AUTOMATIC TRANSMISSION

F3A21, F3A22, F4A21, F4A22, F4A23

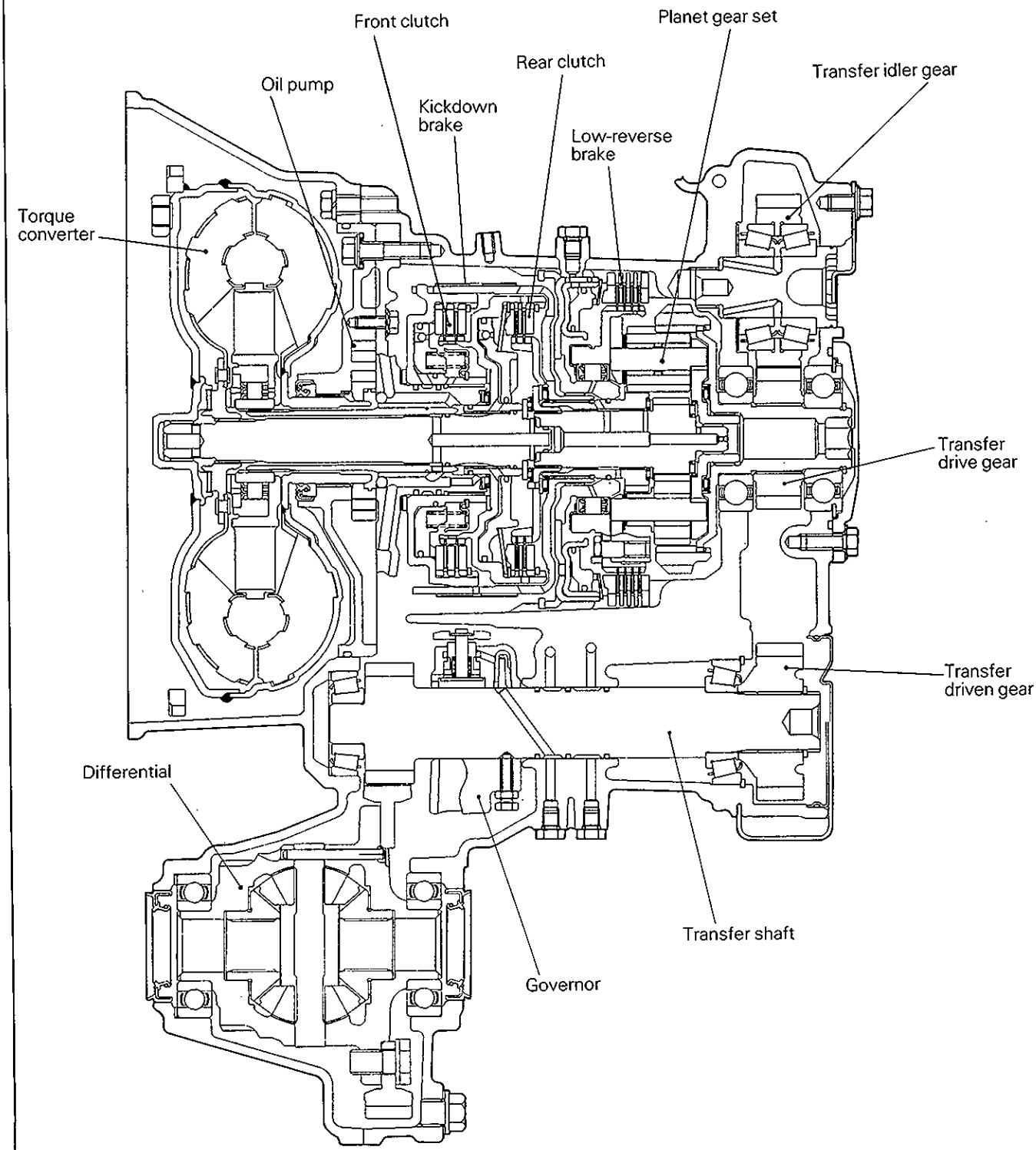
CONTENTS

GENERAL INFORMATION

Precautions to be taken when disassembling and reassembling the transmission

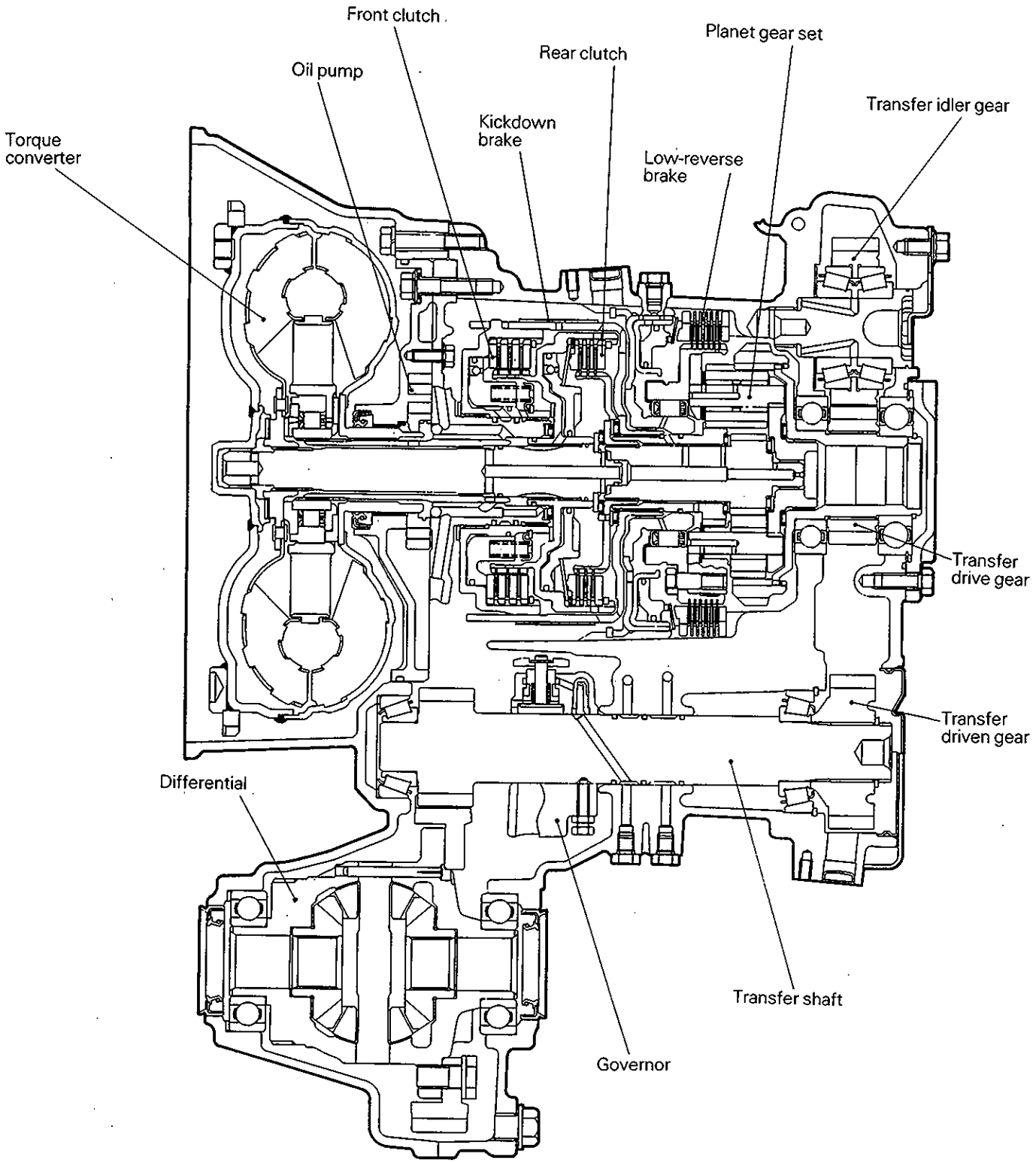
- Because the automatic transmission is composed of component parts of an especially high degree of precision, these parts should be very carefully handled during disassembly and assembly so as not to scar or scratch them.
- A rubber mat should be placed on the workbench, and it should always be kept 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 transmission 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 transmission main unit is damaged, also disassemble and clean the cooler system.

MODEL F3A21 – 3-SPEED AUTOMATIC TRANSMISSION



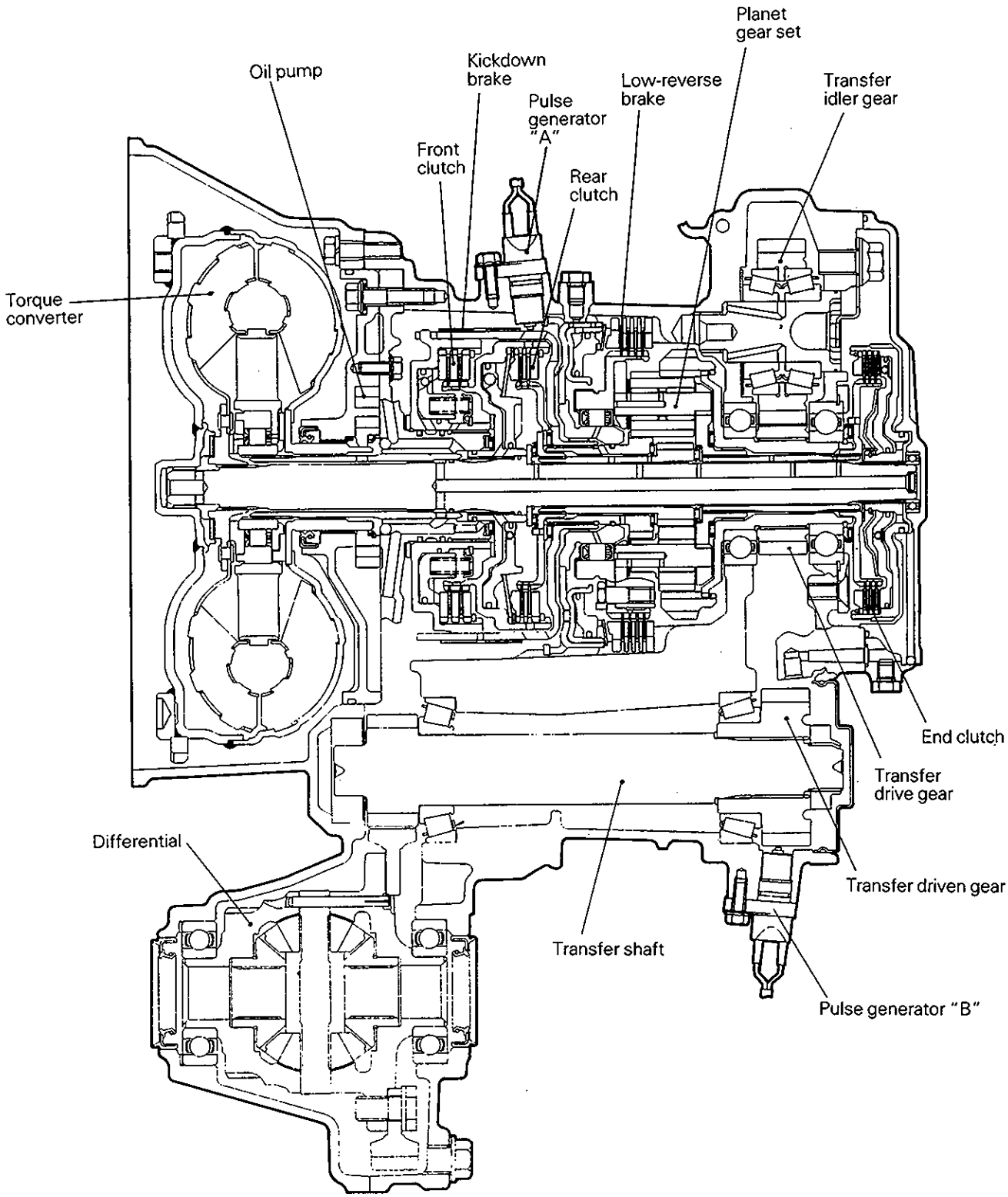
1700014

MODEL F3A22 – 3-SPEED AUTOMATIC TRANSMISSION



1720003

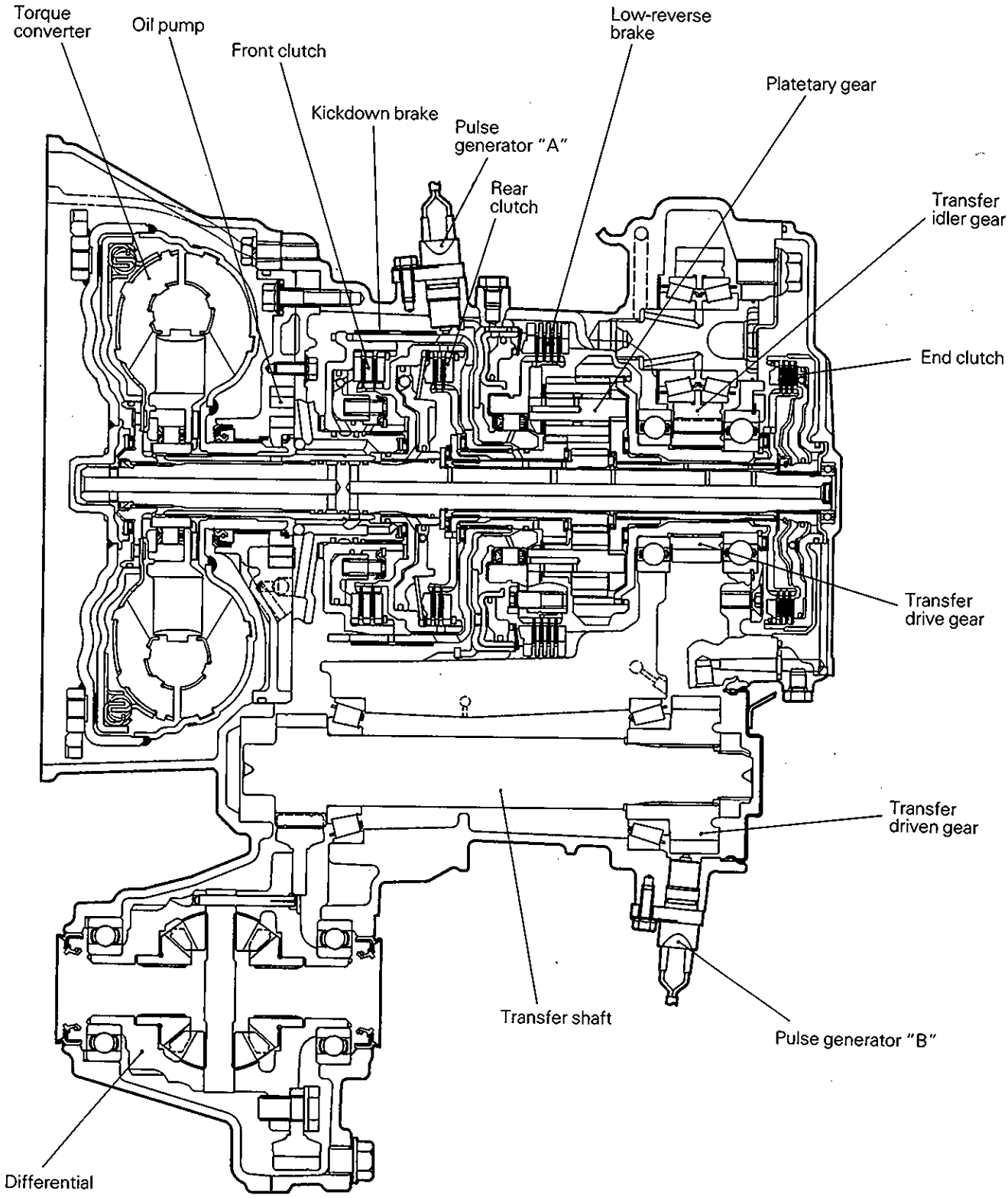
MODEL F4A21 – 4-SPEED AUTOMATIC TRANSMISSION (Without damper clutch)



1760024

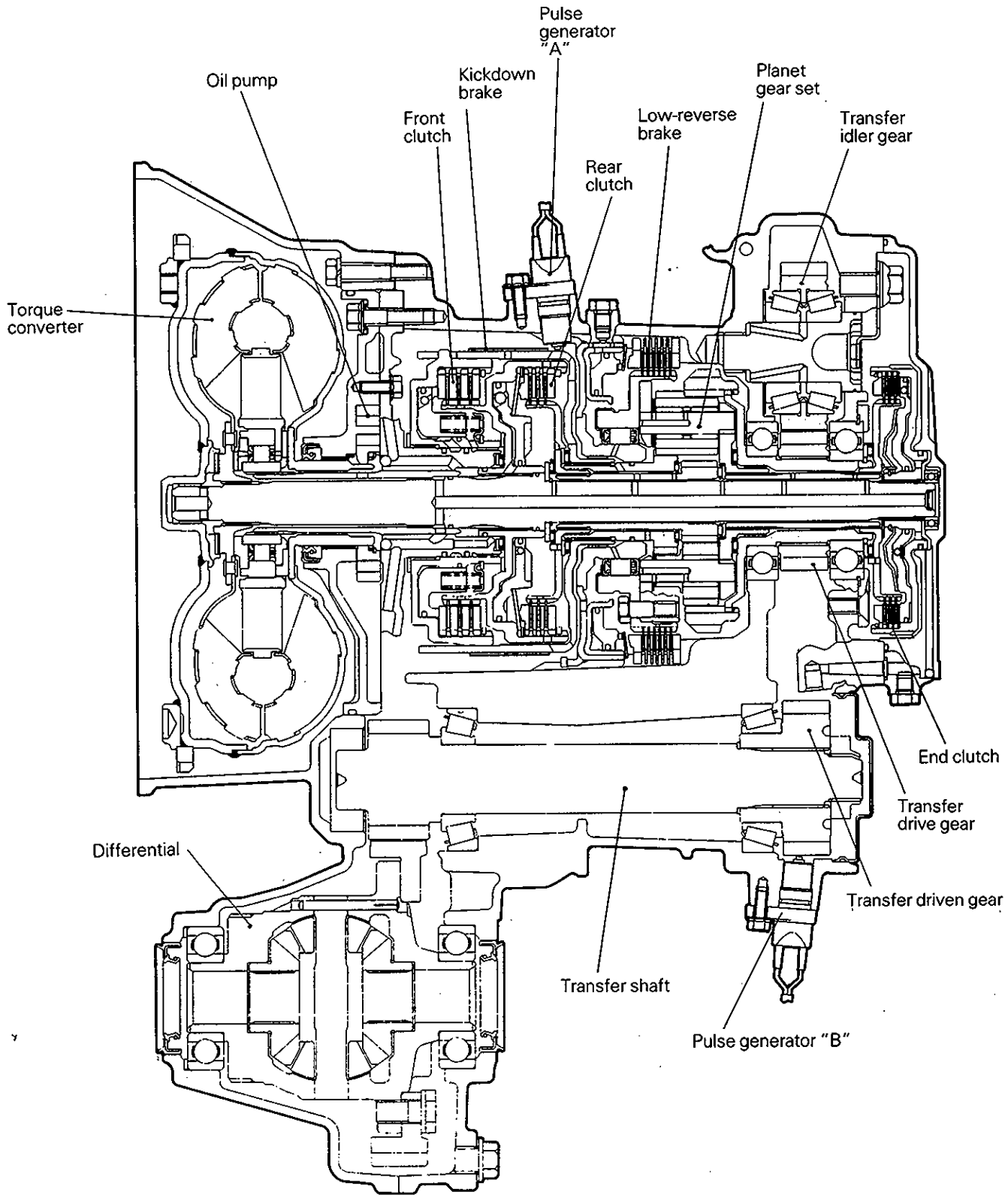
Revised

MODEL F4A21 – 4-SPEED AUTOMATIC TRANSMISSION (With damper clutch)



TFA0550

MODEL F4A22 – 4-SPEED AUTOMATIC TRANSMISSION (Without damper clutch)



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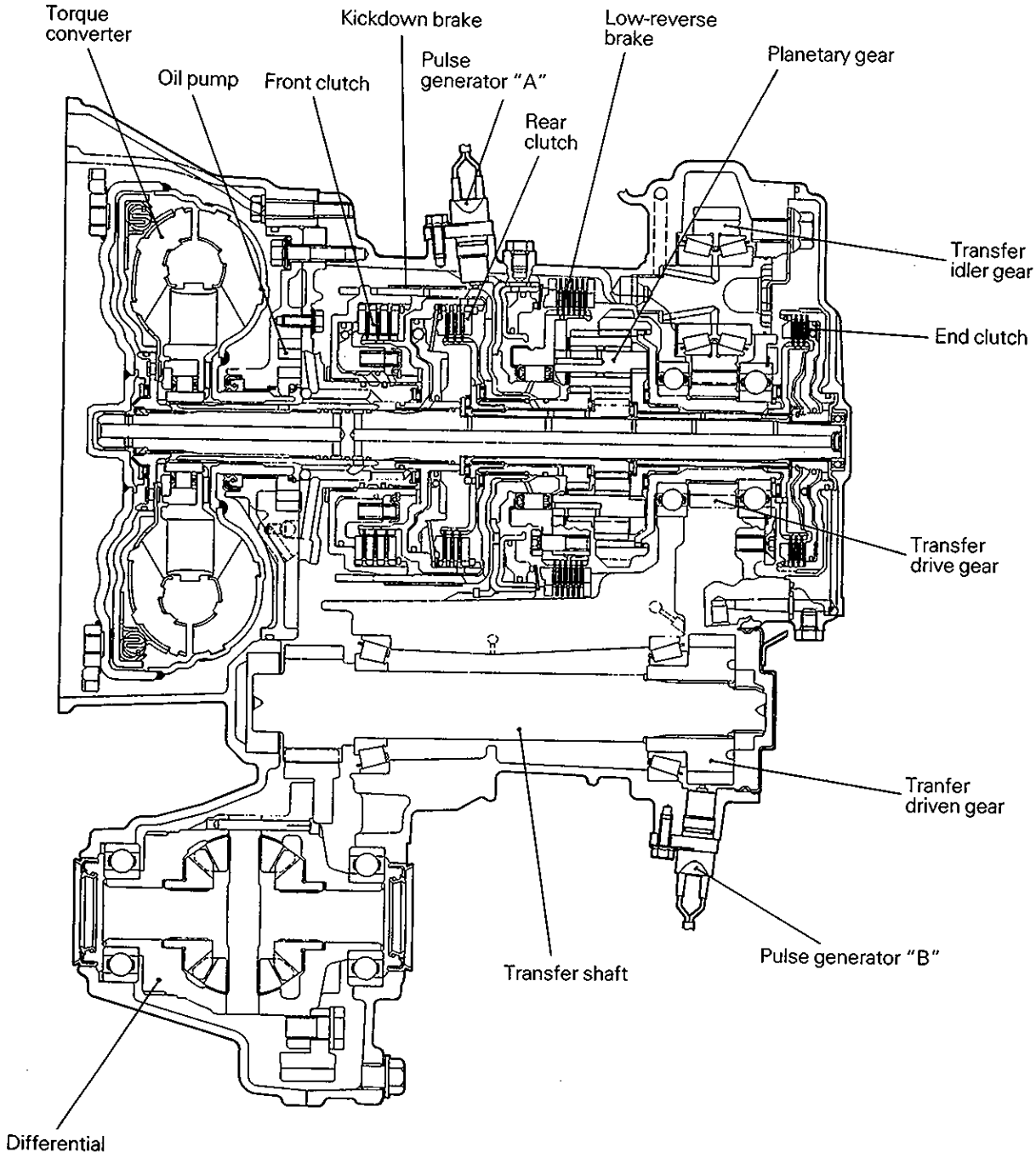
MODEL F4A22 – 4-SPEED AUTOMATIC TRANSMISSION (With damper clutch)



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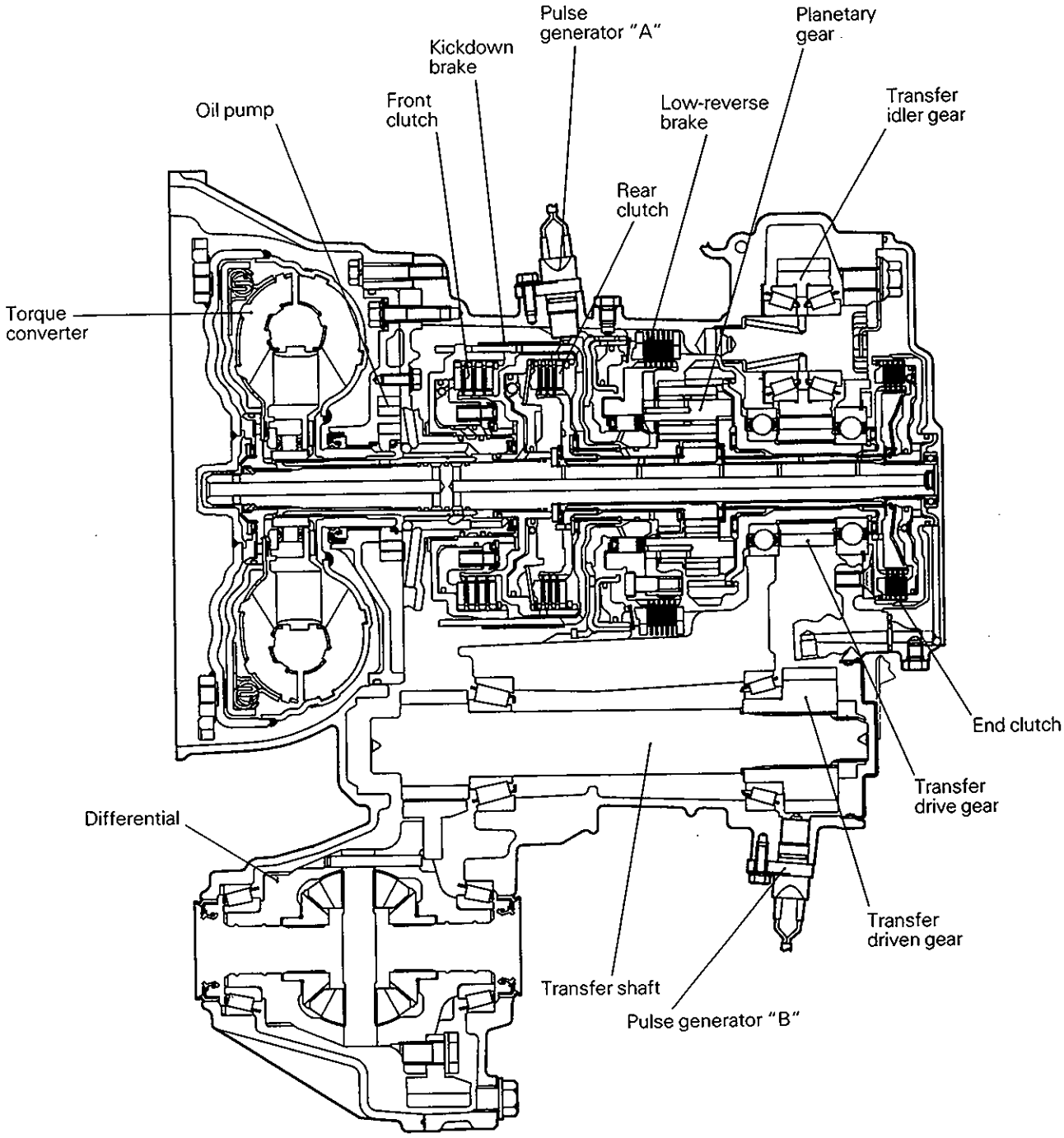
MODEL F4A23 – 4-SPEED AUTOMATIC TRANSMISSION (With damper clutch)



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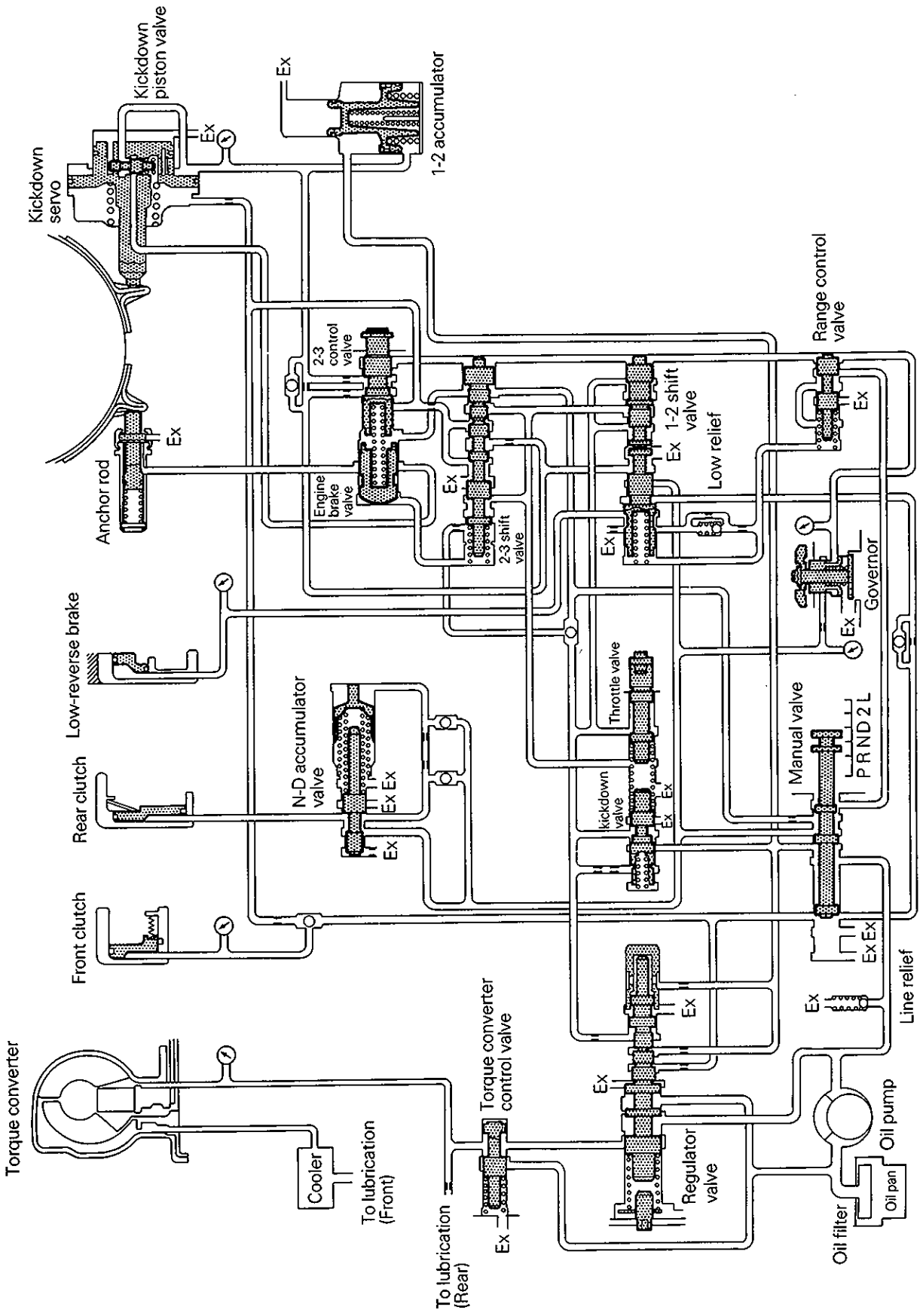
HYDRAULIC CONTROL SYSTEM – 3-SPEED MODELS



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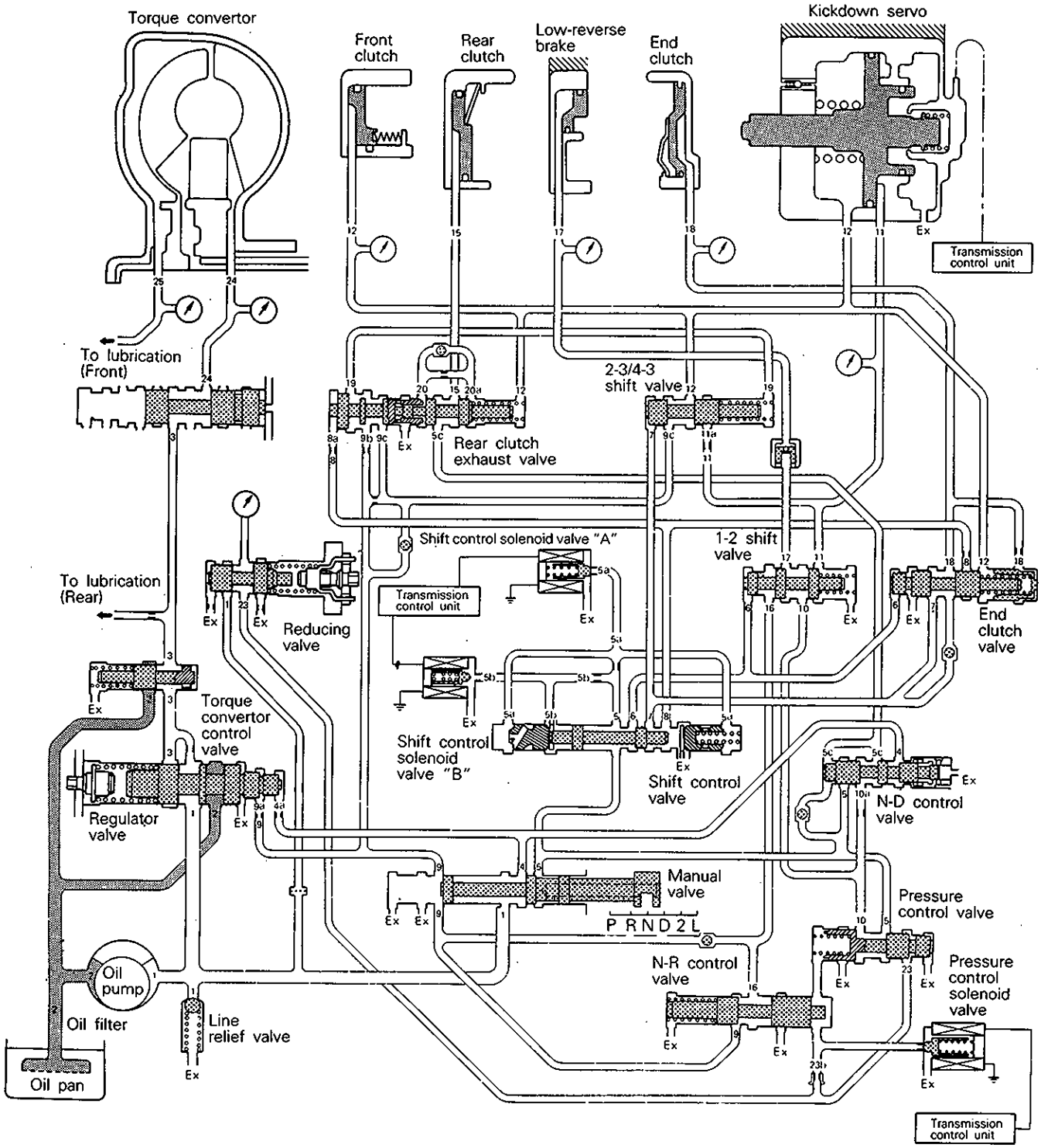
Revised

HYDRAULIC CONTROL SYSTEM – 4-SPEED MODELS (Without damper clutch)



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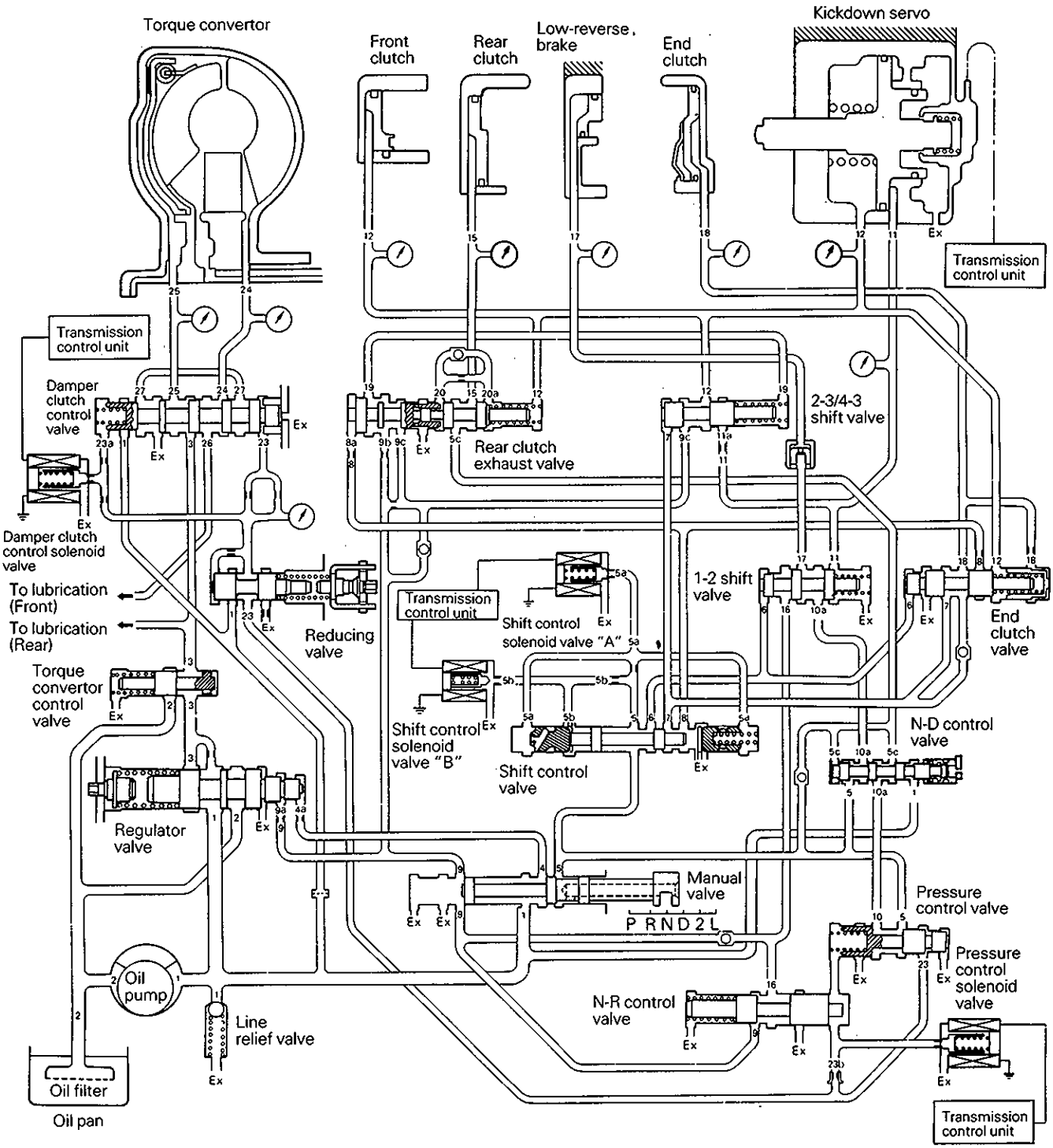
HYDRAULIC CONTROL SYSTEM – 4-SPEED MODELS (With damper clutch)



TFA0070

Added

LIST OF MAJOR CHANGES

	Description of Change	Applicable Transmission Model	Effective Date
①	Change in shape of oil pump rib and groove	All models	From Apr. 1989
②	Change of rear cover O-ring from 2-piece type to 1-piece type	4-speed model	From Aug. 1988
③	Change in shape of lower valve body end cover	3-speed model	From Mar. 1988
④	Addition of plug to intermediate plate	4-speed model	From Feb. 1988
⑤	Change in shape of plug	4-speed model	From Aug. 1988
⑥	Change of drive plate tightening bolt	3-speed model for Colt/Lancer 4-speed model for Colt/Lancer Space runner, Space wagon	From 1992 model year

NOTES

1. SPECIFICATIONS

TRANSMISSION MODEL TABLE

1988 MODEL

Transmission model		Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC 4-speed	KM175-7-CQ	A	30/36	4.350	E33A	4G63
	KM175-7-CR	A	29/36	4.350	E33A	4G63
	KM176-7-R	A	29/36	4.062	E32A	4G37
	KM176-8-CR	B	29/36	4.062	E34A	4D65
EXP 4-speed	KM175-7-R	A	29/36	4.350	E33A	4G63
	KM176-7-R	A	29/36	4.062	E32A	4G37

1989 MODEL

Transmission model		Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC 3-speed	KM170-5-AP	A	31/36	3.600	C52A, C62A	4G15
	KM170-5-ANL	A	32/36	3.600	C12A, C12V	4G15
	KM170-5-APS	A	31/36	3.600	D05W	4G37
	KM170-5-APML	A	31/36	3.600	C12V	4G15
	KM172-7-APM	A	31/36	3.705	D04W	4G63
4-speed	KM175-7-CQ	A	31/36	4.350	E33A	4G63
	KM175-7-CR	A	29/36	4.350	E33A	4G63
	KM176-7-R	A	29/36	4.062	E32A	4G37
	KM176-7-CP	A	31/36	4.367	C52A, C62A	4G15
	KM176-8-CR	B	29/36	4.062	E34A	4D65
EXP 3-speed	KM170-5-AP	A	31/36	3.600	C52A, C62A	4G15
	KM170-5-AP	A	31/36	3.600	D05W	4G37
	KM170-5-ANL	A	32/36	3.600	C12A, C12V	4G15
	KM170-5-APS	A	31/36	3.600	D05W	4G37
4-speed	KM175-7-R	A	29/36	4.007	E33A	4G63
	KM175-7-CR	A	29/36	4.350	E33A	4G63
	KM176-7-R	A	29/36	4.062	E32A, E31A	4G37, 4G32
	KM176-7-CP	A	31/36	4.367	C62A	4G15
AUS 3-speed	KM170-5-AP	A	31/36	3.600	C62A	4G15
	KM172-7-AP	A	31/36	3.705	D04W	4G63

1990 MODEL

Transmission model		Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC 3-speed	F3A21-2-ER1	A	31/36	3.600	D05W	4G37
	F3A21-2-ES1	A	32/36	3.600	C12V	4G15
	F3A21-2-ER12	A	31/36	3.600	C52A, C62A	4G15
	F3A21-2-ER13	A	31/36	3.600	C12V	4G15
	F3A22-2-ER1	A	31/36	3.705	D04W	4G63
4-speed	F4A21-2-MP1	A	29/36	4.062	E32A	4G37
	F4A21-2-UR1	A	31/36	4.367	C52A, C62A	4G15
	KM176-7-R	A	29/36	4.062	E33A	4G63
	KM176-8-CR	A	29/36	4.062	E34A	4D65
	F4A22-2-UP1	A	29/36	4.350	E32A	4G37
	F4A22-2-UQ1	A	30/36	4.350	E32A	4G37
	KM175-7-CQ	A	30/36	4.350	E33A	4G63
	KM175-7-CR	A	29/36	4.350	E33A	4G63
EXP 3-speed	F3A21-2-MR13	A	31/36	4.062	C61A	4G13
	F3A21-2-ER1	A	31/36	3.600	D05W	4G37
	F3A21-2-ES1	A	32/36	3.600	C12V	4G15
	F3A21-2-ER12	A	31/36	3.600	C52A, C62A	4G15
	F3A21-2-ER13	A	31/36	3.600	C12V	4G15
4-speed	F4A21-2-MP1	A	29/36	4.062	E31A, E32A	4G32, 4G37
	F4A21-2-UR1	A	31/36	4.367	C62A	4G15
	F4A22-2-MP1	A	29/36	4.007	E33A	4G63
	KM175-7-CR	A	29/36	4.350	E33A	4G63
AUS 3-speed	F3A21-2-ER12	A	31/36	3.600	C62A	4G15
	F3A22-2-ER11	A	31/36	3.705	D04W	4G63
4-speed	F4A21-2-UR1	A	31/36	4.367	C52A, C62A	4G15
	KM175-7-CR	A	29/36	4.350	E33A	4G63

1991 MODEL

Transmission model		Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC						
3-speed	F3A21-2-ER1	A	31/36	3.600	D05W	4G37
	F3A21-2-ES11	A	32/36	3.600	C12V	4G15
	F3A21-2-ER15	A	31/36	3.600	C52A, C62A	4G15
	F3A21-2-ER14	A	31/36	3.600	C12V	4G15
	F3A22-2-ER1	A	31/36	3.705	D04W	4G63
4-speed	F4A21-2-URA1	A	31/36	4.376	C52A, C62A	4G15
	F4A21-2-MQD	A	30/36	4.062	E31A	4G32
	F4A21-2-MPD1	A	29/36	4.062	E32A	4G37
	F4A21-2-UQN1	B	30/36	4.367	E34A	4D65
	F4A22-2-UPD3	A	29/36	4.350	E32A	4G37
	F4A22-2-UQD2	A	30/36	4.350	E32A	4G37
	F4A22-2-UPD4	A	29/36	4.350	E33A	4G63
	F4A22-2-UQD3	A	30/36	4.350	E33A	4G63
	F4A22-2-UPD6	A	29/36	4.350	N11W, N31W	4G93
EXP						
3-speed	F3A21-2-ER1	A	31/36	3.600	D05W	4G37
	F3A21-2-ES11	A	32/36	3.600	C12V	4G15
	F3A21-2-ER15	A	31/36	3.600	C52A, C62A	4G15
	F3A21-2-MR14	A	31/36	3.600	C61A	4G13
4-speed	F4A21-2-URA1	A	31/36	4.367	C62A	4G15
	F4A21-2-MQD	A	30/36	4.062	E31A	4G32
	F4A21-2-MPD1	A	29/36	4.062	E32A	4G37
	F4A22-2-MPD3	A	29/36	4.007	E33A	4G63
	F4A22-2-UPD4	A	29/36	4.350	E33A	4G63
	F4A22-2-MQD3	A	30/36	4.007	E33A	4G63
AUS						
3-speed	F3A21-2-ER15	A	31/36	3.600	C62A	4G15
	F3A22-2-ER11	A	31/36	3.705	D04W	4G63
4-speed	F4A21-2-URA1	A	31/36	3.367	C52A, C62A	4G15
	F4A22-2-UPD4	A	29/36	4.350	E33A	4G63
	F4A22-2-MQD3	A	30/36	4.007	E33A	4G63

1992 MODEL

Transmission model		Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC 4-speed	F4A21-2-MQD	A	30/36	4.062	E31A	4G32
	F4A21-2-MPD1	A	29/36	4.062	E32A	4G37
	F4A21-2-UPN	B	29/36	4.367	E34A	4D65
	F4A22-2-UPD3	A	29/36	4.350	E32A	4G37
	F4A22-2-UQD2	A	30/36	4.350	E32A	4G37
	F4A22-2-UPD4	A	29/36	4.350	E33A	4G63
	F4A22-2-UQD3	A	30/36	4.350	E33A	4G63
	F4A22-2-UPD6	A	29/36	4.350	N11W, N31W	4G93
	F4A22-2-MRD3	A	31/36	4.007	CA4A, CB4A	4G92
EXP 3-speed	F3A21-2-MR15	A	31/36	4.062	CB1A,	4G13
	F3A21-2-ER17	A	31/36	3.600	CA2A, CB2A	4G15
4-speed	F4A21-2-MQD	A	30/36	4.062	E31A	4G32
	F4A21-2-MPD1	A	29/36	4.062	E32A	4G37
	F4A22-2-MPD3	A	29/36	4.007	E33A	4G63
	F4A22-2-UPD4	A	29/36	4.350	E33A	4G63
	F4A22-2-MQD3	A	30/36	4.007	E33A	4G63
	F4A22-2-UPD6	A	29/36	4.350	N11W, N31W	4G93
	F4A22-2-MPD5	A	29/36	4.007	N31W	4G93
AUS 3-speed	F3A21-2-ER17	A	31/36	3.600	CA2A, CB2A	4G15
4-speed	F4A22-2-MRD4	A	31/36	4.007	CA5A, CB5A	4G93
	F4A22-2-UPD4	A	29/36	4.350	E33A	4G63
	F4A22-2-MQD4	A	30/36	4.007	E33A	4G63
	F4A23-2-LPN1	B	29/36	3.900	N31W	4G64

1993 MODEL

Transmission model		Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC						
3-speed	F3A21-2-ER23	A	31/36	3.600	C62A	4G15
4-speed	F4A21-2-MRF1	A	31/36	4.062	C66A	4G92
	F4A22-2-MRF1	A	31/36	4.007	CB4A, CB4W	4G92
	F4A22-2-UPF	A	29/36	4.350	N11W, N31W	4G93
	F4A22-2-UQF1	A	30/36	4.350	E55A	4G63
	F4A22-2-UPF2	A	29/36	4.350	N33W	4G63
	F4A22-2-UPF3	A	29/36	4.350	E52A	4G93
	F4A23-2-UPQ	B	29/36	4.350	E54A, E64A	6A12
	F4A23-2-UPQ1	B	29/36	4.350	E54A	6A12
EXP						
3-speed	F3A21-2-ER19	A	31/36	3.600	C62A	4G15
	F3A21-2-ER22	A	31/36	3.600	CA2A, CB2A, CB2W	4G15
	F3A21-2-MR18	A	31/36	4.062	CB1W	4G13
4-speed	F4A21-2-MRF1	A	29/36	4.062	C66A	4G92
	F4A22-2-MPF	A	29/36	4.007	E52A, E55A	4G63, 4G93
	F4A22-2-MPF1	A	29/36	4.007	E55A	4G63
	F4A22-2-UPE2	A	29/36	4.350	N11W, N31W	4G93
	F4A23-2-UPQ	B	29/36	4.350	E54A	6A12
AUS						
3-speed	F3A21-2-ER19	A	31/36	3.600	C62A	4G15
	F3A21-2-ER22	A	31/36	3.600	CA2A, CB2A	4G15
4-speed	F4A21-2-MRF1	A	31/36	4.062	C66A	4G92
	F4A22-2-MQF	A	30/36	4.007	E55A	4G63
	F4A22-2-MRF3	A	31/36	4.007	CA5A, CB5A, CB5W	4G93
	F4A23-2-LPQ	B	29/36	3.900	N34W	4G64
	F4A23-2-UPQ	B	29/36	4.350	E54A	6A12

1994 MODEL

Transmission model		Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC 4-speed	F4A21-2-MRF1	A	31/36	4.062	C66A	4G92
	F4A22-2-MRF1	A	31/36	4.007	CA4A, CB4A, CB4W	4G92
	F4A22-2-UPF	A	29/36	4.350	N11W	4G93
	F4A22-2-UPF2	A	29/36	4.350	N33W	4G63
	F4A22-2-UPF3	A	29/36	4.350	E52A	4G93
	F4A22-2-UQF1	A	30/36	4.350	E55A	4G63
	F4A23-2-UPF	B	29/36	4.350	E54A, E64A	6A12
	F4A23-2-UPF1	B	29/36	4.350	E54A	6A12
	F4A23-2-LPQ	B	29/36	3.900	N34W	4G64
EXP 3-speed	F3A21-2-ER19	A	31/36	3.600	C62A	4G15
	F3A21-2-ER22	A	31/36	3.600	CA2A, CB2A, CB2W	4G15
	F3A21-2-MR18	A	31/36	4.062	CB1W	4G13
4-speed	F4A21-2-MRF1	A	29/36	4.062	C66A	4G92
	F4A22-2-MPF	A	29/36	4.007	E52A, E55A	4G63, 4G93
	F4A22-2-MRF1	A	31/36	4.007	E55A	4G63
	F4A22-2-UPF	A	29/36	4.350	N11W, N31W	4G93
	F4A22-2-UPF3	A	29/36	4.350	E52A	4G93
	F4A22-2-UPF4	A	29/36	4.350	E55A	4G63
	F4A23-2-UPF	A	29/36	4.350	E54A	6A12
AUS 4-speed	F4A22-2-MQF	A	30/36	4.007	E55A	4G63
	F4A23-2-LPQ	B	29/36	3.900	N34W	4G64
	F4A23-2-UPF	A	29/36	4.350	E54A	6A12

1995 MODEL

Transmission model		Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC						
4-speed	F4A22-2-MRF1	A	31/36	4.007	CB4A, CB4W	4G92
	F4A22-2-UPF	A	29/36	4.350	N11W	4G93
	F4A22-2-UPF2	A	29/36	4.350	N33W	4G63
	F4A22-2-UPF5	A	29/36	4.350	E52A	4G93
	F4A22-2-UQF2	A	30/36	4.350	E55A	4G63
	F4A23-2-LPQ	B	29/36	3.900	N34W	4G64
	F4A23-2-UPF3	A	29/36	4.350	E54A	6A12
	F4A23-2-UPF4	A	29/36	4.350	E54A	6A12
EXP						
3-speed	F3A21-2-ER22	A	31/36	3.600	CA2A, CB2A, CB2W	4G15
	F3A21-2-MR18	A	31/36	4.062	CB1A,CB1W	4G13
	F3A21-2-MR18	A	31/36	4.062	CB2W	4G15
4-speed	F4A21-2-MRF	A	31/36	4.062	CB3A	4G91
	F4A22-2-MPFA	A	29/36	4.007	E52A	4G93
	F4A22-2-MPFA	A	29/36	4.007	E55A	4G63
	F4A22-2-MRF1	A	31/36	4.007	CA4A, CB4A, CB4W	4G92
	F4A22-2-MRF3	A	31/36	4.007	CA5A	4G93
	F4A22-2-UPF	A	29/36	4.350	N11W, N31W	4G93
	F4A22-2-UPF2	A	29/36	4.350	N33W	4G63
	F4A22-2-UPF5	A	29/36	4.350	E52A	4G93
	F4A22-2-UPF6	A	29/36	4.350	E55A	4G63
	F4A23-2-UPF3	A	29/36	4.350	E54A	6A12
AUS						
3-speed	F3A21-2-ER22	A	31/36	3.600	CA2A, CB2A	4G15
4-speed	F4A22-2-MQF3	A	30/36	4.007	E55A	4G63
	F4A22-2-MQF3	A	30/36	4.007	CA5A	4G93
	F4A22-2-MRF3	A	31/36	4.007	CB5W	4G93
	F4A23-2-LPQ	B	29/36	3.900	N34W	4G64
	F4A23-2-UPF3	A	29/36	4.350	E54A	6A12

1996 MODEL

Transmission model		Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC						
4-speed	F4A22-2-UPF	A	29/36	4.350	N11W	4G93
	F4A22-2-UPF2	A	29/36	4.350	N33W, E55A	4G63
	F4A22-2-UPF5	A	29/36	4.350	E52A	4G93
	F4A23-2-LPQ	B	29/36	3.900	N34W	4G64
	F4A23-2-UPF3	A	29/36	4.350	E54A	6A12
	F4A23-2-UPF4	A	29/36	4.350	E54A	6A12
EXP						
4-speed	F4A22-2-MPFA	A	29/36	4.007	E52A, E55A	4G93
	F4A22-2-MPFA	A	29/36	4.007	E55A	4G63
	F4A22-2-MQF3	A	30/36	4.007	E55A	4G63
	F4A22-2-UPF	A	29/36	4.350	N11W, N31W	4G93
	F4A22-2-UPF2	A	29/36	4.350	N33W, E55A	4G63
	F4A22-2-UPF5	A	29/36	4.350	E52A, E55A	4G93
	F4A22-2-UPF6	A	29/36	4.350	E55A	4G63
AUS						
3-speed	F3A21-2-ER22	A	31/36	3.600	CA2A, CB2A	4G15
4-speed	F4A22-2-MQF3	A	30/36	4.007	E54A	4G63
	F4A22-2-MRF3	A	31/36	4.007	CA5A, CB5A, CB5W	4G93
	F4A23-2-LPQ	B	29/36	3.900	N34W	4G64
	F4A23-2-UPF3	A	29/36	4.350	E55A	6A12

GEAR RATIO TABLE

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

SERVICE SPECIFICATIONS

mm (in.)

		Standard
Transfer idler gear bearing preload	F3A21, F3A22, F4A21, F4A22	0.8 Nm (8 kgcm, 0.6 ft.lbs.)
	F4A23	1.5 Nm (15 kgcm, 1.1 ft.lbs.)
Input shaft end play		0.3 – 1.0 (0.012 – 0.039)
Transfer shaft preload	F3A21, F3A22	0.1 – 0.15 (0.004 – 0.006)
Transfer shaft end play	F4A21, F4A22, F4A23	0 – 0.025 (0 – 0.001)
Low-reverse brake end play	F3A22, F4A22, F4A23	1.0 – 1.2 (0.039 – 0.047)
	F3A21, F4A21	0.8 – 1.0 (0.031 – 0.039)
Differential case end play	F3A21, F3A22, F4A21, F4A22	0 – 0.15 (0 – 0.006)
Differential case preload	F4A23	0.08 – 0.13 (0.003 –0.005)
End clutch snap ring clearance	F4A21, F4A22	0.4 – 0.65 (0.016 – 0.026)
	F4A23	0.6 – 0.85 (0.024 – 0.031)
Oil pump gear side clearance		0.03 – 0.05 (0.001 – 0.002)
Front clutch snap ring clearance	F3A22, F4A22, F4A23	0.7 – 0.9 (0.028 – 0.035)
	F3A21, F4A21	0.4 – 0.6 (0.016 – 0.023)
Rear clutch snap ring clearance	F3A22, F4A22, F4A23	0.4 – 0.6 (0.016 – 0.023)
	F3A21, F4A21	0.3 – 0.5 (0.012 – 0.020)
Output flange bearing end play		0 – 0.06 (0 – 0.002)
Differential pinion backlash		0.025 – 0.150 (0.001 – 0.006)
Pulse generator resistance	F4A21, F4A22, F4A23	245 ohm at 20°C (68°F)
Pressure control solenoid valve resistance	F4A21, F4A22, F4A23	3 ohm at 20°C (68°F)
Damper clutch control solenoid valve resistance	F4A21, F4A22, F4A23 <Up to model 1992> and F4A22-2-UPE2	3 ohm at 20°C (68°F)
	Model 1993 <except F4A22-2-UPE2>	13 ohm at 20°C (68°F)
Shift control solenoid valve resistance	F4A21, F4A22, F4A23	22 ohm at 20°C (68°F)

VALVE BODY SPRING IDENTIFICATION (3-SPEED MODEL)

mm (in.)

Spring	Free height	Outside diameter	Number of loops	Wire diameter	Application
Throttle valve spring	32.05 (1.262)	9.5 (0.374)	12	1.0 (0.039)	KM170-5-APML KM172-7-APM F3A21-2-ER13, ER14 F3A22-2-ER1
	32.62 (1.284)	9.5 (0.374)	17	1.0 (0.039)	KM172-7-AP F3A22-2-ER11
	32.2 (1.268)	9.5 (0.374)	13	1.0 (0.039)	KM170-5-APS F3A21-2-ER1
	32.41 (1.276)	9.5 (0.374)	15	1.0 (0.039)	KM170-5-AP, ANL F3A21-2-ES1, ES11, ER12, ER15 ER17, MR13, MR14, MR15 Model 1993
Kickdown valve spring	26.14 (1.029)	6.4 (0.252)	19	0.5 (0.020)	All

mm (in.)

Spring	Free height	Outside diameter	Number of loops	Wire diameter	Application
Range control valve spring	23.44 (0.923)	8.4 (0.331)	11	1.0 (0.039)	Except KM172-7-AP, F3A22-2-ER11 <Up to model 1992>
	26.51 (1.044)	8.2 (0.323)	12	0.9 (0.035)	KM172-7-AP, F3A22-2-ER11 <Up to model 1992>
Torque converter control valve spring	26.4 (1.039)	8.8 (0.346)	12	1.1 (0.043)	All
Regulator valve spring	51.4 (2.024)	15.4 (0.606)	12	1.4 (0.055)	KM170-5-AP, ANL, APML KM172-7-APM F3A21-2-ES1, ER12, ES11, ER15, ER13, MR13 ER14, ER17, MR14, MR15 F3A22-2-ER1 Model 1993
	55.68 (2.192)	15.4 (0.606)	12	1.4 (0.055)	KM170-5-APS F3A21-2-ER1
	47.29 (1.862)	15.4 (0.606)	12	1.4 (0.055)	KM172-7-AP F3A22-2-ER11
1-2 shift valve spring	31.3 (1.232)	7.6 (0.299)	10	0.6 (0.024)	All
2-3 control valve spring	48.19 (1.897)	6.6 (0.260)	22	0.9 (0.035)	KM172-7-APM, F3A22-2-ER1 <Up to model 1992>
	50.80 (2.000)	6.6 (0.260)	29	0.9 (0.035)	Except KM172-7-APM, F3A22-2-ER1 <Up to model 1992> Model 1993
2-3 shift valve spring	23.71 (0.933)	7.2 (0.283)	14	0.9 (0.035)	Except KM170-5-APS, F3A21-2-ER1 <Up to model 1992> Model 1993
	26.74 (1.053)	7.0 (0.276)	15	0.8 (0.031)	KM170-5-APS, F3A21-2-ER1 <Up to model 1992>
Line relief spring	17.3 (0.681)	7.0 (0.276)	10	1.0 (0.039)	All
Low relief spring	12.46 (0.491)	6.6 (0.260)	8	0.6 (0.024)	All
Servo control valve spring	25.69 (1.011)	7.4 (0.291)	16	0.6 (0.024)	KM172, F3A22 only
N-D accumulator valve spring	53.34 (2.100)	7.8 (0.307)	28	0.8 (0.031)	KM172, F3A22
	51.92 (2.044)	7.8 (0.307)	25	0.8 (0.031)	KM170-5-APS F3A21-2-ER1
	49.71 (1.957)	7.8 (0.307)	25	0.8 (0.031)	KM170-5-AP, ANL, APML F3A21-2-ES1, ER12, ES11, ER15, ER13, MR13 ER14, ER17, MR14, MR15 Model 1993

mm (in.)

Spring	Free height	Outside diameter	Number of loops	Wire diameter	Application
N-D accumulator plug spring	38.38 (1.511)	13.6 (0.535)	10	1.4 (0.055)	KM172, F3A22
	37.39 (1.472)	13.6 (0.535)	12	1.4 (0.055)	KM170, F3A21 Model 1993

VALVE BODY SPRING IDENTIFICATION (4-SPEED MODEL)

mm (in.)

Spring	Free height	Outside diameter	Number of loops	Wire diameter	Application
Regulator valve spring	52 (2.047)	15 (0.591)	11	1.4 (0.055)	All
Torque converter control valve spring	24.1 (0.949)	9.0 (0.354)	10	1.2 (0.047)	Up to Sep. 1989
	22.6 (0.890)	9.0 (0.354)	9.5	1.3 (0.051)	From Oct. 1989
Pressure control valve spring	21.3 (0.839)	7.6 (0.299)	8	0.45 (0.018)	All
Rear clutch exhaust valve spring	27.4 (1.079)	6.8 (0.268)	12	0.7 (0.028)	All
2-3 shift valve spring	27.5 (1.083)	7.0 (0.276)	15	0.8 (0.031)	All
End clutch valve spring	27.5 (1.083)	7.0 (0.276)	15	0.8 (0.031)	Up to model 1992
	24.4 (0.961)	6.6 (0.260)	15.5	0.6 (0.024)	From model 1993
1-2 shift valve spring	26.6 (1.047)	7.6 (0.299)	13	0.6 (0.024)	All
Reducing valve spring	33.4 (1.315)	11 (0.433)	9	1.0 (0.039)	Up to model 1992
	29.5 (1.161)	8.9 (0.350)	12.5	1.2 (0.047)	From model 1993
N-R control valve spring	32.1 (1.264)	9.2 (0.362)	8	0.7 (0.028)	Up to model 1992
	33.9 (1.335)	9.4 (0.370)	12	0.8 (0.031)	From model 1993
Shift control valve spring	26.8 (1.055)	5.7 (0.224)	22	0.5 (0.020)	All
Relief spring	17.3 (0.681)	7.0 (0.276)	10	1.0 (0.039)	All
Damper clutch control valve spring (Model with damper clutch)	15.7 (0.618)	6.2 (0.244)	10.5	0.7 (0.028)	F4A21, F4A22
	14.2 (0.559)	6.2 (0.244)	9.5	0.7 (0.028)	F4A23

ADJUSTMENT PRESSURE PLATE, SNAP RINGS AND SPACERS

Part name	Thickness mm (in.)	Identification symbol	Part No.
Pressure plate (For adjustment of low-reverse brake end play)	5.6 (0.220)	56	MD731720
	5.7 (0.224)	57	MD731721
	5.8 (0.228)	58	MD727801
	5.9 (0.232)	59	MD731000
	6.0 (0.236)	60	MD727802
	6.1 (0.240)	61	MD731001
	6.2 (0.244)	62	MD727803
	6.3 (0.248)	63	MD731002
	6.4 (0.252)	64	MD727804
	6.5 (0.256)	65	MD731003
	6.6 (0.260)	66	MD727805
	6.7 (0.264)	67	MD731004
	6.8 (0.268)	68	MD731005
	6.9 (0.272)	69	MD734766
	7.0 (0.276)	70	MD734767
Snap ring (For adjustment of front clutch and rear clutch clearance)	1.6 (0.063)	None	MD955630
	1.7 (0.067)	Brown	MD730930
	1.8 (0.071)	Blue	MD955631
	1.9 (0.075)	None	MD730931
	2.0 (0.079)	Brown	MD955632
	2.1 (0.083)	Blue	MD730932
	2.2 (0.087)	None	MD955633
	2.3 (0.091)	Brown	MD730933
	2.4 (0.094)	Blue	MD955634
	2.5 (0.098)	None	MD730934
	2.6 (0.102)	Brown	MD955635
	2.7 (0.106)	Blue	MD730935
	2.8 (0.110)	None	MD955636
	2.9 (0.114)	Brown	MD730936
	3.0 (0.118)	Blue	MD955637
Snap ring: F4A21, F4A22, F4A23 (For adjustment of end clutch clearance)	1.05 (0.041)	White	MD715800
	1.30 (0.051)	Yellow	MD715801
	1.55 (0.061)	None	MD715802
	1.80 (0.071)	Green	MD715803
	2.05 (0.081)	Pink	MD720849
Snap ring: F3A22, F4A21, F4A22, F4A23 (For adjustment of output flange bearing end play)	1.82 (0.072)	None	MD722538
	1.88 (0.074)	Blue	MD721014
	1.94 (0.076)	Brown	MD721015
	2.00 (0.079)	None	MD721016
	2.06 (0.081)	Blue	MD721017
	2.12 (0.083)	Brown	MD722539

Part name	Thickness mm (in.)	Identification symbol	Part No.
Snap ring: F3A21 ..... (For adjustment of output flange end play)	1.88 (0.074)	None	MD707501
	1.94 (0.076)	Brown	MD707502
	2.00 (0.079)	Blue	MD707503
	2.06 (0.081)	None	MD707504
Spacer: F4A21, F4A22, F4A23 ..... (For adjustment of transfer shaft preload)	1.20 (0.047)	20	MD723160
	1.23 (0.048)	23	MD723161
	1.26 (0.050)	26	MD723162
	1.29 (0.051)	29	MD723163
	1.32 (0.052)	32	MD723164
	1.35 (0.053)	35	MD723165
	1.38 (0.054)	38	MD723166
	1.41 (0.056)	41	MD723167
	1.44 (0.057)	44	MD723168
	1.47 (0.058)	47	MD727169
	1.50 (0.059)	50	MD723170
	1.53 (0.060)	53	MD723171
	1.56 (0.061)	56	MD723172
	1.59 (0.063)	59	MD723173
	1.62 (0.064)	62	MD723174
	1.65 (0.065)	65	MD723175
	1.68 (0.066)	68	MD723176
	1.71 (0.067)	71	MD723177
	1.74 (0.069)	74	MD723178
	1.77 (0.070)	77	MD723179
	1.80 (0.071)	80	MD723180
Spacer: F3A21, F3A22 ..... (For adjustment of transfer shaft preload)	0.82 (0.032)	82	MD712638
	0.85 (0.033)	85	MD712639
	0.88 (0.035)	88	MD712640
	0.91 (0.036)	91	MD712641
	0.94 (0.037)	94	MD712642
	0.97 (0.038)	97	MD712643
	1.00 (0.039)	00	MD712644
	1.03 (0.041)	03	MD712645
	1.06 (0.042)	06	MD712646
	1.09 (0.043)	09	MD712647
	1.12 (0.044)	12	MD712648
	1.15 (0.045)	15	MD712649
	1.18 (0.046)	18	MD712650
	1.21 (0.048)	21	MD712651
	1.24 (0.049)	24	MD712652
	1.27 (0.050)	27	MD712653
	1.30 (0.051)	30	MD712654
	1.33 (0.052)	33	MD712655
	1.36 (0.054)	36	MD712656
	1.39 (0.055)	39	MD712657

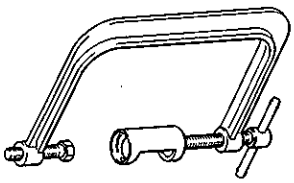
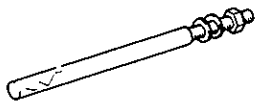
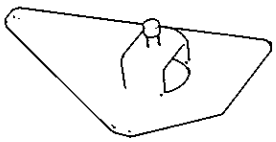
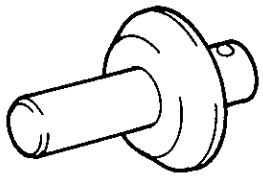
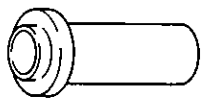
Part name	Thickness mm (in.)	Identification symbol	Part No.
	1.42 (0.056)	42	MD712658
	1.45 (0.057)	45	MD712659
	1.48 (0.058)	48	MD712660
	1.51 (0.059)	51	MD712661
	1.54 (0.061)	54	MD712662
	1.57 (0.062)	57	MD712663
	1.60 (0.063)	60	MD712664
	1.63 (0.064)	63	MD712665
	1.66 (0.065)	66	MD712666
	1.69 (0.067)	69	MD712667
Spacer: F3A22, F4A22 ..... (For adjustment of differential case end play)	1.85 (0.073)	H	MD700272
	1.94 (0.076)	CC	MD715956
	2.03 (0.080)	FF	MD715959
	2.12 (0.083)	II	MD715962
	2.21 (0.087)	LL	MD715965
	2.30 (0.091)	OO	MD715968
	2.39 (0.094)	RR	MD715971
	2.48 (0.098)	UU	MD722736
	2.57 (0.101)	XX	MD731402
Spacer: F3A21, F4A21 ..... (For adjustment of differential case end play)	1.31 (0.052)	E	MD706574
	1.40 (0.055)	None	MD706573
	1.49 (0.059)	C	MD706572
	1.58 (0.062)	B	MD706751
	1.67 (0.066)	A	MD706570
	1.76 (0.069)	F	MD706575
	1.85 (0.073)	H	MD700272
	1.94 (0.076)	CC	MD715956
	2.03 (0.080)	FF	MD725959
	2.12 (0.083)	II	MD715962
Spacer: F4A23 ..... (For adjustment of differential case end play)	1.10 (0.043)	J	MD710454
	1.13 (0.044)	D	MD700270
	1.16 (0.046)	K	MD710455
	1.19 (0.047)	L	MD710456
	1.22 (0.048)	G	MD700271
	1.25 (0.049)	M	MD710457
	1.28 (0.050)	N	MD710458
	1.31 (0.052)	E	MD706574
	1.34 (0.053)	O	MD710459
	1.37 (0.054)	P	MD710460
	1.40 (0.055)	None	MD706573
	1.43 (0.056)	Q	MD710461
	1.46 (0.057)	R	MD710462
	1.49 (0.059)	C	MD706572
	1.52 (0.060)	S	MD710463
	1.55 (0.061)	T	MD710464
	1.58 (0.062)	B	MD706571
	1.61 (0.063)	U	MD710465

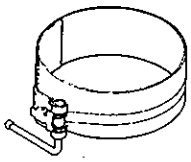
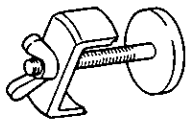
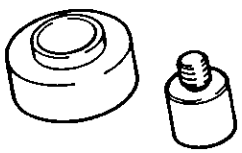
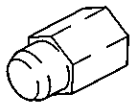
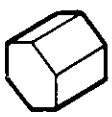
Part name	Thickness mm (in.)	Identification symbol	Part No.
	1.64 (0.065)	V	MD710466
	1.67 (0.066)	A	MD706570
	1.70 (0.067)	W	MD710467
	1.73 (0.068)	X	MD710468
	1.76 (0.069)	F	MD706575
	1.79 (0.070)	Y	MD710469
	1.82 (0.072)	Z	MD710470
	1.85 (0.073)	H	MD700272
	1.88 (0.074)	AA	MD710471
	1.91 (0.075)	BB	MD715955
	1.94 (0.076)	CC	MD715956
	1.97 (0.078)	DD	MD715957
	2.00 (0.079)	EE	MD715958
	2.03 (0.080)	FF	MD715959
	2.06 (0.081)	GG	MD715960
	2.09 (0.082)	HH	MD715961
	2.12 (0.083)	II	MD715962
	2.15 (0.085)	JJ	MD715963
	2.18 (0.086)	KK	MD715964
	2.21 (0.087)	LL	MD715965
	2.24 (0.088)	MM	MD715966
	2.27 (0.089)	NN	MD715967
	2.30 (0.091)	OO	MD715968
	2.33 (0.092)	PP	MD715969
	2.36 (0.093)	QQ	MD715970
	2.39 (0.094)	RR	MD715971
	2.42 (0.095)	SS	MD722734
	2.45 (0.096)	TT	MD722735
	2.48 (0.098)	UU	MD722736
Spacer: F3A22, F4A22, F4A23 ..... (For adjustment of differential pinion backlash)	0.75 – 0.82 (0.030 – 0.032)	–	MD722986
	0.83 – 0.92 (0.033 – 0.036)	–	MD722985
	0.93 – 1.00 (0.037 – 0.039)	–	MD722984
	1.01 – 1.08 (0.040 – 0.043)	–	MD722982
	1.09 – 1.16 (0.043 – 0.047)	–	MD722983
Spacer: F3A21, F4A21 ..... (For adjustment of differential pinion backlash)	0.75 – 0.82 (0.030 – 0.032)	–	MA180862
	0.83 – 0.92 (0.033 – 0.036)	–	MA180861
	0.93 – 1.00 (0.037 – 0.039)	–	MA180860
	1.01 – 1.08 (0.040 – 0.043)	–	MA180875
	1.09 – 1.16 (0.043 – 0.047)	–	MA180876

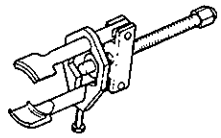
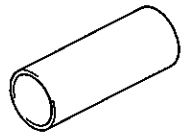
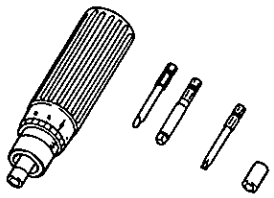
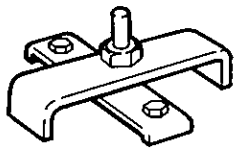
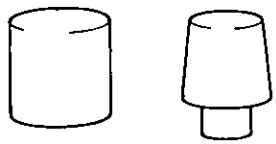
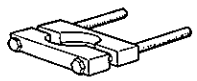
TORQUE SPECIFICATIONS

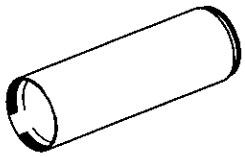
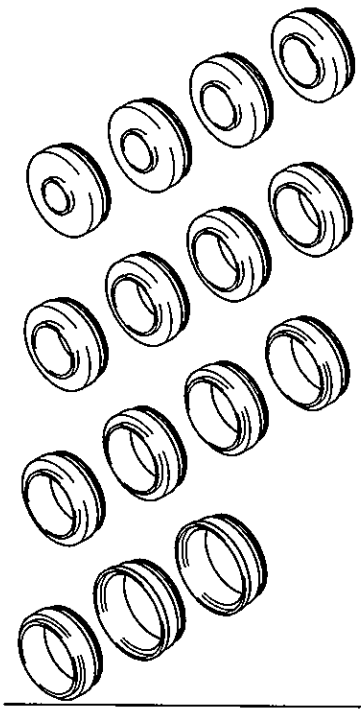
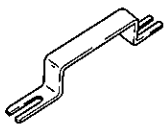
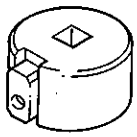
		Torque		
		Nm	kgm	ft.lbs.
Manual control shaft set screw		8 – 10	0.8 – 1.0	6 – 7
Sprag rod support bolts		20 – 27	2.0 – 2.7	15 – 19
Idler shaft lock plate bolt	F3A21, F3A22	20 – 27	2.0 – 2.7	15 – 19
	F4A21, F4A22, F4A23	48 – 60	4.8 – 6.0	35 – 43
Transfer shaft lock nut	F4A21, F4A22, F4A23	200 – 230	20 – 23	145 – 166
Bearing retainer bolts	F3A21, F3A22	15 – 22	1.5 – 2.2	11 – 15
	F4A21, F4A22, F4A23	17 – 22	1.7 – 2.2	13 – 15
Oil pump assembly mounting bolts		19 – 23	1.9 – 2.3	14 – 17
Converter housing bolts		19 – 23	1.9 – 2.3	14 – 16
End clutch cover bolts	F4A21, F4A22, F4A23	6 – 8	0.6 – 0.8	4.5 – 5.5
Valve body assembly mounting bolts		10 – 12	1.0 – 1.2	7.5 – 8.5
Oil filter bolts		5 – 7	0.5 – 0.7	4 – 5
Oil pan bolts		10 – 12	1.0 – 1.2	7.5 – 8.5
Kickdown servo lock nut	F4A21, F4A22, F4A23	25 – 32	2.5 – 3.2	18 – 23
Inhibitor switch bolts		10 – 12	1.0 – 1.2	7.5 – 8.5
Detent plate mounting bolt <MODEL 1993>		11	1.1	8
Manual control lever nut		17 – 21	1.7 – 2.1	13 – 15
Pulse generator bolts	F4A21, F4A22, F4A23	10 – 12	1.0 – 1.2	7.5 – 8.5
Pump housing to reaction shaft support bolts		10 – 12	1.0 – 1.2	7.5 – 8.5
Differential drive gear bolts		130 – 140	13 – 14	94 – 101
One-way clutch outer race lock plate bolts		35 – 45	3.5 – 4.5	26 – 32
Valve body bolts		4 – 6	0.4 – 0.6	3 – 4
Pressure check plug		8 – 10	0.8 – 1.0	6 – 7
Speedometer sleeve locking plate bolt		3 – 5	0.3 – 0.5	2.5 – 3.5
Drain plug		30 – 35	3.0 – 3.5	22 – 25
Throttle cam bolt	F3A21, F3A22	8 – 10	0.8 – 1.0	6 – 7
End cover bolts		4 – 6	0.4 – 0.6	3 – 4
Solenoid valve mounting bolts	F4A21, F4A22, F4A23	4 – 6	0.4 – 0.6	3 – 4
Governor set screw	F3A21, F3A22	8 – 10	0.8 – 1.0	6 – 7

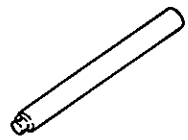
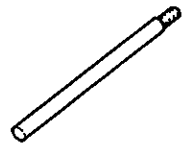
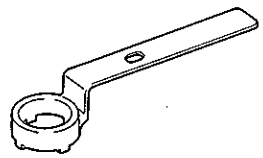
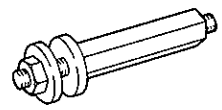
2. SPECIAL TOOLS

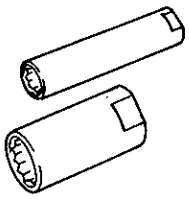
Tool	Number	Name	Use
	MD998266	Guide pin	Assembly of valve body
	MD998303	Valve spring compressor	Removal and installation of kickdown servo (4-speed model only)
	MD998316	Dial gauge support	Installation of dial gauge
	MD998319	Transfer shaft retainer	Retaining of transfer shaft
	MD998325	Oil seal installer	Driving of drive shaft oil seal
	MD998333	Oil pump remover	Removal of oil pump
	MD998334	Oil seal installer	Installation of oil pump oil seal

Tool	Number	Name	Use
	MD998335	Oil pump band	Reassembly of oil pump
	MD998336	Guide pin	Reassembly of oil pump
	MD998337	Spring compressor	Used with MD998907 and MD998338
	MD998338	Spring compressor	Disassembly and reassembly of rear clutch
	MD998341	Adapter set	Removal and installation of kickdown servo (4-speed model only)
	MD998343	Wrench adapter	Preload adjustment of transfer idle gear (3-speed model only)
	MD998344	Wrench adapter	Loosening and tightening of transfer idle gear

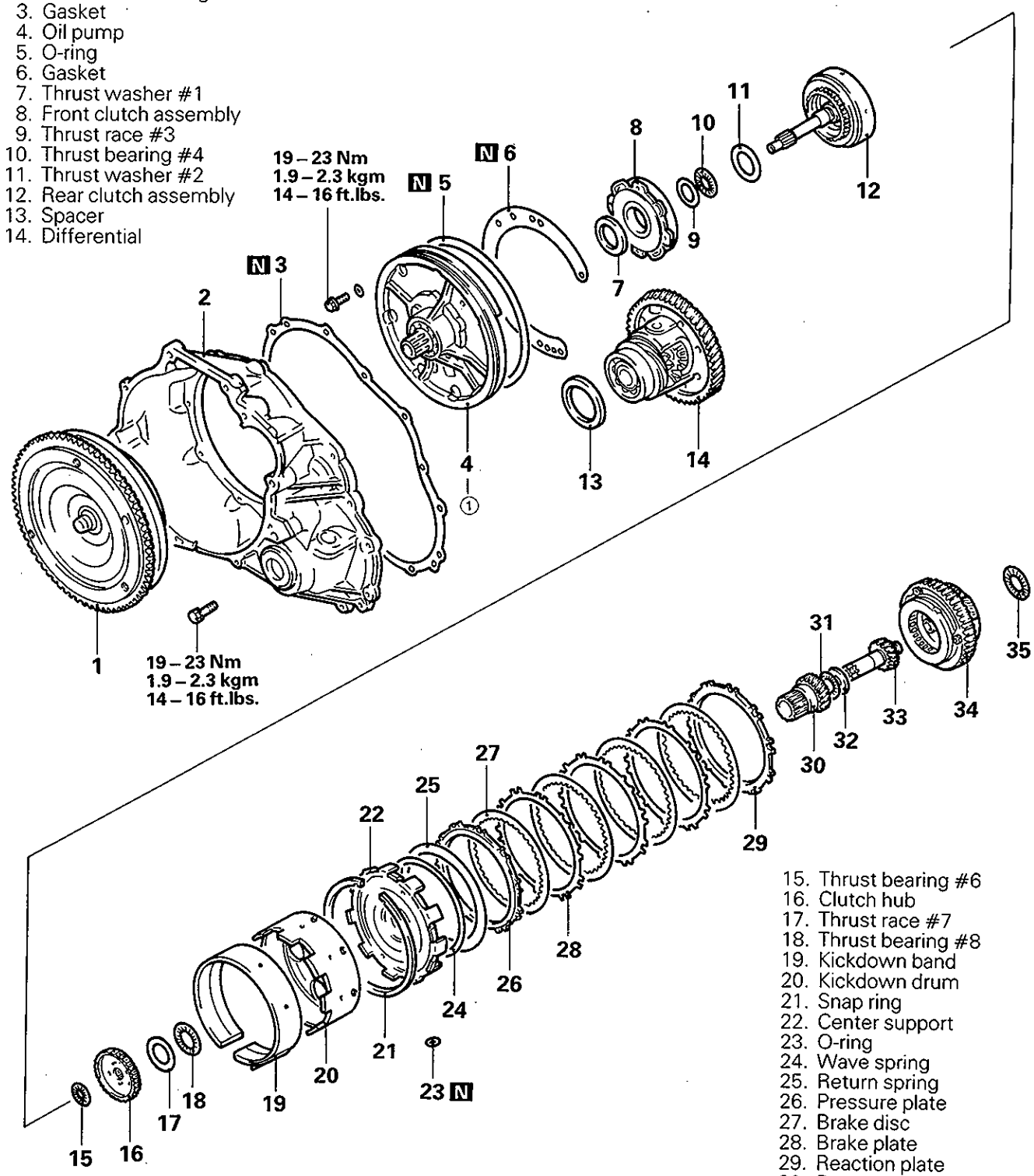
Tool	Number	Name	Use
	MD998348	Bearing and gear puller	Removal of output flange bearing and gear
	MD998350	Bearing installer	Driving of transfer shaft bearing
	MD998353	Torque driver set	Assembly of valve body
	MD998365	Kickdown servo cover remover	Removal of kickdown servo cover (3-speed model only)
	MD998367	Snap ring installer	Installation of end clutch snap ring (4-speed model only)
	MD998801	Bearing remover	Removal of taper bearing
	MD998812	Installer cap	Installation of respective bearings

Tool	Number	Name	Use
	MD998813	Installer (100)	Installation of respective bearings
	MD998814	Installer (200)	Installation of respective bearings
	MD998815 MD998816 MD998817 MD998818 MD998819 MD998820 MD998821 MD998822 MD998823 MD998824 MD998825 MD998826 MD998827 MD998829 MD998830	Installer adapter	Installation of respective bearings
	MD998905	Handle	Removal and installation of center support
	MD998906	Wrench adapter	Preload adjustment of transfer idle gear (4-speed model only)

Tool	Number	Name	Use
	MD998907	Spring compressor	Disassembly and reassembly of front clutch
	MD998908	Bearing installer	Driving of transfer shaft front bearing (4-speed model only)
	MD998910	Bearing installer	Driving of transfer shaft (4-speed model only)
	MD998912	Handle	Used with MD998908 and MD998910 (4-speed model only)
	MD998913	Dial gauge extension	Measurement of low-reverse brake end play
	MD998914	Kickdown servo wrench	Adjustment of kickdown servo (4-speed model only)
	MD998915	Wrench adapter	Use with MD998914 (4-speed model only)

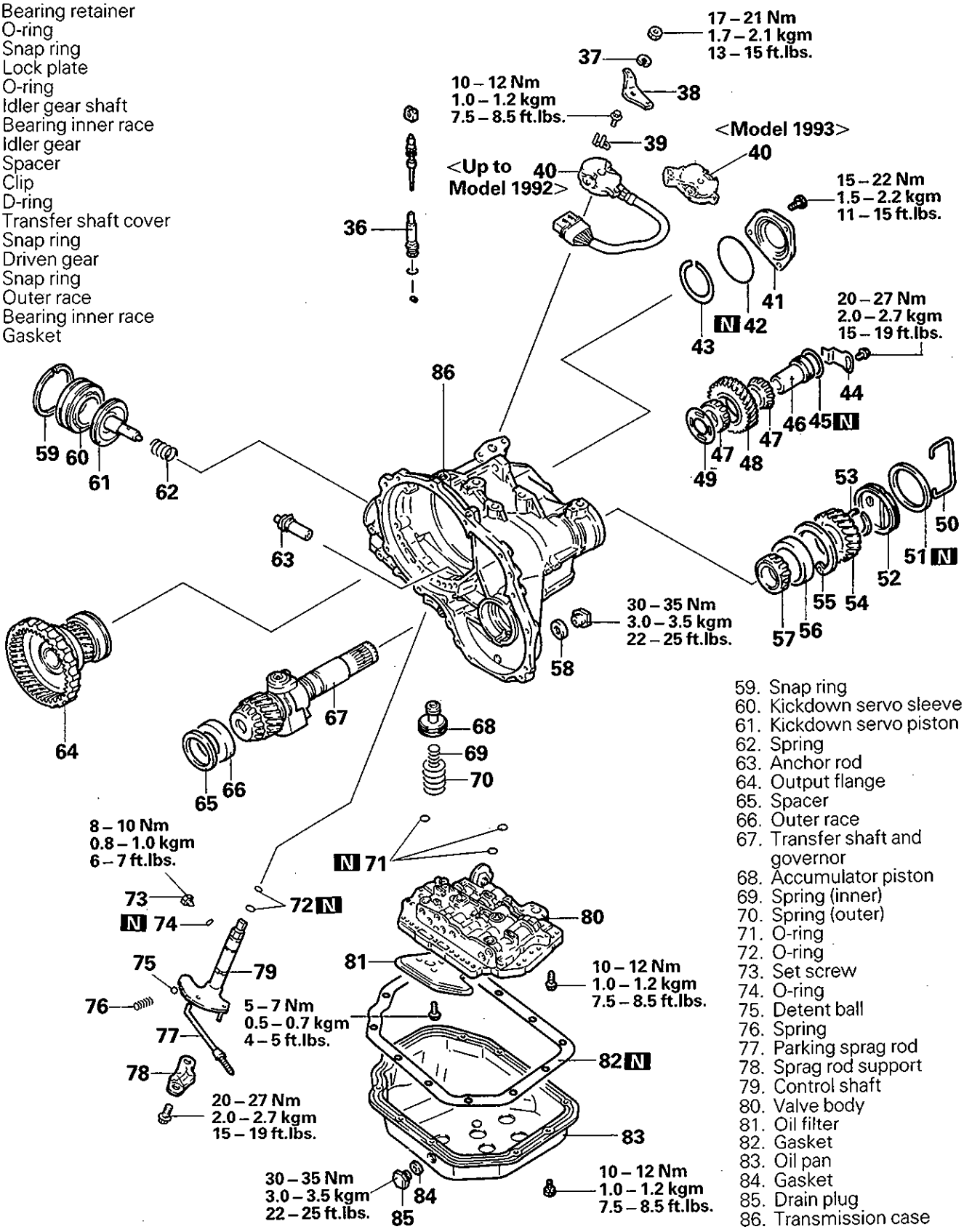
Tool	Number	Name	Use
	MD998916	Socket wrench	Adjustment of kickdown servo (4-speed model only)

3. TRANSMISSION (3-SPEED MODEL)



1. Torque converter
2. Converter housing
3. Gasket
4. Oil pump
5. O-ring
6. Gasket
7. Thrust washer #1
8. Front clutch assembly
9. Thrust race #3
10. Thrust bearing #4
11. Thrust washer #2
12. Rear clutch assembly
13. Spacer
14. Differential
15. Thrust bearing #6
16. Clutch hub
17. Thrust race #7
18. Thrust bearing #8
19. Kickdown band
20. Kickdown drum
21. Snap ring
22. Center support
23. O-ring
24. Wave spring
25. Return spring
26. Pressure plate
27. Brake disc
28. Brake plate
29. Reaction plate
30. Reverse sun gear
31. Thrust bearing #9
32. Thrust race #10
33. Forward sun gear
34. Planetary carrier
35. Thrust bearing #12

36. Control cable
37. Spring washer
38. Control lever
39. Clamp
40. Inhibitor switch
41. Bearing retainer
42. O-ring
43. Snap ring
44. Lock plate
45. O-ring
46. Idler gear shaft
47. Bearing inner race
48. Idler gear
49. Spacer
50. Clip
51. D-ring
52. Transfer shaft cover
53. Snap ring
54. Driven gear
55. Snap ring
56. Outer race
57. Bearing inner race
58. Gasket

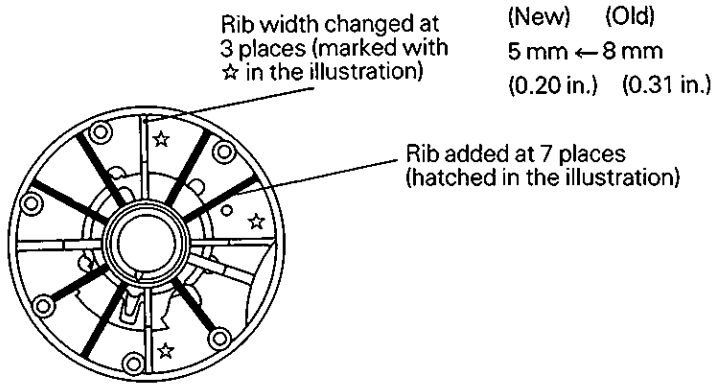


59. Snap ring
60. Kickdown servo sleeve
61. Kickdown servo piston
62. Spring
63. Anchor rod
64. Output flange
65. Spacer
66. Outer race
67. Transfer shaft and governor
68. Accumulator piston
69. Spring (inner)
70. Spring (outer)
71. O-ring
72. O-ring
73. Set screw
74. O-ring
75. Detent ball
76. Spring
77. Parking sprag rod
78. Sprag rod support
79. Control shaft
80. Valve body
81. Oil filter
82. Gasket
83. Oil pan
84. Gasket
85. Drain plug
86. Transmission case

TFA1059

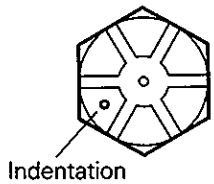
Details of Change

① **Oil pump**



TFA0485

⑥ • **Special bolt**

	Up to 1991 model	From 1992 model
Thread pitch	1.5 mm	1.25 mm
Identification	–	 Indentation

• **Torque converter**

In accordance with the change of the special bolt, the thread pitch of the tapped hole in the torque converter has been changed from 1.5 mm to 1.25 mm.

	Up to 1991 model	From 1992 model
Identification mark	–	41*

*: The identification marks are stamped on the front surface of the torque converter.

Added

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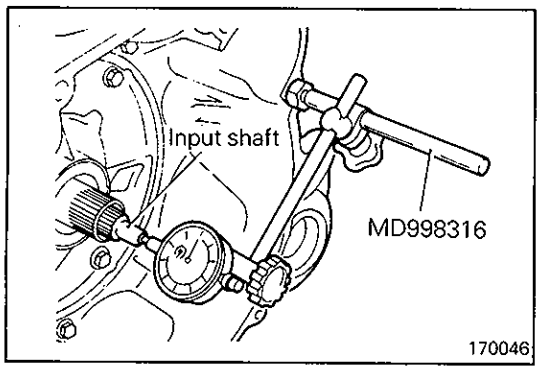
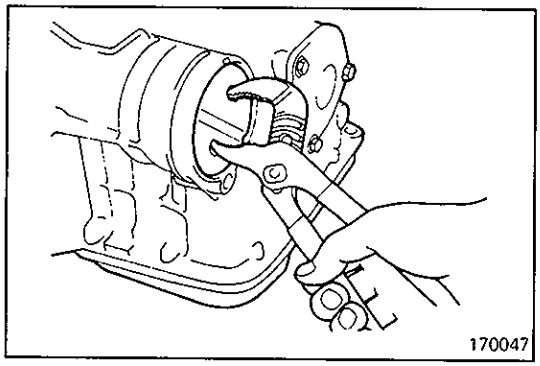
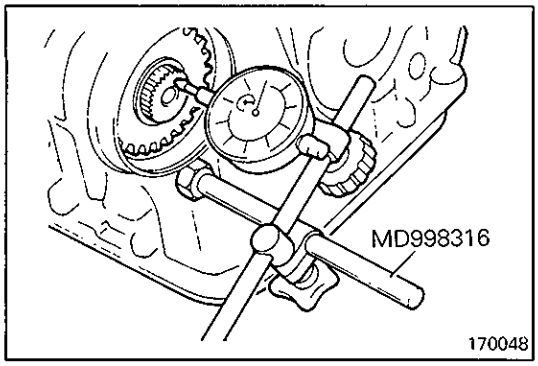


DISASSEMBLY

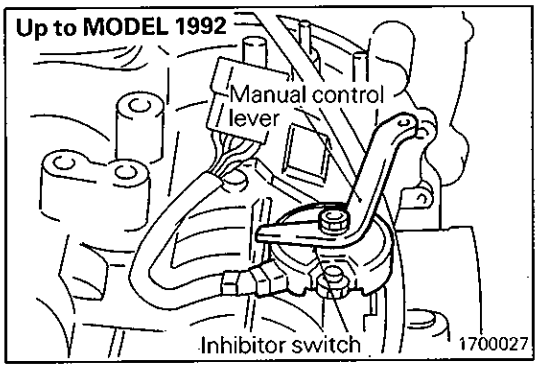
(1) Prior to disassembling the transmission, plug all openings and thoroughly clean the exterior of the assembly, preferably by steam.
(2) Place the transmission on the workbench with the oil pan down.
(3) Remove the torque converter.
(4) Measuring input shaft end play before disassembly will usually indicate when a thrust washer change is required (except when major parts are replaced). Thrust washers are located between the reaction shaft support and rear clutch retainer, and between the reaction shaft support and front clutch retainer.
Using the special tool, mount a dial indicator to the converter housing with its plunger seated against the end of the input shaft.
Move the input shaft in and out with pliers to obtain the end play reading. Be careful not to scratch the input shaft. Record the indicator reading for reference when reassembling the transmission.



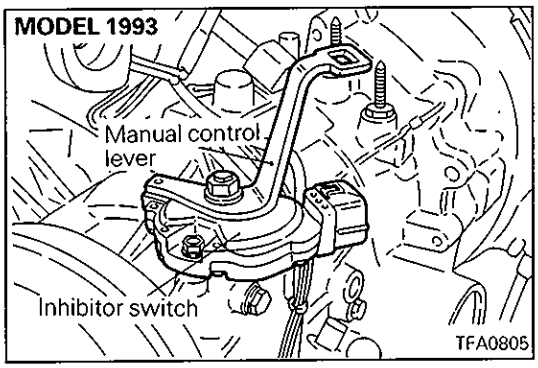
(5) Remove the cover holder, and remove the cover.

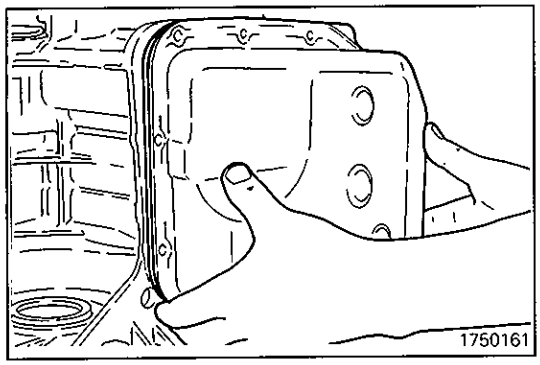


(6) Attach the dial indicator on the transmission case with the special tool.
Measure the transfer shaft end play and record the indicator reading.

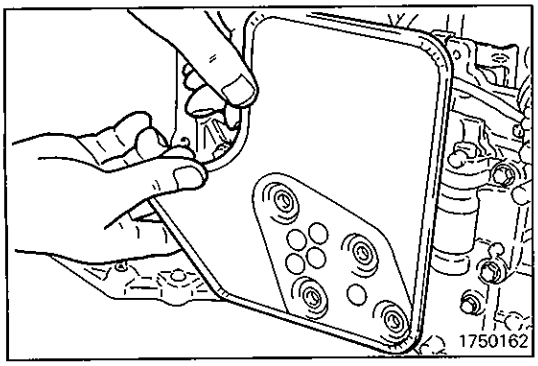


(7) Remove the manual control lever, and then remove the inhibitor switch.

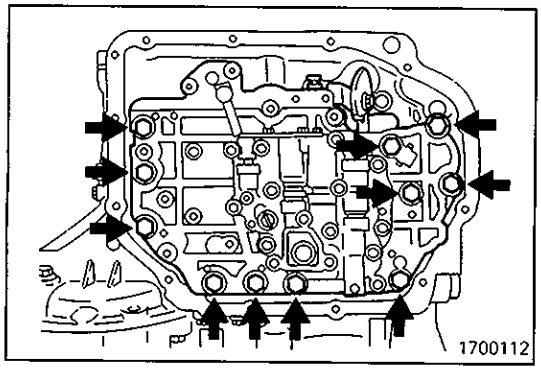




(8) Remove the oil pan and oil pan gasket.



(9) Remove the oil filter.



(10)Disconnect the throttle cable from the throttle cam.
(11)Remove the valve body mounting bolts indicated by arrows and remove the valve body from the transmission case.

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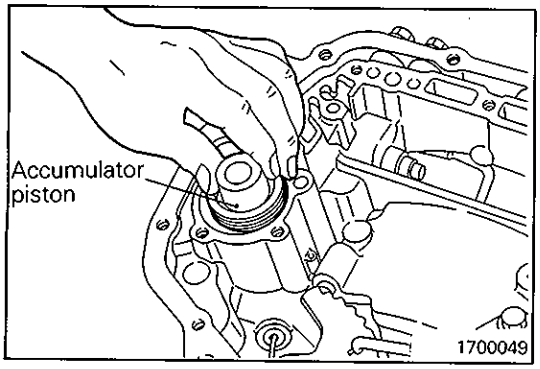
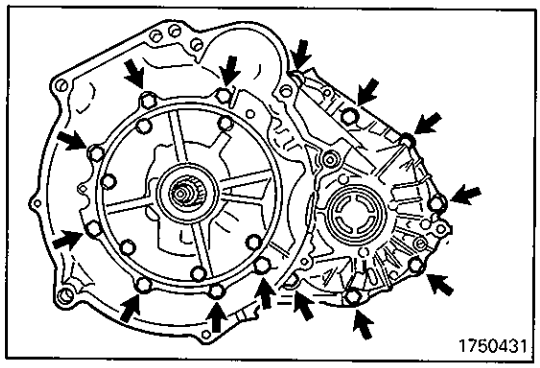
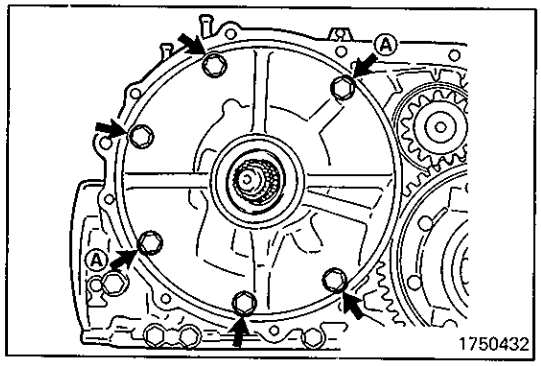


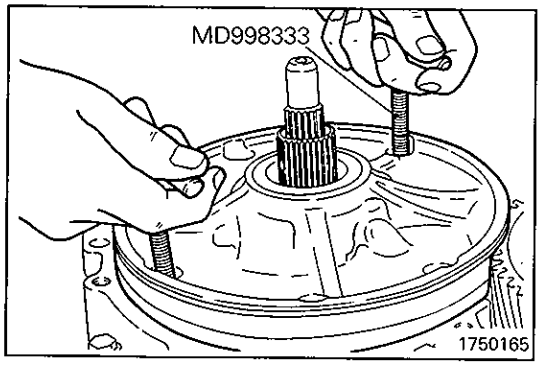
(12)Remove the two accumulator springs, then remove the accumulator piston from the transmission case.



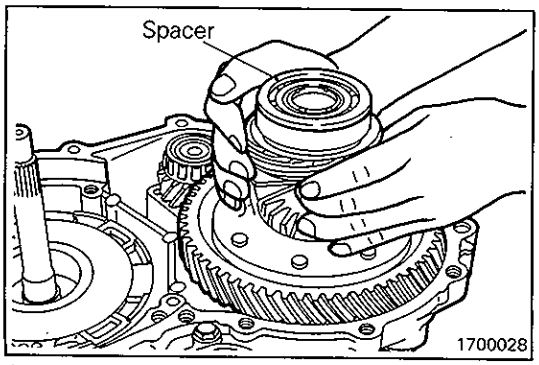
(13)Remove the 14 bolts indicated by arrows and remove the converter housing and gasket.



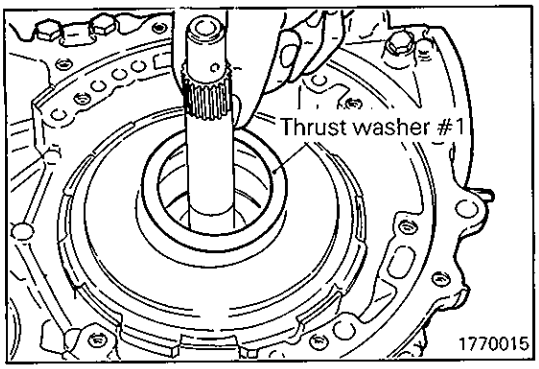
(14)Remove the six oil pump mounting bolts indicated by arrows.
(15)Screw the special tools (MD998333) into the bolt holes marked Ⓐ .



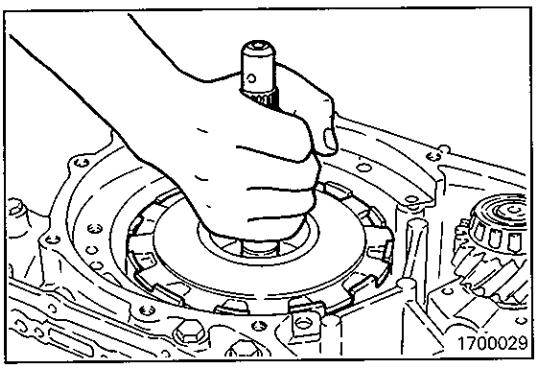
(16)Grasping the special tools, remove the oil pump. Then, remove the gasket.



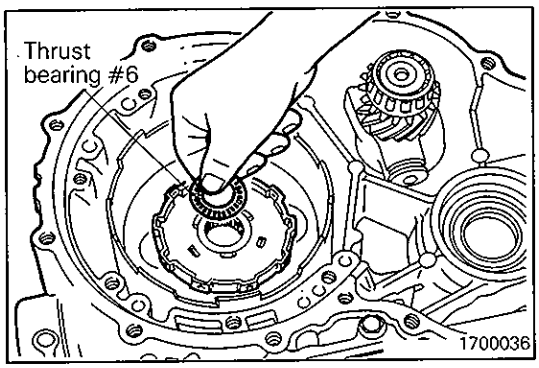
(17)Remove the spacer and differential from the transmission case.



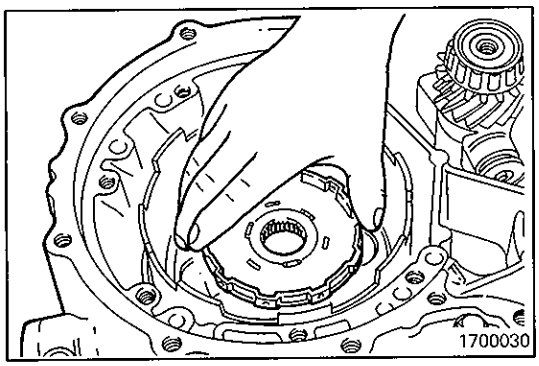
(18)Remove fiber thrust washer #1.



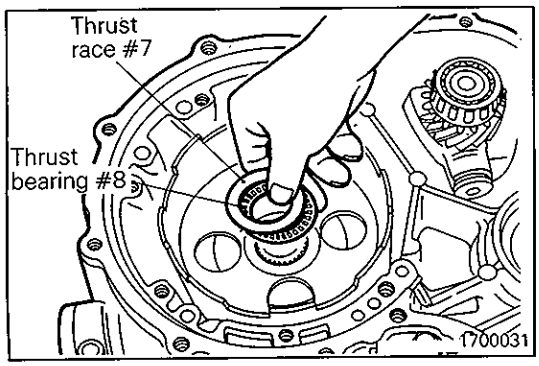
(19)Grasp and raise the input shaft to remove both the front and rear clutch assemblies together.



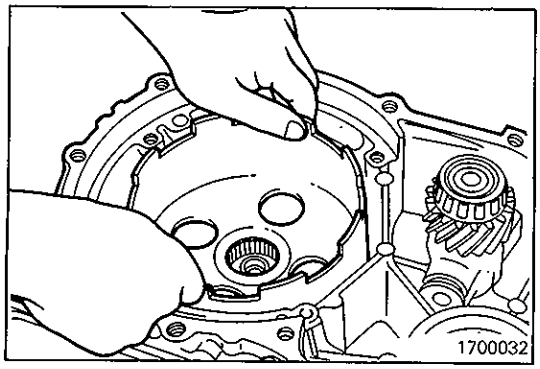
(20)Remove thrust bearing #6.



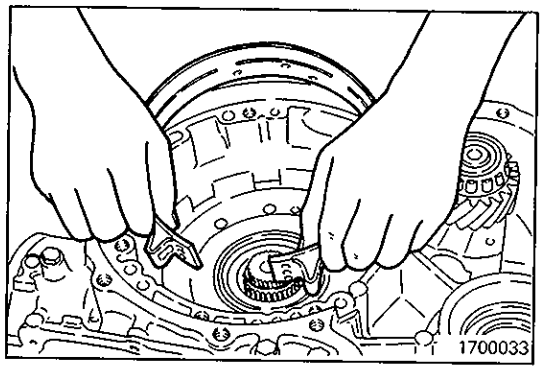
(21)Remove the clutch hub.



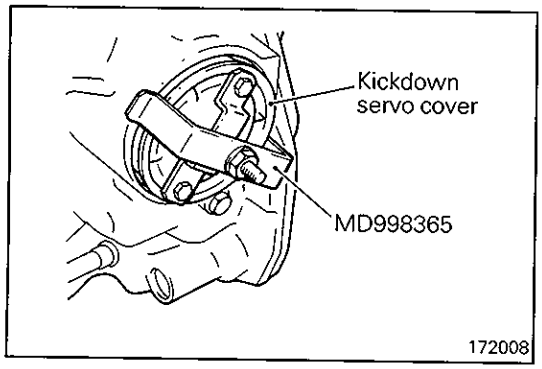
(22)Remove thrust race #7 and thrust bearing #8.



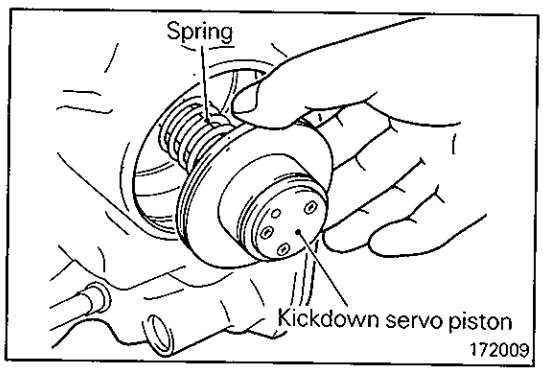
(23)Remove the kickdown drum.



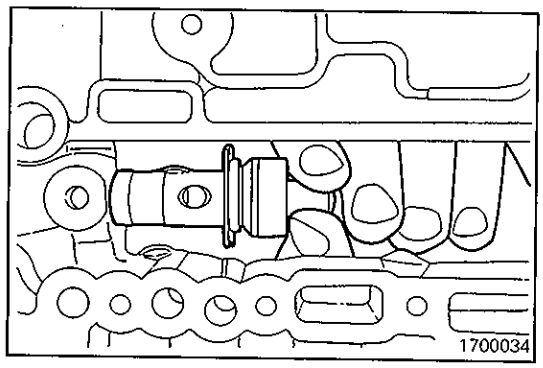
(24)Remove the kickdown band.



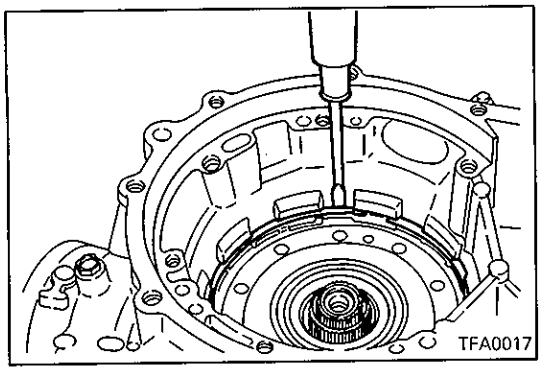
(25)Remove the snap ring.
(26)Set the special tools as shown in the illustration, and use them to remove the kickdown servo cover.



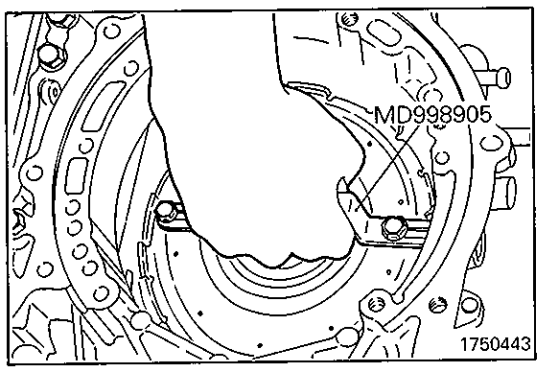
(27)Remove the kickdown servo piston and spring.



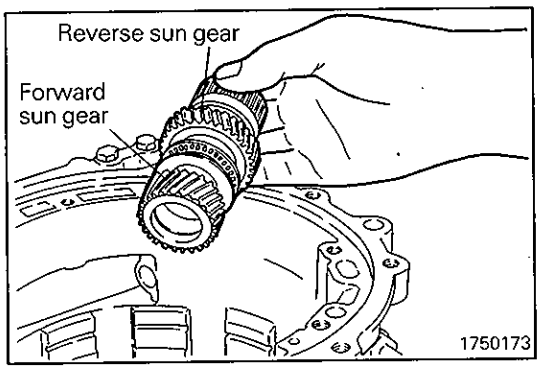
(28)Remove the anchor rod.



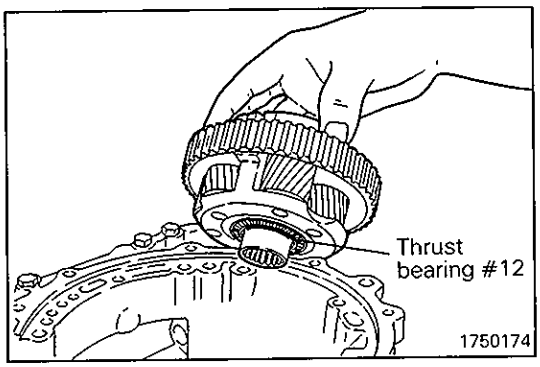
(29)Remove the snap ring.



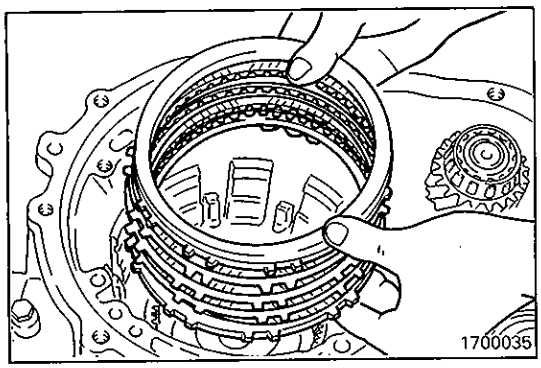
(30)Set the special tool on the center support and remove the center support from the case.



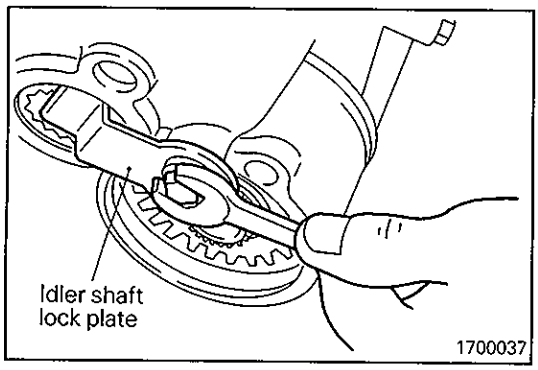
(31)Remove reverse sun gear, thrust bearing #9, thrust race #10 and forward sun gear together.



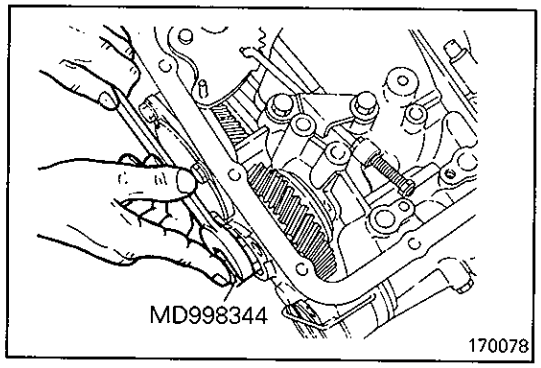
(32)Remove the planetary gear set and thrust bearing #12.



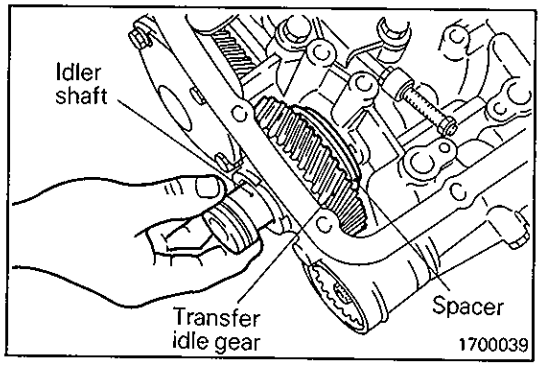
(33)Remove the wave spring, return spring, reaction plate, brake discs, and brake plates.



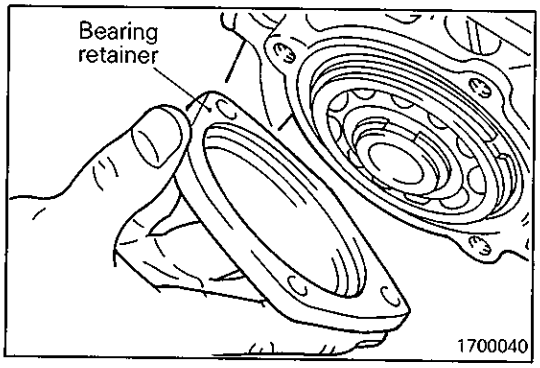
(34)Remove the idler shaft lock plate.



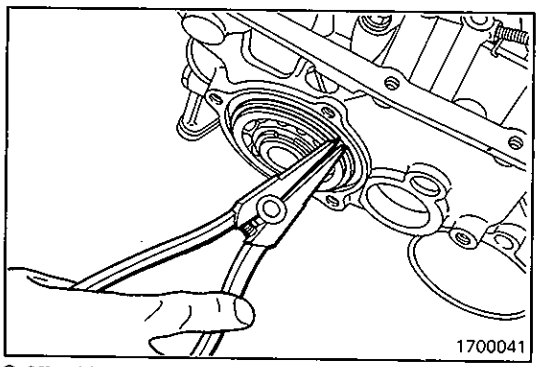
(35)Loosen the transfer idler shaft with the special tool.



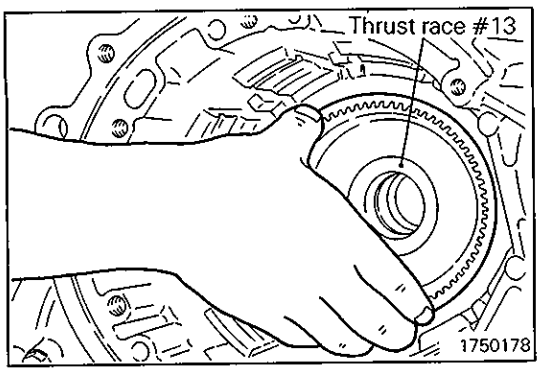
(36)Pull out the transfer idler gear shaft, and remove the transfer idler gear, the two bearing inner races, and the spacer.



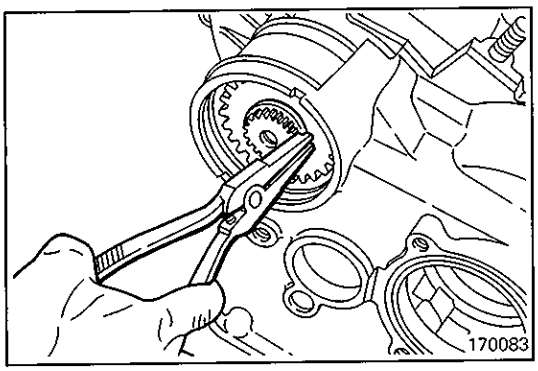
(37)Remove the bearing retainer.



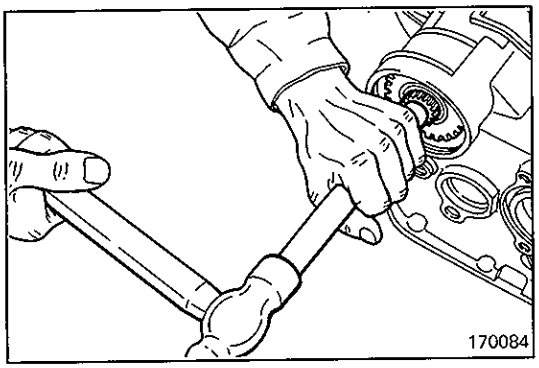
(38)Remove the snap ring from the output flange bearing.



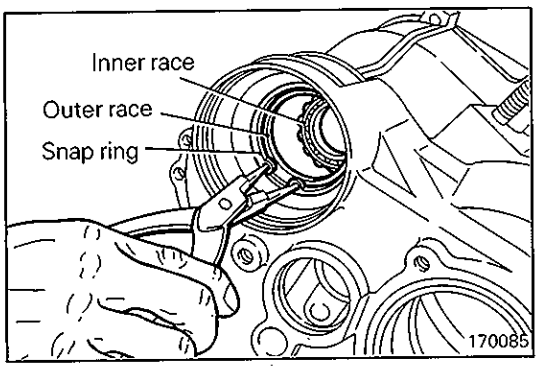
(39)Remove the output flange and thrust race #13 from the case.



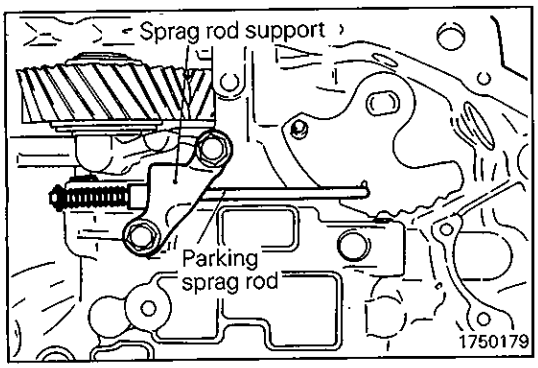
(40)Remove the snap ring from the transfer shaft.



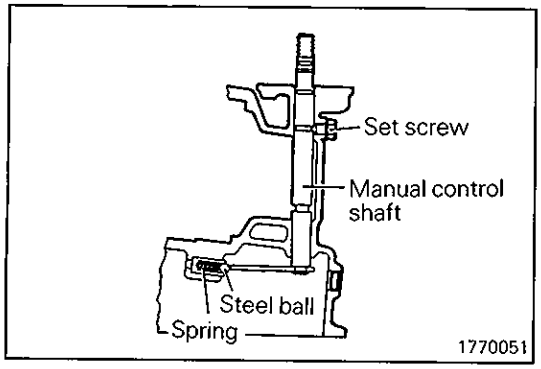
(41)Drive the transfer shaft out toward the torque converter housing to remove the shaft and the transfer driven gear.



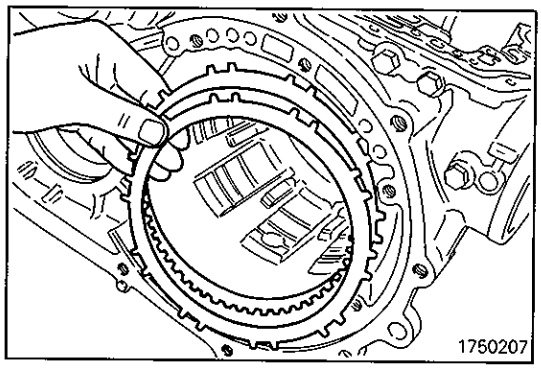
(42)Remove the snap ring, and then the tapered roller bearing inner and outer races.



(43)Remove the sprag rod support.



(44)Remove the set screw, and remove the manual control shaft assembly. At this time, remove also the steel ball and spring.



REASSEMBLY

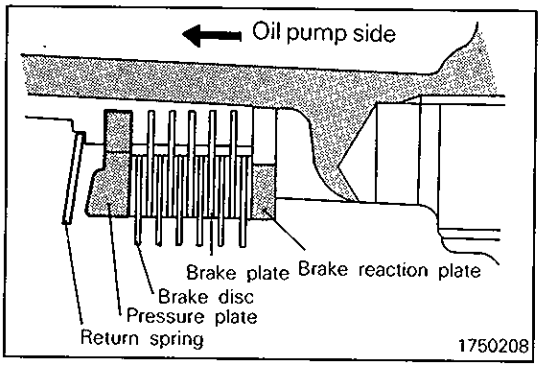
(1) Before reassembling the transmission, measure the end play in the low-reverse brake and select a pressure plate to obtain the specified end play. Use the following procedure.

(a) Install the brake reaction plate, brake plates and brake discs in the transmission case.

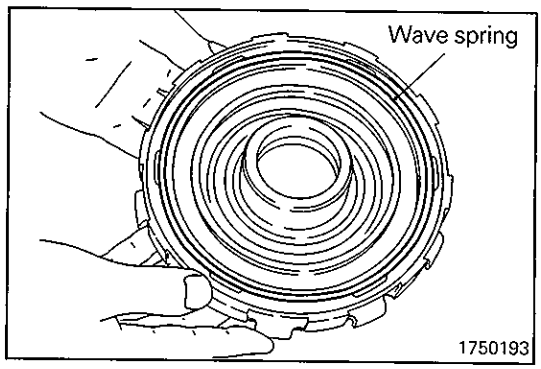
Caution

- **Blow off automatic transmission fluid from the plates and discs with low-pressure compressed air.**

Transmission model	No. of brake discs	No. of brake plates
F3A21	4	3
F3A22	6	5

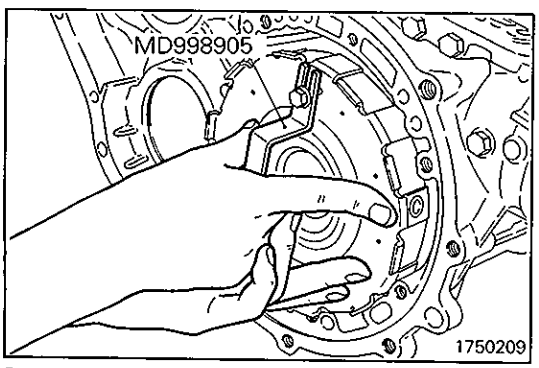


(b) Install the pressure plate and mount the return spring.



(c) Apply petrolatum jelly to the wave spring and attach the wave spring on the low-reverse brake piston.

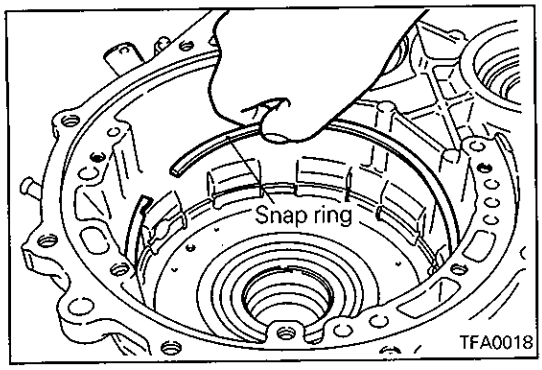
(d) Install the two O-rings removed during disassembly and coat them with automatic transmission fluid.



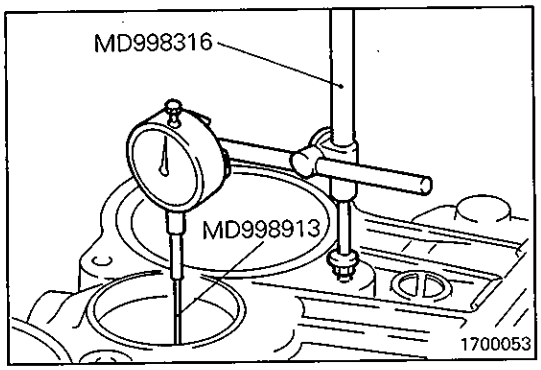
(e) Attach the special tool to the center support and install the support in the transmission case.

Caution

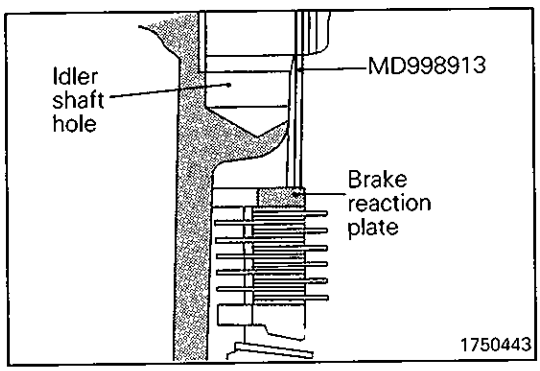
- **Install the center support, taking care that the waved spring is not out of position.**
- **Install the two O-rings in alignment with the oil holes provided in the transmission case.**

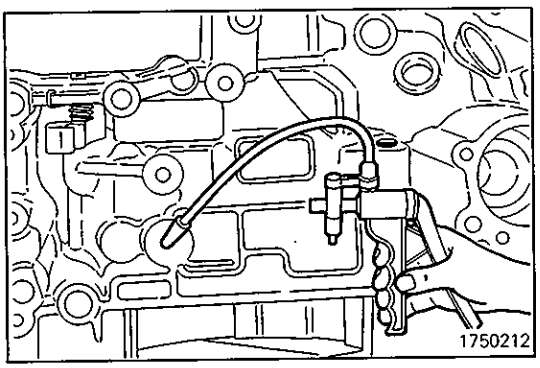


(f) Remove the special tool.
(g) Install the snap ring.



(h) Mount the special tool and dial indicator on the rear side of the transmission case.
Make sure that the dial indicator rod (MD998913) is inserted into the transfer idler shaft hole, contacting the brake reaction plate at a right angle.



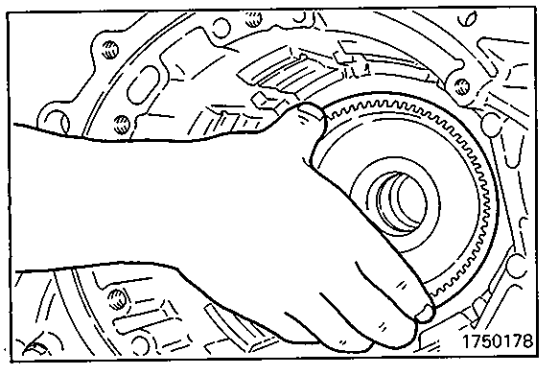


(i) Using a hand pump, feed air through the location shown and, at the same time, read the dial indicator and select a pressure plate to obtain the specified end play.

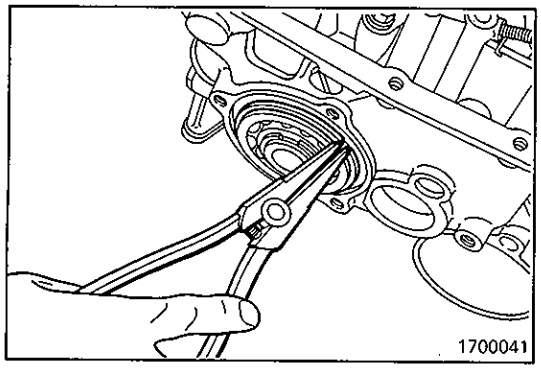
Standard value:

0.8 – 1.0 mm (0.031 – 0.039 in.)	**F3A21**
1.0 – 1.2 mm (0.039 – 0.047 in.)	**F3A22**

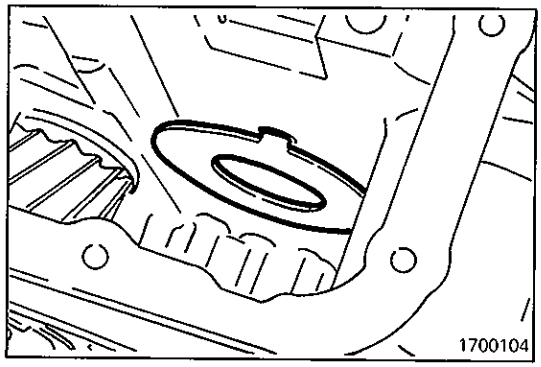
(j) After a pressure plate of the appropriate thickness has been selected, remove all the mounted parts.



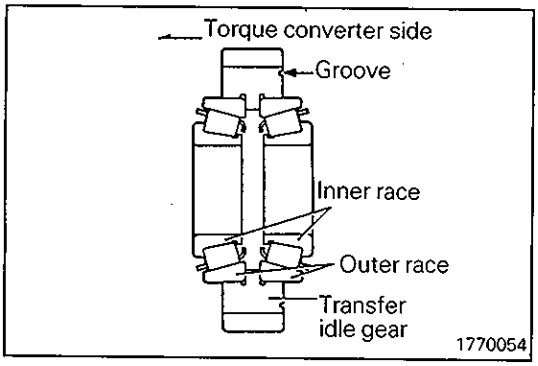
(2) Place the transmission case on the workbench with the oil pan mounting surface up.
(3) Insert the output flange in position (with two ball bearings and transfer drive gear attached) from the inside of the transmission case.



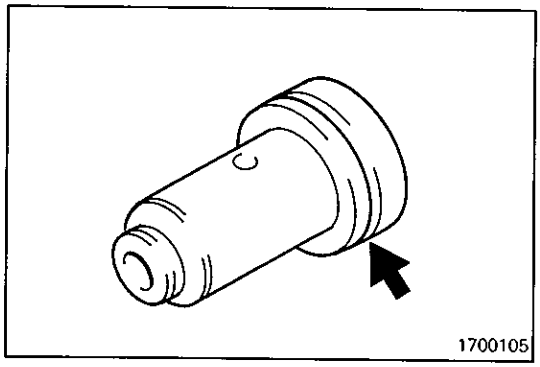
(4) Install the snap ring in the groove of the output flange bearing.



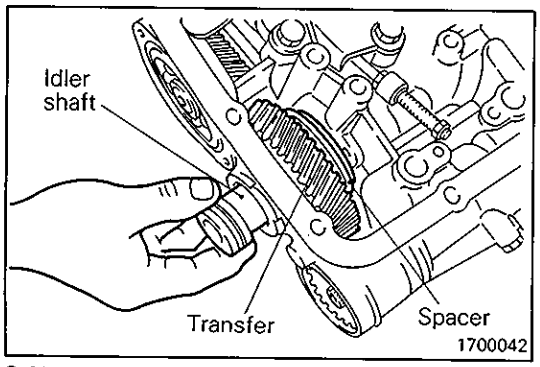
(5) Apply petrolatum jelly to the spacer and attach the spacer to the case.



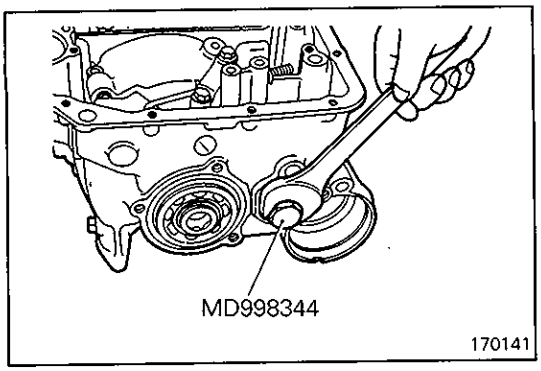
(6) Install the bearing outer race and inner races in the transfer idler gear.



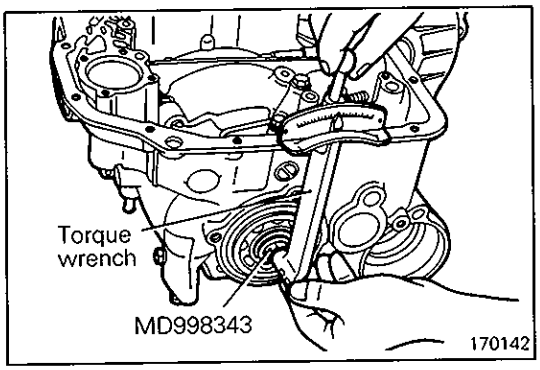
(7) Install a new O-ring in the groove of the idler shaft, and apply a very thin coat of automatic transmission fluid to the O-ring.



(8) Place the transfer idler gear in the case, and insert and screw the idler shaft into position.

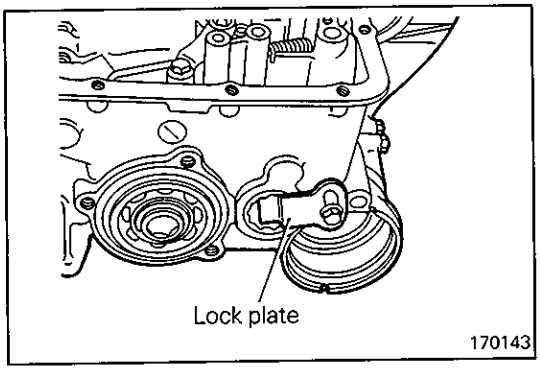


(9) Screw in and tighten the idler shaft by using the special tool.



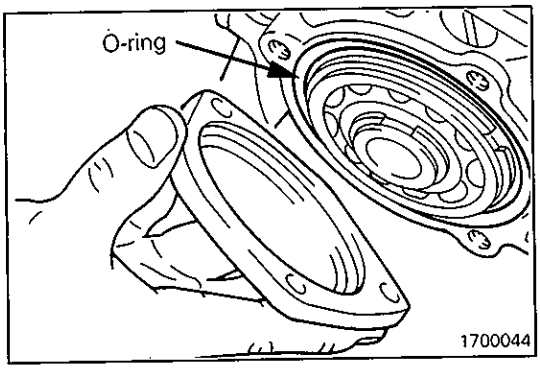
(10)Insert the special tool into the output flange and measure the preload using a low reading torque wrench. Adjust the preload to the standard value by tightening or loosening the transfer idler shaft.

Standard value: 0.8 Nm (0.08 kgm, 0.6 ft.lbs.)

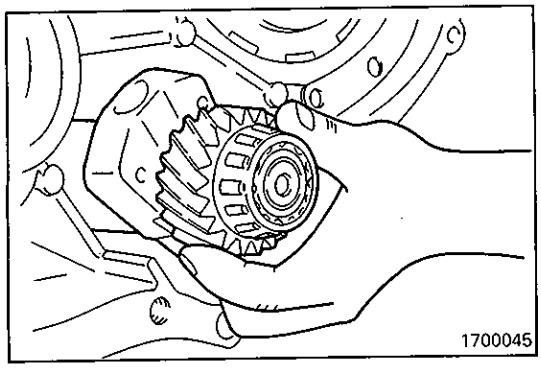


(11)After completing the preload adjustment, install the idler shaft lock plate. The clearance between the idler shaft and the lock plate should be closed in the direction that will prevent idler shaft looseness, and then tighten the lock plate bolt to specified torque.

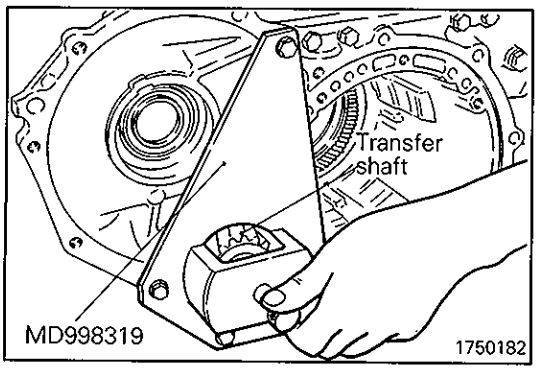
Tightening torque:
20 – 27 Nm (2.0 – 2.7 kgm, 15 – 19 ft.lbs.)



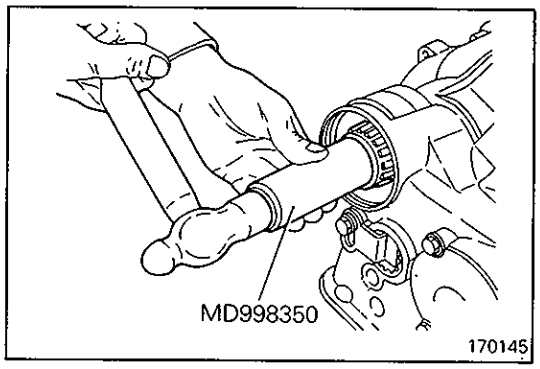
(12)Install a new O-ring in the groove of the transmission case, and then install the bearing retainer.



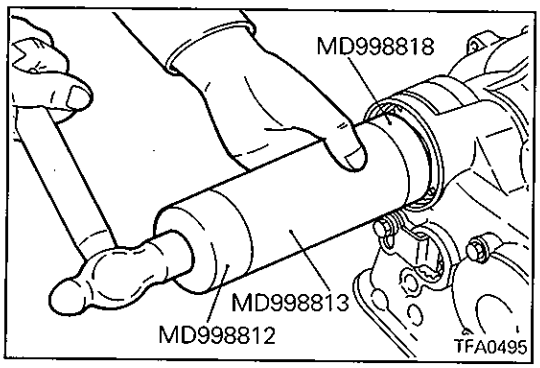
(13)Insert the transfer shaft in the case..



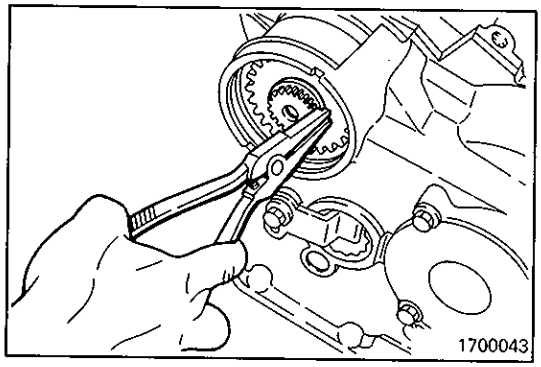
(14)Mount the special tool on the transmission case to support the transfer shaft.



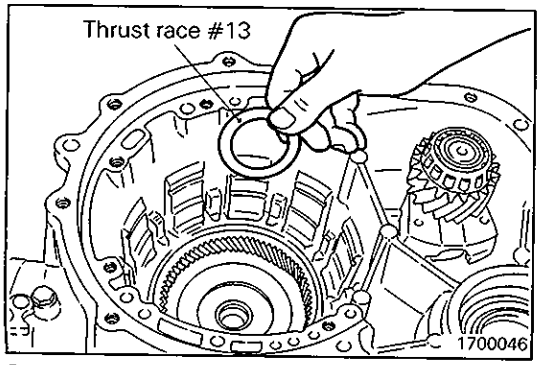
(15)Use the special tool to install the bearing inner race on the transfer shaft.
(16)Install the tapered roller bearing outer race, and then the snap ring.



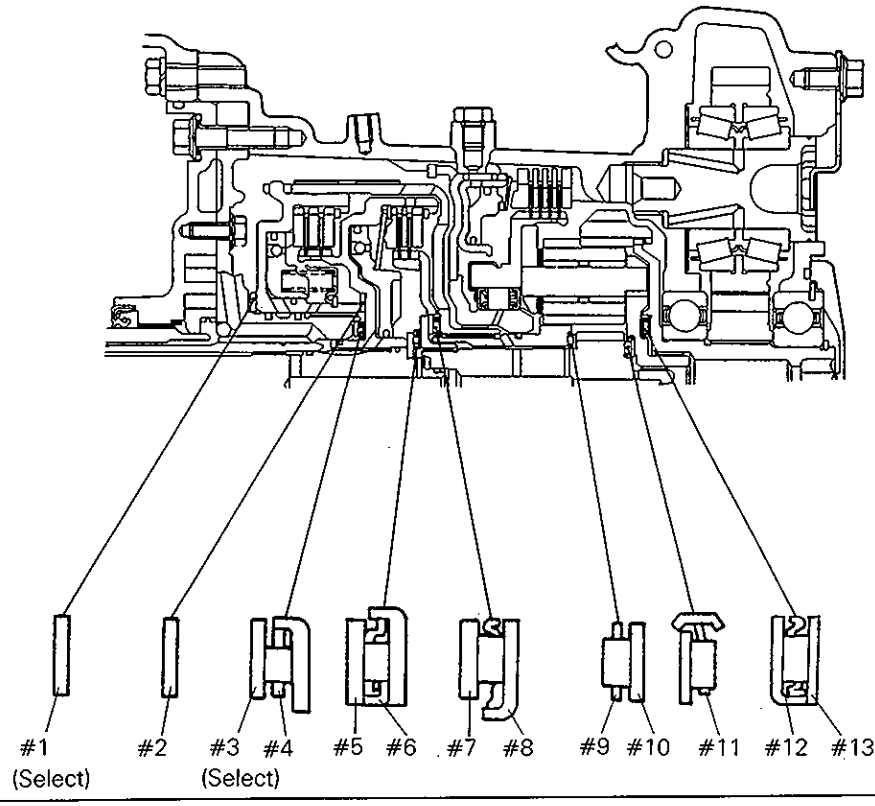
(17)Use the special tool to install the transfer driven gear on the transfer shaft.



(18)Install the snap ring on the end of the transfer shaft.



(19)Coat thrust race #13 with petrolatum jelly and attach it to the output flange.

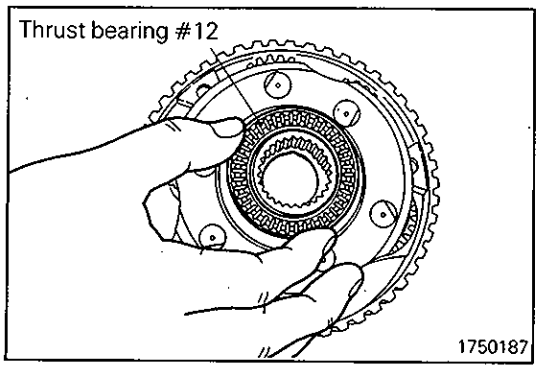


1700047

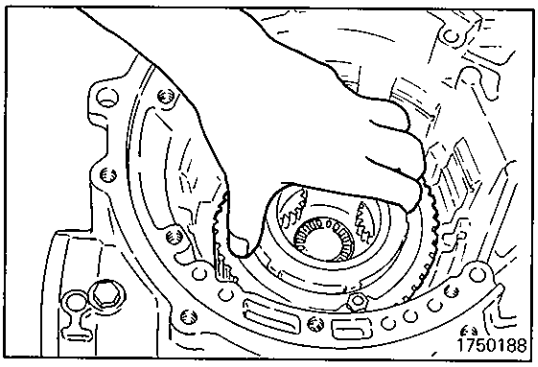
IDENTIFICATION OF THRUST BEARINGS, THRUST RACES, AND THRUST WASHERS

mm (in.)

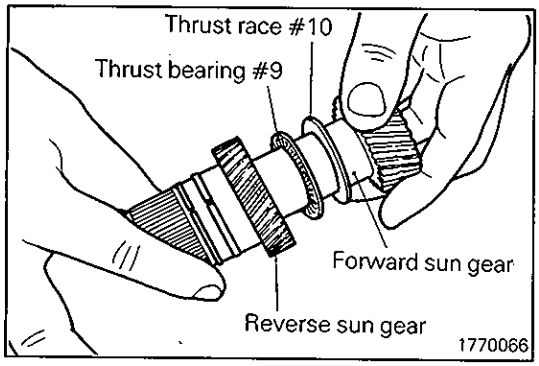
O.D.	I.D.	Thickness	Part No.	Identification marking	O.D.	I.D.	Thickness	Part No.	Identification marking
70 (2.756)	55.7 (2.193)	1.4 (0.055)	*1	#1	48.1 (1.906)	34.4 (1.354)	–	MD707271	#4
70 (2.756)	55.7 (2.193)	1.8 (0.071)	*2		40 (1.575)	21 (0.827)	2.4 (0.094)	MD722552	#5
70 (2.756)	55.7 (2.193)	2.2 (0.087)	*3		42.6 (1.677)	28 (1.102)	–	MD720753	#6
70 (2.756)	55.7 (2.193)	2.6 (0.102)	*4		54 (2.126)	38.7 (1.524)	1.6 (0.063)	MD704936	#7
70 (2.756)	55.7 (2.193)	1.8 (0.071)	MD707290	#2	52 (2.047)	36.4 (1.433)	–	MD720010	#8
48.9 (1.925)	37 (1.457)	1.0 (0.039)	MD997854 (incl.*1)	#3	41 (1.614)	28 (1.102)	–	MD728763	#9
48.9 (1.925)	37 (1.457)	1.2 (0.047)	MD997847 (incl.*1)		39 (1.535)	28 (1.102)	1.2 (0.047)	MD728764	#10
48.9 (1.925)	37 (1.457)	1.4 (0.055)	MD997848 (incl.*2)		38 (1.496)	22.2 (0.874)	–	MD727787	#11
48.9 (1.925)	37 (1.457)	1.6 (0.063)	MD997849 (incl.*2)		52 (2.047)	36.4 (1.433)	–	MD720010	#12
48.9 (1.925)	37 (1.457)	1.8 (0.071)	MD997850 (incl.*3)		54 (2.126)	38.7 (1.524)	0.8 (0.031)	MD704935	#13
48.9 (1.925)	37 (1.457)	2.0 (0.079)	MD997851 (incl.*3)						
48.9 (1.925)	37 (1.457)	2.2 (0.087)	MD997852 (incl.*4)						
48.9 (1.925)	37 (1.457)	2.4 (0.094)	MD997853 (incl.*4)						



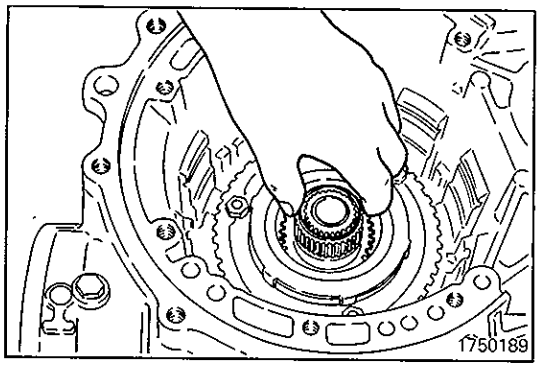
(20)Apply petrolatum jelly to thrust bearing #12 and secure the bearing on the planetary carrier.



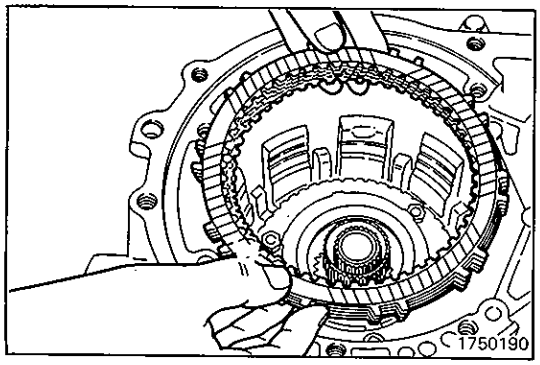
(21)Mount the planetary carrier on the case.



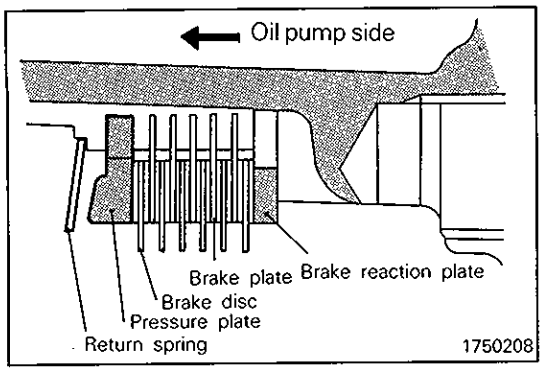
(22)Attach thrust race #10 and thrust bearing #9 to the forward sun gear. Then, assemble the reverse sun gear.

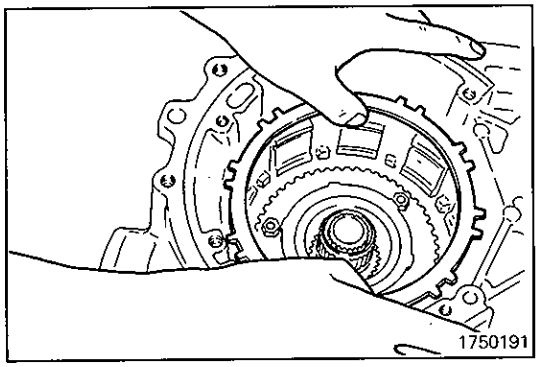


(23)Install the sun gear assembly assembled in step (22) in the planetary carrier.

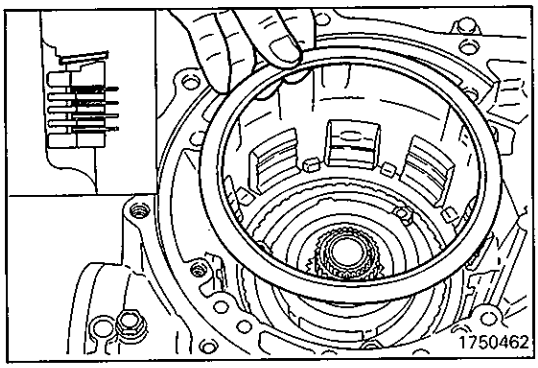


(24)Put the brake disc and brake plate in position.

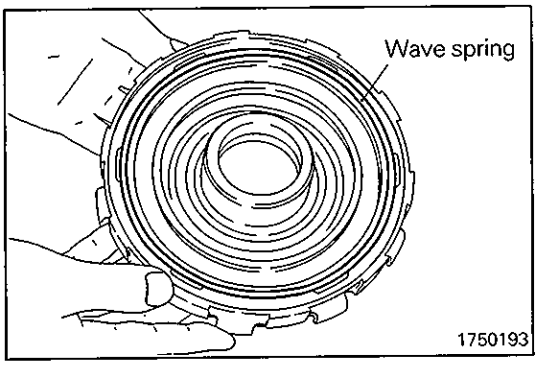




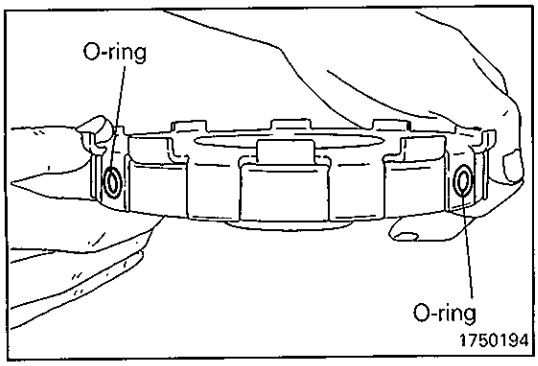
(25)Install the brake pressure plate which was selected in Step (1).



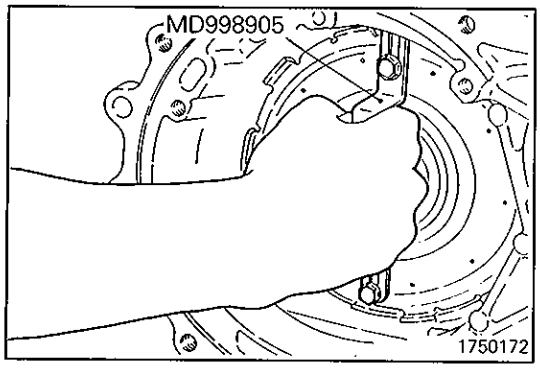
(26)Install the return spring.



(27)Apply petrolatum jelly to the wave spring and attach the wave spring to the center support.



(28)Install the two new O-rings on the hydraulic pressure holes of the center support.
Coat the O-rings with automatic transmission fluid.

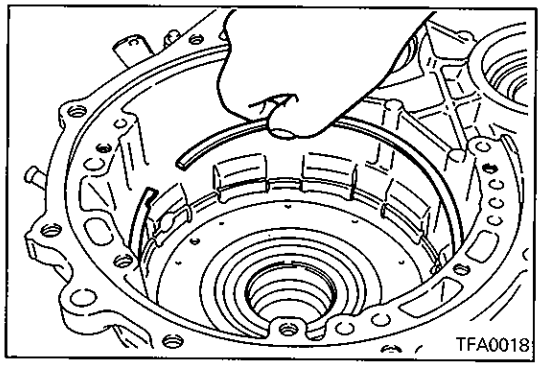


(29)Attach the special tool to the center support and install the support in the transmission case.

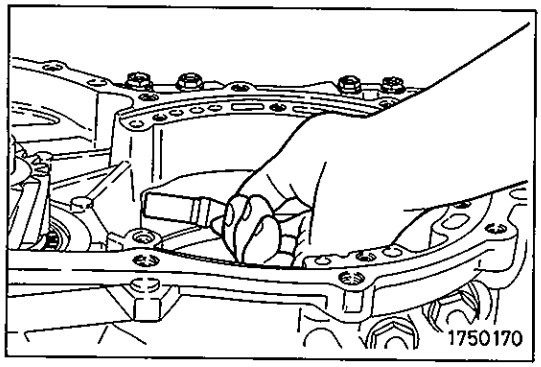
Caution

- **Install the center support, taking care that the waved spring is not out of position.**
- **Install the two O-rings in alignment with the oil holes provided in the transmission case.**

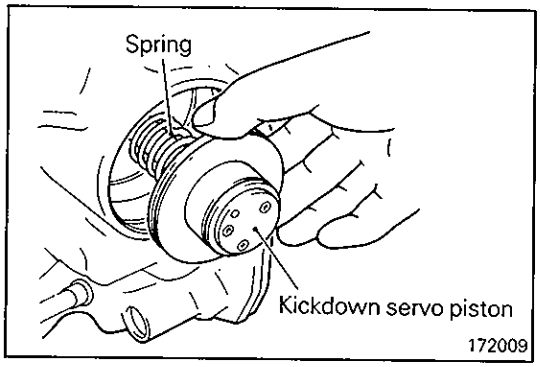
(30)Remove the special tool from center support.



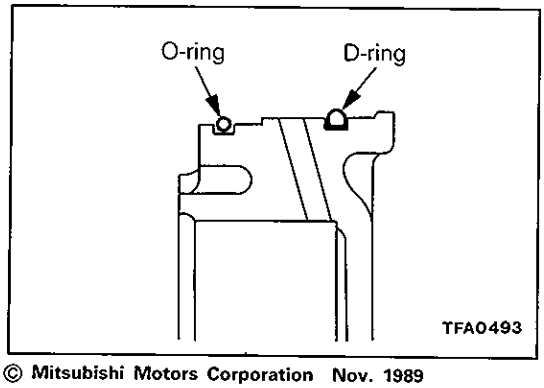
(31)Install the snap ring for the center support.



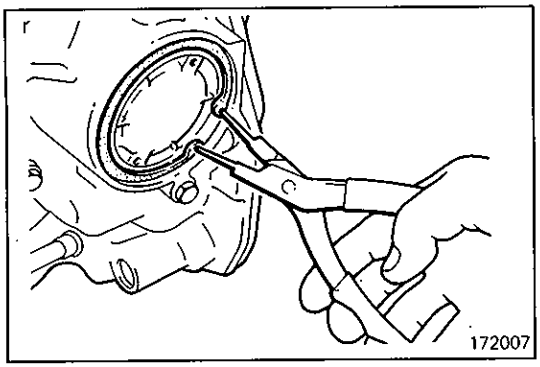
(32)Install the anchor rod, in the transmission case.



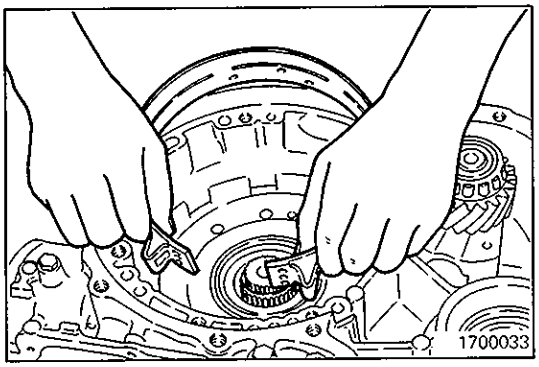
(33)Install new seal rings in the grooves of the kickdown servo piston and coat the rings with automatic transmission fluid.
(34)Insert the kickdown servo spring and piston in the transmission case.



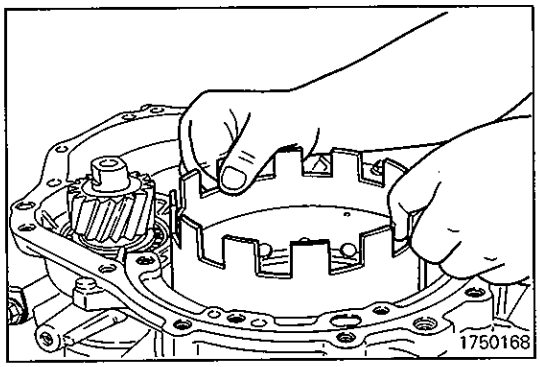
(35)Install a new O-ring and D-ring on the kickdown servo sleeve, and apply a very thin coat of automatic transmission fluid to the rings.



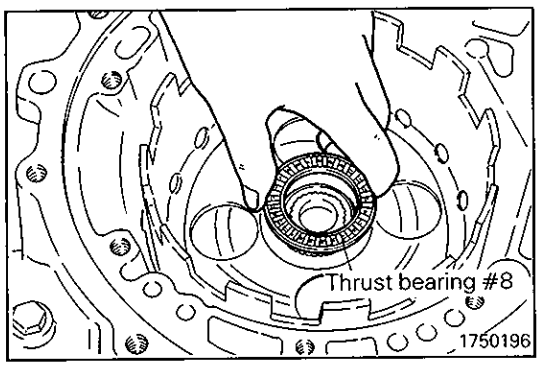
(36)Insert the kickdown servo sleeve in the transmission case and install the snap ring.



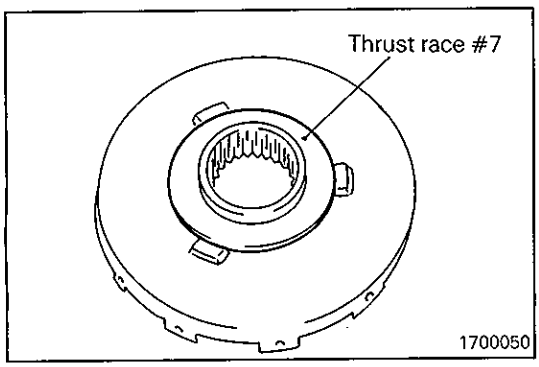
(37)Install the kickdown band; attach the ends of the band to the ends of the anchor rod and servo piston rod.



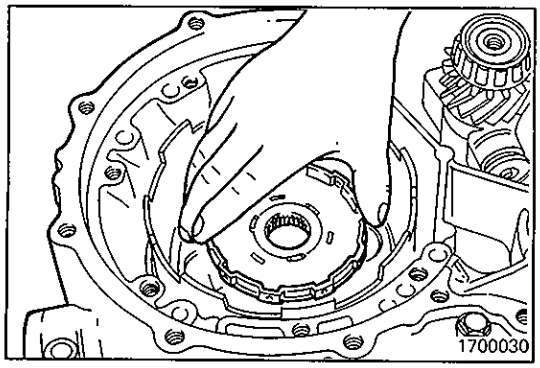
(38)When putting the kickdown drum in the kickdown band, engage the splines of the kickdown drum with those of the reverse sun gear.



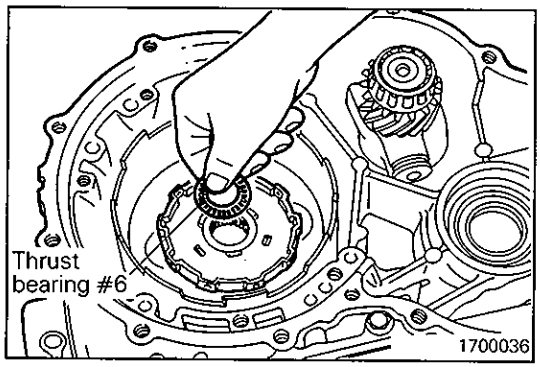
(39)Apply petrolatum jelly to thrust bearing #8 and attach the thrust bearing to the kickdown drum.



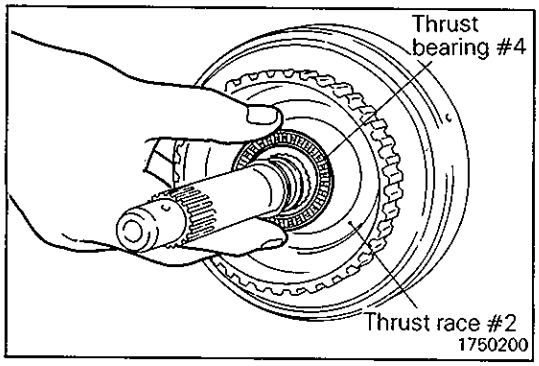
(40)Apply petrolatum jelly to thrust race #7 and attach the thrust race to the rear clutch hub.



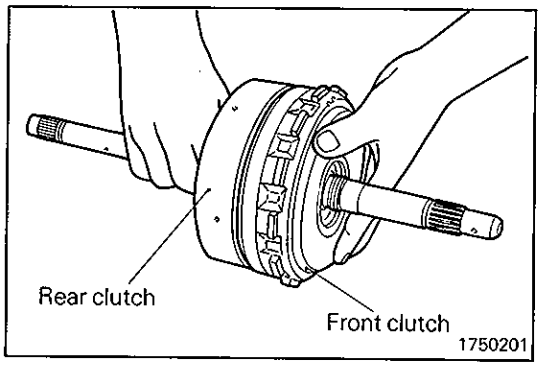
(41)Install the rear clutch hub, engaging it with the forward sun gear splines.



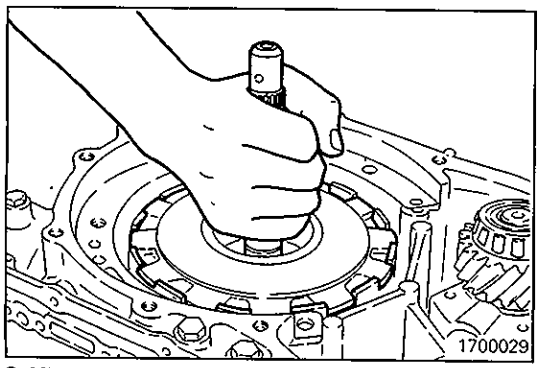
(42)Apply petrolatum jelly to thrust bearing #6 and attach it to the clutch hub.



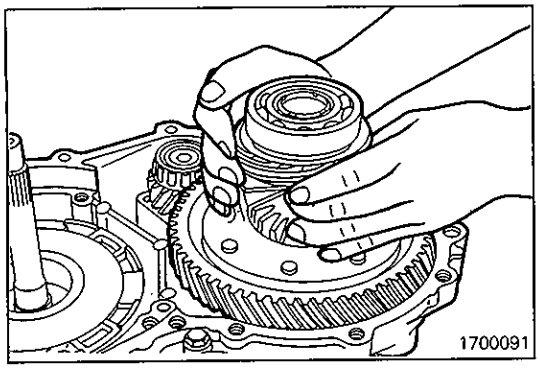
(43)Apply petrolatum jelly to thrust washer #2 and thrust bearing #4 and attach the washer and bearing to the rear clutch assembly.



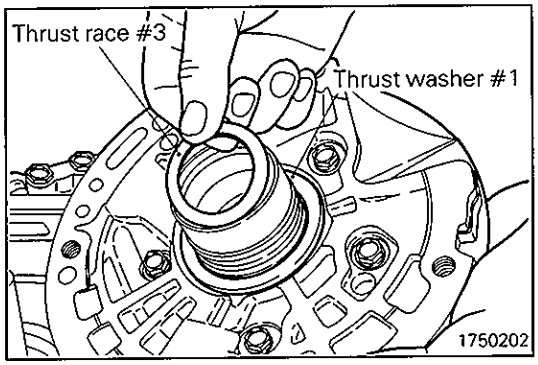
(44)Mate the rear clutch assembly with the front clutch assembly.



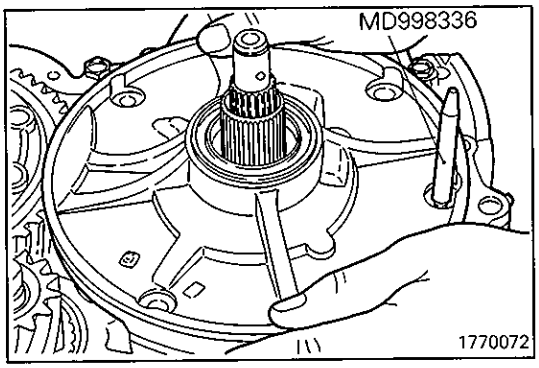
(45)Install the clutch assembly.



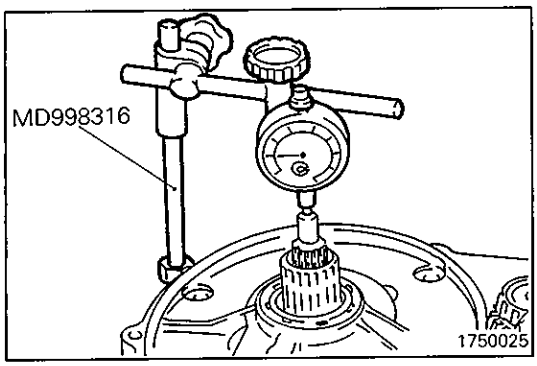
(46)Install the differential.



(47)Attach thrust race #3 and thrust washer #1 to the rear end face of the oil pump with petrolatum jelly.

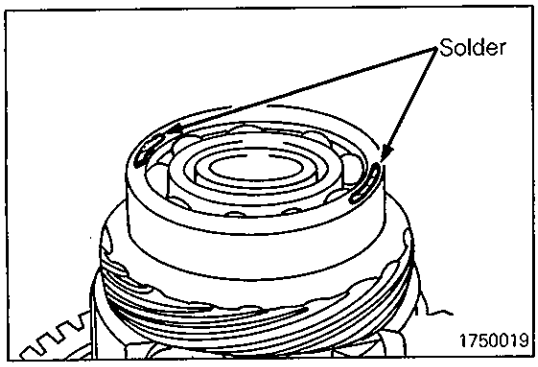


(48)Attach the special tool to the transmission case. Using the tool as a guide, first install a new oil pump gasket and then the oil pump in the case.
(49)Remove the special tool.
(50)Tighten the oil pump bolts to the specified torque.

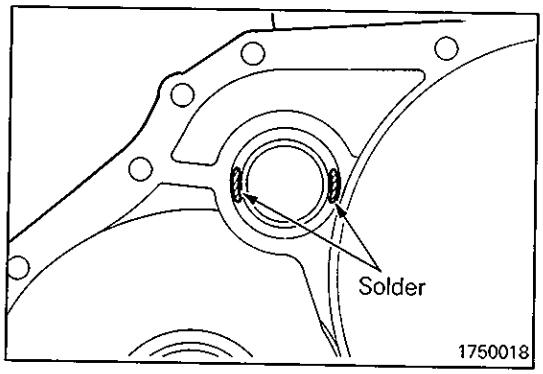


(51)Measure the end play of the input shaft. If the measurement is out of specification, replace thrust race #3 and thrust washer #1 to meet the specification.

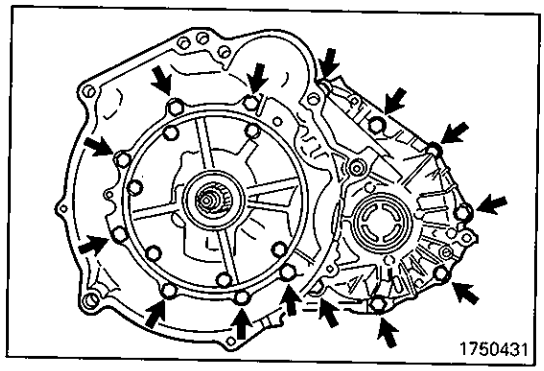
Standard value: 0.3 – 1.0 mm (0.012 – 0.039 in.)



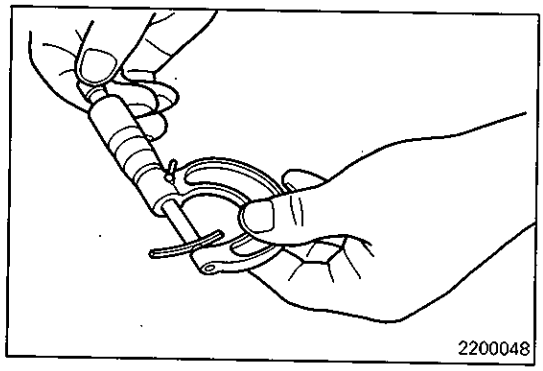
(52)Place approx. 10 mm (0.394 in.) long and 2.5 mm (0.10 in.) dia. pieces of solder at the locations shown on the differential assembly.



(53)Place approx. 10 mm (0.394 in.) long and 2 mm (0.08 in.) dia. pieces of solder at the illustrated locations on the converter housing. Place the outer race of transfer shaft front bearing in position.



(54)Install the converter housing directly to the transmission case without installing the rubber coated metal gasket.
(55)Tighten the bolts to the specified torque.
(56)Loosen the bolts, remove the converter housing and remove the flattened solder pieces.



(57)Measure the thickness of the flattened solder using a micrometer. Add the measured solder thickness (T) to the value 0.38 mm (0.015 in.), which corresponds to the gasket thickness. Then add to or subtract from that sum a value corresponding to the specified preload or end play range. The result obtained is the thickness of the spacer to be selected.

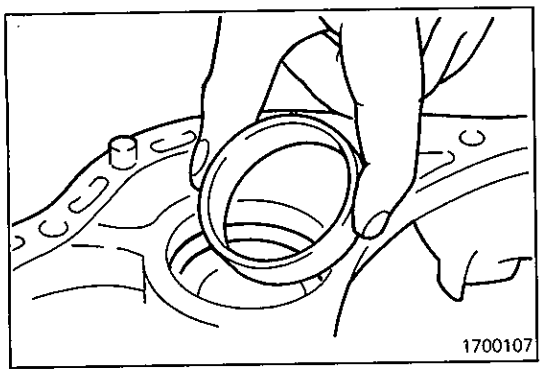
For the transfer shaft, select a spacer whose thickness falls within the range determined by the formulas below:

[T + 0.38 mm (0.015 in.) + 0.1 mm (0.004 in.)] to
[T + 0.38 mm (0.015 in.) + 0.15 mm (0.006 in.)]

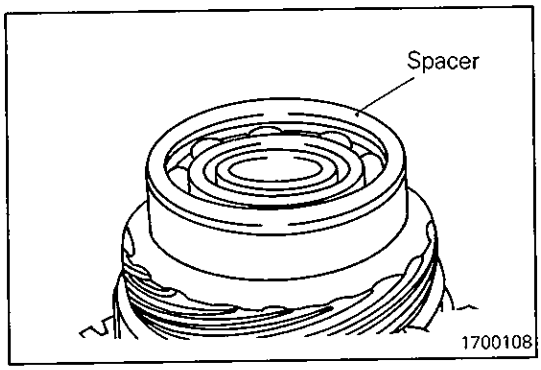
For the differential case spacer, determine the thickness using the following formulas:

[T + 0.38 mm (0.015 in.) – 0.15 mm (0.006 in.)] to
[T + 0.38 mm (0.015 in.) – 0 mm (0 in.)]

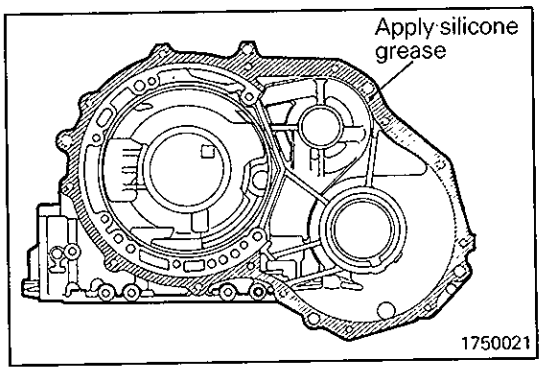
Transfer shaft preload:
0.1 – 0.15 mm (0.004 – 0.006 in.)
Differential case end play:
0 – 0.15 mm (0 – 0.006 in.)



(58)Place the spacer for the transfer shaft which was selected in Step (57) in the transfer shaft bearing hole in the converter housing, and insert the bearing outer race in the case.



(59)Place the spacer for the differential case which was selected in Step (57) on the bearing outer race.



(60)Coat the gasket surface of the transmission case with silicone grease.

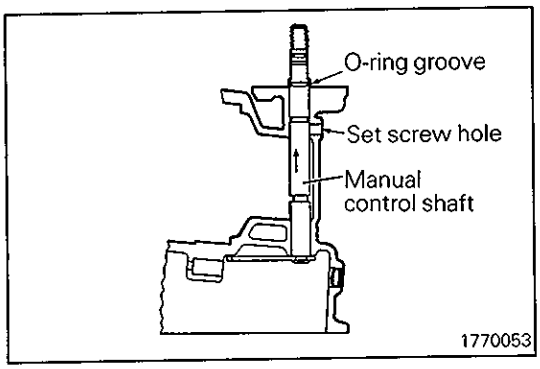
(61)Install a new gasket on the transmission case.

Caution

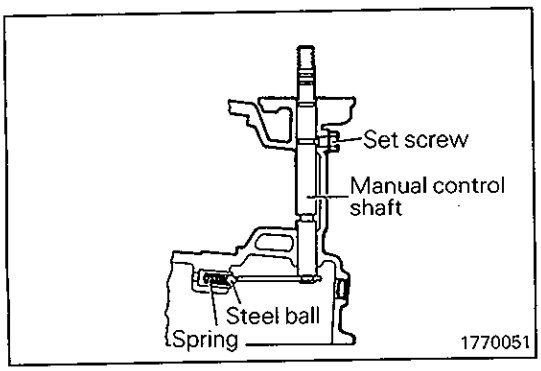
- **Do not reuse the gasket which was previously removed.**

(62)Install the converter housing with the 14 bolts. Tighten the bolts to the specified torque.

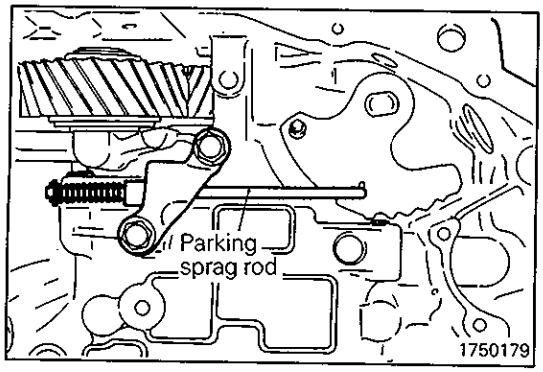
Specified torque:
19 – 23 Nm (1.9 – 2.3 kgm, 14 – 16 ft.lbs.)



(63)Install the parking sprag rod to the manual control shaft. Then, insert the shaft in the transmission as shown in the illustration. In doing this work, do not install O-ring in the O-ring groove.

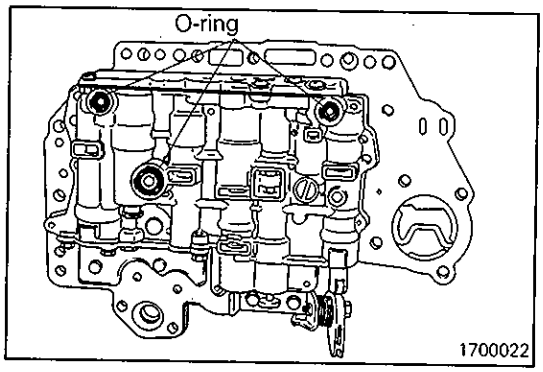


(64)After installing a new O-ring on the manual control shaft assembly, draw the shaft back into the case, then install the set screw and gasket. Also install the detent steel ball, seat and spring at the same time.

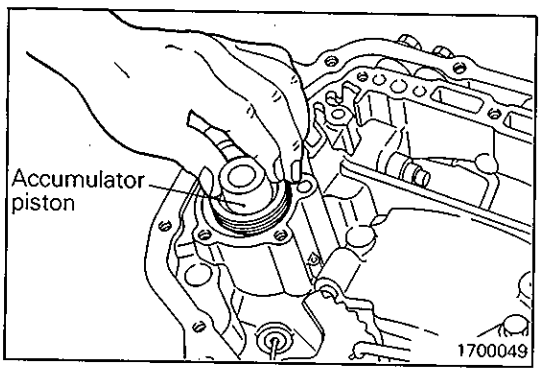


(65)Place the case with the oil pan mounting surface up.
(66)Install the sprag rod support and tighten the two bolts to the specified torque.

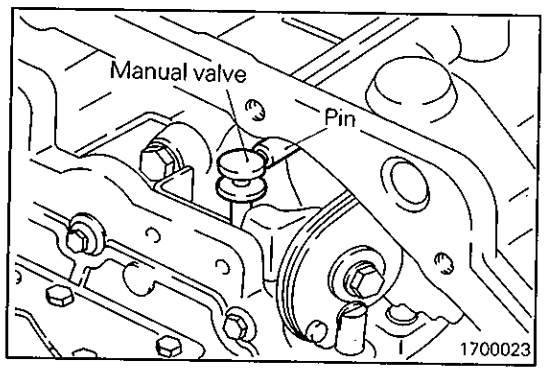
Specified torque:
20 – 27 Nm (2.0 – 2.7 kgm, 15 – 19 ft.lbs.)



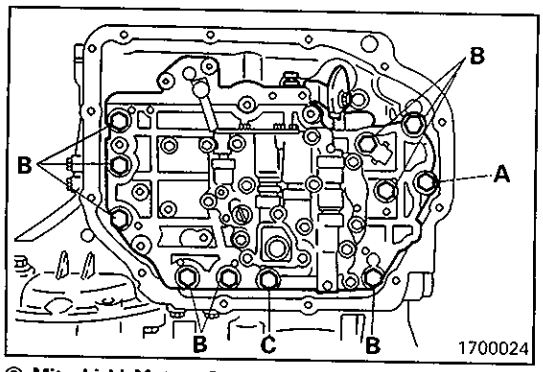
(67)Install the O-rings in the O-ring grooves at three locations on the valve body.



(68)Install new seal rings in the groove of the accumulator piston and coat the rings with automatic transmission fluid.
(69)Install the accumulator piston in the transmission case and install the two springs.

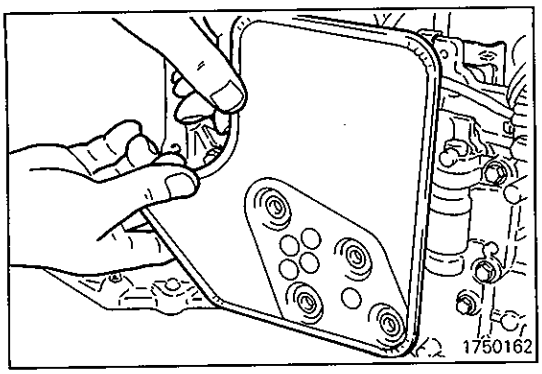


(70)Install the valve body in the transmission case while fitting the detent plate pin in the gap between the lands of the manual valve.



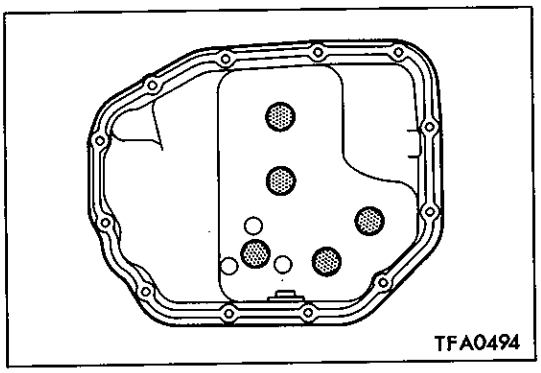
(71)Tighten the valve body mounting bolts (10 pieces) to the specified torque.

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

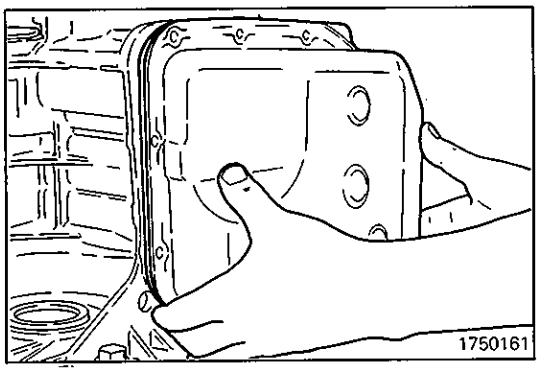


(72)Install the oil filter and tighten the four oil filter mounting bolts to the specified torque.

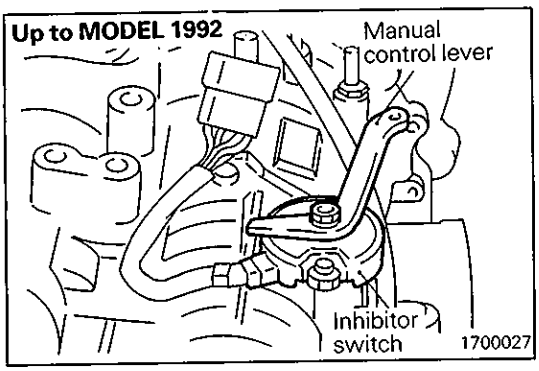
Specified torque:
10 – 12 Nm (1.0 – 1.2 kgm, 7.5 – 8.5 ft.lbs.)



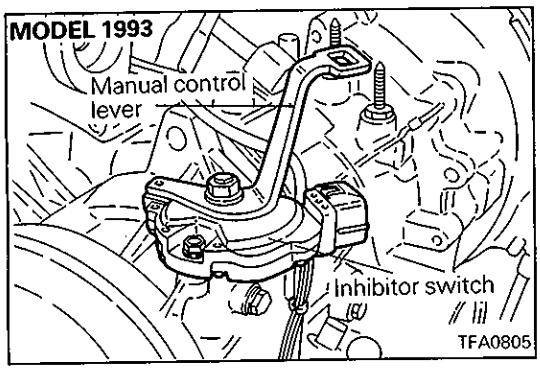
(73)Install the magnet to one of the recesses provided inside the oil pan.
Be sure to remove metal particles from the magnets and clean the inside of the oil pan beforehand.

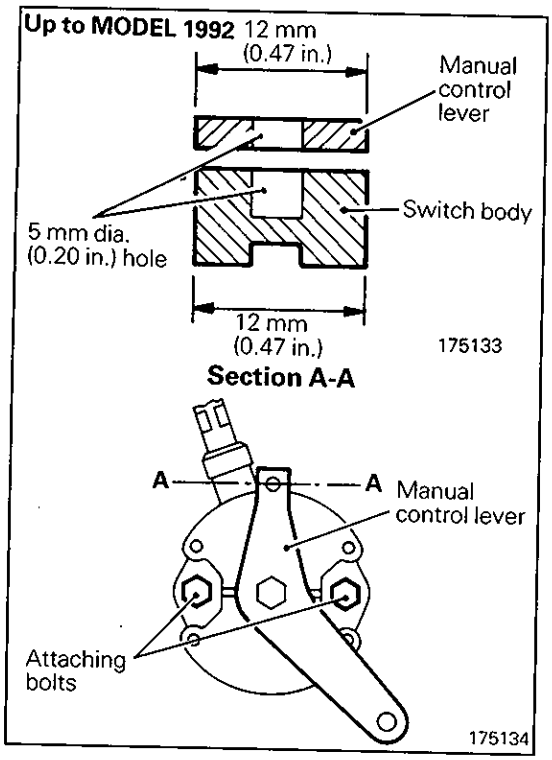


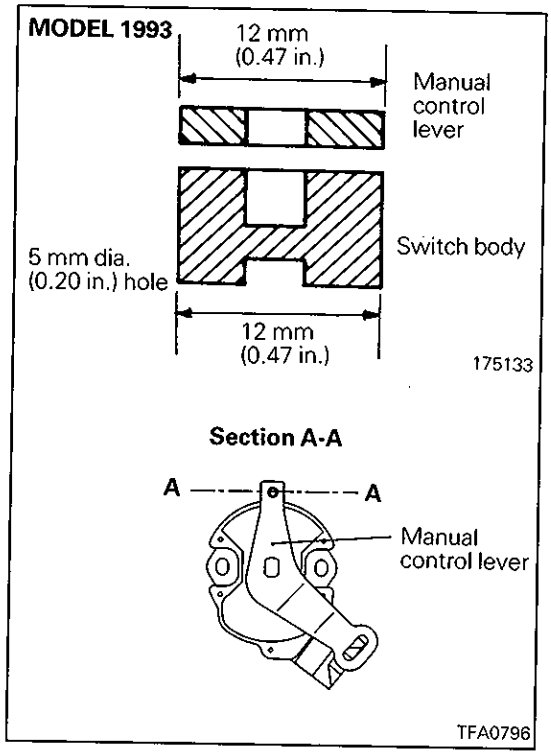
(74)Clean the gasket surfaces of both the transmission case and oil pan. Using a new oil pan gasket, install the oil pan by tightening the 12 bolts to the specified torque.



(75)Install the inhibitor switch and manual control lever, and tighten the manual control lever nut to the specified torque.







(76)Adjust the inhibitor switch by the following procedure:

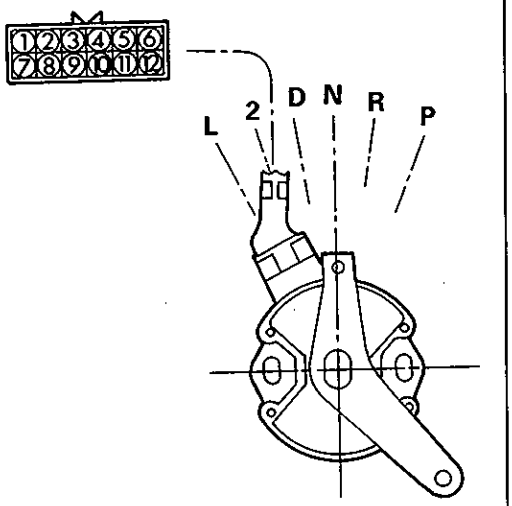
(a) Place the manual control lever in the "N" (neutral) position.

(b) Turn the inhibitor switch body until the 12 mm (0.47 in.) wide end of the manual control lever aligns with the switch body flange [12 mm (0.47 in.) wide portion]. Alternatively turn the switch body until the 5 mm (0.20 in.) hole in manual control lever aligns with the 5 mm (0.20 in.) hole in the switch body.

(c) Tighten the attaching bolts to specified torque taking care that switch body is not displaced.

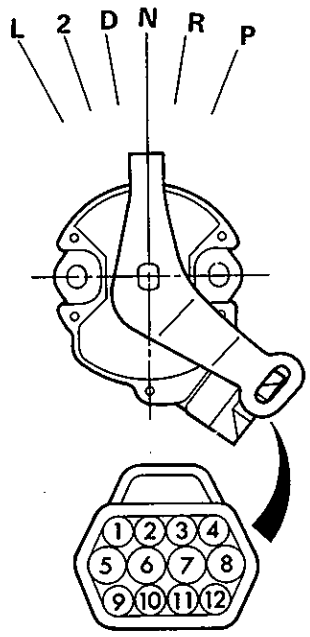
Tightening torque:
10 – 12 Nm (1.0 – 1.2 kgm, 7.5 – 8.5 ft.lbs.)

Up to MODEL 1992

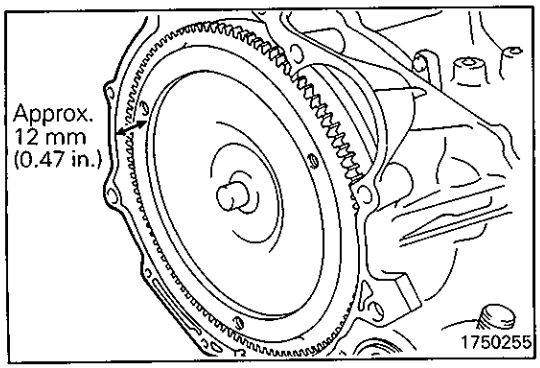


1750149

MODEL 1993



TFA0793



1750255

(77)Check the continuity between terminals with the manual control lever at each position.
The continuity between terminals should be as shown in the table below.

Internal Connection in the Inhibitor Switch – Up to MODEL 1992

Terminal No.	P	R	N	D	2	L	Connected circuits
1					○		
2			○				
3	○						
4	○	○	○	○	○	○	Ignition switch "ON" terminal
5						○	
6				○			
7		○					
8	○		○				Ignition switch "ST" terminal
9	○		○				Starter motor "S" terminal
10		○					Ignition switch "ON" terminal
11		○					Backup lamp

Lack of continuity indicates a poorly adjusted switch or faulty switch. Readjust the switch. If still without continuity, replace the switch.

Internal Connection in the Inhibitor Switch – Up to MODEL 1993

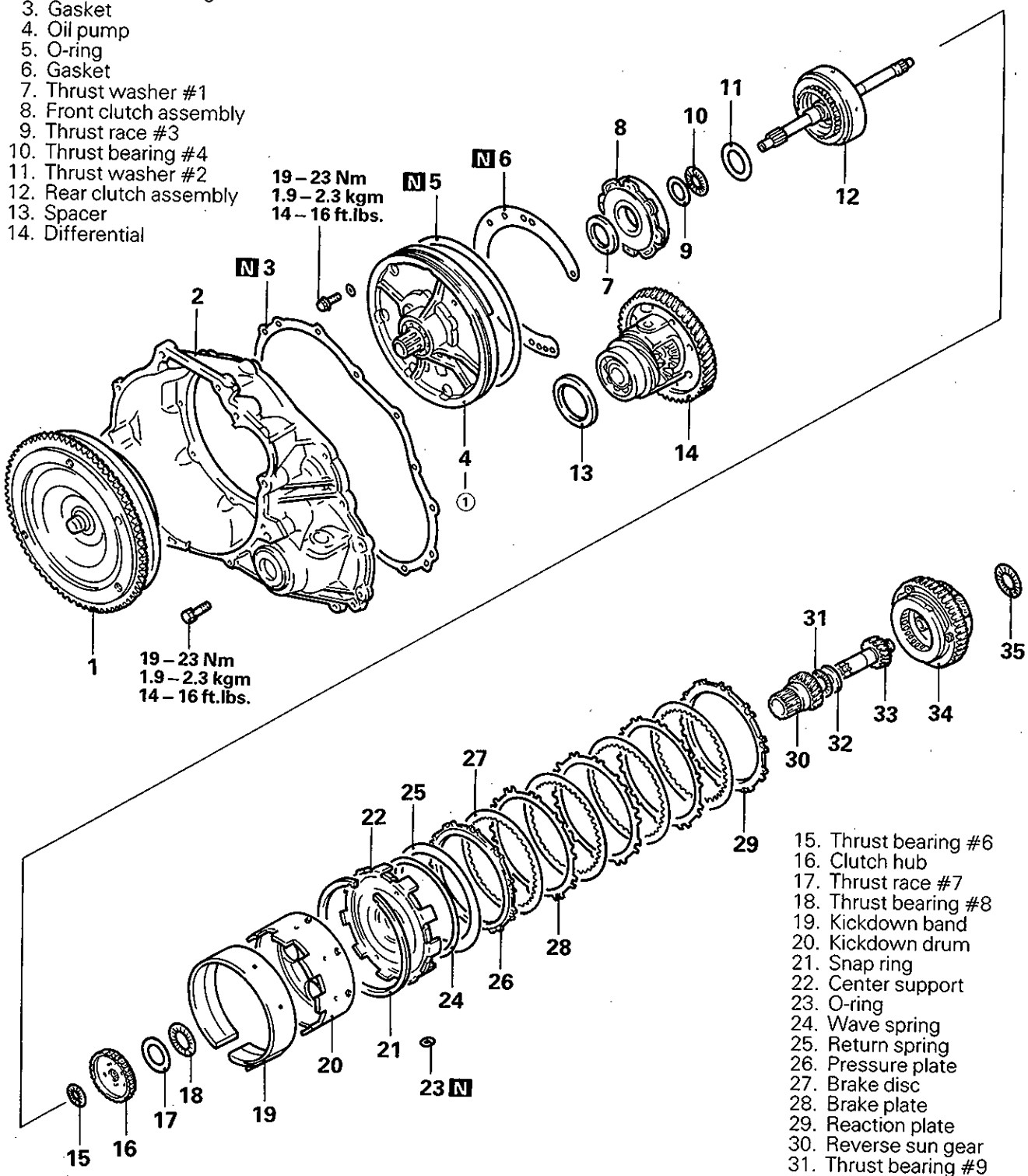
Terminal No.	P	R	N	D	2	L	Connected circuits
1	○						
2			○				
3					○		
4	○	○	○	○	○	○	Ignition switch "ON" terminal
5	○		○				Ignition switch "ST" terminal
6		○					Backup lamp
7		○					Ignition switch "ON" terminal
8	○		○				Starter motor "S" terminal
9				○			
10		○					
11						○	

Lack of continuity indicates a poorly adjusted switch or faulty switch. Readjust the switch. If still without continuity, replace the switch.

(78)Measure the distance between the ring gear end and the converter housing end.
The torque converter has been properly installed if the measurement is approx. 12 mm (0.47 in.).

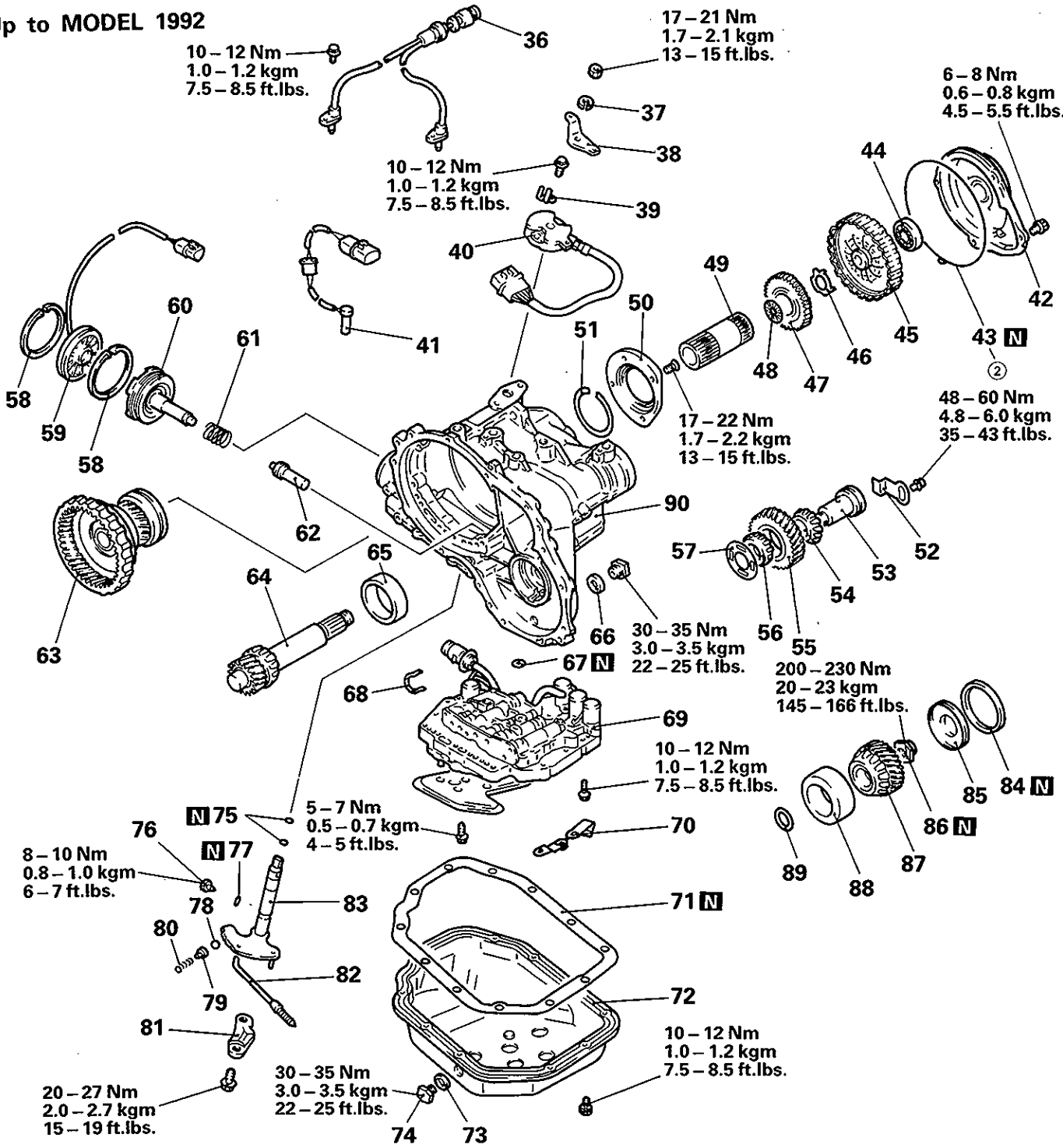
Added

4. TRANSMISSION (4-SPEED MODEL)



1. Torque converter
2. Converter housing
3. Gasket
4. Oil pump
5. O-ring
6. Gasket
7. Thrust washer #1
8. Front clutch assembly
9. Thrust race #3
10. Thrust bearing #4
11. Thrust washer #2
12. Rear clutch assembly
13. Spacer
14. Differential
15. Thrust bearing #6
16. Clutch hub
17. Thrust race #7
18. Thrust bearing #8
19. Kickdown band
20. Kickdown drum
21. Snap ring
22. Center support
23. O-ring
24. Wave spring
25. Return spring
26. Pressure plate
27. Brake disc
28. Brake plate
29. Reaction plate
30. Reverse sun gear
31. Thrust bearing #9
32. Thrust race #10
33. Forward sun gear
34. Planetary carrier
35. Thrust bearing #12

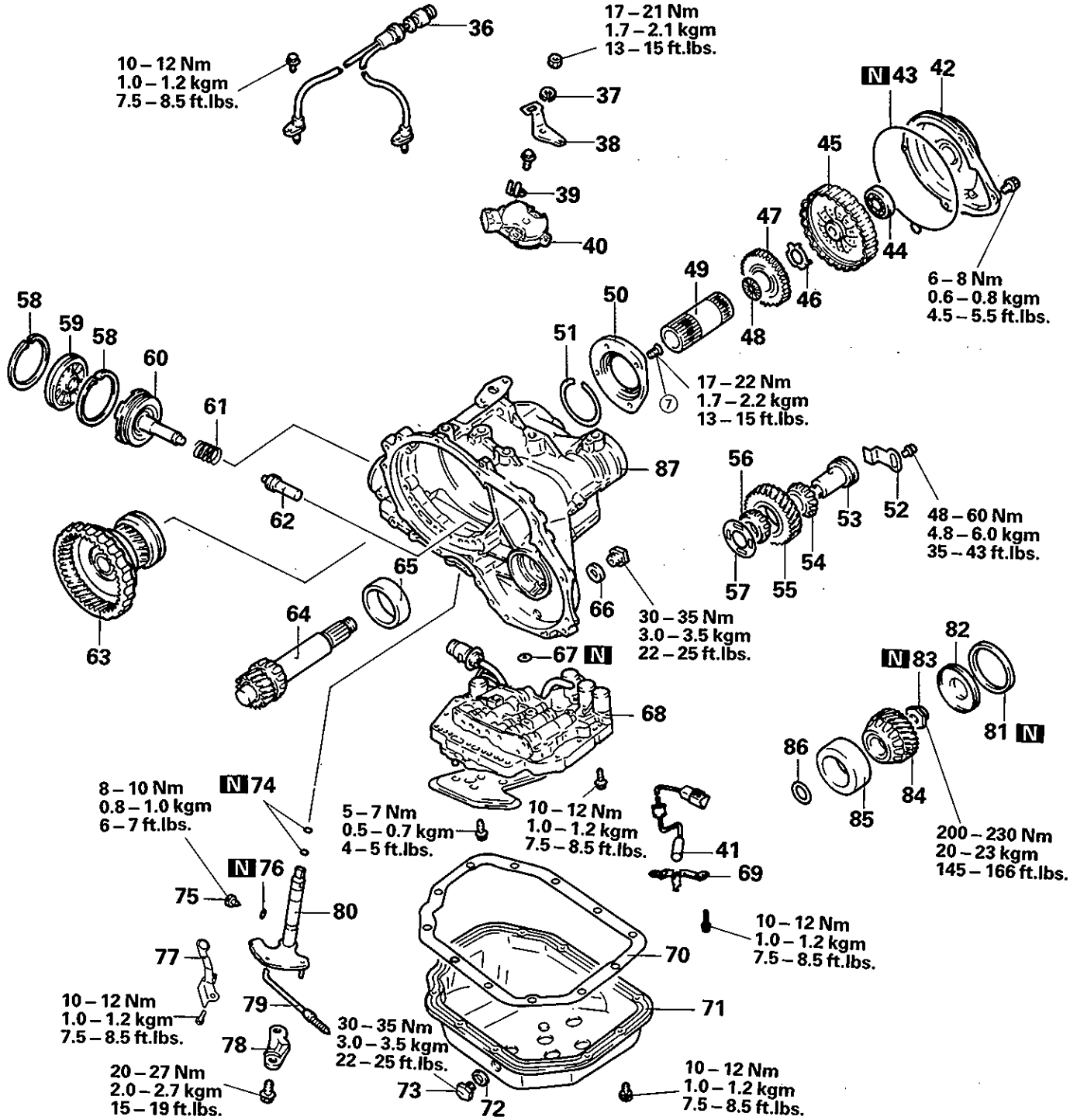
Up to MODEL 1992



36. Pulse generator
37. Spring washer
38. Control lever
39. Clamp
40. Inhibitor switch
41. Oil temperature sensor
42. End clutch cover
43. O-ring
44. Bearing
45. End clutch
46. Thrust washer
47. End clutch hub
48. Thrust bearing #13
49. End clutch shaft
50. Bearing retainer
51. Snap ring
52. Lock plate
53. Idler gear shaft
54. Bearing inner race
55. Idler gear
56. Bearing inner race
57. Spacer
58. Snap ring
59. Kickdown servo switch
60. Kickdown servo piston
61. Spring
62. Anchor rod
63. Output flange
64. Transfer shaft
65. Outer race
66. Gasket
67. O-ring
68. Clip (Except Galant built from Oct. 1989)
69. Valve body
70. Clamp
71. Gasket
72. Oil pan
73. Gasket
74. Drain plug
75. O-ring
76. Set screw
77. O-ring
78. Detent ball
79. Detent seat
80. Detent spring
81. Sprag rod support
82. Parking sprag rod
83. Control shaft
84. D-ring
85. Transfer shaft cover
86. Lock nut
87. Driven gear
88. Outer race
89. Spacer
90. Transmission case

TFA0051

FROM MODEL 1993

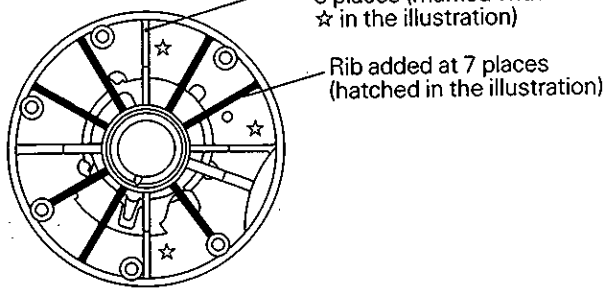


36. Pulse generator
37. Spring washer
38. Control lever
39. Clamp
40. Inhibitor switch
41. Oil temperature sensor
42. End clutch cover
43. O-ring
44. Bearing
45. End clutch
46. Thrust washer
47. End clutch hub
48. Thrust bearing #13
49. End clutch shaft
50. Bearing retainer
51. Snap ring
52. Lock plate
53. Idler gear shaft
54. Bearing inner race
55. Idler gear
56. Bearing inner race
57. Spacer
58. Snap ring
59. Kickdown servo switch
60. Kickdown servo piston
61. Spring
62. Anchor rod
63. Output flange
64. Transfer shaft
65. Outer race
66. Gasket
67. O-ring
68. Valve body
69. Clamp
70. Gasket
71. Oil pan
72. Gasket
73. Drain plug
74. O-ring
75. Set screw
76. O-ring
77. Detent plate
78. Sprag rod support
79. Parking sprag rod
80. Control shaft
81. D-ring
82. Transfer shaft cover
83. Lock nut
84. Driven gear
85. Outer race
86. Spacer
87. Transmission case

TFA1005

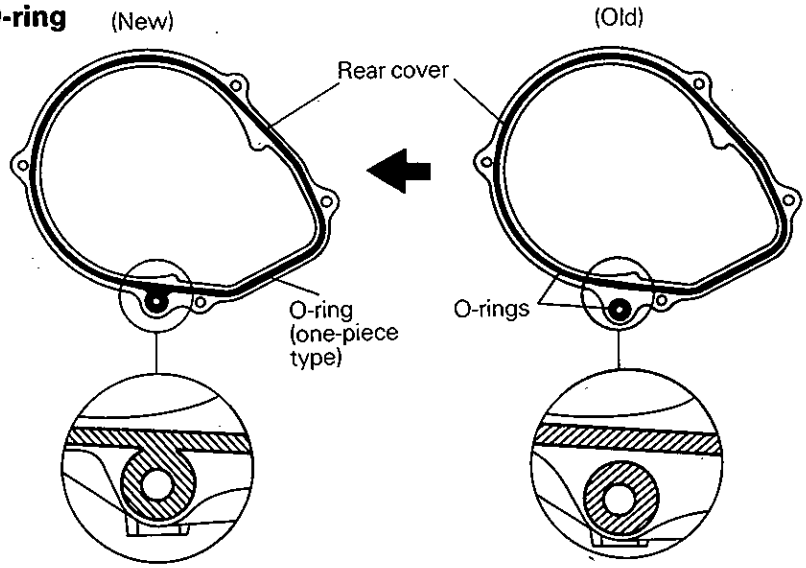
Details of Change

① **Oil pump**



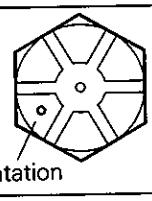
TFA0485

② **End clutch cover O-ring**



TFA0496

⑥ • **Special bolt**

	Up to 1991 model	From 1992 model
Thread pitch	1.5 mm	1.25 mm
Identification	–	 Indentation

⑥ • **Torque converter**

In accordance with the change of the special bolt, the thread pitch of the tapped hole in the torque converter has been changed from 1.5 mm to 1.25 mm.

		Up to 1991 model	From 1992 model
Identification mark	Colt/Lancer	–	1F*
	Space runner, Space wagon (EC, EXP)	–	KV*
	Space wagon (AUS)	–	1Q*

*: The identification marks are stamped on the front surface of the torque converter.

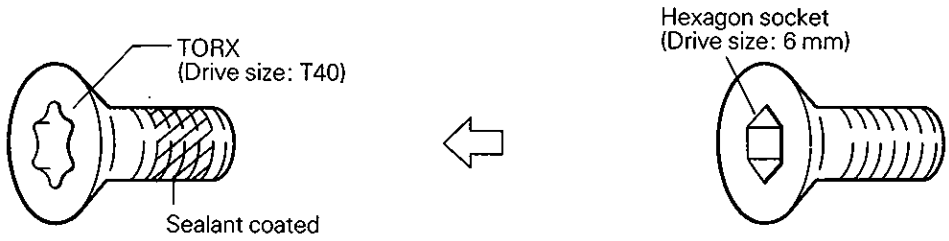
⑦

Sealant-coated bolt

Bearing retainer tightening bolts have been changed to sealant-coated bolts (the same as ones used in F4A3).

Therefore, application of sealant is not required when a new sealant-coated bolt is used.

When the bolt is reused, application of sealant is required.



TFA1265

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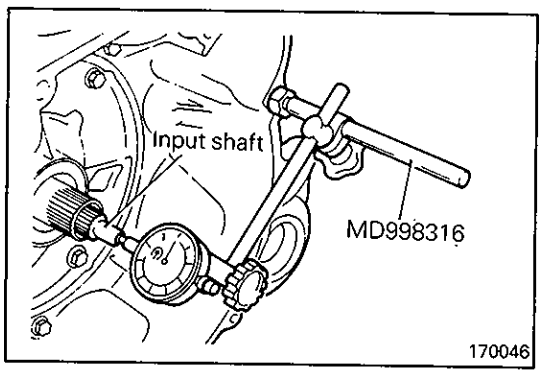
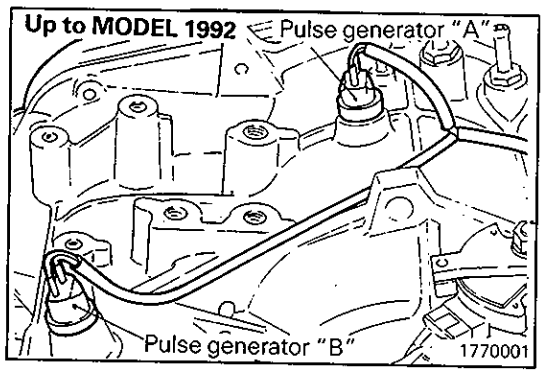
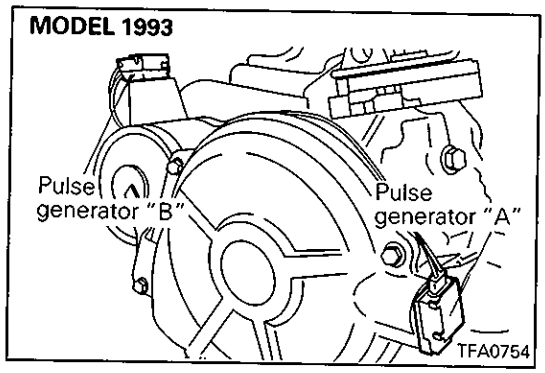
DISASSEMBLY

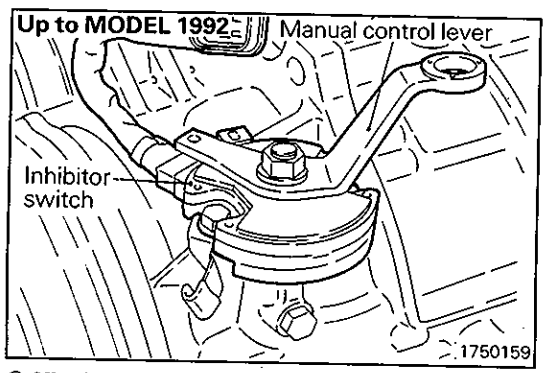
(1) Prior to disassembling the transmission, plug all openings and thoroughly clean the exterior of the assembly, preferably by steam.
(2) Place the transmission on the workbench with the oil pan down.
(3) Remove the torque converter.
(4) Measuring input shaft end play before disassembly will usually indicate when a thrust washer change is required (except when major parts are replaced). Thrust washers are located between the reaction shaft support and rear clutch retainer, and between the reaction shaft support and front clutch retainer.
Using the special tool, mount a dial indicator to the converter housing with its plunger seated against the end of the input shaft.
Move the input shaft in and out with pliers to obtain the end play reading. Be careful not to scratch the input shaft. Record the indicator reading for reference when reassembling the transmission.



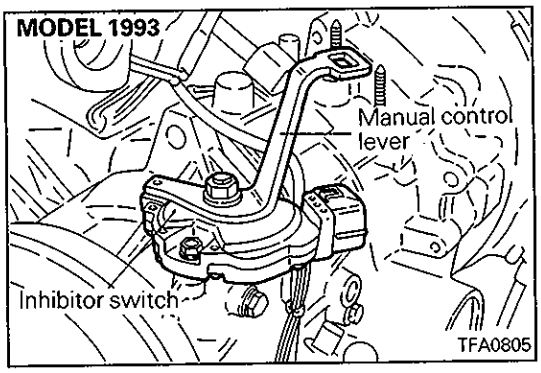


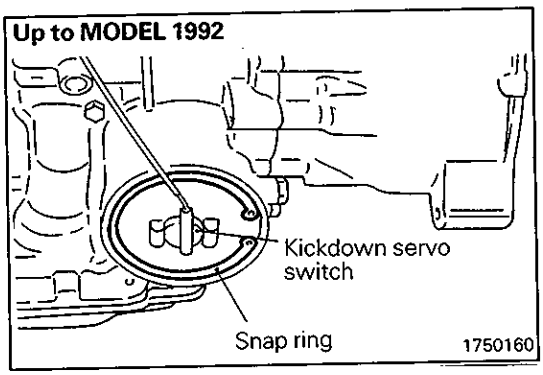
(5) Remove pulse generators "A" and "B".



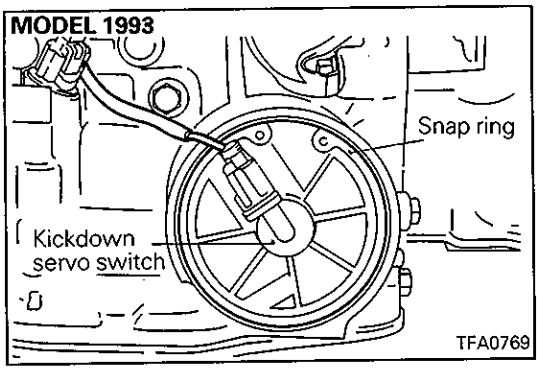


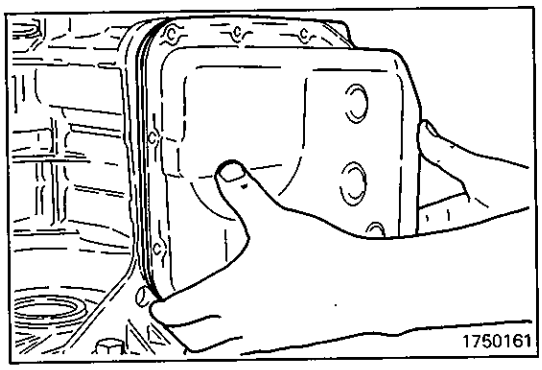
(6) Remove the manual control lever, and then remove the inhibitor switch.



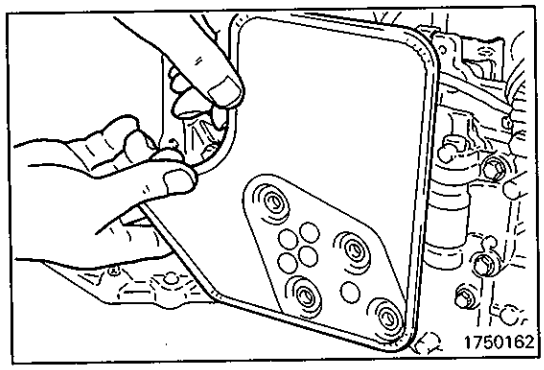


(7) Snap off the snap ring and remove the kickdown servo switch.

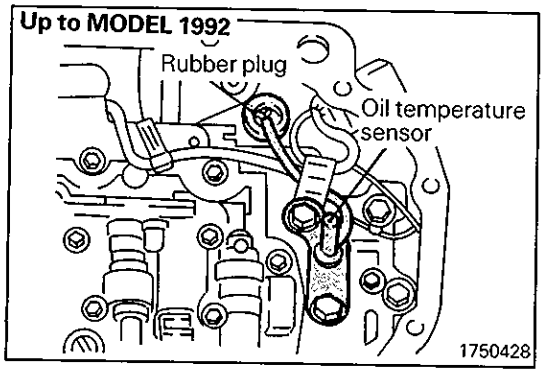




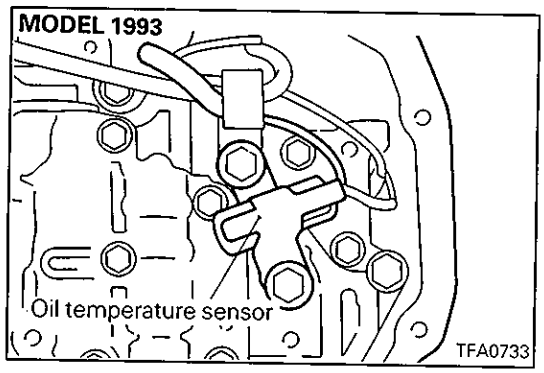
(8) Remove the oil pan and oil pan gasket.

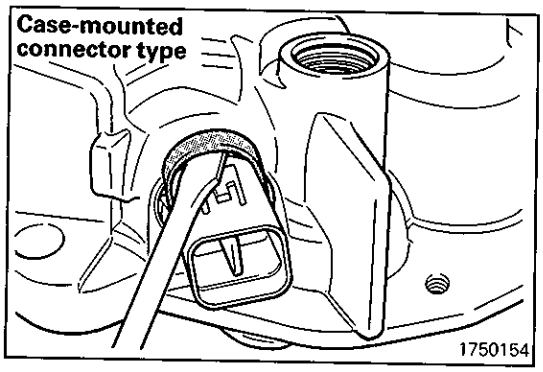


(9) Remove the oil filter.

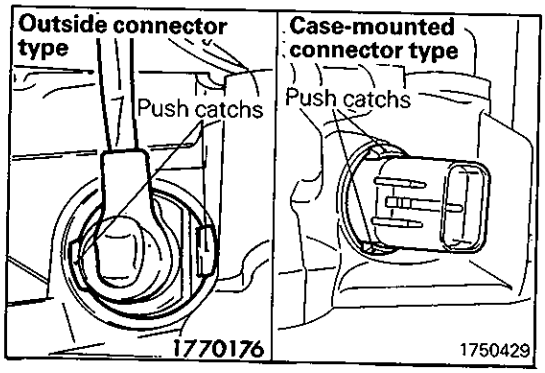


(10)Remove the oil temperature sensor bracket mounting bolts and remove the oil temperature sensor from its bracket. Using a screwdriver, push out the rubber plug, working from inside the case, and remove the oil temperature sensor from the case.

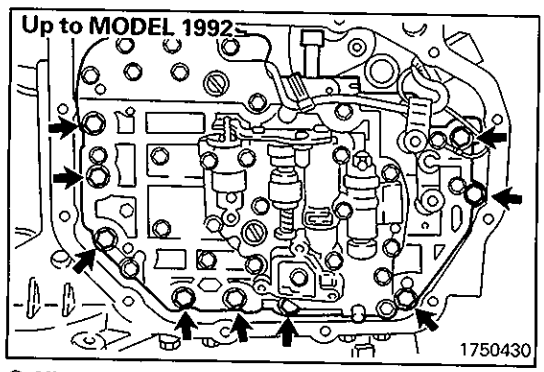




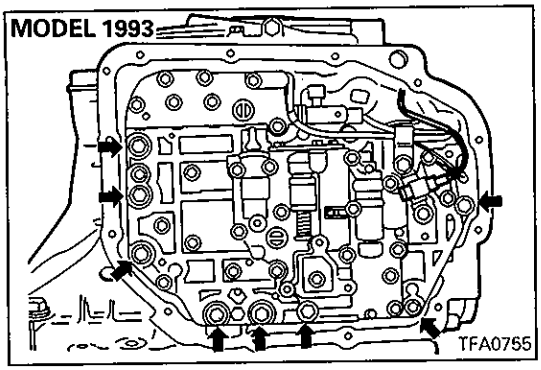
(11)Remove the clip from the solenoid valve connector. (Case-mounted connector type)

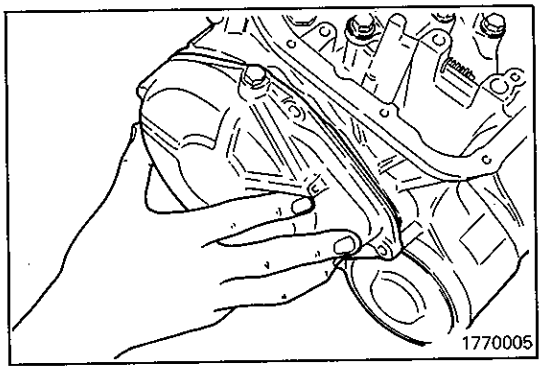


(12)With their catches pressed, push the harness grommet and connector into the transmission case.



(13)Remove the valve body mounting bolts indicated by arrows and remove the valve body from the transmission case.





(14)Remove the end clutch cover.

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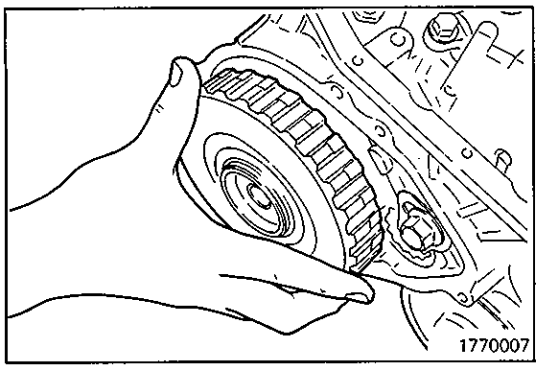
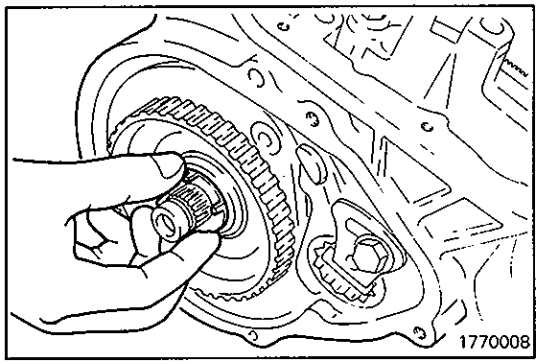
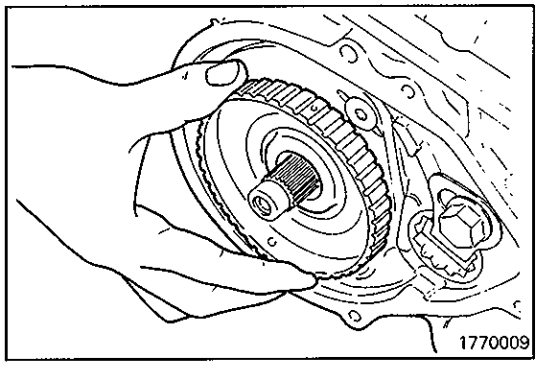


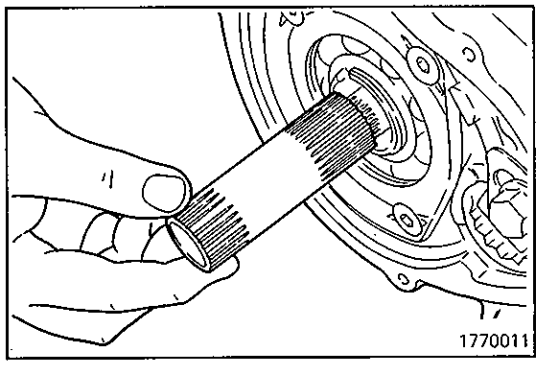
(15)Remove the end clutch assembly.



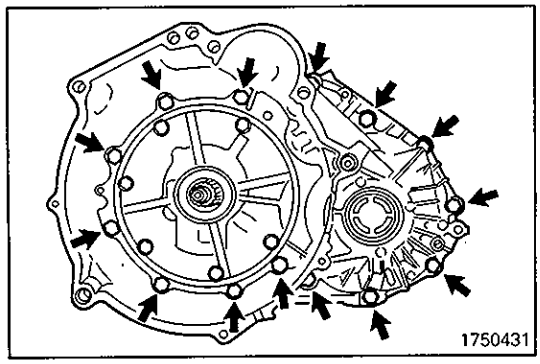
(16)Remove the thrust washer from the input shaft end.



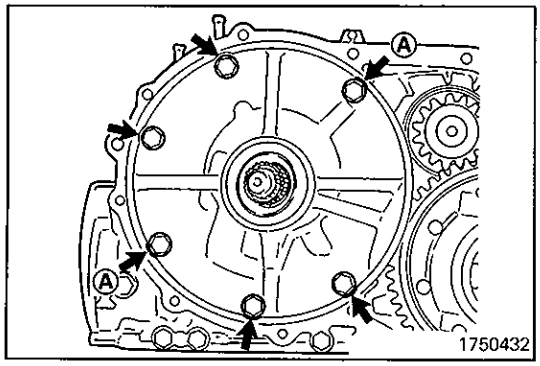
(17)Remove the end clutch hub and the thrust bearing.



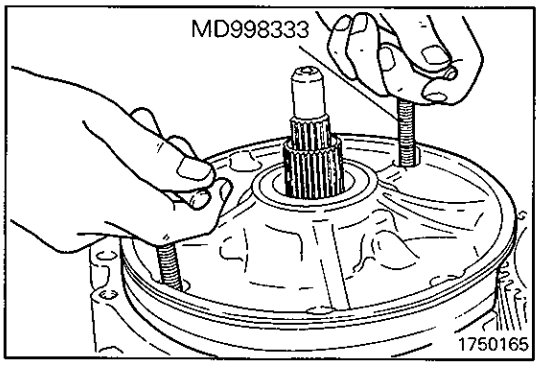
(18)Pull out the end clutch shaft.



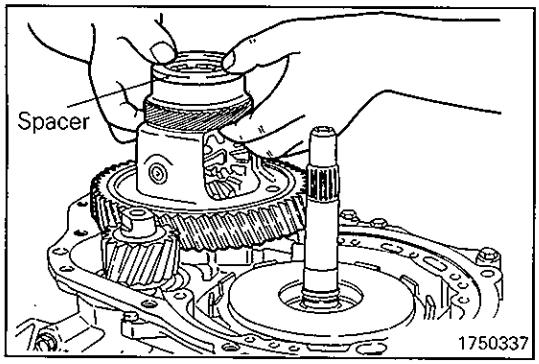
(19)Remove the 14 bolts indicated by arrows and remove the converter housing and gasket.



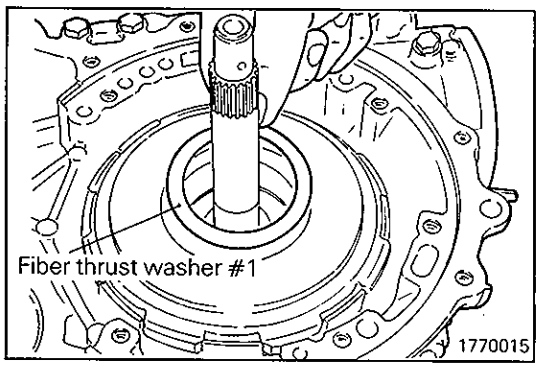
(20)Remove the six oil pump mounting bolts indicated by arrows.
(21)Screw the special tools (MD998333) into the bolt holes marked Ⓐ.



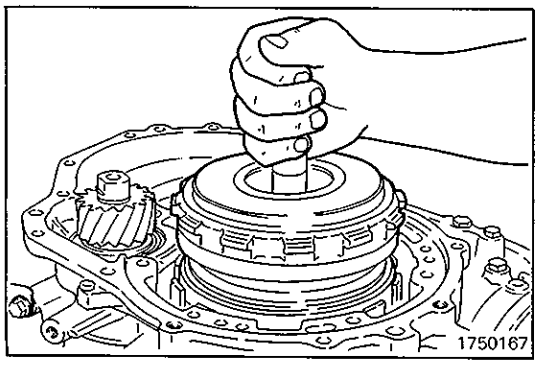
(22)Grasping the special tools, remove the oil pump. Then, remove the gasket.



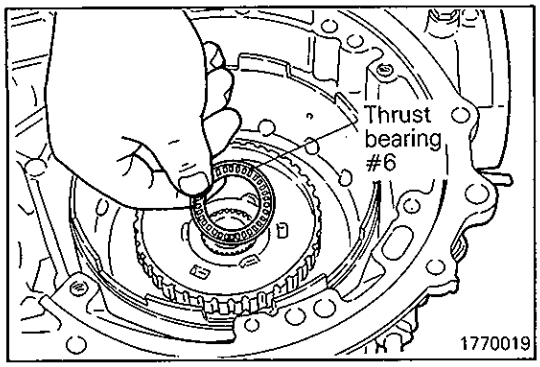
(23)Remove the spacer and differential from the transmission case.



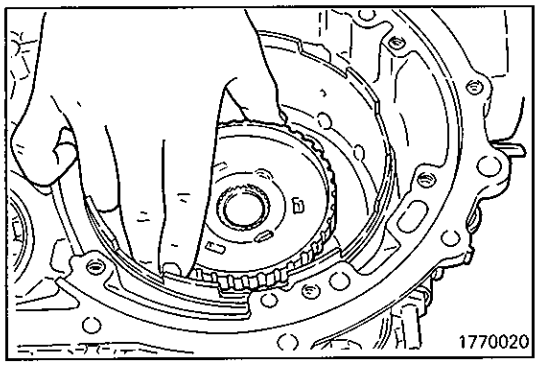
(24)Remove fiber thrust washer #1.



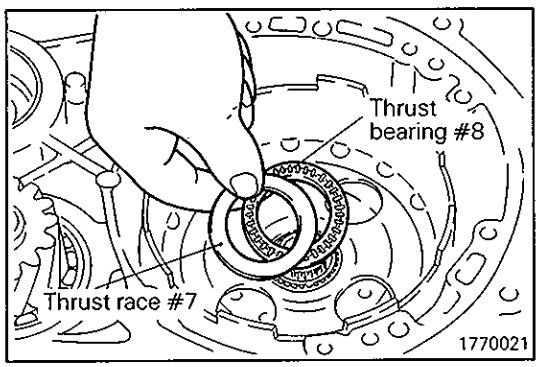
(25)Grasp and raise the input shaft to remove both the front and rear clutch assemblies together.



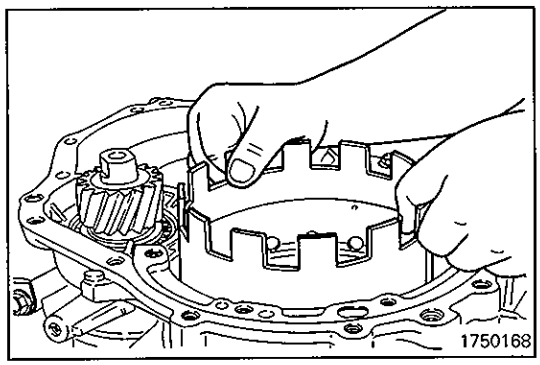
(26)Remove thrust bearing #6.



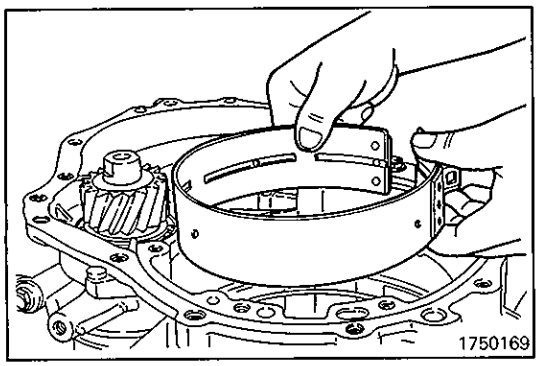
(27)Remove the clutch hub.



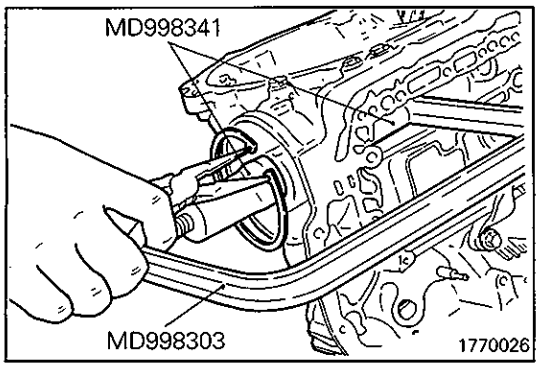
(28)Remove thrust race #7 and thrust bearing #8.



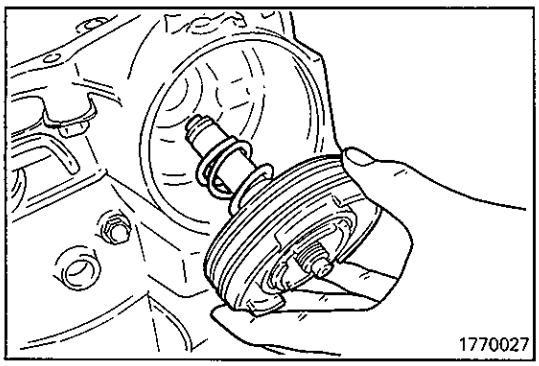
(29)Remove the kickdown drum.



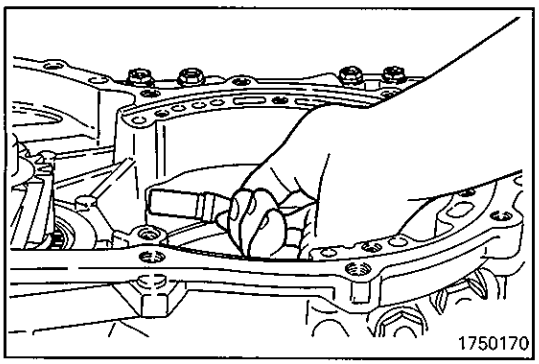
(30)Remove the kickdown band.



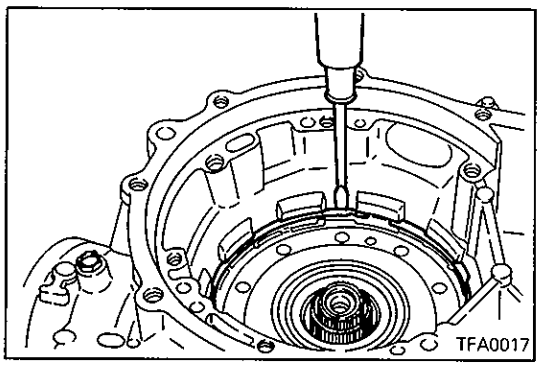
(31)Using the special tools, push in the kickdown servo and remove the snap ring.



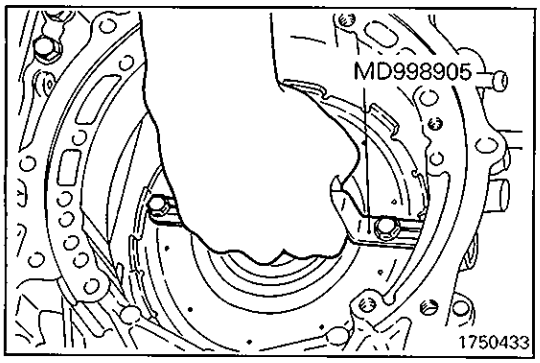
(32)Remove the special tools and then remove the kickdown servo piston, sleeve and spring.



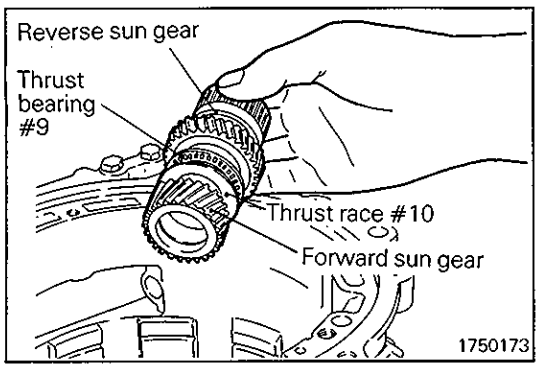
(33)Remove the anchor rod.



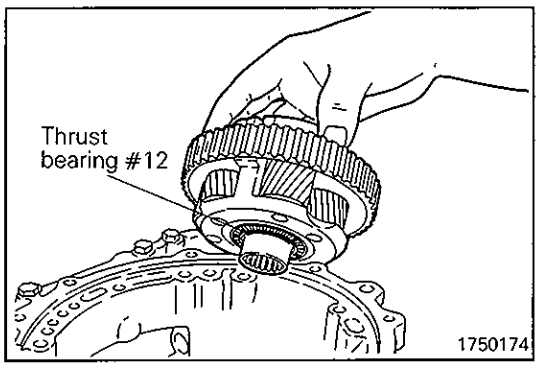
(34)Remove the snap ring.



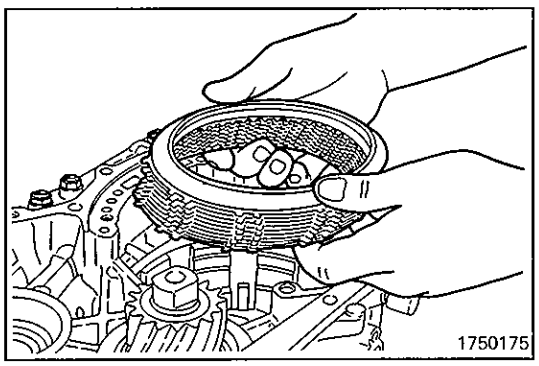
(35)Set the special tool on the center support and remove the center support from the case.



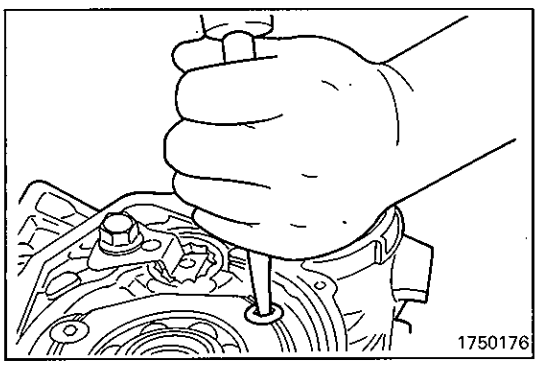
(36)Remove reverse sun gear, thrust bearing #9, thrust race #10 and forward sun gear together.



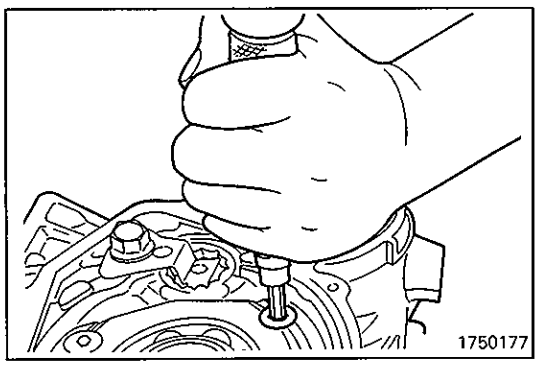
(37)Remove the planetary gear set and thrust bearing #12.



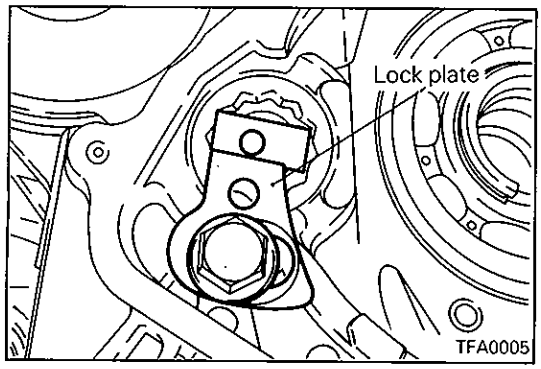
(38)Remove the wave spring, return spring, reaction plate, brake discs, and brake plates.



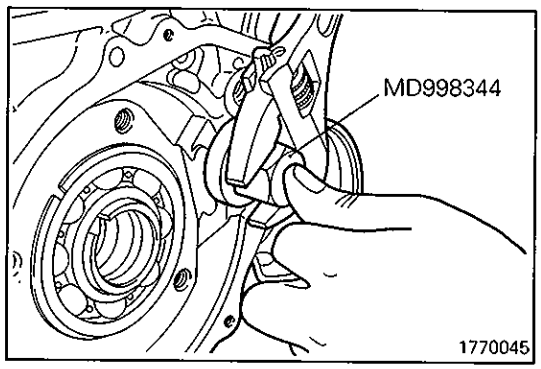
(39)Sealant has been applied to the threads of the screws on the bearing retainer. Tap the screw heads so the screws can be easily loosened.



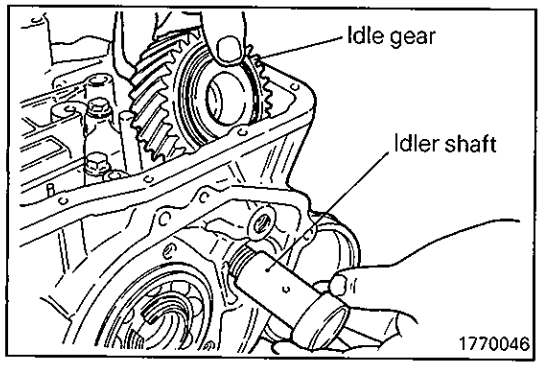
(40)Using an impact screwdriver, loosen the screws and remove the bearing retainer.



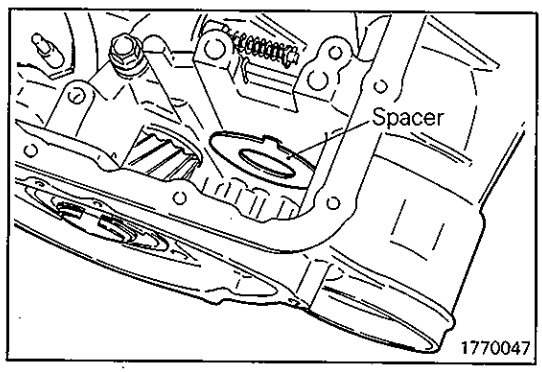
(41)Remove the idler shaft lock plate.



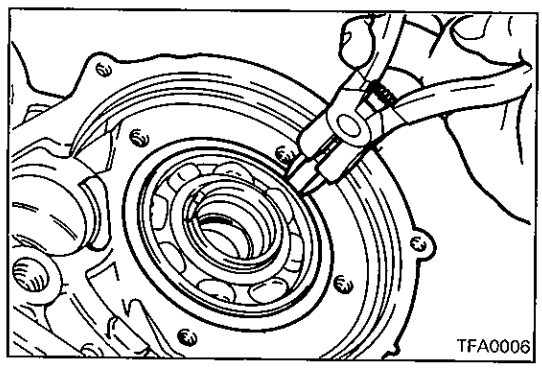
(42)Loosen the transfer idler shaft with the special tool.



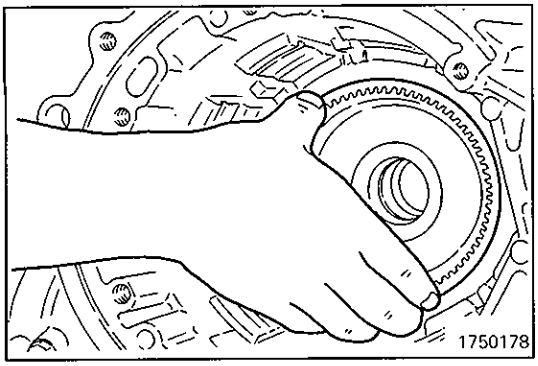
(43)Pull out the transfer idler shaft. Remove the transfer idle gear and the two bearing inner races from inside the case.



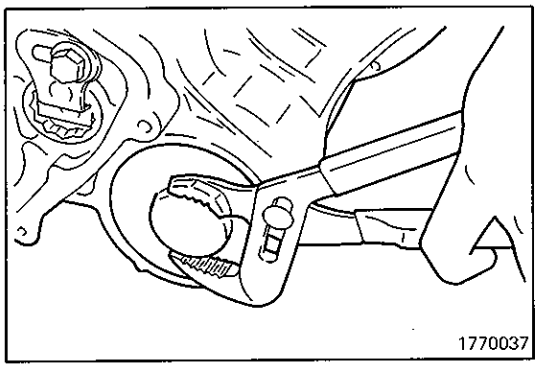
(44)Remove the spacer.



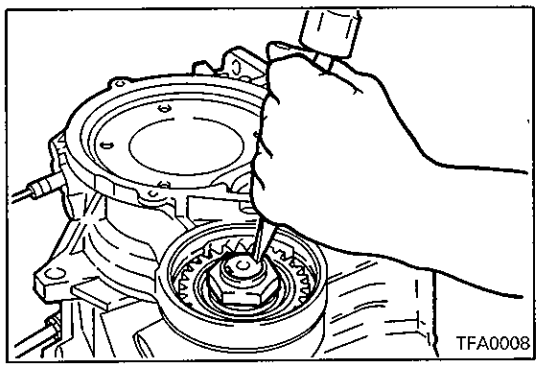
(45)Remove the snap ring from the output flange bearing.



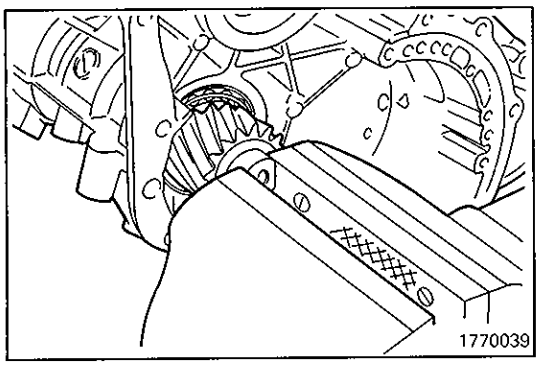
(46)Remove the output flange from the case.



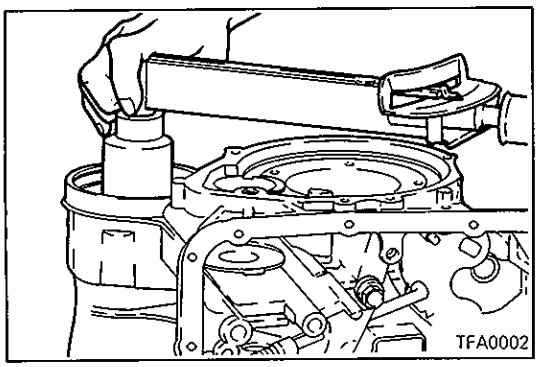
(47)Remove the transfer shaft cover.



(48)Straighten the locking tab of the transfer shaft lock nut where it is bent.



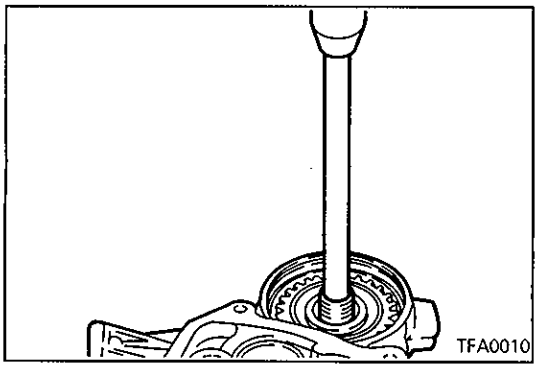
(49)Secure the transfer shaft on the end of the converter housing.



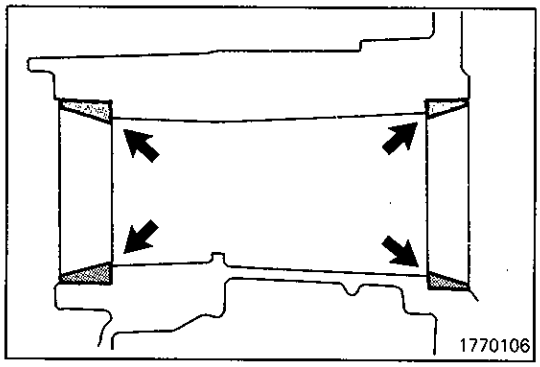
(50)Remove the lock nut.

Caution

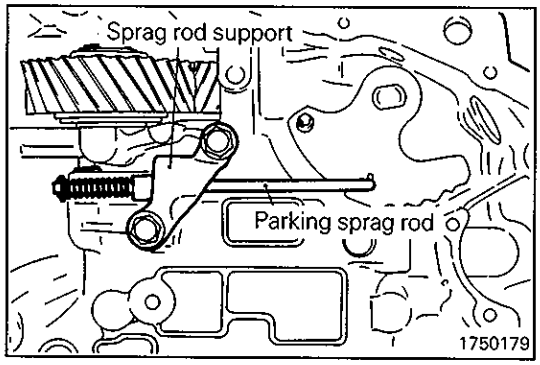
- **The lock nut is a left-handed screw.**



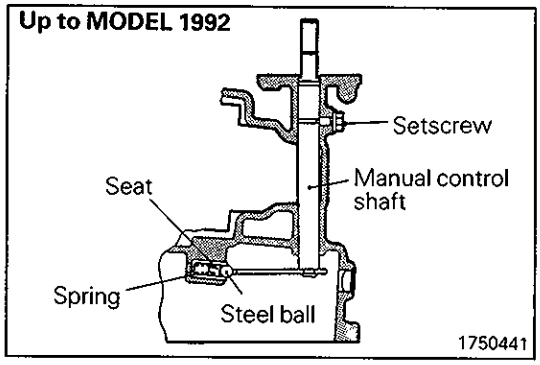
(51)Drive out the transfer shaft toward the converter housing end and remove the transfer shaft and transfer driven gear.



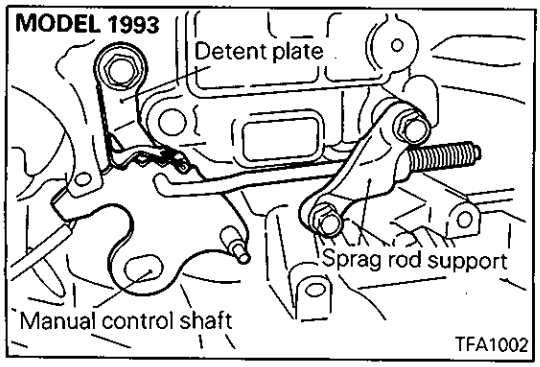
(52)Remove the outer races from the transfer shaft bearing.



(53)Remove the sprag rod support. <Up to MODEL 1992>

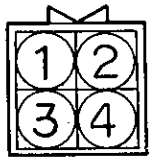


(54)Remove the set screw, and remove the manual control shaft assembly. At this time, also remove the steel ball, seat and spring. <Up to MODEL 1992>



(55)Remove the set screw, sprag rod support and remove the manual control shaft assembly, detent plate. <MODEL 1993>

Pulse generator connector



1-2: Pulse generator "A"
3-4: Pulse generator "B"

1750010

INSPECTION

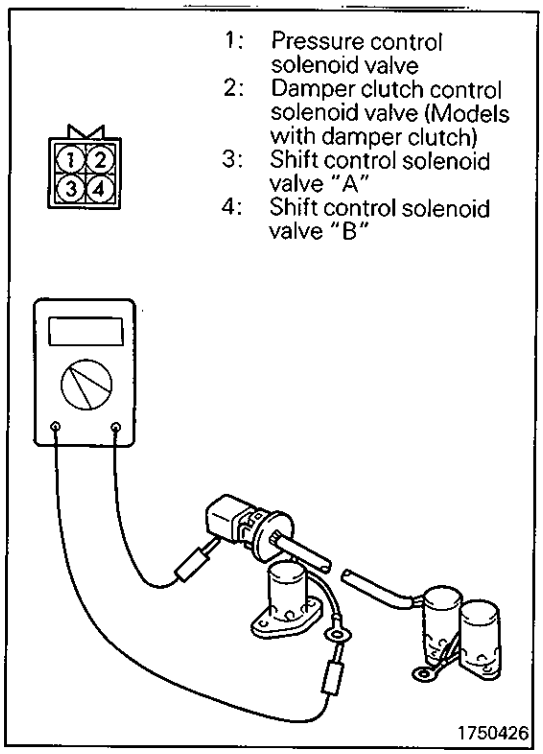
PULSE GENERATORS

(1) Measure the resistance between terminals 1 and 2 or 3 and 4.

Standard value: 245 ohm at 20°C (68°F)

(2) A too small resistance indicates a short circuit and a too large resistance indicates an open circuit.
In either case, replace the pulse generator assembly.

Intentionally blank



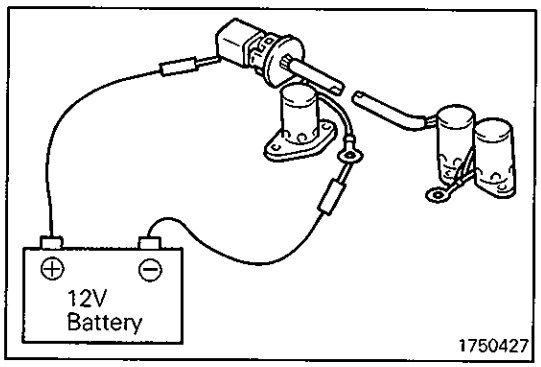
SOLENOID VALVES

(1) Measure the resistance between the terminal and the valve body of each solenoid valve.

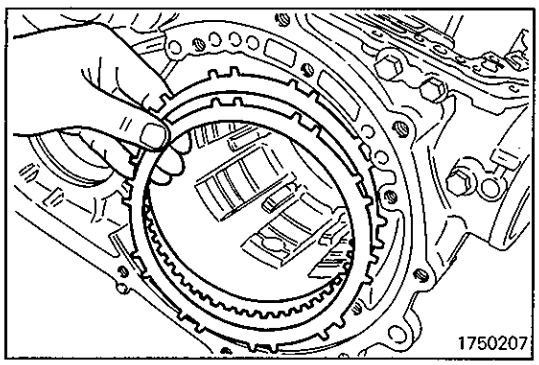
Standard value:

Pressure control solenoid valve
3 Ω at 20°C (68°F)
Shift control solenoid valves
22 Ω at 20°C (68°F)
Damper clutch control soleniod valve
3 Ω at 20°C (68°F) F4A21, F4A22, F4A23 <Up to MODEL 1992> and F4A22-2-UPE2
13 Ω at 20°C (68°F) – MODEL 1993 (Except FA422-2-UPE2)

(2) A too small or large resistance indicates a short or open circuit.
In either case, replace the solenoid valve assembly.



(3) Connect a 12V battery between the terminal and the body of each solenoid valve and check the operating sound. The valve is okay if an operating sound is heard. No operating sound indicates sticking or contaminated valve. In this case, replace the solenoid valve assembly.



REASSEMBLY

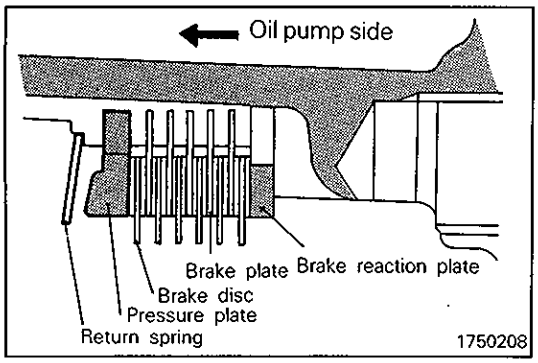
(1) Before reassembling the transmission, measure the end play in the low-reverse brake and select a pressure plate to obtain the specified end play. Use the following procedure:

(a) Install the brake reaction plate, brake plate, and brake disc in the transmission case.

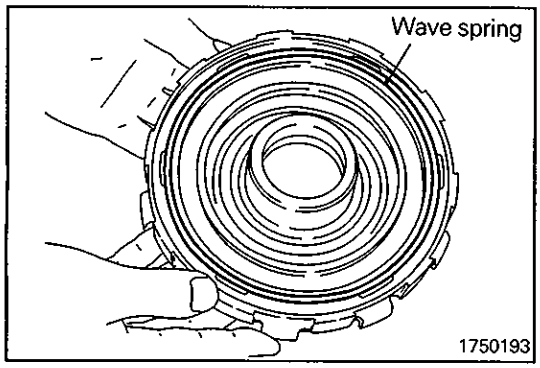
Caution
- **Blow off automatic transmission fluid from the plates and discs with low-pressure compressed air.**

(b) Install the appropriate pressure plate and mount the return spring.

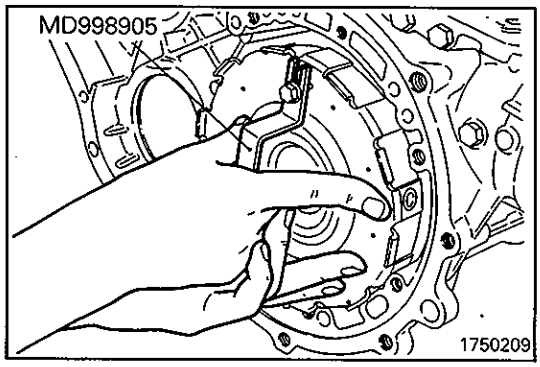
Caution
- **Make sure that the return spring is mounted in the correct direction.**



Transmission model	No. of brake discs	No. of brake plates
F4A21	4	3
F4A22, F4A23	6	5

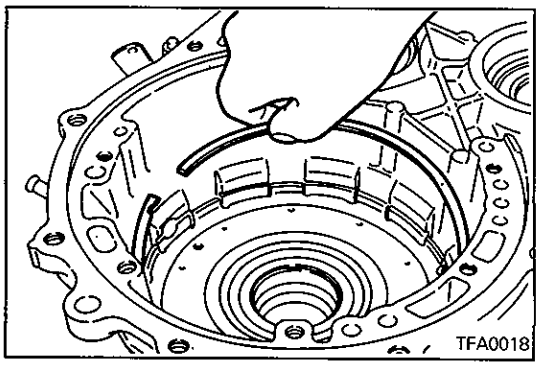


(c) Apply petrolatum jelly to the wave spring and attach the wave spring on the center support.
(d) Install the two O-rings removed during disassembly and coat them with automatic transmission fluid.

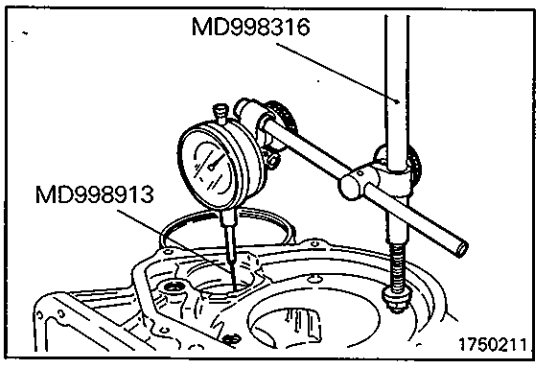


(e) Attach the special tool to the center support and install the support in the transmission case.

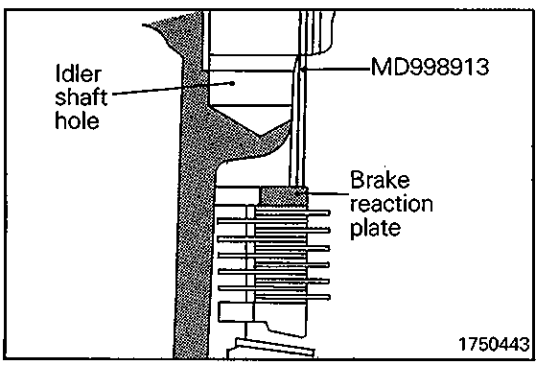
Caution
- **Install the center support, taking care that the waved spring is not out of position.**
- **Install the two O-rings in alignment with the oil holes provided in the transmission case.**

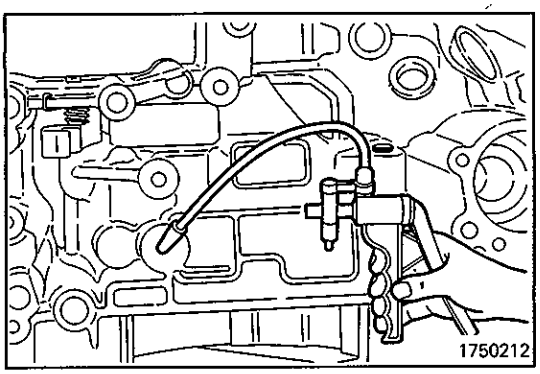


(f) Remove the special tool.
(g) Install the snap ring.



(h) Mount the special tool and dial indicator on the rear side of the transmission case.
Make sure that the dial indicator rod (MD998913) is inserted into the transfer idler shaft hole, contacting the brake reaction plate at a right angle.



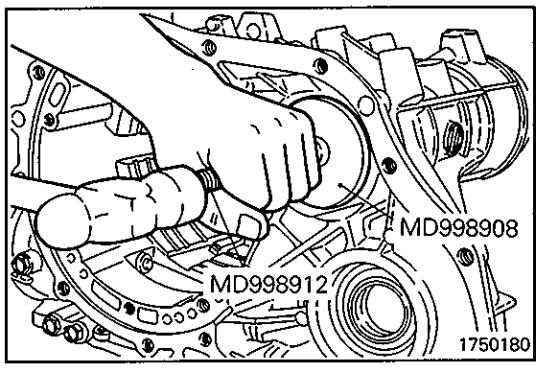


(i) Using a hand pump, feed air through the location shown and, at the same time, read the dial indicator and select a pressure plate to obtain the specified end play.

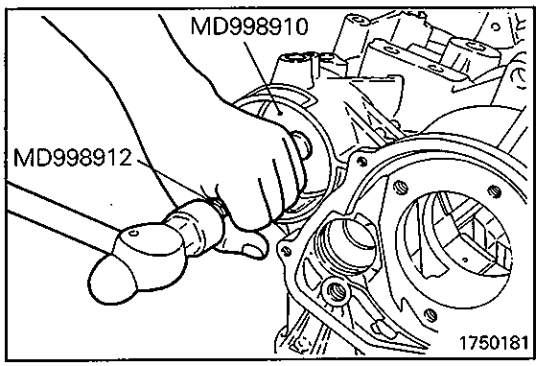
Standard value:

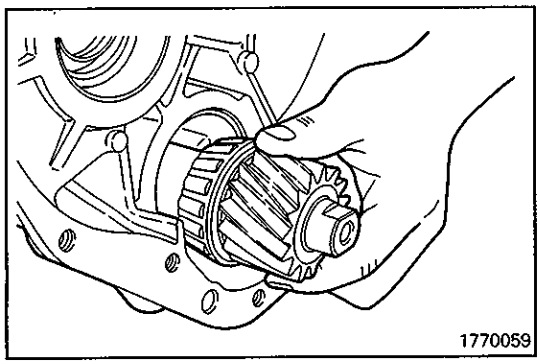
0.8 – 1.0 mm (0.031 – 0.039 in.) F4A21
1.0 – 1.2 mm (0.039 – 0.047 in.) F4A22, F4A23

(j) After a pressure plate of the appropriate thickness has been selected, remove all the mounted parts.

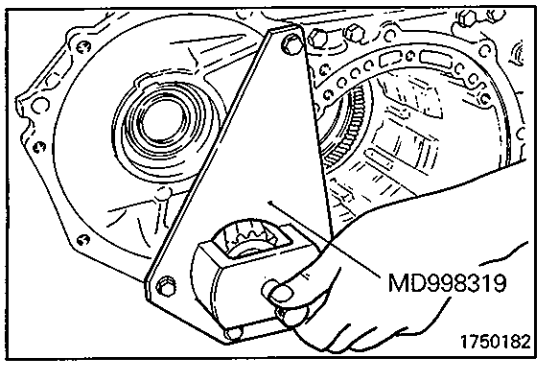


(2) Using the special tools, drive the transfer shaft bearing outer races into position.

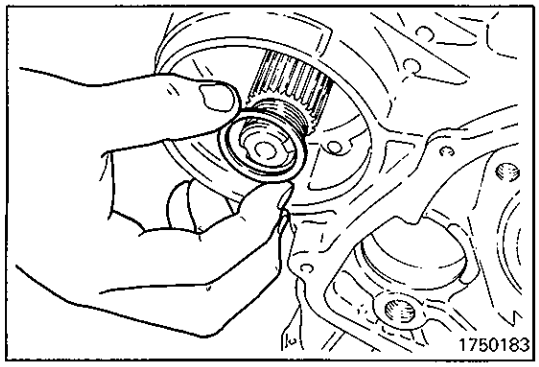




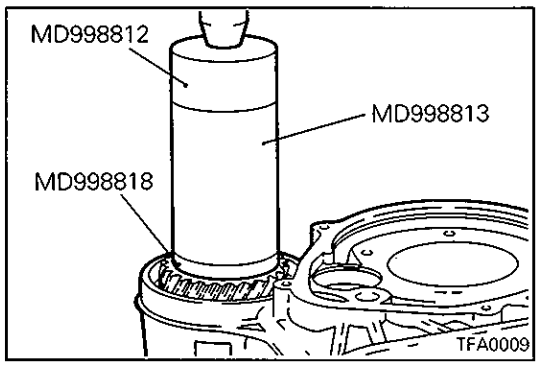
(3) Insert the transfer shaft in the case.



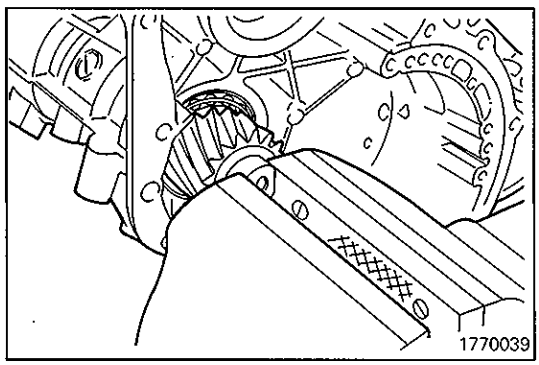
(4) Mount the special tool on the transmission case to support the transfer shaft.



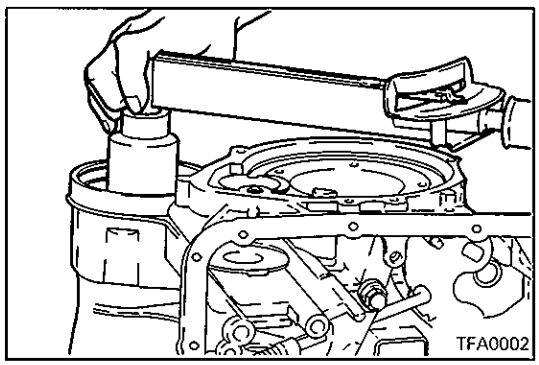
(5) Install the thickest spacer [1.80 mm (0.071 in.)].



(6) Install the transfer driven gear on the transfer shaft.



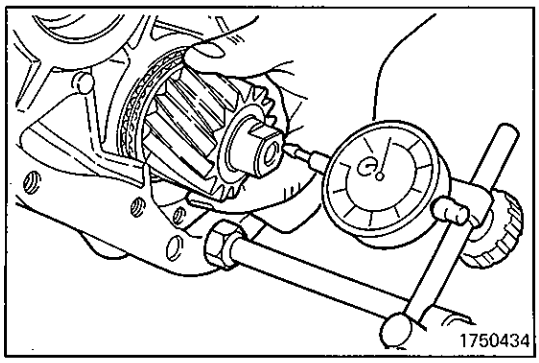
(7) Remove the special tool and secure the transfer shaft in position.



(8) Put on the lock nut and tighten it to specified torque.

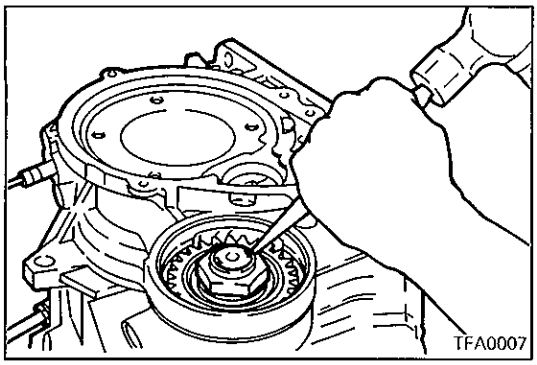
Caution
- **The lock nut is a left-handed screw.**

Tightening torque:
200 – 230 Nm (20 – 23 kgm, 145 – 166 ft.lbs.)

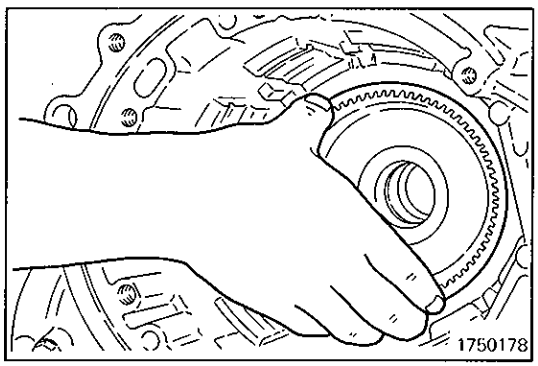


(9) Measure the end play while sliding the transfer shaft in and out, and select a spacer to obtain the specified end play.

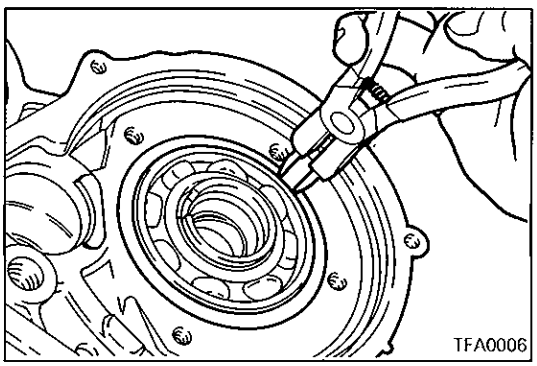
Standard value: 0 – 0.025 mm (0 – 0.001 in.)



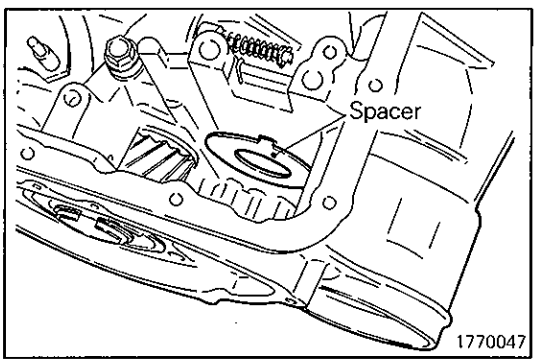
(10)Bend the locking tab of the lock nut.



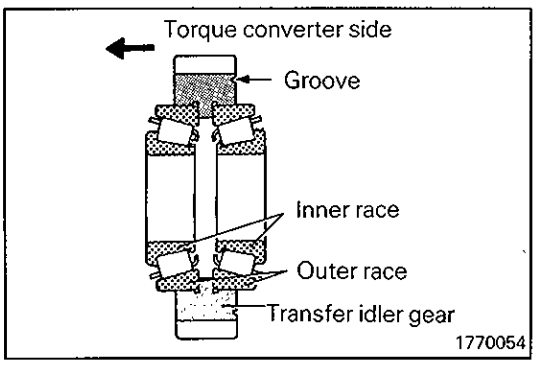
(11)Place the transmission case on the workbench with the oil pan mounting surface up.
(12)Insert the output flange in position (with two ball bearings and transfer drive gear attached) from the inside of the transmission case.



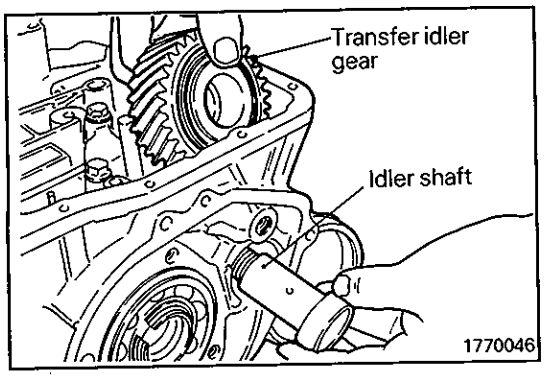
(13)Install the snap ring in the groove of the output flange bearing.



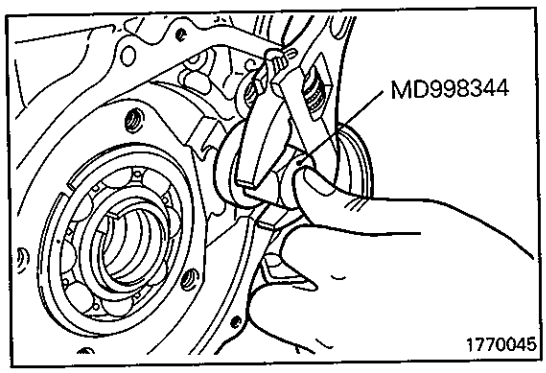
(14)Apply petrolatum jelly to the spacer and attach the spacer to the case.



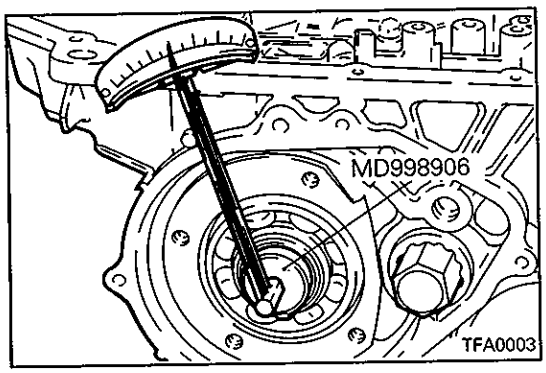
(15)Install the bearing outer race and inner races in the transfer idler gear.



(16)Place the transfer idler gear in the case, and insert and screw the idler shaft into position.

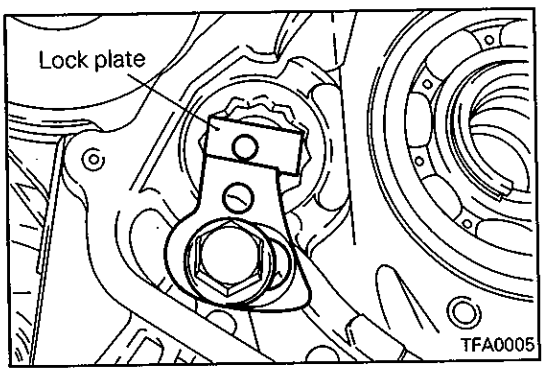


(17)Tighten the idler shaft by using the special tool.



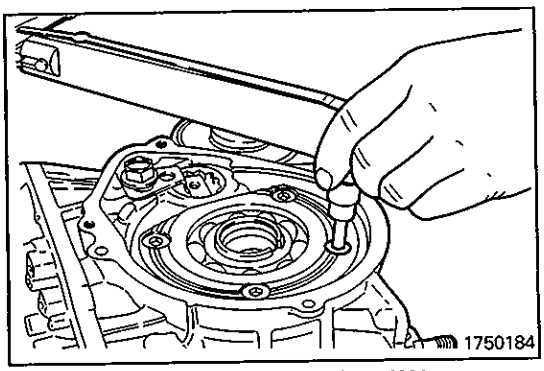
(18)Insert the special tool into the output flange and measure the preload using a low reading torque wrench.
Adjust the preload to the standard value by tightening or loosening the transfer idler shaft.

Standard value:
0.8 Nm (0.08 kgm, 0.6 ft.lbs) F4A21, F4A22
1.5 Nm (0.15 kgm, 1.1 ft.lbs) F4A23



(19)After completing the preload adjustment, install the idler shaft lock plate. Fit the lock plate snugly against the idler shaft so that it can prevent the shaft from turning in the loosening direction, and then tighten the lock plate bolt to the specified torque.

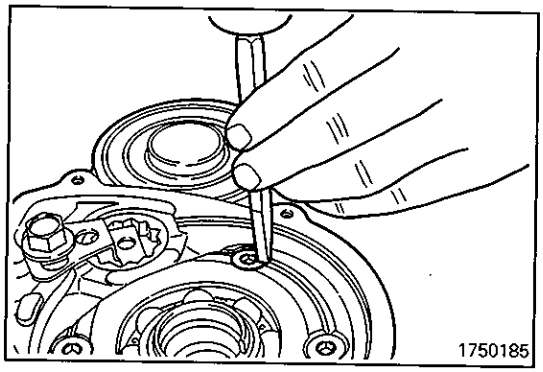
Tightening torque:
48 – 60 Nm (4.8 – 6.0 kgm, 35 – 43 ft.lbs.)



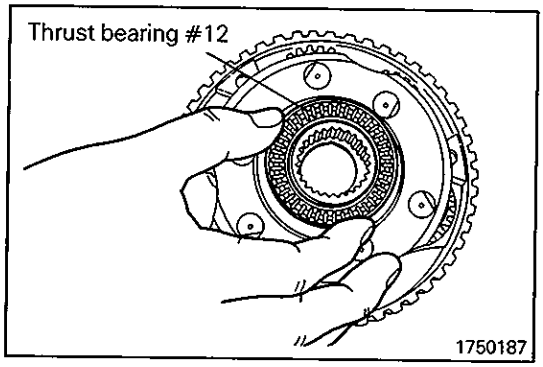
(20)Install the bearing retainer.
(21)Tighten the screws to the specified torque.

Caution
- **Use only new screws.**

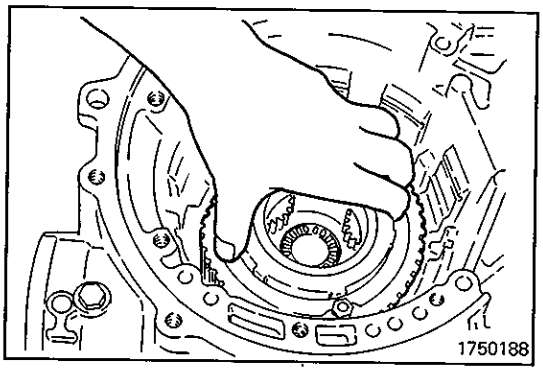
Tightening torque:
17 – 22 Nm (1.7 – 2.2 kgm, 13 – 15 ft.lbs.)



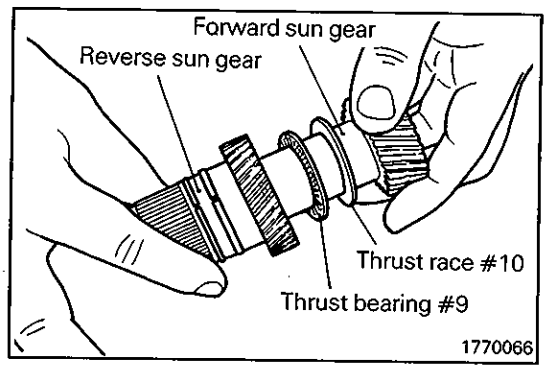
(22)Lock the screw head in place using a chisel.



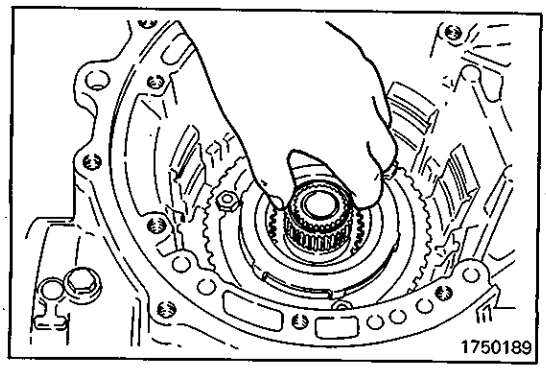
(23)Apply petrolatum jelly to thrust bearing #12 and secure the bearing on the planetary carrier.



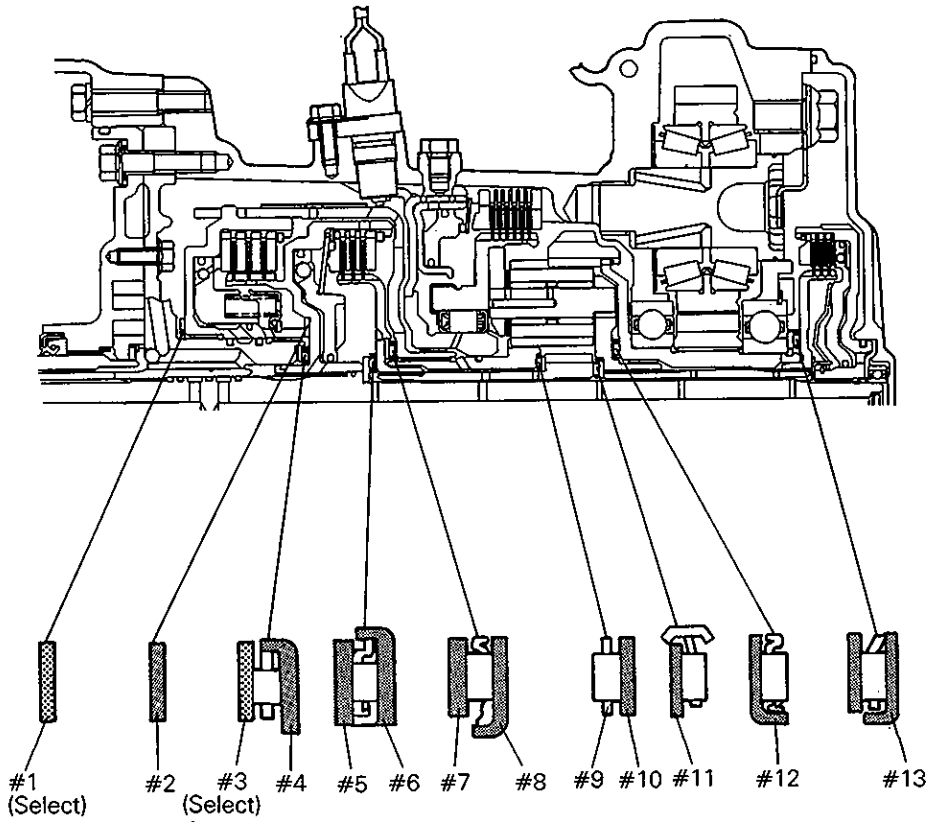
(24)Mount the planetary carrier on the case.



(25)Attach thrust race #10 and thrust bearing #9 to the forward sun gear. Then, assemble the reverse sun gear.



(26)Install the sun gear assembly assembled in step (25) in the planetary carrier.

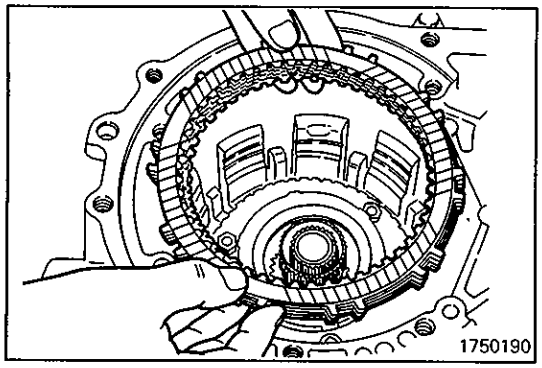


1750186

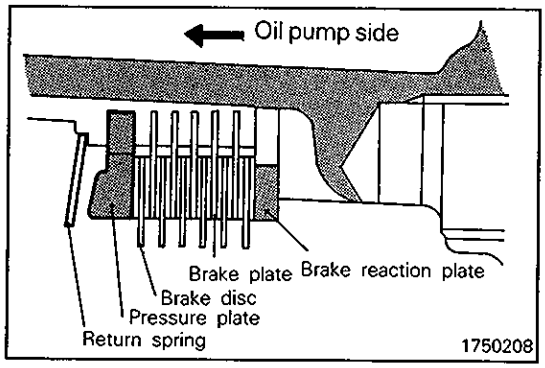
IDENTIFICATION OF THRUST BEARINGS, THRUST RACES, AND THRUST WASHERS

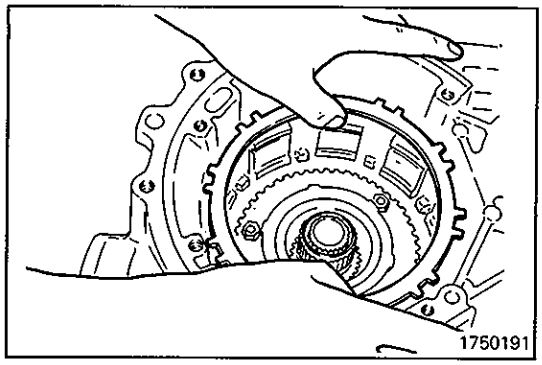
mm (in.)

O.D.	I.D.	Thickness	Part No.	Identification marking	O.D.	I.D.	Thickness	Part No.	Identification marking
70 (2.756)	55.7 (2.193)	1.4 (0.055)	*1	#1	48.1 (1.906)	34.4 (1.354)	–	MD707271	#4
70 (2.756)	55.7 (2.193)	1.8 (0.071)	*2		40 (1.575)	21 (0.827)	2.4 (0.094)	MD722552 (F4A21, F4A22)	#5
70 (2.756)	55.7 (2.193)	2.2 (0.087)	*3		40 (1.575)	21 (0.827)	1.8 (0.071)	MD720751 (F4A23)	
70 (2.756)	55.7 (2.193)	2.6 (0.102)	*4		42.6 (1.677)	28 (1.102)	–	MD720753	#6
70 (2.756)	55.7 (2.193)	1.8 (0.071)	MD707290 (F4A21) MD729336 (F4A22, F4A23)	#2	54 (2.126)	38.7 (1.524)	1.6 (0.063)	MD704936	#7
48.9 (1.925)	37 (1.457)	1.0 (0.039)	MD997854 (incl.*1)	#3	52 (2.047)	36.4 (1.433)	–	MD720010	#8
48.9 (1.925)	37 (1.457)	1.2 (0.047)	MD997847 (incl.*1)		41 (1.614)	28 (1.102)	–	MD728763	#9
48.9 (1.925)	37 (1.457)	1.4 (0.055)	MD997848 (incl.*2)		39 (1.535)	28 (1.102)	1.2 (0.047)	MD728764	#10
48.9 (1.925)	37 (1.457)	1.6 (0.063)	MD997849 (incl.*2)		38 (1.496)	22.2 (0.874)	–	MD727787 (F4A21, F4A22)	#11
48.9 (1.925)	37 (1.457)	1.8 (0.071)	MD997850 (incl.*3)		42.4 (1.669)	22.2 (0.874)	–	MD722797 (F4A23)	
48.9 (1.925)	37 (1.457)	2.0 (0.079)	MD997851 (incl.*3)		52 (2.047)	36.4 (1.433)	–	MD720010 (F4A21, F4A22)	#12
48.9 (1.925)	37 (1.457)	2.2 (0.087)	MD997852 (incl.*4)		54 (2.126)	36.4 (1.433)	–	MD719846 (F4A23)	
48.9 (1.925)	37 (1.457)	2.4 (0.094)	MD997853 (incl.*4)		58 (2.283)	44 (1.732)	–	MD724206	#13

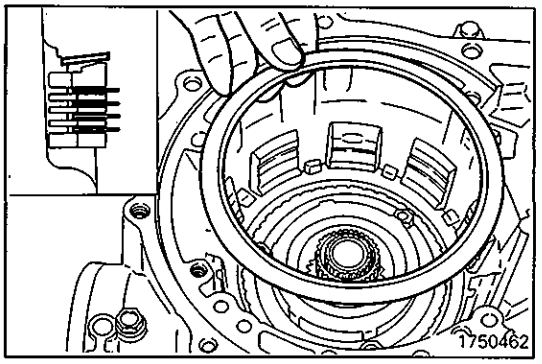


(27)Put the brake disc and brake plate in position.

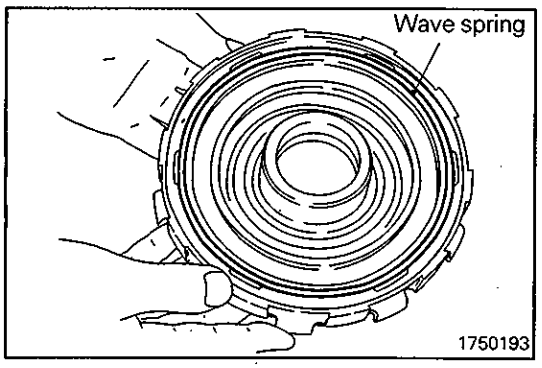




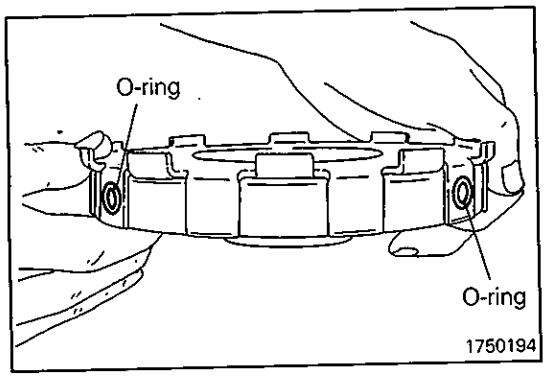
(28)Install the pressure plate which was selected in Step (1).



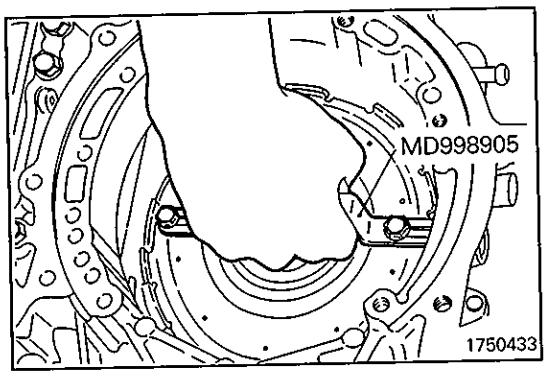
(29)Install the return spring.



(30)Apply petrolatum jelly to the wave spring and attach the wave spring to the center support.



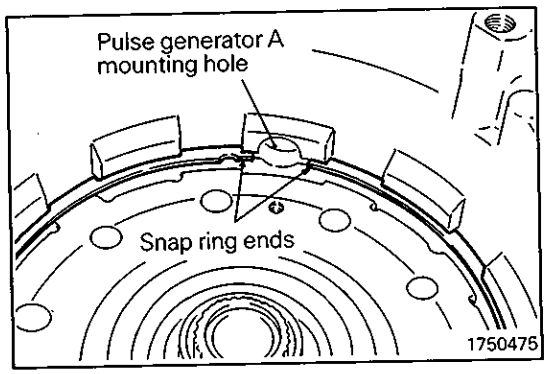
(31)Install the two new O-rings on the hydraulic pressure holes of the center support.
Apply automatic transmission fluid to the O-rings.



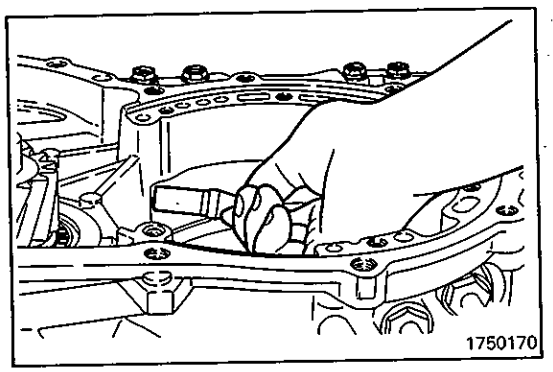
(32)Attach the special tool to the center support. Install the center support slowly in the transmission case, grasping the special tool.

Caution
- **During installation, take care not to let the wave spring drop which was applied in Step (30).**
- **Install the two O-rings in alignment with the oil holes provided in the transmission case.**

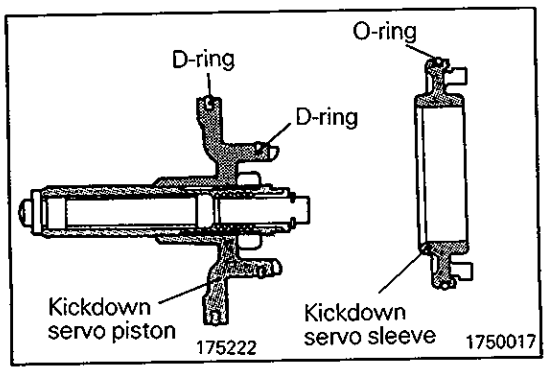
(33)Remove the special tool from the center support.



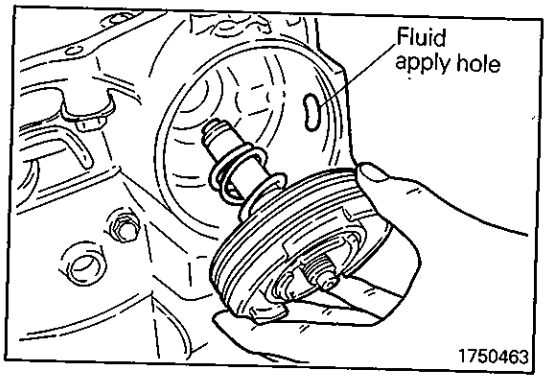
(34)Install the snap ring to secure the center support. The snap ring ends should not interfere with the pulse generator mounting hole.



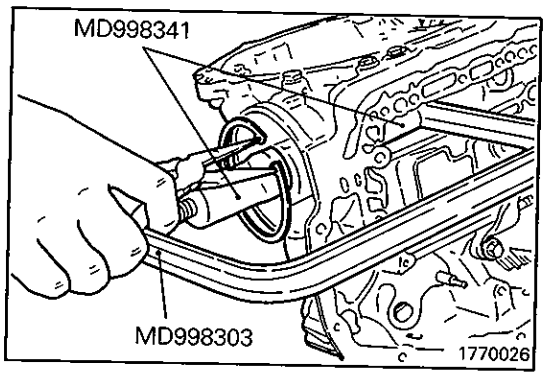
(35)Install the anchor rod, in the transmission case.



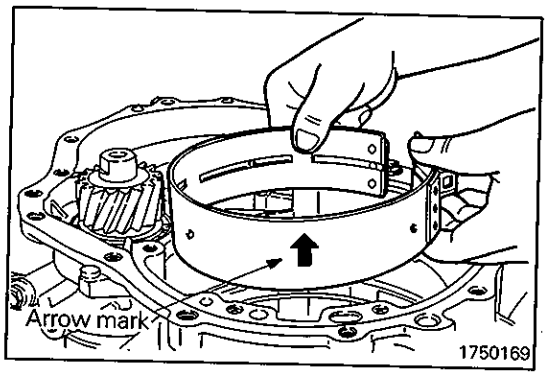
(36)Install a new teflon seal ring and a new D-ring in the grooves of the kickdown servo piston, and apply automatic transmission fluid to the rings.
(37)Install a new O-ring to the groove of kickdown servo sleeve, and apply automatic transmission fluid to the ring.
(38)Assemble the kickdown servo piston with the sleeve.



(39)Put the spring on the kickdown servo piston and sleeve assembly, and insert the assembly in the transmission case, making sure that the end gap of the teflon seal ring on the kickdown servo piston does not interfere with the fluid apply hole provided in the servo bore of the transmission case.

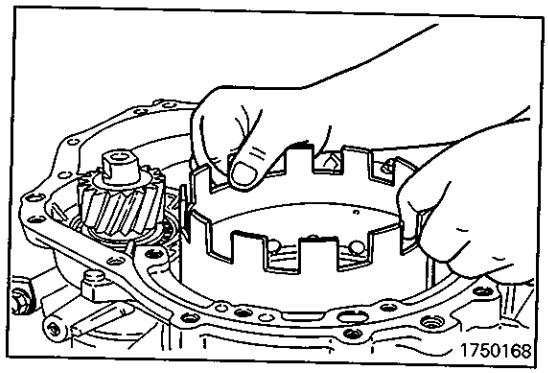


(40)Using the special tools, hold the kickdown servo piston and sleeve assembly pushed inward, and then install the snap ring.

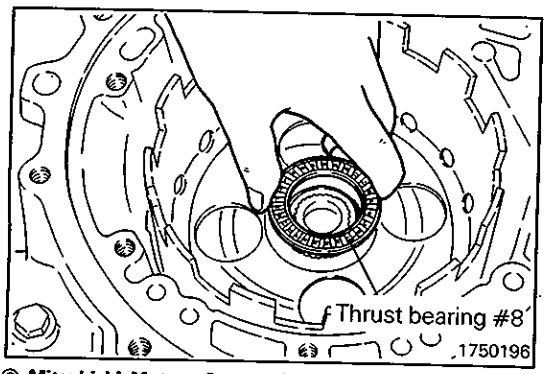


(41)Install the kickdown band; attach the ends of the band to the ends of the anchor rod and the servo piston rod.

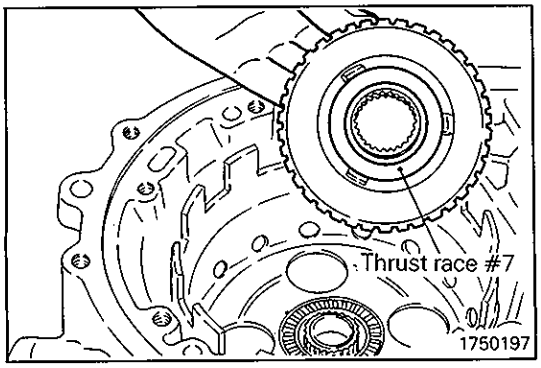
NOTE
Install the band with the arrow mark pointing to the oil pump side (F4A23).



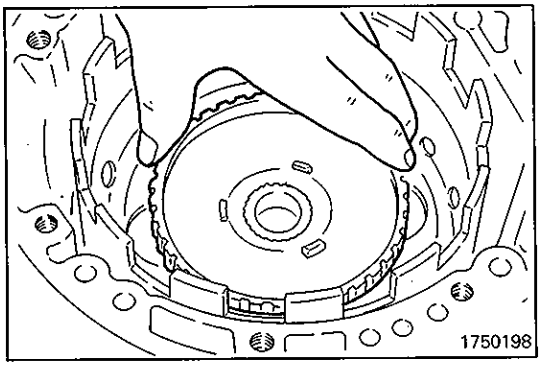
(42)When setting the kickdown drum in the kickdown band, engage the splines of the kickdown drum with those of the reverse sun gear. Install the kickdown band around the kickdown drum and tighten the kickdown servo adjusting screw to keep the band in position.



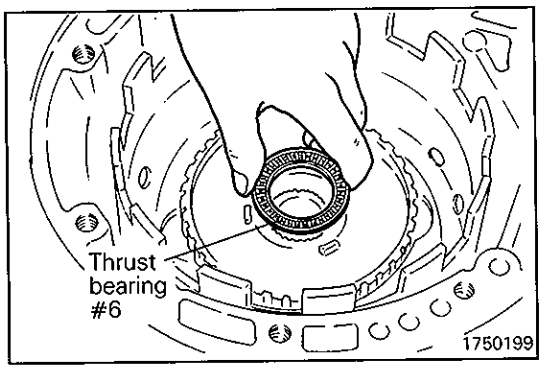
(43)Apply petrolatum jelly to thrust bearing #8 and attach the thrust bearing to the kickdown drum.



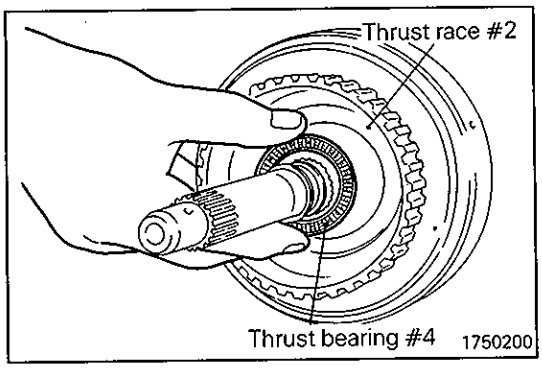
(44)Apply petrolatum jelly to thrust race #7 and attach the thrust race to the rear clutch hub.



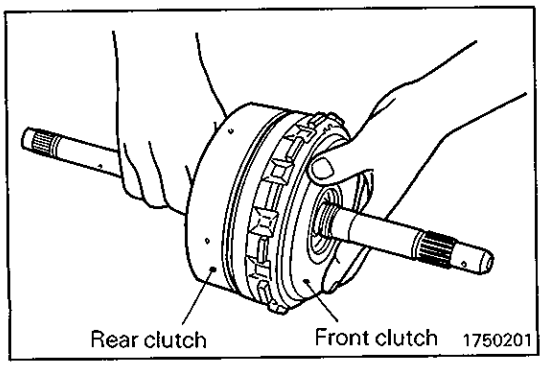
(45)Install clutch hub, engaging it with the forward sun gear splines.



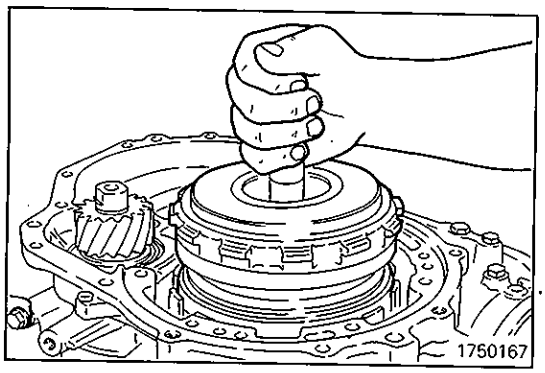
(46)Apply petrolatum jelly to thrust bearing #6 and attach it to the clutch hub.



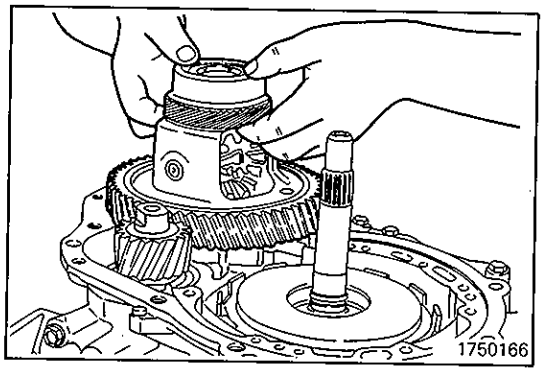
(47)Apply petrolatum jelly to thrust washer #2 and thrust bearing #4 and attach the washer and bearing to the rear clutch assembly.



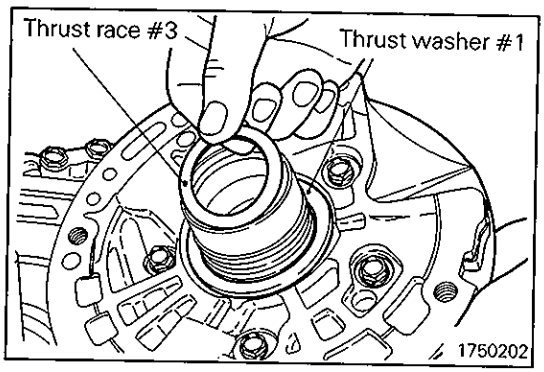
(48)Mate the rear clutch assembly with the front clutch assembly.



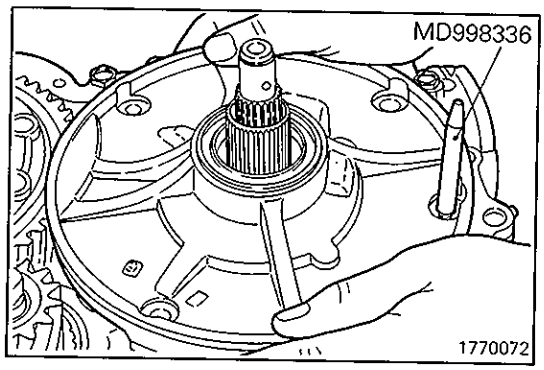
(49)Install the clutch assembly.



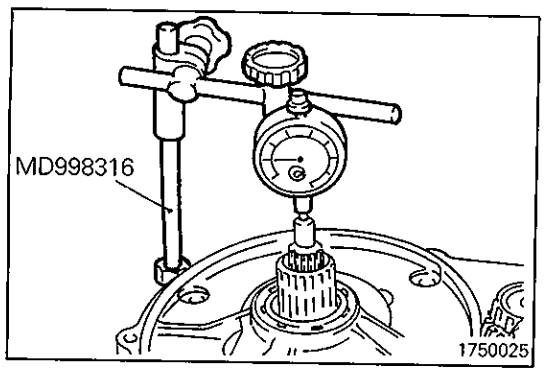
(50)Install the differential.



(51)Attach thrust race #3 and thrust washer #1 on the rear end face of the oil pump with petrolatum jelly.

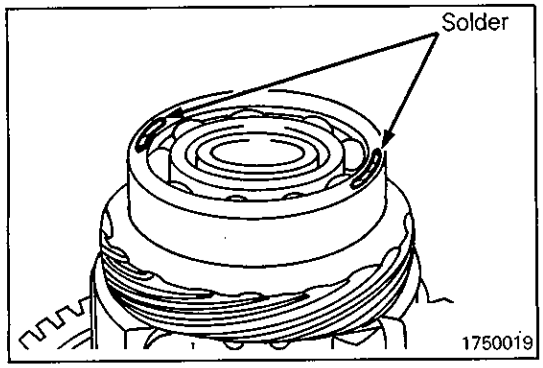


(52)Install the special tool on the transmission case. Using the special tool as a guide, install a new oil pump gasket and the oil pump in the case.
(53)Remove the special tool.
(54)Tighten the oil pump bolts to the specified torque.

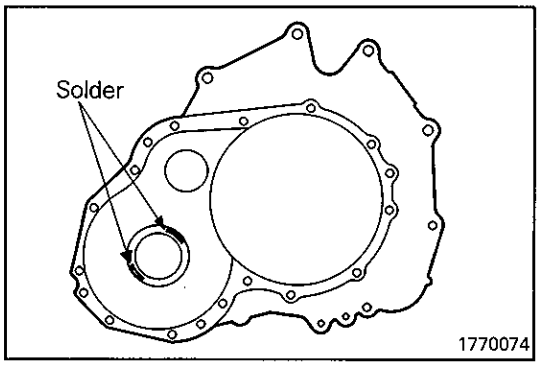


(55)Measure the end play of the input shaft. If the measurement is out of specification, replace thrust race #3 and thrust washer #1 to meet the specification.

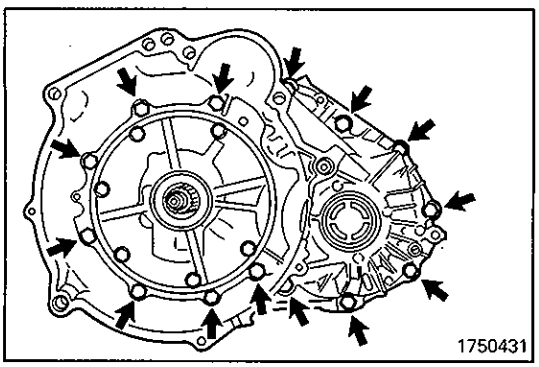
Standard value: 0.3 – 1.0 mm (0.012 – 0.039 in.)



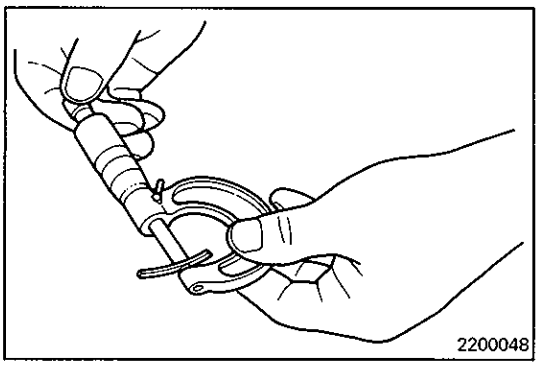
(56)Place two pieces of approx. 10 mm (0.394 in.) long, 1.6 mm (0.06 in.) dia. solder at the locations shown on the differential assembly (F4A21, F4A22).



(57)Place two pieces of approx. 10 mm (0.394 in.) long, 1.6 mm (0.06 in.) dia. solder at the locations shown on the converter housing and assemble the outer race (F4A23).

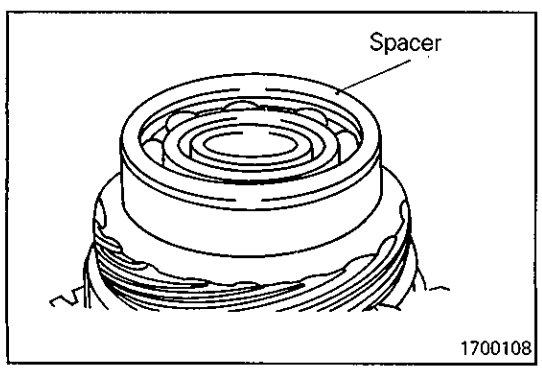


(58)Install the converter housing directly to the transmission case without installing the rubber coated metal gasket.
(59)Tighten the bolts to the specification.
(60)Remove the bolts and remove the converter housing.
Remove the pieces of flattened solder (F4A21, F4A22).
(61)Remove the bolts and remove the outer race from the converter housing.
Remove the pieces of flattened solder (F4A23).
(62)If the solders are not flattened, use the solder of a larger diameter and repeat Steps (56) through (61).

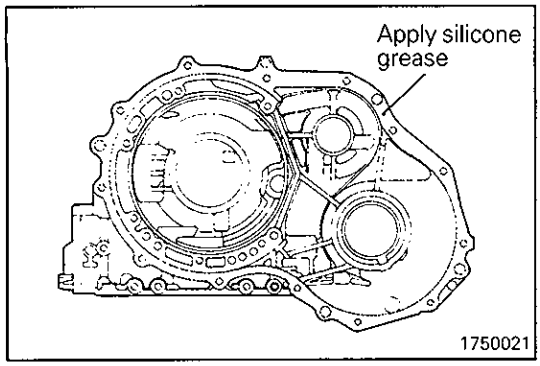


(63)Measure the thickness of the flattened solder using a micrometer. Add the measured solder thickness (T) to the value 0.38 mm (0.015 in.), which corresponds to the gasket thickness.
Then subtract from that sum a value corresponding to the specified end play.
The result obtained is the thickness of the spacer to be selected.
Select a spacer whose thickness falls within the range determined by the formulas below:

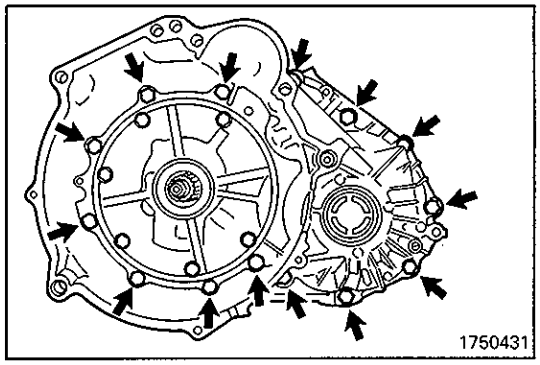
F4A21, F4A22
[T + 0.38 mm (0.015 in.) – 0.15 mm (0.006 in.)] to
[T + 0.38 mm (0.015 in.) – 0 mm (0 in.)]
F4A23
[T + 0.38 mm (0.015 in.) + 0.13 mm (0.005 in.)] to
[T + 0.38 mm (0.015 in.) + 0.08 mm (0.003 in.)]



(64)Place the spacer selected in Step (63) on the outer race of the differential bearing (F4A21, F4A22).
(65)Place the spacer selected in Step (63) and the outer race on the converter housing (F4A23).



(66)Apply silicone grease to all gasket surfaces of the transmission case.

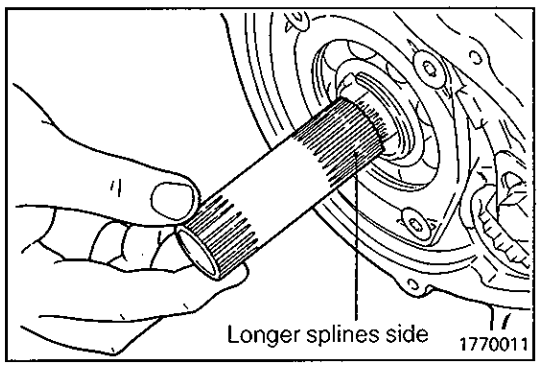


(67)Install a new gasket on the transmission case.

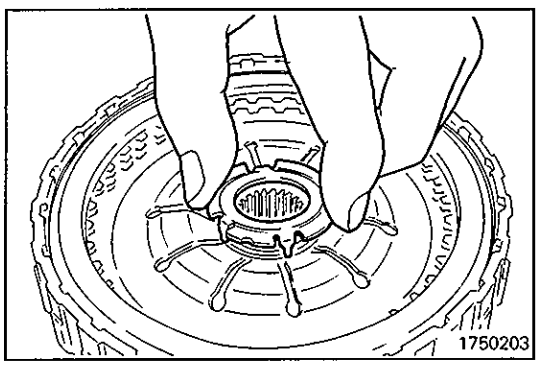
Caution
- **Do not reuse the gasket which was previously removed.**

(68)Install converter housing and tighten the 14 bolts indicated by arrows to the specified torque.

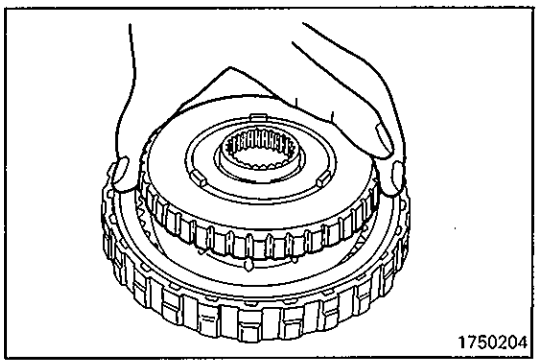
Tightening torque:
19 – 23 Nm (1.9 – 2.3 kgm, 14 – 16 ft.lbs.)



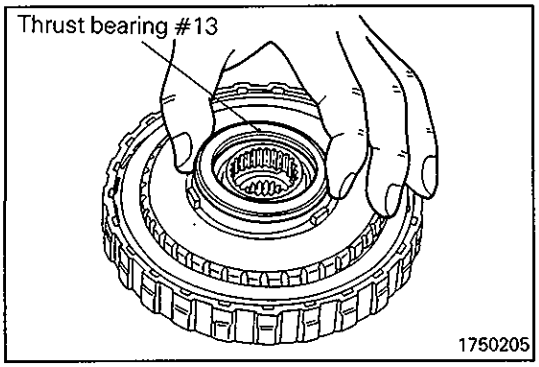
(69)Install the end clutch shaft, inserting the end that has longer splines first.



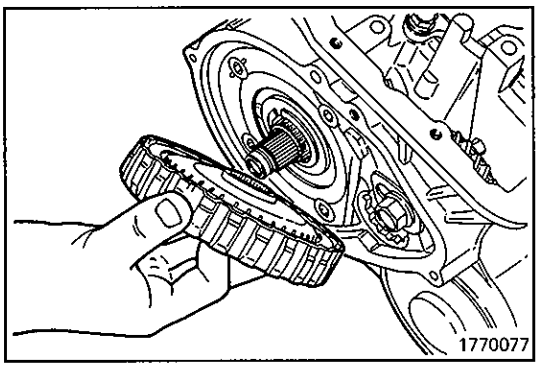
(70)Install the thrust washer on the return spring at the end clutch side.



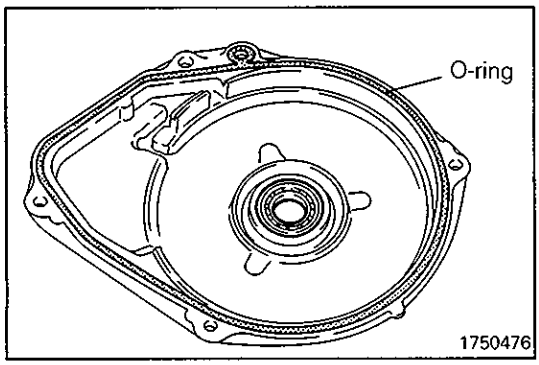
(71)Install the end clutch hub on the end clutch assembly.



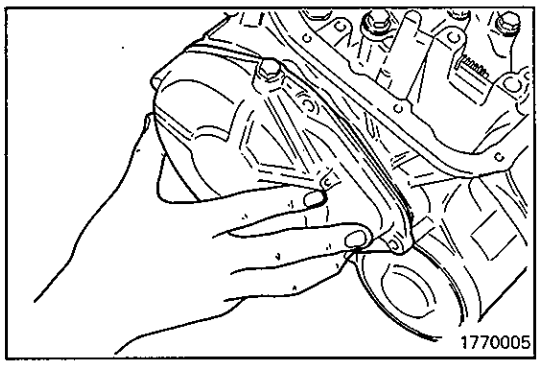
(72)Attach thrust bearing #13 to the end clutch hub with petrolatum jelly.



(73)Install the end clutch assembly.



(74)Install new O-ring in the groove of the end clutch cover.
Check the bearing for smooth rotation and replace it if defects are evident.
Apply an ample amount of automatic transmission fluid to the bearing.

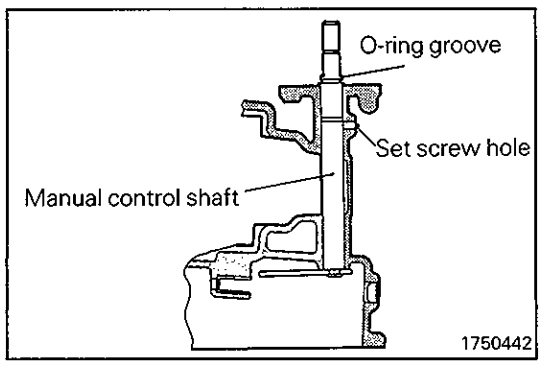


(75)Secure the end clutch cover by tightening its mounting bolts to the specified torque.

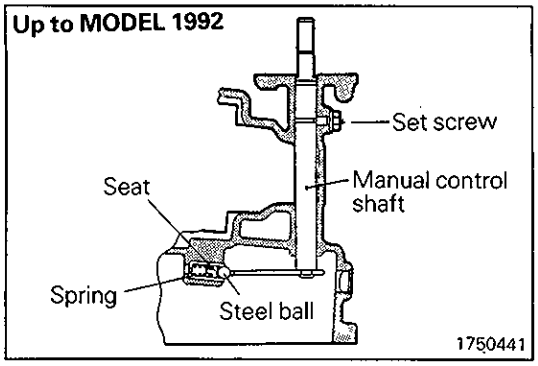
Tightening torque:
6 – 8 Nm (0.6 – 0.8 kgm, 4.5 – 5.5 ft.lbs.)

Caution

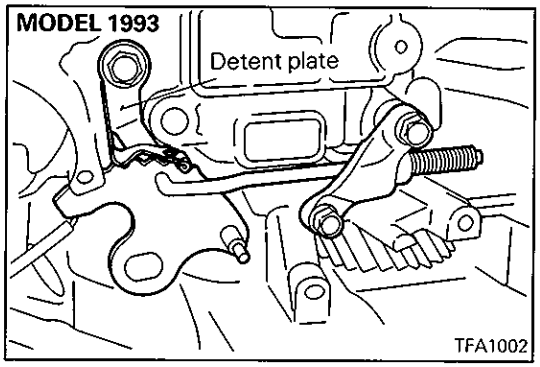
- **When installing the end clutch cover, make sure that the threaded holes are aligned. Turning the end clutch cover can cause the O-ring to become twisted.**



(76)Install the parking sprag rod to the manual control shaft. Then, insert the shaft in the transmission case as shown in the illustration without installing any O-ring in the O-ring groove.

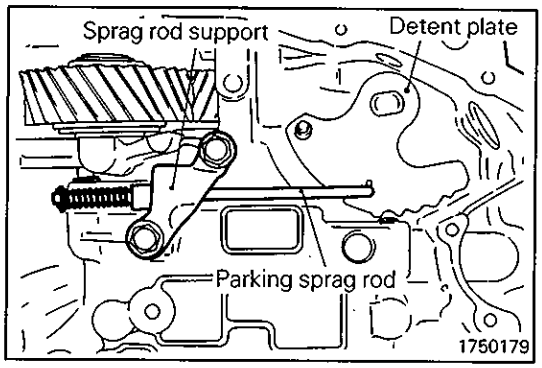


(77)Install a new O-ring on the manual control shaft assembly, draw the shaft into the transmission case, then install the set screw and the gasket.
Install the detent steel ball, seat and spring. <Up to MODEL 1992>



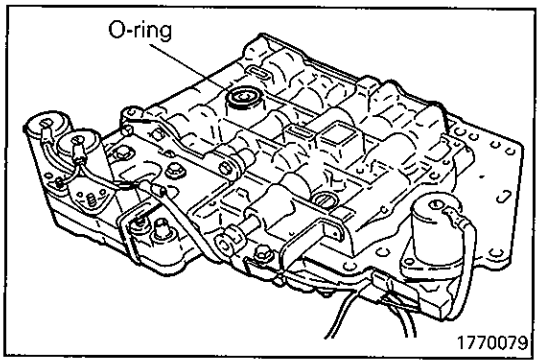
Install the detent plate. <MODEL 1993>

Detent plate mounting bolt:
11 Nm (1.1 kgm, 8 ft.lbs.)

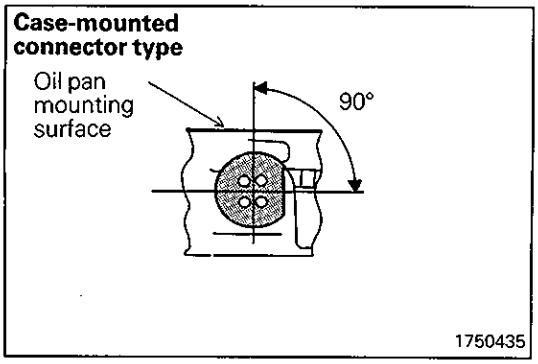


(78)Place the transmission case with the oil pan mounting surface up.
(79)Install the sprag rod support and tighten the two bolts to the specified torque.

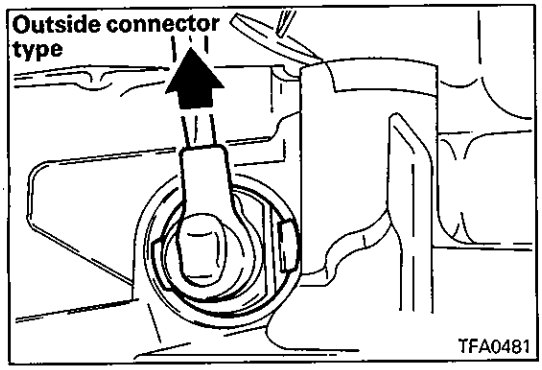
Tightening torque:
20 – 27 Nm (2.0 – 2.7 kgm, 15 – 19 ft.lbs.)



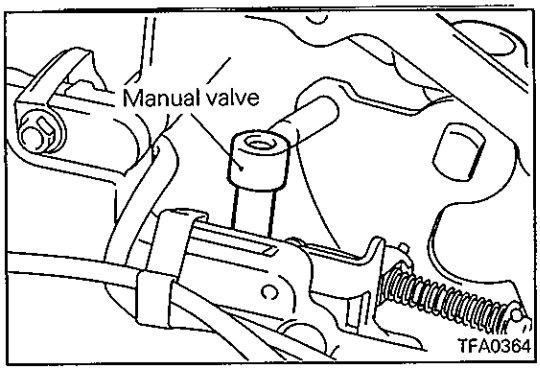
(80)Install the O-ring at the top of the valve body.
(81)Replace the solenoid valve connector O-ring with a new one.



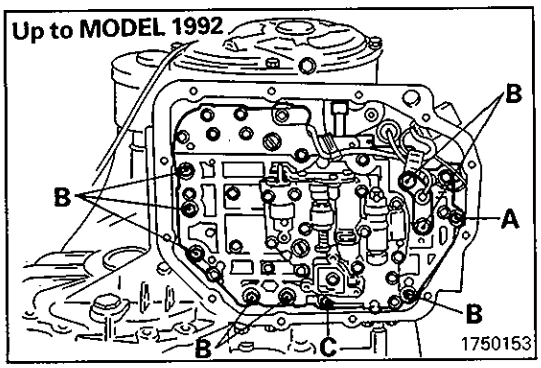
(82)When installing the valve body, insert the solenoid valve connector in the case with its flat section positioned as shown in the illustration.



(83)Pass the solenoid valve harness through the hole from inside the transmission case (Outside connecter type).
(84)Install the harness grommet securely so that the harness will be routed in the direction indicated by the arrow in the illustration (Outside connecter type).

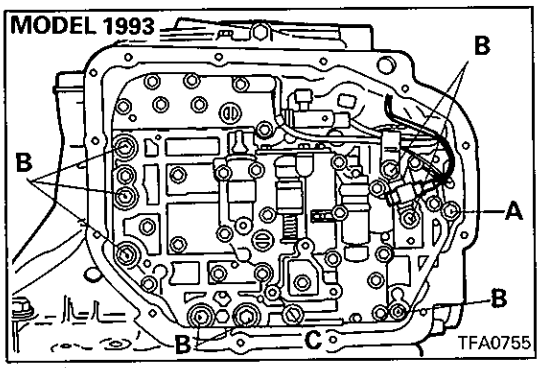


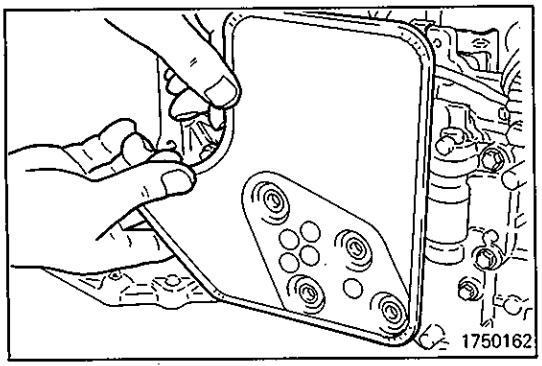
(85)Install the valve body in the transmission case while fitting the detent plate pin in the groove at the end of the manual valve.



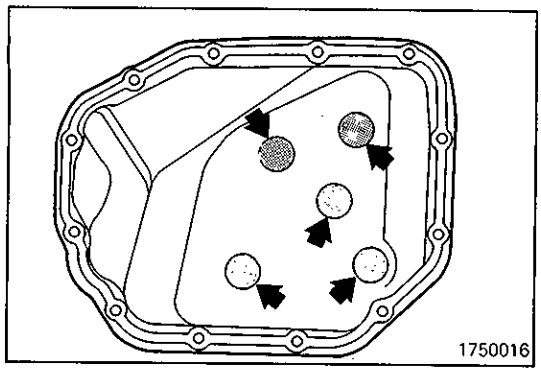
(86)Tighten the valve body mounting bolts (10 pieces) to the specified torque.

Bolt A ..... 18 mm (0.709 in.) long
Bolt B ..... 25 mm (0.984 in.) long
Bolt C ..... 40 mm (1.575 in.) long

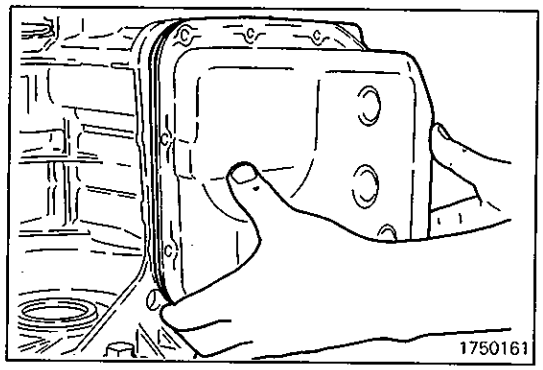




(87)Install the oil filter and tighten the four oil filter mounting bolts to the specified torque.

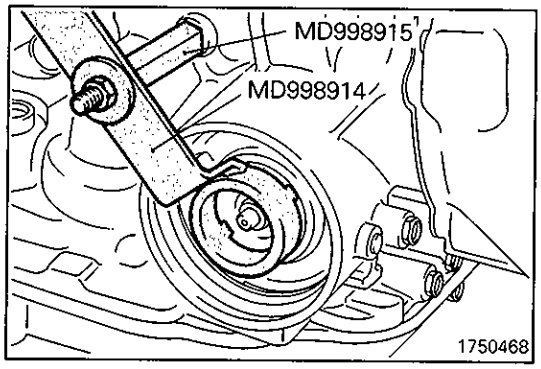


(88)Install five magnets in the five depressions provided inside the oil pan.
Be sure to remove metal particles from the magnets and clean the inside of the oil pan beforehand.



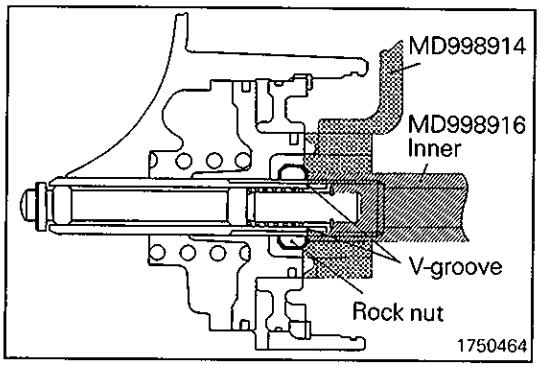
(89)Clean the gasket surfaces of the transmission case and oil pan. Install a new oil pan gasket and then the oil pan by tightening the 12 bolts to the specified torque.

Tightening torque:
10 – 12 Nm (1.0 – 1.2 kgm, 7.5 – 8.5 ft.lbs.)

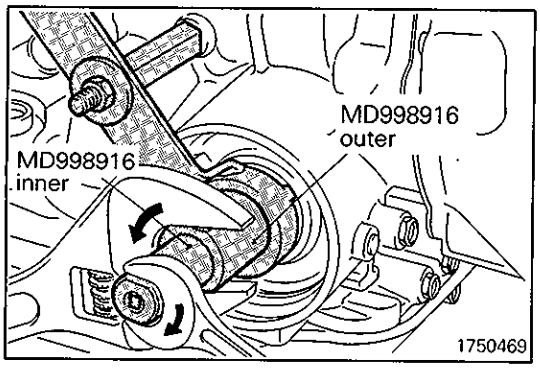


(90)Adjust the kickdown servo by the following procedure:
(a) Fit the claw of the special tool in the notch of the piston to prevent the piston from turning, and use adapter to secure it as illustrated.

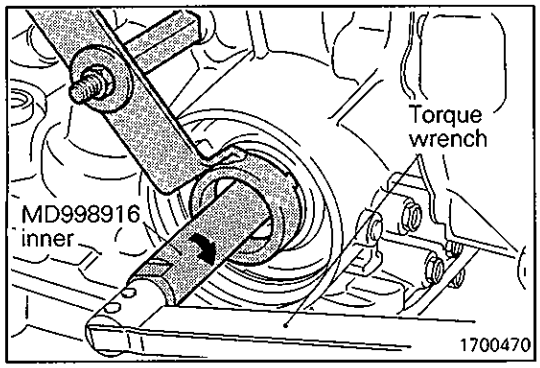
Caution
- **Do not push the piston inward with the special tool.**
- **When the adapter is installed on the transmission case, do not apply excessive torque but only hand tighten it.**



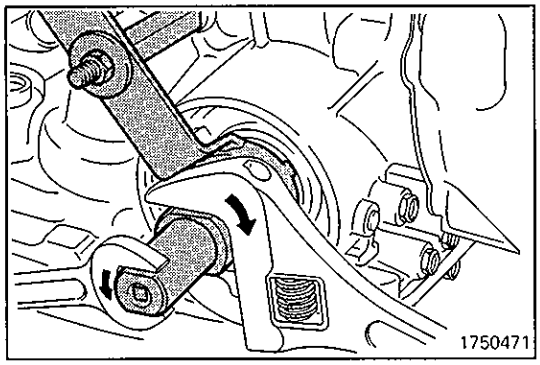
(b) Loosen the lock nut until it is about to reach the V groove in the adjusting rod. Install the special tool (inner) on the adjusting rod and turn down until it touches the lock nut.



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

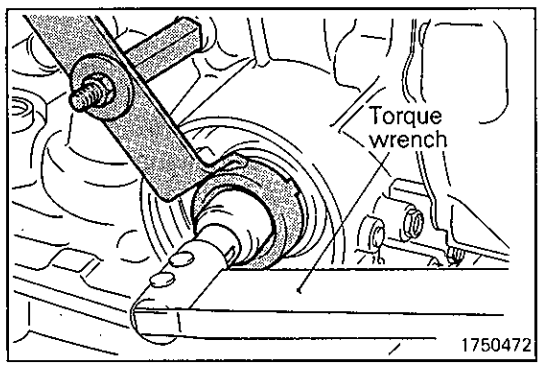


(d) Fit a torque wrench to the inner tool to tighten it to a torque of 10 Nm (1 kgm, 7.2 ft.lbs.) and loosen. Repeat this sequence two times before finally tightening the inner tool to 5 Nm (0.5 kgm, 3.6 ft.lbs.) torque. Then back off the outer tool 2 to 2¼ turns.



(e) Fit the outer tool to the lock nut.
Turn the outer tool clockwise and the inner tool counterclockwise to separate the lock nut from the inner tool.

Caution
- **When doing this work, apply equal force to both tools.**

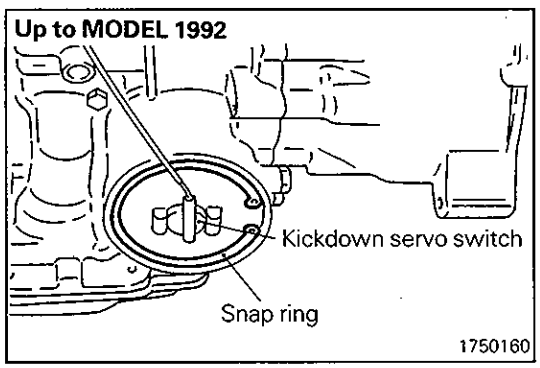


(f) Hand tighten the lock nut until it touches the piston. Then, use a torque wrench to tighten the lock nut to the specified torque.

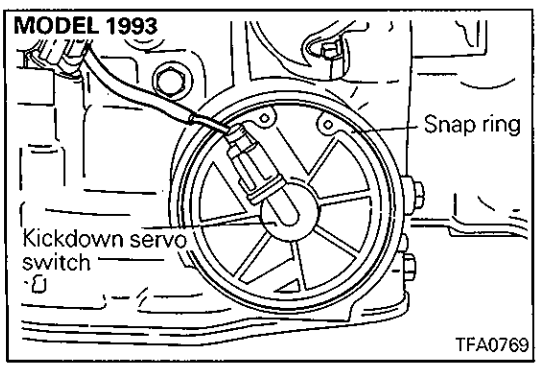
Lock nut:
25 – 32 Nm (2.5 – 3.2 kgm, 18 – 23 ft.lbs.)

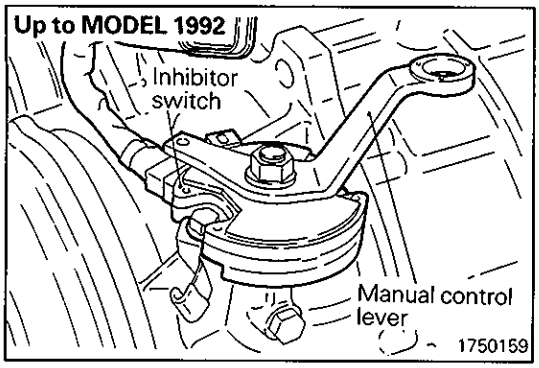
Caution
- **The lock nut may turn with the adjusting rod if tightened too quickly with the torque wrench.**

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

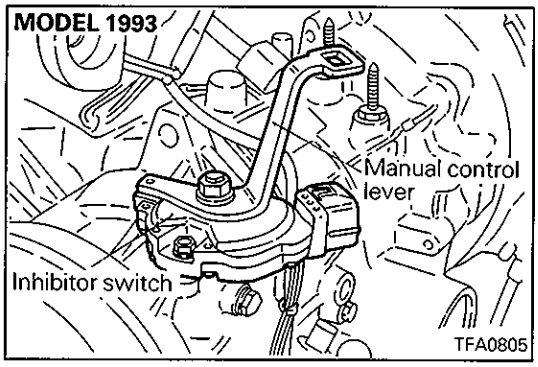


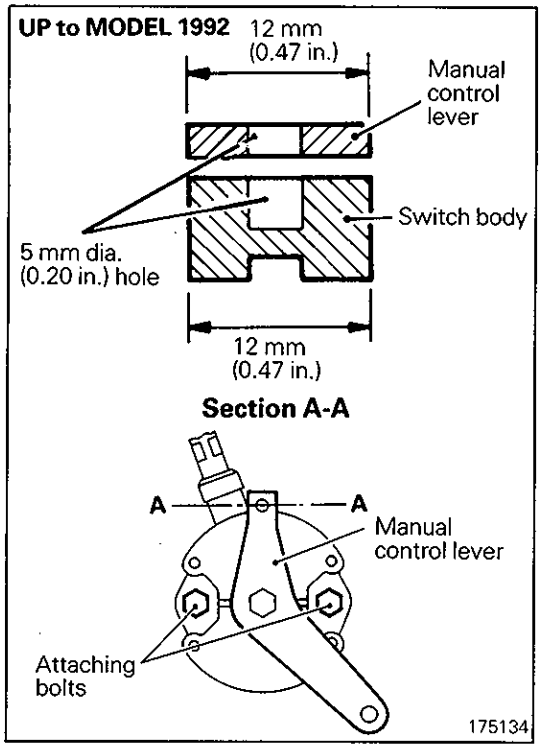
(91)Set a new D-ring in the kickdown servo switch, push the switch into the transmission case and secure it with the snap ring.





(92)Install the inhibitor switch and the manual control lever and tighten the manual control lever nut to the specified torque.



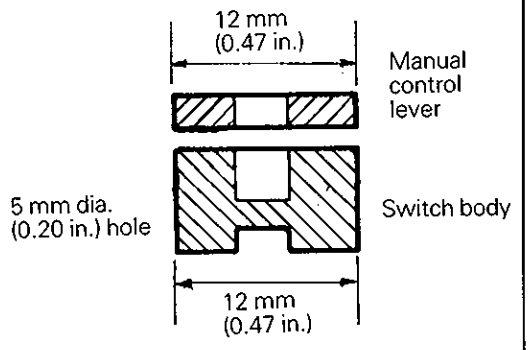


(93)Adjust the inhibitor switch as follows:

(a) Place the manual control lever in the "N" (neutral) position.
(b) Turn the inhibitor switch body until the 12 mm (0.47 in.) wide end of the manual control lever aligns with the switch body flange [12 mm (0.47 in.) wide portion]. Alternatively, turn the switch body until the 5 mm (0.20 in.) hole in the manual control lever aligns with the 5 mm (0.20 in.) hole in the switch body.
(c) Tighten the attaching bolts to the specified torque taking care not to displace the switch body.

Tightening torque:
10 – 12 Nm (1.0 – 1.2 kgm, 7.5 – 8.5 ft.lbs.)

MODEL 1993



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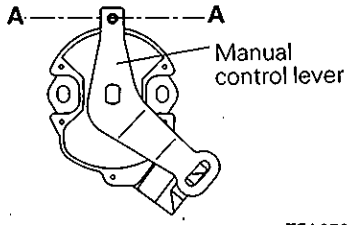
Section A-A



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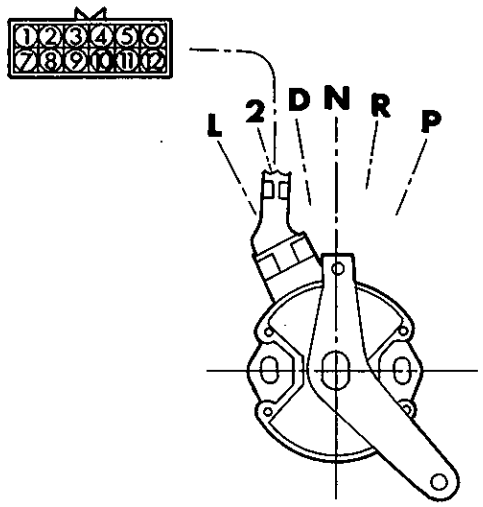
Up to MODEL 1992



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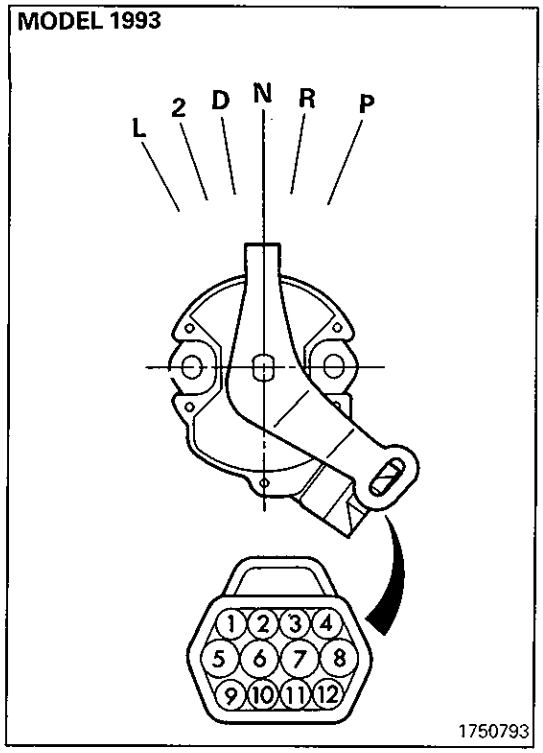
(94)Check the continuity between terminals while shifting the manual control lever at each position.
The continuity between terminals should be as shown in the table below.

Internal Connection in the Inhibitor Switch – Up to MODEL 1992

Terminal No.	P	R	N	D	2	L	Connected circuits
1					○		Transmission control unit
2			○				Transmission control unit
3	○						Transmission control unit
4	○	○	○	○	○	○	Ignition switch "ON" terminal
5						○	Transmission control unit
6				○			Transmission control unit
7		○					Transmission control unit
8	○		○				Ignition switch "ST" terminal
9	○		○				Starter motor "S" terminal
10		○					Ignition switch "ON" terminal
11		○					Backup lamp

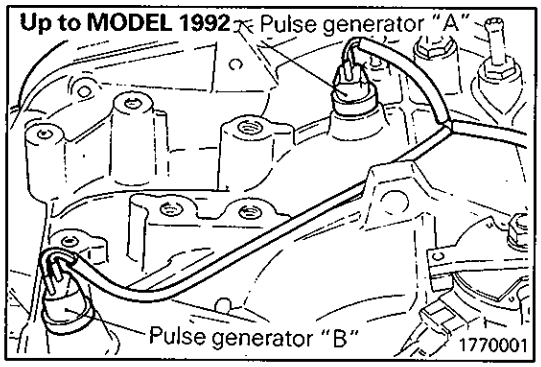
Lack of continuity indicates a poorly adjusted or faulty switch. Readjust the switch. If the continuity is still absent, replace the switch.



Internal Connection in the Inhibitor Switch – MODEL 1993

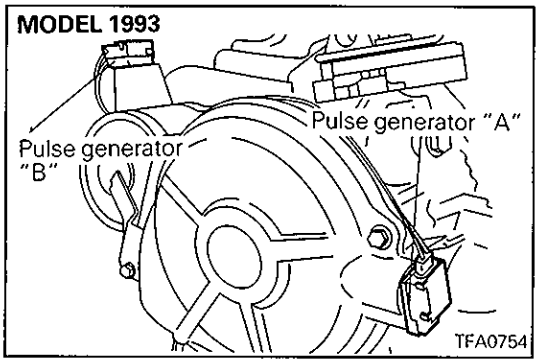
Terminal No.	P	R	N	D	2	L	Connected circuits
1	○						Transmission control unit
2			○				Transmission control unit
3					○		Transmission control unit
4	○	○	○	○	○	○	Ignition switch "ON" terminal
5	○		○				Transmission control unit
6		○					Transmission control unit
7		○					Transmission control unit
8	○		○				Ignition switch "ST" terminal
9				○			Starter motor "S" terminal
10		○					Ignition switch "ON" terminal
11						○	Backup lamp

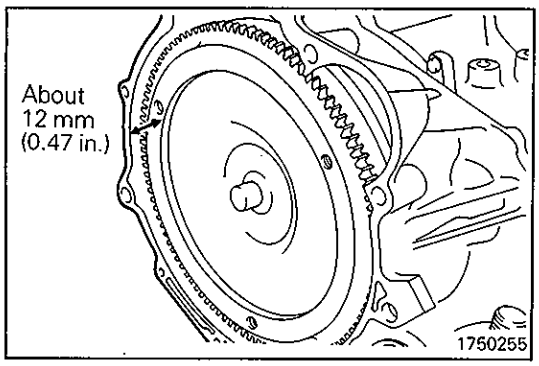
Lack of continuity indicates a poorly adjusted or faulty switch. Readjust the switch. If the continuity is still absent, replace the switch.



(95)Install pulse generators "A" and "B" and tighten the bolt to the specified torque.

Tightening torque:
10 – 12 Nm (1.0 – 1.2 kgm, 7.5 – 8.5 ft.lbs.)



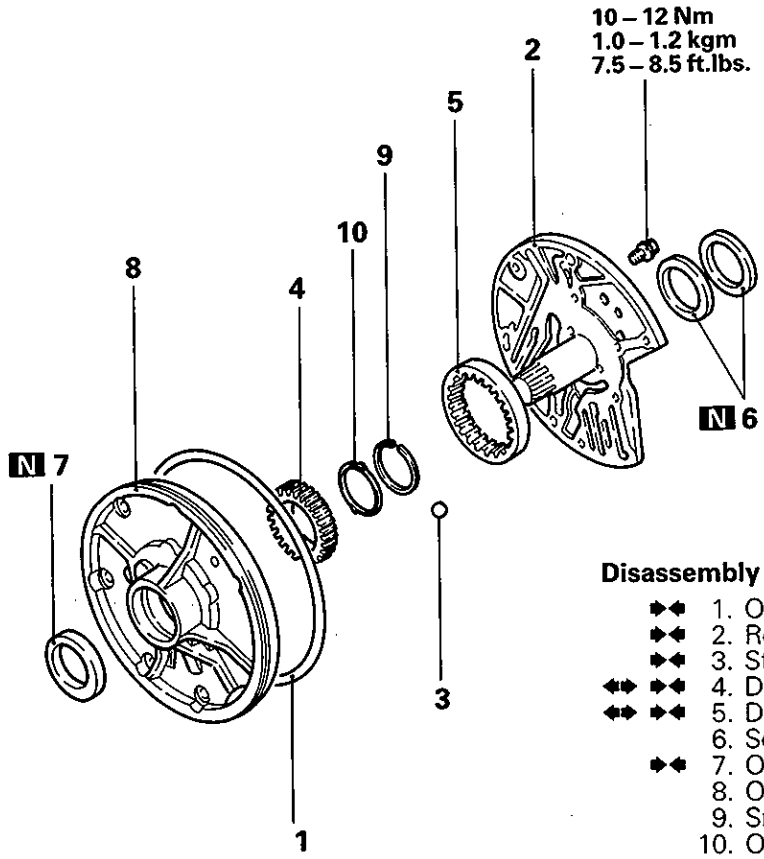


(96)After applying automatic transmission fluid to the outside surface of the oil pump-side cylindrical portion of the torque converter, install the torque converter carefully so as not to give damage to the oil seal lip. Make certain that the torque converter is in mesh with the oil pump drive gear.

(97)Measure the distance between the ring gear end and the converter housing end.
The torque converter has been properly installed when the measurement is approx. 12 mm (0.47 in.).

5. OIL PUMP

DISASSEMBLY AND REASSEMBLY



Disassembly steps

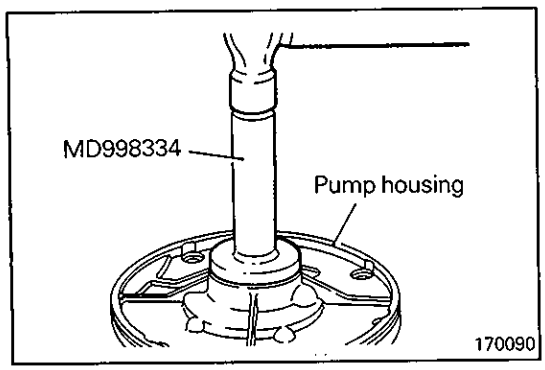
- ◆◆ 1. O-ring
- ◆◆ 2. Reaction shaft support
- ◆◆ 3. Steel ball
- ◆◆ ◆◆ 4. Drive gear
- ◆◆ ◆◆ 5. Driven gear
- 6. Seal ring
- ◆◆ 7. Oil seal
- 8. Oil pump housing
- 9. Snap ring (Models with damper clutch)
- 10. Oil seal (Models with damper clutch)

1750261

SERVICE POINTS OF DISASSEMBLY

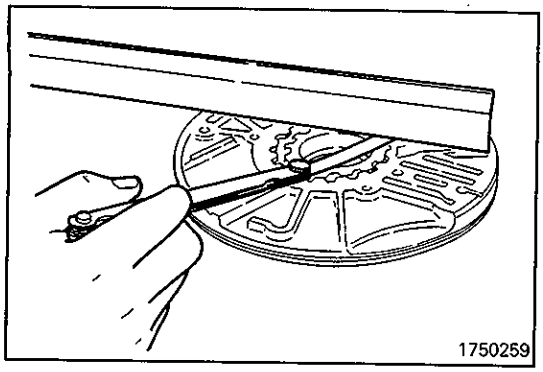
4. / 5. REMOVAL OF DRIVE GEAR / DRIVEN GEAR

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



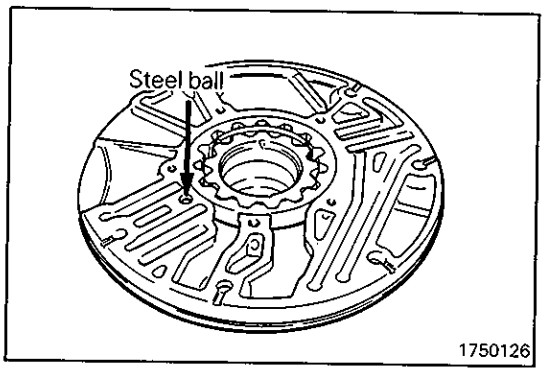
SERVICE POINTS OF REASSEMBLY

7. INSTALLATION OF OIL SEAL

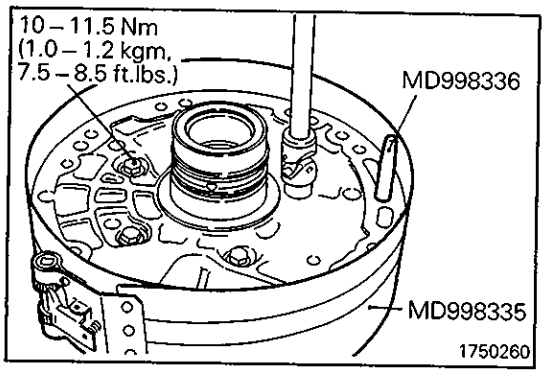


5. / 4. MEASUREMENT SIDE CLEARANCE OF DRIVEN GEAR / DRIVE GEAR

Standard value:
0.03 – 0.05 mm (0.001 – 0.002 in.)



3. LOCATION OF STEEL BALL



2. INSTALLATION OF REACTION SHAFT SUPPORT

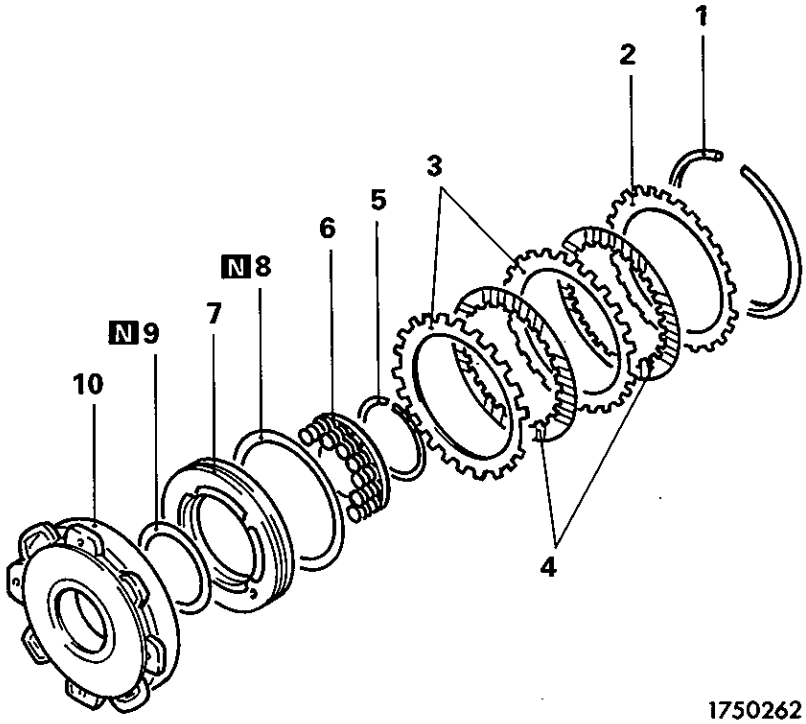
(1) Assemble the reaction shaft support and the pump housing, and tighten the five bolts by fingers.
(2) Insert the special tool (Guide Pin MD998336) in the oil pump bolt hole and tighten the peripheries of the support and housing with the special tool (Band MD998335) to locate the support and housing.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

1. INSTALLATION OF O-RING

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

6. FRONT CLUTCH

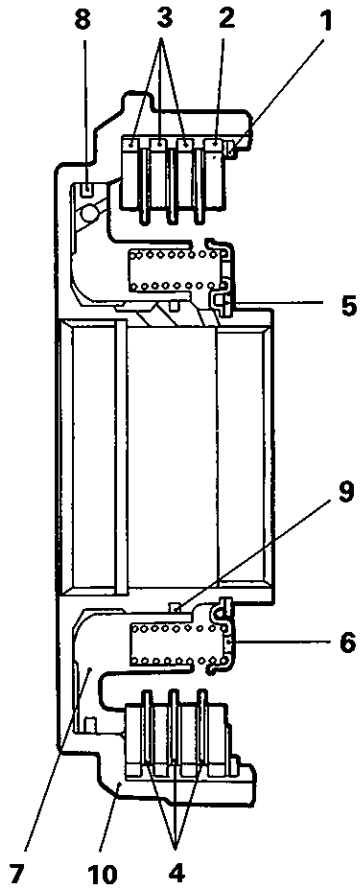
DISASSEMBLY AND REASSEMBLY



1750262

Disassembly steps

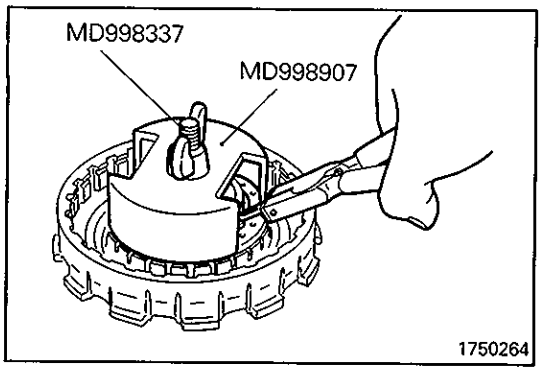
- ◆◆ 1. Snap ring
- ◆◆ 2. Clutch reaction plate
- ◆◆ 3. Clutch plate
- 4. Clutch disc
- ◆◆ ◆◆ 5. Snap ring
- 6. Return spring
- 7. Front clutch piston
- 8. D-ring
- 9. D-ring
- 10. Front clutch retainer



1750213

Number of Clutch Discs and Plates

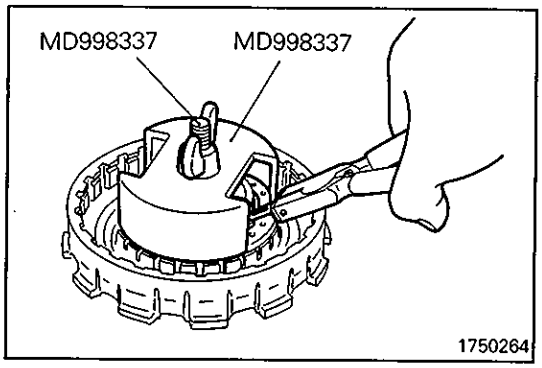
Model	Clutch disc	Clutch plate	Clutch reaction plate
F3A21, F4A21	2	2	1
F3A22, F4A22, F4A23	3	3	1



SERVICE POINT OF DISASSEMBLY

5. REMOVAL OF SNAP RING

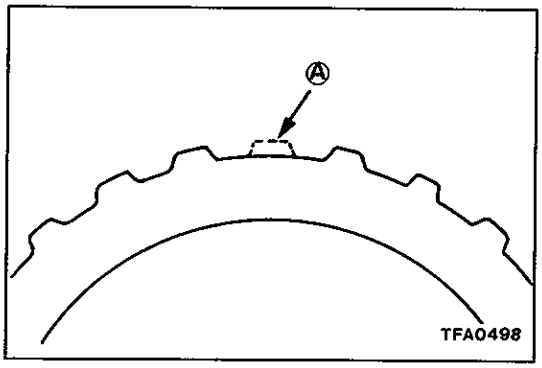
(1) Compress the return spring with the special tool.
(2) Remove the snap ring.



SERVICE POINTS OF REASSEMBLY

5. INSTALLATION OF SNAP RING

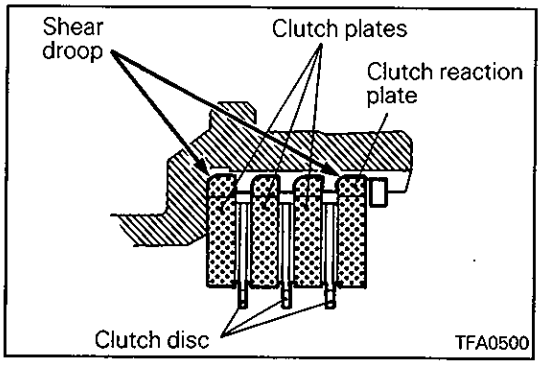
(1) Compress the return spring with the special tool.
(2) Install the snap ring.



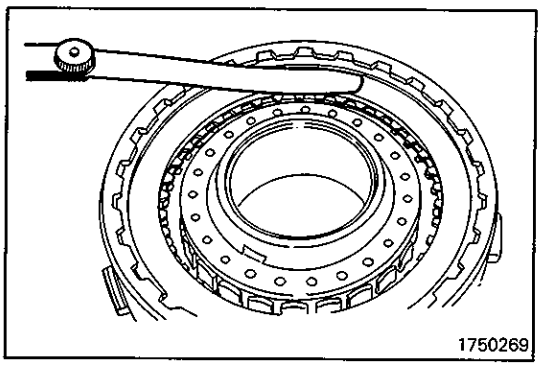
3. / 2. INSTALLATION OF CLUTCH PLATE / CLUTCH REACTION PLATE

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

NOTE
This design is to allow free flow of automatic transmission fluid thus improving the cooling efficiency of the plates and discs.



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



1. SELECTION OF SNAP RING

(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 (5 kg, 11 lbs.) force. If the clearance is out of standard value, select another snap ring to obtain the standard value.

Standard value:

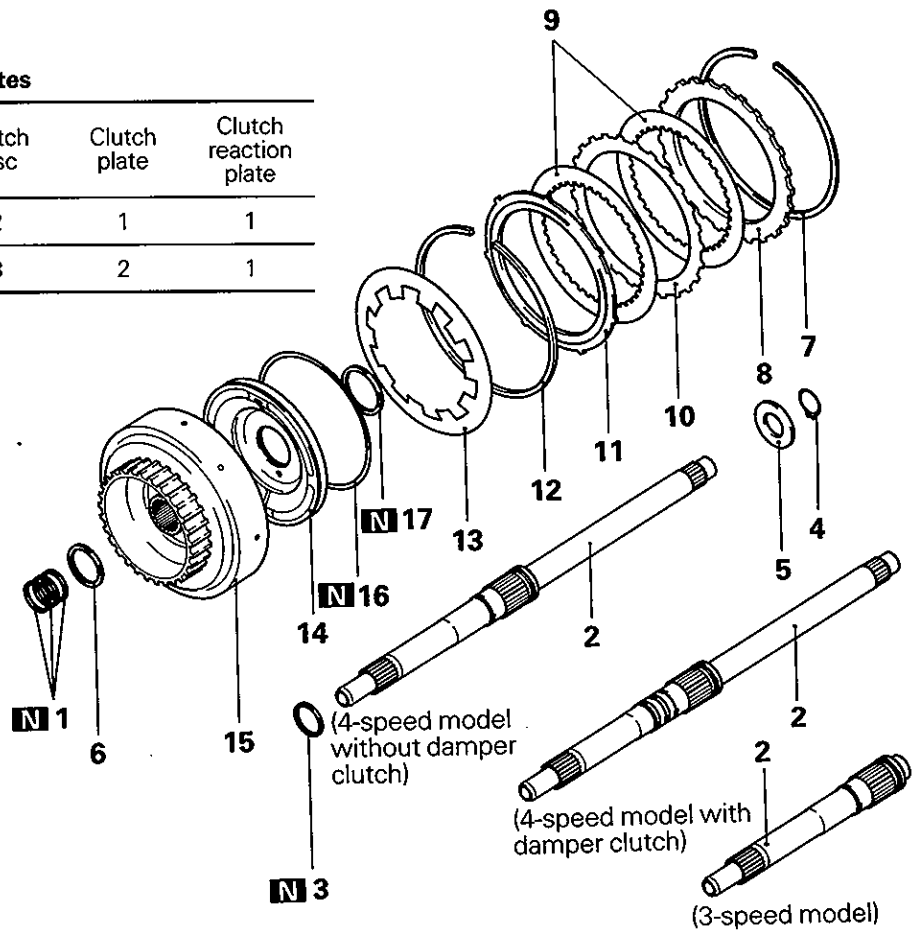
0.4 – 0.6 mm (0.016 – 0.024 in.)	**F3A21, F4A21**
0.7 – 0.9 mm (0.028 – 0.035 in.)	**F3A22, F4A22, F4A23**

7. REAR CLUTCH

DISASSEMBLY AND REASSEMBLY

Number of Clutch Discs and Plates

Model	Clutch disc	Clutch plate	Clutch reaction plate
F3A21, F4A21	2	1	1
F3A22, F4A22, F4A23	3	2	1

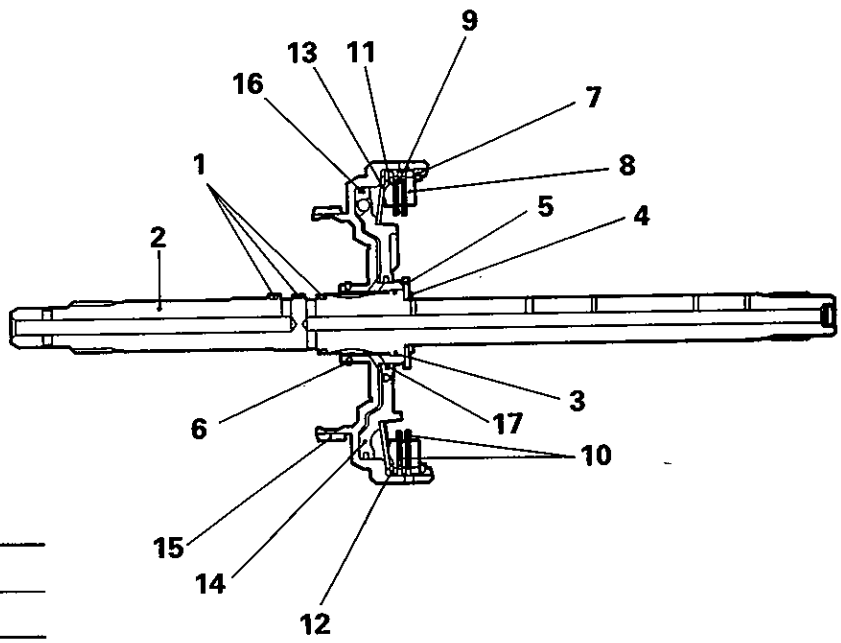


Disassembly steps

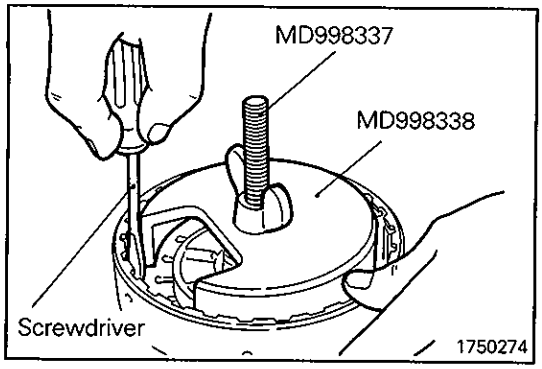
1. Seal ring*
2. Input shaft
3. O-ring
4. Snap ring
5. Thrust race
6. Seal ring
7. Snap ring
8. Clutch reaction plate
9. Clutch disc
10. Clutch plate
11. Clutch pressure plate
12. Wave spring
13. Return spring
14. Rear clutch piston
15. Rear clutch retainer
16. D-ring
17. D-ring

*: The number of seal rings varies with the transmission model.

Models with damper clutch	3
Models without damper clutch	1



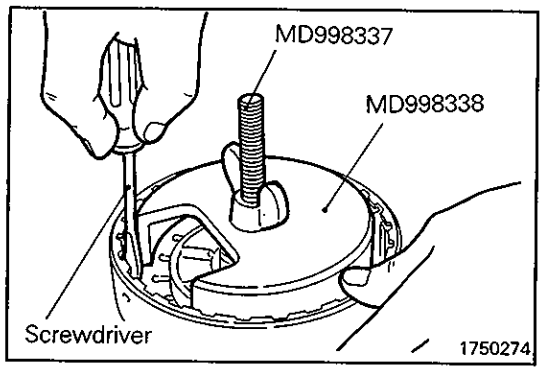
TFA0013



SERVICE POINT OF DISASSEMBLY

12. REMOVAL OF WAVE SPRING

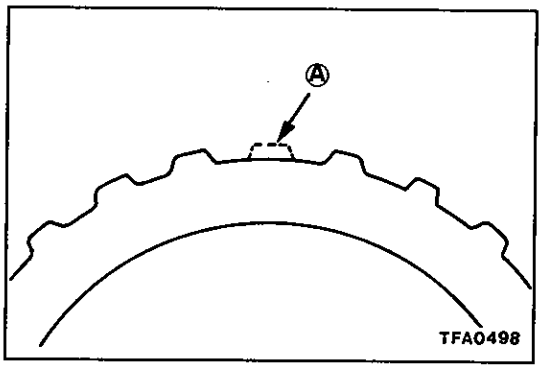
(1) Compress the return spring with the special tool.
(2) Using a screwdriver, remove the wave spring.



SERVICE POINTS OF REASSEMBLY

12. INSTALLATION OF WAVE SPRING

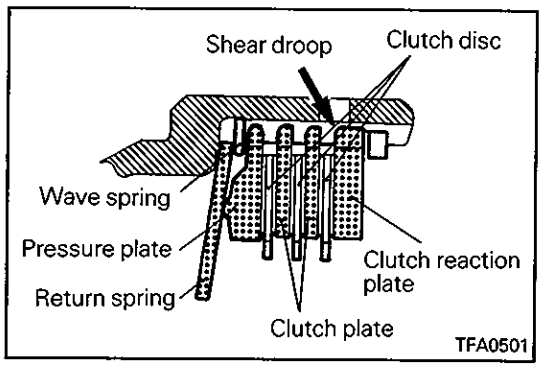
(1) Compress clutch reaction plate with the special tool.
(2) Install the wave spring.



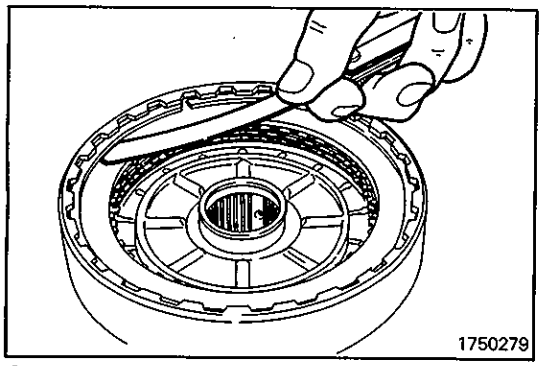
11. / 10. / 8. INSTALLATION OF CLUTCH PRESSURE PLATE / CLUTCH PLATE / CLUTCH REACTION PLATE

(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 allow free flow of automatic transmission fluid thus improving the cooling efficiency of the plates and discs.



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

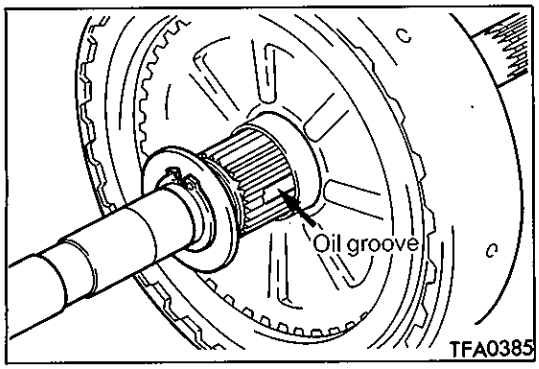


7. SELECTION OF SNAP RING

(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 (5 kg, 11 lbs.) force. If clearance is out of standard value, select another snap ring to obtain the standard value.

Standard value:

0.3 – 0.5 mm (0.012 – 0.020 in.)	**F3A21, F4A21**
0.4 – 0.6 mm (0.016 – 0.024 in.)	**F3A22, F4A22, F4A23**



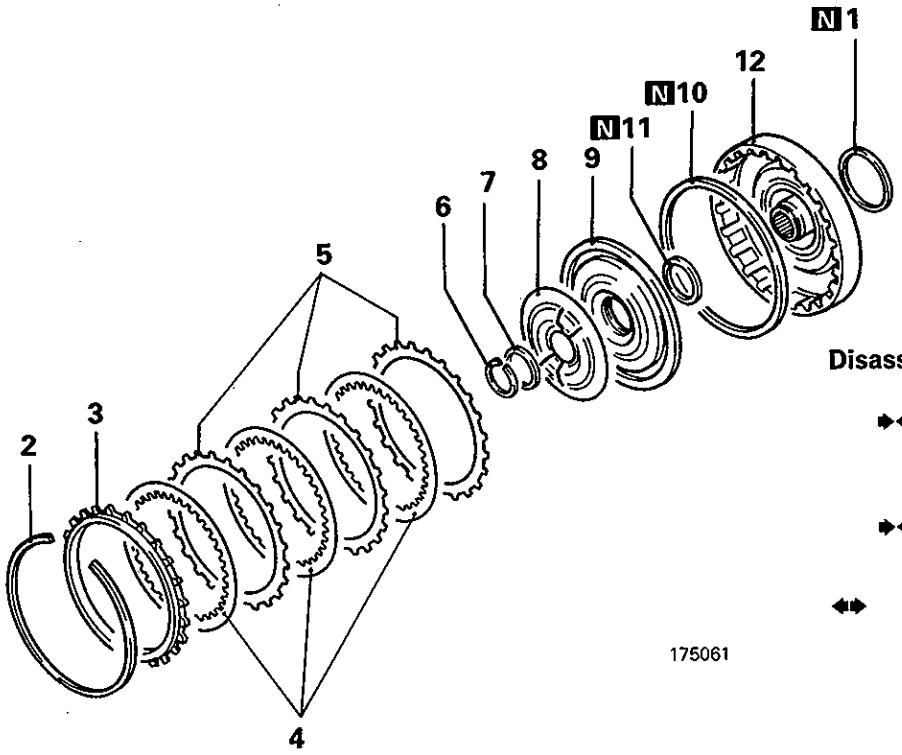
1. INSTALLATION OF INPUT SHAFT

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

NOTES

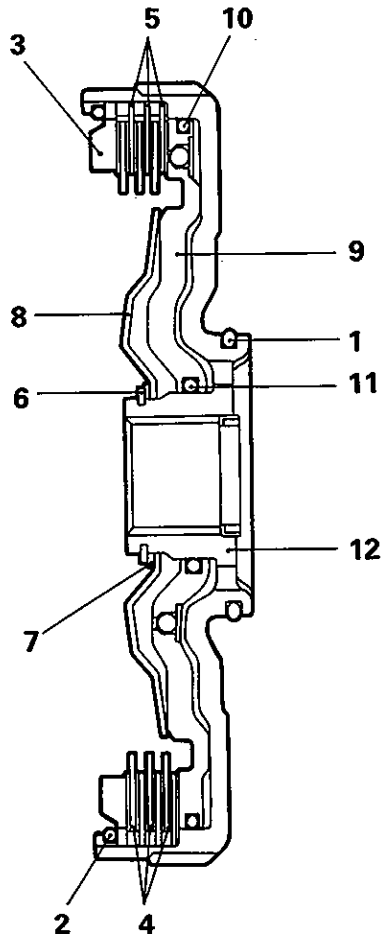
8. END CLUTCH (4-SPEED MODEL)

DISASSEMBLY AND REASSEMBLY



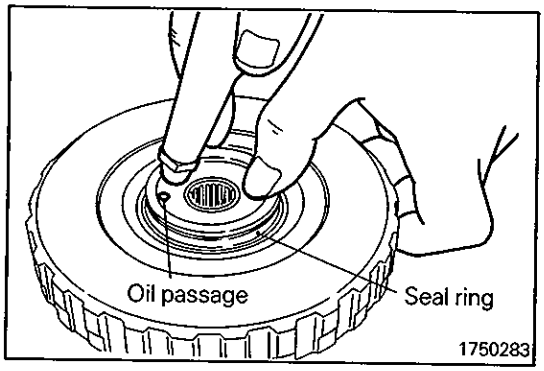
Disassembly steps

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



No. of Clutch Discs and Plates

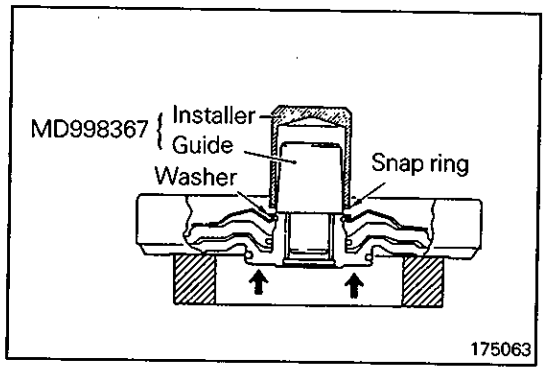
Clutch disc	Clutch plate	Clutch reaction plate
3	3	1



SERVICE POINT OF DISASSEMBLY

9. REMOVAL OF END CLUTCH PISTON

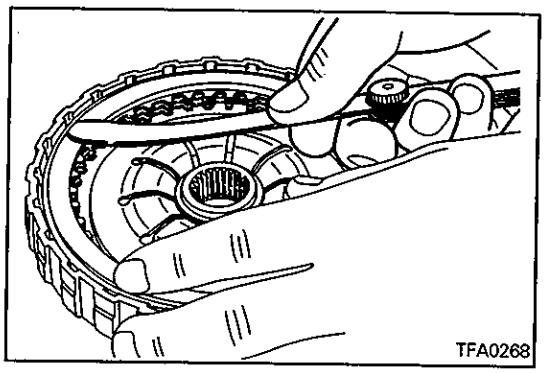
(1) Remove the piston. If it is hard to remove, place the retainer on the workbench with piston side down and blow air through the oil passage in the back of retainer.



SERVICE POINTS OF REASSEMBLY

6. INSTALLATION OF SNAP RING

(1) Fit a new snap ring to the Guide (special tool), and install it to the retainer. Be sure to fit snap ring to the lowest possible portion of the Guide.
Put the Installer (special tool) over the Guide and use a press to install the snap ring in the groove. If the snap ring is installed in the groove, stop pressing. Do not use the press more than necessary. Further, be sure not to support the portion (center protruded portion) marked with arrows in the illustration.



2. SELECTION OF SNAP RING

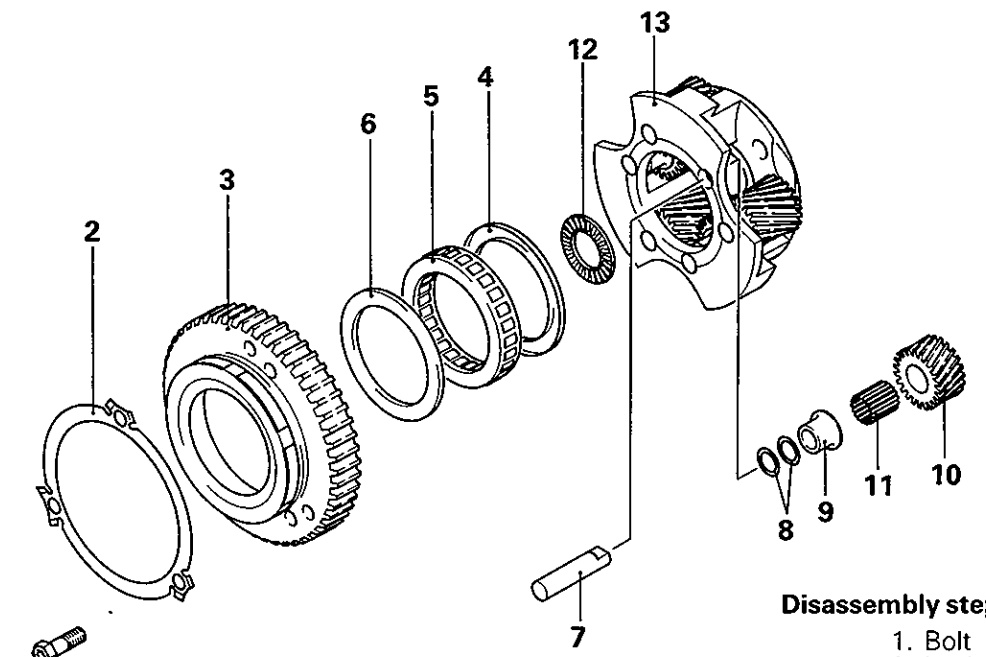
(1) Check clearance between the snap ring and clutch reaction plate. To check the clearance, hold entire circumference of the clutch reaction plate down with 50 N (5 kg, 11 lbs.) force. If clearance is out of standard value, select another snap ring to obtain the standard value.

Standard value:

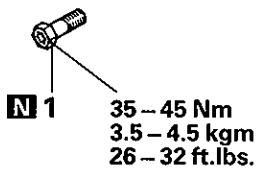
0.4 – 0.65 mm (0.016 – 0.026 in.) F4A21, F4A22
0.6 – 0.85 mm (0.024 – 0.031 in.) F4A23

9. PLANETARY GEAR

DISASSEMBLY AND REASSEMBLY

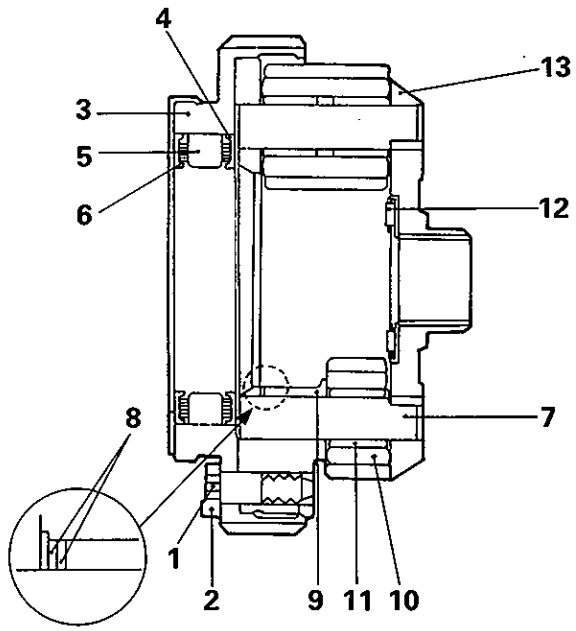


TFA0522

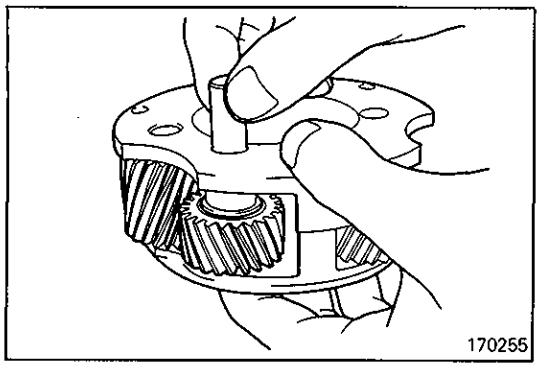


Disassembly steps

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



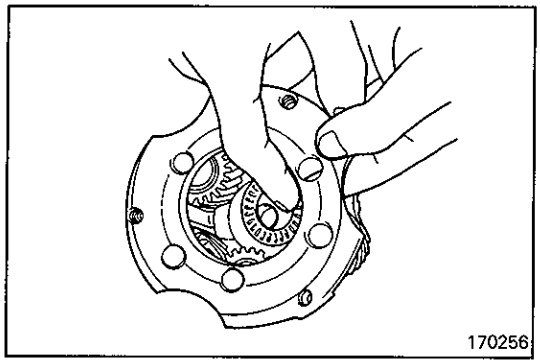
TFA0524



SERVICE POINT OF DISASSEMBLY

12. REMOVAL OF THRUST BEARING

(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.

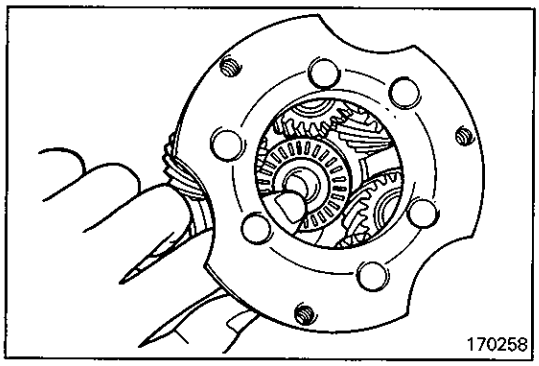


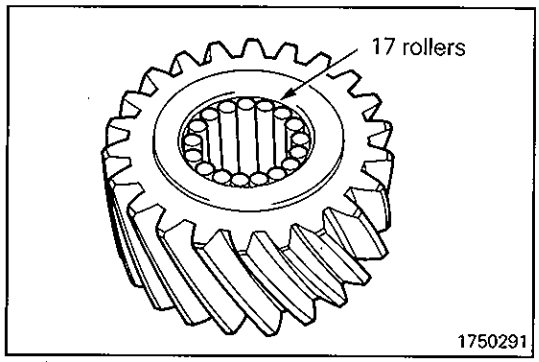
(2) Remove the thrust bearing.

SERVICE POINTS OF REASSEMBLY

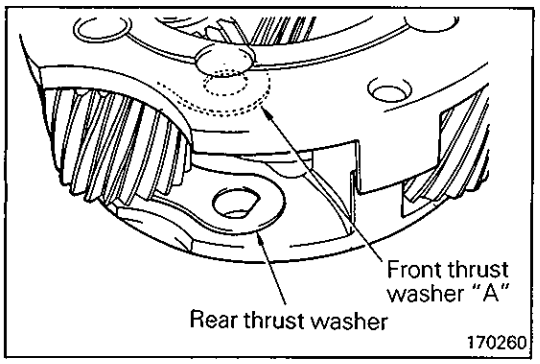
12. INSTALLATION OF THRUST BEARING

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

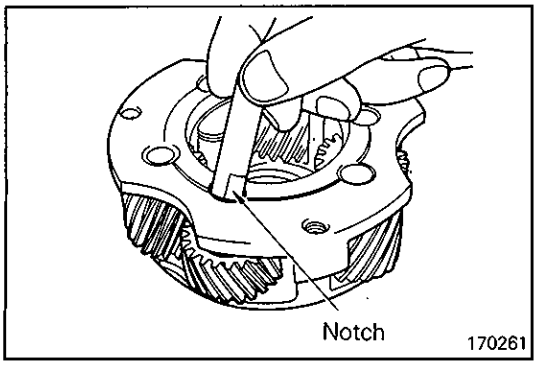




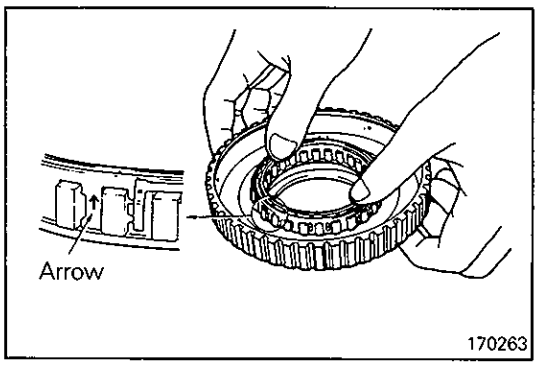
(2) Apply vaseline unsparingly to the inside surface of the short pinion and attach the 17 rollers on the surface.



(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.



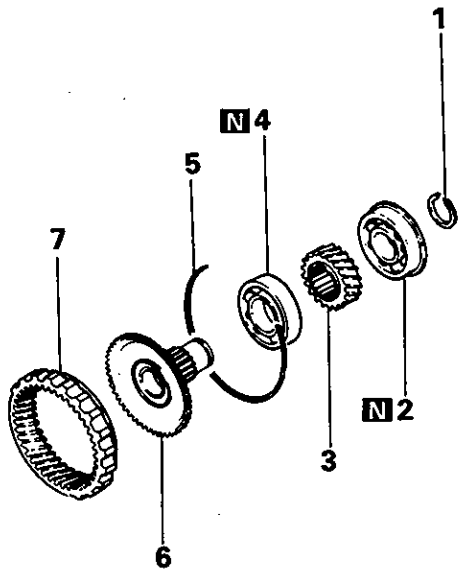
5. INSTALLATION OF ONE-WAY CLUTCH

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

NOTES

10. ANNULUS GEAR AND TRANSFER DRIVE GEAR SET

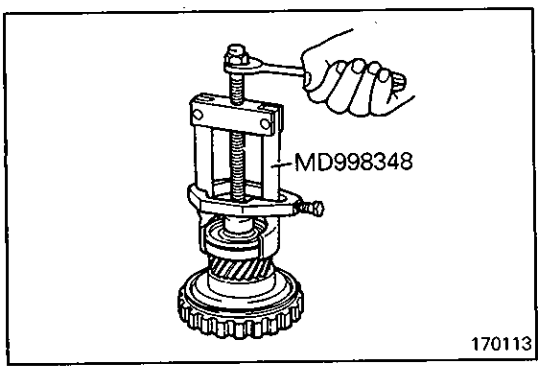
DISASSEMBLY AND REASSEMBLY



Disassembly steps

1. Snap ring
2. Bearing
3. Transfer drive gear
4. Bearing
5. Snap ring
6. Output flange
7. Annulus gear

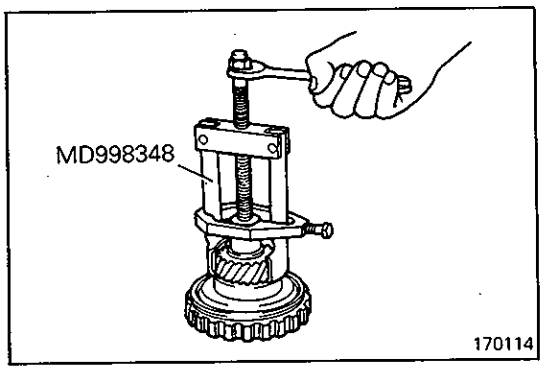
170178



170113

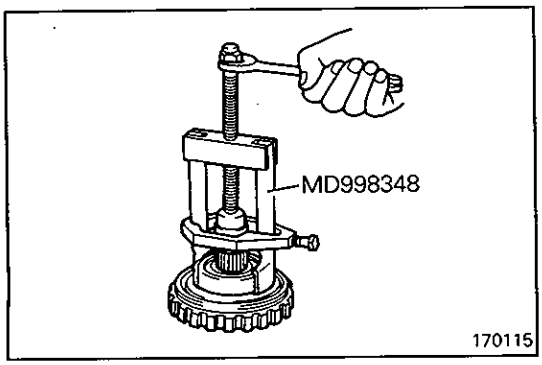
SERVICE POINTS OF DISASSEMBLY

2. REMOVAL OF BEARING



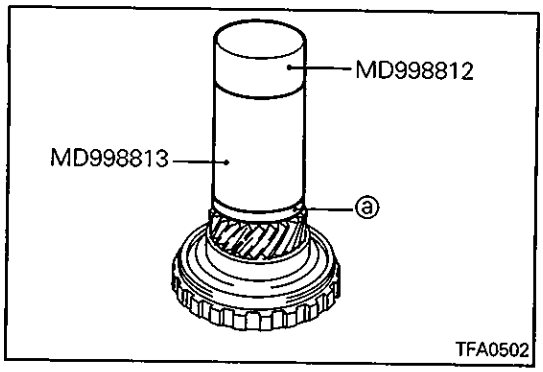
170114

3. REMOVAL OF TRANSFER DRIVE GEAR



170115

4. REMOVAL OF BEARING

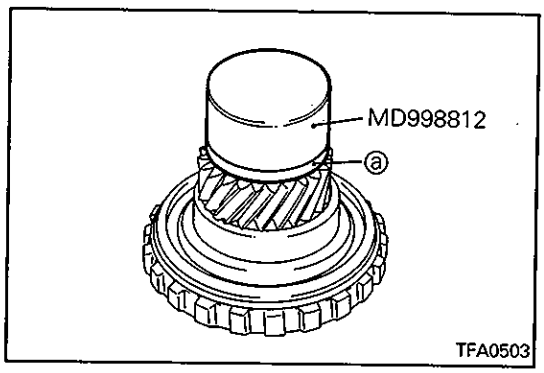


SERVICE POINTS OF REASSEMBLY

4. INSTALLATION OF BEARING

ⓐ: Special Tool

Transmission model	F3A21	F3A22, F4A21, F4A22, F4A23
Special tool part No.	MD998820	MD998824



3. INSTALLATION OF TRANSFER DRIVE GEAR

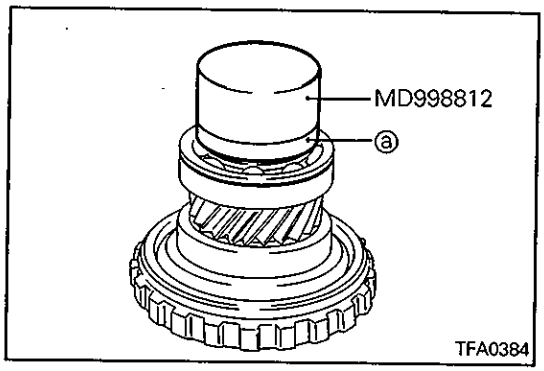
(1) Install the transfer drive gear in proper direction. The direction can be identified by the groove provided in one of the pinion side surfaces.

Caution

- **Replace the output flange and the transfer drive gear as a set.**

ⓐ: Special Tool

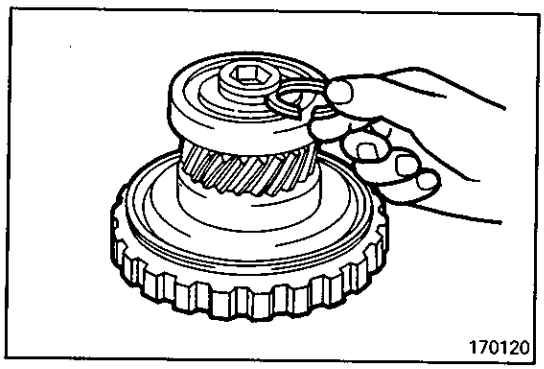
Transmission model	F3A21	F3A22, F4A21, F4A22, F4A23
Special tool part No.	MD998820	MD998824



2. INSTALLATION OF BEARING

ⓐ: Special Tool

Transmission model	F3A21	F3A22, F4A21, F4A22, F4A23
Special tool part No.	MD998820	MD998824

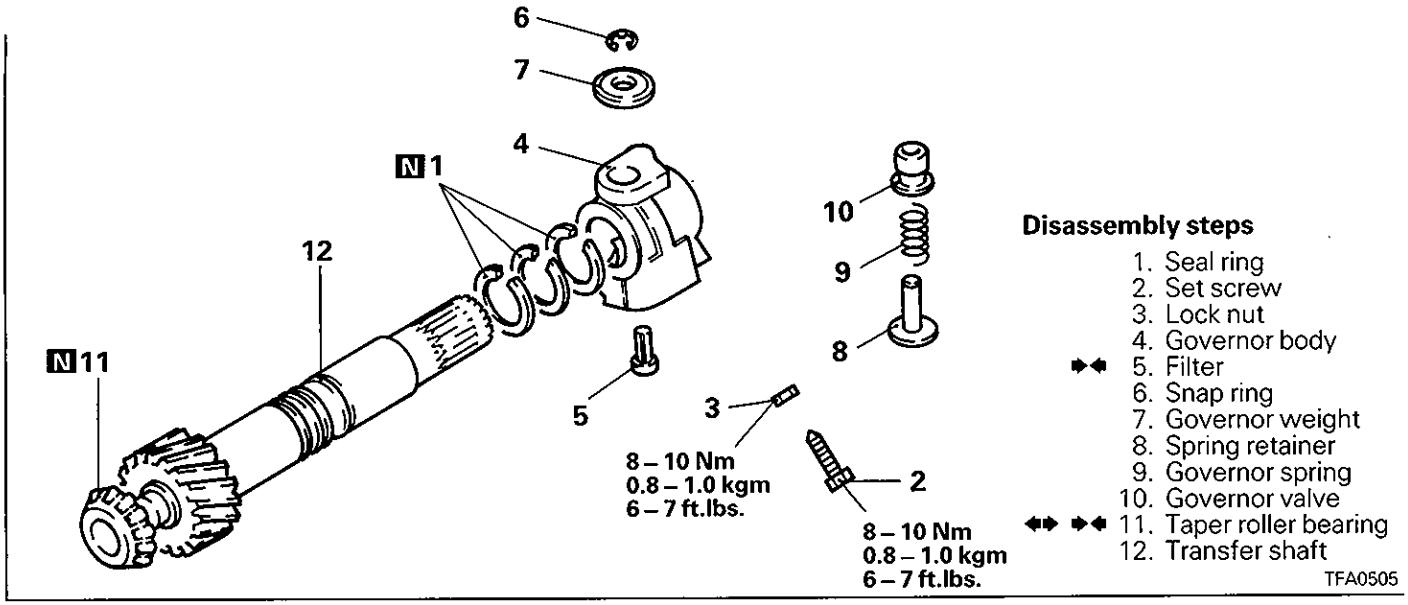


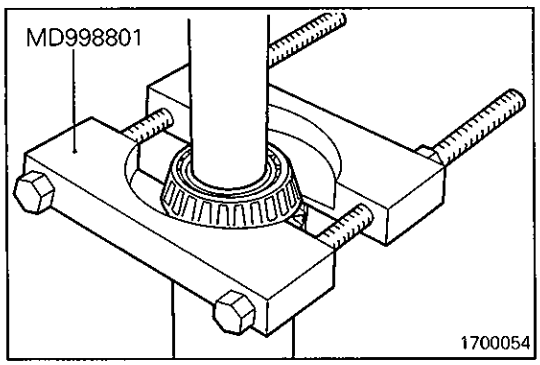
1. SELECTION OF SNAP RING

(1) Select the thickest snap ring that will fit in the groove.
Standard value: 0 – 0.06 mm (0 – 0.0024 in.)

11. TRANSFER SHAFT / GOVERNOR (3-SPEED MODEL)

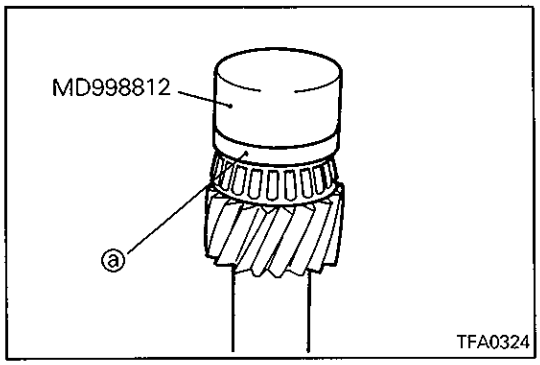
DISASSEMBLY AND REASSEMBLY





SERVICE POINT OF DISASSEMBLY

11. REMOVAL OF TAPER ROLLER BEARING

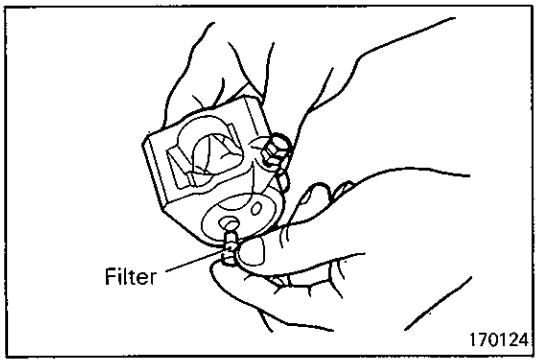


SERVICE POINTS OF REASSEMBLY

11. INSTALLATION OF TAPER ROLLER BEARING

ⓐ: Special tool

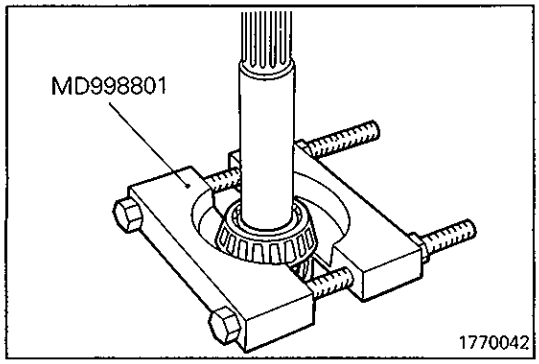
Transmission model	F3A21	F3A22
Special tool part No.	MD998815	MD998816



5. INSTALLATION OF FILTER

(1) If dust has accumulated inside the filter, replace it with a new one.

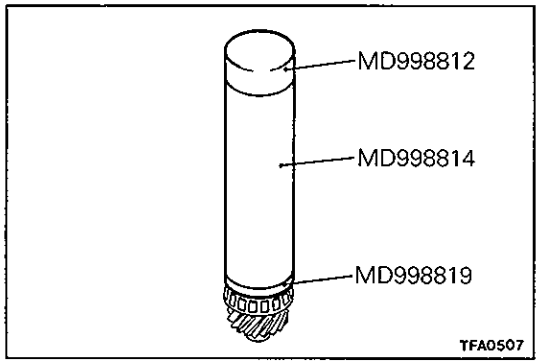
NOTES



12. TRANSFER SHAFT, TRANSFER DRIVEN GEAR (4-SPEED MODEL)

TRANSFER SHAFT BEARING

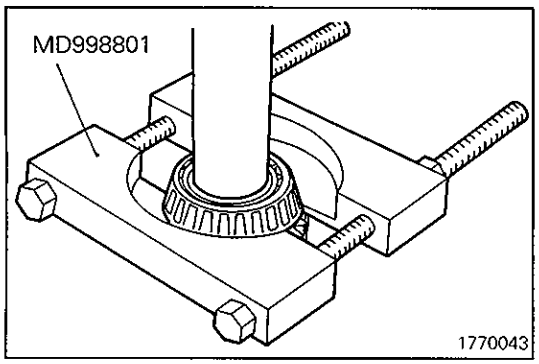
REMOVAL OF TRANSFER SHAFT BEARING



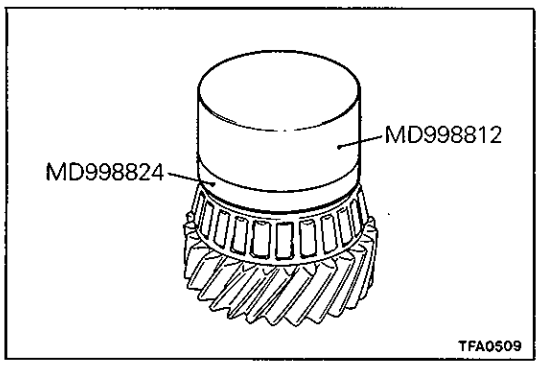
INSTALLATION OF TRANSFER SHAFT BEARING

TRANSFER DRIVEN GEAR BEARING

REMOVAL OF TRANSFER DRIVEN GEAR BEARING



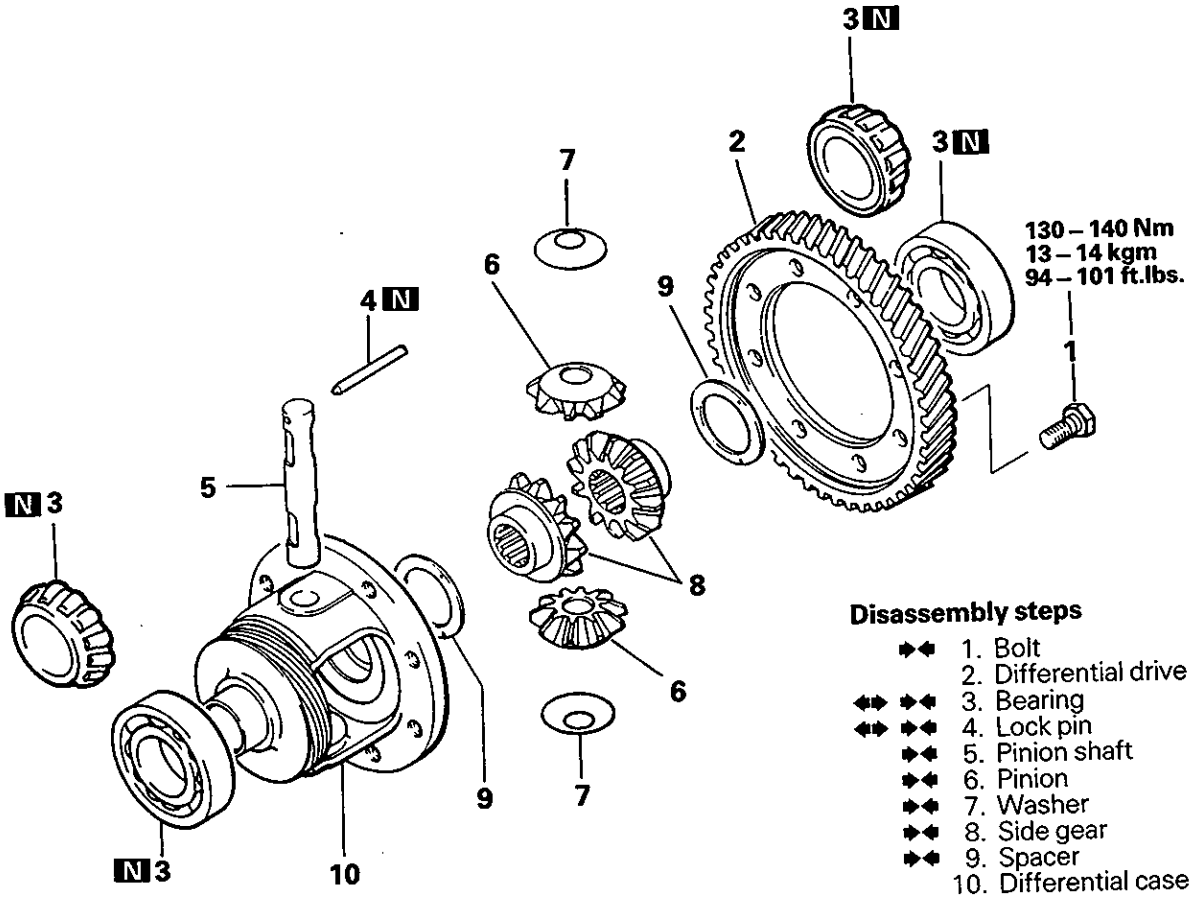
INSTALLATION OF TRANSFER DRIVEN GEAR BEARING



NOTES

13. DIFFERENTIAL

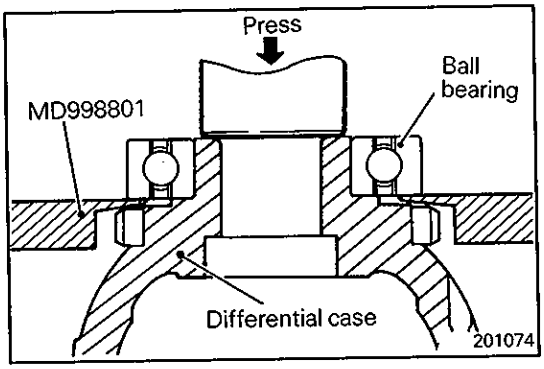
DISASSEMBLY AND REASSEMBLY

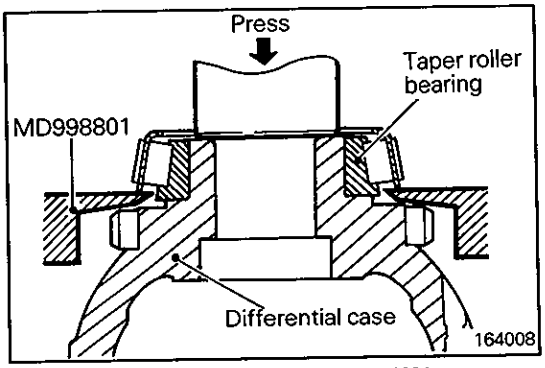


Disassembly steps

1. Bolt
2. Differential drive gear
3. Bearing
4. Lock pin
5. Pinion shaft
6. Pinion
7. Washer
8. Side gear
9. Spacer
10. Differential case

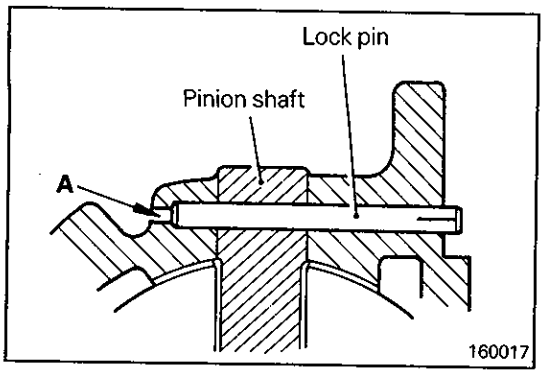
160119

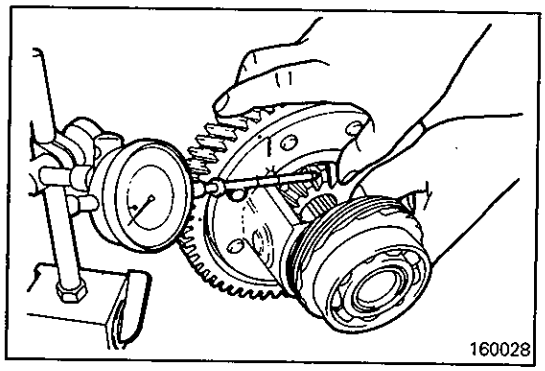


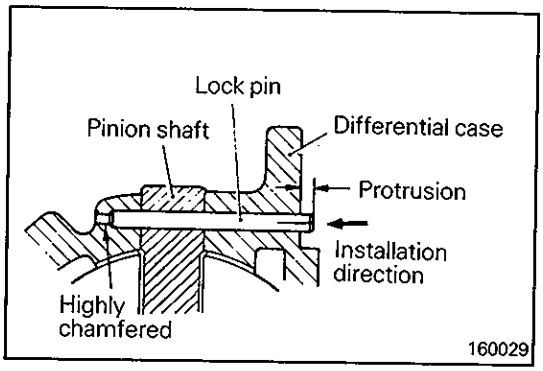


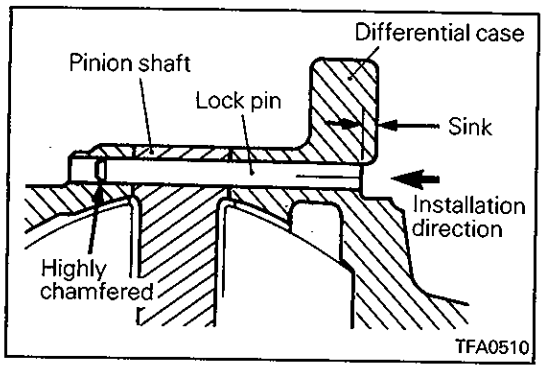
SERVICE POINTS OF DISASSEMBLY

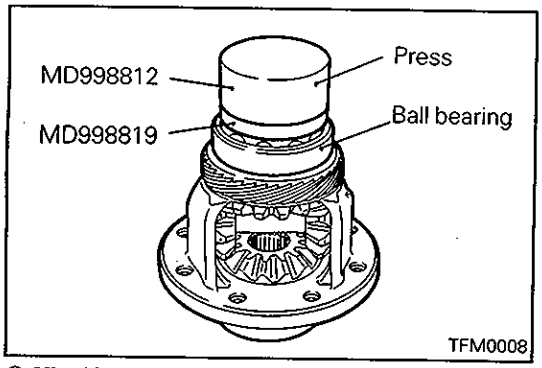
3. REMOVAL OF BEARING











4. REMOVAL OF LOCK PIN

(1) Drive out the lock pin with a punch inserted in hole "A".

SERVICE POINTS OF REASSEMBLY

9. / 8. / 7. / 6. / 5. INSTALLATION OF SPACER / SIDE GEAR / WASHER / PINION / PINION SHAFT

(1) With the spacers installed at the back of the differential side gears, install the gears in the differential case. When reusing the removed parts, install them in the original positions noted during disassembly. When using new differential side gears, install spacers of medium thickness $1.0\ ^{0}_{-0.07}$ mm ($0.039\ ^{0}_{-0.003}$ in.).

(2) Install the washers at the back of the pinion gears, install the gears in the differential case, and then insert the pinion shaft.

(3) Measure the backlash between the side gear and pinion gear. The backlash should be 0.025 to 0.150 mm (0.0010 to 0.0059 in.) and the right and left gear pairs should have equal backlash. If the backlash is not within the specified range, disassemble and reassemble them using spacers selected for correct backlash.

Backlash: 0.025 – 0.150 mm (0.0010 – 0.0059 in.)

4. INSTALLATION OF LOCK PIN (F3A21, F4A21)

(1) Align the lock pin hole in the pinion shaft with that in the case and press fit the lock pin until its protrusion becomes 3 mm (0.12 in.) or less.

Caution
- **Do not reuse the lock pin.**
- **Do not use a lock pin which requires only 2000 N (440 lbs.) or less force for installation.**

4. INSTALLATION OF LOCK PIN (F3A22, F4A22)

(1) Align the lock pin hole in the pinion shaft with that in the case and press fit the lock pin until its sink from the differential case end becomes 1 mm (0.04 in.) or more.

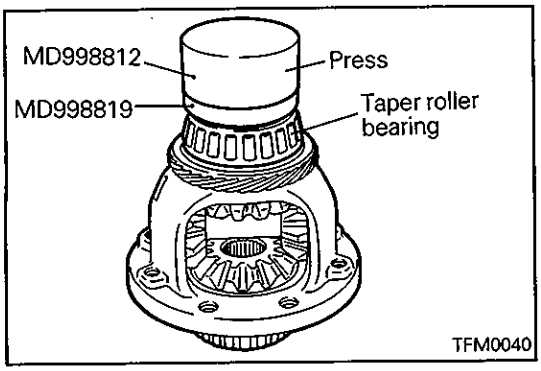
Caution
- **Do not reuse the lock pin.**
- **Do not use a lock pin which requires only 2000 N (440 lbs.) or less force for installation.**

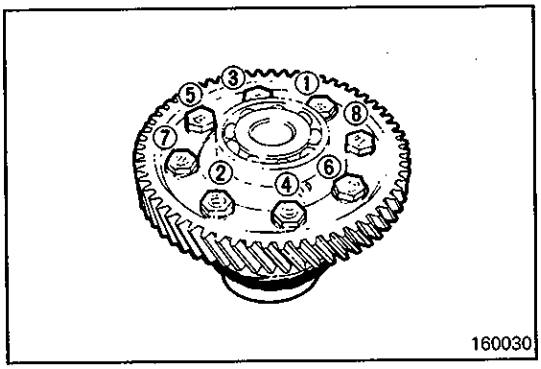
4. INSTALLATION OF LOCK PIN (F4A23)

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

Caution
- **The lock pin should be pressed to a level lower than the differential case flange surface.**

3. INSTALLATION OF BEARING





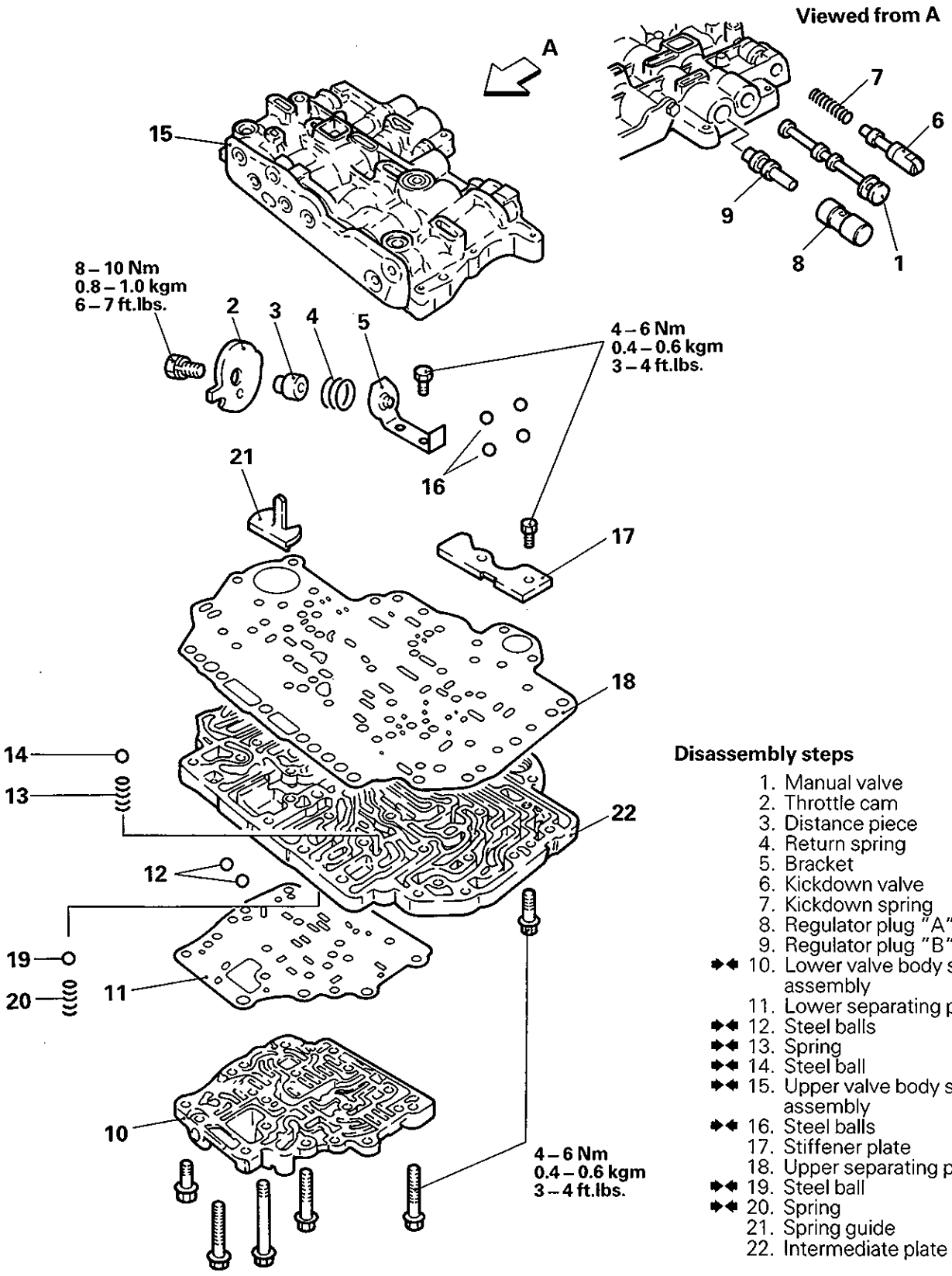
1. TIGHTENING OF DRIVE GEAR

(1) Apply automatic transmission fluid to the bolts and tighten the bolts to the specified torque in the sequence shown in the illustration.

NOTES

14. VALVE BODY (3-SPEED MODEL)

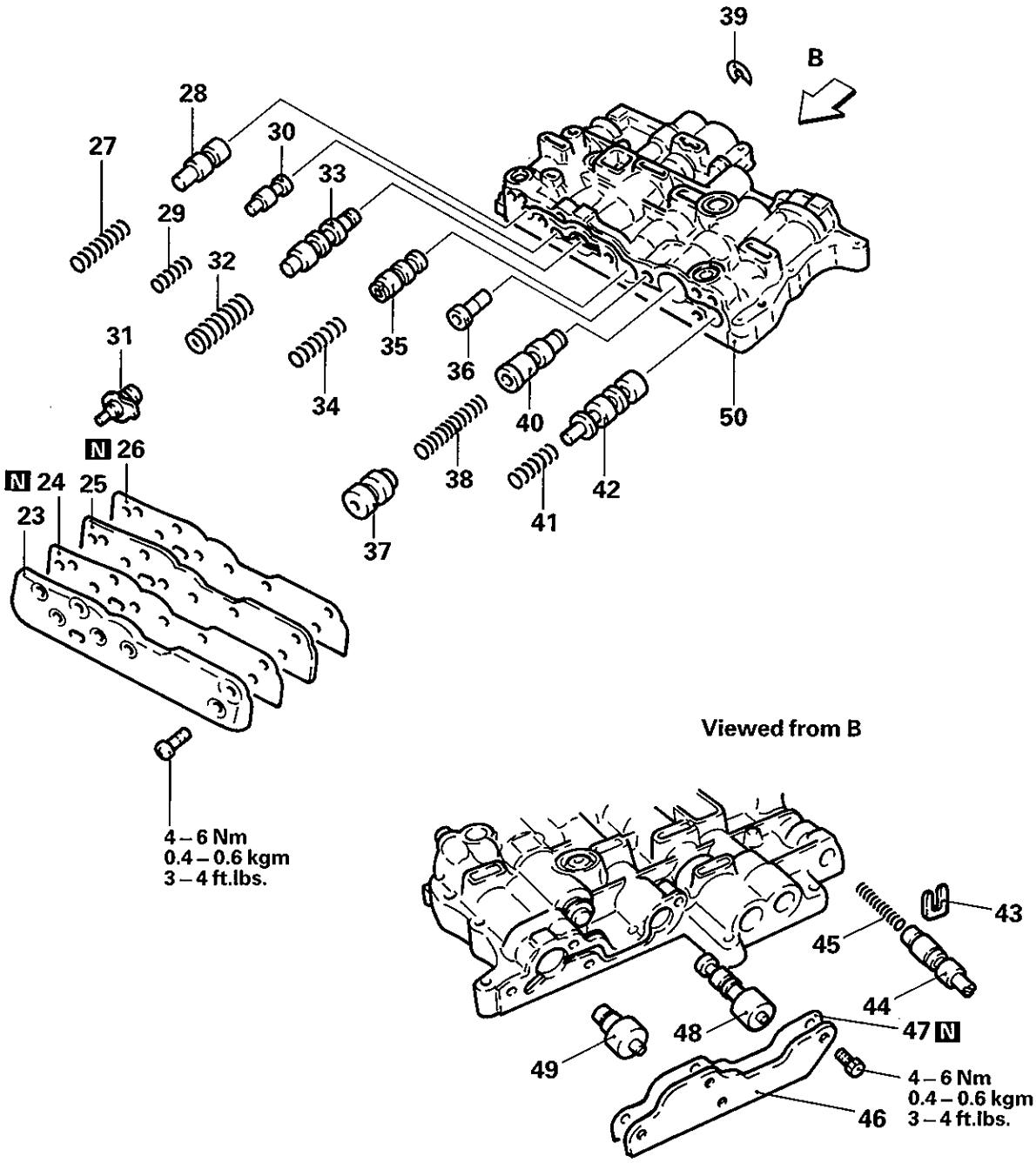
DISASSEMBLY AND REASSEMBLY



Disassembly steps

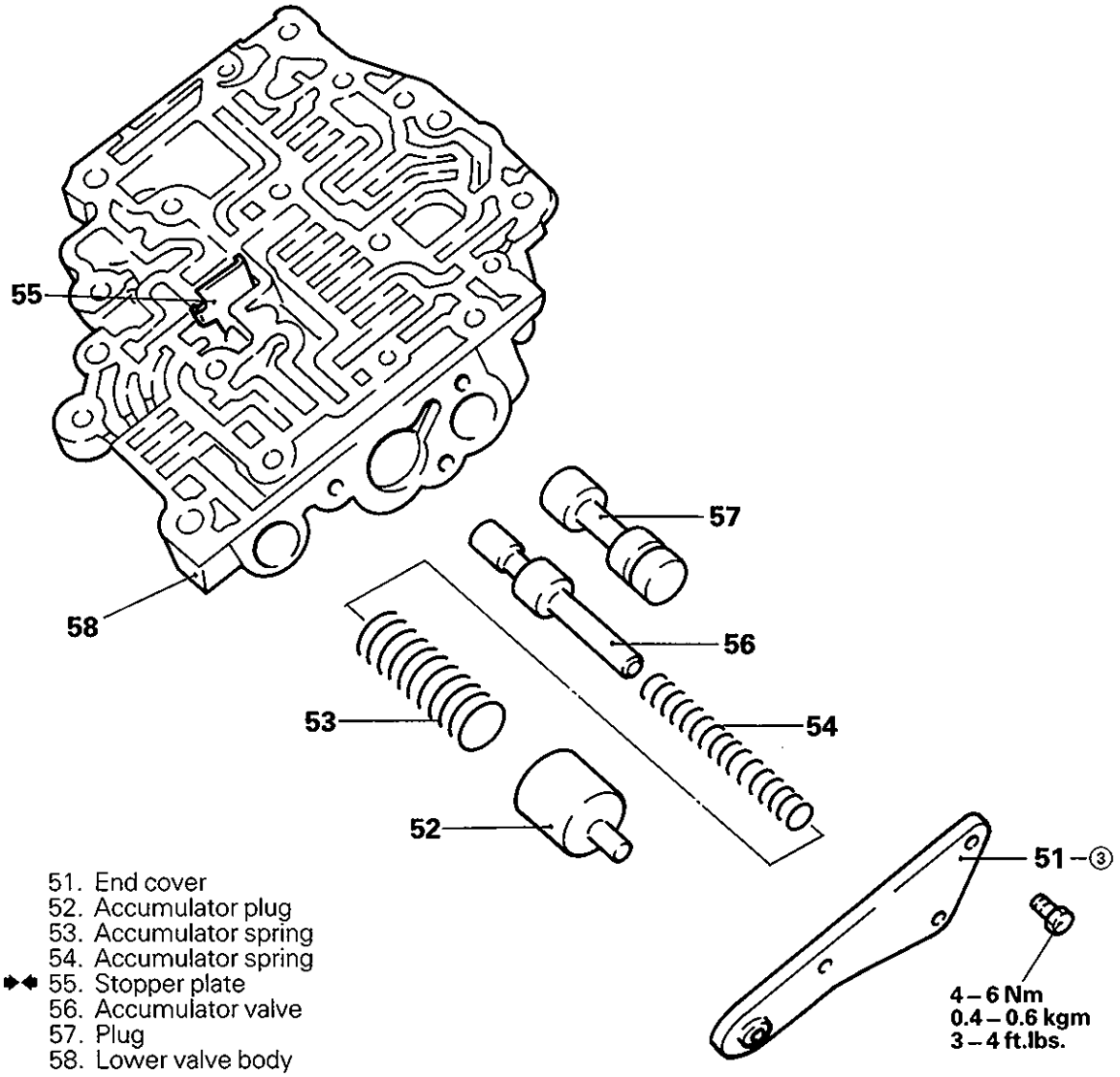
1. Manual valve
2. Throttle cam
3. Distance piece
4. Return spring
5. Bracket
6. Kickdown valve
7. Kickdown spring
8. Regulator plug "A"
9. Regulator plug "B"
10. ◆◆ Lower valve body sub assembly
11. Lower separating plate
12. ◆◆ Steel balls
13. ◆◆ Spring
14. ◆◆ Steel ball
15. ◆◆ Upper valve body sub assembly
16. ◆◆ Steel balls
17. Stiffener plate
18. Upper separating plate
19. ◆◆ Steel ball
20. ◆◆ Spring
21. Spring guide
22. Intermediate plate

TFA0511



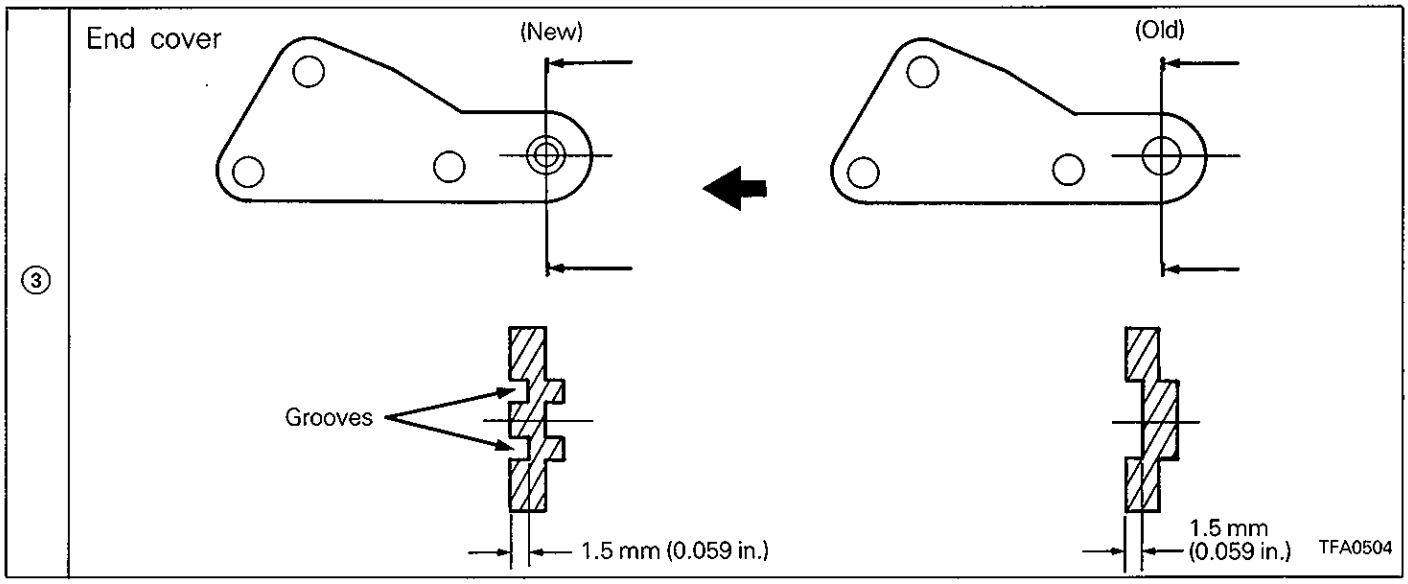
23. Front end cover
24. Front end cover gasket
25. Front end plate
26. Front end plate gasket
27. Range control spring
28. Range control valve
29. Torque converter control spring
30. Torque converter control valve
31. Line pressure adjusting screw
32. Regulator spring
33. Regulator valve
34. 1-2 shift spring
35. 1-2 shift plug
36. Filter
37. Engine brake valve
38. 2-3 control spring
39. Snap ring
40. 2-3 control valve
41. 2-3 shift spring
42. 2-3 shift valve
43. Stopper plate
44. Throttle valve
45. Throttle spring
46. Rear end cover
47. Gasket
48. 1-2 shift valve
49. 2-3 shift plug
50. Upper valve body

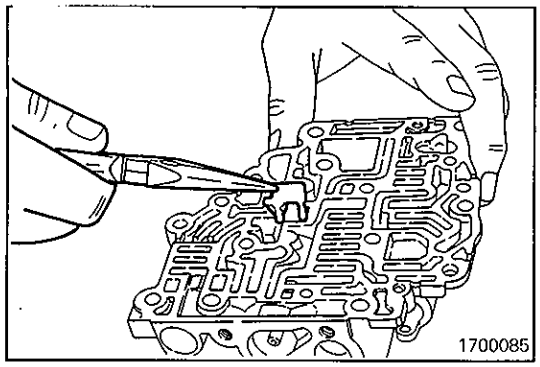
TFA0512



51. End cover
52. Accumulator plug
53. Accumulator spring
54. Accumulator spring
◆◆ 55. Stopper plate
56. Accumulator valve
57. Plug
58. Lower valve body

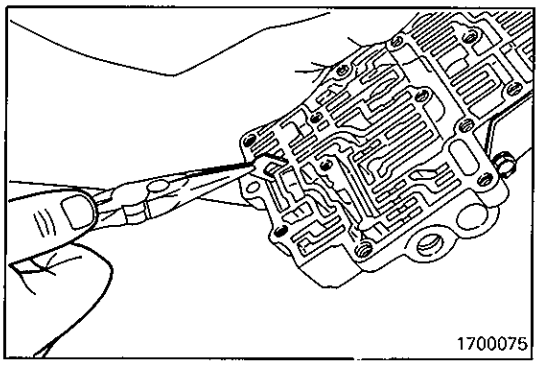
Detail of Change



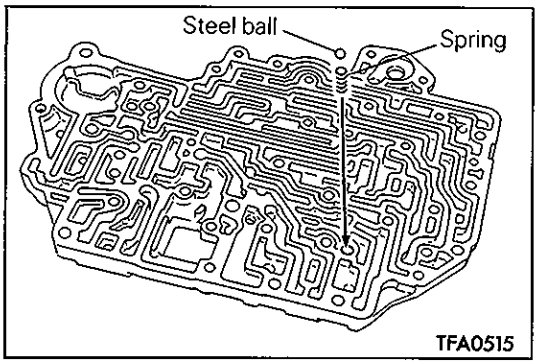


SERVICE POINTS OF REASSEMBLY

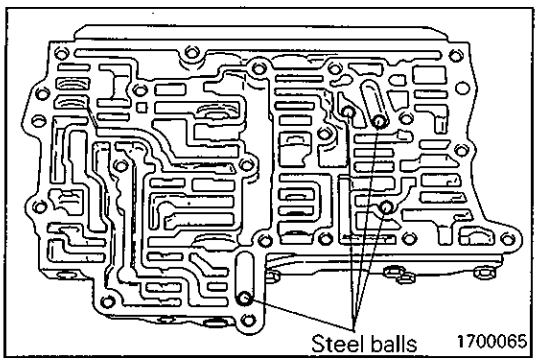
55. INSERT OF STOPPER PLATE



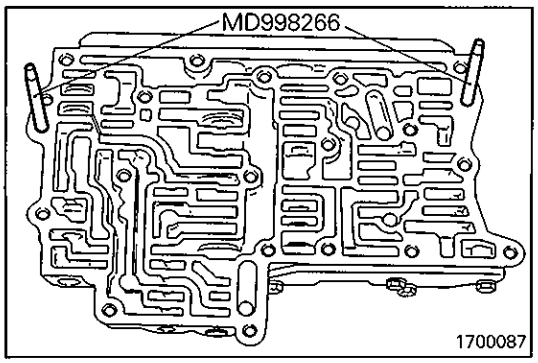
43. INSERT OF STOPPER PLATE



20. / 19. LOCATION OF SPRING / STEEL BALL

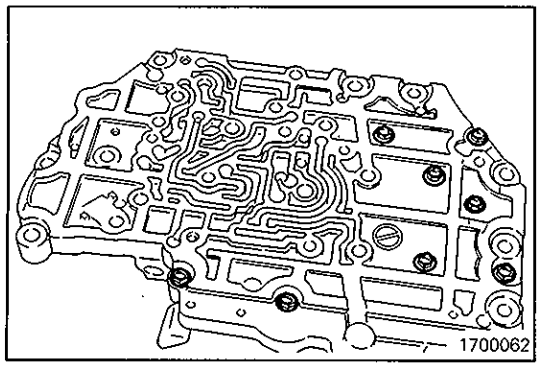


16. LOCATION OF STEEL BALLS

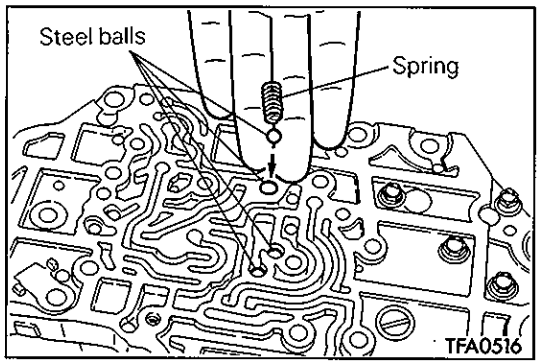


15. INSTALLATION OF UPPER VALVE BODY SUB ASSEMBLY

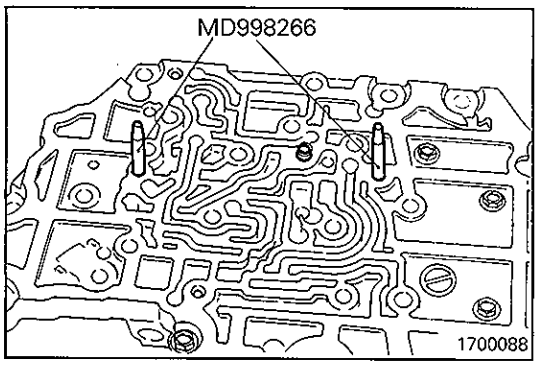
(1) Install the special tools on the upper valve body.



(2) Fasten the upper valve body, intermediate plate and upper separating plate together with the eight bolts. Remove the special tools.

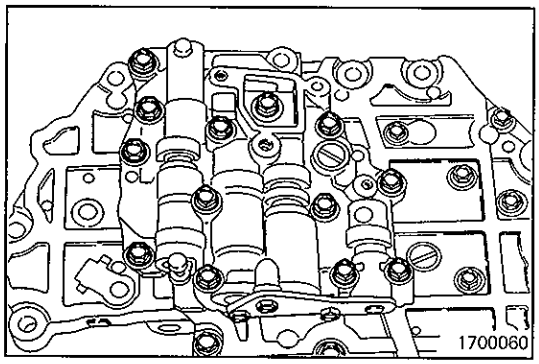


14. 12. / 13. LOCATION OF STEEL BALL / SPRING



10. INSTALLATION OF LOWER VALVE BODY SUB ASSEMBLY

(1) Install the special tools on the intermediate plate.

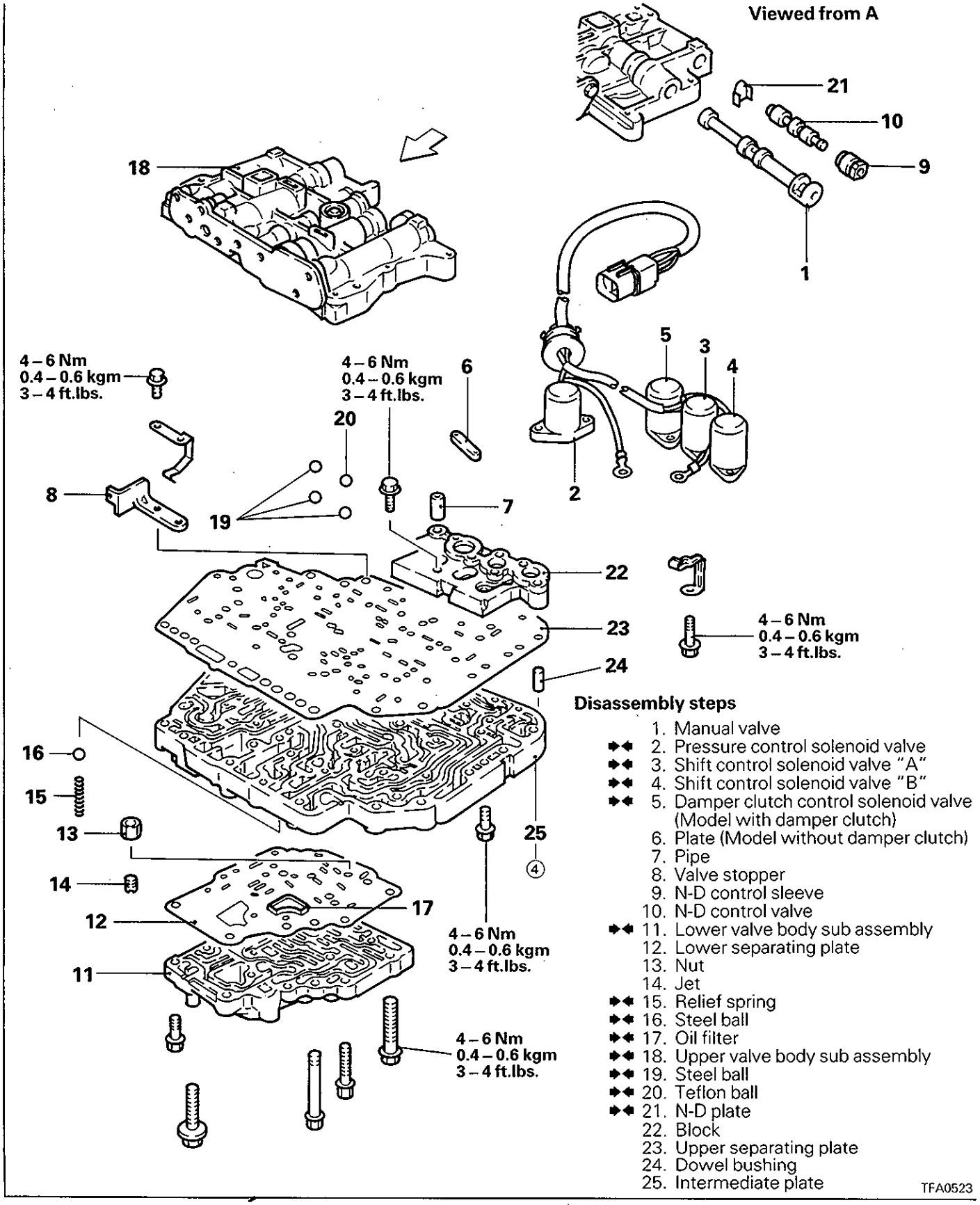


(2) Secure the lower valve body with the 13 bolts. Remove the special tools.

NOTES

15. VALVE BODY (4-SPEED MODEL)

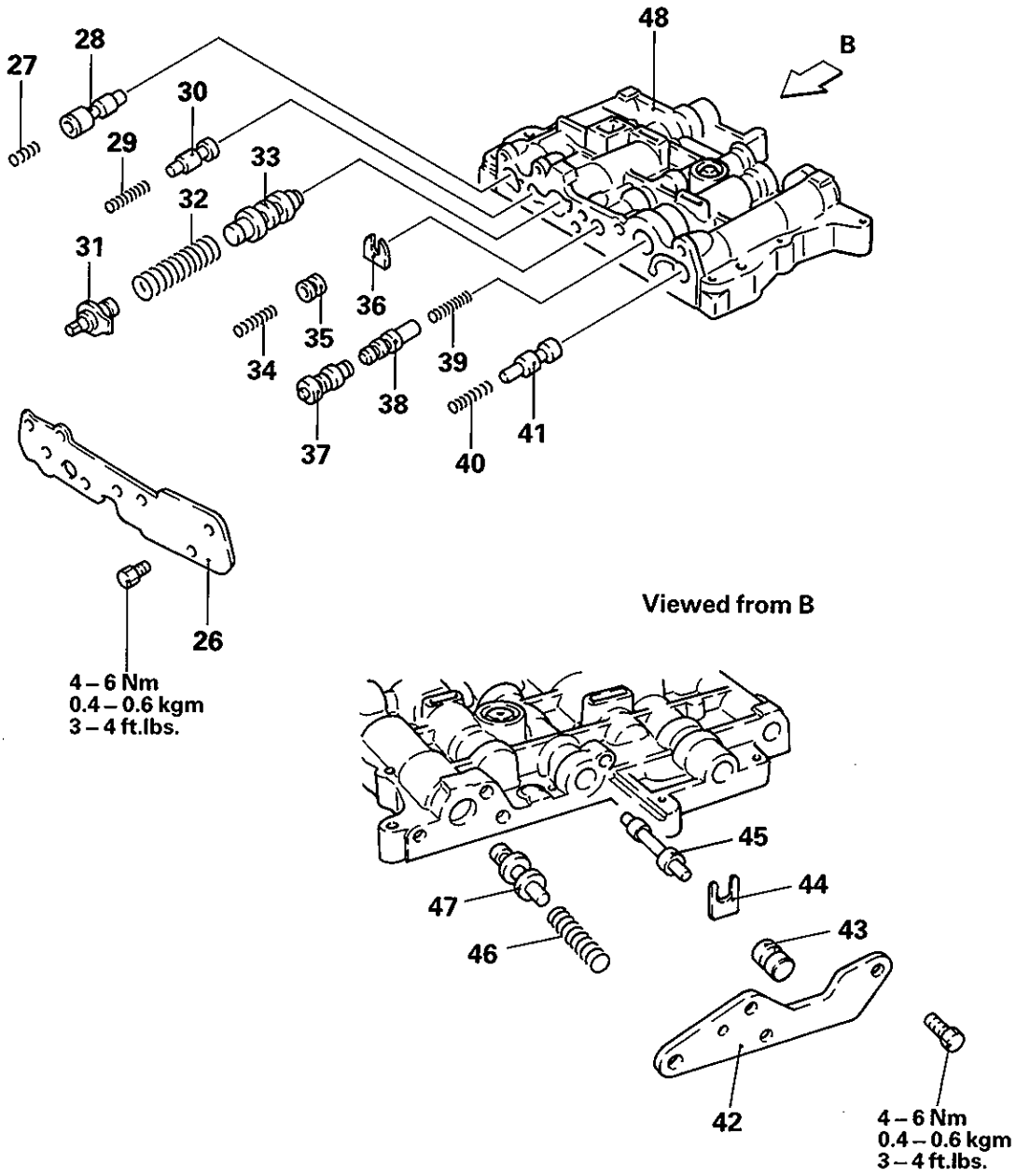
DISASSEMBLY AND REASSEMBLY



Disassembly steps

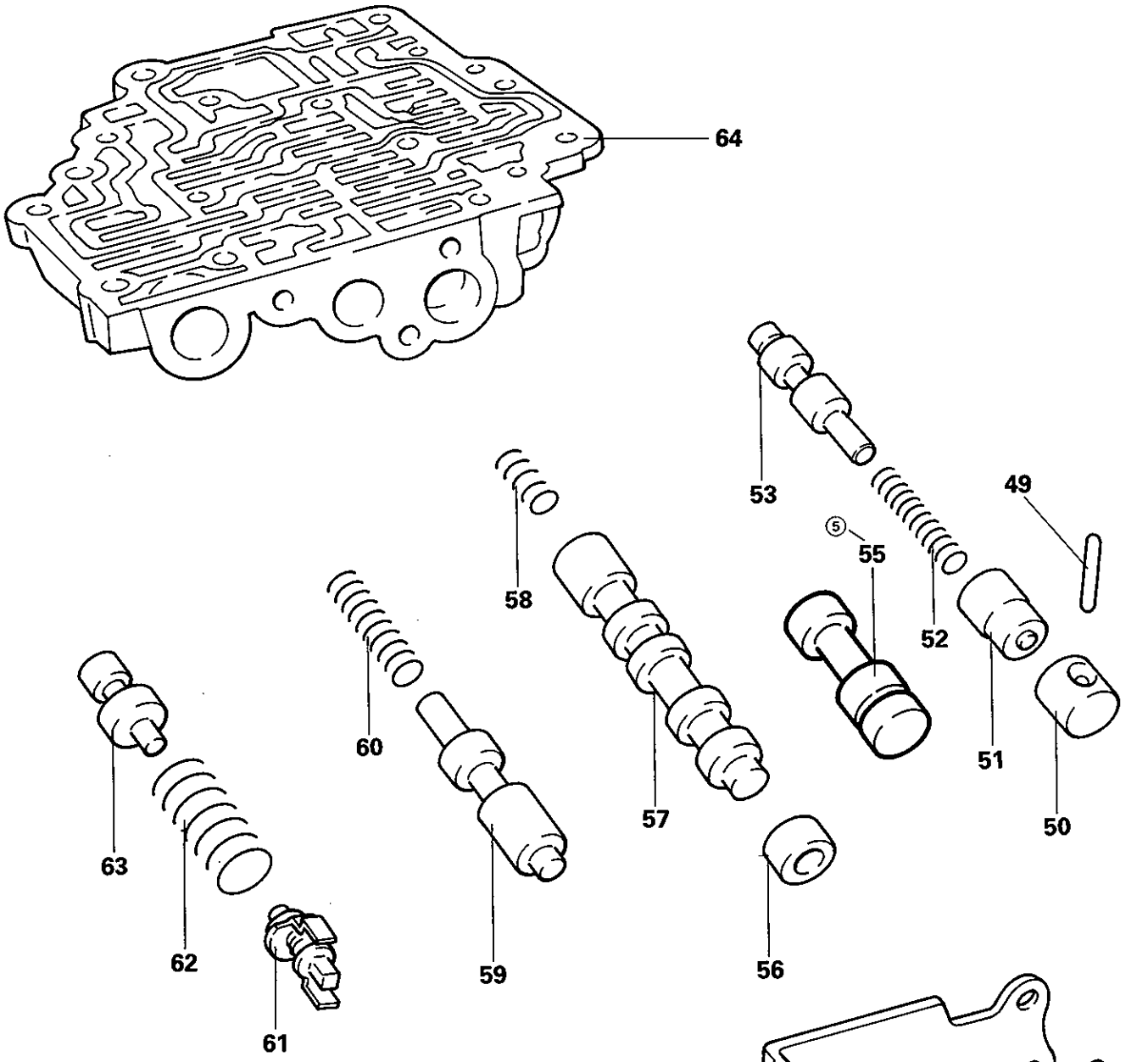
1. Manual valve
2. Pressure control solenoid valve
3. Shift control solenoid valve "A"
4. Shift control solenoid valve "B"
5. Damper clutch control solenoid valve (Model with damper clutch)
6. Plate (Model without damper clutch)
7. Pipe
8. Valve stopper
9. N-D control sleeve
10. N-D control valve
11. Lower valve body sub assembly
12. Lower separating plate
13. Nut
14. Jet
15. Relief spring
16. Steel ball
17. Oil filter
18. Upper valve body sub assembly
19. Steel ball
20. Teflon ball
21. N-D plate
22. Block
23. Upper separating plate
24. Dowel bushing
25. Intermediate plate

TFA0523



26. Front end cover
27. Pressure control spring
28. Pressure control valve
29. Torque converter control spring
30. Torque converter control valve
31. Adjusting screw
32. Regulator spring
33. Regulator valve
34. Shift control spring A
◆◆ 35. Stopper plate
36. Shift control plug
37. Rear clutch exhaust valve A
38. Rear clutch exhaust valve B
39. Rear clutch exhaust spring
40. 2-3/4-3 shift spring
41. 2-3/4-3 shift valve
42. Rear end cover
43. Shift control plug B
◆◆ 44. Stopper plate
45. Shift control valve
46. 1-2 shift spring
47. 1-2 shift valve
48. Upper valve body

TFA0518

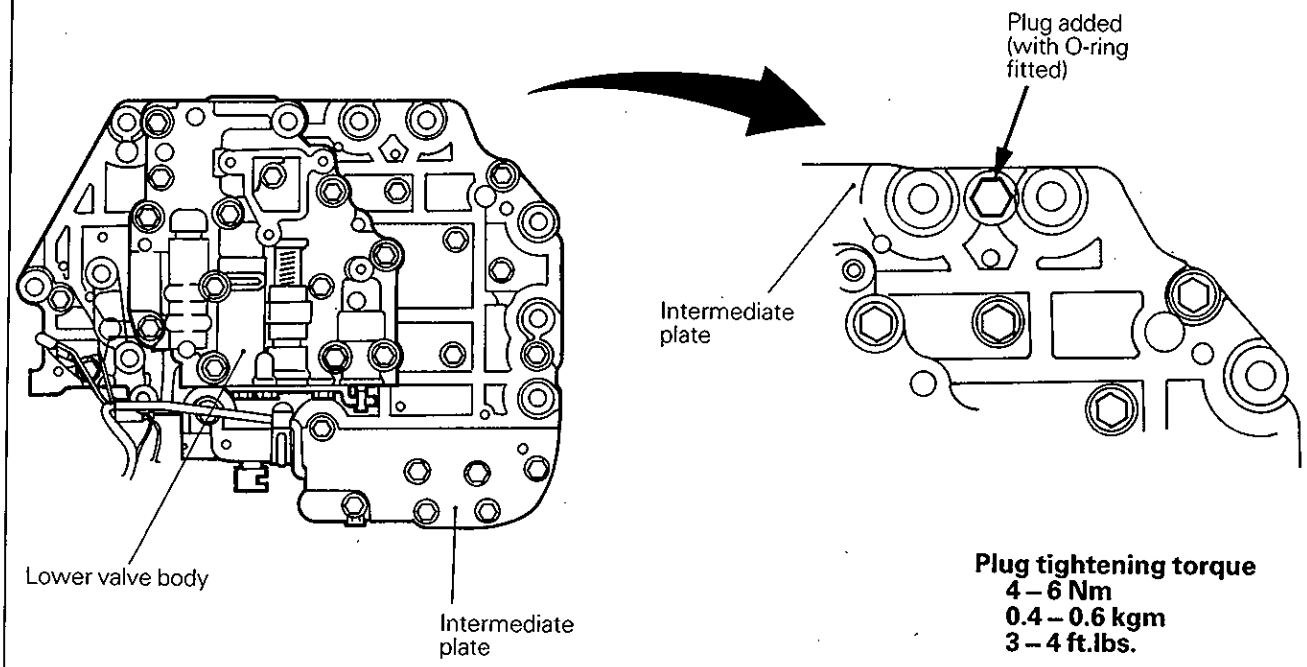


49. Pin
50. Stopper
51. End clutch plug
52. End clutch spring
53. End clutch valve
54. End cover
55. Plug (Model without damper clutch)
56. Damper clutch control sleeve (Model with damper clutch)
57. Damper clutch control valve (Model with damper clutch)
58. Damper clutch control spring (Model with damper clutch)
59. N-R control valve
60. N-R control spring
61. Adjusting screw
62. Reducing spring
63. Reducing valve
64. Lower valve body

TFA0622

Details of Change

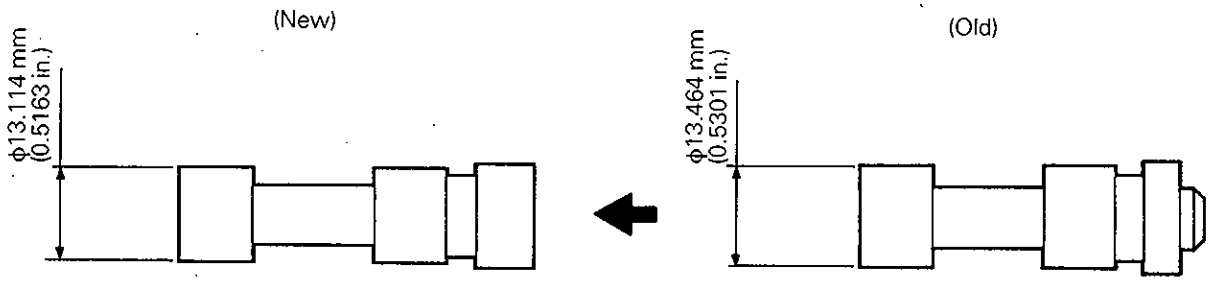
④ Intermediate plate



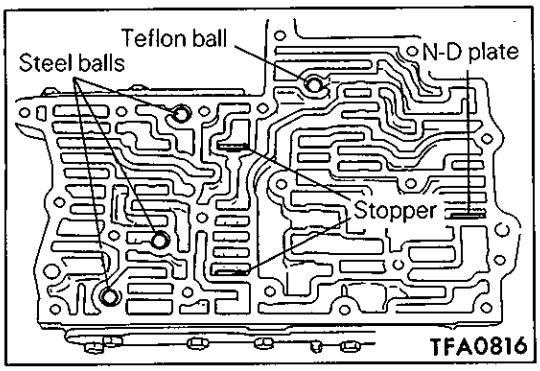
Plug tightening torque
4 – 6 Nm
0.4 – 0.6 kgm
3 – 4 ft.lbs.

TFA0520

⑤ Plug

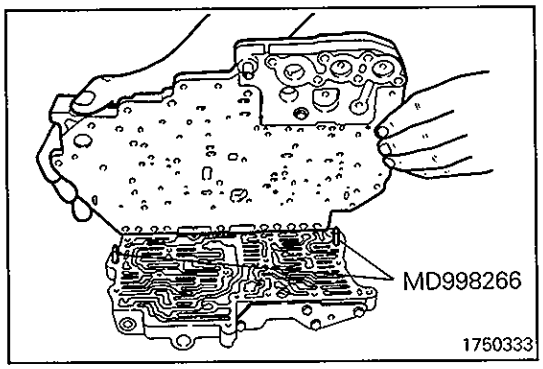


TFA0521



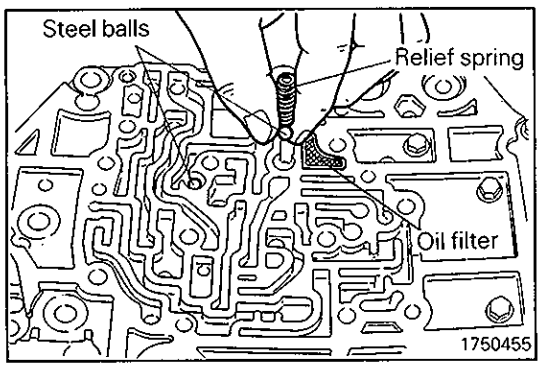
SERVICE POINTS OF REASSEMBLY

44. 35. / 21. / 20. / 19. LOCATION OF STOPPER PLATE / N-D PLATE / TEFLON BALL / STEEL BALL

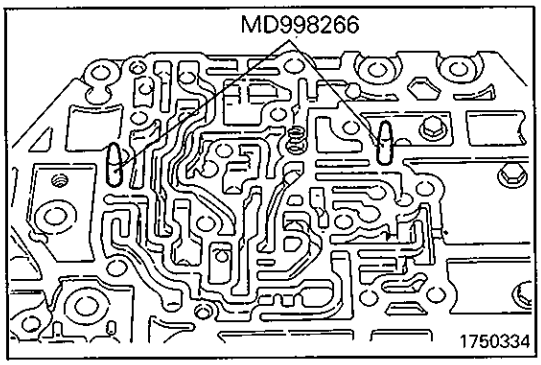


18. INSTALLATION OF UPPER VALVE BODY SUB ASSEMBLY

(1) Mount the special tools, and secure the upper separating plate and intermediate plate with the eight mounting bolts. Then, demount the special tools.

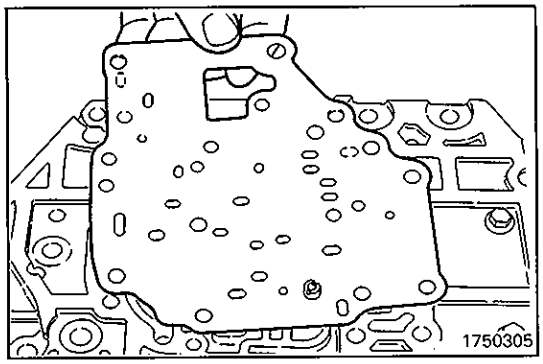


17. /16./ 15. LOCATION OF OIL FILTER / STEEL BALL / RELIEF SPRING

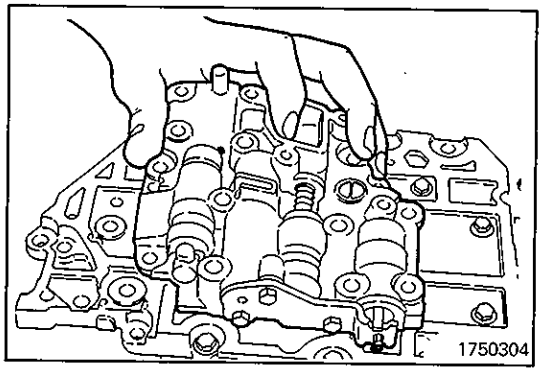


11. INSTALLATION OF LOWER VALVE BODY SUB ASSEMBLY

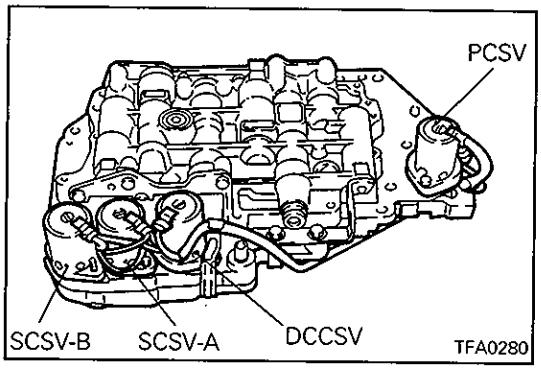
(1) Mount the special tools on the intermediate plate.



(2) Install the separating plate.



(3) Secure the lower valve body with the bolts. Then, remove the special tools.



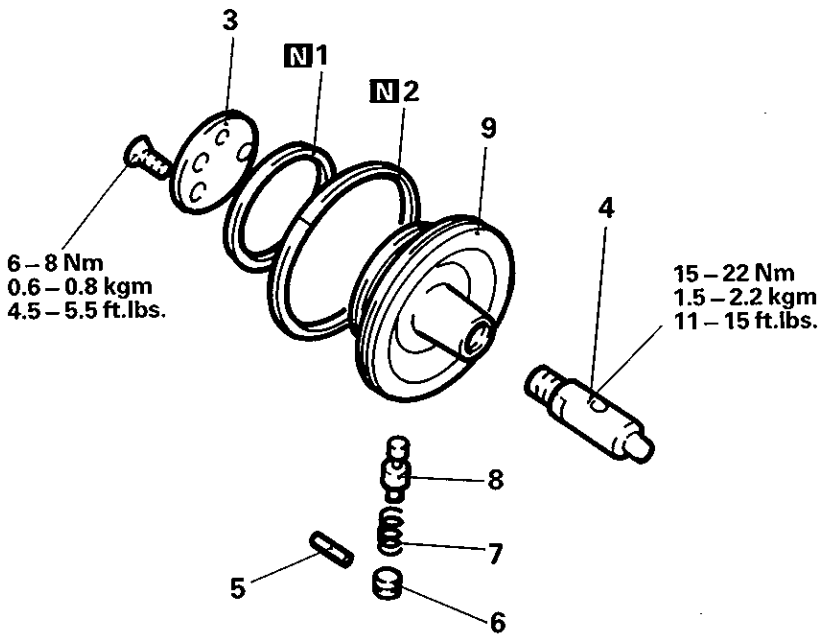
5. / 4. / 3. / 2. INSTALLATION OF SOLENOID VALVE ASSEMBLY

(1) Install each solenoid valve in the position shown in the illustration.

16. KICKDOWN SERVO

DISASSEMBLY AND REASSEMBLY

(3-speed model)



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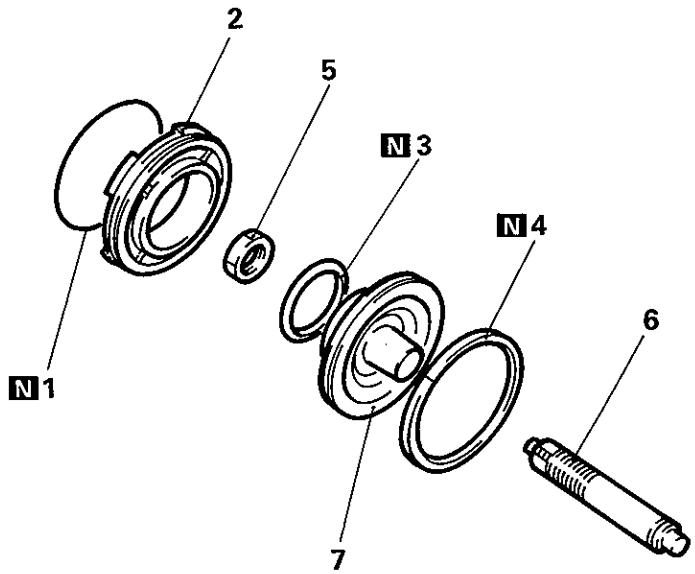
Disassembly steps

1. Seal ring
2. Seal ring
3. Cover
4. Kickdown servo rod
5. Pin
6. Plug
7. Spring
8. Kickdown piston valve
9. Kickdown servo piston

(4-speed model)



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

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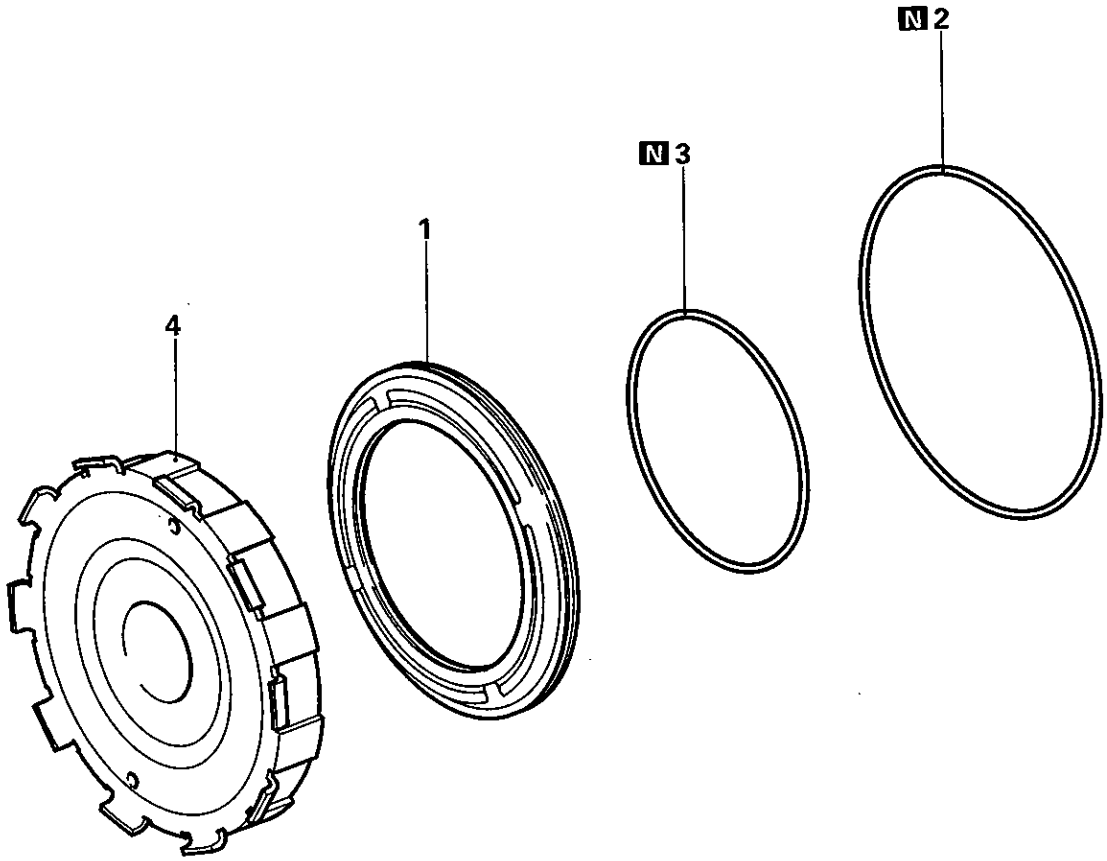
NOTES

17. LOW-REVERSE BRAKE

DISASSEMBLY AND REASSEMBLY



Disassembly steps

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

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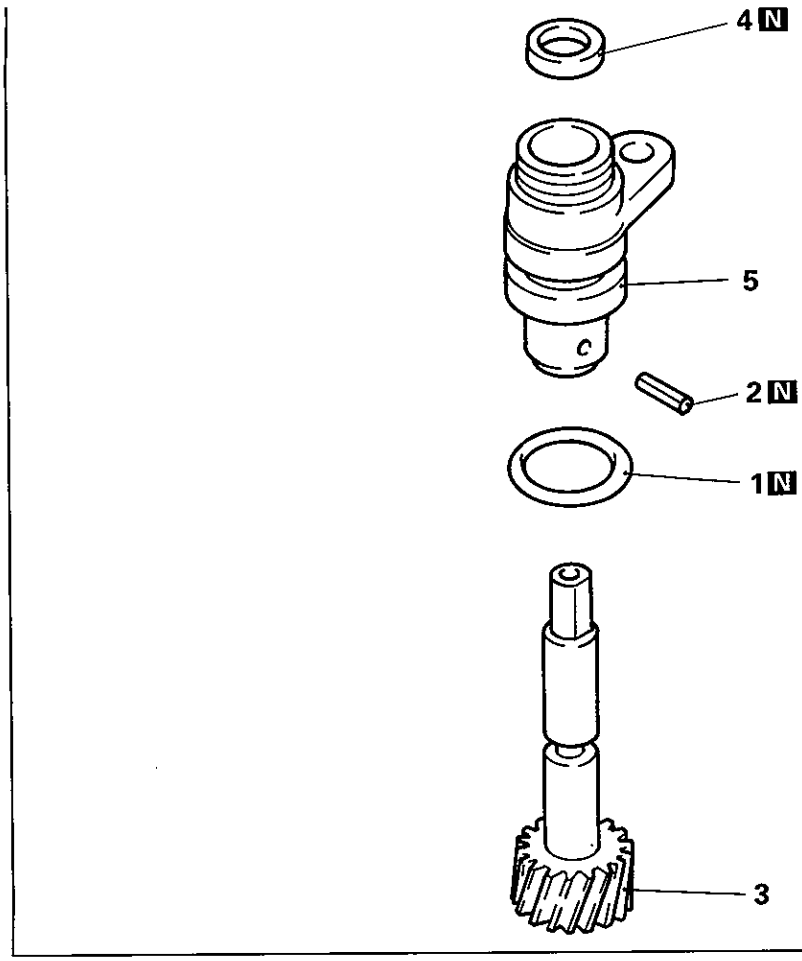
NOTES

18. SPEEDOMETER GEAR

DISASSEMBLY AND REASSEMBLY



Disassembly steps

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

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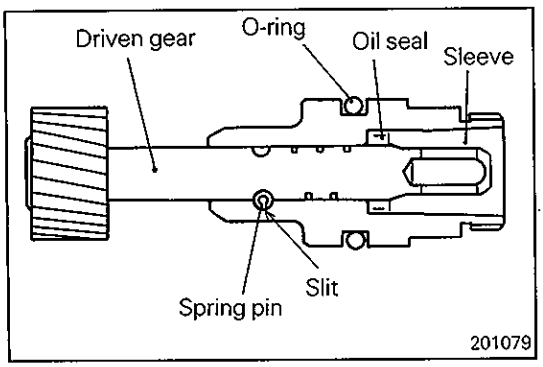


SERVICE POINTS OF REASSEMBLY

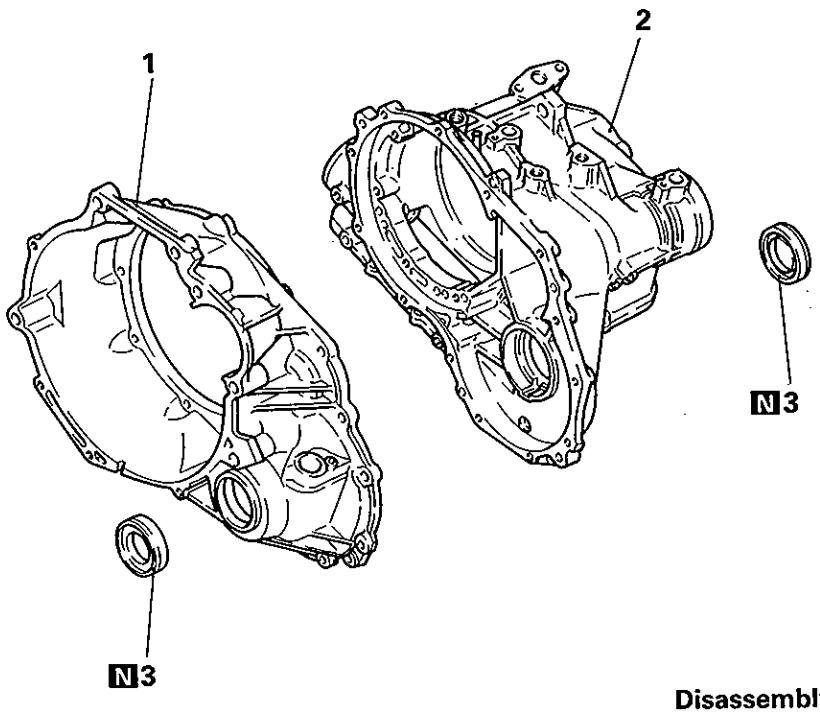
2. INSTALLATION OF SPRING PIN

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

NOTES

19. DRIVE SHAFT OIL SEAL

DISASSEMBLY AND REASSEMBLY



Disassembly steps

1. Converter housing
2. Transmission case
◆◆ 3. Oil seal

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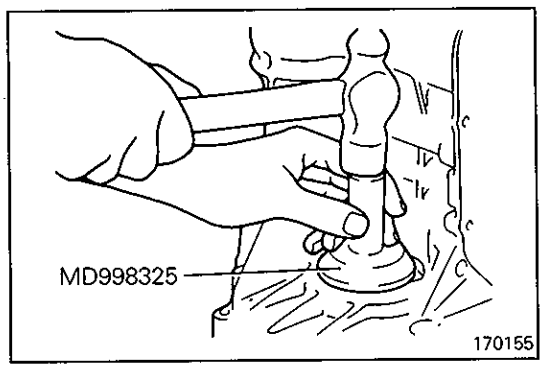

SERVICE POINT OF REASSEMBLY

3. INSTALLATION OF OIL SEAL

NOTES