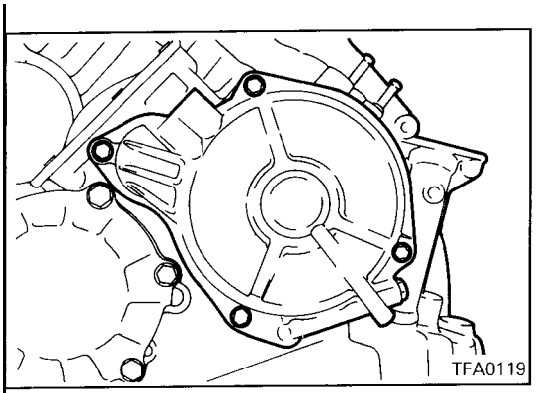
16. Remove the differential cover and gasket.
17. Remove the differential front bearing cap.



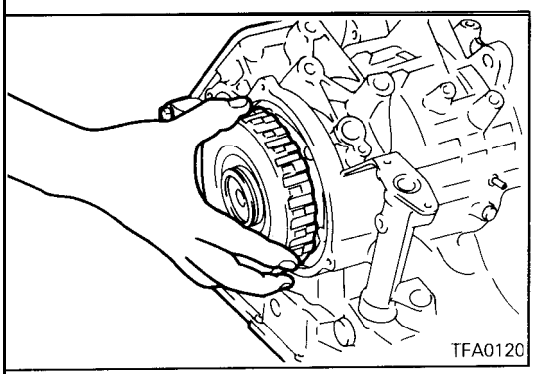
18. Remove the differential bearing retainer, spacer and outer race.



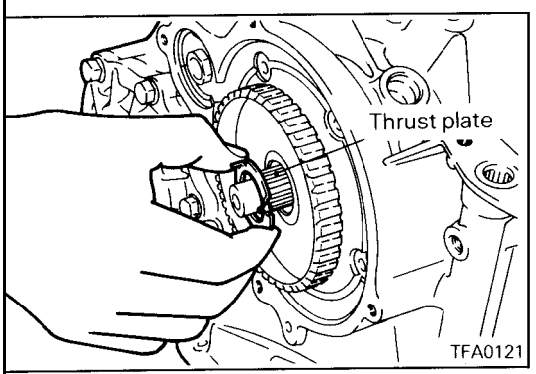
19. Remove the differential assembly.



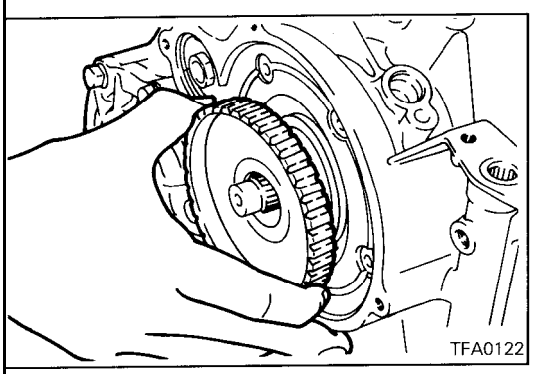
20. Take out the end clutch cover installation bolts, then remove the cover holder and end clutch cover.



21. Remove the end clutch assembly.

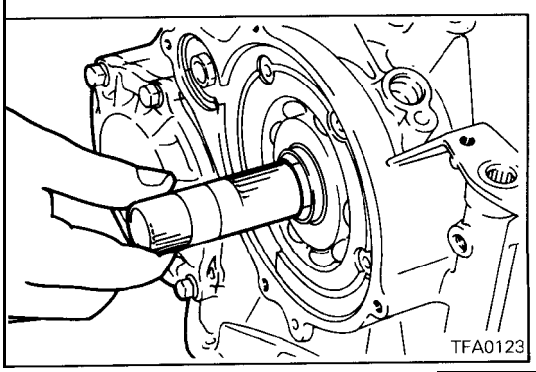


22. Remove the thrust plate.

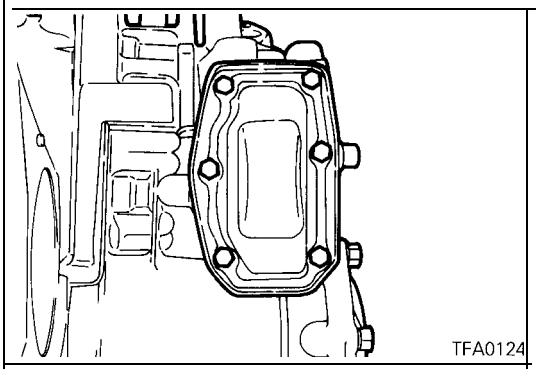


23. Remove the end clutch hub.
24. Remove the thrust bearing #11.

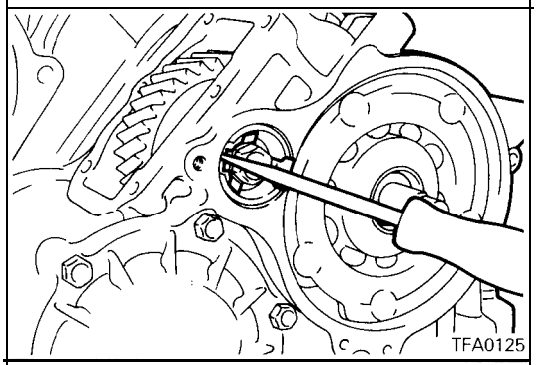
NOTE
It may be stuck to the end clutch hub.



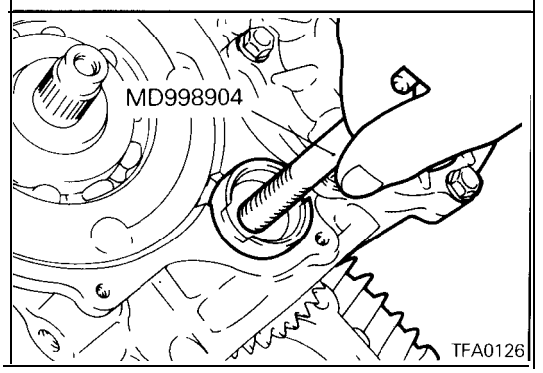
25. Pull out the end clutch shaft



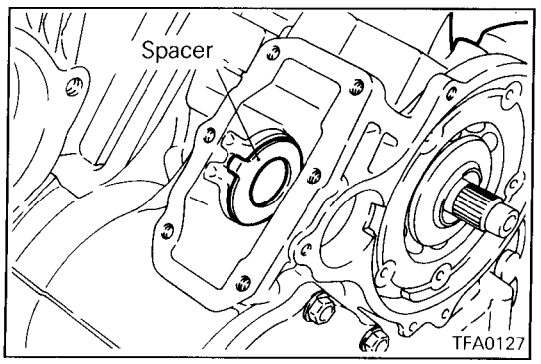
26. Remove the idler gear cover mounting bolts, then remove the idler gear cover and gasket.



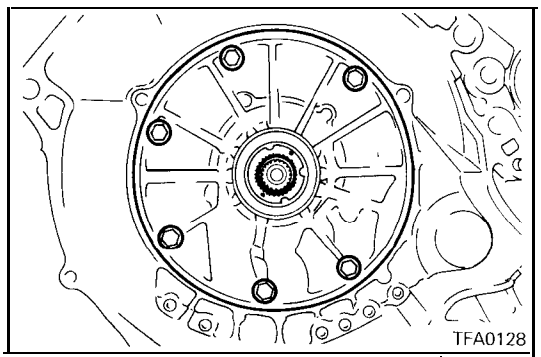
27. Disengage the bolt stopper and remove the bolt.



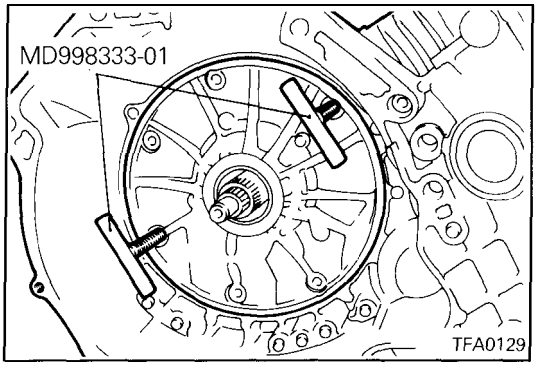
28. Using the special tool, pull out the idler shaft and then remove the idler gear and bearing inner race.



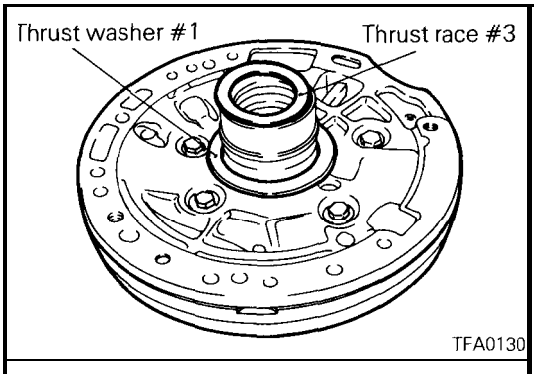
29. Remove the spacer



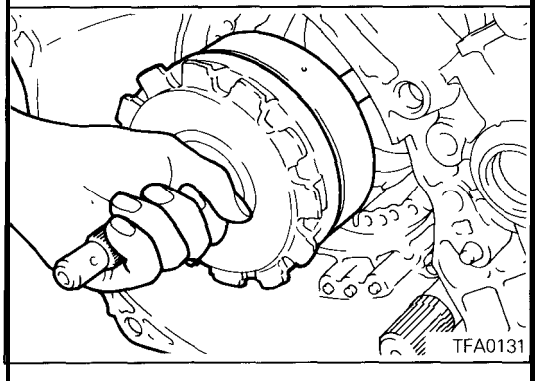
30. Remove oil pump installation bolts.



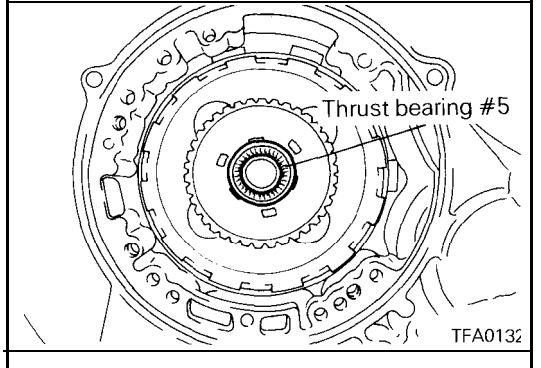
31. Use the special tool and remove the oil pump.



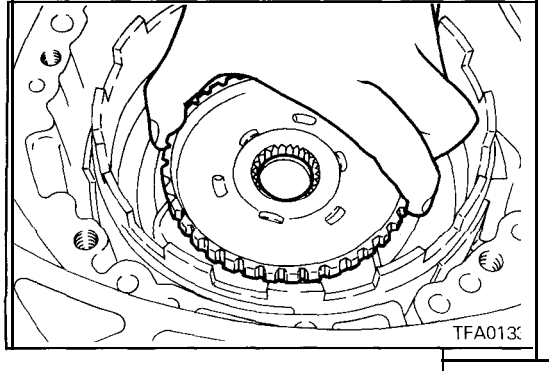
32. Remove thrust washer #1 and thrust race #3.



33. Hold the input shaft and remove the front clutch assembly and rear clutch assembly together.

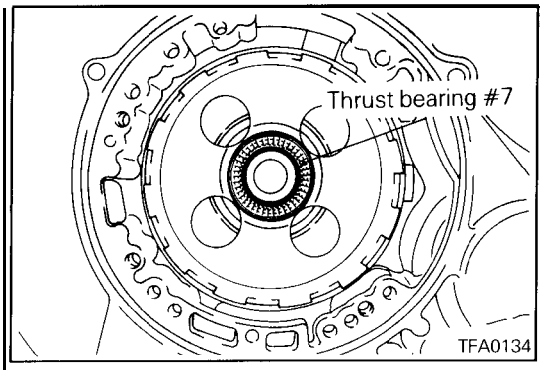


34. Remove the thrust bearing #5

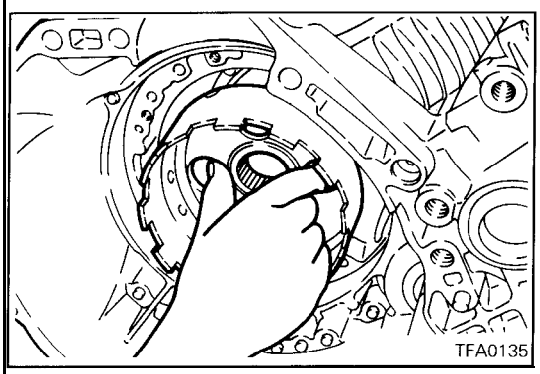


35. Remove the clutch hub.

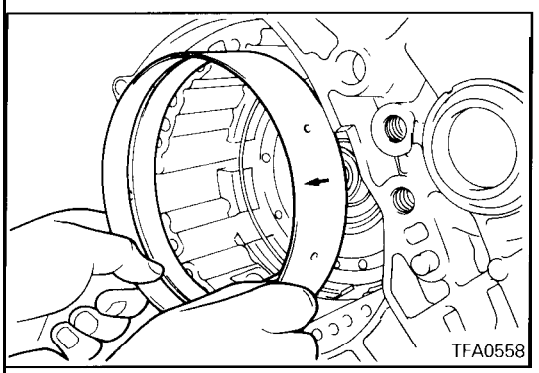
NOTE
The thrust race may be stuck to the clutch hub.



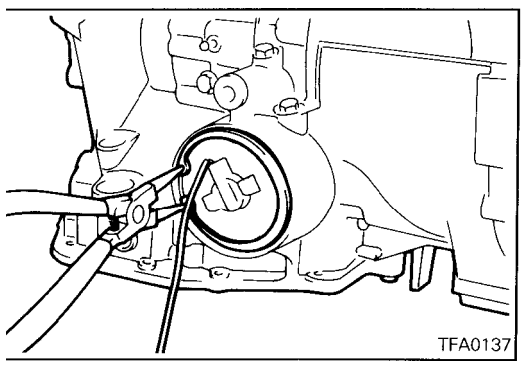
36. Remove the thrust bearing #7



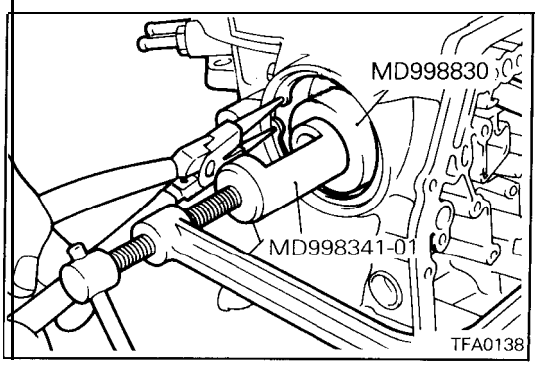
37. Remove the kickdown drum.



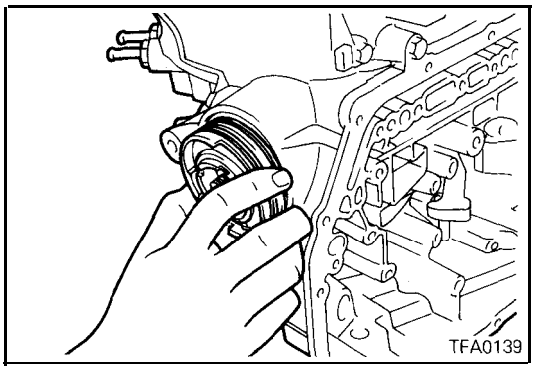
38. Remove the kickdown band.



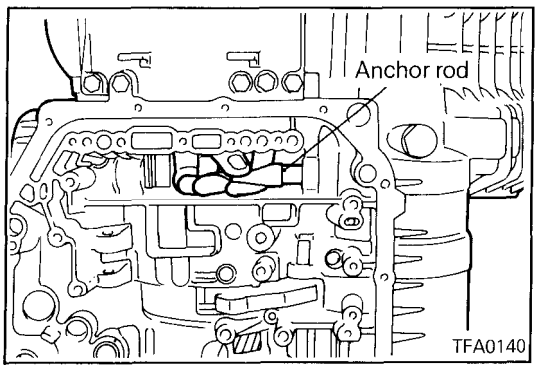
39. Remove the kickdown servo cover snap ring. Then remove the kickdown servo switch.



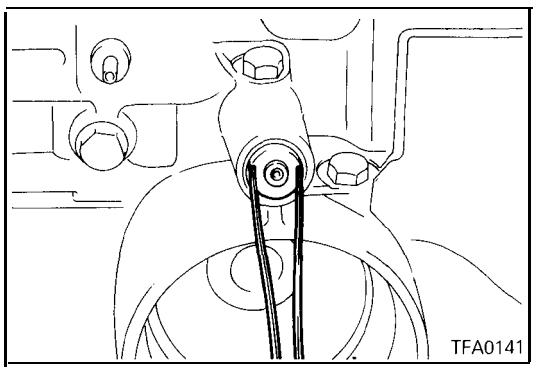
40. Using the special tool, push in the kickdown servo and remove the snap ring.



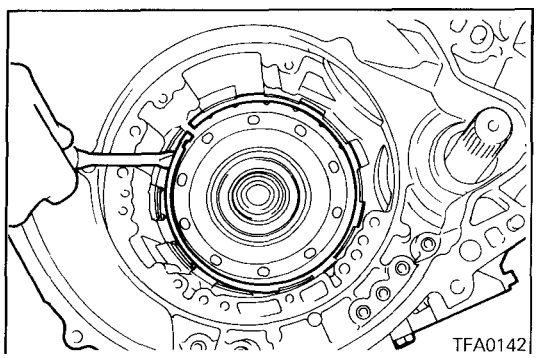
41. Remove the kickdown servo piston.



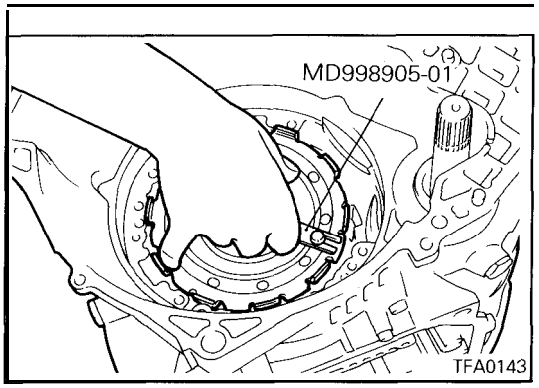
42. Remove the anchor rod.



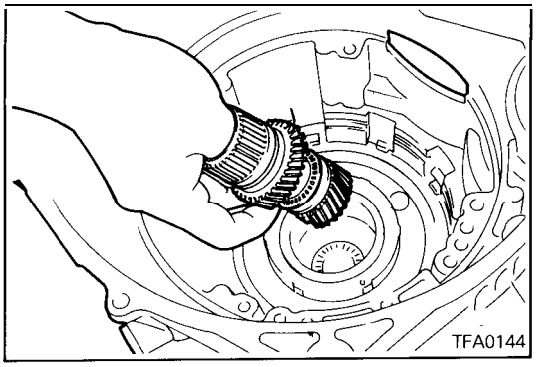
43. Remove the plug, then remove the air exhaust plug.



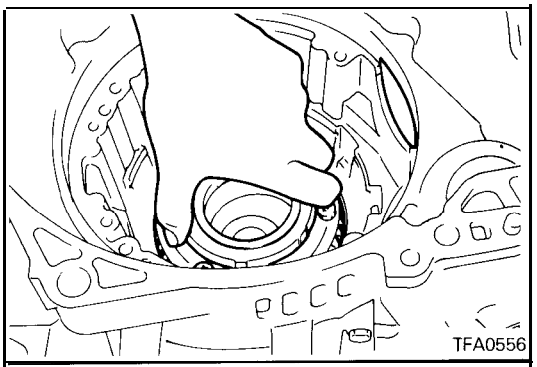
44. Remove the snap ring.



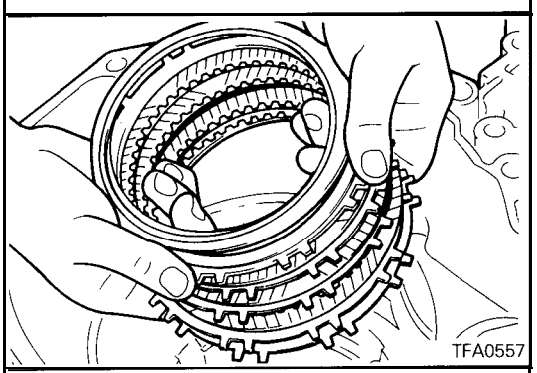
45. Using the special tool, remove the center support.



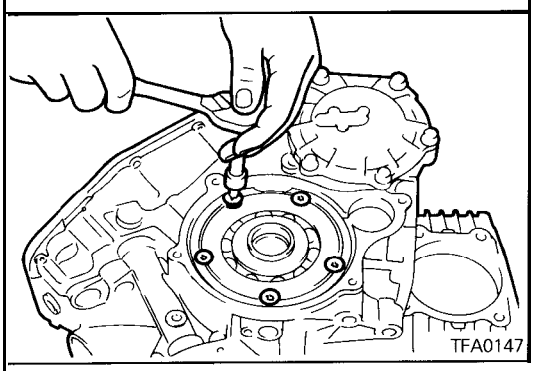
46. Remove reverse sun gear and forward sun gear together.



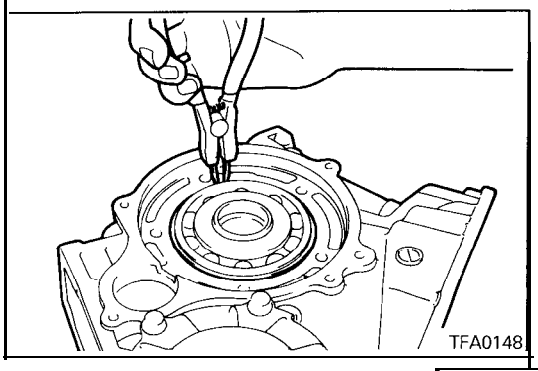
47. Remove planet carrier assembly.



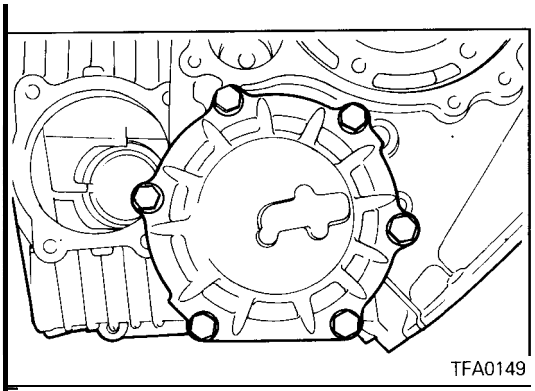
48. Remove the wave spring, return spring, reaction plate, brake discs, and brake plates.



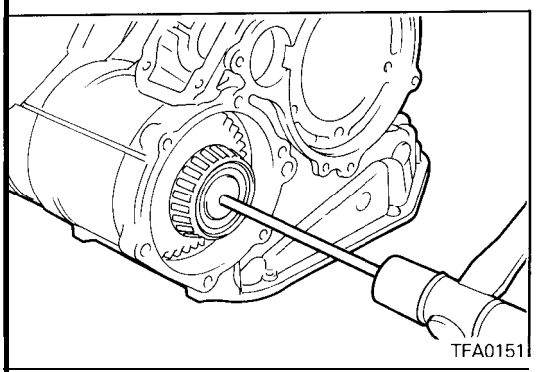
49. Remove the screws and the rear bearing retainer.



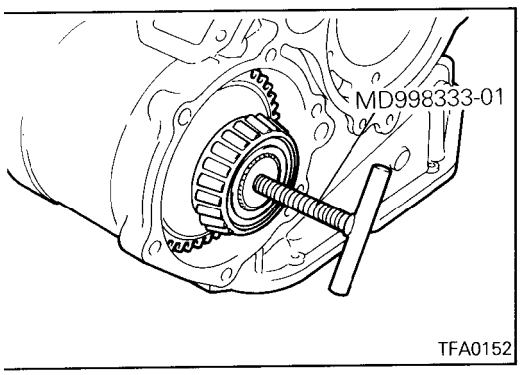
50. Remove the snap ring and then remove the output flange assembly.


TFA0149

51. Remove the output bearing retainer mounting bolts and then remove the output bearing retainer and outer race.

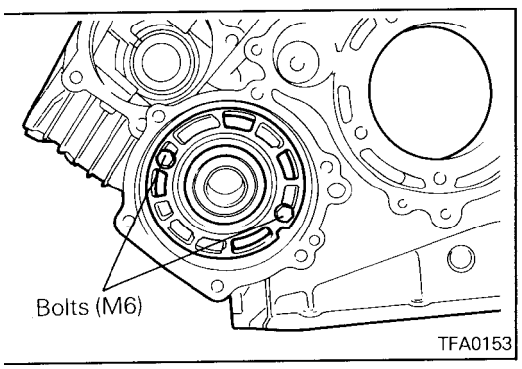

TFA0151

52. Insert a rod 8 mm (.31 in.) in diameter and 200 mm (7.87 in.) in length from the hole shown in the figure and punch out the rear output shaft.



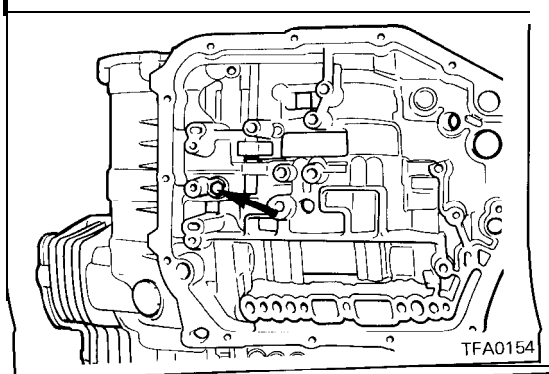
TFA0152

53. Using the special tool, remove the center differential.

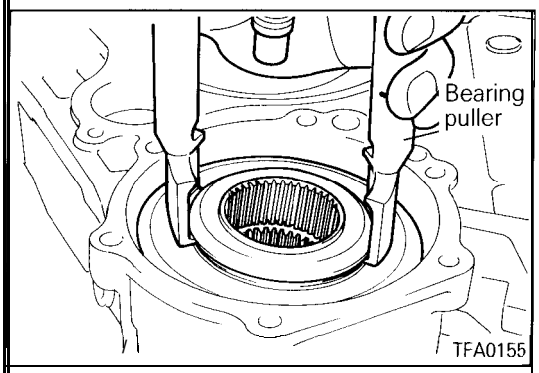


TFA0153

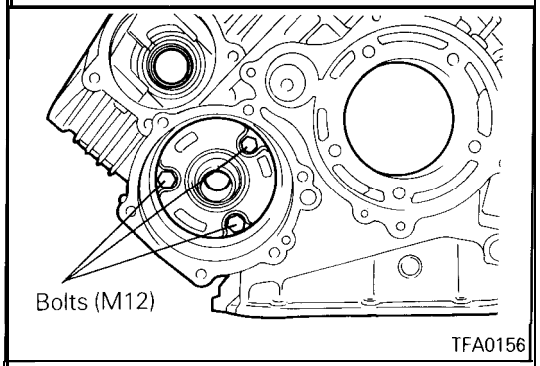
54. Put a bolt (M6) into the center bearing retainer and, holding that bolt, remove the center bearing retainer and outer race.


TFA0154

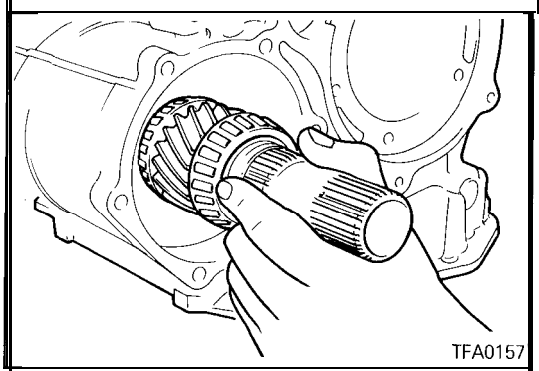
55. Remove the center bearing retainer stopper bolt.



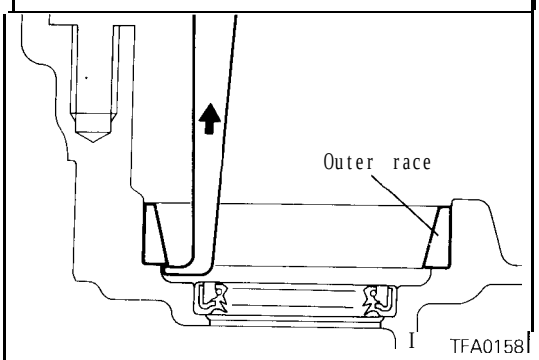
56. First remove the stopper ring and then put a bearing puller or similar tool in the viscous coupling groove and pull out the viscous coupling.



57. Remove the front bearing retainer mounting bolt (M10). Then, screw a bolt (M12) into the threaded hole of the front bearing retainer and, holding that bolt, remove the front bearing retainer and outer race.

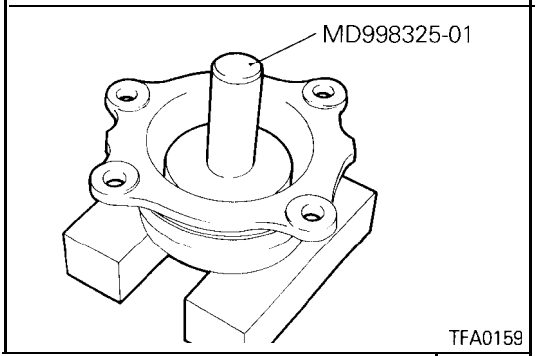


58. Remove the front output shaft.



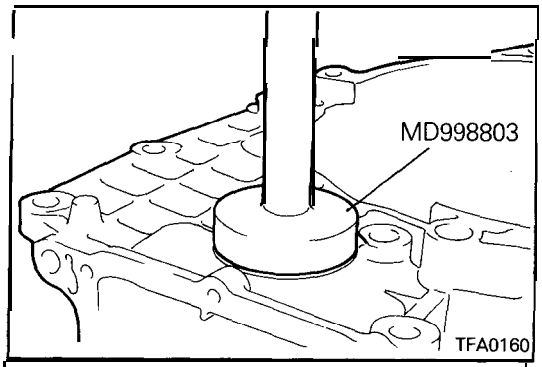
59. Using a sliding hammer or similar tool, remove the outer race.

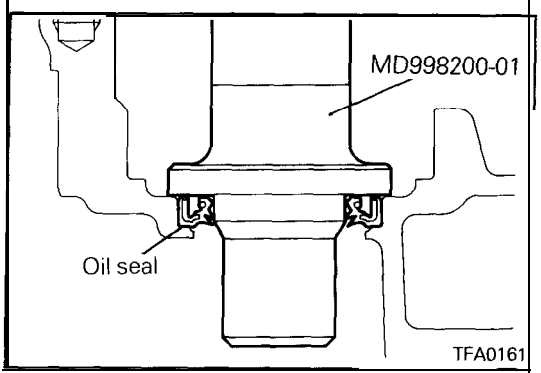
60. Remove the oil seals.



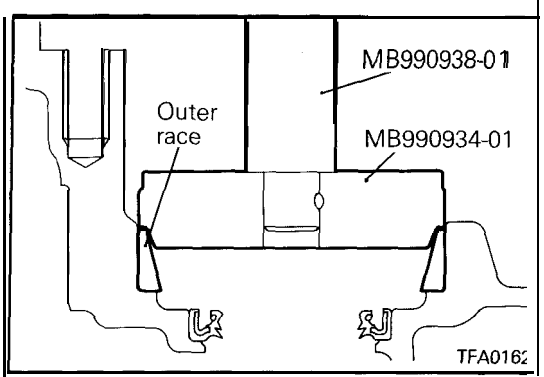
REASSEMBLY

1. Using the special tool, install the oil seals to the differential bearing retainer and transaxle case.

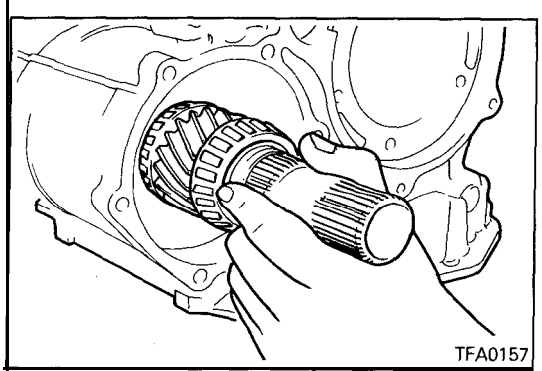




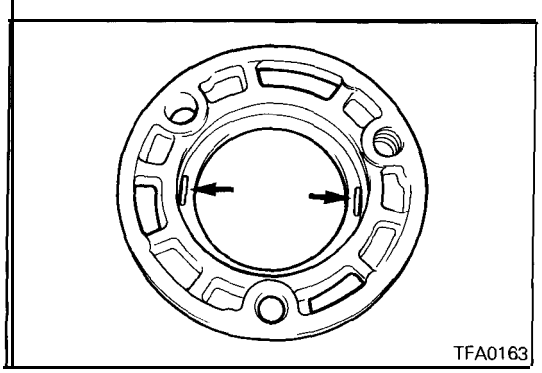
2. Using the special tool, install the rear output shaft oil seal.



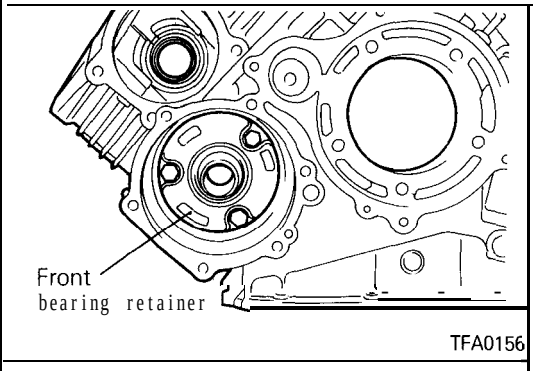
3. Using the special tool, press-fit the outer race in the transaxle case.



4. Install the front output shaft assembly.



5. Position the solder approx. 10 mm (40 in.) long by 1.6 mm (.06 in.) in diameter in the front bearing retainer in the position shown in the figure and then install the outer race.



6. Install the front bearing retainer and tighten the bolt with the specified torque.

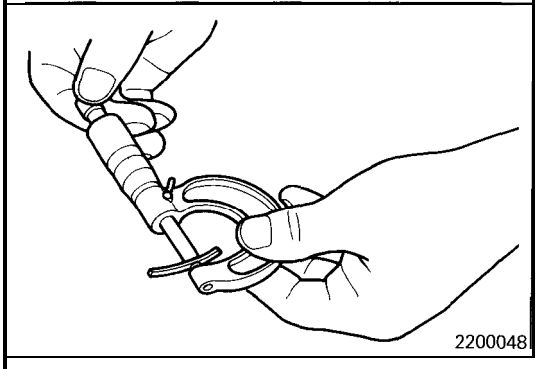
Front bearing retainer mounting bolts:
49 Nm (35 ft.lbs.)

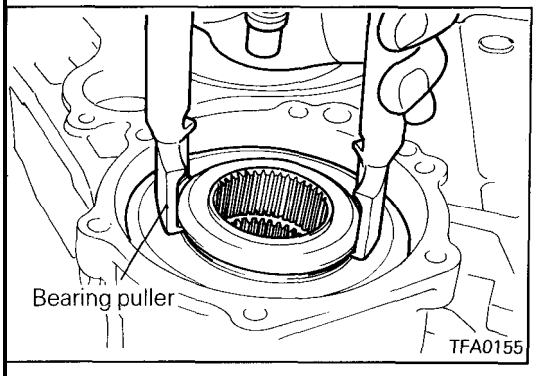
7. Loosen the bolts and remove the front bearing retainer.
8. Remove the outer race from the front bearing retainer and remove the solder. If the solder does not break, perform the work in steps 5 – 8 with large diameter solder. Measure the thickness of the crushed solder with a micrometer and select a spacer with the correct thickness so the preload reaches the standard value.

Standard value: 0.055 – 0.115 mm (.0022 – .0045 in.)

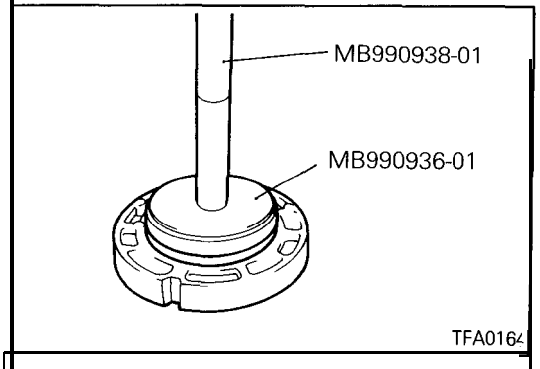
9. Install the spacer selected in the previous step and the outer race in the front bearing retainer.
10. First install the front bearing retainer and apply sealant to the bolts and then tighten with the specified torque.

Specified sealant:
3M Stud Locking Part No. 4170 or equivalent
Front bearing retainer mounting bolts:
49 Nm (35 ft.lbs.)

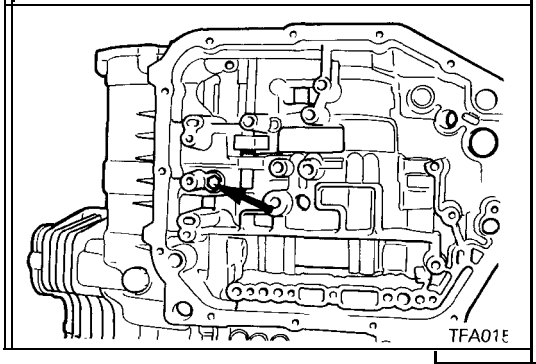




11. Using a bearing puller, support the viscous coupling and insert in the case. Then, install the stopper ring.

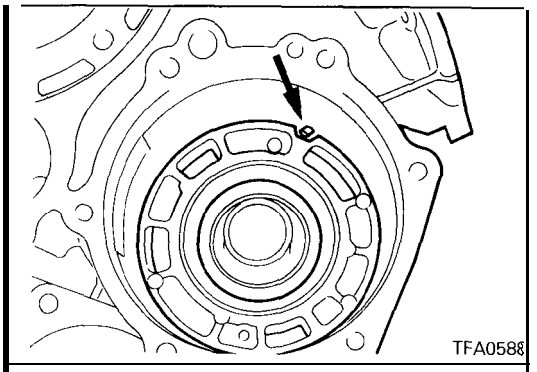


12. Using the special tool, install the outer race in the center bearing retainer.

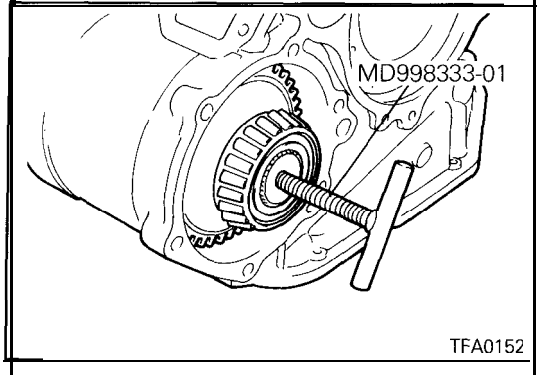


13. Install the center bearing retainer stopper bolt.

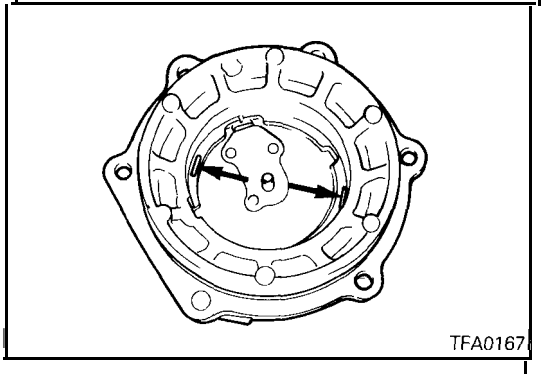
Center bearing retainer stopper bolt: 5 Nm (4 ft.lbs.)



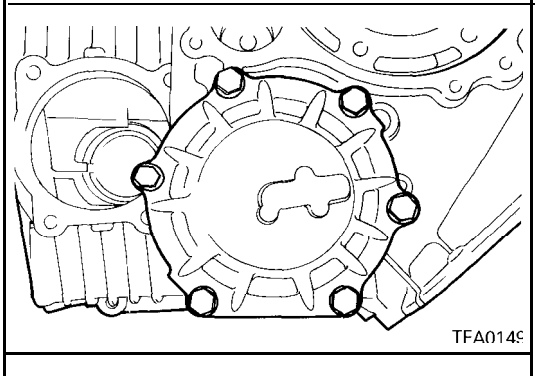
14. Install the center bearing retainer so the projection of the stopper bolt fits in the groove of the center bearing retainer.



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



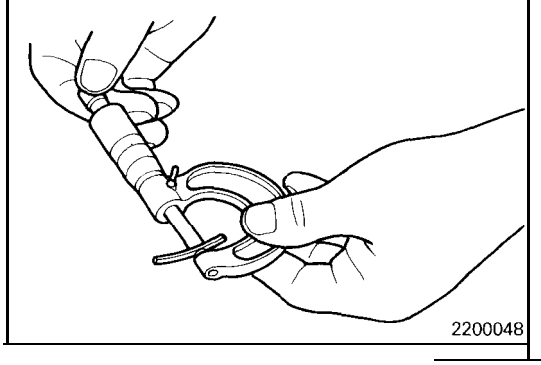
16. Place solder with a length approximately 10 mm (.39 in.) and diameter of 1.6 mm (.06 in.) on the output bearing retainer at the position shown in the diagram and install the outer race.



17. Install the output bearing retainer and tighten the bolts to the specified torque.

Output bearing retainer mounting bolts: 24 Nm (18 ft.lbs.)

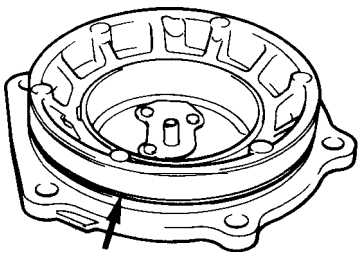
18. Loosen the bolts and remove the output bearing retainer.



19. Remove the outer race from the output bearing retainer and remove the solder. If the solder is not crushed, repeat steps (4) – (6), using the solder with diameter of 3 mm (.12 in.). Measure the thickness of the crushed solder with a micrometer and select a spacer with a thickness that will provide the standard value for the preload.

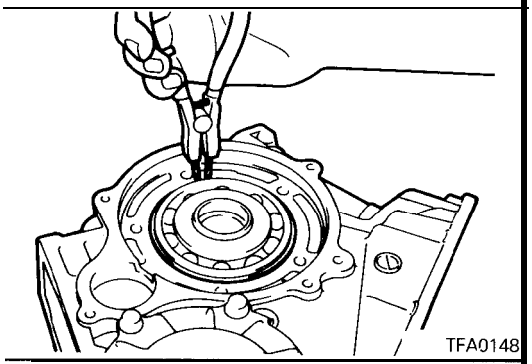
Standard value: 0.075 – 0.135 mm (.003 – .0053 in.)

20. Install the spacer selected in the previous item and the outer race on the output bearing retainer.

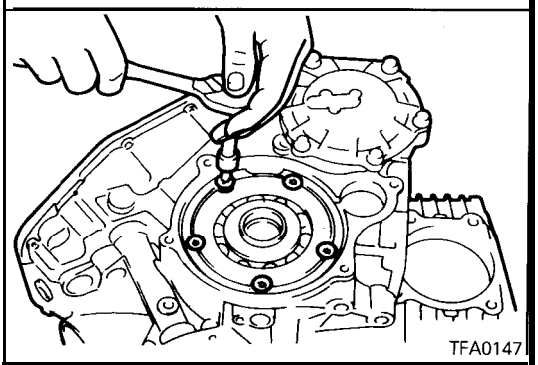

TFA0168

21. Install a new O-ring around the outer circumference of the outer bearing retainer.
22. 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: 24 Nm (18 ft.lbs.)

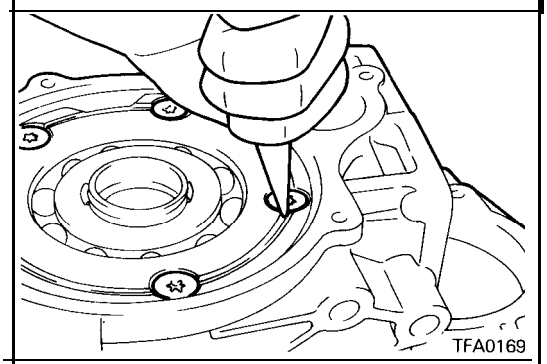

TFA0148

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

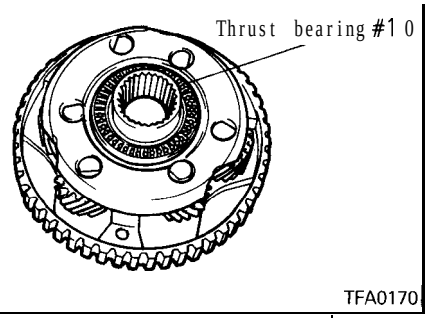

TFA0147

24. Install the bearing retainer using new bolts.

Bearing retainer mounting bolts: 20 Nm (15 ft.lbs.)

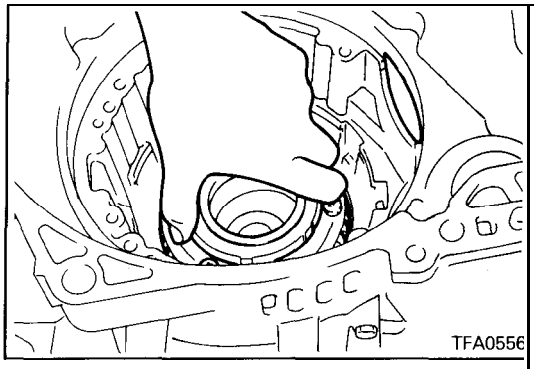

TFA0169

25. Caulk the heads of the bolts.

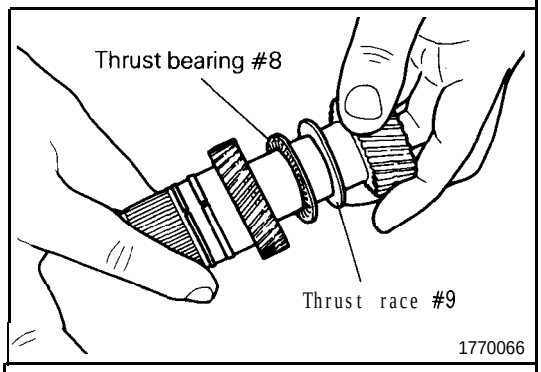


TFA0170

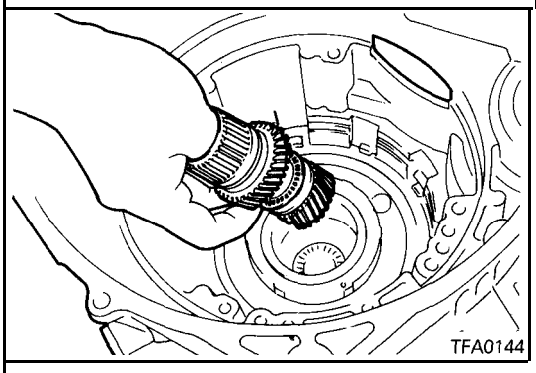
26. Apply a coating of petrolatum to thrust bearing #10 and attach to the planetary carrier.



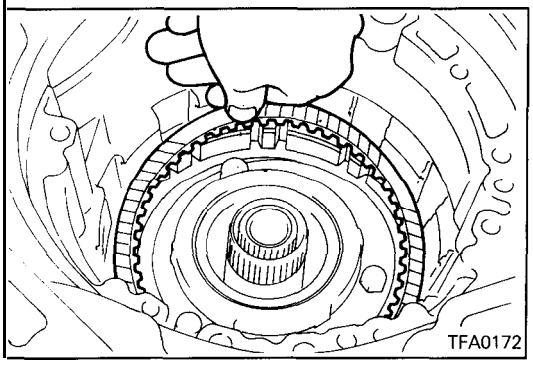
27. Assemble the planetary carrier.



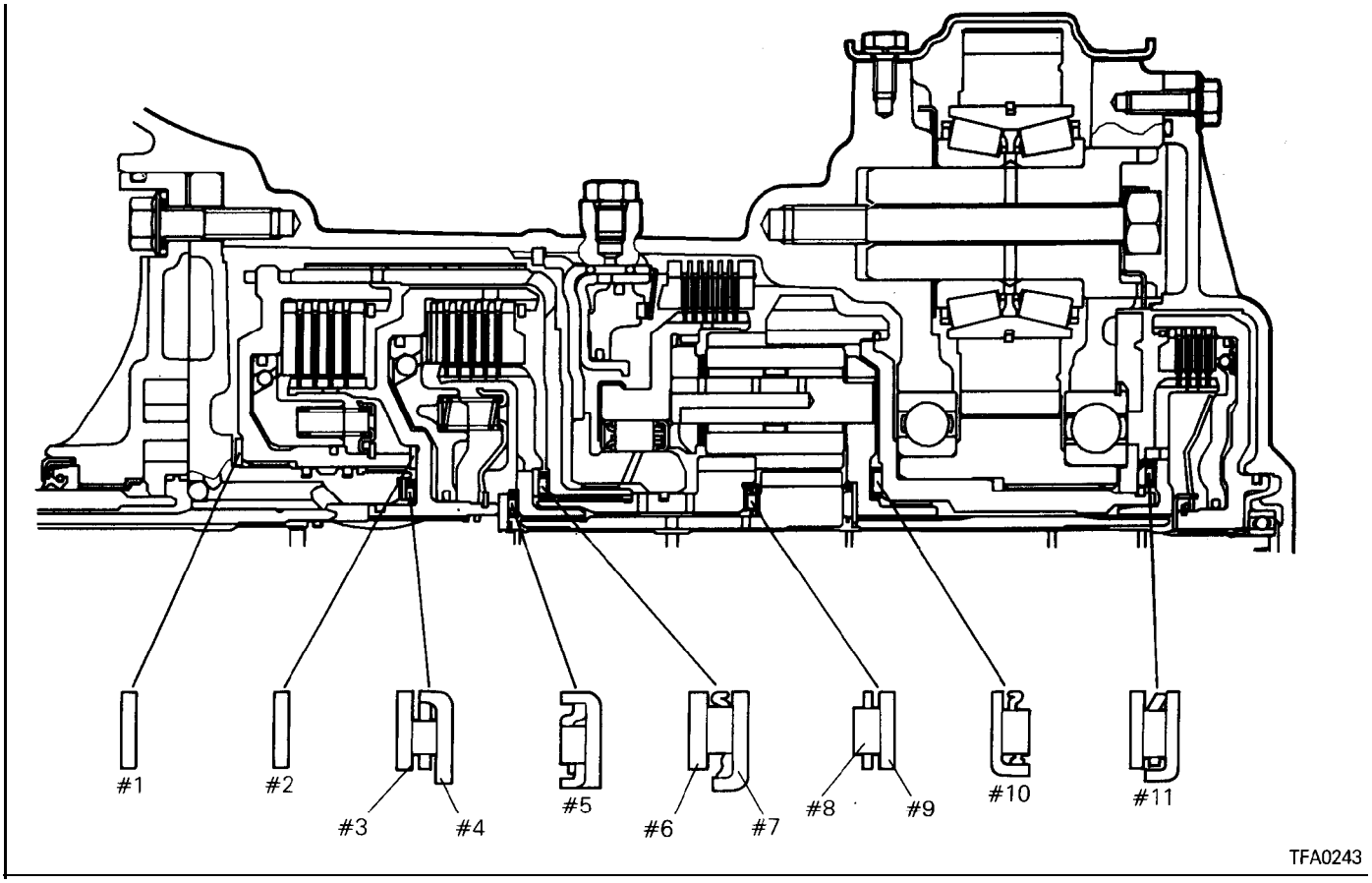
28. Assemble the forward sun gear, thrust race #9, thrust bearing #8 and reverse sun gear.



29. Install both sun gears assembled in the previous item into the planetary carrier.



30. Assemble the reaction plate, brake disc and brake plate.

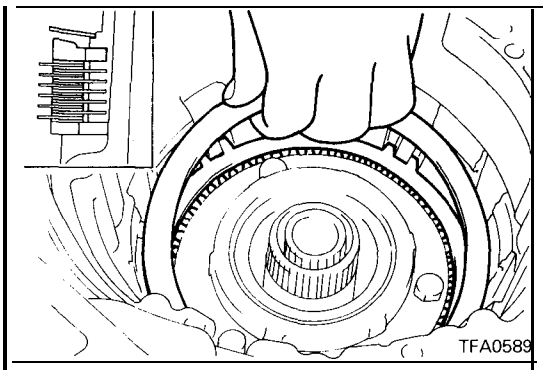


Identification of thrust bearings, thrust races and thrust washers

mm (in.)

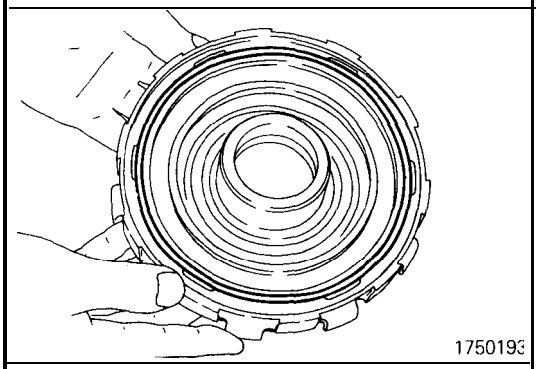
Outer diameter	Inner diameter	Thickness	Part No.	Code No.	Outer diameter	Inner diameter	Thickness	Part No.	Code No.
70 (2.7559)	55.7 (2.1929)	1.4 (.0551)	*1	#1	48.1 (1.8937)	34.4 (1.3543)	–	MD707271	#4
70 (2.7559)	55.7 (2.1929)	1.8 (.0709)	*2		42.6 (1.6772)	28 (1.1024)	–	MD720753	#5
70 (2.7559)	55.7 (2.1929)	2.2 (.0866)	*3		54 (2.1260)	38.7 (1.5236)	1.6 (.0630)	MD704936	#6
70 (2.7559)	55.7 (2.1929)	2.6 (.1024)	*4		52 (2.0472)	36.4 (1.4331)	–	MD720010	#7
70 (2.7559)	55.7 (2.1929)	1.8 (.0709)	MD729336 (W4A32) MD731212 (W4A33)	#2	41 (1.6142)	28 (1.1024)	1.2 (.0472)	MD728763 (W4A32)	#8
48.9 (1.9252)	37 (1.4567)	1.0 (.0394)	MD997854 (incl *1)	#3	45 (1.7717)	28 (1.1024)	–	MD735062 (W4A33)	
48.9 (1.9252)	37 (1.4567)	1.2 (.0472)	MD997847 (incl *1)		39 (1.5354)	28 (1.1024)	–	MD728764 (W4A32)	#9
48.9 (1.9252)	37 (1.4567)	1.4 (.0551)	MD997848 (incl *2)		46 (1.8110)	31 (1.2205)	0.8 (.0315)	MD735063 (W4A33)	
48.9 (1.9252)	37 (1.4567)	1.6 (.0630)	MD997849 (incl *2)		52 (2.0472)	36.4 (1.4331)	–	MD720010	#10
48.9 (1.9252)	37 (1.4567)	1.8 (.0709)	MD997850 (incl *3)		58 (2.2835)	44 (1.7323)	–	MD724206	#11
48.9 (1.9252)	37 (1.4567)	2.0 (.0787)	MD997851 (incl *3)						
48.9 (1.9252)	37 (1.4567)	2.2 (.0866)	MD997852 (incl *4)						
48.9 (1.9252)	37 (1.4567)	2.4 (.0945)	MD997853 (incl *4)						

TSB Revision

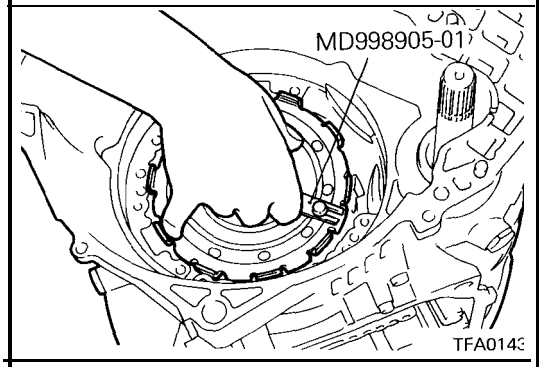


31. Assemble the pressure plate used in disassembly and install the return spring.

Caution
Position the return spring correctly when installing.

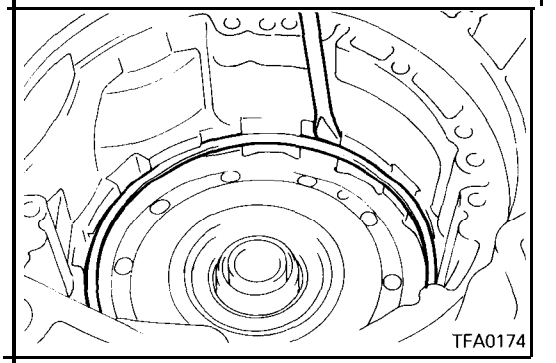


32. Apply a coating of petrolatum jelly to the wave spring and attach it to the center support.

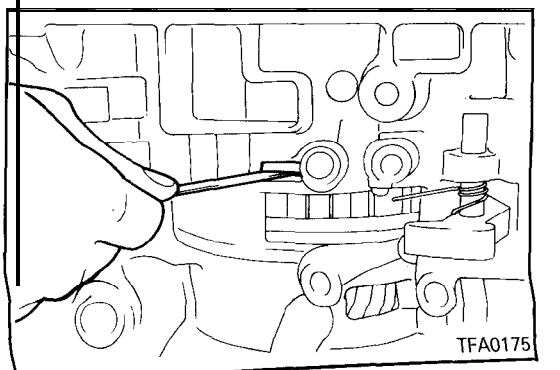


33. Mount the special tool on the center support, install 2 new O-rings and push into the transaxle case.

Caution
1. **Coat the O-rings with automatic transmission fluid and align the oil holes.**
2. **Do not move the wave spring out of position when installing.**

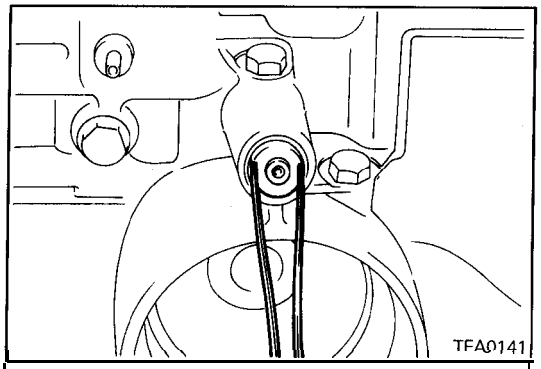


34. Install the snap ring.

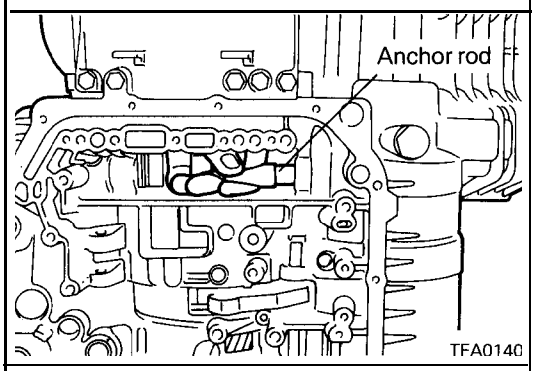


35. Use a thickness gauge and measure the end play of the low/reverse brake. Adjust to the standard value by selecting the proper pressure plate.

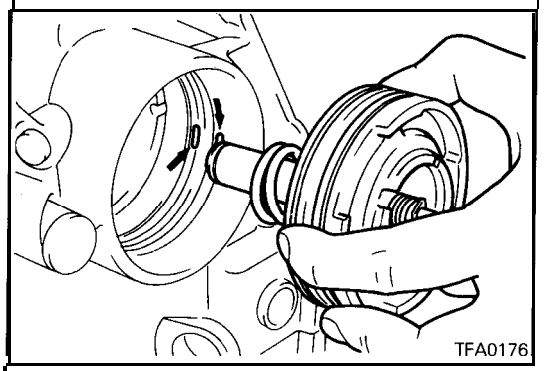
Standard value: 1.0 – 1.2 mm (.039 – .047 in.)



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

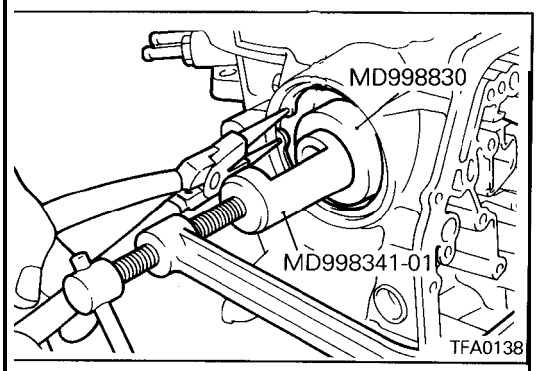


37. Install the anchor rod.

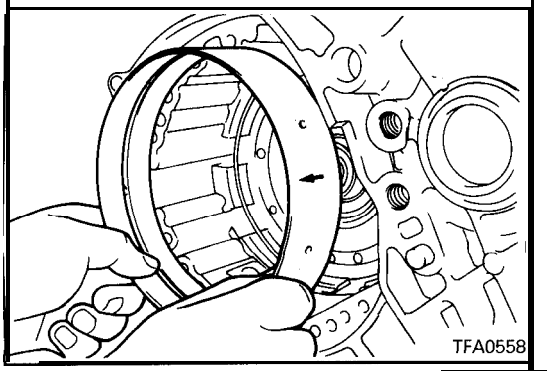


38. Install the kickdown servo spring, piston and sleeve.

Caution
The seal ring alignment hole of the kickdown servo piston must not overlap the oil filler port (indicated by the arrow in the diagram).

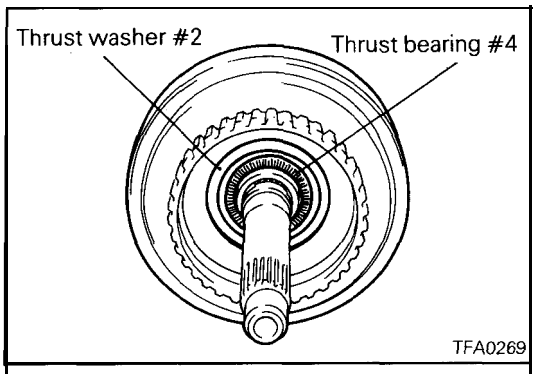


39. Use the special tool to push in the kickdown servo piston and sleeve, and then install a snap ring.

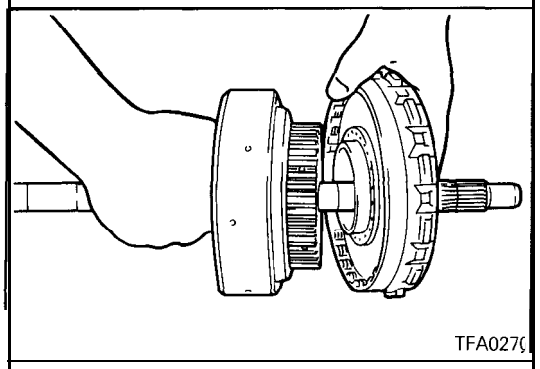


40. Install the kickdown band.

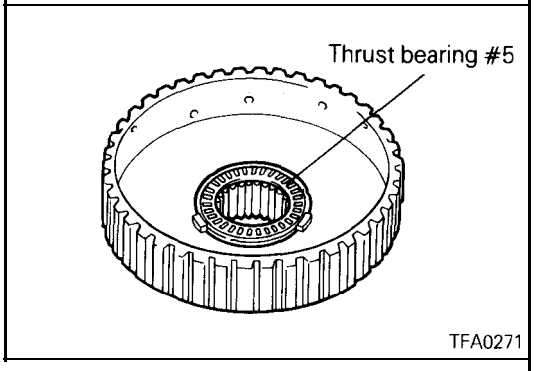
Caution
Install so the arrow mark is facing toward the front.



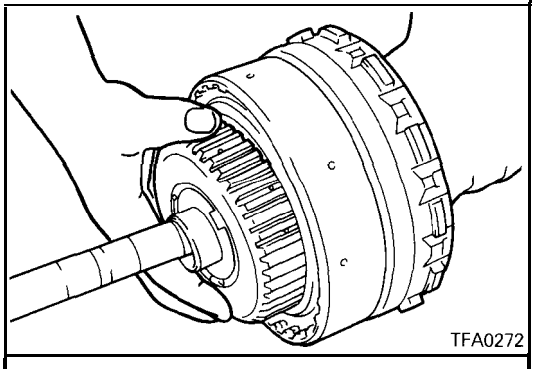
41. Install thrust bearing #4 and thrust washer #2 on the rear clutch.



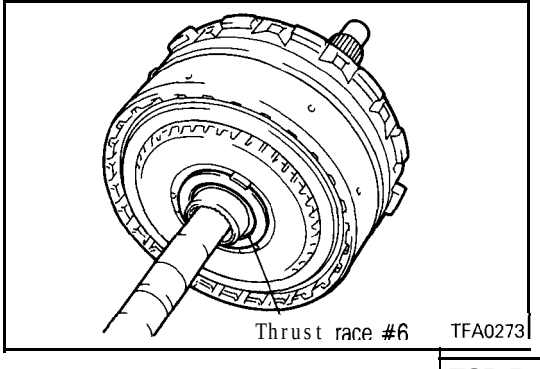
42. Combine the rear clutch assembly and the front clutch assembly.



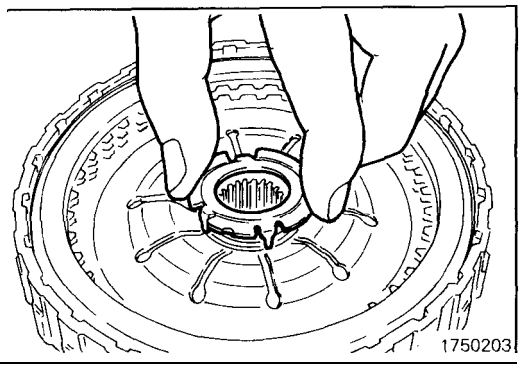
43. Install thrust bearing #5 on the rear clutch hub.



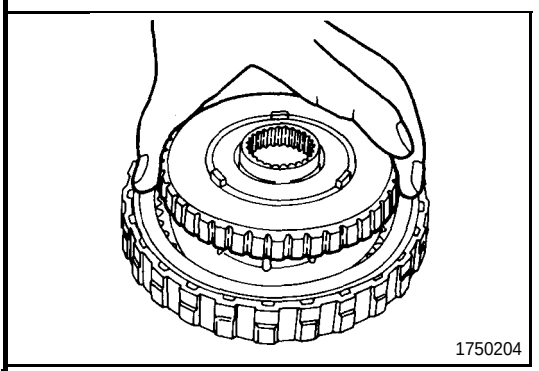
44. Install the rear clutch hub on the rear clutch.



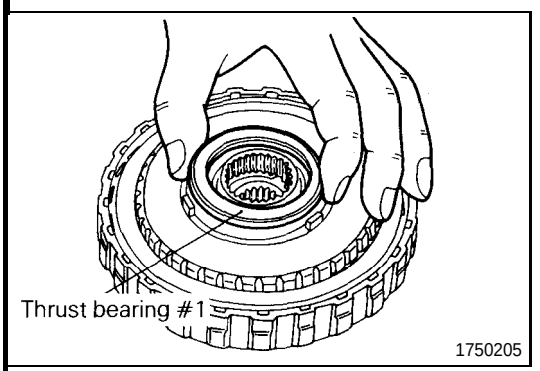
45. Install thrust race #6 on the end of the rear clutch hub.



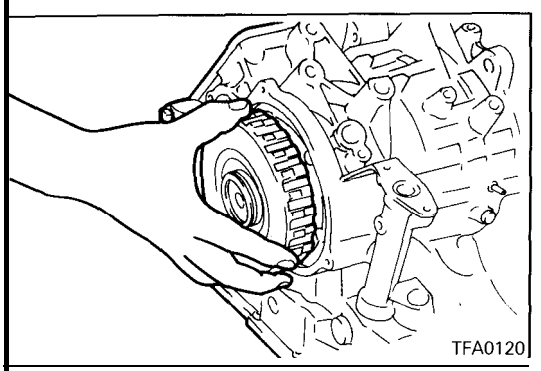
56. Fit the thrust washer on the return spring of the end clutch.



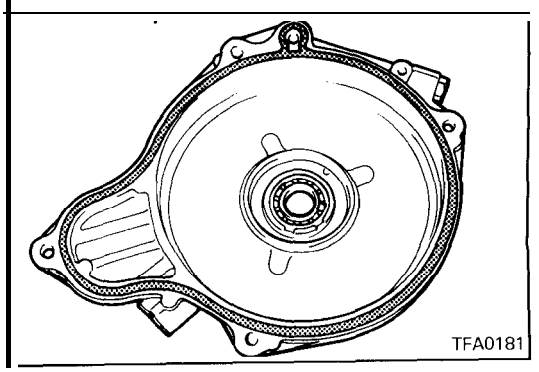
57. Install the end clutch hub on the end clutch assembly.



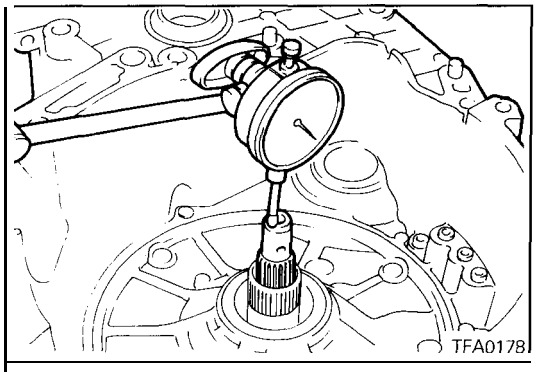
58. Adhere thrust bearing #1 to the end of the clutch hub with petrolatum.



59. Install end clutch assembly.

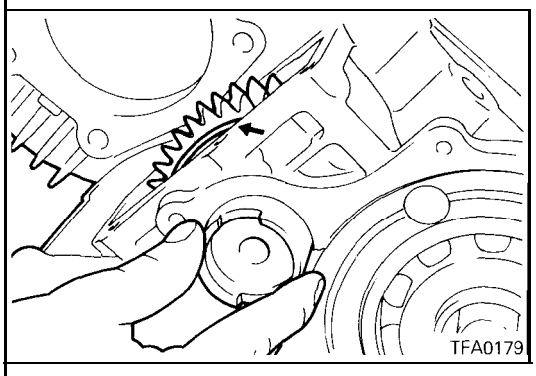


60. Attach a new O-ring to the end clutch cover.



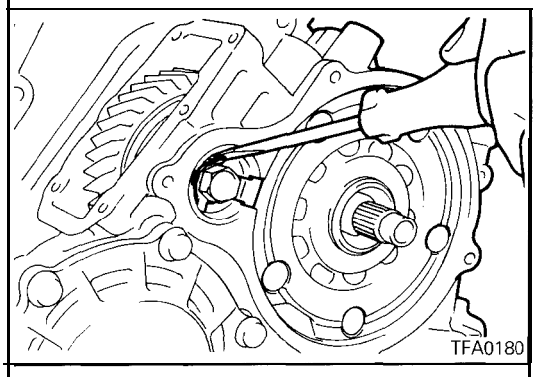
51. Measure the end play of the input shaft. If not the standard value, replace thrust race #3 and thrust washer #1 and adjust to the standard value.

Standard value: 0.3 – 1.0 mm (.012 – .039 in.)



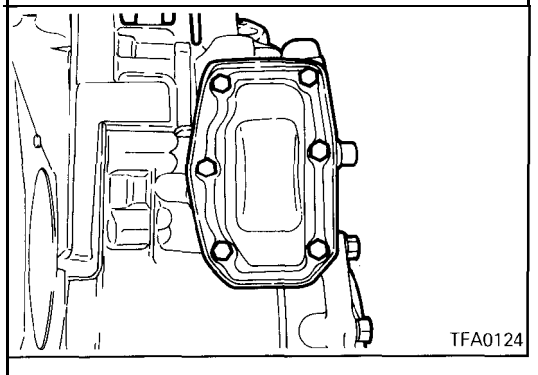
52. Install the spacer, idler gear and bearing and then insert the idler shaft.

Caution
Assemble so that the identification groove on the idler gear faces the rear.



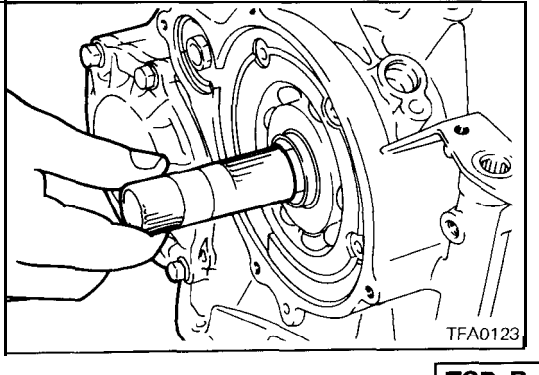
53. Tighten the idler shaft lock bolt together with the new lock plat to the specified torque. Bend the three fingers of the lock plate to prevent turning.

Idler shaft lock bolt: 38 Nm (28 ft.lbs.)

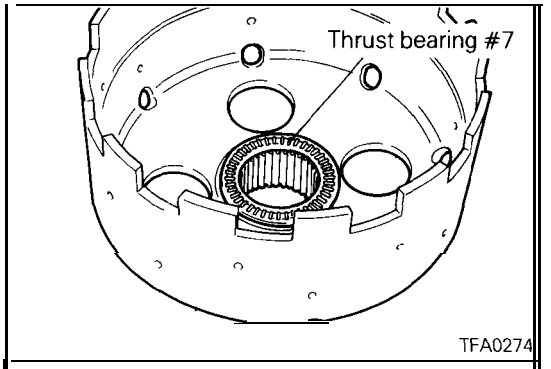


54. Install the idler gear cover and a new gasket.

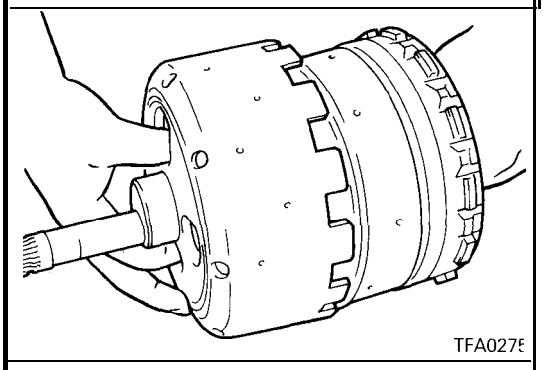
Idler gear cover mounting bolt: 11 Nm (8 ft.lbs.)



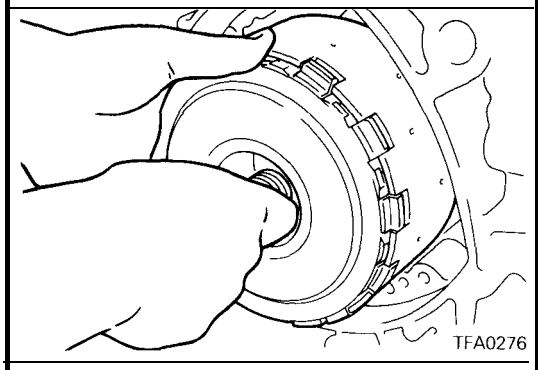
55. Insert the end clutch shaft from the end with the long spline.



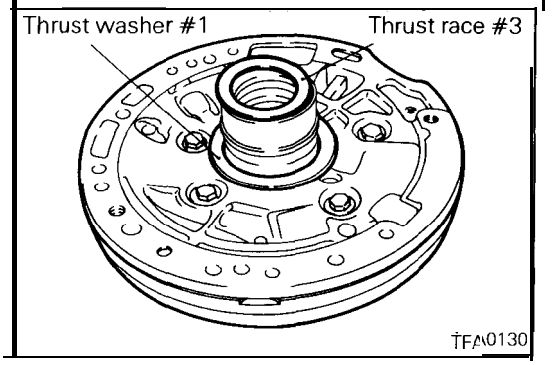
46. Install thrust bearing #7 in the kickdown drum.



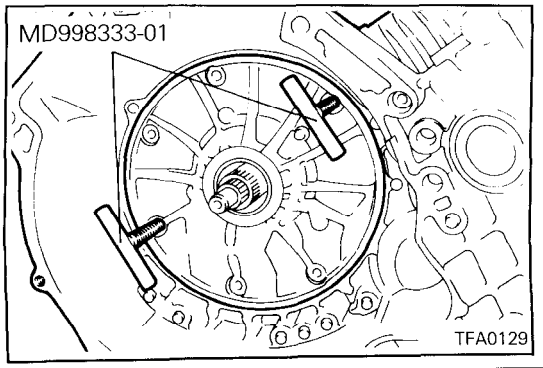
47. Install the clutch assembly in the kickdown drum.



48. Install the clutch assembly and kickdown drum into the transaxle case at the same time.



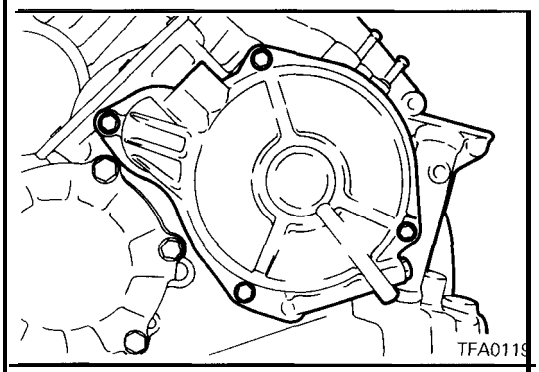
49. Adhere thrust race #3 and thrust washer #1 to the back of the oil pump with petrolatum.



50. Use the special tool to install a new oil pump gasket and oil pump assembly.

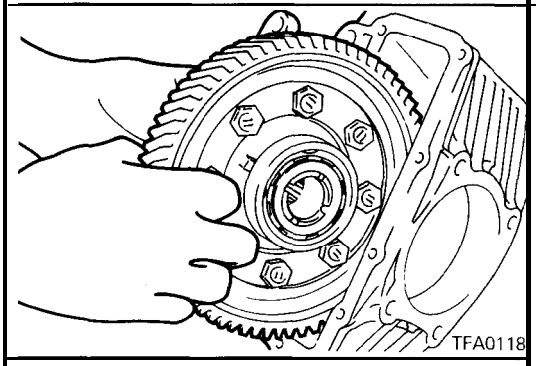
Oil pump assembly mounting bolts: 21 Nm (16 ft.lbs.)

TSB Revision

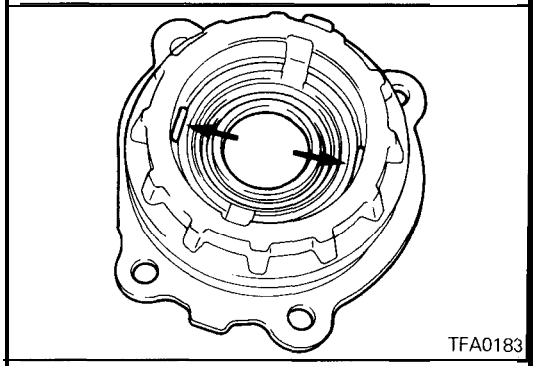


61. Install the end clutch cover and tighten the bolts to the specified torque.

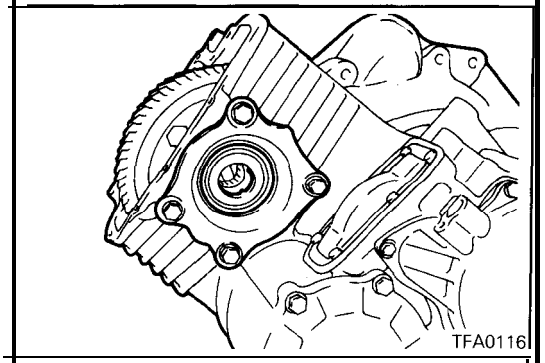
End clutch cover mounting bolts: 11 Nm (8 ft.lbs.)



62. Install the differential assembly.

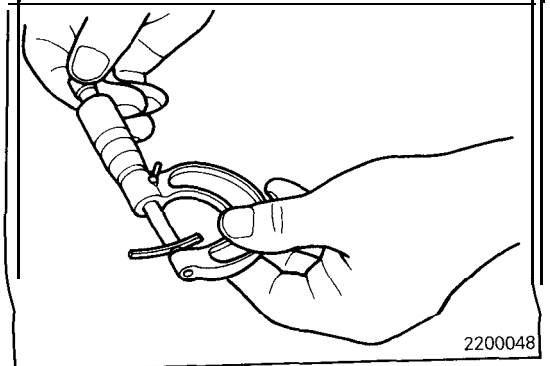


63. Place solder with a length of approximately 10 mm (.39 in.) and diameter of 1.6 mm (.06 in.) on the differential rear bearing retainer at the position shown in the diagram and install the outer race.



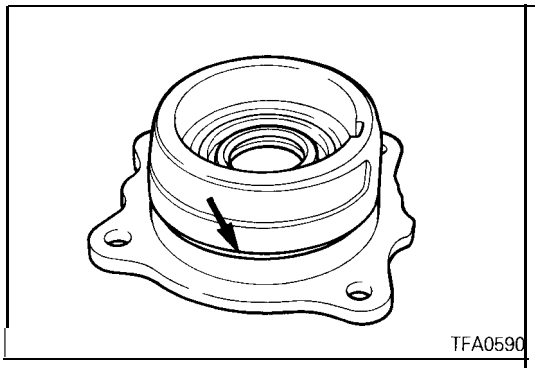
64. Install the differential rear bearing retainer and tighten the bolts to the specified torque.
65. Loosen the bolts, remove the differential rear bearing retainer and remove the solder. If the solder is not crushed, repeat steps (51) – (53). using the solder with the diameter of 3 mm.

Differential rear bearing retainer mounting bolts: 35 Nm (26 ft.lbs.)



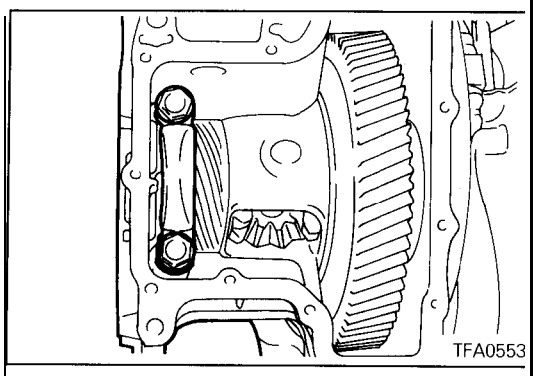
66. Measure the thickness of the crushed solder with a micrometer and adjust by selecting a spacer with a thickness that will provide the standard value for the end play and preload.

Standard value: 0.075 – 0.135 mm (.003 – .0053 in.)



67. Install a new O-ring on the differential rear bearing retainer, coat the O-ring with automatic transmission fluid; then' install in the transaxle case and tighten the mounting bolts to the specified torque.

Differential rear bearing retainer mounting bolts:
35 **Nm (26 ft.lbs.)**

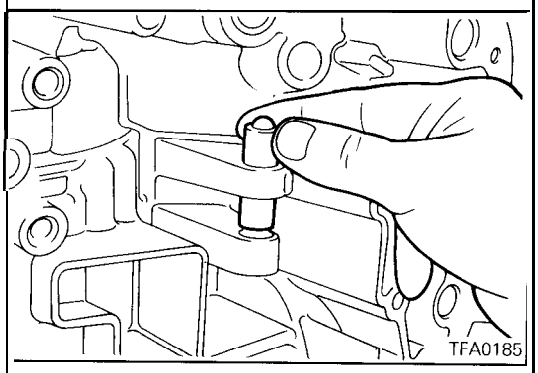


68. Install the front bearing cap and tighten the bolts to the specified torque.

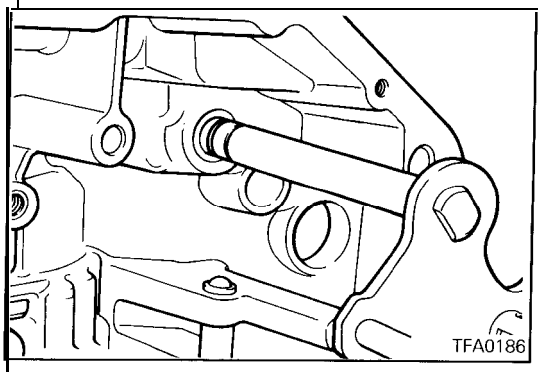
Differential front bearing cap mounting bolts:
70 **Nm (51 ft.lbs.)**

69. Install the differential cover and a new gasket.

Differential cover mounting volts: 11 Nm (8 ft.lbs.)

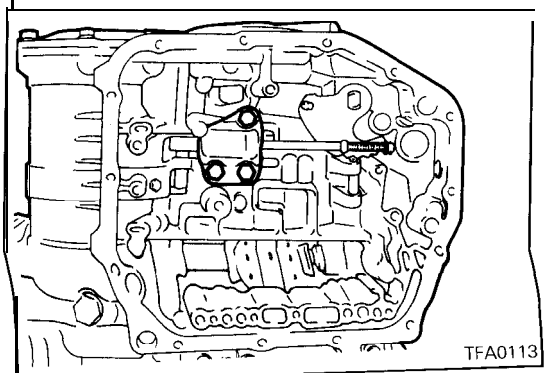


70. Install the detent assembly.



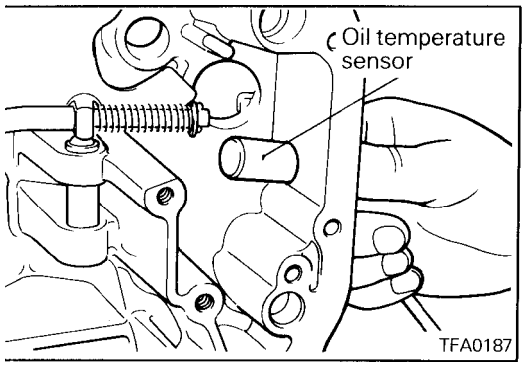
71. Install a new O-ring on the manual control shaft assembly, coat the O-ring with automatic transmission fluid and then insert into the transaxle case.
72. Align the groove in the manual control shaft and the set screw hole; then install the set screw.

Manual **control** shaft set screw: 9 Nm (7 **ft.lbs.)**

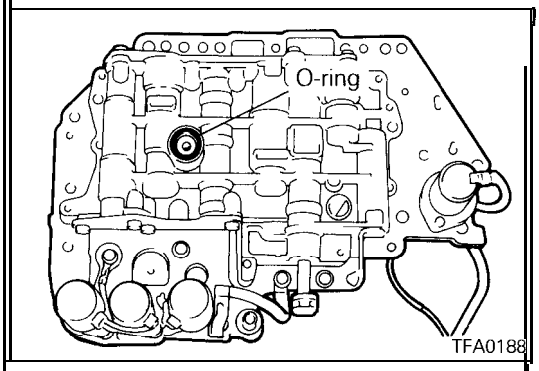


73. Install the parking roller support.

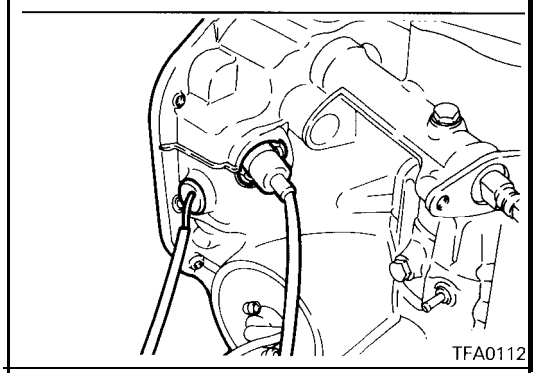
Parking roller support mounting bolts:
24 **Nm (18 ft.lbs.)**



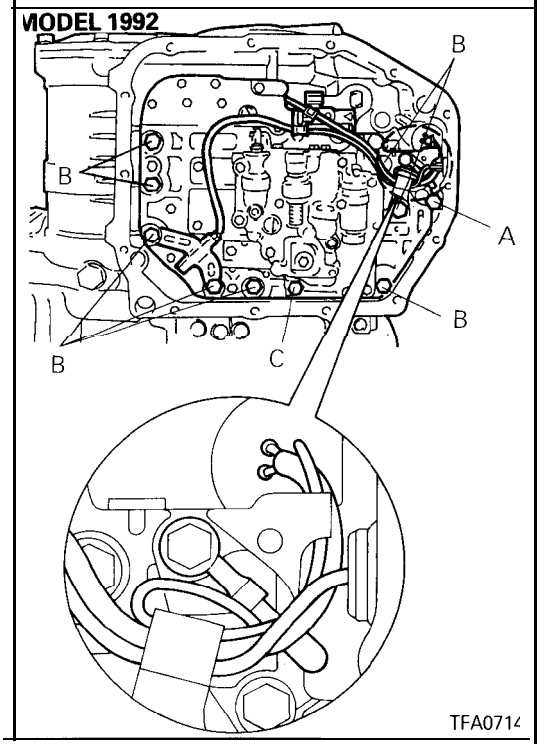
74. Insert the oil temperature sensor into the case.



75. Install an O-ring in the O-ring groove at the top of the valve body assembly.



76. Replace the solenoid valve harness grommet O-ring with a new one.
77. Pass the solenoid valve connector through the transaxle case hole from the inside.
78. Push the solenoid valve harness grommet into the case hole.

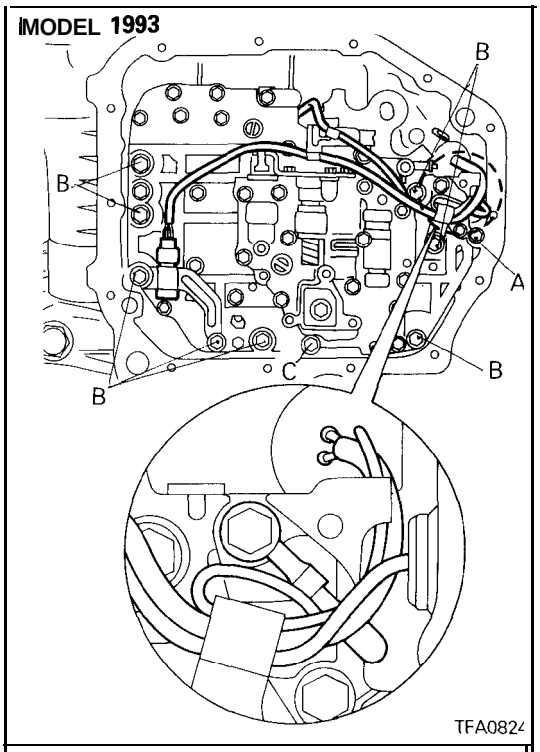


79. Insert the knock pin of the valve body into the case, keeping the detent plate pin in the manual valve groove. Temporarily install the valve body, install the oil temperature sensor and holder; then tighten the mounting bolts to the specified torque.

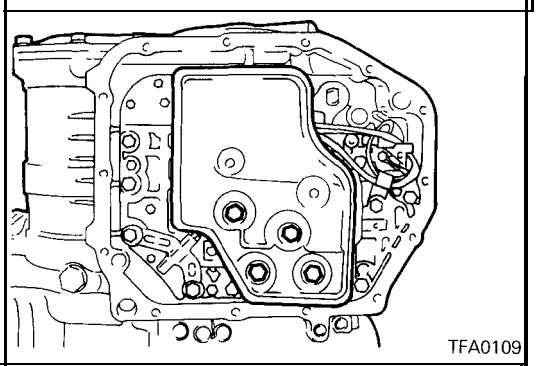
A bolt: 18 mm (.709 in.)
B bolt: 25 mm (.984 in.)
C bolt: 40 mm (1.575 in.)

Valve body assembly mounting bolts: 11 Nm (8 ft.lbs.)

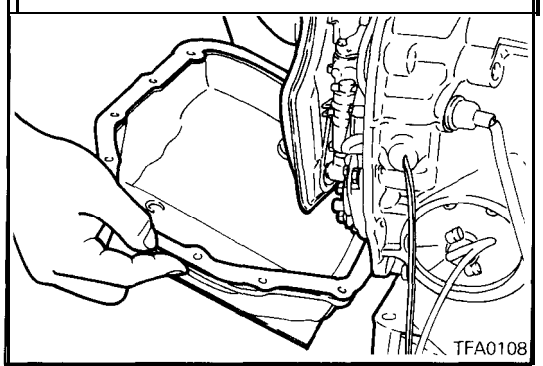
Caution
Firmly fasten the solenoid valve and oil temperature sensor harness at the position shown in the diagram. Especially, be sure to route the pressure control solenoid valve (PCSV) harness, which is separated from other harness, as shown in the diagram and fasten the harness with a clamp. Failure to fasten it may result in contact with the detent plate or parking rod.

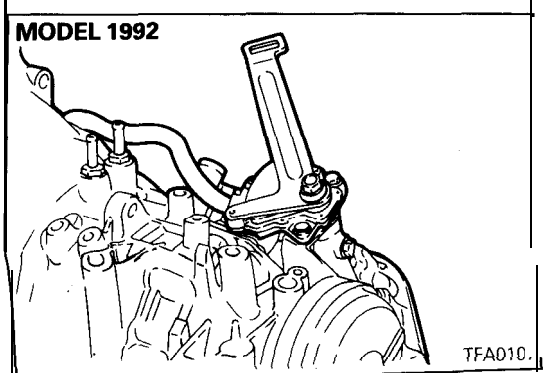


80. Install the oil screen.
Oil filter mounting bolts: 6 Nm (5 ft.lbs.)

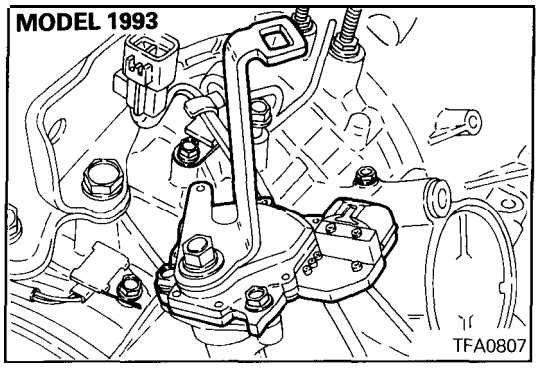


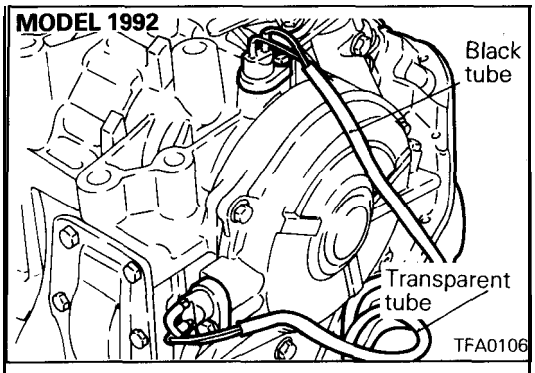
81. Install the magnets in the oil pan and install the oil pan.
Oil pan mounting bolts: 11 Nm (8 ft.lbs.)

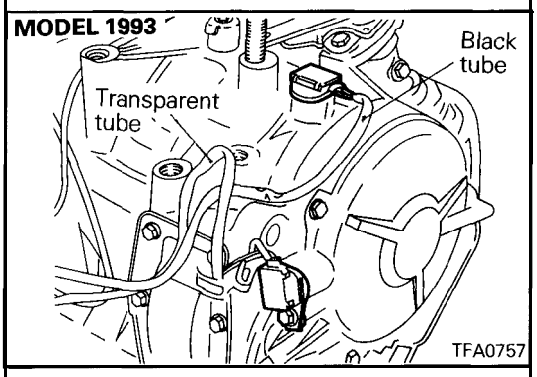




82. Install park/neutral position switch (PNP switch) and manual control lever.
Park/neutral position switch mounting bolts: 11 Nm (8 ft.lbs.)
Manual control lever mounting bolt: 19 Nm (14 ft.lbs.)
83. Install the speedometer gear assembly.
Speedometer gear locking plate mounting bolt: 5 Nm (4 ft.lbs.)







84. Install the pulse generator A and B.

Pulse generator mounting bolts: 11 Nm (8 ft.lbs.)

Caution

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

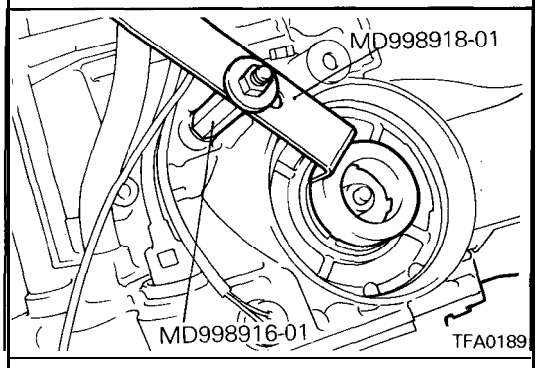
85. Install the oil filler tube and insert the level gauge.

Oil filler tube mounting bolt: 24 Nm (18 ft.lbs.)

86. Install the brackets.

Transaxle mounting bracket bolts: 70 Nm (51 ft.lbs.)

87. Adjust the kickdown servo.

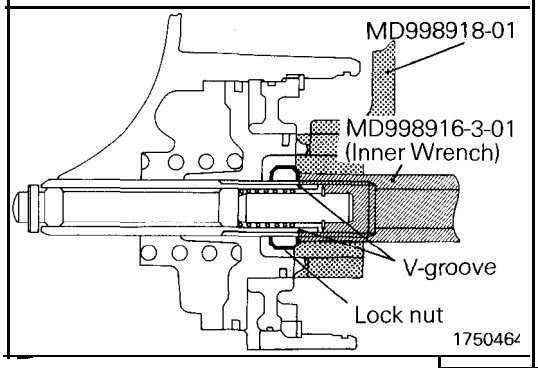


88. Adjust the kickdown servo by the following procedure:

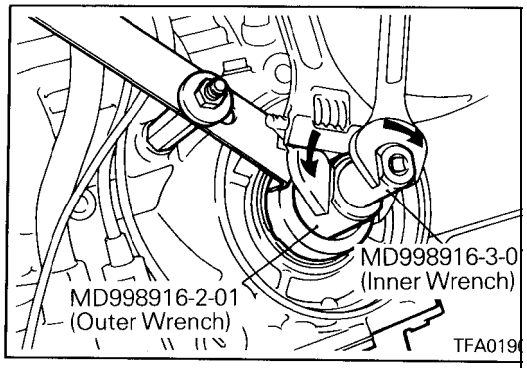
(a) Fit the claw of the special tool in the notch of the piston to prevent the piston from turning, and use adapter to secure it as illustrated at left.

Caution

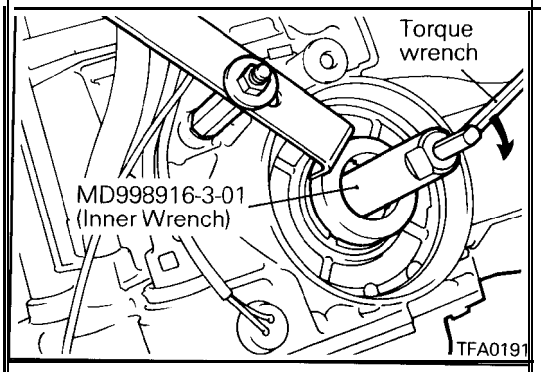
1. Do not push in the piston **with the special tool.**
2. **When the adapter is installed to the transaxle case, do not apply excessive torque but tighten with a hand.**



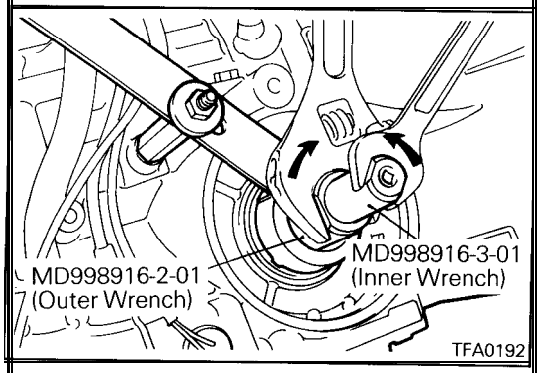
(b) Loosen the lock nut until it is about to reach the V groove in the adjusting rod. Tighten the special tool (inner) until it touches the lock nut.



(c) Fit the special tool (outer) to the lock nut. Turn the outer cylinder counterclockwise and the inner cylinder clockwise to lock the lock nut and the special tool (inner).

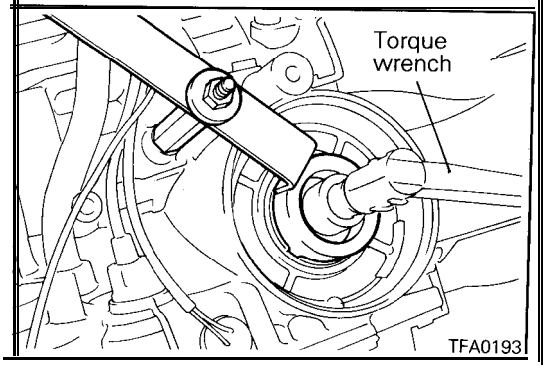


(d) Fit torque wrench to the special tool (inner) to tighten it to a torque of 10 Nm (7.2 ft.lbs.) and loosen. Repeat this sequence two times before tightening the special tool (inner) to 5 Nm (3.6 ft.lbs.) torque. Then back off the special tool (outer) 2 to 2¼ turns.



(e) Fit the special tool (outer) to the lock nut.
Turn the outer cylinder clockwise and the inner cylinder counterclockwise to unlock the lock nut and the special tool (inner).

Caution
When unlocking is carried out, apply equal force to both special tools to loosen.

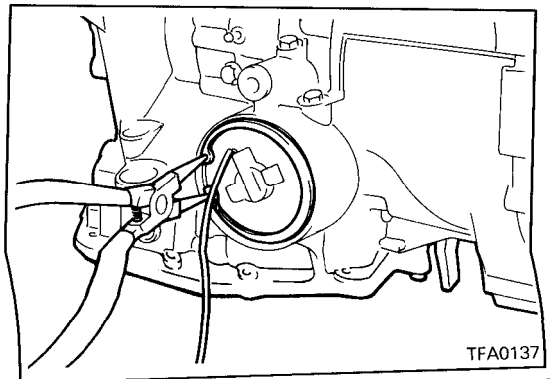


(f) Tighten the lock nut with a hand until it touches the piston.
Then, use torque wrench to tighten the lock nut to specified torque.

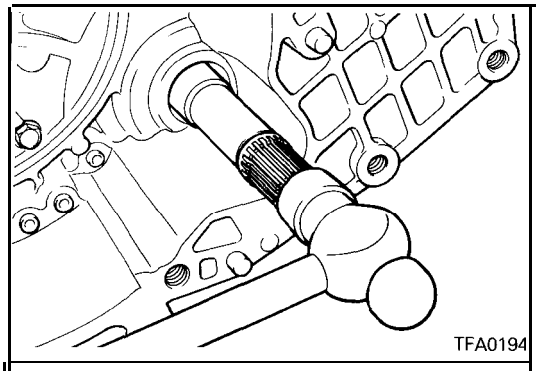
Lock nut: 29 Nm (21 ft.lbs.)

Caution
The lock nut may turn with the adjusting rod if **tightened quickly with socket wrench or torque wrench.**

(g) Remove the special tool for securing the piston. Install the plug to the Low/Reverse pressure outlet and tighten to specified torque.

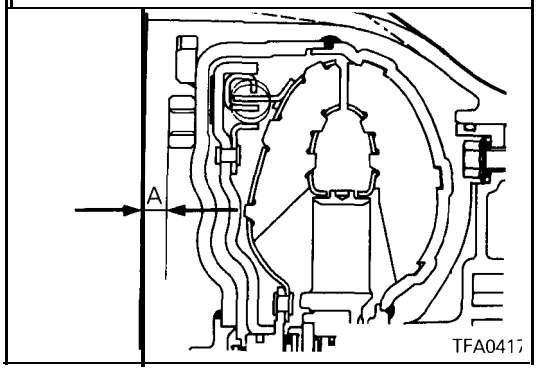


89. Install the kickdown servo switch and fasten with a snap ring.



90. Insert the center shaft and hit it with a plastic hammer or similar instrument to install it securely.

NOTE
Apply ATF to the oil seal lip and do not scratch it.



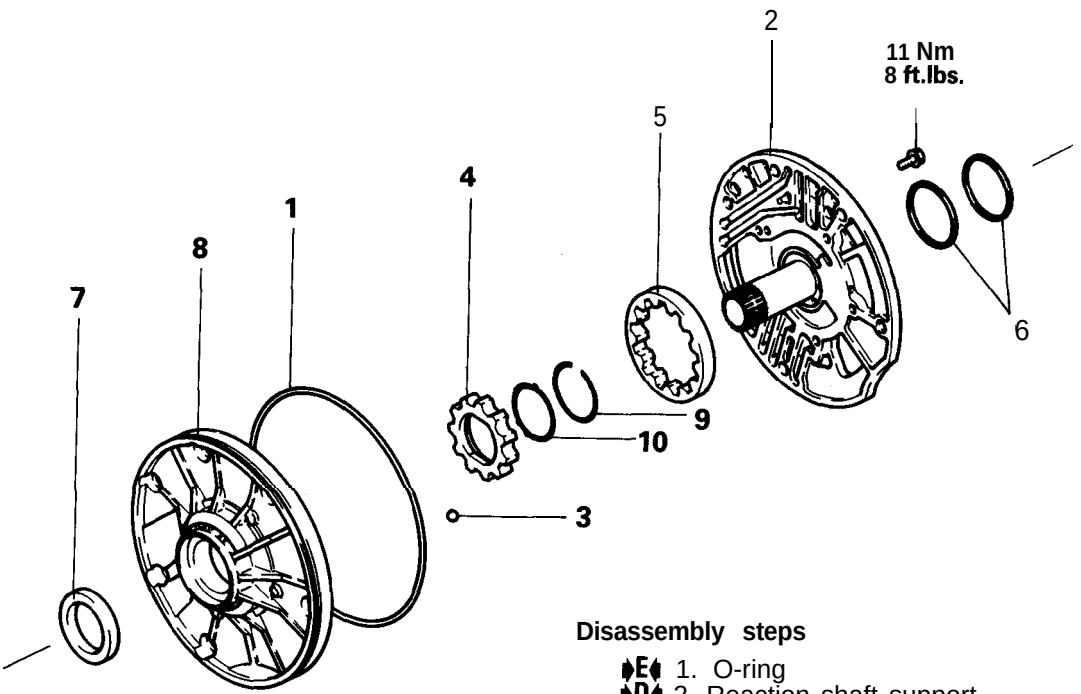
91. Coat the oil pump drive hub with automatic transmission fluid and install the torque converter. Push in firmly so that dimension A in the diagram is the standard value.

Standard value:

W4A33	**approx. 16.3 mm (.642 in.)**
W4A32	**approx. 12.4 mm (.488 in.)**

OIL PUMP

DISASSEMBLY AND REASSEMBLY



Disassembly steps

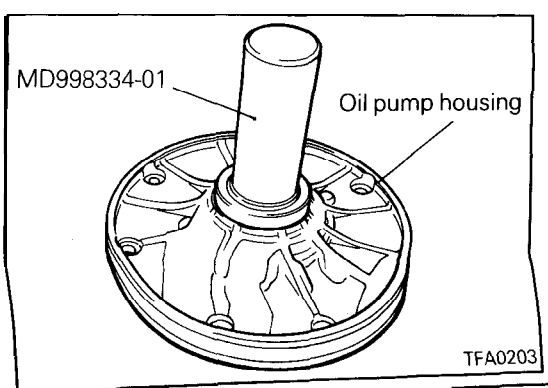
- ◆E◆ 1. O-ring
- ◆D◆ 2. Reaction shaft support
- ◆C◆ 3. Steel ball
- ◇A◇ ◆B◆ 4. Drivegear
- ◇A◇ ◆B◆ 5. Driven gear
- 6. Seal ring
- ◆A◆ 7. Oil seal
- 8. Oil pump housing
- 9. Snap ring (with torque converter clutch only)
- 10. Oil seal (with torque converter clutch only)

TFA0245

DISASSEMBLY SERVICE POINT

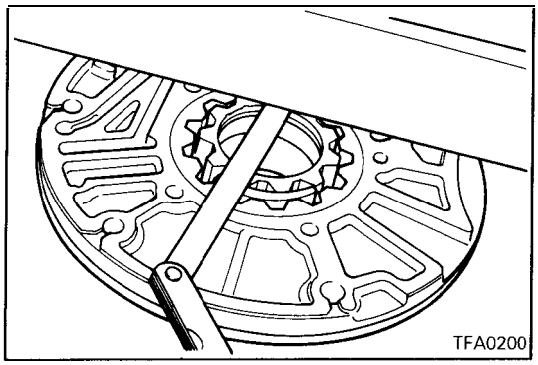
◇A◇ DRIVE GEAR / DRIVEN GEAR REMOVAL

(1) Make reassembly alignment marks on the drive and driven gears.



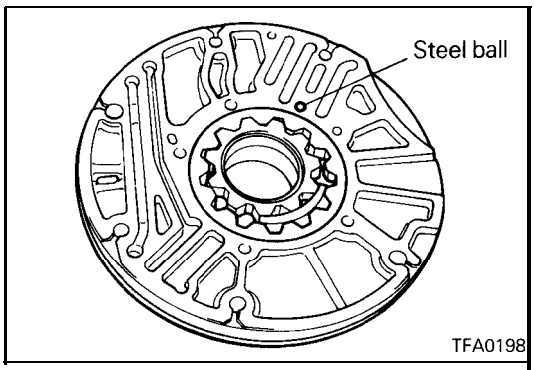
REASSEMBLY SERVICE POINTS

◆A◆ OIL SEAL INSTALLATION

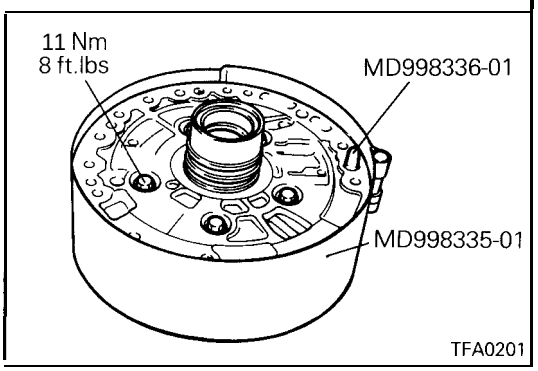


◆B◆ DRIVEN GEAR / DRIVE GEAR SIDE CLEARANCE MEASUREMENT

Standard value: 0.03 – 0.05 mm (.001 – .002 in.)



◆C◆ STEEL BALL LOCATION



◆D◆ REACTION SHAFT SUPPORT INSTALLATION

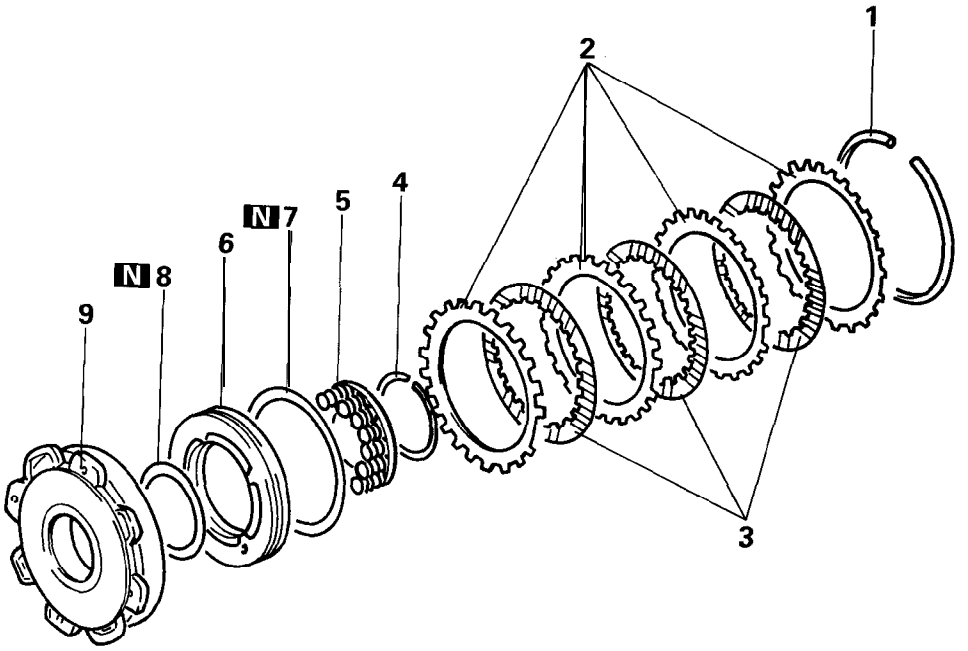
(1) Assemble the reaction shaft support and the pump housing, and tighten the five bolts by fingers.
(2) Insert the special tool, Guide Pin MD998336-01, in the oil pump bolt hole and tighten the peripheries of the support and housing with the special tool, Band MD998335-01, to locate the support and housing.
(3) Tighten the five bolts to the specified torque.
(4) Make sure that the oil pump gear turns freely.

◆E◆ O-RING INSTALLATION

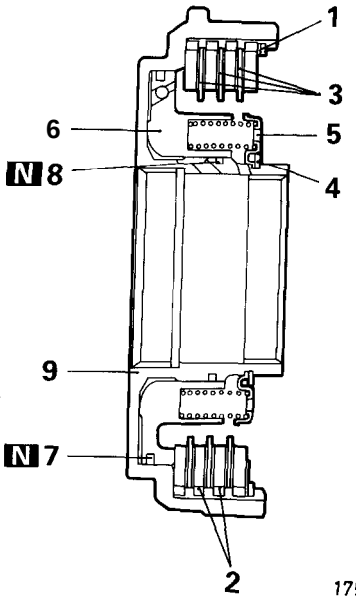
(1) Install a new O-ring in the groove of the pump housing and apply petrolatum jelly to the O-ring.

FRONT CLUTCH

DISASSEMBLY AND REASSEMBLY – W4A32



TFA0029

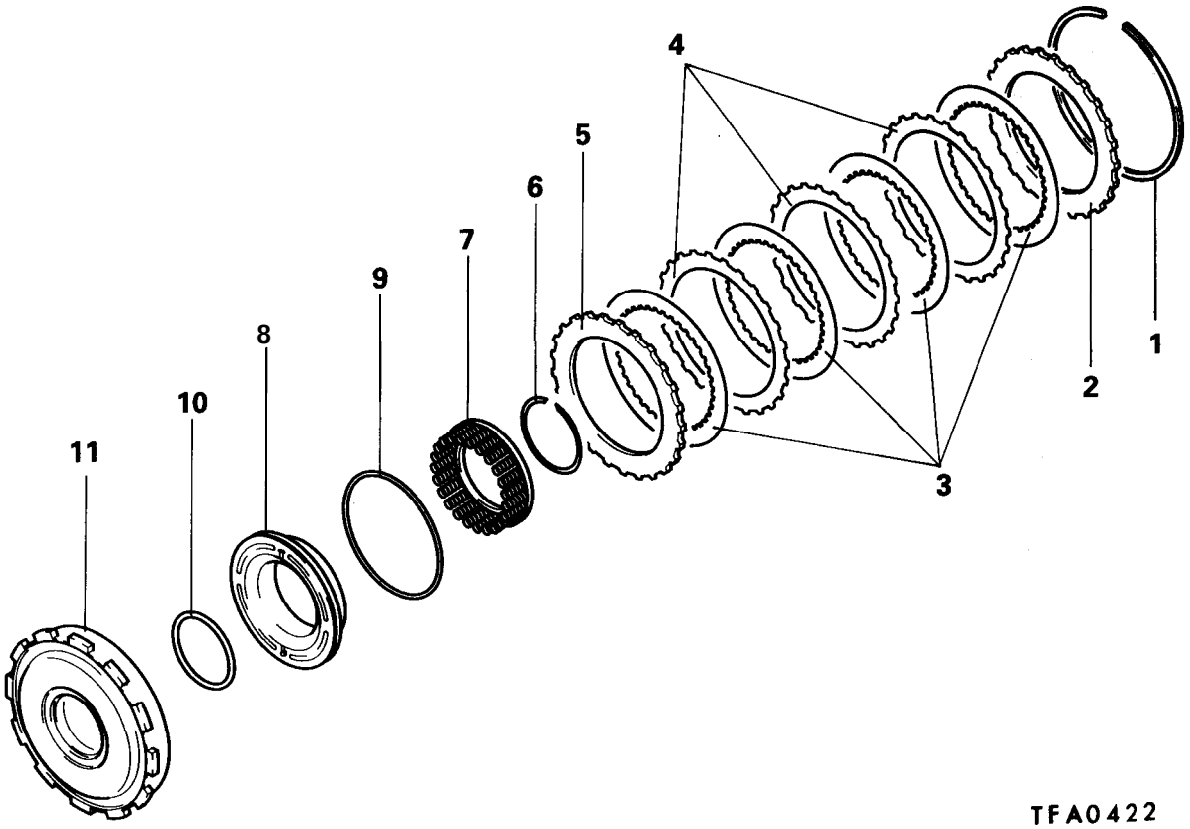


1750213

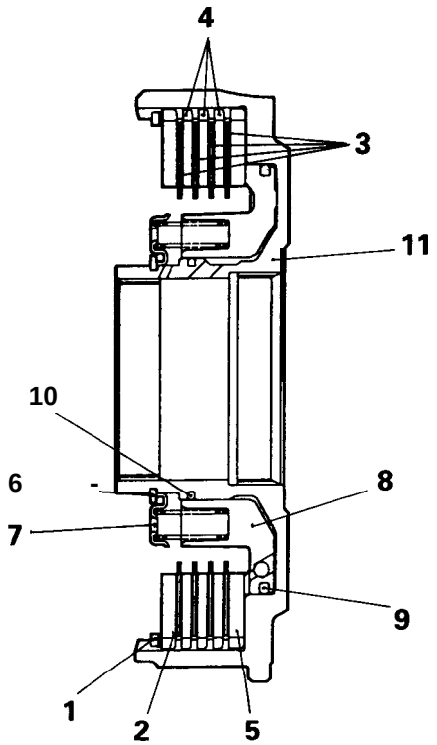
Disassembly steps

- ◆C◆ 1. Snap ring
- ◆B◆ 2. Clutch reaction plate
- 3. Clutch disc
- ◇A◇ ◆A◆ 4. Snap ring
- 5. Return spring
- 6. Front clutch piston
- 7. D-ring
- 8. D-ring
- 9. Front clutch retainer

DISASSEMBLY AND REASSEMBLY – F4A33, W4A33



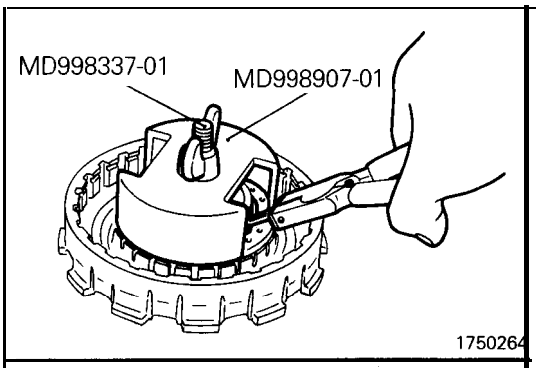
TFA0422



TFA0423

Disassembly steps

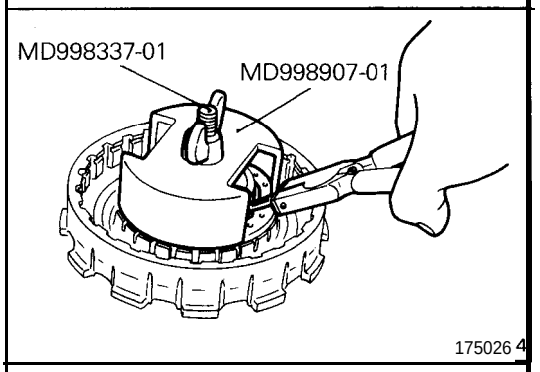
- ◆C◆ 1. Snap ring
- ◆B◆ 2. Clutch reaction plate
- 3. Clutch disc
- ◆B◆ 4. Clutch plate
- ◆B◆ 5. Clutch pressure plate
- ◇A◇ ◆A◆ 6. Snap ring
- 7. Return spring
- 8. Front clutch piston
- 9. D-ring
- 10. D-ring
- 11. Front clutch retainer



DISASSEMBLY SERVICE POINT

⟨A⟩ SNAP RING REMOVAL

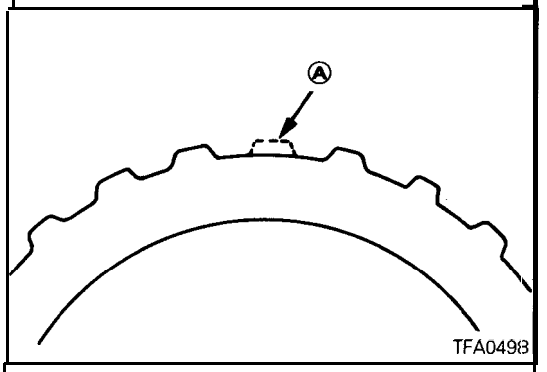
(1) Compress the return spring with the special tool.
(2) Remove the snap ring.



REASSEMBLY SERVICE POINTS

▶A◀ SNAP RING INSTALLATION

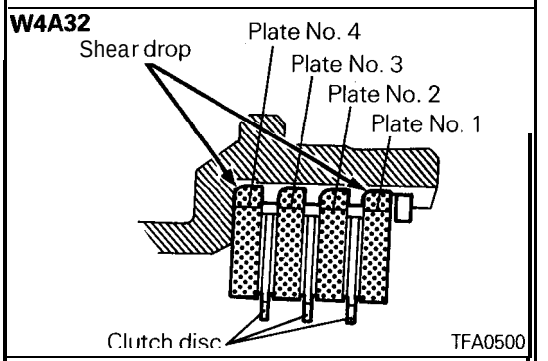
(1) Compress the return spring with the special tool.
(2) install the snap ring.



▶B◀ CLUTCH PLATE INSTALLATION

(1) Install the clutch plate with their missing tooth portions (Ⓐ in the illustration) in alignment.

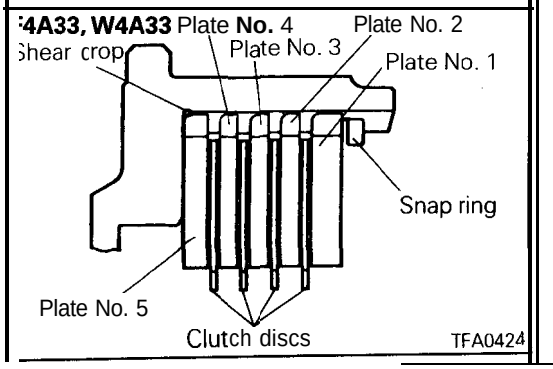
NOTE
This design is to facilitate escape of automatic transmission fluid and improve the cooling efficiency of the plate and disc.



(2) Install the innermost plate with their shear droops directed as shown in the illustration.

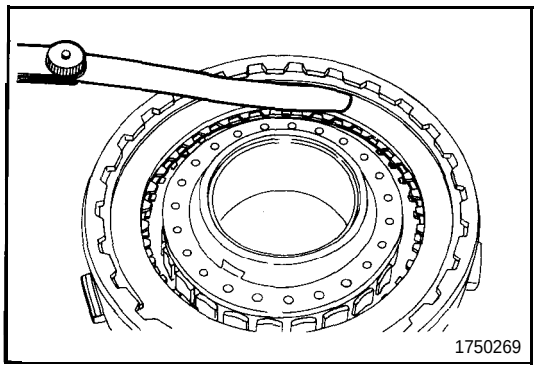
W4A32

Plate No.	Thickness mm (in.)	Identification mark
1	5.0 (.197)	A
2	3.1 (.122)	B
3	3.1 (.122)	B
4	3.7 (.146)	None



F4A33, W4A33

Plate No.	Thickness mm (in.)
1	5.0 (.197)
2	2.2 (.087)
3	2.2 (.087)
4	2.2 (.087)
5	3.8 (.150)



◆C◆ SNAP RING SELECTION

(1) Check clearance between the snap ring and clutch reaction plate. To check the clearance, hold entire circumference of the clutch reaction plate down with 50 N (11 lbs.) force. If clearance is out of standard value, select a snap ring to obtain the standard value.

Standard value:

W4A32 0.7 – **0.9 mm (.028 – .035 in.)**
F4A33, W4A33 0.8 – **1.0 mm (.031 – .039 in.)**

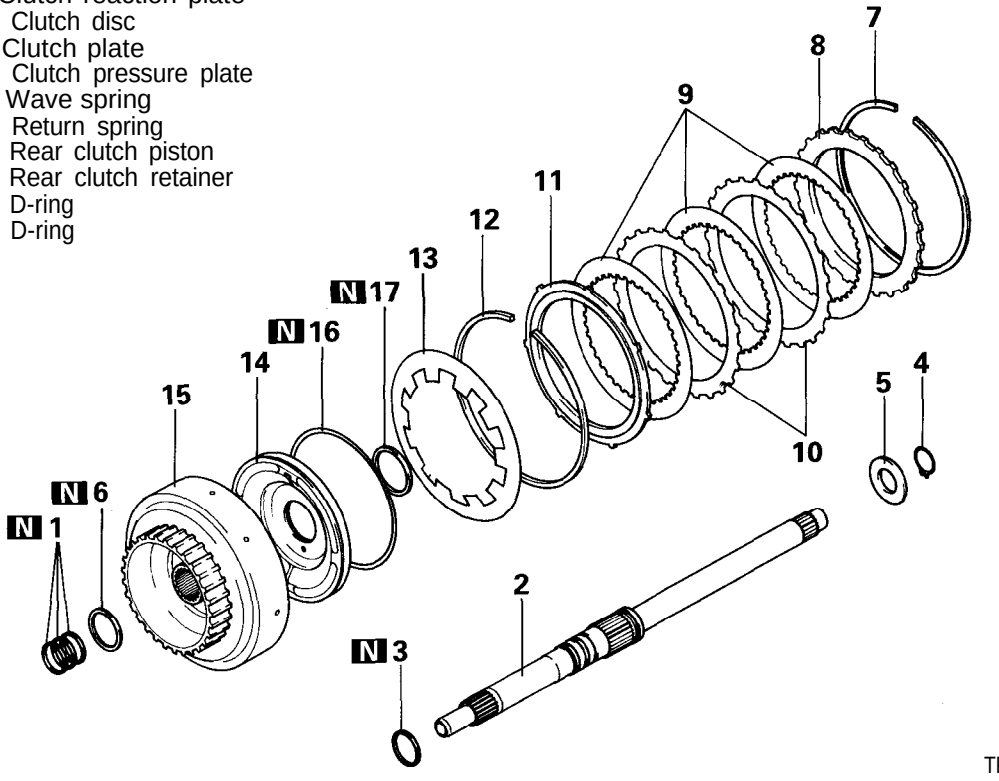
NOTE
Position the gap of the snap ring approx. 180” away from that of the return spring mounting snap ring.

REAR CLUTCH

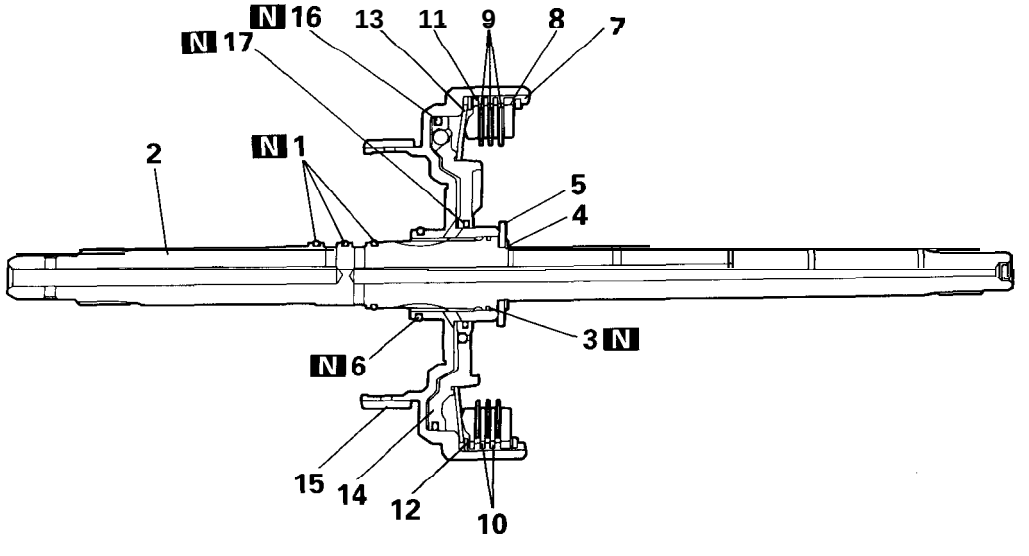
DISASSEMBLY AND REASSEMBLY – W4A32

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◇ ◆A◆ 12. Wave spring
13. Return spring
14. Rear clutch piston
15. Rear clutch retainer
16. D-ring
17. D-ring

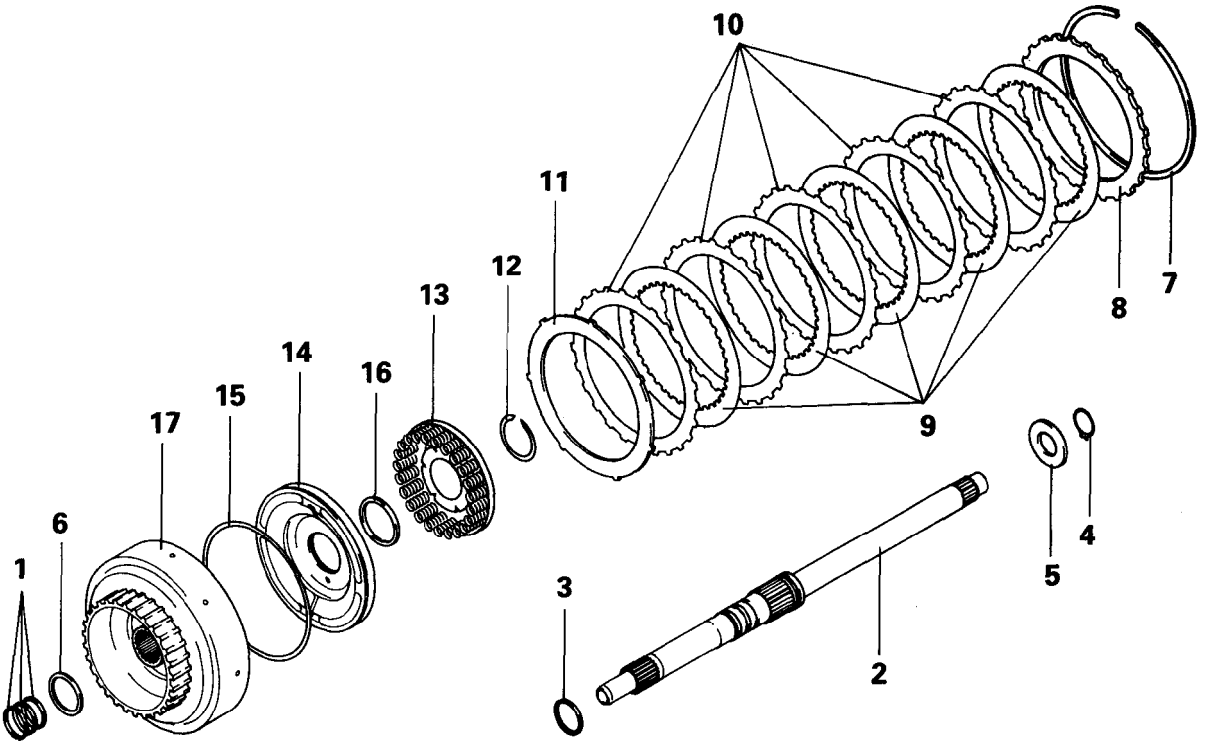


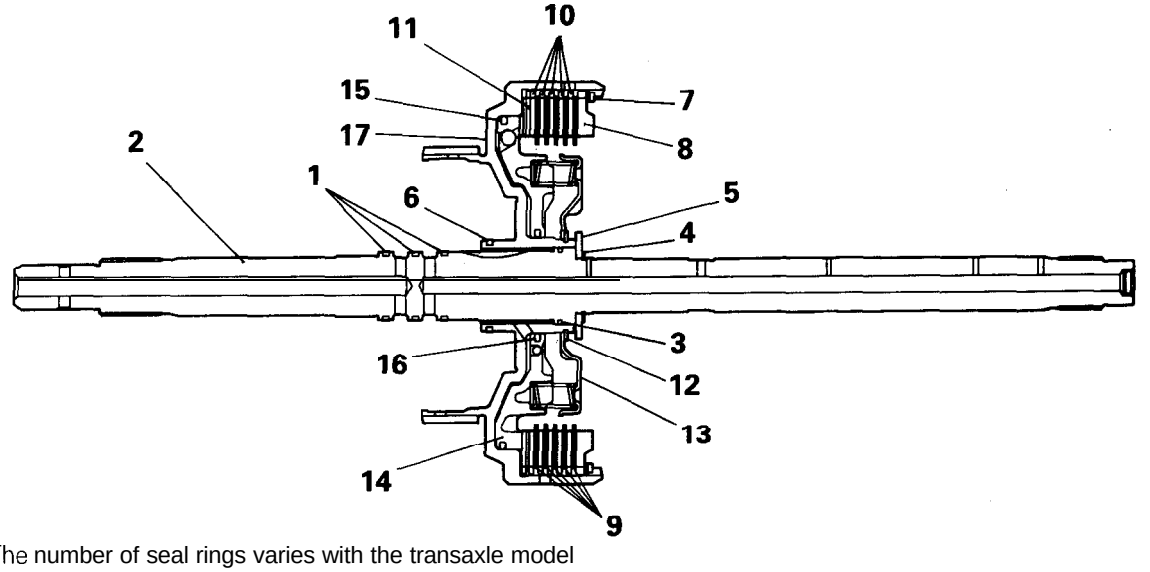
TFAO 621



1750215

DISASSEMBLY AND REASSEMBLY – F4A33, W4A33





TF A0418

*: The number of seal rings varies with the transaxle model

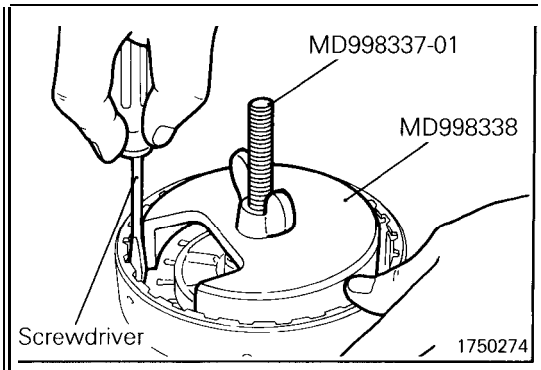
Models with torque converter clutch	3
Models without torque converter clutch	1

TF A0490

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
11. Wave spring
◇B◇ ◆B◆ 12. Snap ring
13. Return spring
14. Rear clutch piston
15. D-ring
16. D-ring
17. Rear clutch retainer

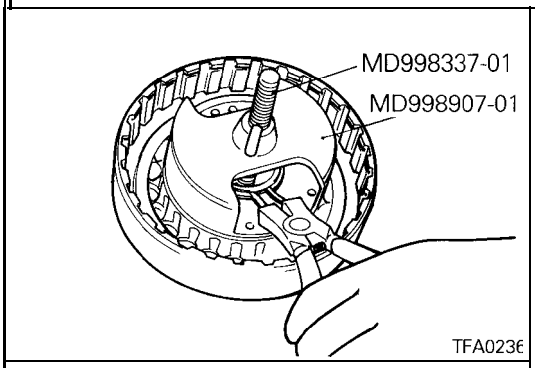
TSB Revision



DISASSEMBLY SERVICE POINTS

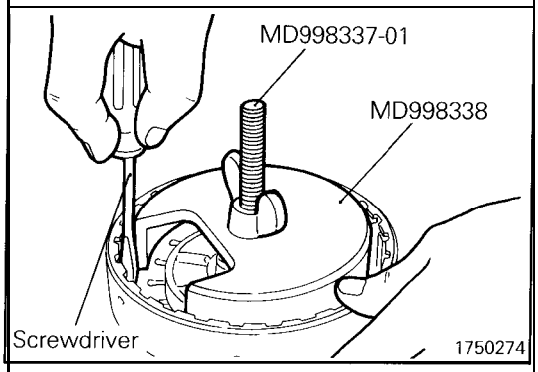
⟨A⟩ WAVE SPRING REMOVAL

(1) Compress the return spring with the special tool.
(2) Using a screwdriver, remove the wave spring.



⟨B⟩ SNAP RING REMOVAL

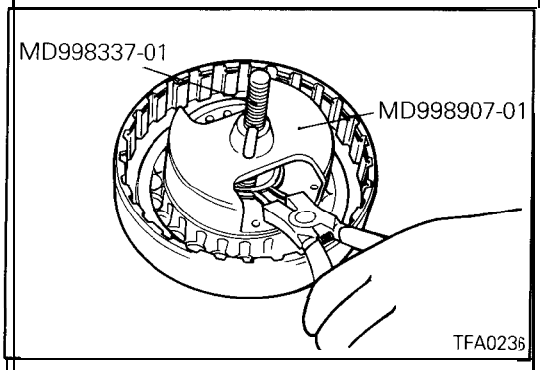
(1) Compress the return spring with the special tool.
(2) Using a screwdriver, remove the snap ring.



REASSEMBLY SERVICE POINTS

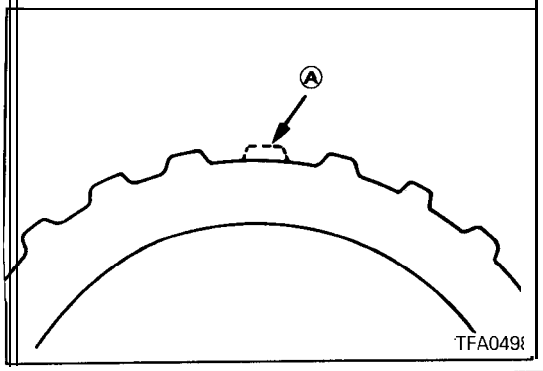
◆A◆ WAVE SPRING INSTALLATION

(1) Compress clutch reaction plate with the special tool.
(2) Install the wave spring.



◆B◆ SNAP RING INSTALLATION

(1) Compress clutch reaction plate with the special tool.
(2) Install the snap ring.

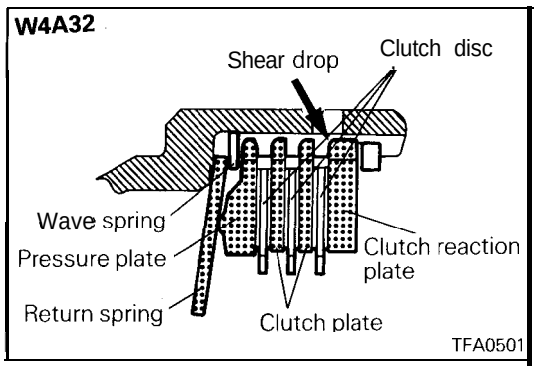


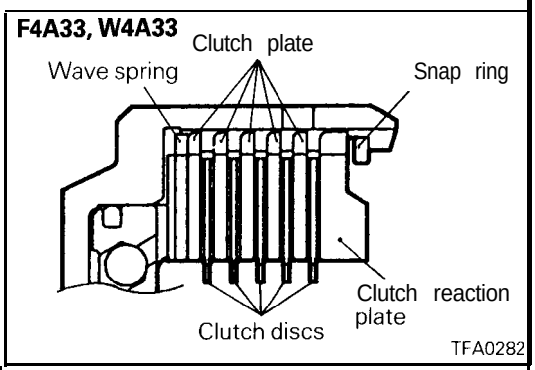
◆C◆ CLUTCH PRESSURE PLATE / CLUTCH PLATE / CLUTCH REACTION PLATE INSTALLATION

(1) Install the clutch pressure plate, clutch plates and clutch reaction plate with their missing tooth portions (Ⓐ in the illustration) in alignment.

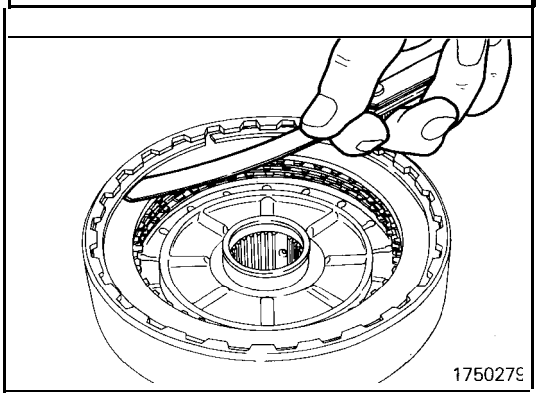
NOTE
This design is to facilitate escape of automatic transmission fluid and improve the cooling efficiency of the plates and disc.

TSB Revision





(2) Install the clutch reaction plate with its shear droop directed as shown in the illustration.

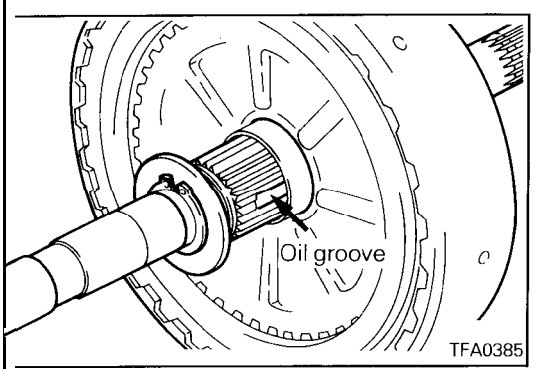


◆D◆ SNAP RING SELECTION

(1) Check clearance between the snap ring and clutch reaction plate. To check the clearance, hold entire circumference of the clutch reaction plate down with 50 N (11lbs.) force. If clearance is out of standard value, select a snap ring to obtain the standard value.

Standard value:

W4A32	**0.4 – 0.6 mm (.016 – .024 in.)**
F4A33, W4A33	**1.0 – 1.2 mm (.039 – .047 in.)**

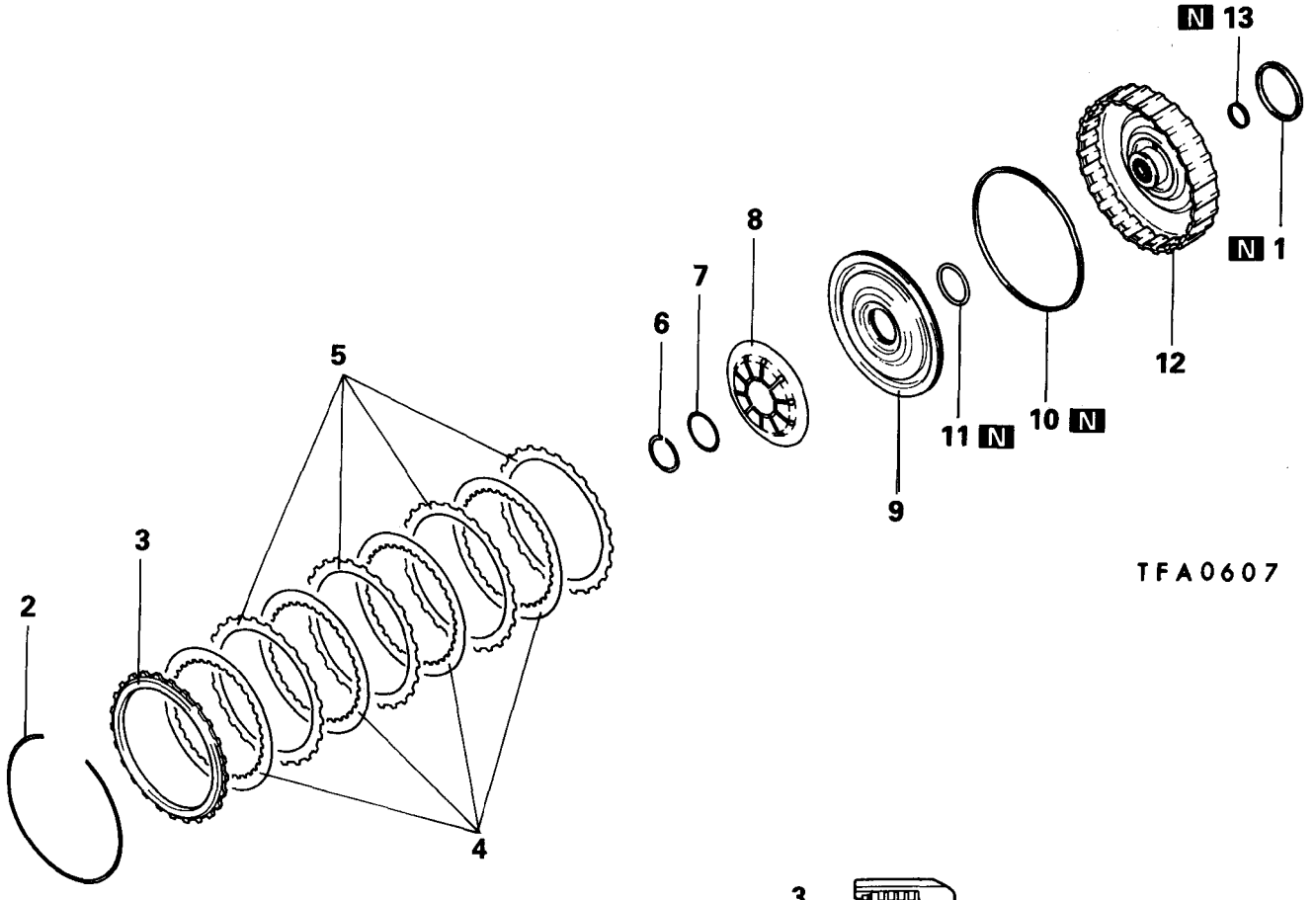


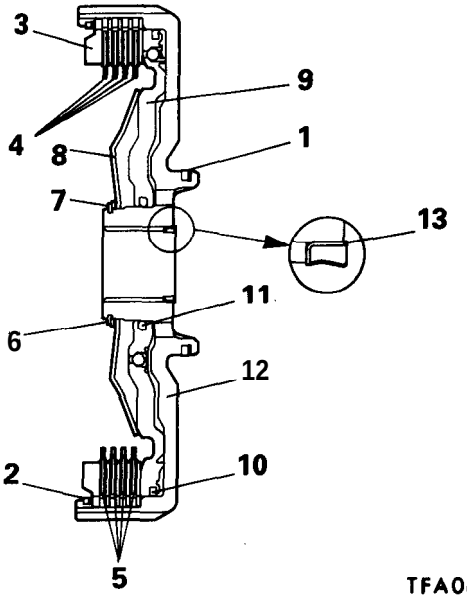
◆E◆ INPUT SHAFT INSTALLATION

(1) Install the input shaft with its oil groove aligned with the oil hole in the rear clutch retainer.

END CLUTCH

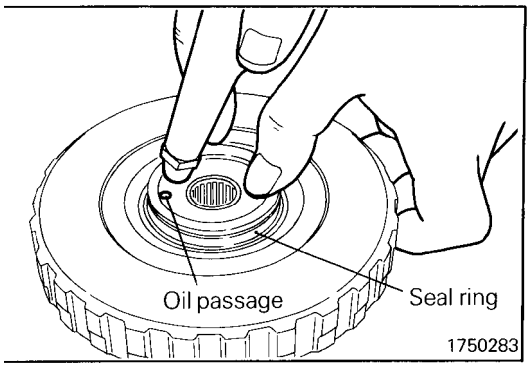
DISASSEMBLY AND REASSEMBLY





Disassembly steps

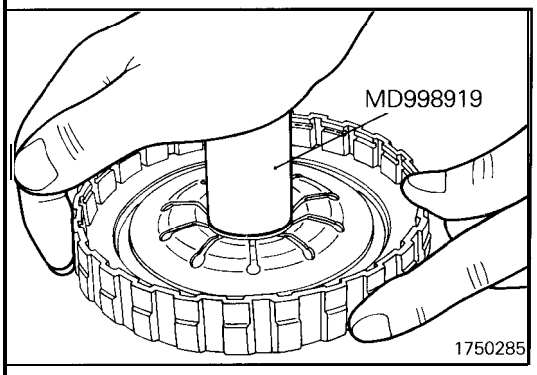
1. Seal ring
◆B◆ 2. Snap ring
3. Clutch reaction plate
4. Clutch disc
5. Clutch plate
◆A◆ 6. Snap ring
7. Washer
8. Return spring
◇A◇ 9. End clutch piston
10. Oil seal
11. D-ring
12. End clutch retainer
13. Oil seal



DISASSEMBLY SERVICE POINT

⟨A⟩ END CLUTCH PISTON REMOVAL

(1) Remove the piston. If it is hard to remove, place the retainer on the workbench with piston side down and blow air through the oil passage in the back of retainer.

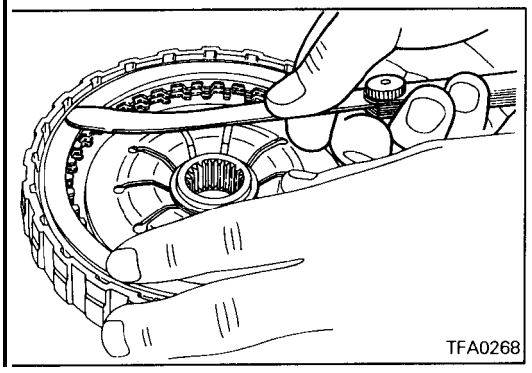


REASSEMBLY SERVICE POINTS

▶A◀ SNAP RING INSTALLATION

(1) Using the special tool, fit the snap ring.

Caution
Make sure that the snap ring is fitted in position in the groove.



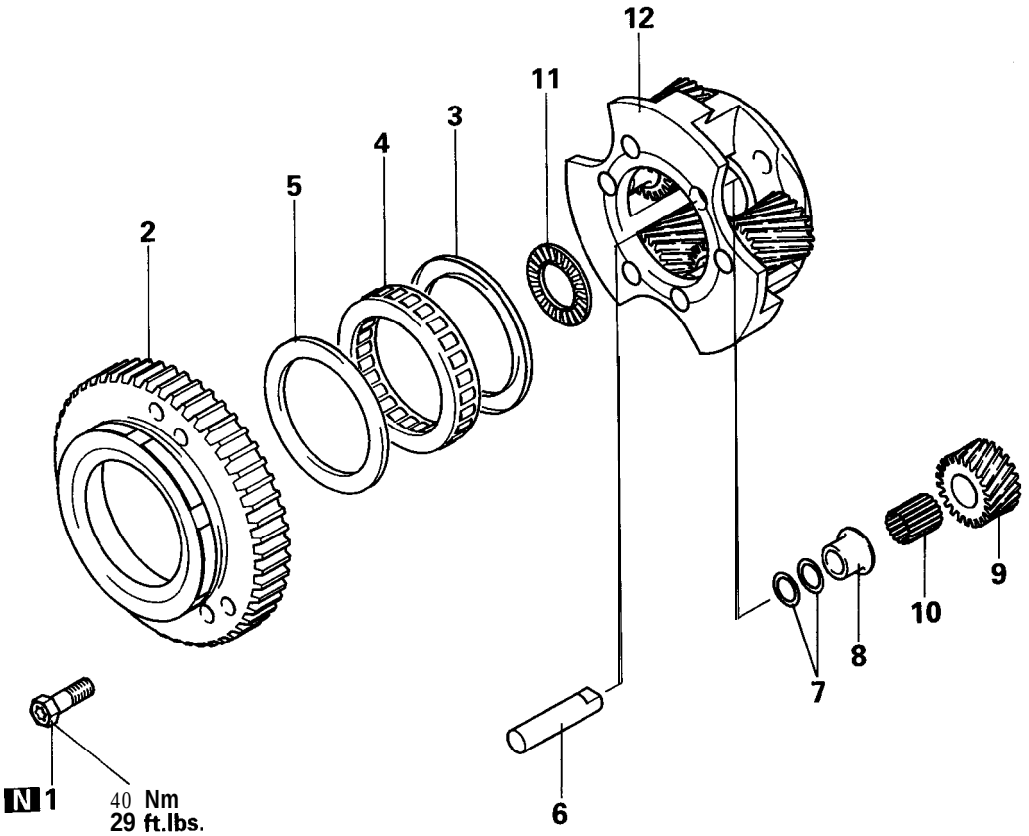
▶B◀ SNAP RING SELECTION

(1) Check clearance between the snap ring and clutch reaction plate. To check the clearance, hold entire circumference of the clutch reaction plate down with 50 N (11 lbs.) force. If clearance is out of standard value, select a snap ring to obtain the standard value.

Standard value: 0.6 – 0.85 mm (.024 – .031 in.)

PLANETARY GEAR

DISASSEMBLY AND REASSEMBLY – W4A32



Disassembly steps

1. Bolt
2. One-way clutch outer race
3. End plate
◆B◆ **4.** One-way clutch
5. End plate
6. Pinion shaft
7. Front thrust washer
8. Spacer bushing
9. Short pinion
10. Roller
◇A◇ ◆A◆ 11. Thrust bearing
12. Planetary carrier

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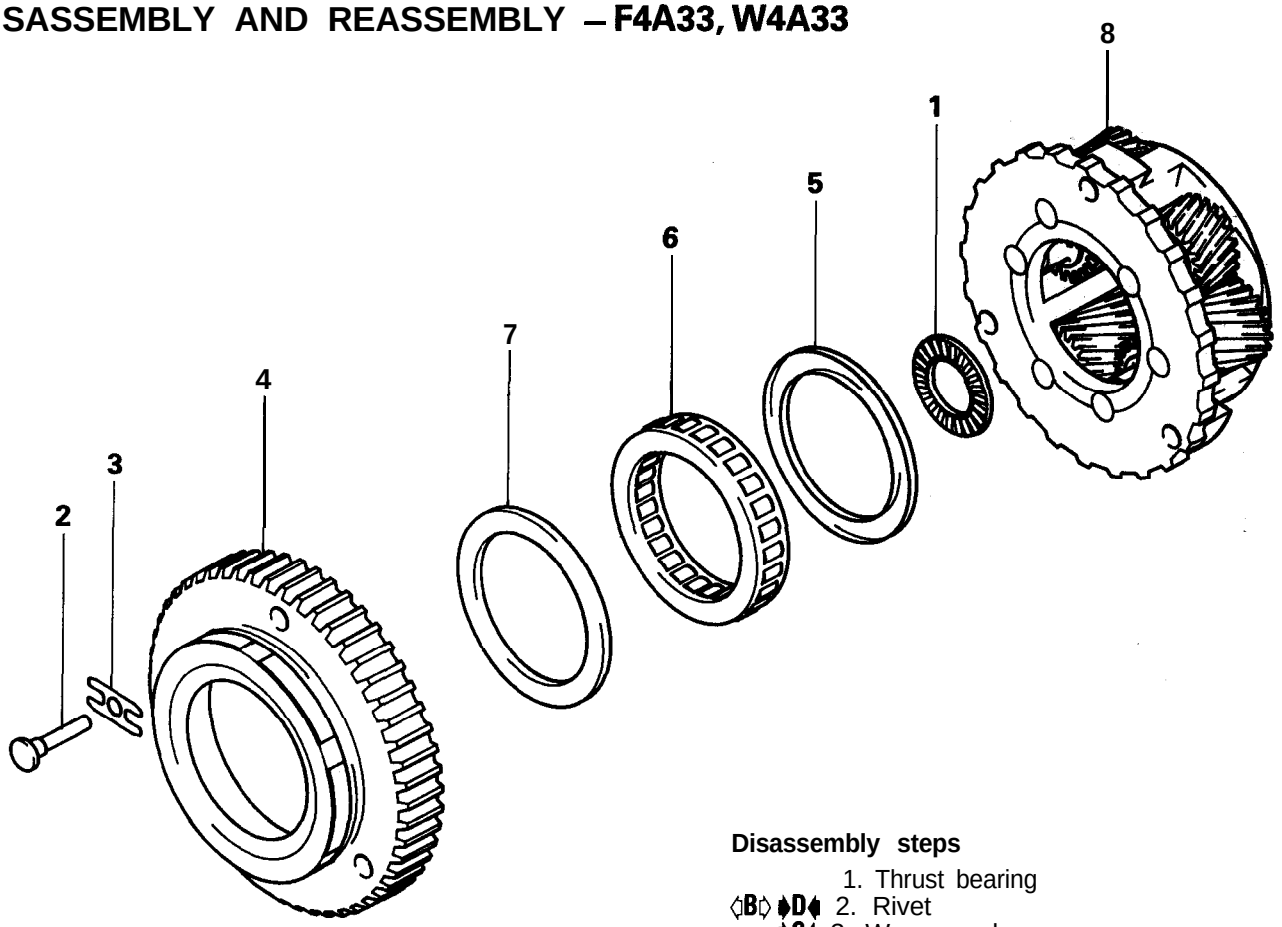
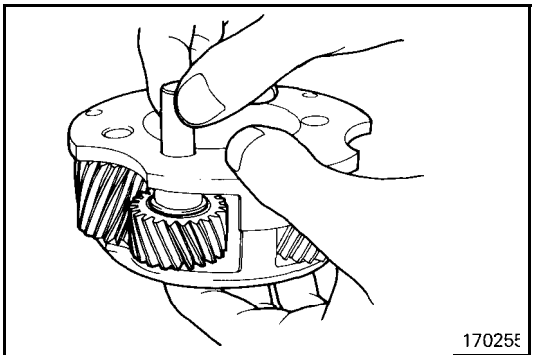
DISASSEMBLY AND REASSEMBLY – F4A33, W4A33



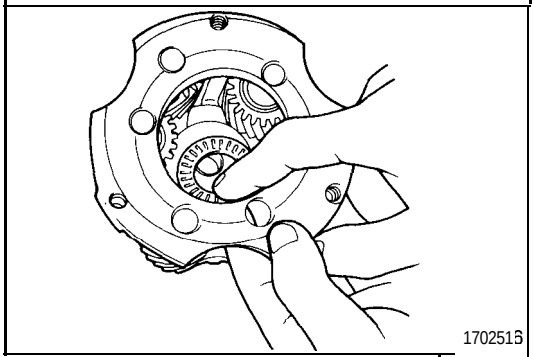
TFA0491

Disassembly steps

1. Thrust bearing
〈B〉 ◆D◆ 2. Rivet
◆C◆ 3. Wave washer
4. One way clutch outer race
5. End plate
◆B◆ 6. One way clutch
7. End plate
8. Planetary carrier



170255



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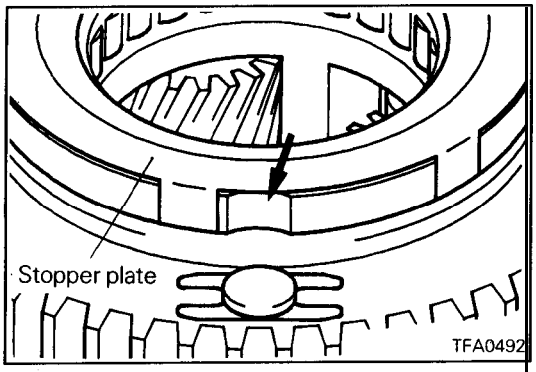
DISASSEMBLY SERVICE POINTS

〈A〉 THRUST BEARING REMOVAL

(1) Remove the only one short pinion. Use care not to drop and lose the 17 rollers in the short pinion. Do not remove the other short pinions.

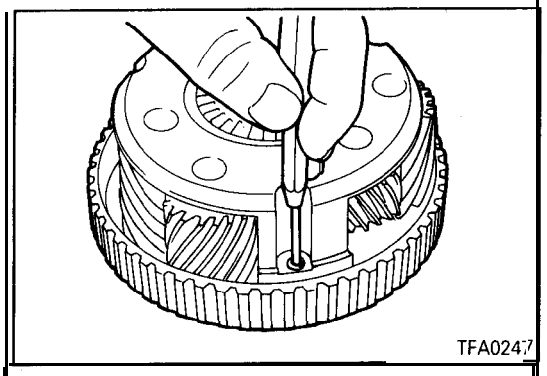
(2) Remove the thrust bearing.



⟨B⟩ RIVET REMOVAL

(1) Shift the stopper plate to ensure that the rivet head does not hit it.

NOTE
Make sure that the stopper plate claw is not located at the groove in the one-way clutch outer race.

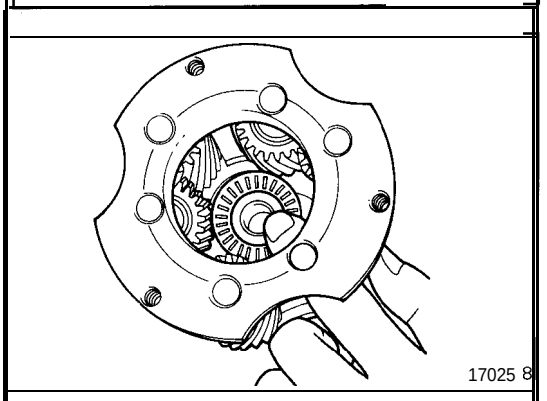


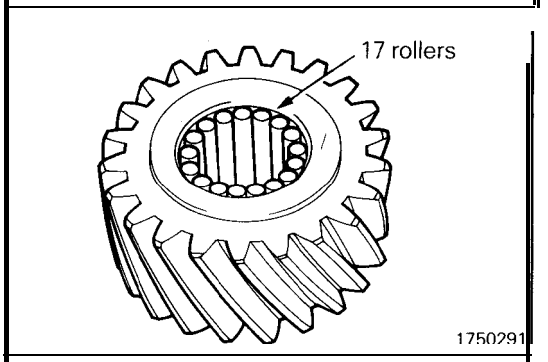
(2) Using a pin punch, drive out the rivet.

REASSEMBLY SERVICE POINTS

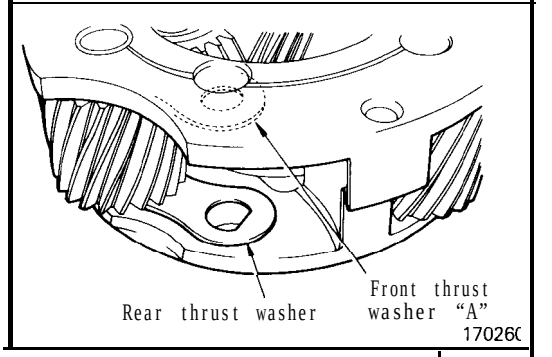
▶A◀ THRUST BEARING INSTALLATION

(1) Install a new thrust bearing on the carrier. Make sure that it fits correctly in the spot faced portion of the carrier.

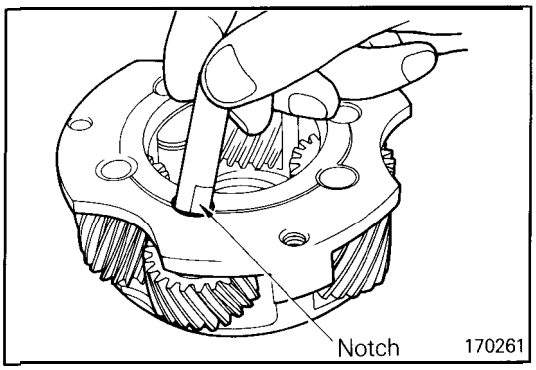




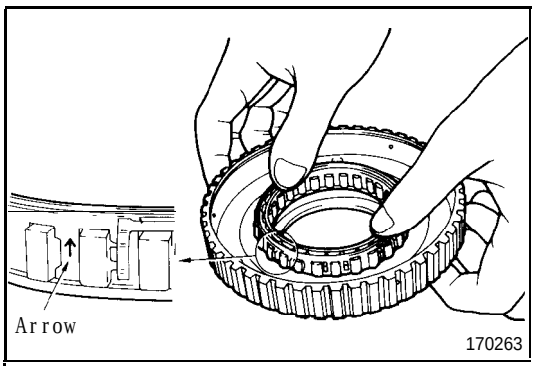
(2) Apply vaseline unsparingly to the inside surface of the short pinion and attach the 17 rollers on the surface.



(3) Line up the holes of the rear thrust washer and front thrust washer "A" with the shaft hole of the carrier.
(4) Install the short pinion, spacer bushing and front thrust washer and align the holes. Use care not to allow the rollers to get out of position.

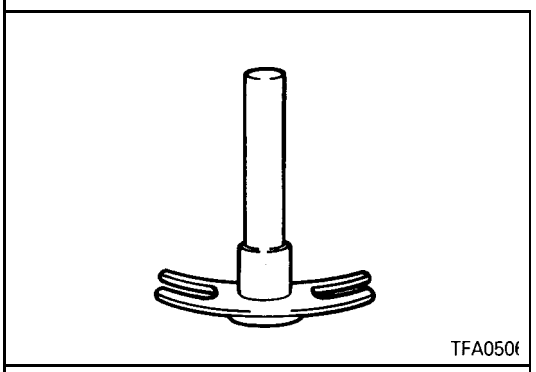


(5) Insert the pinion shaft. Make sure that the flattened end of pinion shaft is correctly fitted in the hole of the rear thrust plate when the pinion shafts is inserted.



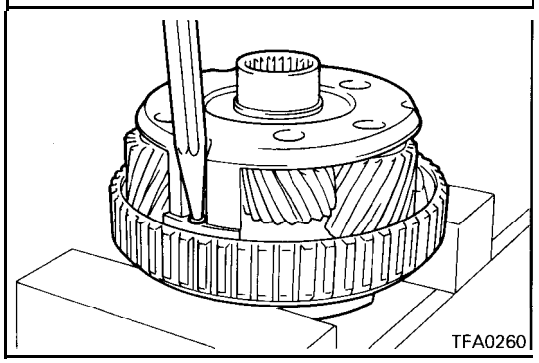
◆B◆ ONE-WAY CLUTCH INSTALLATION

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



◆C◆ WAVE WASHER INSTALLATION

(1) Install the wave washer to the rivet so that its indentation is placed on the outer race side.



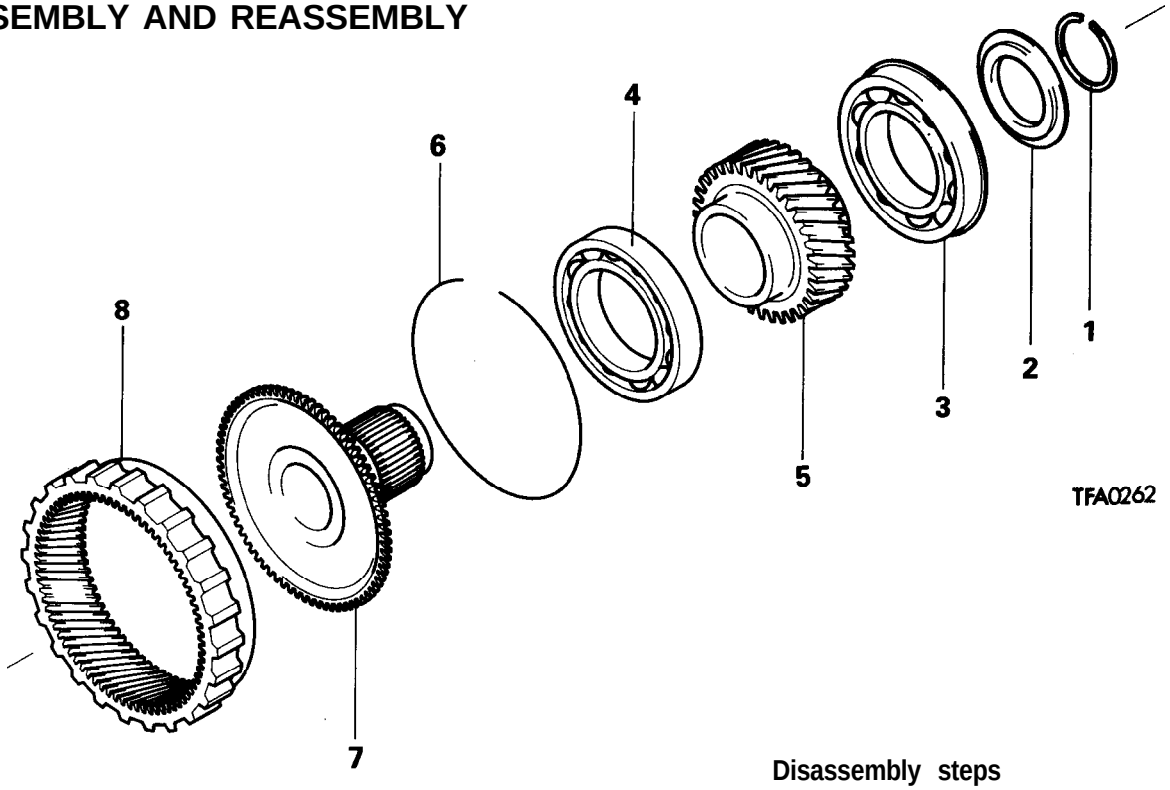
◆D◆ RIVET INSTALLATION

(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 (2,425 – 2,866 lbs.).

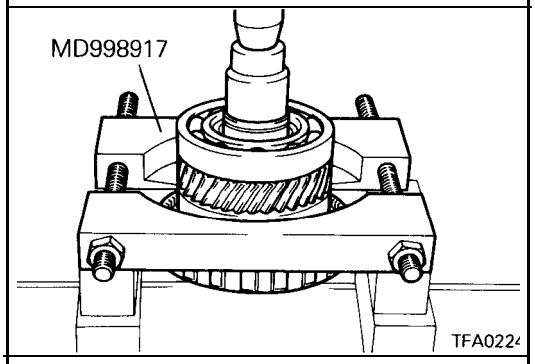
ANNULUS GEAR AND TRANSFER DRIVE GEAR SET

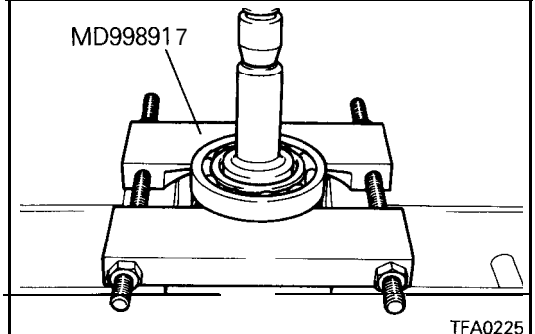
DISASSEMBLY AND REASSEMBLY



Disassembly steps

◆B◆ 1. Snap ring
2. Stopper plate
〈A〉 ◆A◆ 3. Bearing
〈A〉 ◆A◆ 4. Bearing
〈A〉 ◆A◆ 5. Transfer drive gear
6. Snap ring
7. Output flange
8. Annulus gear





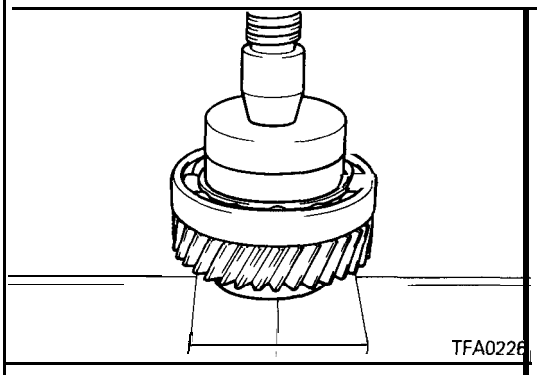
DISASSEMBLY SERVICE POINT

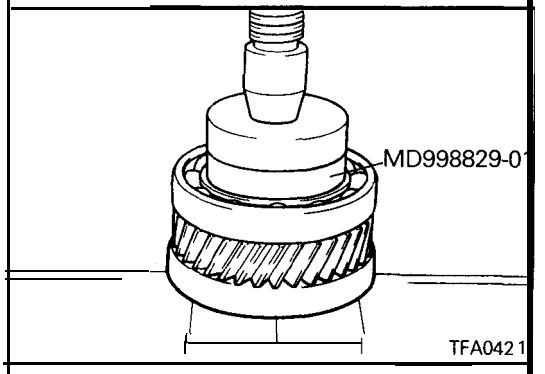
〈A〉 BEARING / TRANSFER DRIVE GEAR REMOVAL

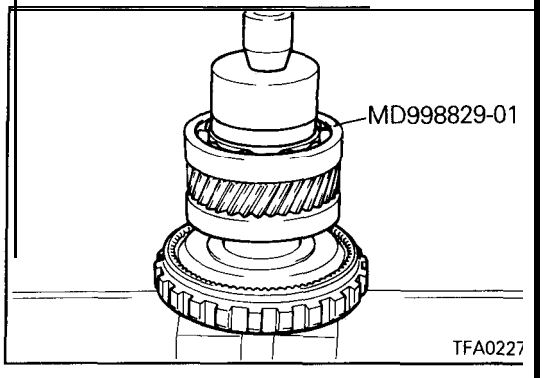
(1) Using the special tool, remove the transfer drive gear together with two bearings from the output flange.

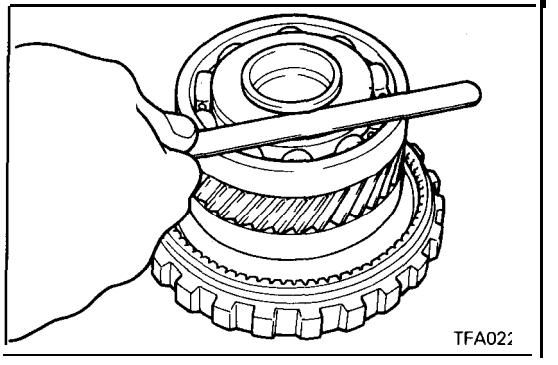
Caution
Install the special tool in position between the output flange and bearings.

(2) Using the special tool, remove the bearings from both sides of the transfer drive gear.









REASSEMBLY SERVICE POINTS

◆A◆ TRANSFER DRIVE GEAR / BEARING INSTALLATION

(1) Using the special tool, press-fit the bearings into both sides of the transfer drive gear.

(2) Using the special tool, install the transfer drive gear to the output flange.

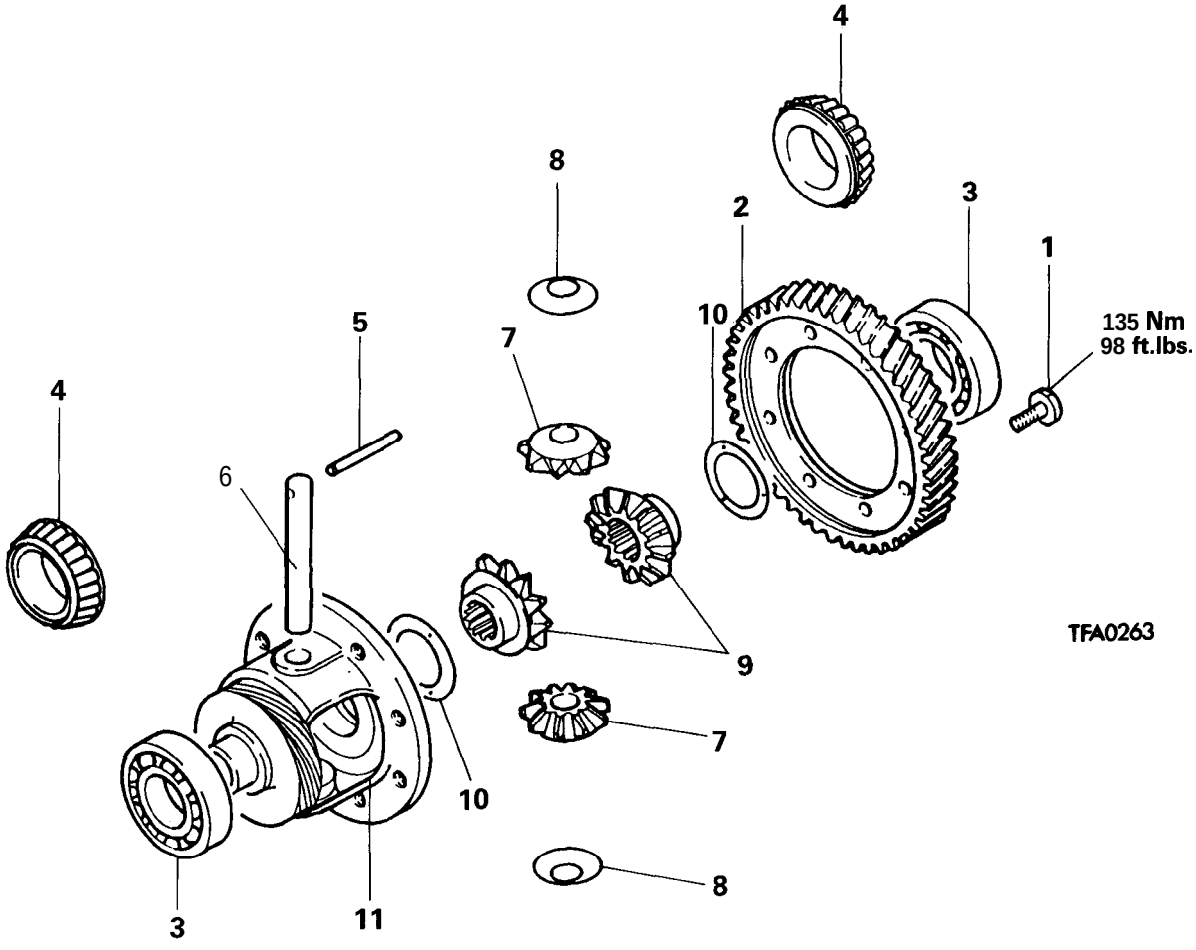
◆B◆ SNAP RING SELECTION

(1) Measure the snap ring groove clearance and select the appropriate spacer to obtain the specified end play.

Standard value: 0 – 0.09 mm (0 – .0035 in.)

DIFFERENTIAL

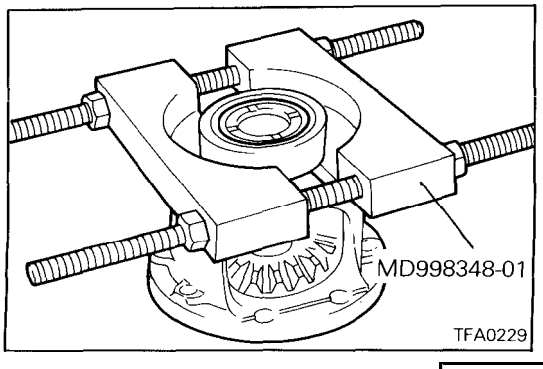
DISASSEMBLY AND REASSEMBLY



Disassembly steps

- ◆E◆ 1. Bolt
- 2. Differential drive gear
- 〈A〉 ◆D◆ 3. Ball bearing (W4A32, W4A33)
- 〈B〉 ◆C◆ 4. Taper roller bearing (F4A33)
- 〈C〉 ◆B◆ 5. Lock pin
- ◆A◆ 6. Pinion shaft
- ◆A◆ **7. Pinion**
- ◆A◆ 8. Washer
- ◆A◆ 9. Side gear
- ◆A◆ 10. Spacer
- 11. Differential case

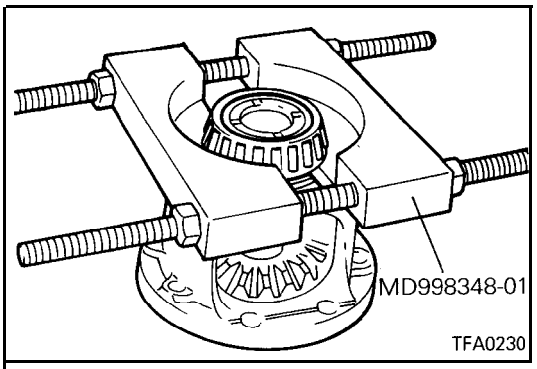
TFA0263



DISASSEMBLY SERVICE POINTS

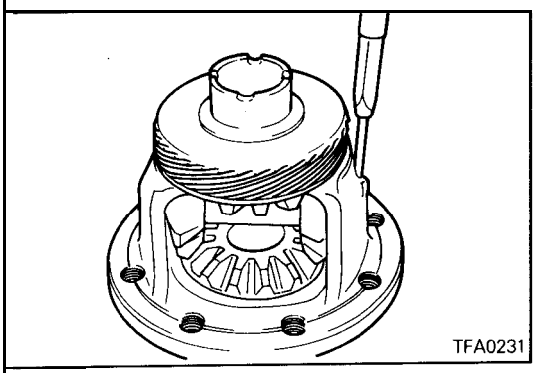
〈A〉 BEARING REMOVAL

(1) Using the special tool, remove the bearing.



⟨B⟩ TAPER ROLLER BEARING REMOVAL

(1) Using the special tool, remove the taper roller bearing.



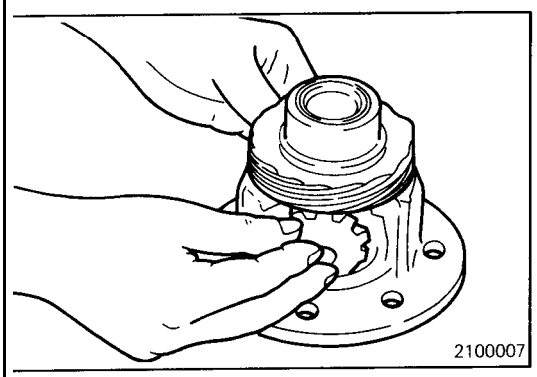
⟨C⟩ LOCK PIN REMOVAL

(1) Using a pin punch, drive out the lock pin.

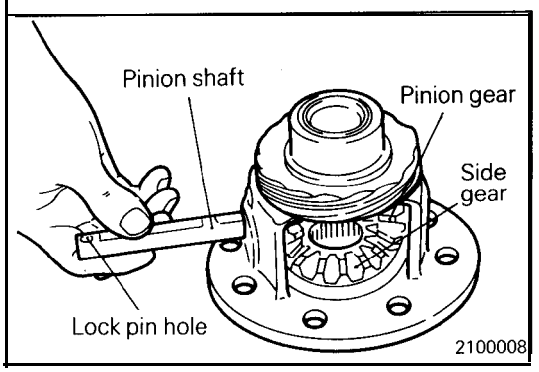
NOTE
Sometimes the lock pin is removed with a light punch.

REASSEMBLY SERVICE POINTS

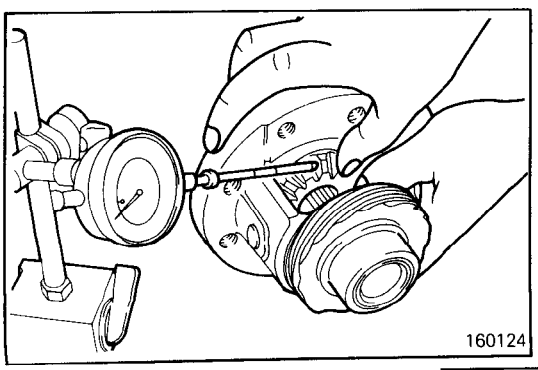
▶A◀ SPACER / SIDE GEAR WASHER / PINION / PINION SHAFT INSTALLATION



(1) Fit the spacer to the back face of the side gear, then install the gear into the differential case.
(2) Fit washer to back of pinion and rotate two pinions at the same time into position to mesh with the side gear.



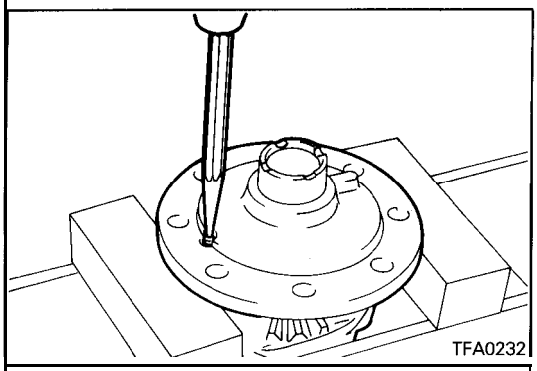
(3) Insert the pinion shaft.



(4) Measure the backlash between the side gear and pinion.
Standard value: 0.025 – 0.150 mm (.001 – .0059 in.)
(5) If the backlash is out of specification, select the appropriate spacer and disassemble and reassemble the gears as necessary.

NOTE
Adjust so that the backlash in both side gears equals.

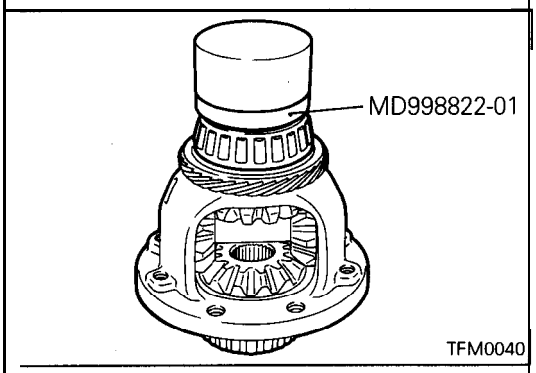
TSB Revision



◆B◆ LOCK PIN INSTALLATION

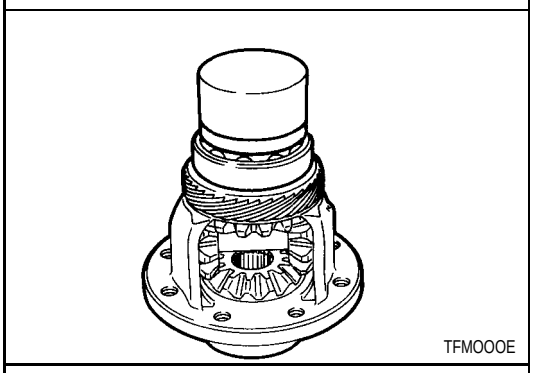
(1) Align the lock pin hole in pinion shaft with that in the case and install the lock pin.

Caution
1. Do not reuse lock pins
2. Make the lock pin lower than the surface of the differential case flange.
3. Press-fitting load is over 5,000 N (1,100 lbs.)

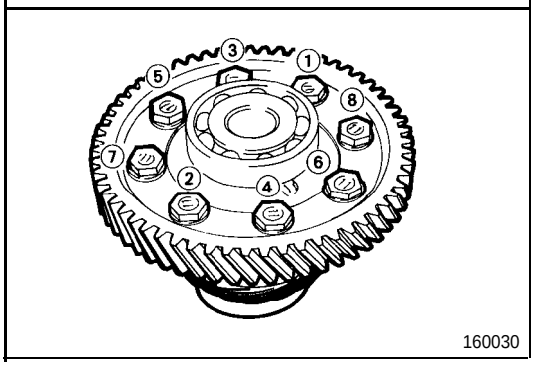


◆C◆ TAPER ROLLER BEARING INSTALLATION

(1) Using the special tool, press-fit the bearings into both sides of the differential case.



◆D◆ BEARING INSTALLATION



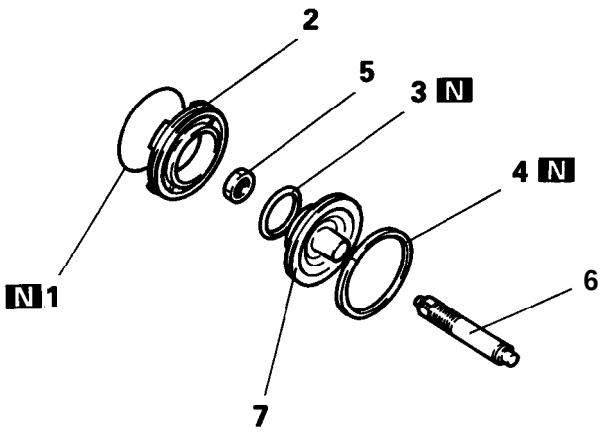
◆E◆ BOLTS INSTALLATION

(1) Apply ATF to the differential drive gear bolts, install and tighten with specified torque in the order shown in the figure.

Differential drive gear bolt: 135 Nm (98 ft.lbs.)

KICKDOWN SERVO

DISASSEMBLY AND REASSEMBLY



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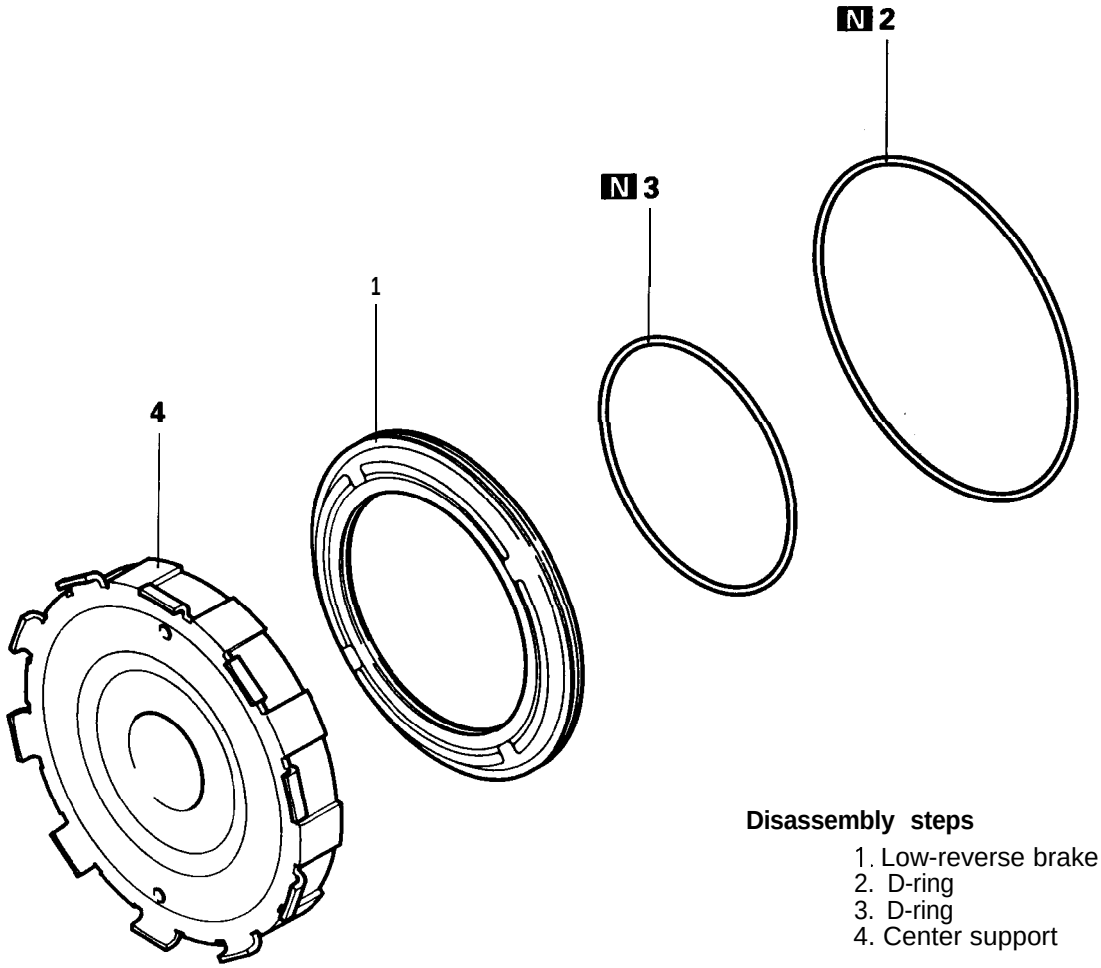
Disassembly steps

1. O-ring
2. Kickdown servo sleeve
3. D-ring
4. Seal ring
5. Lock nut
6. Kickdown servo rod
7. Kickdown servo piston

LOW-REVERSE BRAKE



Disassembly steps

1. Low-reverse brake piston
2. D-ring
3. D-ring
4. Center support

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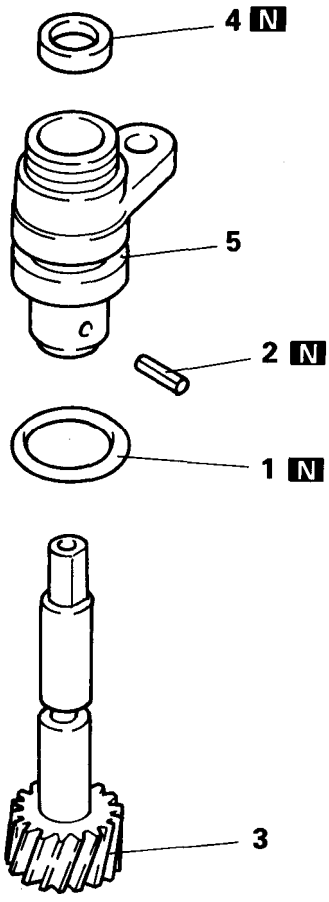
TSB Revision

SPEEDOMETER GEAR

DISASSEMBLY AND REASSEMBLY



Disassembly steps

1. O-ring
◆A◆ 2. Spring pin
3. Driven gear
4. Oil seal
5. **Sleeve**

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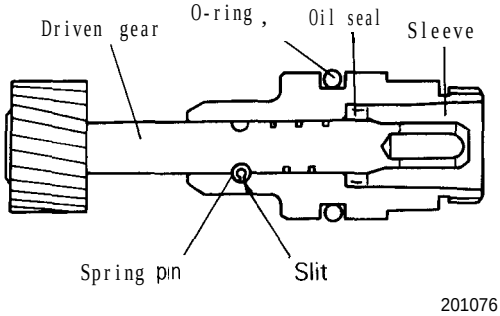

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REASSEMBLY SERVICE POINT

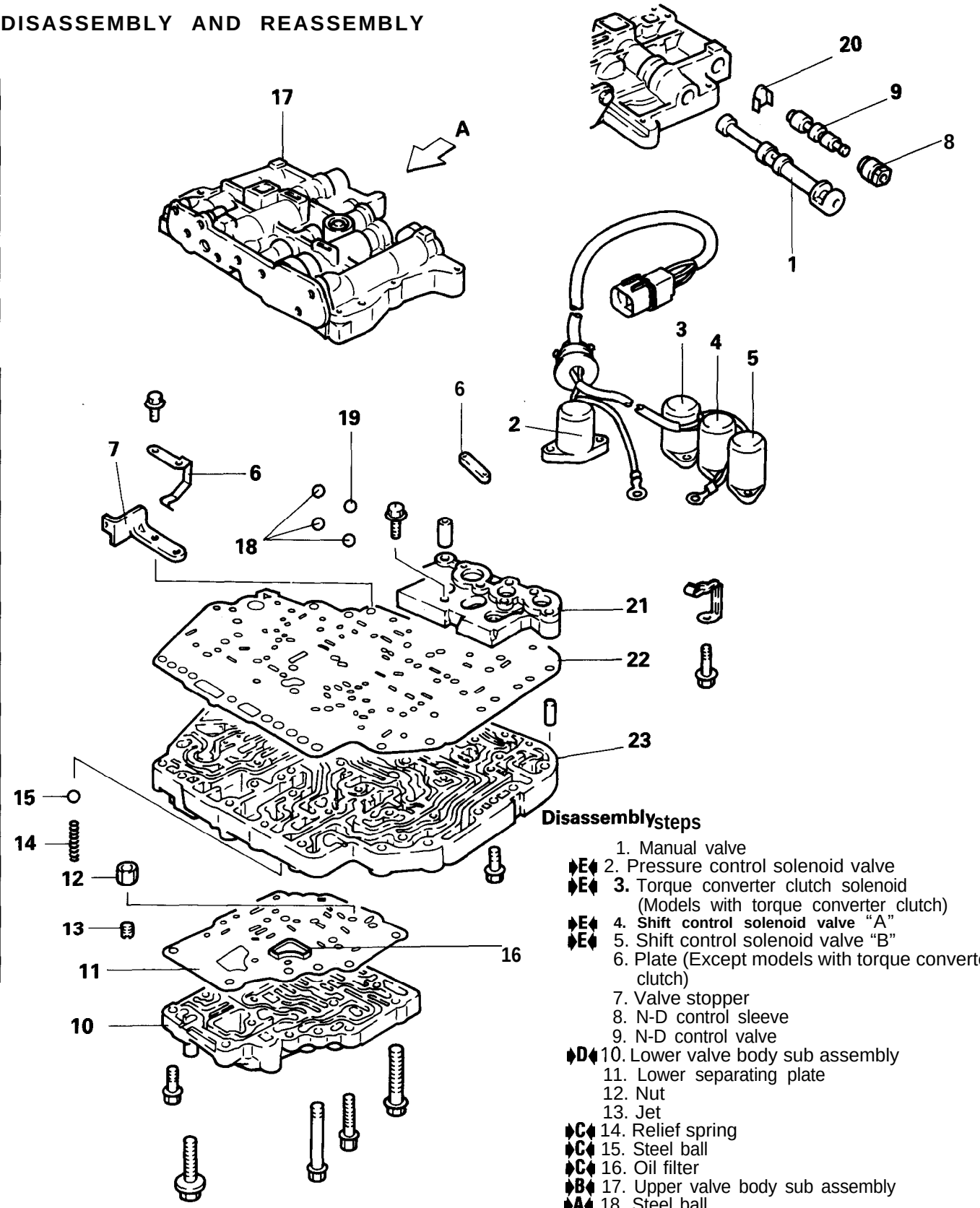
◆A◆ SPRING PIN INSTALLATION

(1) Drive a new spring pin into the sleeve. Make sure that the slit in the spring pin does not face the gear.

TSB Revision

VALVE BODY

DISASSEMBLY AND REASSEMBLY

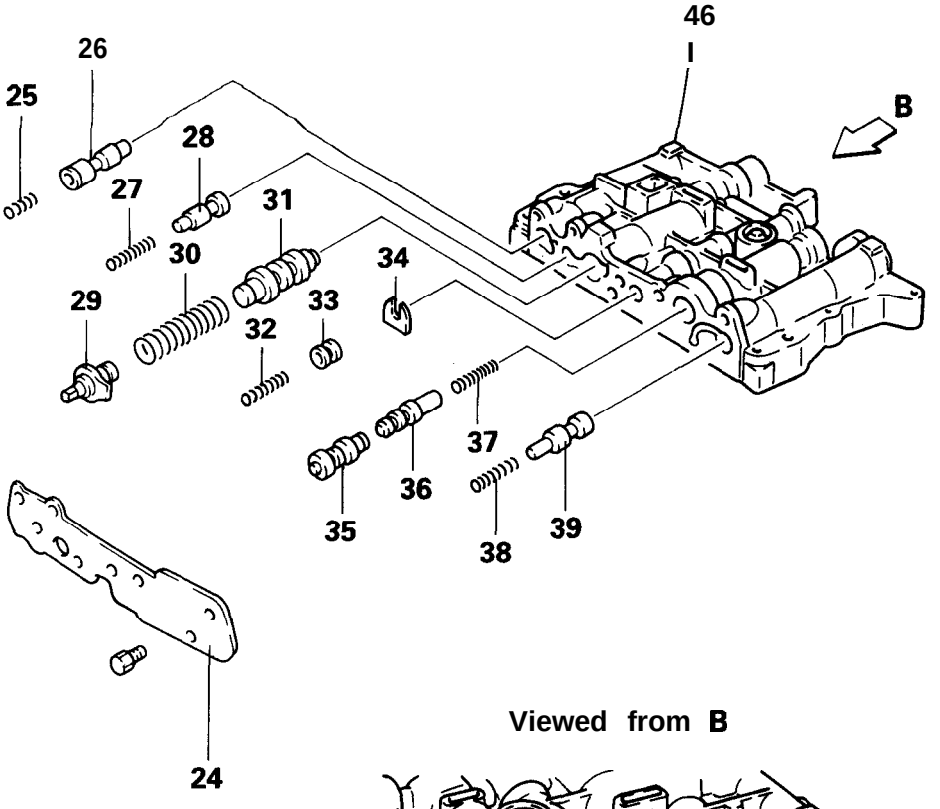


Disassembly steps

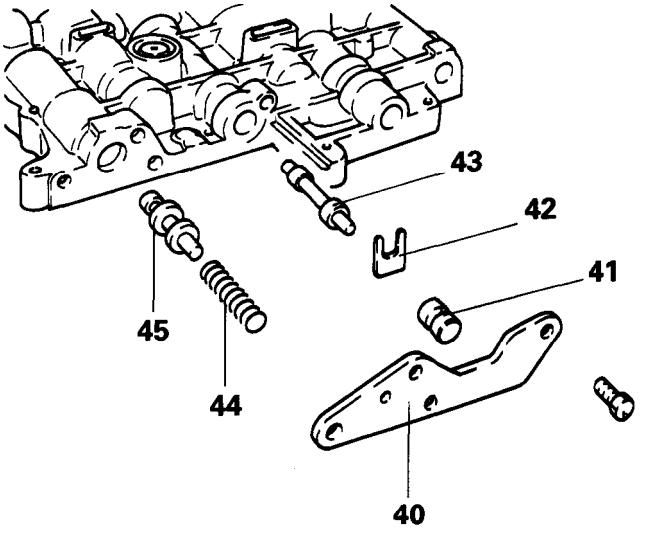
1. Manual valve
◆E◆ 2. Pressure control solenoid valve
◆E◆ **3.** Torque converter clutch solenoid (Models with torque converter clutch)
◆E◆ **4. Shift control solenoid valve** "A"
◆E◆ 5. Shift control solenoid valve "B"
6. Plate (Except models with torque converter clutch)
7. Valve stopper
8. N-D control sleeve
9. N-D control valve
◆D◆ 10. Lower valve body sub assembly
11. Lower separating plate
12. Nut
13. Jet
◆C◆ 14. Relief spring
◆C◆ 15. Steel ball
◆C◆ 16. Oil filter
◆B◆ 17. Upper valve body sub assembly
◆A◆ 18. Steel ball
◆A◆ 19. Teflon ball
◆A◆ 20. N-D plate
21. Block
22. Upper separating plate
23. Intermediate plate

TFA0523

TSB Revision



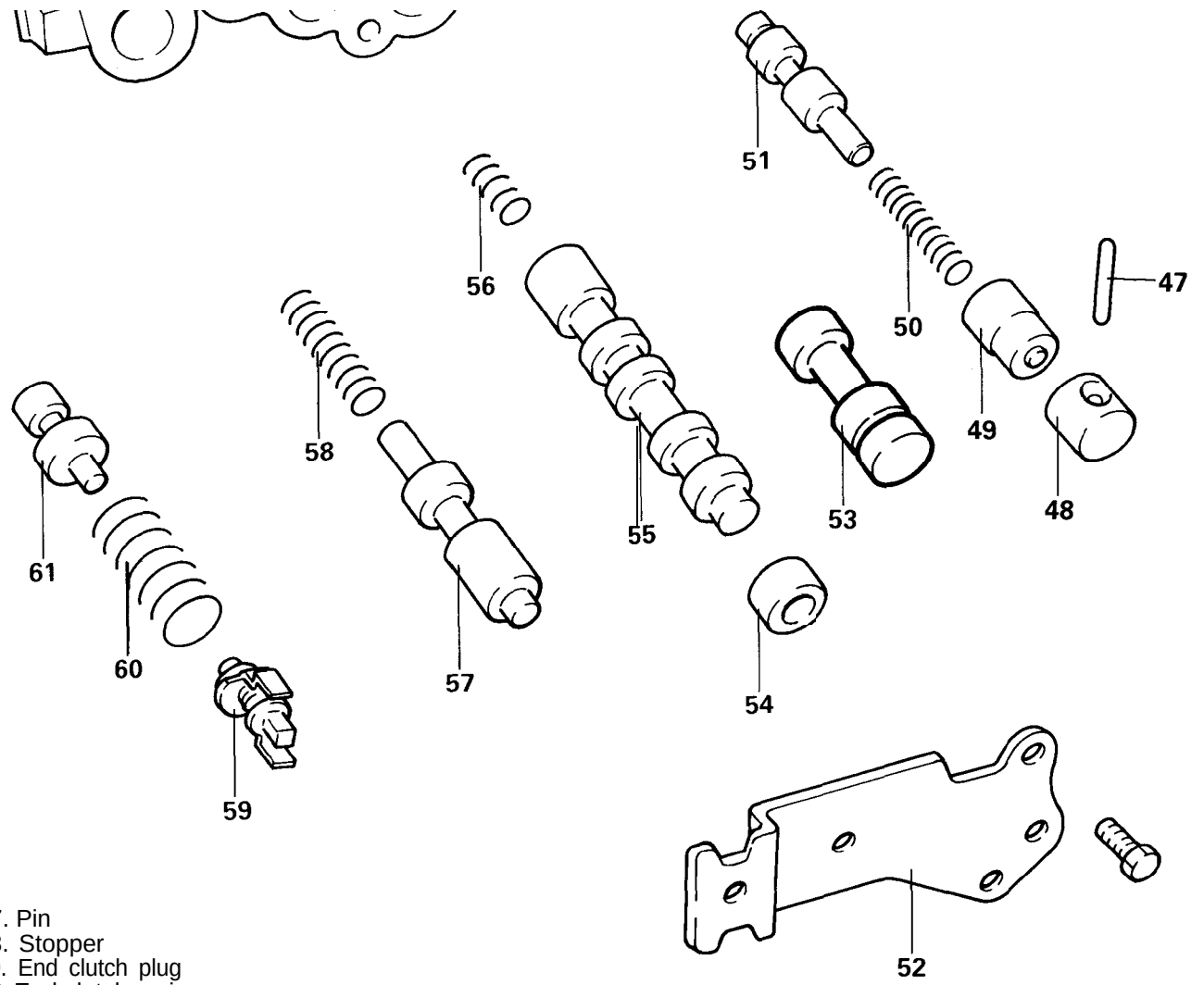
Viewed from B



TFA0518

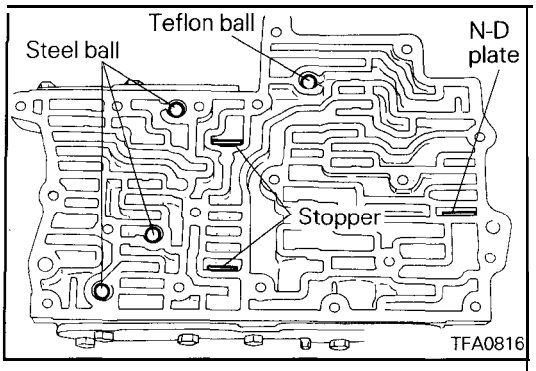
Disassembly steps

24. Front end cover
25. Pressure control spring
26. Pressure control valve
27. Torque converter control spring
28. Torque converter control valve
29. Adjusting screw
30. Regulator spring
31. Regulator valve
32. Shift control spring
◆A◆ 33. Stopper plate
34. Shift control plug
35. Rear clutch exhaust valve A
36. Rear clutch exhaust valve B
37. Rear clutch exhaust spring
38. 2-3/4-3 shift spring
39. 2-3/4-3 shift valve
40. Rear end cover
41. Shift control plug B
◆A◆ 42. Stopper plate
43. Shift control valve
44. 1-2 shift spring
45. 1-2 shift valve
46. Upper valve body



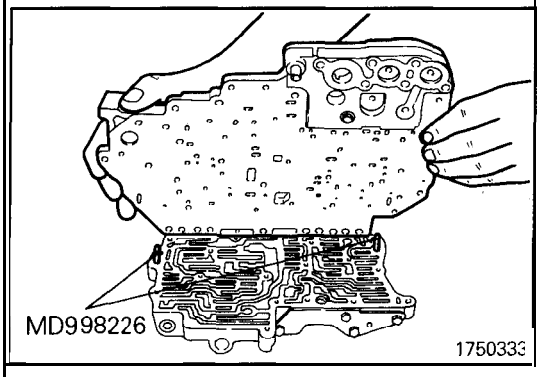
47. Pin
48. Stopper
49. End clutch plug
50. End clutch spring
51. End clutch valve
52. End cover
53. Plug (Except models with torque converter clutch)
54. Torque converter clutch control sleeve } Models with torque converter clutch
55. Torque converter clutch control valve } Models with torque converter clutch
56. Torque converter clutch control spring } Models with torque converter clutch
57. N-R control valve
58. N-R control spring
59. Adjusting screw
60. Reducing spring
61. Reducing valve
62. Lower valve body

TFA0622



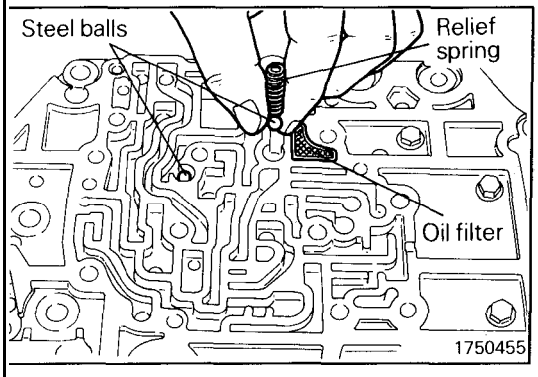
◆A◆ STOPPER PLATE / N-D PLATE / TEFLON BALL / STEEL BALL LOCATION

(1) Install the stopper plates, N-D plate, teflon ball, and steel balls into the upper valve body as shown.



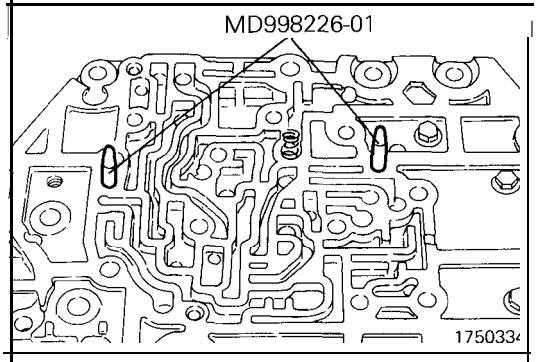
◆B◆ UPPER VALVE BODY SUB ASSEMBLY INSTALLATION

(1) Install the special tool and secure the upper separating plate and intermediate plate with eight mounting bolts. Then, remove the special tool.



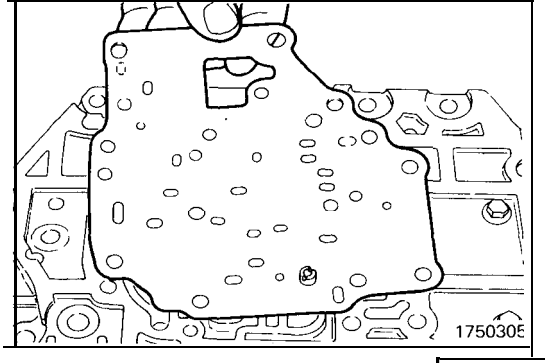
◆C◆ OIL FILTER / STEEL BALL / RELIEF SPRING INSTALLATION

(1) Install the oil filter, two steel balls, and spring to the intermediate plate.

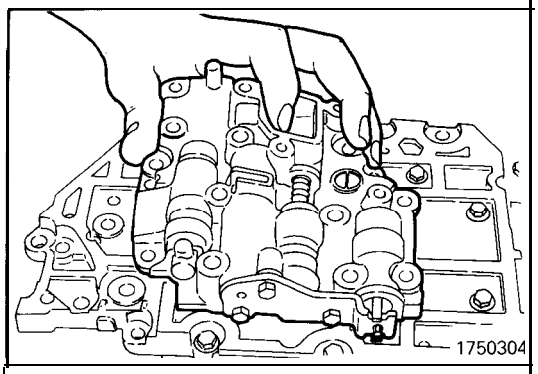


◆D◆ LOWER VALVE BODY SUB ASSEMBLY INSTALLATION

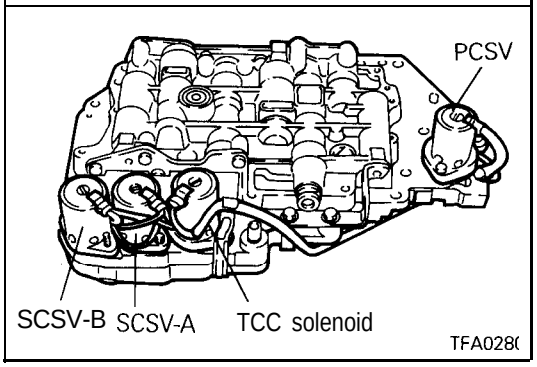
(1) Mount the special tool to the intermediate plate.



(2) Install the separating plate.



(3) Secure the lower valve body with mounting bolts and then remove the special tool.



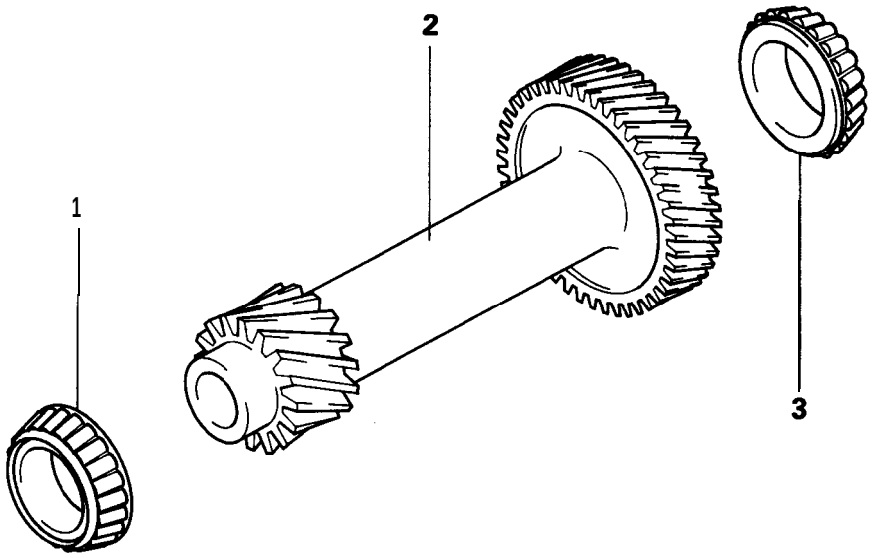
◆E◆ SOLENOID VALVE ASSEMBLY INSTALLATION

(1) Install the solenoid valves as shown.

Solenoid valve	Wire color
Shift control solenoid valve A (SCSV-A)	Orange
Shift control solenoid valve B (SCSV-B)	Yellow
Torque converter clutch solenoid (TCC solenoid)	Red
Pressure control solenoid valve (PCSV)	Blue

TRANSFER SHAFT – FWD

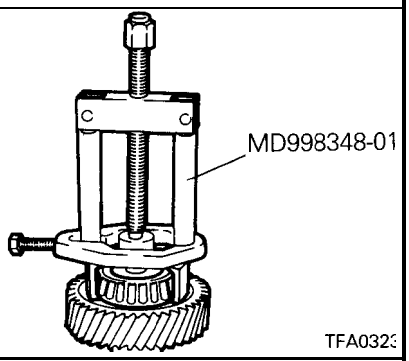
DISASSEMBLY AND REASSEMBLY



TFA0322

Disassembly steps

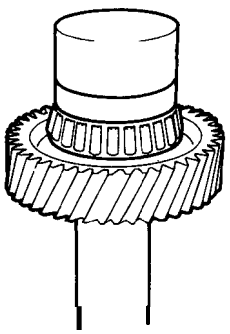
〈A〉 ▶B◀ 1. Taper roller bearing
2. Transfer shaft
〈A〉 ▶A◀ 3. Taper roller bearing



TFA0323

DISASSEMBLY SERVICE POINT

〈A〉 TAPER ROLLER BEARING REMOVAL

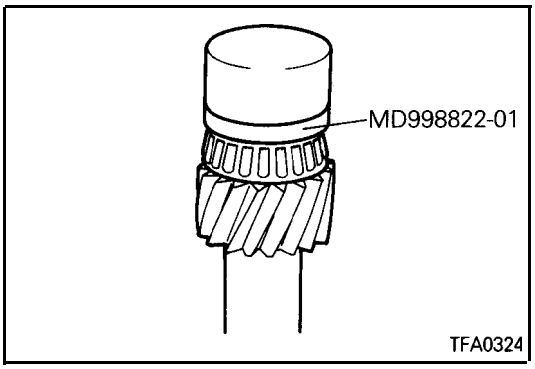


TFA0325

REASSEMBLY SERVICE POINTS

▶A◀ TAPER ROLLER BEARING INSTALLATION

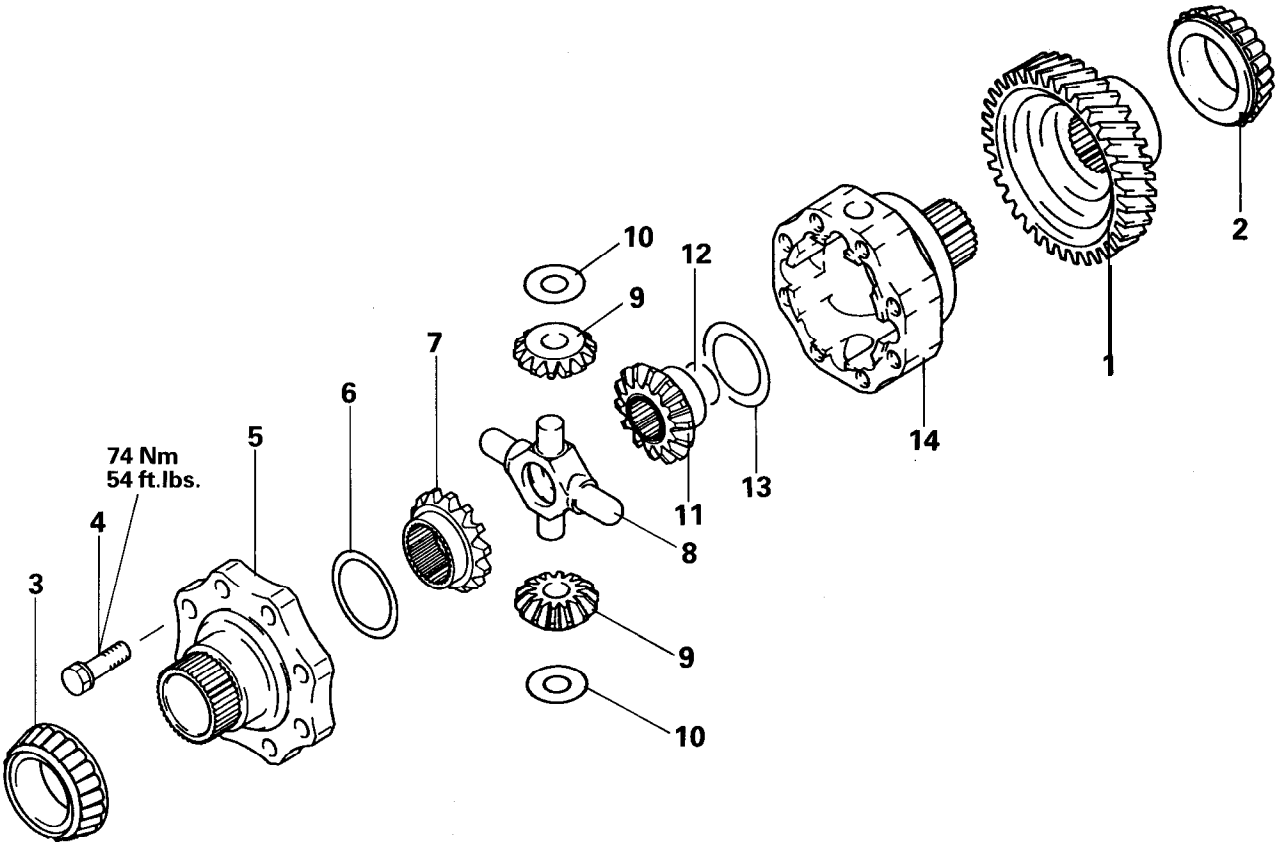
TSB Revision



◆B◆ TAPER ROLLER BEARING INSTALLATION

CENTER DIFFERENTIAL – 4WD

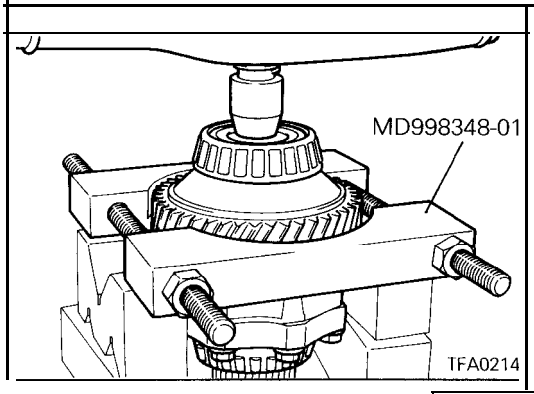
DISASSEMBLY AND REASSEMBLY



Disassembly steps

〈A〉 1. Transfer driven gear
〈B〉 ◆D◆ 2. Taper roller bearing
〈C〉 ◆C◆ 3. Taper roller bearing
◆B◆ 4. Bolt
5. Center differential flange
◆A◆ 6. Spacer
7. Side gear (front)
8. Pinion shaft
9. Pinion
10. Washer
11. Side gear (rear)
12. Clip
◆A◆ 13. Spacer
14. Center differential case

TFA0261



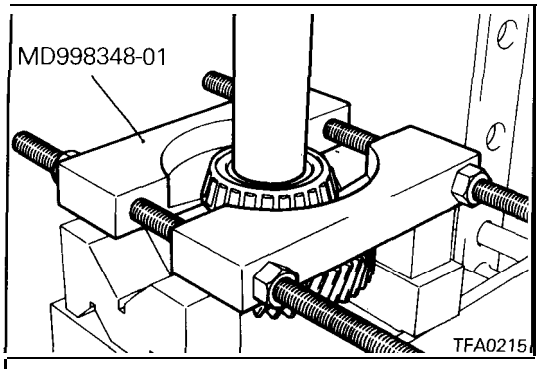
DISASSEMBLY SERVICE POINTS

〈A〉 TRANSFER DRIVEN GEAR REMOVAL

(1) Remove the transfer driven gear.

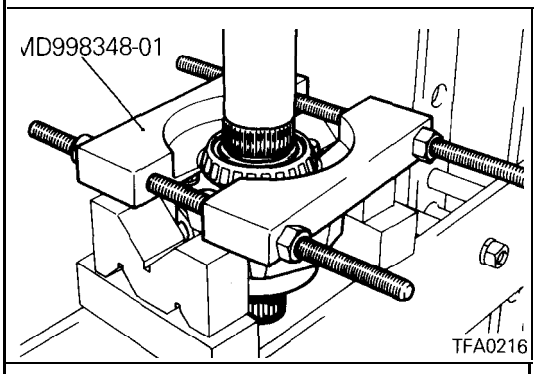
NOTE
If it is hard to remove, use the special tool to remove it.

TSB Revision



⟨B⟩ TAPER ROLLER BEARING REMOVAL

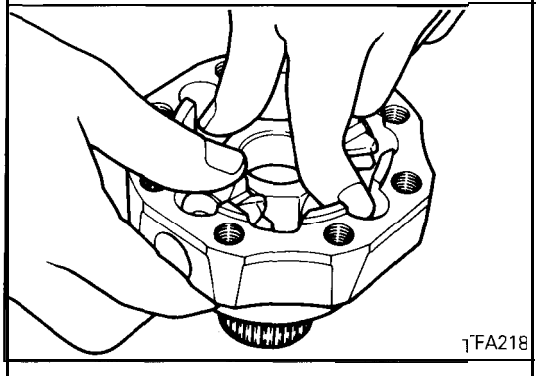
(1) Using the special tool, remove the taper roller bearing from the transfer driven gear.



⟨C⟩ TAPER ROLLER BEARING REMOVAL

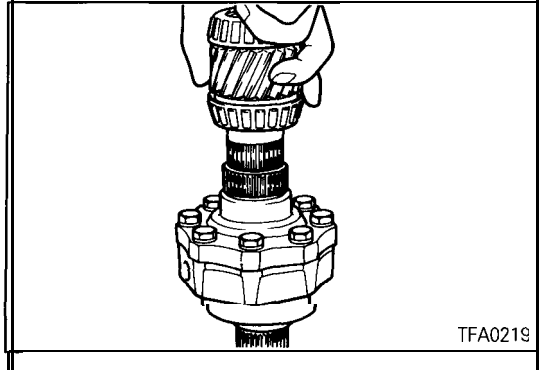
(1) Using the special tool, remove the taper roller bearing from the center differential flange.

REASSEMBLY SERVICE POINTS



◆A◆ SPACERS SELECTION

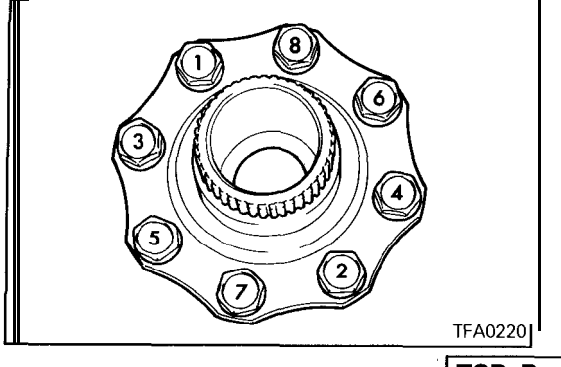
(1) install the spacer, side gear (rear), pinion, washer and pinion shaft in the center differential case.
(2) While pressing the pinion shaft, select the thickest spacer to gently rotate the pinion.



(3) Install the side gear (front), spacer and center differential flange and tighten the bolts with the specified torque.

Center differential drive gear bolt: 75 Nm (54 ft.lbs.)

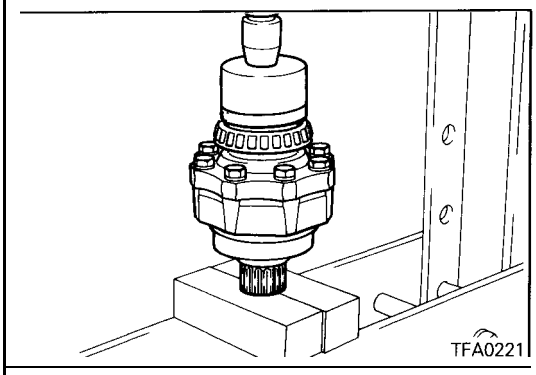
(4) Using the front output shaft, rotate the side gear front and select the thickest spacer to gently rotate the side gear front.



◆B◆ BOLT INSTALLATION

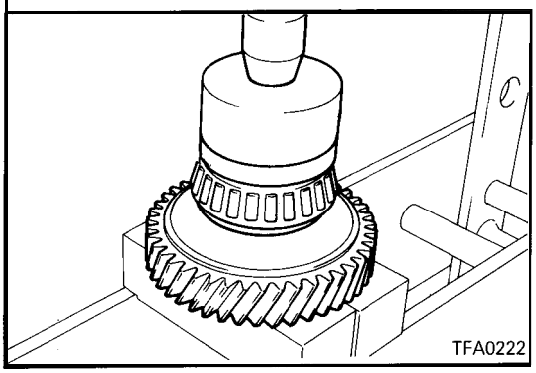
(1) First apply sealant to the end [5 mm (.2 in.)] of the bolt threads and then tighten to the specified torque in the order shown in the figure.

Center differential drive gear bolt: 75 Nm (54 ft.lbs.)
Specified adhesive:
3M Stud Locking Part No. 4170 or equivalent



◆C◆ TAPER ROLLER BEARING INSTALLATION

(1) Using the special tool, install the taper roller bearing on the center differential flange.

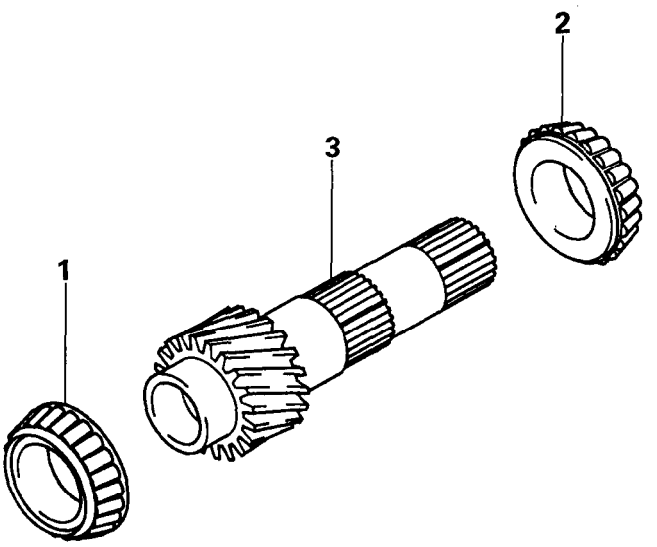


◆D◆ TAPER ROLLER BEARING INSTALLATION

(1) Using the special tool, install the taper roller bearing on the transfer driven gear.

FRONT OUTPUT SHAFT – 4WD

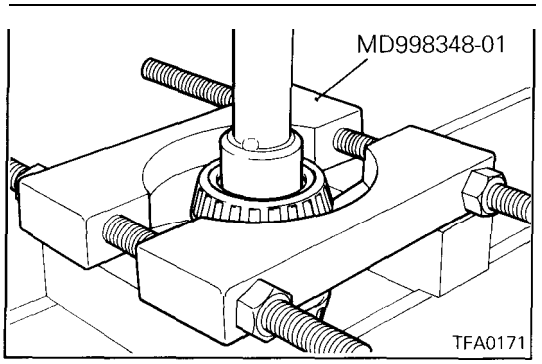
DISASSEMBLY AND REASSEMBLY



Disassembly steps

◇A◇ ◆A◆ 1. Taper roller bearing
◇A◇ ◆A◆ 2. Taper roller bearing
3. Front output shaft

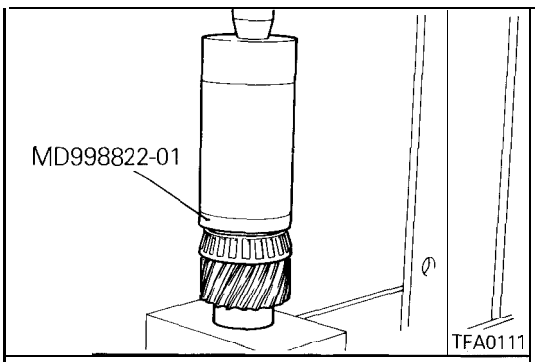
TFA0244

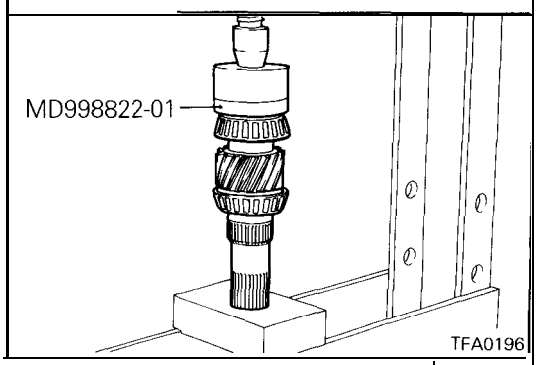


DISASSEMBLY SERVICE POINT

◇A◇ **TAPER ROLLER BEARINGS REMOVAL**

(1) Using the special tool, remove the taper roller bearings on both ends of the front output shaft.





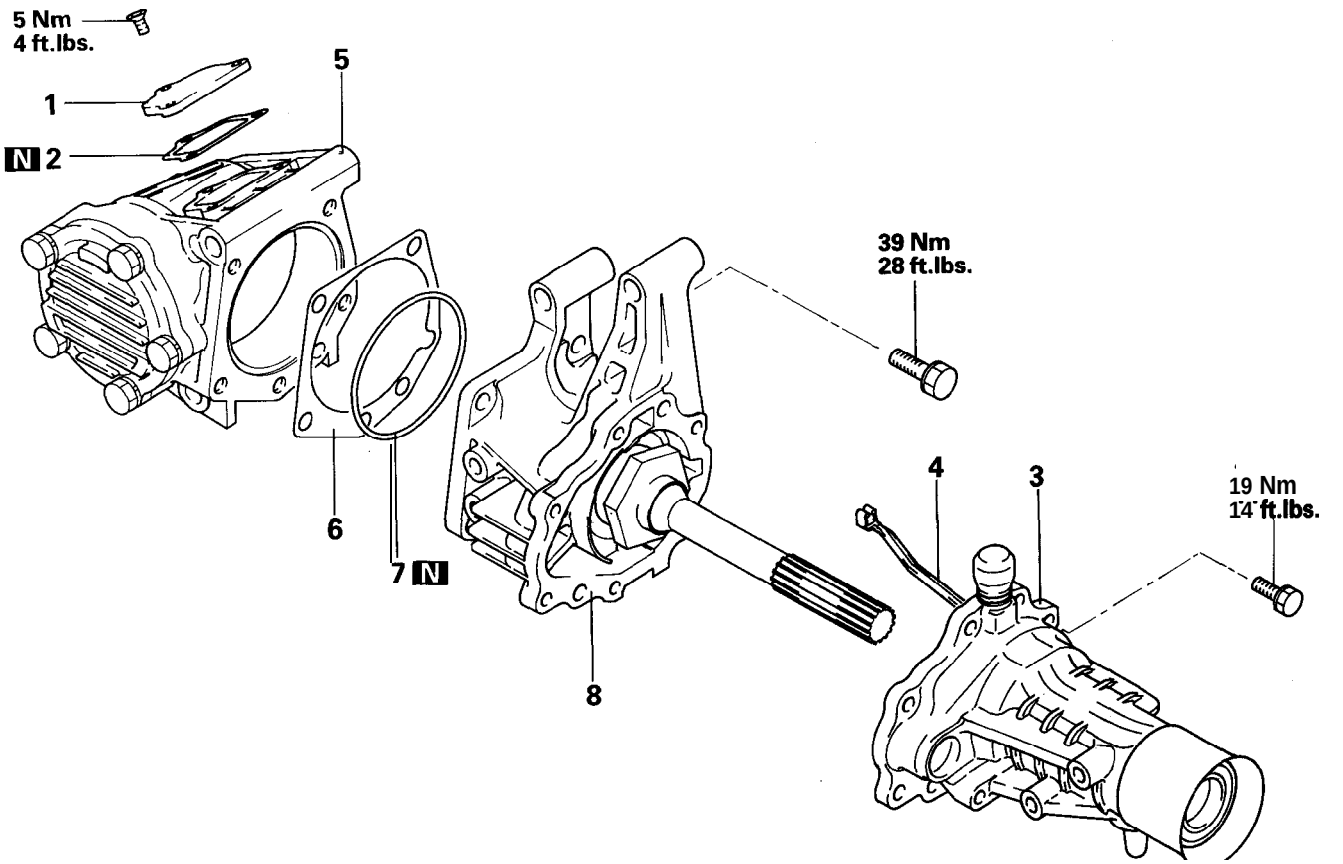
REASSEMBLY SERVICE POINT

◆A◆ **TAPER ROLLER BEARINGS INSTALLATION**

(1) Using the special tool, press-fit the taper roller bearings on both ends of the front output shaft.

TRANSFER – 4WD

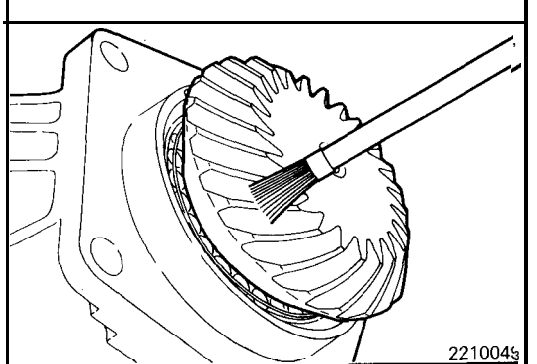
DISASSEMBLY AND REASSEMBLY



Disassembly steps

1. Cover
◆E◆ 2. Cover gasket
◆D◆ 3. Extension housing assembly
4. Oil guide
◆C◆ 5. Transfer case sub assembly
◆B◆ 6. Spacer
7. O-ring
◆A◆ 8. Transfer case adapter sub assembly

TFA0601

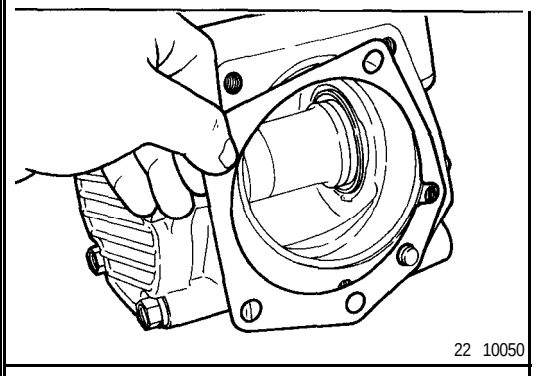


REASSEMBLY SERVICE POINTS

◆A◆ TRANSFER CASE ADAPTER SUB ASSEMBLY INSTALLATION

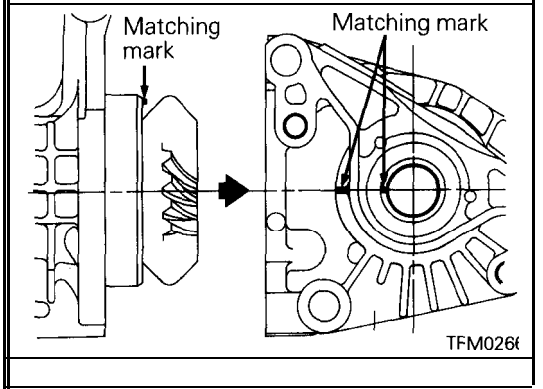
(1) Apply a light and uniform coat of machine blue or red lead to the driven bevel gear teeth (both sides) using a brush.

TSB Revision



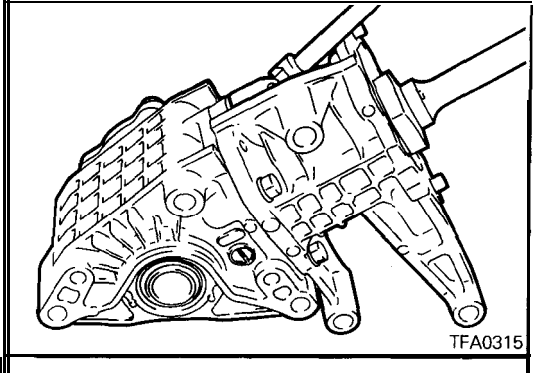
◆B◆ SPACER INSTALLATION

(1) Install the spacer that has been used.



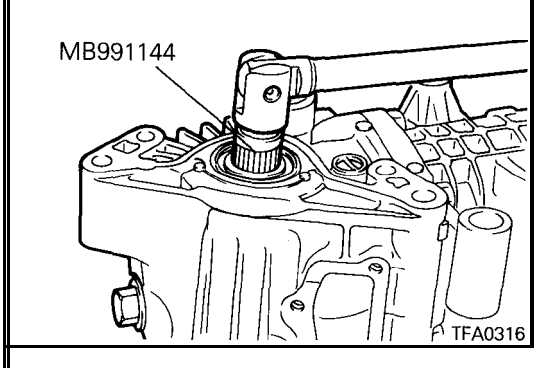
◆C◆ TRANSFER CASE SUB ASSEMBLY INSTALLATION

(1) With the matching marks in alignment, install the transfer case adapter sub assembly to the transfer case sub assembly.



(2) Tighten the transfer case adapter sub assembly to the transfer case sub assembly to specified torque.

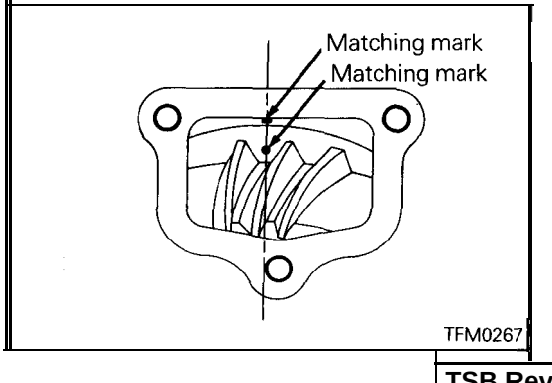
Transfer case adapter mounting bolt: 39 Nm (28 ft.lbs.)



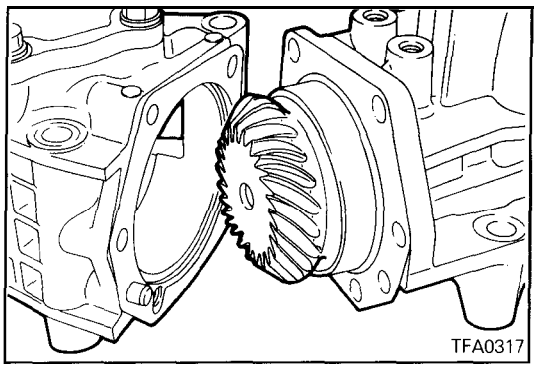
(3) Using the special tool, turn the drive bevel gear shaft (one turn in normal direction, one turn in reverse direction).

NOTE

Do not give the drive bevel gear shaft more than one turn in either direction as this causes unclear tooth contact pattern.

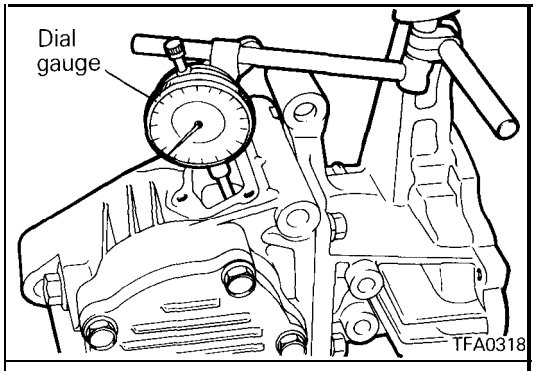


(4) Make sure that the driven bevel gear and transfer case matching marks are in alignment.


TFA0317

(5) Check to see if the drive bevel gear tooth contact is normal.

NOTE
Refer to the TOOTH CONTACT ADJUSTMENT PROCEDURES on next page (below) for the standard tooth contact.



TFA0318

(6) Check to see if the drive bevel gear and driven bevel backlash is as specified.

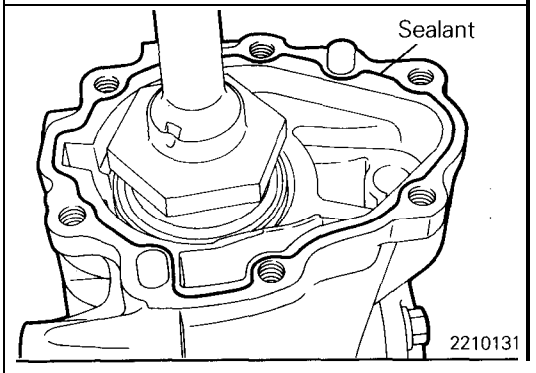
Standard value: Bevel gear set backlash
0.08 – 0.13 (.0031 – .0051 in.)

◆D◆ EXTENSION HOUSING INSTALLATION

(1) Apply sealant to the adapter flange surface and install the extension housing.

Specified sealant:
Mitsubishi genuine sealant Part No. MD997740 or equivalent

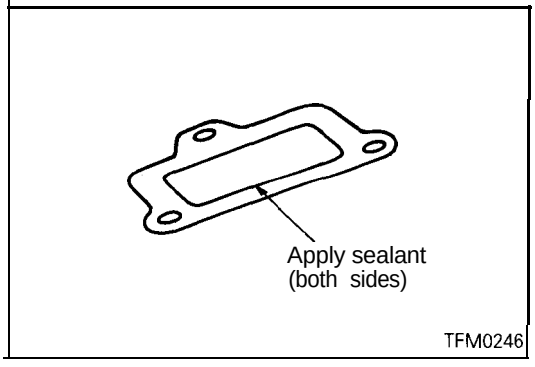
NOTE
Squeeze out sealant from the tube uniformly and continuously in adequante amount.



2210131

◆E◆ SEALANT TO COVER GASKET APPLICATION

Specified sealant:
3M ATD Part No. 8660 or equivalent



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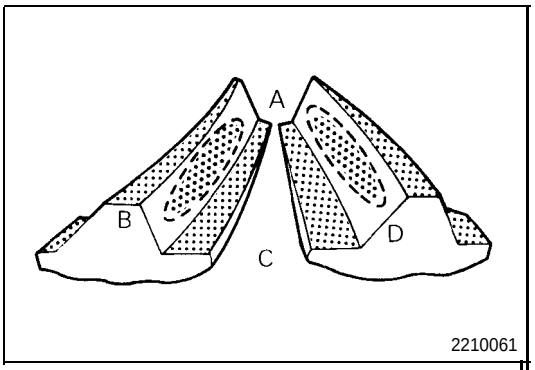
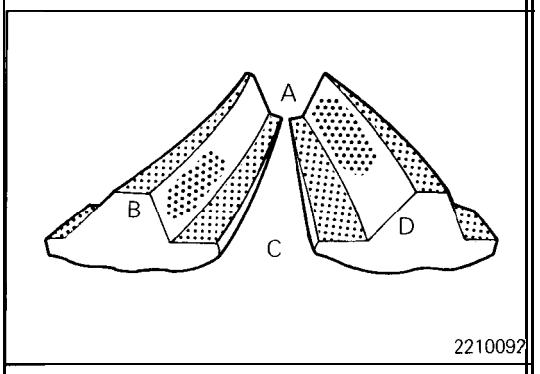


2210061

TOOTH CONTACT ADJUSTING PROCEDURES

1. Standard tooth contact pattern

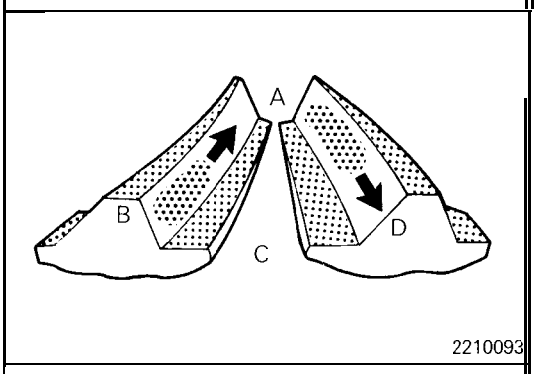
A .... Small end side
B . . Drive side tooth face
(Side on which force acts when running forward)
C .... Big end side
D.... Coast side tooth face
(Side on which force acts when reversing)



2210092

2. Tooth contact pattern produced when drive bevel gear height is too large

Cause
The driven bevel is too close to the drive bevel gear.

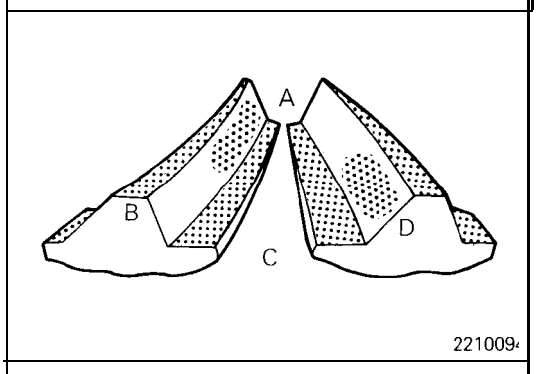


2210093

Remedy
Use thicker bevel gear mount adjusting spacer to separate the driven bevel gear more from the drive bevel gear.

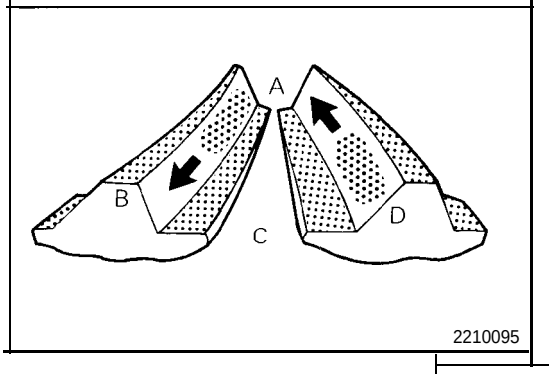
3. Tooth contact pattern produced when driven bevel gear height is too small

Cause
The driven bevel gear is too separated from the drive bevel gear.

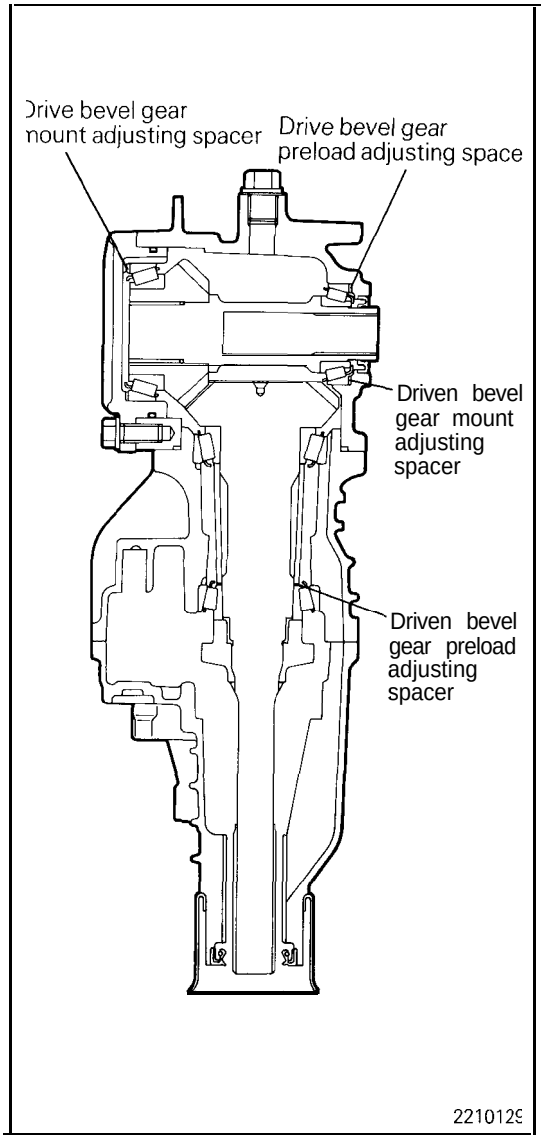


2210094

Remedy
Use thinner driven bevel gear mount adjusting spacer to bring the driven bevel gear more closer to the drive bevel gear.



2210095



NOTE

(1) If correct tooth contact cannot be obtained even by change of the driven bevel gear mount adjusting spacer, increase or decrease the drive bevel gear preload adjusting spacer and the drive bevel gear mount adjusting spacer as described below and then adjust tooth contact again.

- When the driven bevel gear height is too small even if the thinnest driven bevel gear mount adjusting spacer 0.13 mm (.0051 in.) is used:

  Replace the drive bevel gear mount adjusting spacer that is in use with one that is one rank thicker and replace the drive bevel preload adjusting spacer that is in use with one that is one rank thinner.

- When the driven bevel gear height is too large even if the thickest driven bevel gear mount adjusting spacer 0.52 (.025 in.) is used:

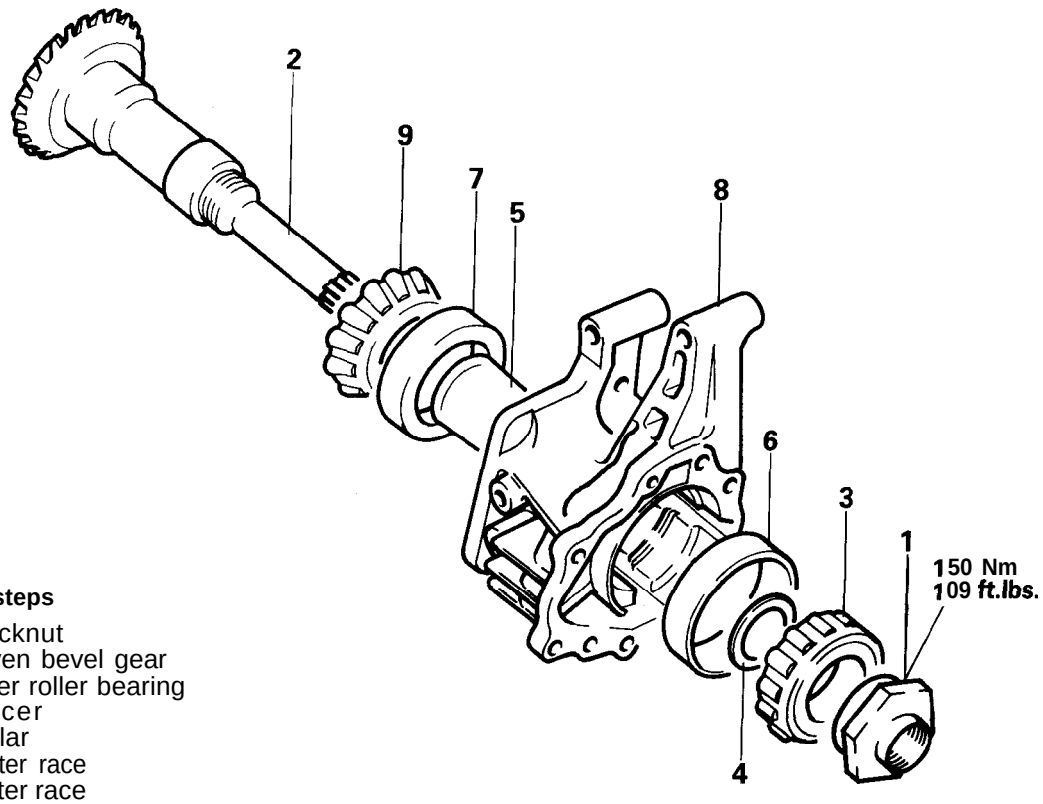
  Replace the drive bevel gear mount adjusting spacer that is in use with one that is one rank thinner and replace the drive bevel gear preload adjusting spacer that is in use with one that is one rank thicker.

  Repeat above steps until the tooth contact pattern equal or close to the standard pattern is obtained.

(2) If the tooth contact pattern cannot be adjusted close to the standard pattern by above adjustment, replace the drive bevel gear and driven bevel gear as a set and readjust the tooth contact.

TRANSFER CASE ADAPTER – 4WD

DISASSEMBLY AND REASSEMBLY



Disassembly steps

◇A◇ ◆B◆ 1. Locknut
◇B◇ ◆D◆ 2. Driven bevel gear
◆C◆ 3. Taper roller bearing
◆B◆ 4. Spacer
5. Collar
◇C◇ 6. Outer race
◇C◇ 7. Outer race
8. Transfer case adapter
◇D◇ ◆A◆ 9. Taper roller bearing

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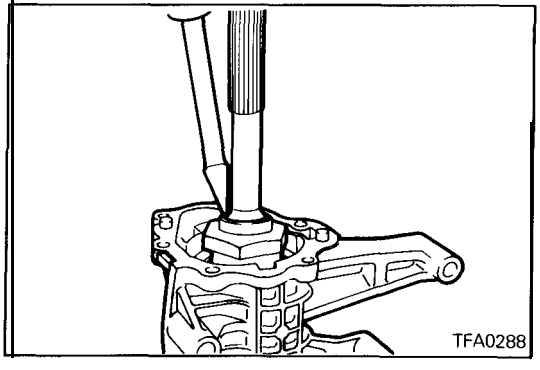
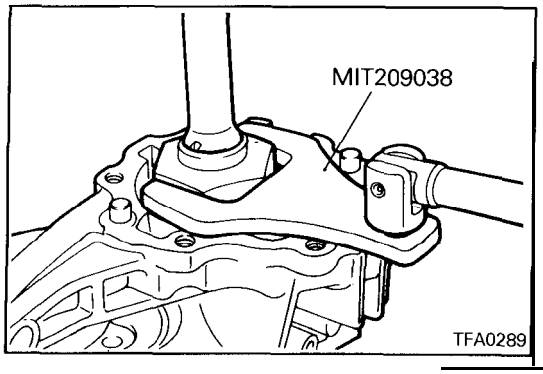


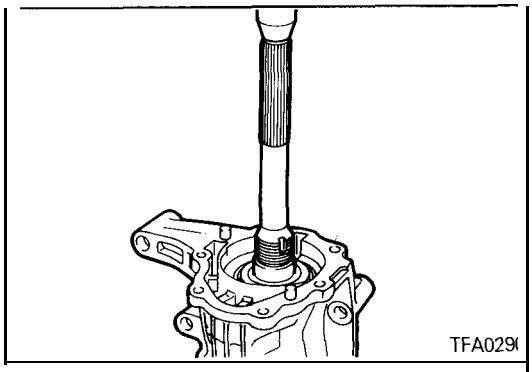


DISASSEMBLY SERVICE POINTS

◇A◇ LOCKNUT REMOVAL

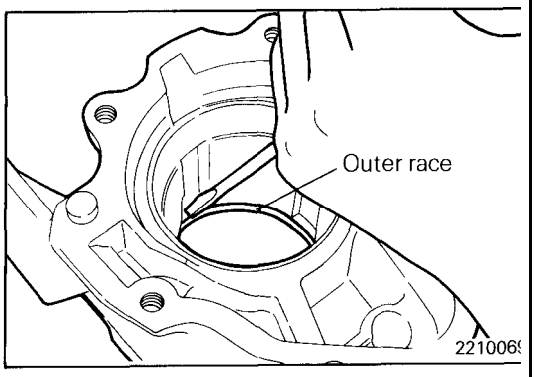
(1) Unlock the lock nut. (Straighten the bent nut.)

(2) Holding the driven bevel gear in a vice and using the special tool, remove the lock nut.



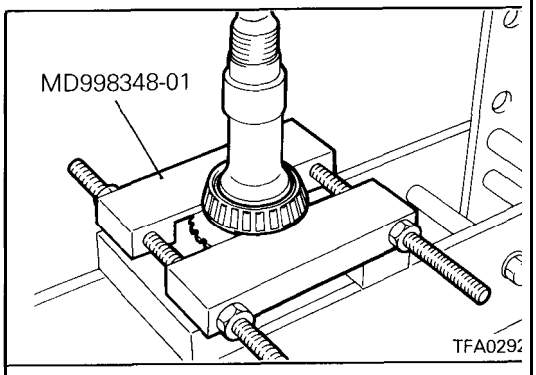
⟨B⟩ DRIVEN BEVEL GEAR ASSEMBLY REMOVAL

(1) Using a press, remove the driven bevel gear assembly.



⟨C⟩ OUTER RACE REMOVAL

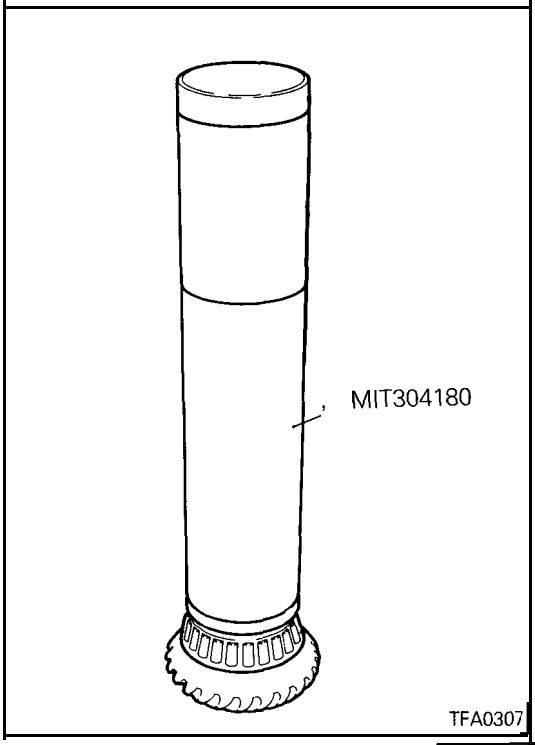
(1) Remove the outer race, striking lightly with a screwdriver, etc.

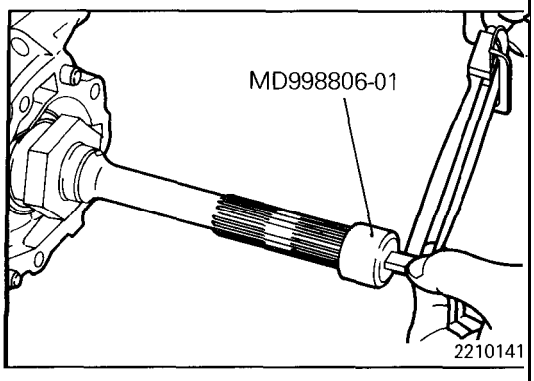


⟨D⟩ TAPER ROLLER BEARING REMOVAL

REASSEMBLY SERVICE POINTS

▶A◀ TAPER ROLLER BEARING INSTALLATION



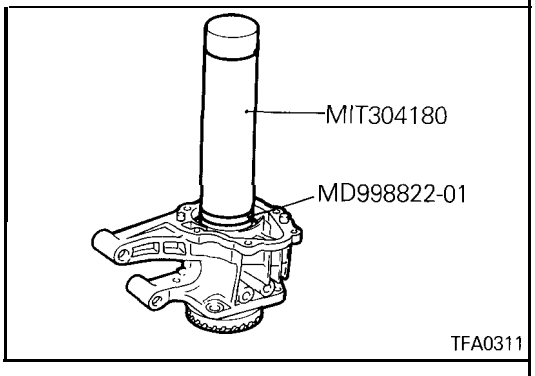


◆B◆ SPACER SELECTION

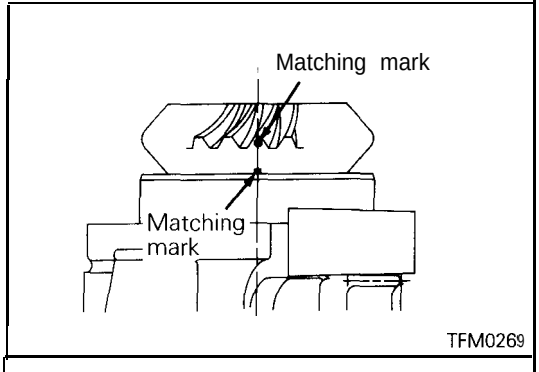
(1) Use the existing spacer to assemble the transfer case adapter.
(2) Using the special tool, check that the bevel gear rotating drive torque is within standard range.

Standard value: 1.0 – 1.7 Nm (.72 – 1.23 ft.lbs.)

(3) If the rotating drive torque is outside of the standard range, adjust using adjusting spacers.

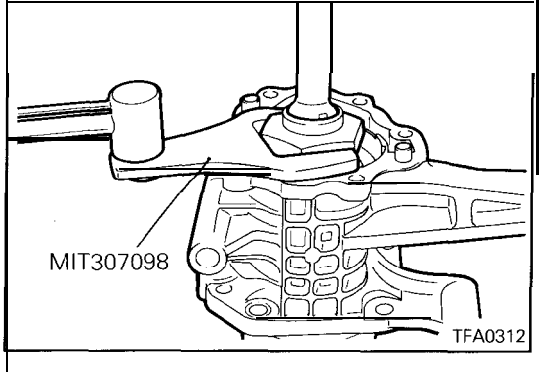


◆C◆ TAPER ROLLER BEARING INSTALLATION



◆D◆ DRIVEN BEVEL GEAR INSTALLATION

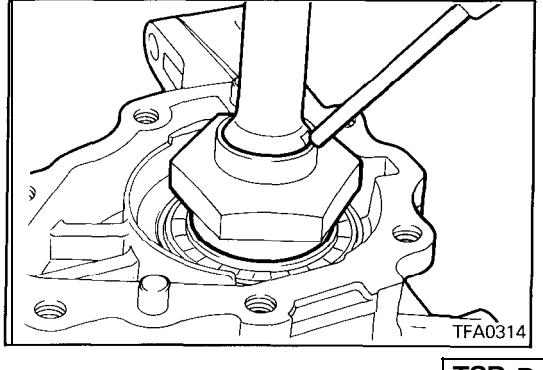
(1) Attach the driven bevel gear to the transfer case adapter and then align their matching marks.



◆E◆ LOCK NUT INSTALLATION

(1) Holding the driven bevel gear in a vice and using the special tool, tighten the lock nut to specified torque.

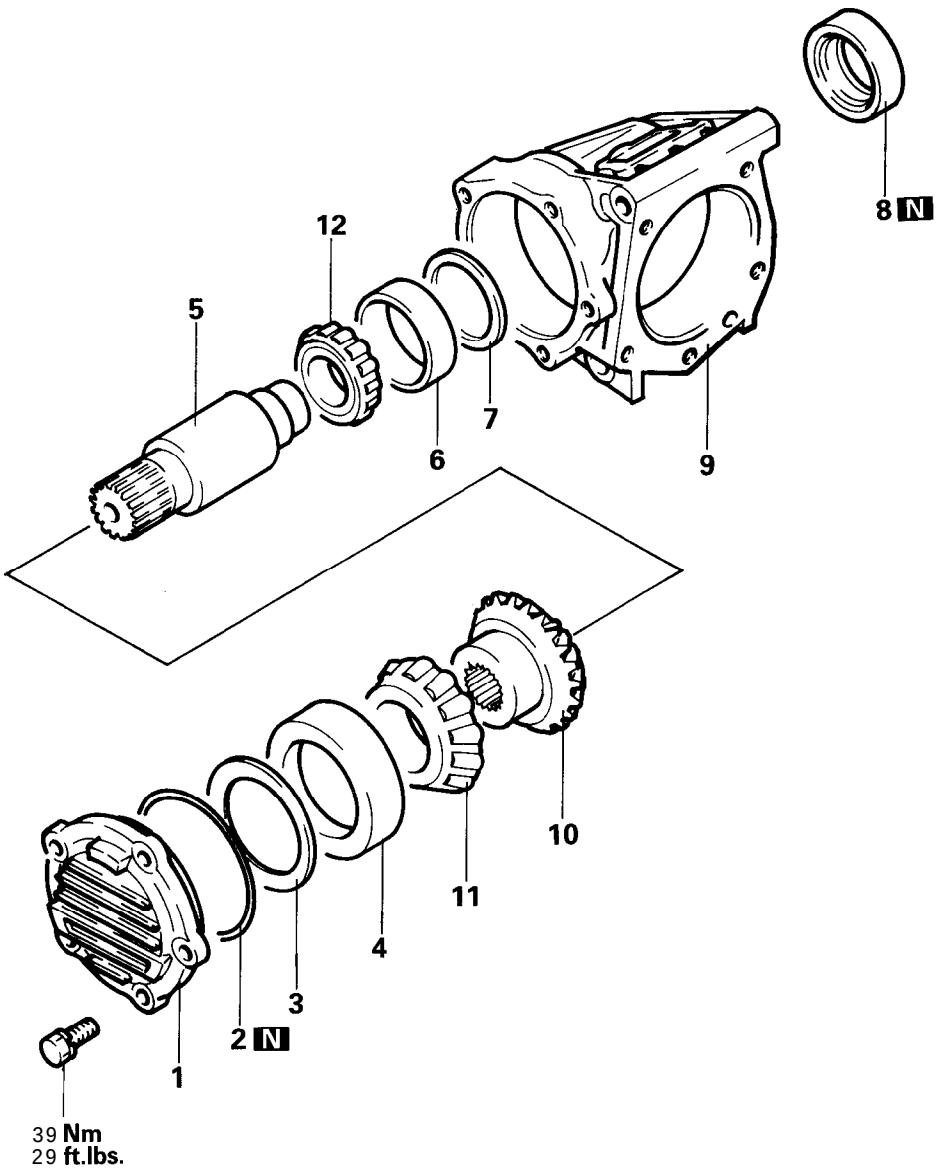
Driven bevel gear lock nut: 150 Nm (108 ft.lbs)



(2) Lock the lock nut at two positions.

TRANSFER CASE – 4WD

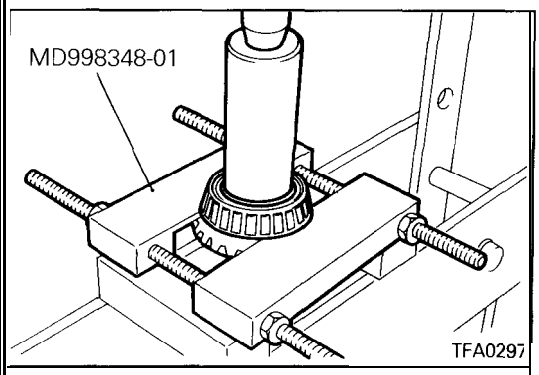
DISASSEMBLY AND REASSEMBLY

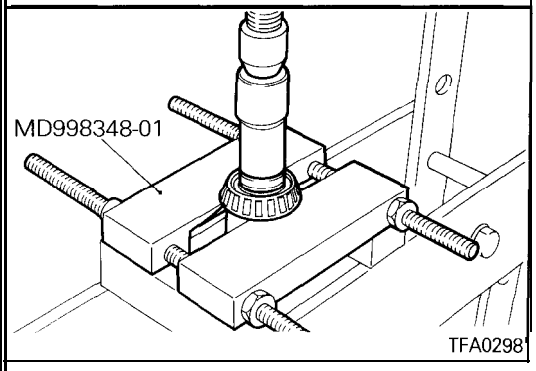


Disassembly steps

1. Transfer cover
2. O-ring
◆E◆ **3.** Spacer
4. Outer race
◆D◆ 5. Drive bevel gear shaft
6. Outer race
◆E◆ 7. Spacer
◆C◆ **8. Oil** seal
9. Transfer case
◆B◆ 10. Drive bevel gear
〈A〉◆A◆ 11. Taper roller bearing
〈A〉◆A◆ 12. Taper roller bearing

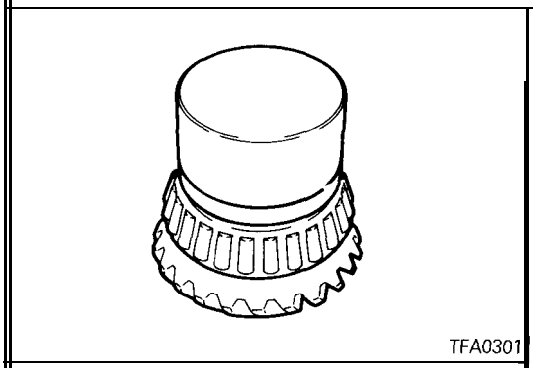
TFA0603

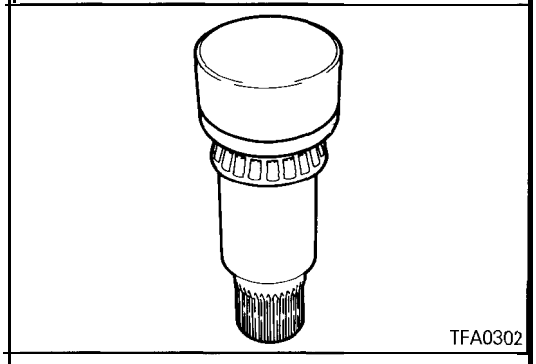




DISASSEMBLY SERVICE POINT

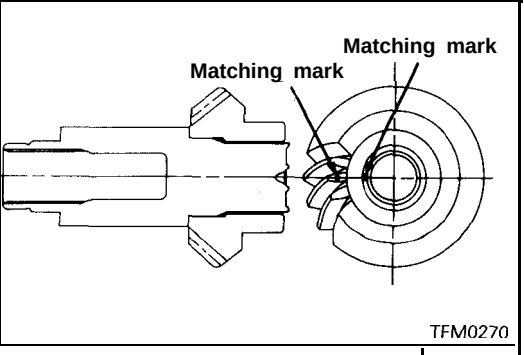
〈A〉 TAPER ROLLER BEARINGS REMOVAL





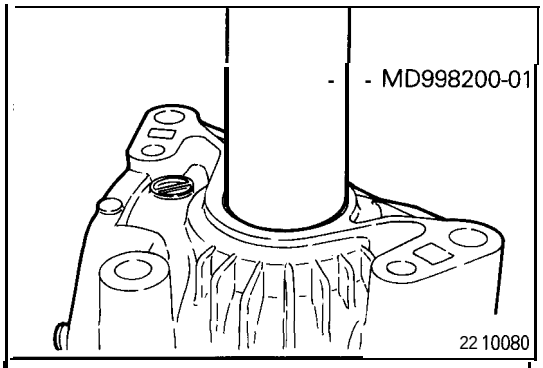
REASSEMBLY SERVICE POINTS

▶A◀ TAPER ROLLER BEARING INSTALLATION

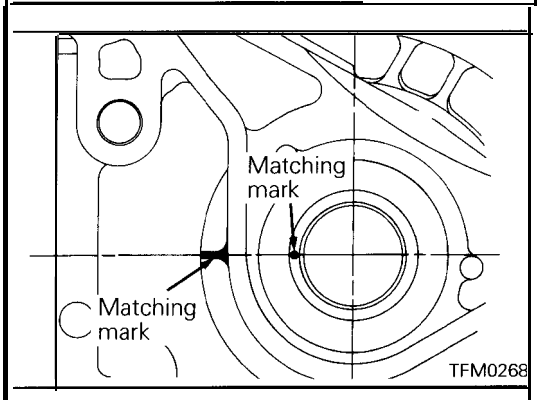


▶B◀ DRIVE BEVEL GEAR INSTALLATION

(1) Install the drive bevel gear to the drive bevel gear shaft with their matching marks in alignment.

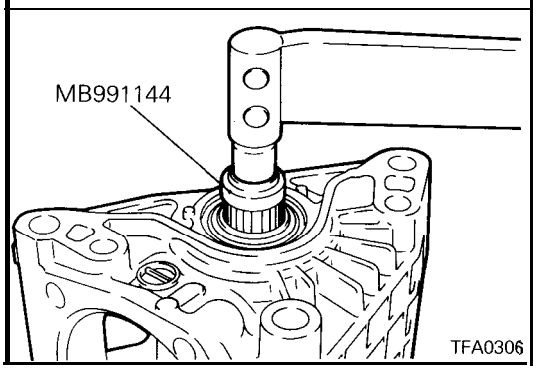


◆C◆ OIL SEAL INSTALLATION



◆D◆ DRIVE BEVEL GEAR SHAFT INSTALLATION

(1) Install the drive bevel gear shaft to the transfer case and align the matching mark on the transfer case with that on the drive bevel gear shaft.



◆E◆ SPACER SELECTION

(1) Use the existing spacer to assemble the transfer case.
(2) Using the special tool, check that the bevel gear rotating drive torque is within standard range.

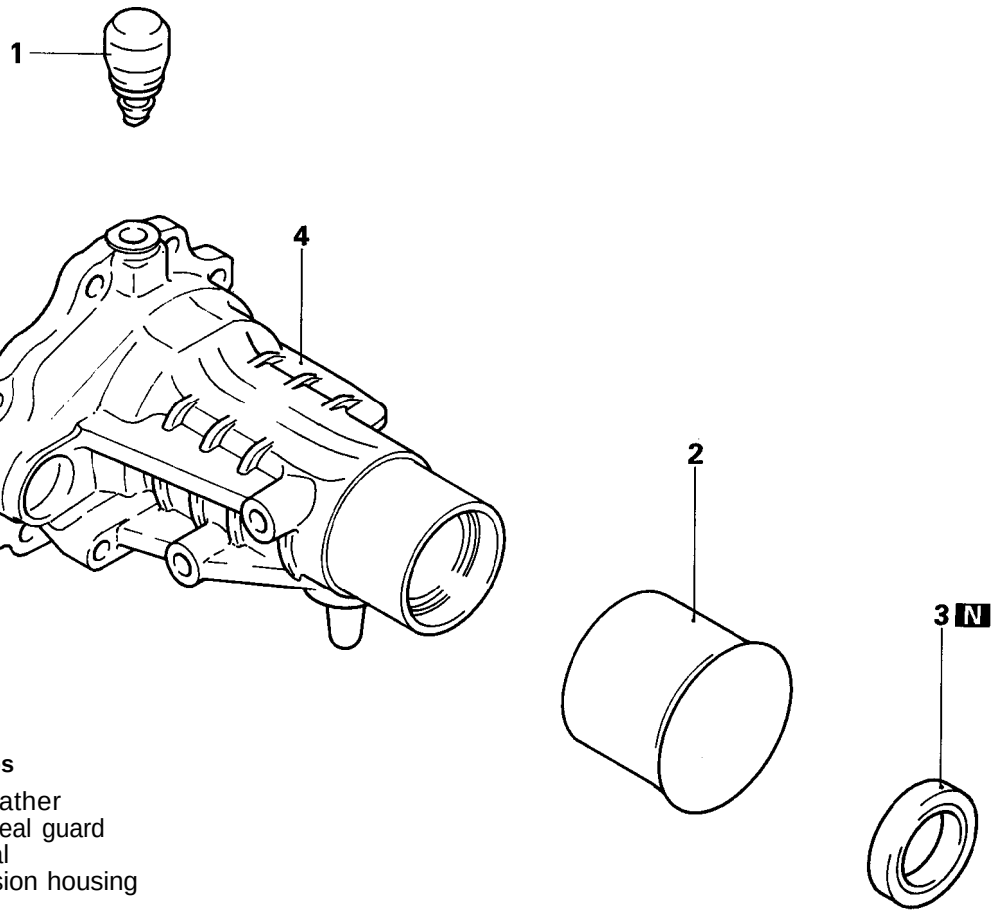
Standard value: 1.7 – 2.5 Nm (1.23 – 1.81 ft.lbs.)

(3) If the rotating drive torque is outside of the standard range, adjust using adjusting spacers.

NOTE
For adjustment, use two spacers of which thickness is as close as possible to each other.

EXTENSION HOUSING – 4WD

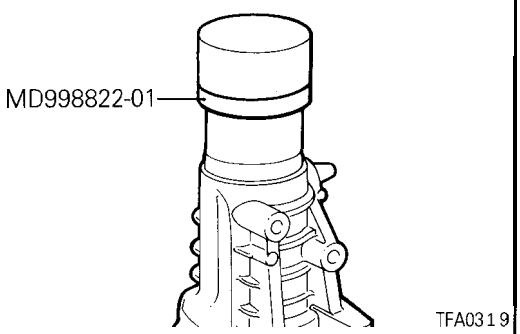
DISASSEMBLY AND REASSEMBLY



Disassembly steps

◆B◆ 1. Air breather
2. Dust seal guard
◆A◆ 3. Oil seal
4. Extension housing

TFA0602



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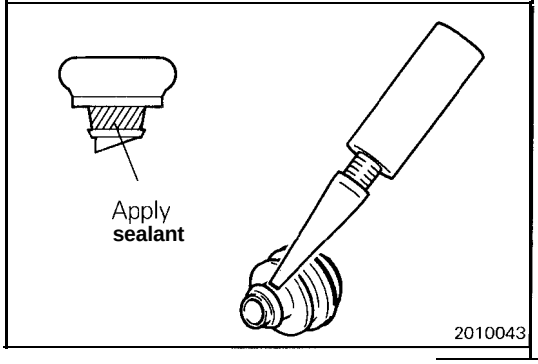
REASSEMBLY SERVICE POINTS

◆A◆ **OIL SEAL INSTALLATION**



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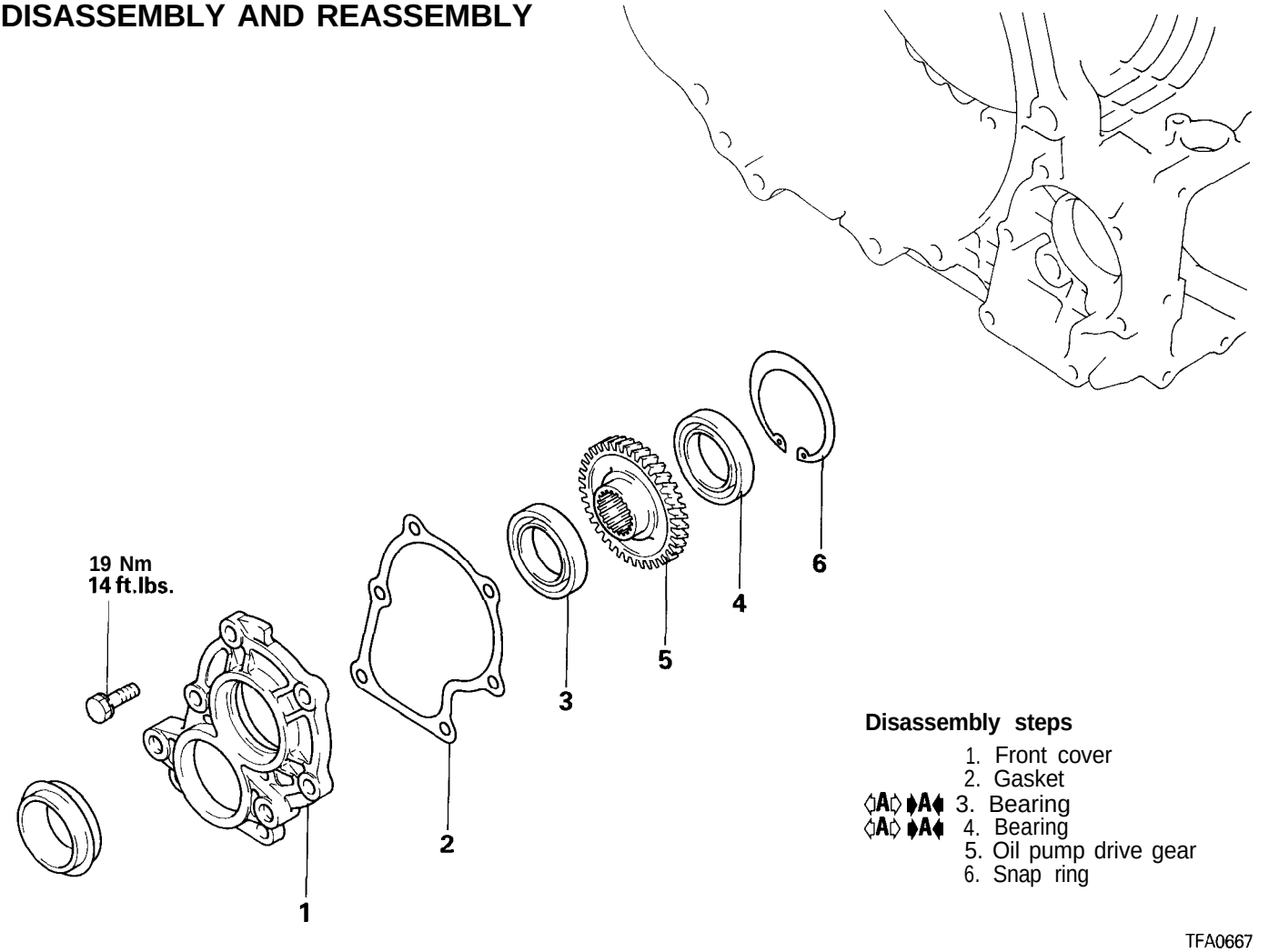
◆B◆ **AIR BLEEDER INSTALLATION**

(1) Install the air bleeder applying sealant to the inserting portion.

Specified sealant:
3M SUPER WETHERSTRIP No. 8001 or equivalent

OIL PUMP DRIVE GEAR – F4A33-1-MNN5, MNPE

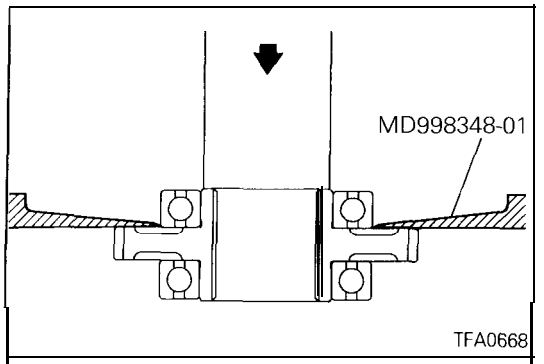
DISASSEMBLY AND REASSEMBLY



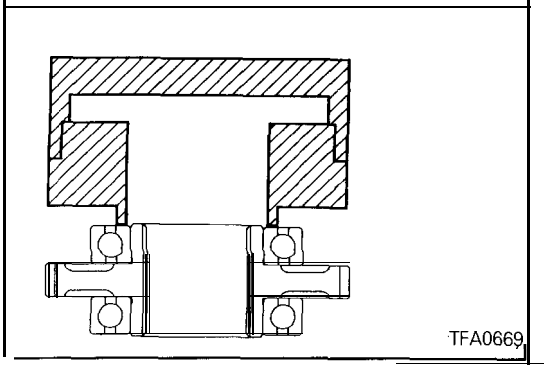
Disassembly steps

1. Front cover
2. Gasket
3. ◇A◇ ◆A◆ Bearing
4. ◇A◇ ◆A◆ Bearing
5. Oil pump drive gear
6. Snap ring

TFA0667



TFA0668



TFA0669

DISASSEMBLY SERVICE POINT

◇A◇ **BEARING REMOVAL**

REASSEMBLY SERVICE POINT

◆A◆ **BEARING INSTALLATION**

NOTES