

WORKSHOP MANUAL

TF SERIES

TRANSFER CASE

SECTION 7D

ISUZU

NOTICE

Before using this Workshop Manual to assist you in performing vehicle service and maintenance operations, it is recommended that you carefully read and thoroughly understand the information contained in Section - 0 "GENERAL INFORMATION".

All material contained in this Manual is based on the latest product information available at the time of publication.

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SECTION 7D

TRANSFER CASE

⚠ CAUTION

When fasteners are removed, always reinstall them at the same location from which they were removed. If a fastener needs to be replaced, use the correct part number fastener for that application. If the correct part number fastener is not available, a fastener of equal size and strength (or stronger) may be used.

Fasteners that are not reused, and those requiring thread locking compound, will be called out. The correct torque values must be used when installing fasteners that require torque. If the above conditions are not followed, parts or system damage could result.

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GENERAL DESCRIPTION

The transfer case is used to provide a means of providing power flow to the front axle. The transfer case also provides a means of disconnecting the front axle, providing better fuel economy and quieter operation when the vehicle is driven on improved roads where four wheel drive is not required. In addition, the transfer case provides an additional gear reduction when placed in low range, which is useful when difficult off-road conditions are encountered.

A floor mounted shift lever is used to select the operating range. When four wheel drive has been selected, the four wheel drive indicator light is designed to come on when the front axle has been engaged.

TORQUE SPECIFICATIONS



STANDARD BOLTS

The torque values given in the following table should be applied where a particular torque is not specified.

Strength Class Bolt Identification Bolt Diameter x Pitch (mm)		4.8/4T		7T		8.8		9.8/9T		N-m (kgf-m/lb-ft)	
						Refined		Non-Refined			
											
		 No mark		-							
Standard Hex. Head Bolt	M6 x 1.0	6 (0.6 / 52 lb.in)		7 (0.7 / 61 lb.in)		8 (0.8 / 69 lb.in)				-	
	M8 x 1.25	13 (1.3 / 113 lb.in)		17 (1.7 / 12)		20 (2.0 / 14)				24 (2.4 / 17)	
	M10 x 1.25	27 (2.8 / 20)		37 (3.8 / 27)		42 (4.3 / 31)				50 (5.1 / 37)	
	M12 x 1.25	61 (6.3 / 45)		76 (7.8 / 56)		87 (8.9 / 64)				95 (9.7 / 70)	
	M14 x 1.5	96 (9.8 / 71)		116 (11.8 / 85)		133 (13.6 / 98)				142 (14.5 / 105)	
	M16 x 1.5	130 (13.3 / 96)		170 (17.3 / 125)		193 (19.7 / 143)				200 (20.4 / 148)	
	M18 x 1.5	188 (19.2 / 139)		244 (24.9 / 180)		278 (28.3 / 205)				287 (29.3 / 212)	
	M20 x 1.5	258 (26.3 / 190)		337 (34.4 / 249)		385 (39.3 / 284)				396 (40.4 / 292)	
	M22 x 1.5	332 (33.9 / 245)		453 (46.3 / 335)		517 (52.7 / 381)				530 (54.1 / 391)	
	M24 x 2.0	449 (45.8 / 331)		570 (58.2 / 421)		651 (66.3 / 480)				692 (70.6 / 511)	
	*M10 x 1.5	26 (2.7 / 20)		36 (3.7 / 27)		41 (4.2 / 30)				48 (4.9 / 35)	
	*M12 x 1.75	57 (5.8 / 42)		71 (7.2 / 52)		80 (8.2 / 59)				89 (9.1 / 66)	
	*M14 x 2.0	89 (9.1 / 66)		110 (11.2 / 81)		125 (12.7 / 92)				133 (13.6 / 98)	
*M16 x 2.0	124 (12.7 / 92)		162 (16.5 / 119)		185 (18.9 / 137)				191 (19.5 / 141)		
Flange Bolt	M6 x 1.0	7 (0.7 / 61 lb.in)		8 (0.8 / 69 lb.in)		9 (0.9 / 78 lb.in)				-	
	M8 x 1.25	15 (1.5 / 11)		19 (1.9 / 14)		22 (2.2 / 16)				26 (2.7 / 20)	
	M10 x 1.25	31 (3.2 / 23)		41 (4.2 / 30)		47 (4.8 / 35)				56 (5.7 / 41)	
	M12 x 1.25	69 (7.0 / 51)		85 (8.7 / 63)		97 (9.9 / 72)				106 (10.8 / 78)	
	M14 x 1.5	104 (10.6 / 77)		126 (12.8 / 93)		144 (14.6 / 106)				154 (15.7 / 114)	
	M16 x 1.5	145 (14.8 / 127)		188 (19.2 / 139)		214 (21.8 / 158)				221 (22.5 / 163)	
	M18 x 1.5	-		-		-				-	
	M20 x 1.5	-		-		-				-	
	M22 x 1.5	-		-		-				-	
	M24 x 2.0	-		-		-				-	
	*M10 x 1.5	30 (3.1 / 22)		40 (4.1 / 30)		46 (4.7 / 34)				54 (5.5 / 40)	
	*M12 x 1.75	64 (6.5 / 47)		78 (8.0 / 58)		89 (9.1 / 66)				99 (10.1 / 73)	
	*M14 x 2.0	97 (9.9 / 72)		119 (12.1 / 88)		135 (13.8 / 99.7)				144 (14.7 / 107)	
	*M16 x 2.0	137 (14.0 / 101)		178 (18.2 / 132)		203 (20.7 / 152)				210 (21.5 / 155)	

The asterisk * indicates that the bolts are used for female-threaded parts that are made of soft materials such as casting, etc.



FLARE NUTS

Pipe diameter mm (in)	Torque N-m (kgf-m / lb-ft)	Pipe diameter mm (in)	Torque N-m (kgf-m / lb-ft)
4.76 (0.187)	16 (1.6 / 12)	10.00 (0.394)	54 (5.5 / 40)
6.35 (0.250)	26 (2.7 / 20)	12.00 (0.472)	88 (9.0 / 65)
8.00 (0.315)	44 (4.5 / 33)	15.00 (0.591)	106 (10.8 / 78)



RECOMMENDED LIQUID GASKET

Type	Brand Name	Manufacturer	Remarks
RTV* Silicon Base	ThreeBond 1207B ThreeBond 1207C	Three Bond Three Bond	For Engine Repairs
	ThreeBond 1215 ThreeBond 1281	Three Bond Three Bond	For Axle Case and Transmission Repairs
Water Base	ThreeBond 1141E	Three Bond	For Engine Repairs
Solvent	ThreeBond 1104 BelcoBond 4 BelcoBond 401 BelcoBond 402	Three Bond Isuzu Isuzu Isuzu	For Engine Repairs
Anerobic	LOCTITE 515 LOCTITE 518	Loctite Loctite	All

*RTV: Room Temperature Vulcanizer

Note:

1. It is very important that the liquid gaskets listed above or their exact equivalent be used on the vehicle.
2. Be careful to use the specified amount of liquid gasket.
Follow the manufacturer's instructions at all times.
3. Be absolutely sure to remove all lubricants and moisture from the connecting surfaces before applying the liquid gasket.
The connecting surfaces must be perfectly dry.
4. LOCTITE 515 and LOCTITE 518 harden upon contact with a metal surface.
Do not apply LOCTITE 515 or LOCTITE 518 between two metal surfaces having a clearance of greater than 0.25 mm (0.01 in). Poor adhesion will result.

MAIN DATA AND SPECIFICATIONS (CONT.)**TRANSFER CASE**

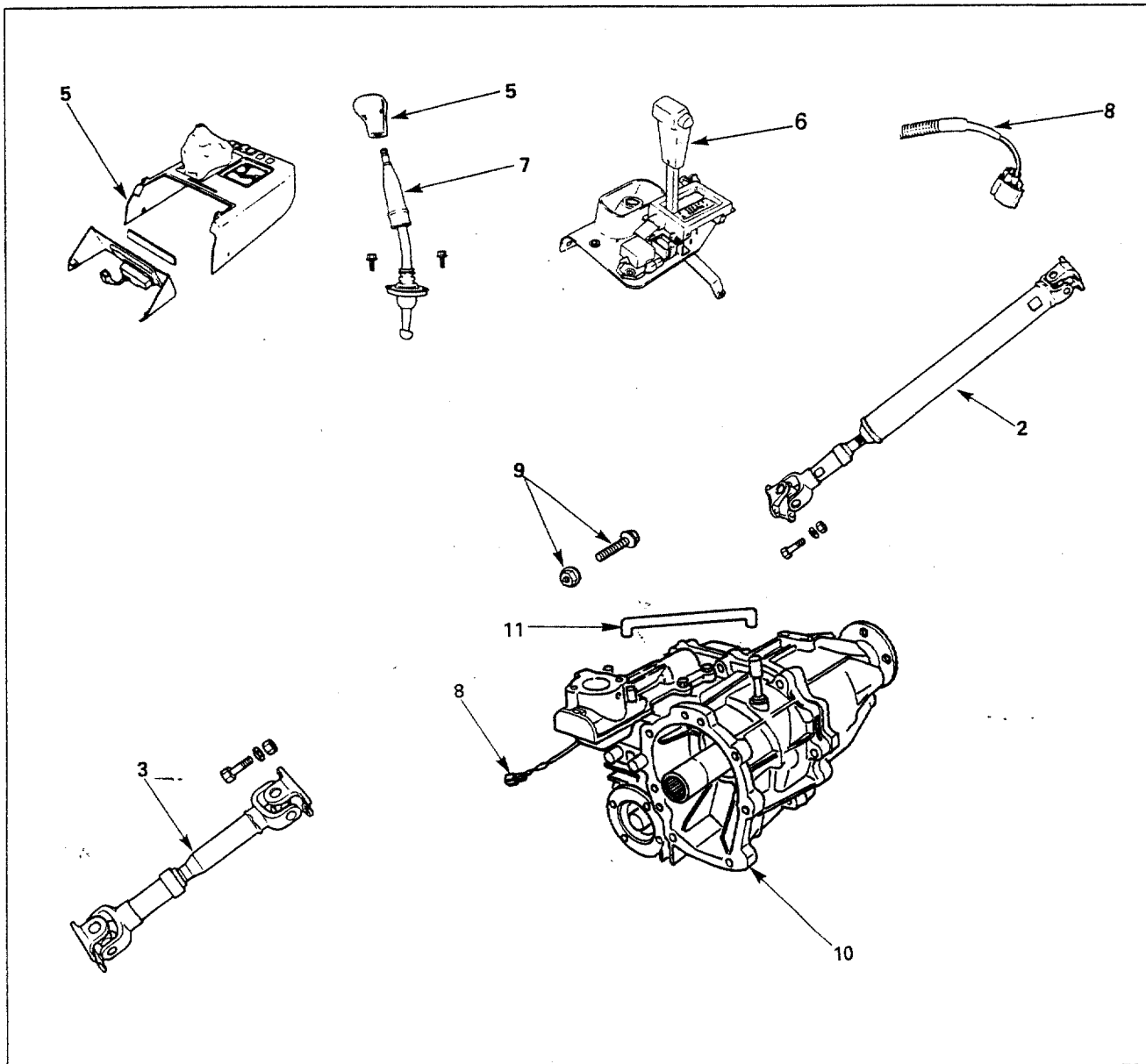
Type	Constant mesh (4L - 4H & 2WD - 4WD)
Control method Gear ratio	Remote control with the gear shift lever on the floor. High; 1.000 Low ; 2.050
Oil capacity lit (Imp qt / US qt)	1.45 (1.28 / 1.53)
Type of lubricant	Engine oil

SERVICE STANDARD (CONT.)**TRANSFER CASE**

ITEMS		SERVICE STANDARD	SERVICE LIMIT
GEAR			
Gear Inside Diameter	mm (in)	48.000 – 48.013 (1.8898 – 1.8903)	48.10 (1.894)
CLUTCH HUB			
Clutch Hub Spline Play	mm (in)	0 – 0.1 (0 – 0.004)	0.2 (0.008)
BALL BEARING			
Ball Bearing Play	mm (in)	–	0.2 (0.008)
DETENT SPRING			
Detent Spring Free Length			
Detent Ball	mm (in)	23.4 (0.921)	22.8 (0.898)
Interlock Pin	mm (in)	15.9 (0.626)	15.3 (0.602)
Detent Spring Tension/Compressed Height			
Detent Ball	N (kg / lb) / mm (in)	68.6 – 88.2 (7.0 – 9.0/15.4 – 19.8)/ 18.7 (0.736)	–
Interlock Pin	N (kg / lb) / mm (in)	9.8 (1.0 / 2.2) / 11.5 (0.453)	–
SHIFT ARM			
Shift Arm Thickness	mm (in)	9.60 – 9.85 (0.378 – 0.388)	9.0 (0.354)

ON-VEHICLE SERVICE

TRANSFER CASE

**Removal Steps**

1. Exhaust and transfer protectors
2. Rear propeller shaft
3. Front propeller shaft
4. Exhaust pipe
5. Front console
6. Selector lever assembly
7. Transfer control lever
8. Wiring harness connector
9. Transmission-transfer bolt
10. Transfer case assembly
11. Breather Hose

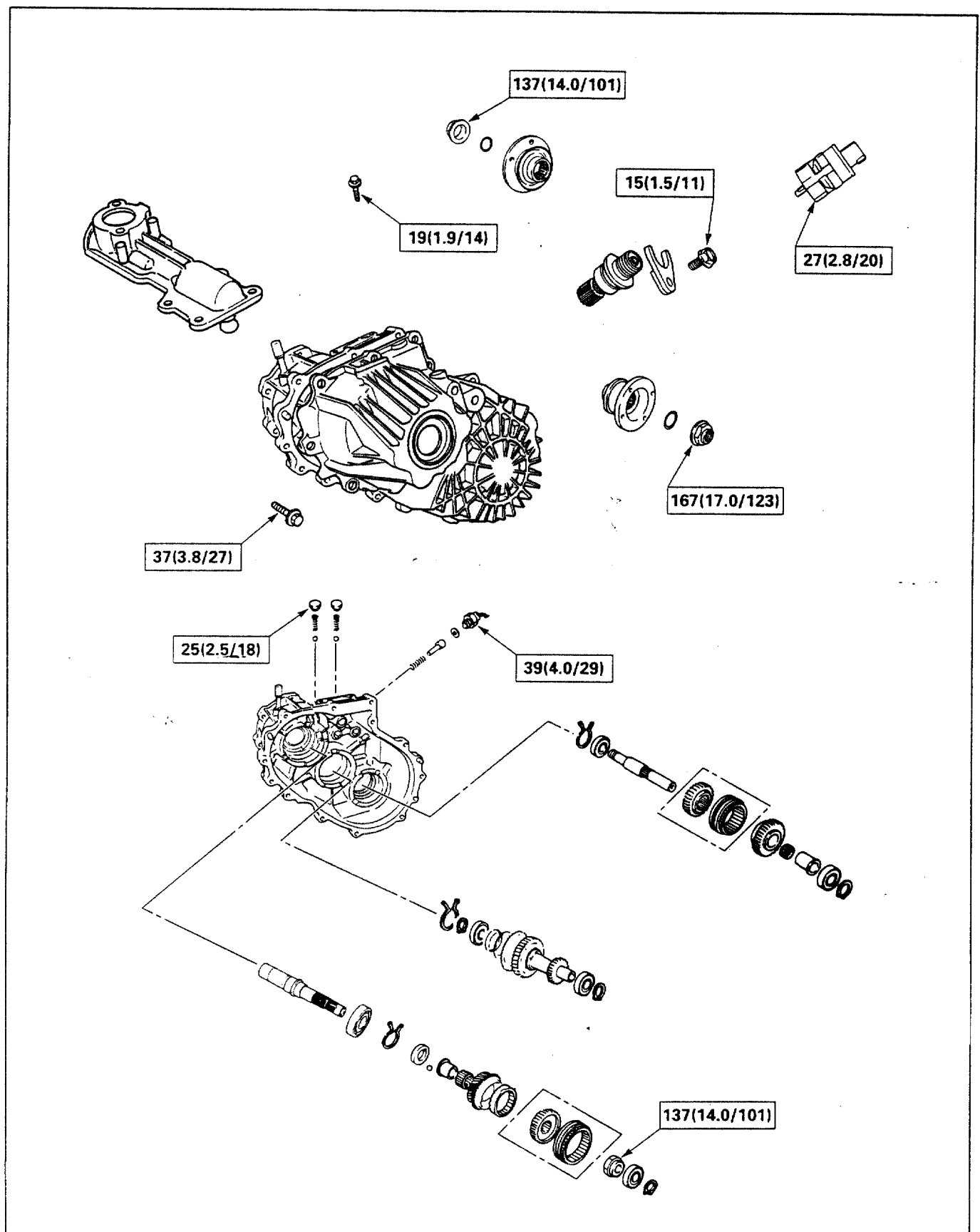
Installation Steps

To install, follow the removal steps in the reverse order.

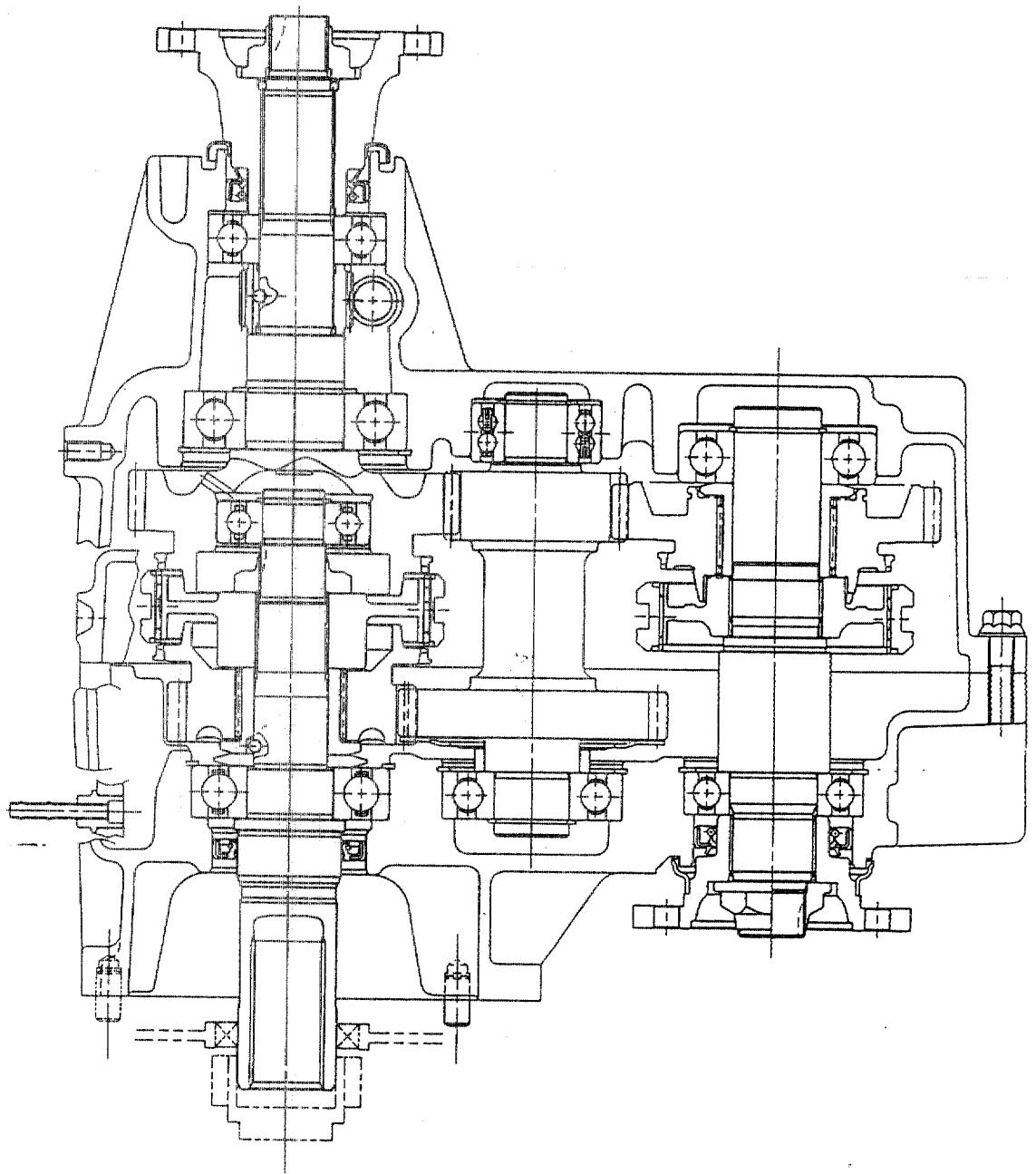
FIXING TORQUE (CONT.)

TRANSFER CASE

N·m (kg·m / lb·ft)



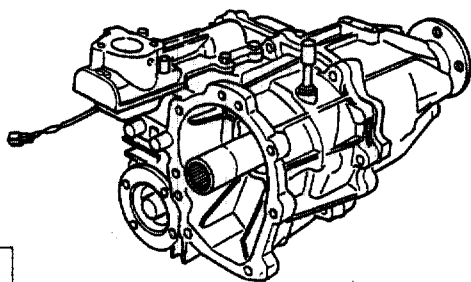
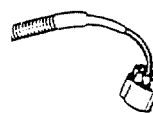
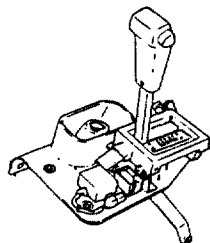
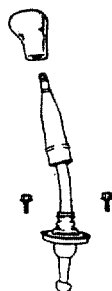
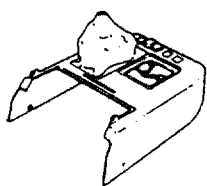
CONSTRUCTION



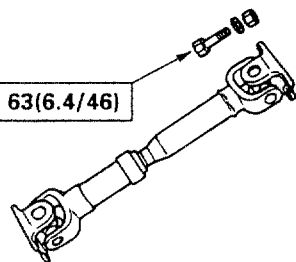
FIXING TORQUE (CONT.)

TRANSFER CASE

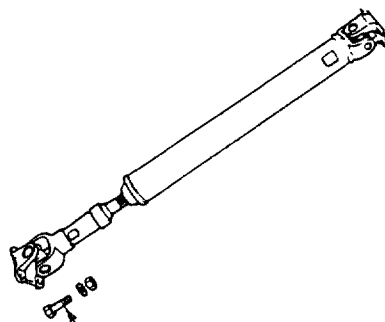
N·m (kg·m / lb·ft)



46(4.7/34)



63(6.4/46)



63(6.4/46)

**REMOVAL****Preparation**

- Disconnect battery negative (-) cable.
- Drain transfer case fluid.

1. **Exhaust and Transfer Protectors**
2. **Rear Propeller Shaft**
3. **Front Propeller Shaft**
Remove the rear and front propeller shaft from the transfer case side.
4. **Exhaust Pipe**
 - 1) Remove precatalytic converter.
 - 2) Remove the center exhaust pipe.
5. **Front Console**
 - 1) Remove the transfer control lever knob.
 - 2) Disconnect the harness connectors.
6. **Selector Lever Assembly**
Refer to "SELECTOR LEVER" in this section.
7. **Transfer Control Lever**
8. **Wiring Harness Connector**
Disconnect the 4WD switch and speed sensor harness connector from the transmission harness.
9. **Transmission-Transfer Bolt**
 - 1) Support the transfer case with a transmission jack.
 - 2) Remove four transmission-transfer bolts and three nuts.
10. **Transfer Case Assembly**
Remove the transfer case assembly from the vehicle.

INSTALLATION

To install, follow the removal steps in the reverse order, noting the following points:

- Transfer case assembly
Apply a thin coat of molybdenum disulfide grease to the input shaft spline.
Transmission-transfer bolt

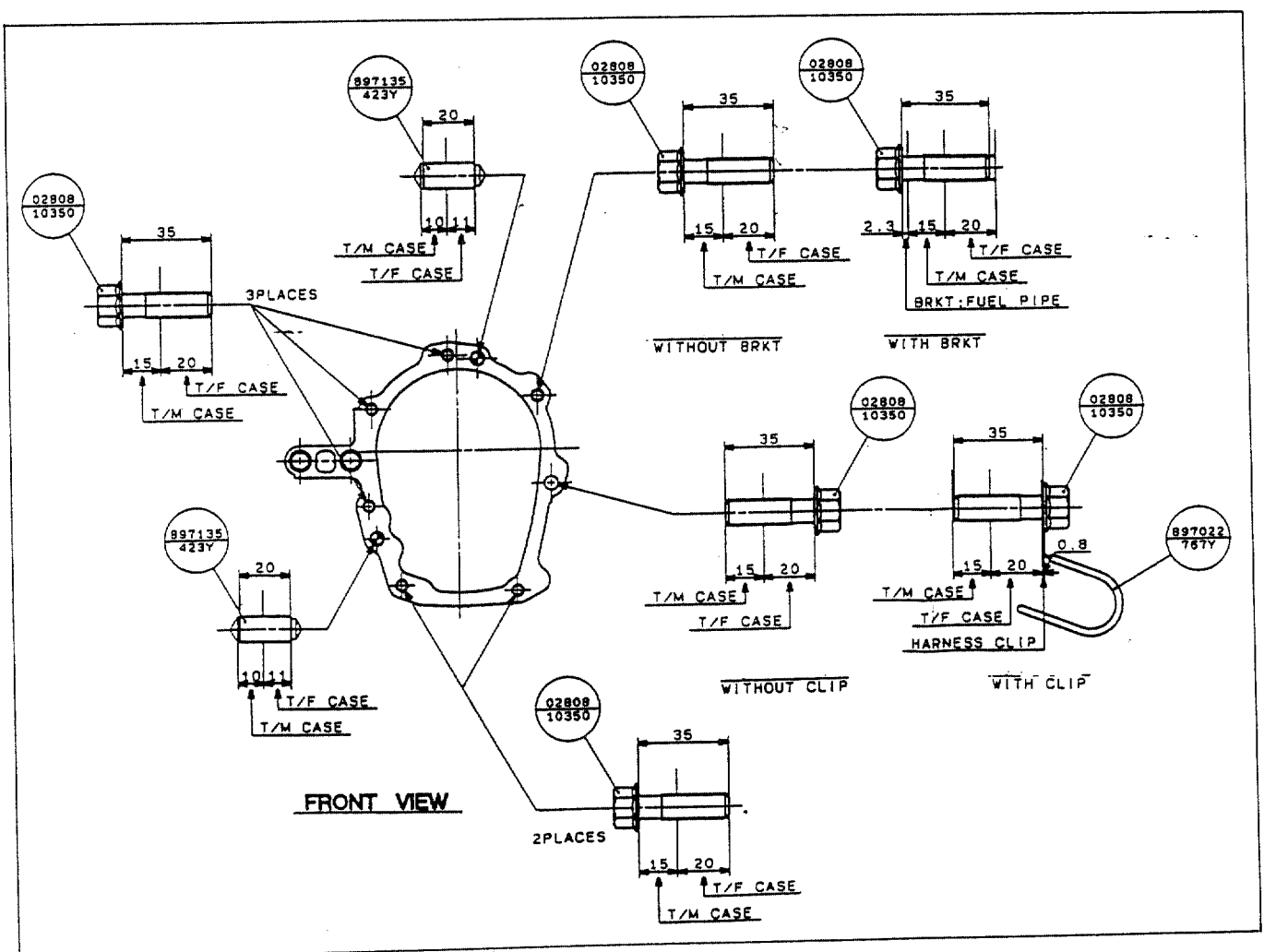
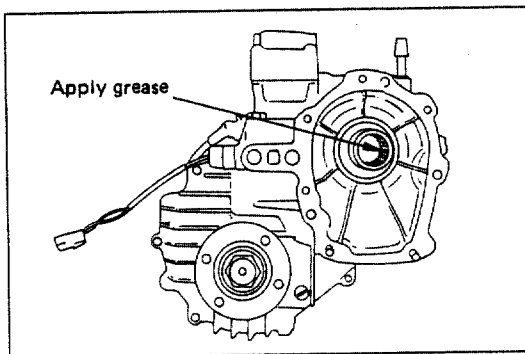
Transmission-Transfer Bolt Torque		N·m (kg·m / lb·ft)
		41 (4.2 / 30)

- Exhaust pipe bolt

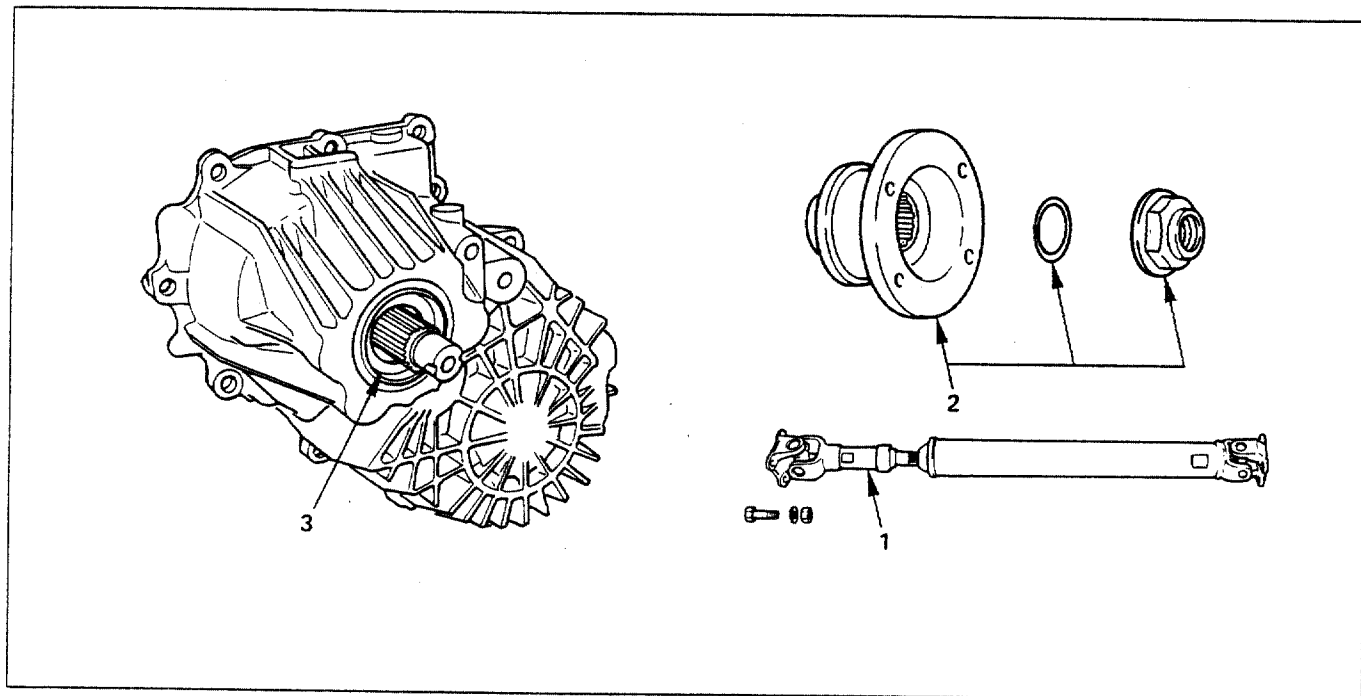
Exhaust Pipe Bolt Torque		N·m (kg·m / lb·ft)
Exh. pipe flange bolt		43 (4.4 / 32)

- Propeller shaft bolt

Propeller Shaft Bolt Torque		N·m (kg·m / lb·ft)
		63 (6.4 / 46)



TRANSFER REAR OIL SEAL



Removal Steps

1. Rear propeller shaft
2. End nut and rear companion flange
3. Oil seal

Installation Steps

To install, follow the removal steps in the reverse order.

REMOVAL

1. Rear Propeller Shaft

Disconnect the rear propeller shaft from the transfer case side.

2. End Nut and Rear Companion Flange

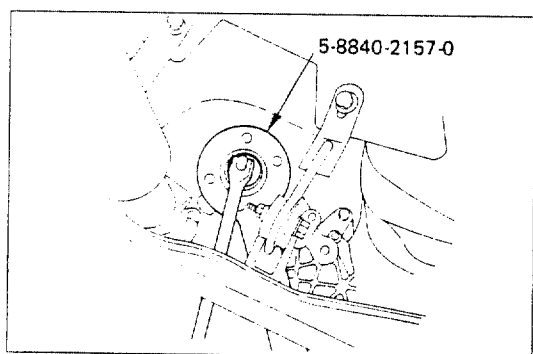
- 1) Use the companion flange holder to remove the end nut.

Companion flange holder: 5-8840-2157-0
(J-37221)

- 2) Use the universal puller to remove the rear companion flange and O-ring.

3. Oil Seal

Remove the oil seal from the transfer case.





INSTALLATION

To install, follow the removal steps in the reverse order, noting the following points:

3. Oil Seal



1) Apply engine oil to the oil seal outer surfaces.

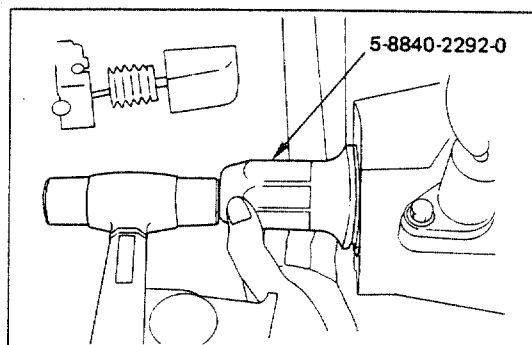


2) Apply recommended grease (BESCO L2) or equivalent to the oil seal lip.



3) Use the oil seal installer to install the rear seal to the transfer rear case.

Rear oil seal installer: 5-8840-2292-0 (J-39208)



2. Rear Companion Flange and End Nut



1) Install the rear companion flange and O-ring.

2) Use the flange holder to install the end nut.

Companion flange holder: 5-8840-2157-0 (J-37221)



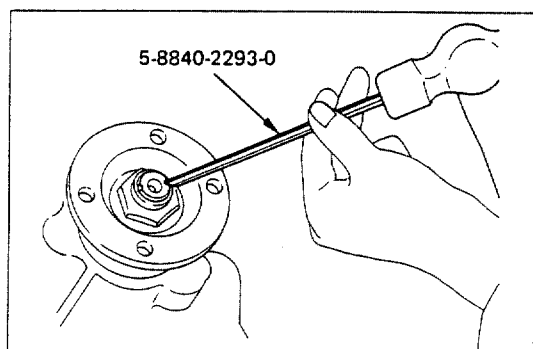
End Nut Torque N·m (kg·m / lb·ft)

167 (17.0 / 123)



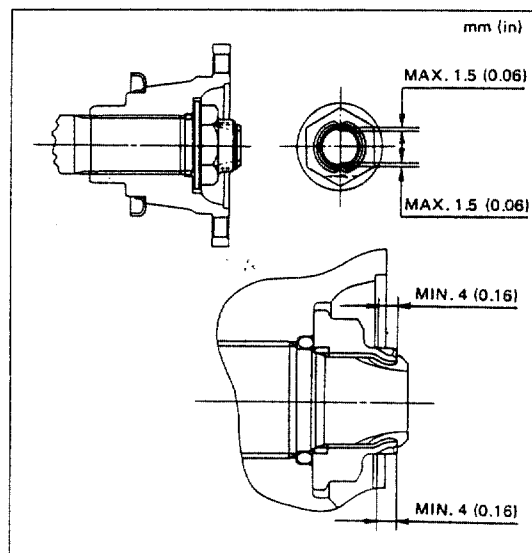
3) Use the punch to stake the end nut at two spots.

Punch: 5-8840-2293-0 (J-39209)



Note:

Be sure to confirm that there is no crack at the staked portion of the end nut after staking.



1. Rear Propeller Shaft

Connect the rear propeller shaft to the transfer case.

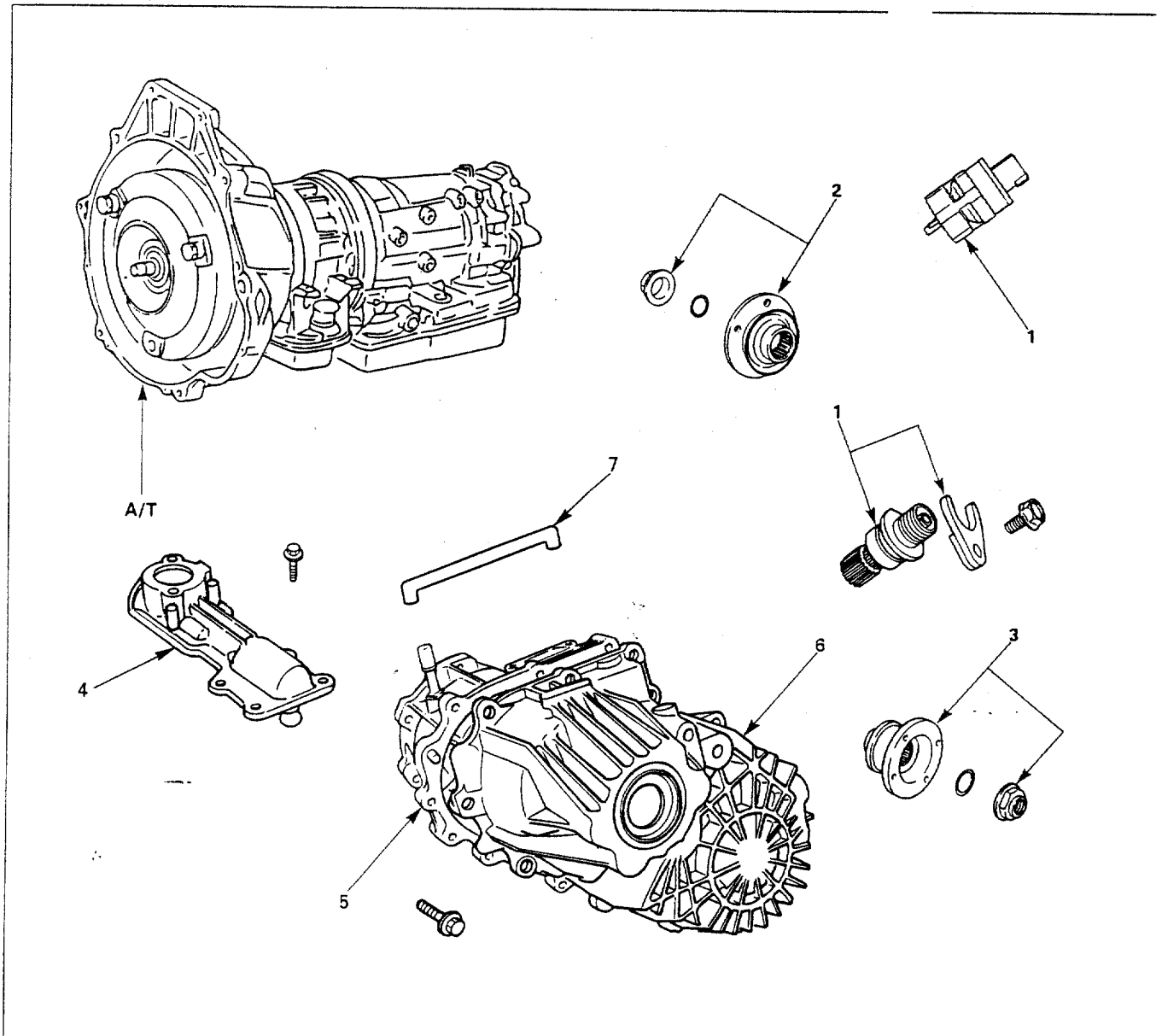


Rear Propeller Shaft Bolt Torque N·m (kg·m / lb·ft)

63 (6.4 / 46)

UNIT REPAIR

MAJOR COMPONENTS



Disassembly Steps

1. Speedometer sensor and speedometer driven gear
2. Front companion flange
3. Rear companion flange
4. Control box assembly
5. Transfer case assembly
6. Transfer rear case assembly
7. Breather Hose

Reassembly Steps

To reassemble, follow the disassembly steps in the reverse order.

**DISASSEMBLY****1. Speedometer Sensor and Speedometer Driven Gear**

- 1) Remove the speedometer sensor.
- 2) Remove the plate.
- 3) Remove the speedometer driven gear bushing and driven gear.

NOTE:

Apply a reference mark to the driven gear bushing before removal.

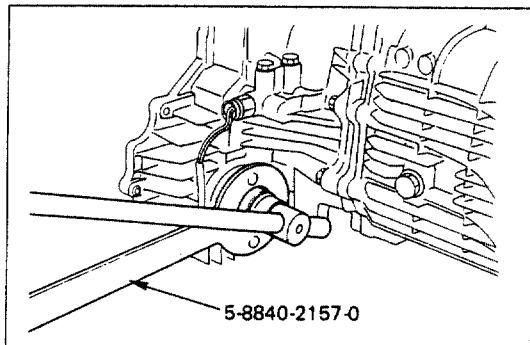
2. Front Companion Flange**3. Rear Companion Flange**

- 1) Use the flange holder to remove the end nut.
Flange companion holder: 5-8840-2157-0 (J-37221)

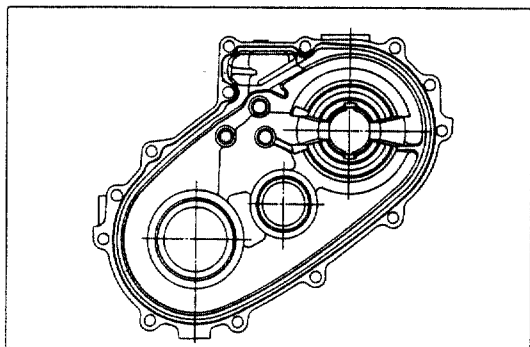
- 2) Remove the front and rear companion flange.

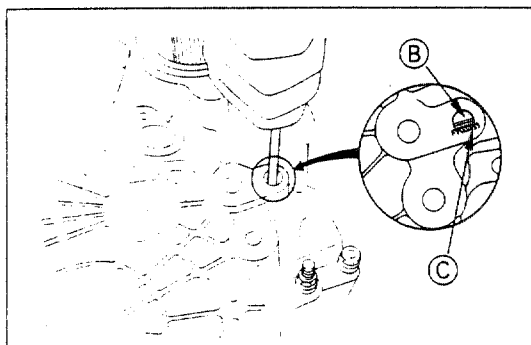
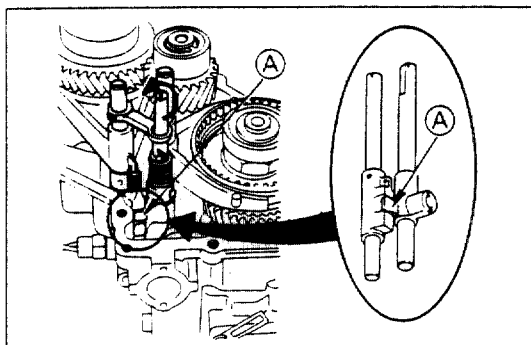
NOTE:

Use the universal puller to remove the rear companion flange.

**4. Control Box Assembly****5. Transfer Case Assembly****6. Transfer Rear Case Assembly****REASSEMBLY****6. Transfer Rear Case Assembly****5. Transfer Case Assembly**

- 1) Apply recommended liquid gasket (LOCTITE FMD127) or its equivalent to the transfer rear case fitting faces.





2) Perform the following steps before fitting the transfer rear case.

- (1) Shift the High-Low shift to the 4H side.
- (2) Turn the select rod counterclockwise so that the select block projection **A** may enter into the 2WD-4WD shift block.

- (3) When the rear case is fitted under the condition (2), the direction of the cut-away portion of the select rod head **B** aligns with that of the rear case hole's stopper **C**.

3) Tighten the transfer rear case bolts to the specified torque.

Transfer Rear Case Bolt Torque	N·m (kg·m / lb·ft)
37 (3.8 / 27)	

4. Control Box Assembly

Control Box Bolt Torque	N·m (kg·m / lb·ft)
19 (1.9 / 14)	

3. Rear Companion Flange

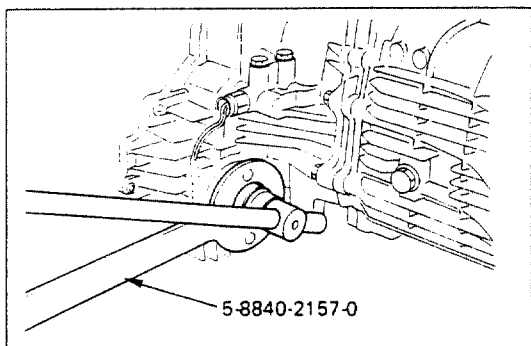
2. Front Companion Flange

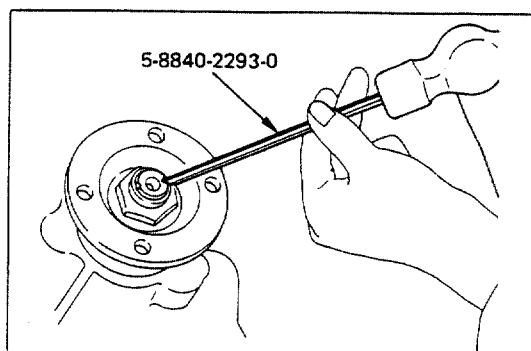
- 1) Install the companion flange.
- 2) Use the flange holder to tighten the flange nuts to the transfer case.

Companion flange holder: 5-8840-2157-0
(J-37221)

- 3) Tighten the transfer flange nuts to the specified torque.

Flange Nut Torque	N·m (kg·m / lb·ft)
Rear companion flange	167 (17.0 / 123)
Front companion flange	137 (14.0 / 101)





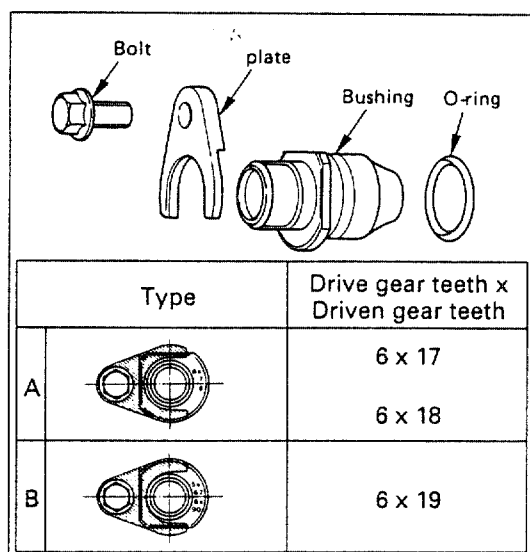
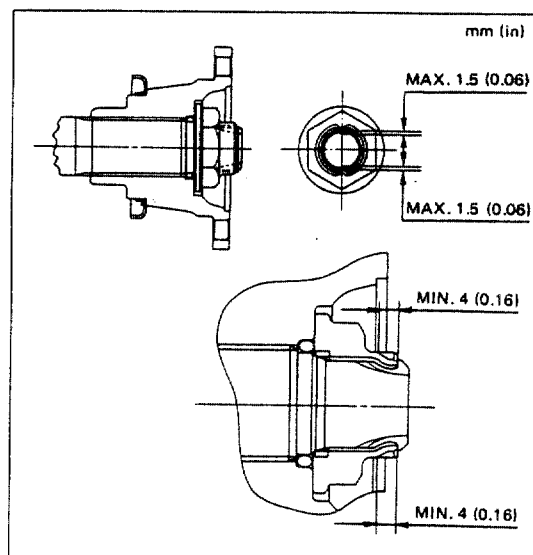
- 4) Use the punch to stake the rear companion flange nut at two spots.

Punch: 5-8840-2293-0 (J-39209)

- 5) Stake the front companion flange nut at one spot.

Note:

Be sure to confirm that there is no crack at the staked portion of the flange nut after staking.



1. Speedometer Driven Gear and Speedometer Sensor

- 1) Install the O-ring to the speedometer driven gear bushing.
- 2) Install the driven gear to the speedometer driven gear bushing.
- 3) Install the speedometer driven gear assembly to the transfer rear cover.
- 4) Install the plate to the transfer rear case.

Plate Bolt Torque N·m (kg·m / lb·ft)

15 (1.5 / 11)

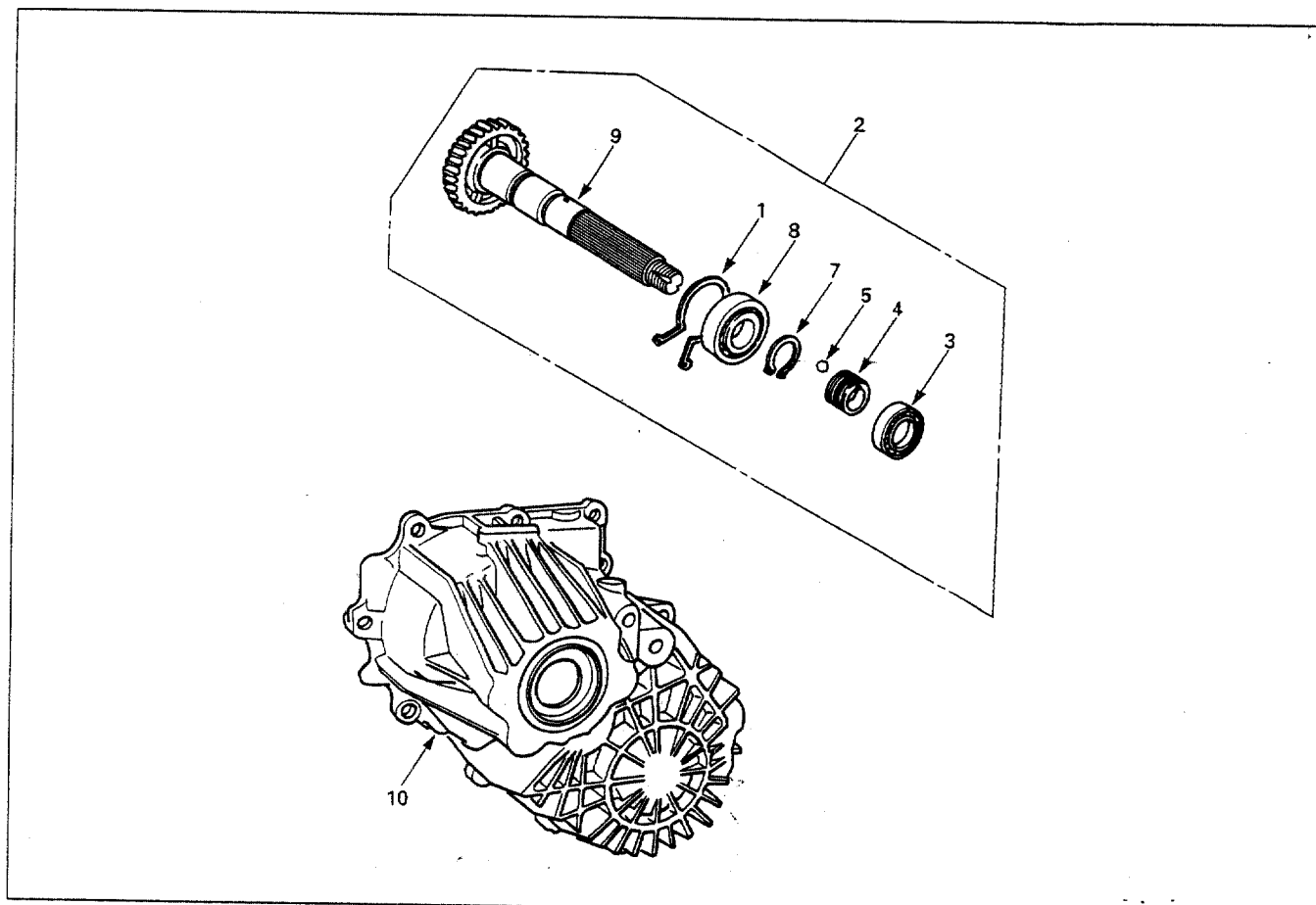
- 5) Install the speedometer sensor.

Speedometer Sensor Torque N·m (kg·m / lb·ft)

27 (2.8 / 20)



TRANSFER REAR CASE ASSEMBLY



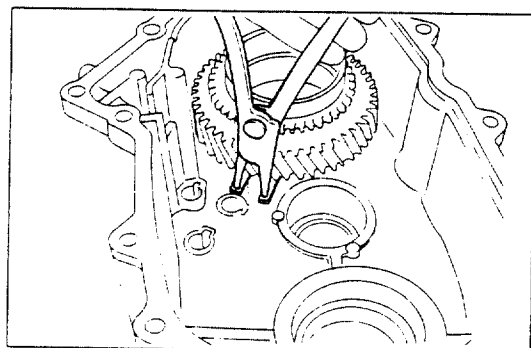
26294

Disassembly Steps

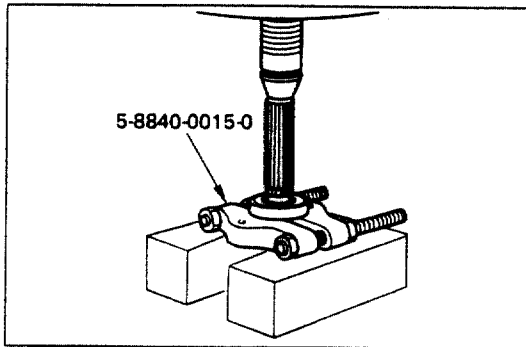
1. Bearing snap ring
2. Rear output shaft assembly
3. Ball bearing
4. Speedometer drive gear
5. Ball
7. Bearing snap ring
8. Ball bearing
9. Rear output shaft
10. Transfer rear case (with oil seal)

Reassembly Steps

To reassemble, follow the disassembly step in the reverse order.

**DISASSEMBLY****1. Bearing Snap Ring**

Use a pair of snap ring pliers to remove the snap ring.



2. Rear Output Shaft Assembly

Remove the rear output shaft assembly from the transfer rear case.

3. Ball Bearing

Use a bench press and the bearing remover to remove the ball bearing.

Bearing remover: 5-8840-0015-0 (J-22912-01)



4. Speedometer Drive Gear

5. Ball

6. Collar ('94)

7. Bearing Snap Ring

Use a pair of snap ring pliers to remove the snap ring.

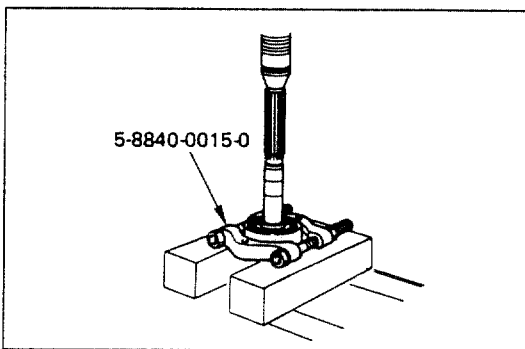
8. Ball Bearing

9. Rear Output Shaft

Use a bench press and the bearing remover to remove the ball bearing.

Bearing remover: 5-8840-0015-0 (J-22912-01)

10. Transfer rear case (with oil seal)



INSPECTION AND REPAIR

Refer to "TRANSFER CASE ASSEMBLY" in this section for inspection and repair.



REASSEMBLY

10. Transfer Rear Case (with oil seal)

Oil seal replacement

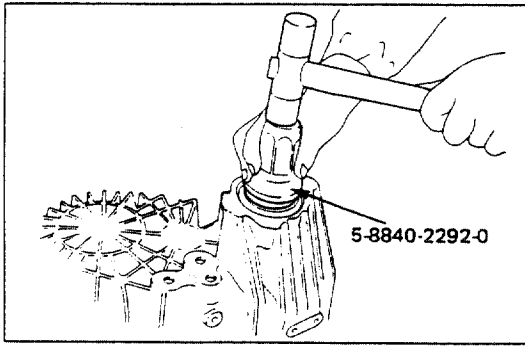
1) Remove the oil seal from the transfer rear case.

2) Apply engine oil to the oil seal outer surfaces.



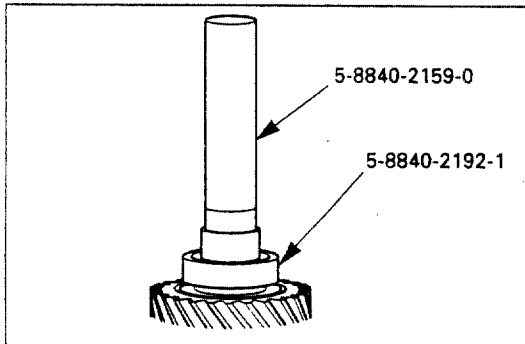
3) Fill in recommended grease (BESCO L2) or equivalent in the oil seal lip.





- 4) Use the oil seal installer to install the rear oil seal to the transfer rear case.

Oil seal installer: 5-8840-2292-0 (J-39208)



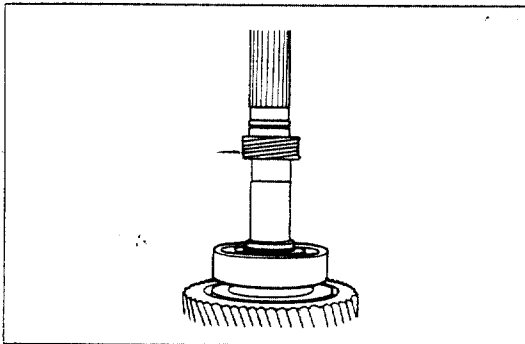
9. Rear Output Shaft

8. Ball Bearing

Use the ball bearing installer and the adapter to install the ball bearing.

Ball bearing installer: 5-8840-2159-0 (J-37223)

Adapter: 5-8840-2192-1 (J-37486-A)

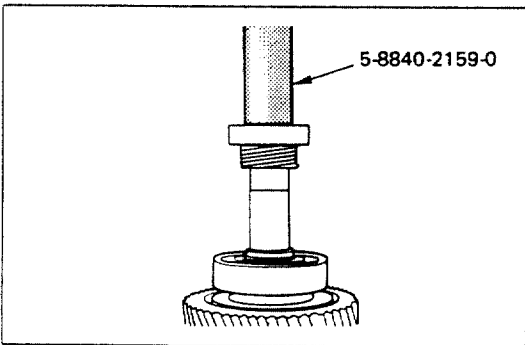


7. Bearing Snap Ring

6. Collar

5. Ball

4. Speedometer Drive Gear



3. Ball bearing

Use the ball bearing installer to install the ball bearing.

Ball bearing installer: 5-8840-2159-0 (J-37223)

2. Rear Output Shaft Assembly

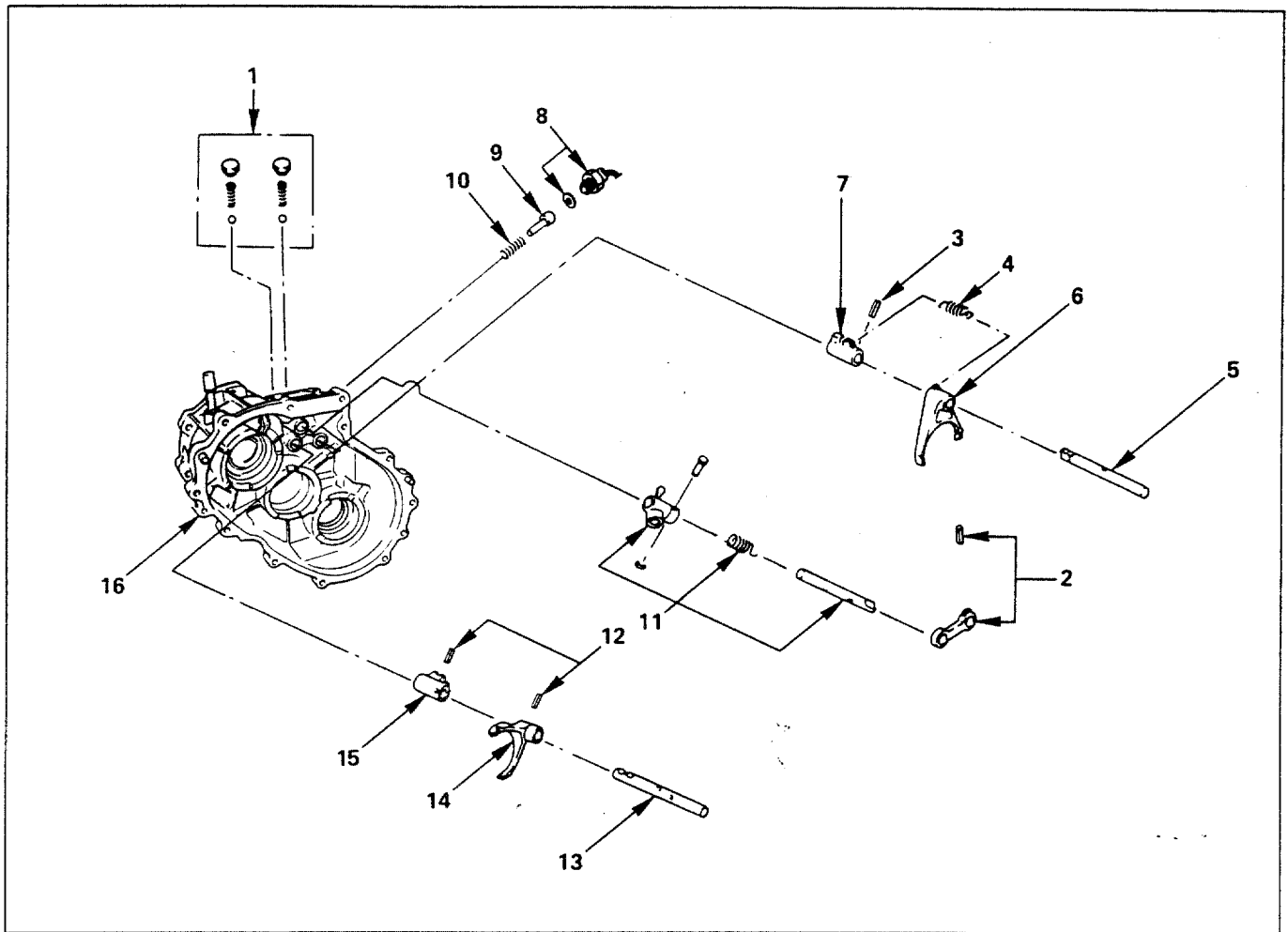
Install the rear output shaft assembly to the transfer rear case.

1. Bearing Snap Ring

NOTE:

The snap ring must be fully inserted into the transfer rear case snap ring groove.

DETENT, SHIFT ARM, AND INTERLOCK PIN (TRANSFER CASE ASSEMBLY)

**Disassembly Steps**

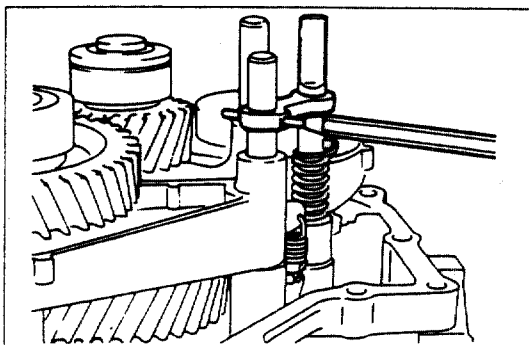
1. Detent ball, spring and plug
2. Spring pin and bridge
3. Spring pin
4. Spring
5. 2WD-4WD shift rod
6. Shift arm
7. Shift block
8. 4WD indicator switch
9. Interlock pin
10. Spring
11. Select rod assembly
12. Spring pin
13. High-low shift rod
14. Shift arm
15. Shift block
16. Transfer case

Reassembly Steps

To reassemble, follow the disassembly steps in the reverse order.



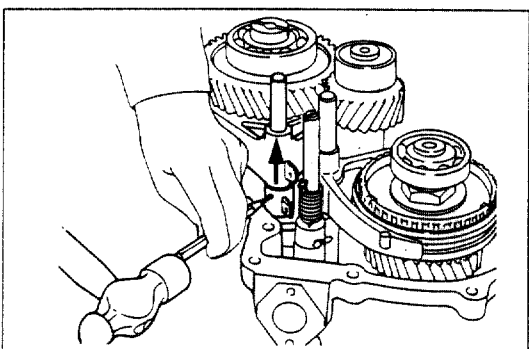
DISASSEMBLY



1. Detent Ball, Spring and Plug

2. Spring Pin and Bridge

Use a spring pin remover to remove the spring pin from the bridge.

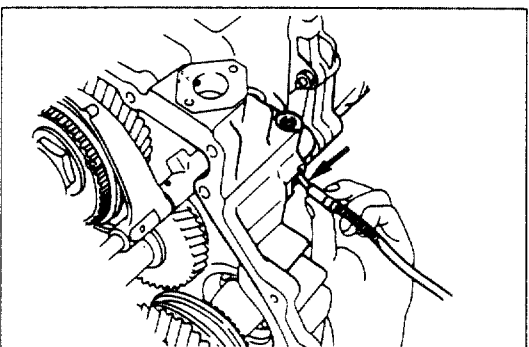


3. Spring Pin

4. Spring

5. 2WD-4WD Shift Rod

Engage the 2WD-4WD sleeve with front output gear. Remove the spring pin from the block. Remove the shift rod.



6. Shift Arm

7. Shift Block

8. 4WD Indicator Switch

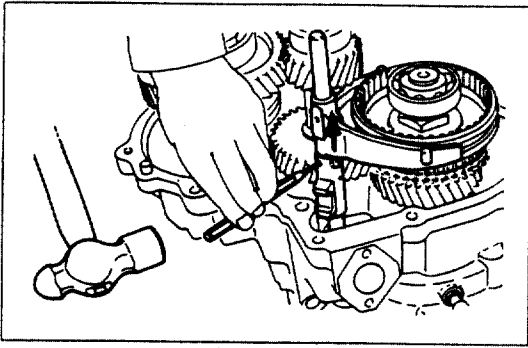
9. Interlock Pin

10. Spring

Use a magnetic tool to remove the interlock pin from the transfer case.

11. Select Rod Assembly

12. Spring Pin

**13. High-Low Shift Rod**

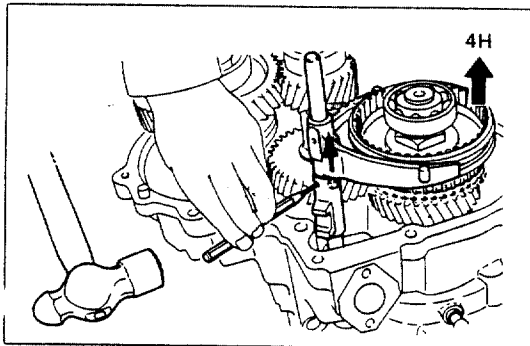
Use a spring pin remover to remove the shift arm spring pin from the shift arm and shift block. Remove the High-Low shift rod.

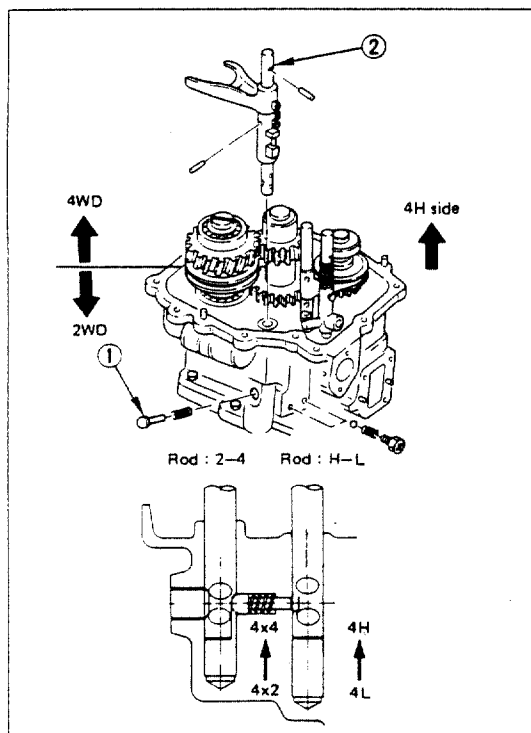
14. Shift Arm**15. Shift Block****16. Transfer Case****INSPECTION AND REPAIR**

Refer to "TRANSFER CASE ASSEMBLY" in this section for inspection and repair.

**REASSEMBLY****16. Transfer Case****15. Shift Block****14. Shift Arm****13. High-Low Shift Rod****12. Spring Pin**

- 1) Engage the High-Low sleeve with 4H side.
- 2) Install the spring pin to the shift block and shift arm.

**11. Select Rod Assembly****10. Spring**



9. Interlock Pin

- 1) Engage the High-Low sleeve with 4H side and install the interlock pin ① in proper direction.
- 2) Install the shift rod: 2WD-4WD ② with interlock pin pushed in.



8. 4WD Indicator Switch

4WD Indicator Switch Torque	N·m (kg·m / lb·ft)
39 (4.0 / 29)	



7. Shift Block
6. Shift Arm
5. 2WD-4WD Shift Rod
4. Spring
3. Spring Pin



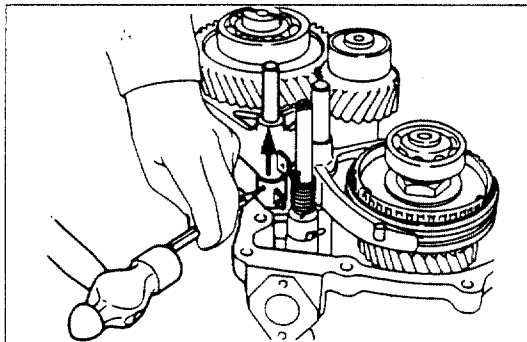
Engage the 2WD-4WD sleeve with the 4WD side and install the spring pin.

2. Spring Pin and Bridge

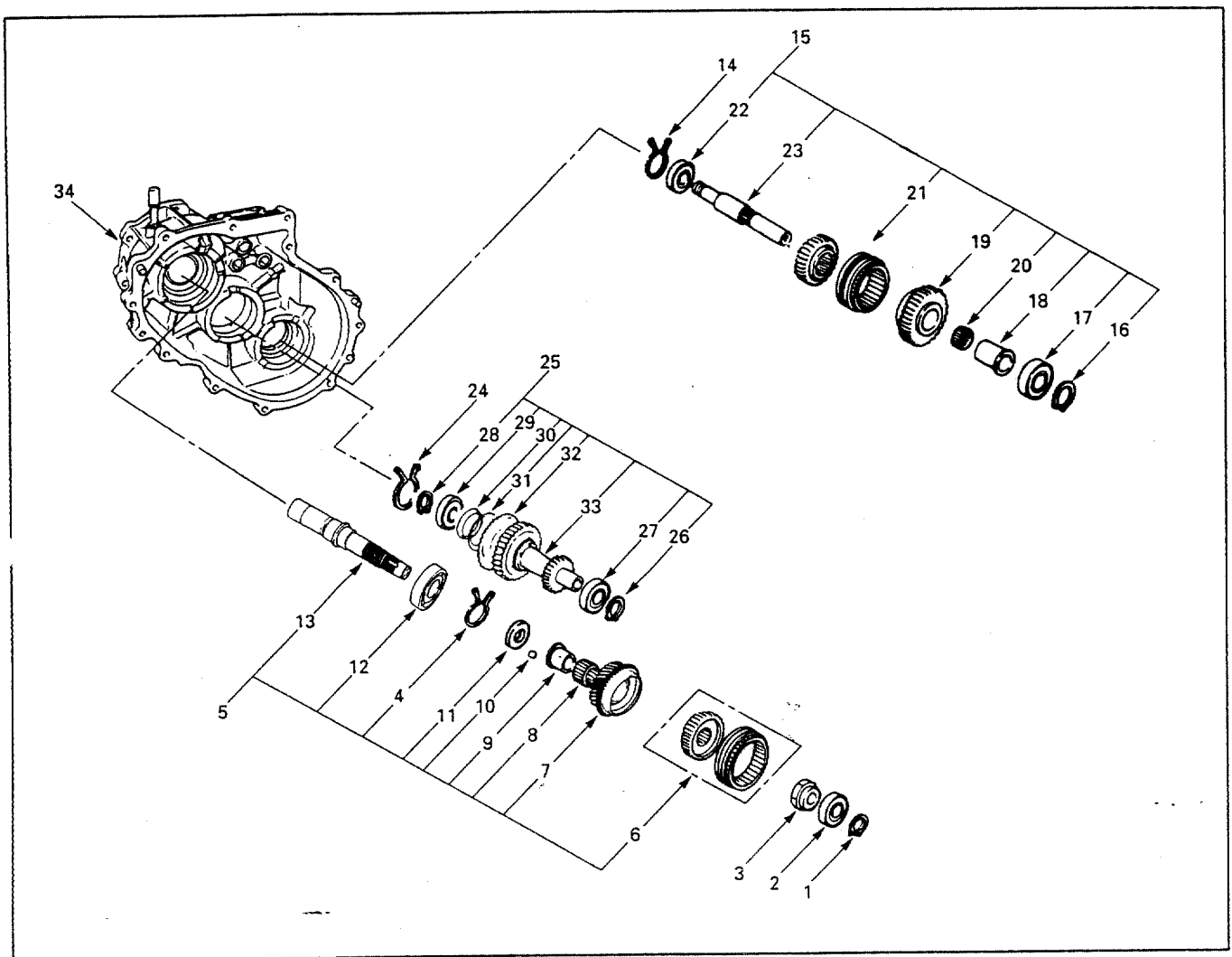
1. Detent Ball, Spring and Plug

Tighten the plug to the specified torque.

Plug Torque	N·m (kg·m / lb·ft)
25 (2.5 / 18)	



TRANSFER CASE ASSEMBLY



Disassembly Steps

1. Bearing snap ring
2. Ball bearing
3. Lock nut
4. Snap ring
5. Input shaft assembly
6. High-low sleeve & hub
7. Transfer input gear
8. Needle bearing
9. Bearing collar
10. Ball
11. Plate
12. Ball bearing
13. Input shaft
14. Bearing snap ring
15. Front output gear assembly
16. Bearing snap ring
17. Ball bearing
18. Bearing collar
19. Front output gear
20. Needle bearing
21. Clutch sleeve & hub
22. Ball bearing
23. Front output shaft
24. Bearing snap ring
25. Counter gear assembly
26. Snap ring
27. Ball bearing
28. Snap ring
29. Ball bearing
30. Spacer
31. Belleville spring
32. Sub-gear
33. Counter gear
34. Transfer case (with oil seal)

Reassembly Steps

To reassemble, follow the disassembly steps in the reverse order.



DISASSEMBLY

1. Bearing Snap Ring

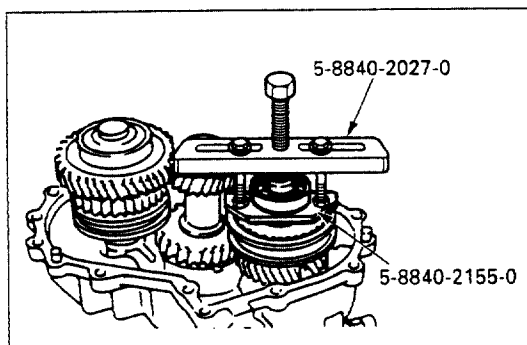
Use a pair of snap ring pliers to remove the snap ring.

2. Ball Bearing

Use a bearing remover to remove the ball bearing.

Bearing remover: 5-8840-2155-0

Puller: 5-8840-2027-0



3. Lock Nut

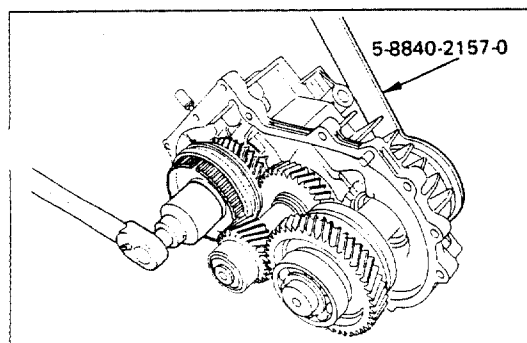
1) Install the front companion flange temporarily.

2) Use the flange holder and lock nut wrench to remove the lock nut.

Companion flange holder: 5-8840-2157-0 (J-37221)

Lock nut wrench: 5-8840-2156-0 (J-37219)

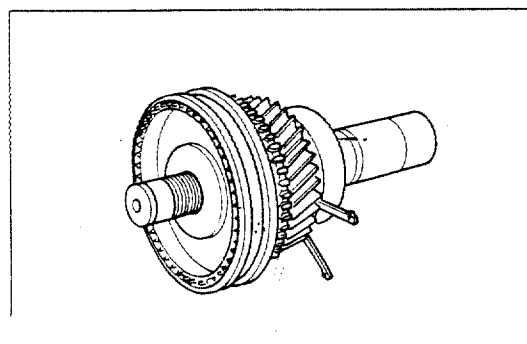
3) Remove the front companion flange.



4. Snap Ring

5. Input Shaft Assembly

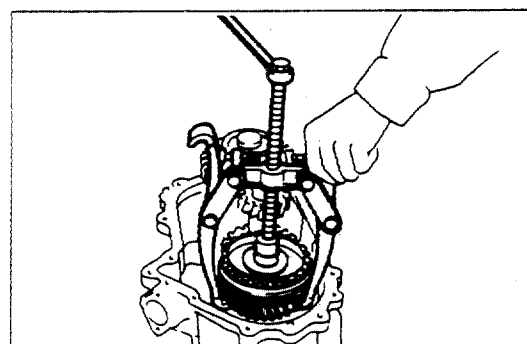
Remove the input shaft assembly from the transfer case.



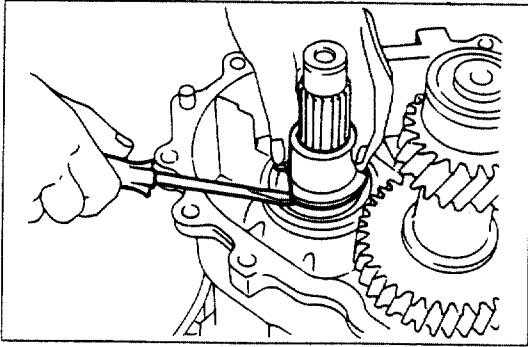
6. High-Low Sleeve and Hub

7. Transfer Input Gear

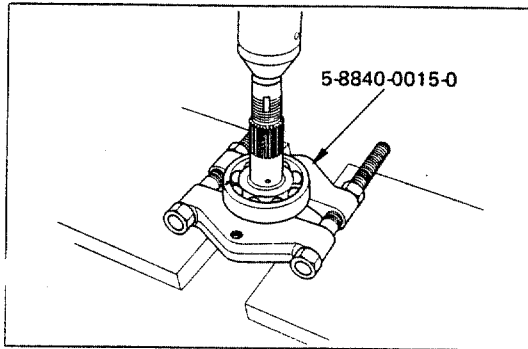
Use the universal puller to remove the High-Low sleeve and hub and transfer input gear.



8. Needle Bearing



- 9. Bearing Collar
- 10. Ball
- 11. Plate

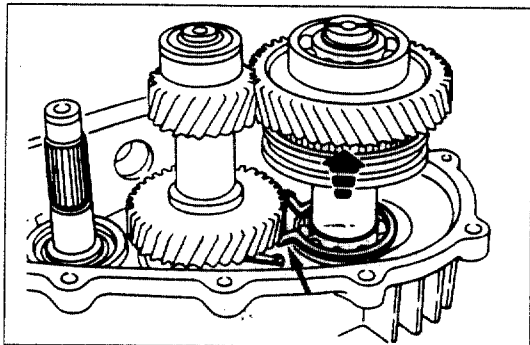


12. Ball Bearing



Use a bench press and the ball bearing remover to remove the ball bearing.

Bearing remover: 5-8840-0015-0 (J-22912-01)



13. Input Shaft

14. Bearing Snap Ring

15. Front Output Gear Assembly

- 1) Use a pair of snap ring pliers to expand the bearing snap ring.
- 2) Use a plastic hammer to tap the front output gear assembly free.

16. Bearing Snap Ring

17. Ball Bearing

18. Bearing Collar

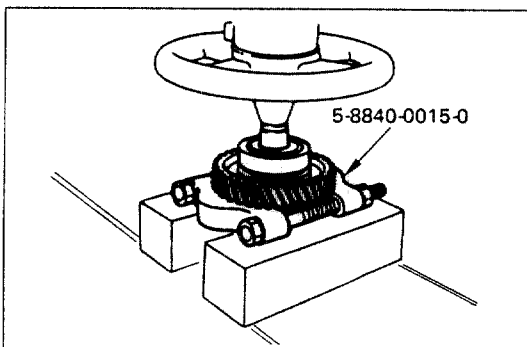
19. Front Output Gear

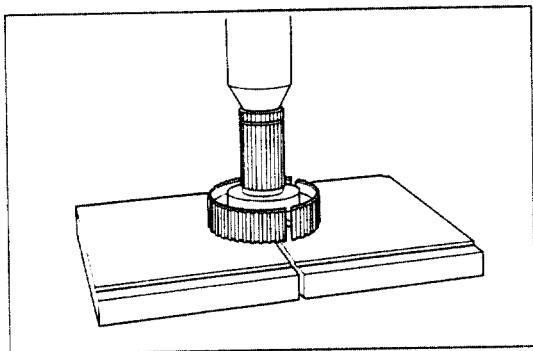
20. Needle Bearing



Use a bench press and the bearing remover to remove the parts above.

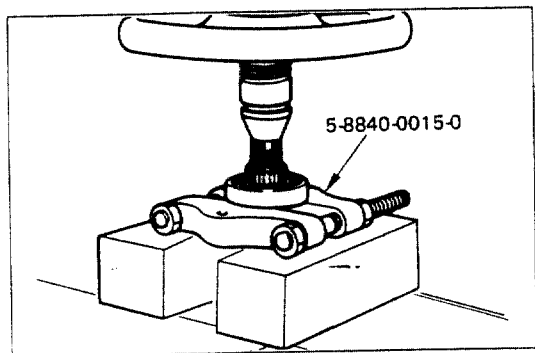
Bearing remover: 5-8840-0015-0 (J-22912-01)





21. Clutch Sleeve and Hub

Use a bench press to remove the clutch sleeve and hub.



22. Ball Bearing

Use the bearing remover to remove the ball bearing.
Bearing remover: 5-8840-0015-0 (J-22912-01)

23. Front Output Shaft

24. Bearing Snap Ring

25. Counter Gear Assembly

Remove the counter gear assembly from the transfer case.

26. Snap Ring

Use a pair of snap ring pliers to remove the snap ring.

27. Ball Bearing

Use a bench press and the bearing remover to remove the ball bearing.

Bearing remover: 5-8840-0015-0 (J-22912-01)

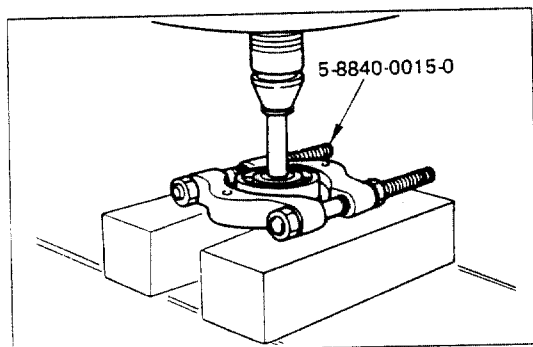
28. Snap Ring

Use a pair of snap ring pliers to remove the snap ring.

29. Ball Bearing

Use a bench press and the bearing remover to remove the ball bearing.

Bearing remover: 5-8840-0015-0 (J-22912-01)



- 30. Spacer
- 31. Belleville Spring
- 32. Sub-Gear
- 33. Counter Gear
- 34. Transfer Case (with oil seal)



INSPECTION AND REPAIR

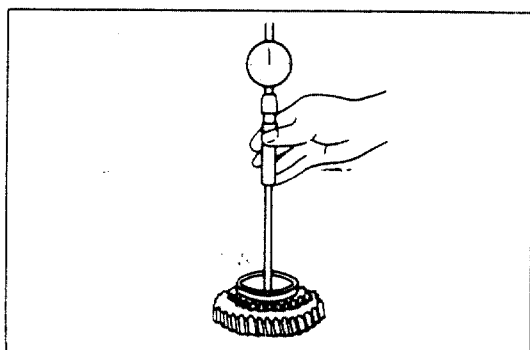
Make the necessary repair or parts replacement if wear, damage or any other abnormal conditions are found during inspection.

Wash all parts thoroughly in clean solvent. Be sure all old lubricant, metallic particles, dirt, or foreign material are removed from the surfaces of every part.

Apply compressed air to each oil feed port and channel in each case half to remove any obstructions or cleaning solvent residue.

Gears

Inspect all gear teeth for signs of excessive wear or damage and check all gear splines for burrs, nicks, wear or damage. Remove minor nicks or scratches on an oil stone. Replace any part exhibiting excessive wear or damage.

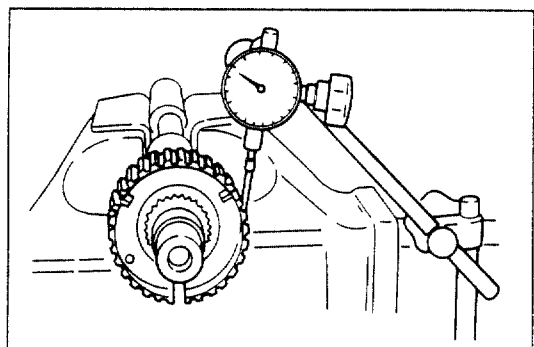


Gear Inside Diameter

Use an inside dial indicator to measure the gear inside diameter.

If the measured value exceeds the specified limit, the gear must be replaced.

Gear Inside Diameter		mm (in)
Standard	Limit	
48.000 – 48.013 (1.8898 – 1.8903)	48.10 (1.894)	



Clutch Hub Spline Play

- 1) Set a dial indicator to the clutch hub to the measured.
- 2) Move the clutch hub as far as possible to both the right and the left.

Note the dial indicator reading.

If the measured value exceeds the specified limit, the clutch hub must be replaced.

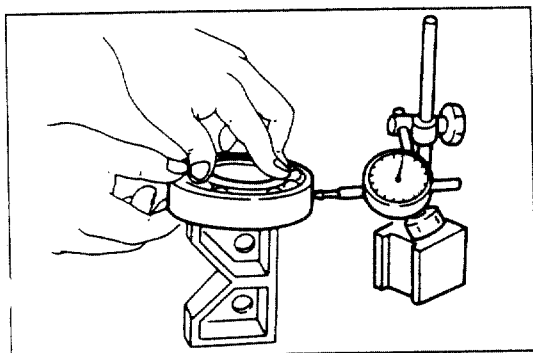
Clutch Hub Spline Play		mm (in)
Standard	Limit	
0 – 0.1 (0 – 0.004)	0.2 (0.008)	

Bearings

Inspect the condition of all needles, and ball bearings. Wash bearings thoroughly in a cleaning solvent. Apply compressed air to bearings.

NOTE:

Do not allow the bearings to spin. Turn them slowly by hand. Spinning bearings may damage the rollers. Lubricate bearings with a light oil and check them for roughness by slowly turning the race by hand.



Ball Bearing Play

Use a dial indicator to measure the ball bearing play. If the measured value exceeds the specified limit, the ball bearing must be replaced.

Ball Bearing Play	mm (in)
Limit	
	0.2 (0.008)

Detent Springs

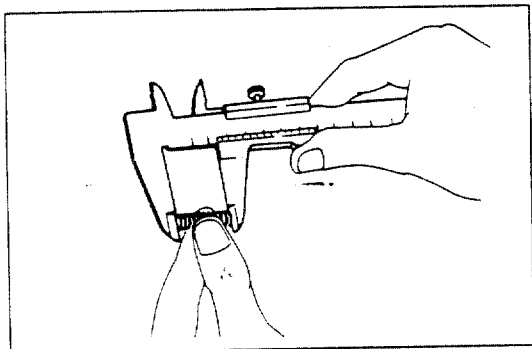
Inspect the springs for distortion, cracks or wear. Replace if these conditions are present.

Detent Spring Free Length

Use a vernier caliper to measure the detent spring free length.

If the measured value is less than the specified limit, the detent spring must be replaced.

Detent Spring Free Length	mm (in)	
	Standard	Limit
Detent ball	23.4 (0.921)	22.8 (0.898)
Interlock pin	15.9 (0.626)	15.3 (0.602)

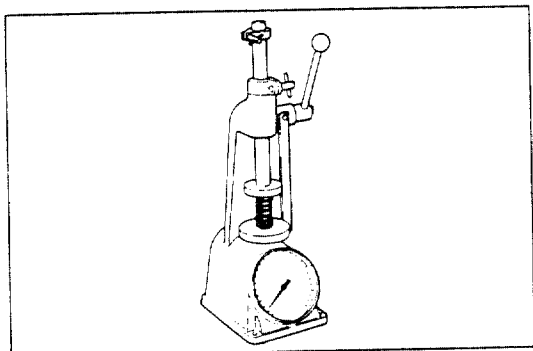


Detent Spring Tension

Use a spring tester to measure the detent spring tension. If the measured value is less than the specified limit, the detent spring must be replaced.

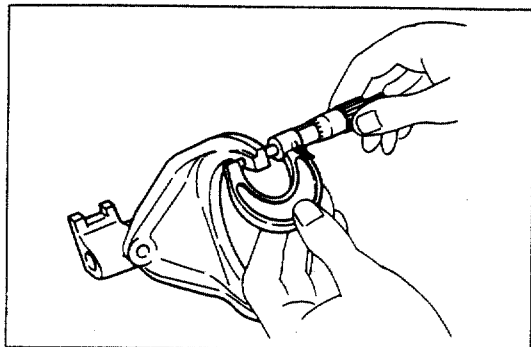
Detent Spring Tension

	Compressed height mm (in)	Standard N (kg / lb)
Detent ball	18.7 (0.736)	68.6 – 88.2 (7.0 – 9.0 / 15.4 – 19.8)
Interlock pin	11.5 (0.453)	9.8 (1.0 / 2.2)



Shift Arm

Inspect the shift arms for wear, distortion or scoring. Replace if these conditions are present.



Shift Arm Thickness

Use a micrometer to measure the shift arm thickness. If the measured value is less than the specified limit, the shift arm must be replaced.

Shift Arm Thickness		mm (in)
Standard		Limit
9.60 – 9.85 (0.378 – 0.388)		9.0 (0.354)



REASSEMBLY

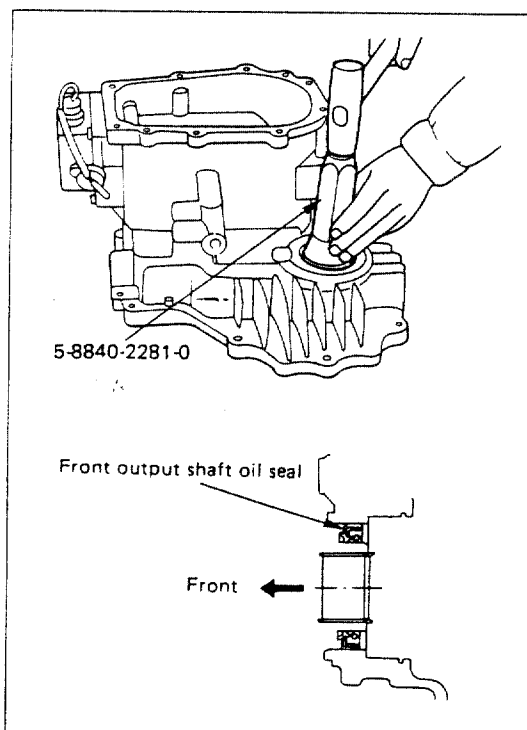
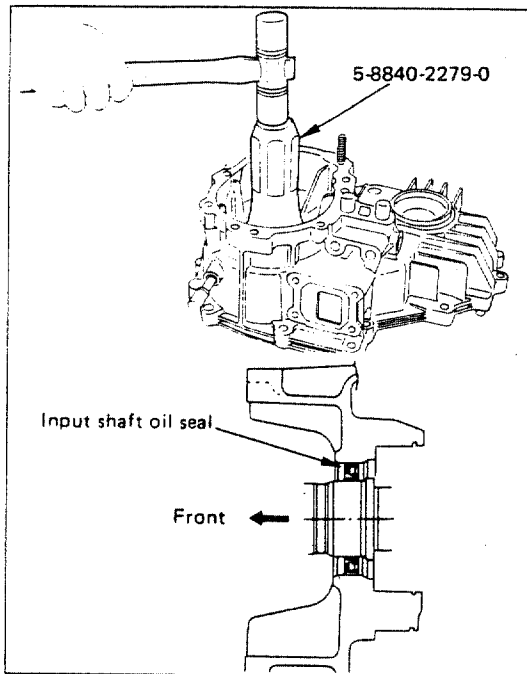
34. Transfer Case (with oil seal)

Oil seal replacement

Input shaft oil seal:

- 1) Remove the oil seal from the transfer case.
- 2) Apply engine oil to the oil seal outer surfaces.
- 3) Apply recommended grease (BESCO L2) or equivalent to the oil seal lip.
- 4) Use the oil seal installer to install the oil seal to the transfer case.

Oil seal installer: 5-8840-2279-0 (J-38592)

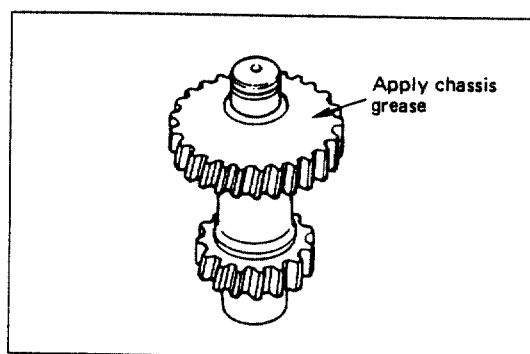


Front output shaft oil seal:

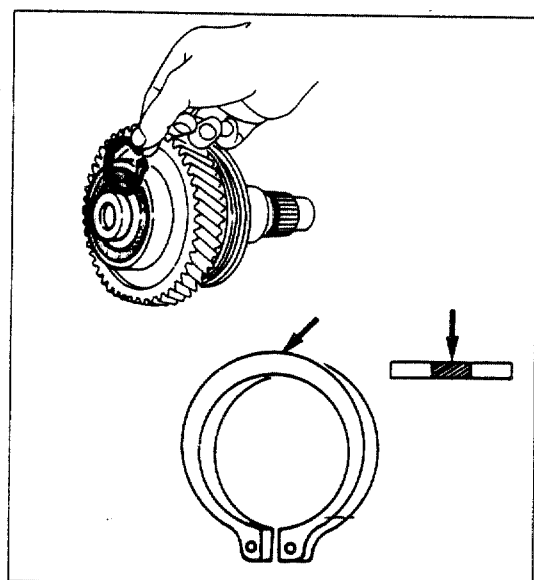
- 1) Remove the oil seal from the transfer case.
- 2) Apply engine oil to the oil seal outer surfaces.
- 3) Apply recommended grease (BESCO L2) or equivalent to the oil seal lip.
- 4) Use the oil seal installer to install the oil seal to the transfer case.

Oil seal installer: 5-8840-2281-0 (J-38594)



**33. Counter Gear****32. Sub-Gear**

Apply chassis grease to the sub-gear and the counter gear thrust surfaces.

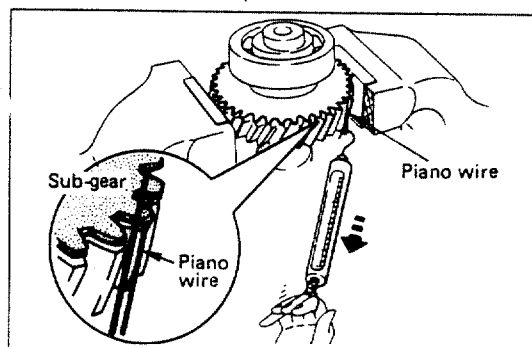
**31. Belleville Spring****30. Spacer****29. Ball bearing****28. Snap Ring**

- 1) Select a snap ring that will allow the minimum axial play.

Bearing Snap Ring Clearance	N (kg / lb)
49 – 118 (5 – 12 / 11 – 27)	

Snap Ring Availability		mm (in)
Thickness	Color-coding	
1.50 (0.059)	White	
1.55 (0.061)	Yellow	
1.60 (0.063)	Blue	

- 2) Use a pair of snap ring pliers to install the snap ring to the output gear.

**Sub-Gear Preload**

- 1) Hook a length of piano wire over one of the sub-gear teeth.
- 2) Attach the other end of the piano wire to a spring balancer.
- 3) Measure the sub-gear preload.

	N (kg / lb)
59 – 98 (6 – 10 / 13 – 22)	

27. Ball Bearing

26. Snap Ring

25. Counter Gear Assembly

Install the counter gear assembly to the transfer case.

24. Bearing Snap Ring

Use a pair of snap ring pliers to install the snap ring to the transfer case.

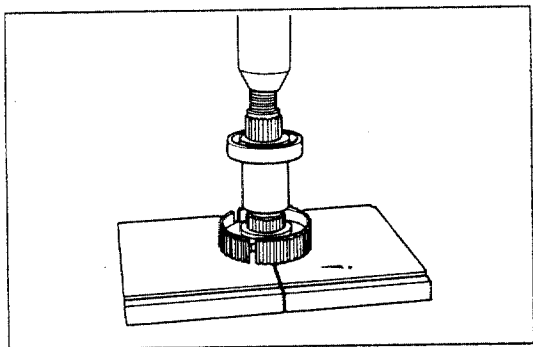
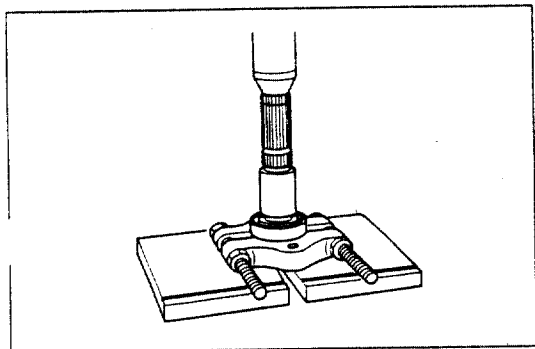
NOTE:

The snap ring must be fully inserted into the transfer case snap ring groove.

23. Front Output Shaft

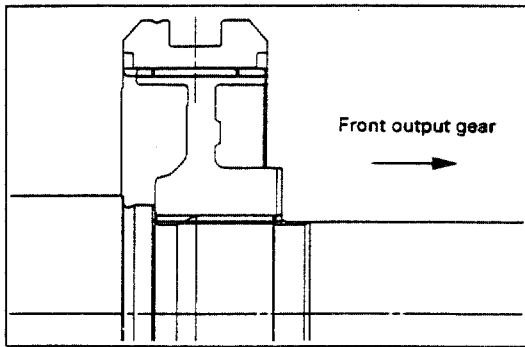
22. Ball Bearing

Use a bench press to install the ball bearing to the front output shaft.



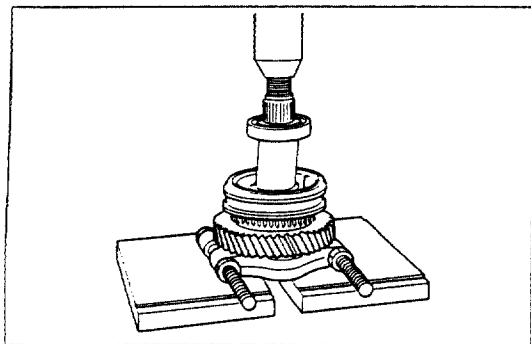
21. Clutch Hub and Sleeve

Use a bench press to install the clutch hub to the front output shaft.

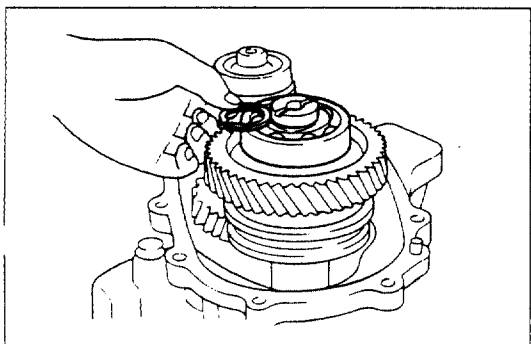


The clutch hub face (with the heavy boss) must be facing the front output gear side.

- 20. Needle Bearing
- 19. Front Output Gear

**18. Bearing Collar**

Use a bench press to install the needle bearing collar together with the front output gear.

**17. Ball Bearing****16. Bearing Snap Ring**

- 1) Select a snap ring that will allow the minimum axial play.

Bearing Snap Ring Clearance	mm (in)
0 – 0.1 (0 – 0.004)	

Snap Ring Availability		mm (in)
Snap ring thickness	Color-coding	
1.55 (0.061)	White	
1.60 (0.063)	Yellow	
1.65 (0.065)	Blue	
1.70 (0.067)	Pink	
1.75 (0.069)	Green	
1.80 (0.071)	Brown	
1.85 (0.073)	Red	
1.90 (0.075)	Orange	

- 2) Use a pair of snap ring pliers to install the snap ring to the output shaft.

15. Front Output Gear Assembly**14. Bearing Snap Ring**

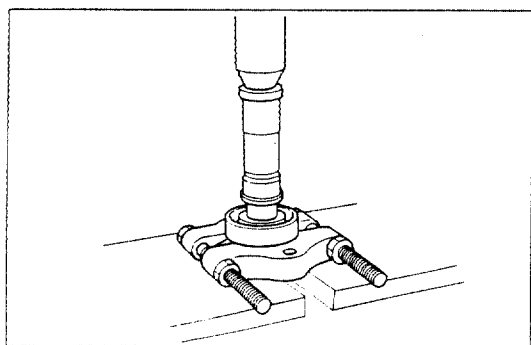
Use a pair of snap ring pliers to install the snap ring to the transfer case.

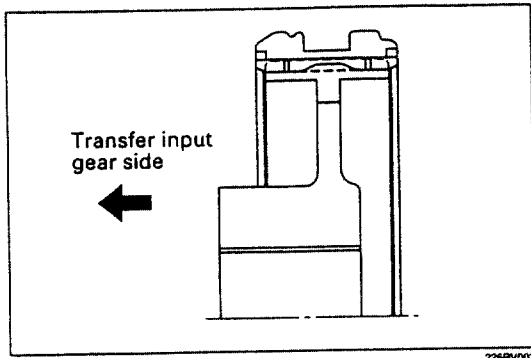
NOTE:

The snap ring must be fully inserted into the transfer case snap ring groove.

13. Input Shaft**12. Ball Bearing**

Use a bench press to install the ball bearing to the input shaft.





11. Plate
10. Ball
9. Bearing Collar
8. Needle Bearing
7. Transfer Input Gear
6. High-Low Sleeve & Hub
The clutch hub face (with the heavy boss) must be facing the transfer input gear side.

5. Input Shaft Assembly

4. Snap Ring

- 1) Install the snap ring to the input shaft.
- 2) Install the input shaft assembly to the transfer case.
- 3) Install the snap ring to the transfer case.

NOTE:

The snap ring must be fully inserted into the transfer case snap ring groove.

3. Lock Nut

- 1) Install the front companion flange temporarily.
- 2) Use the flange holder and lock nut wrench to install the lock nut.

Companion flange holder: 5-8840-2157-0 (J-37221)

Lock nut wrench: 5-8840-2156-0 (J-37219)

Lock Nut Torque	N·m (kg·m / lb·ft)
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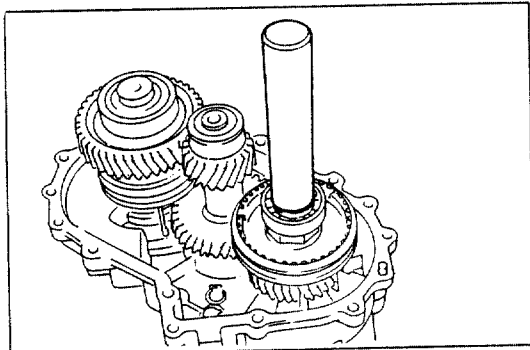
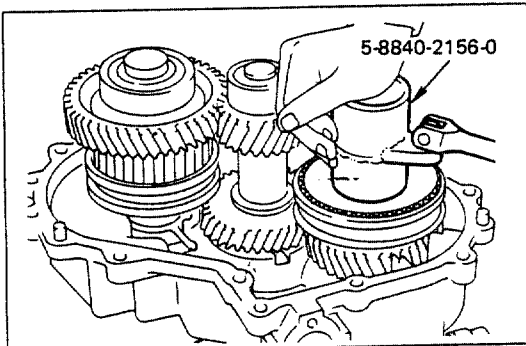
137 (14.0 / 101)

- 3) Use the punch to stake the lock nut at one spot.

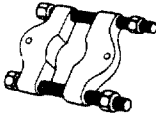
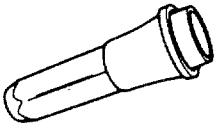
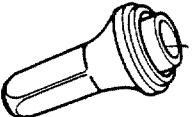
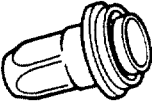
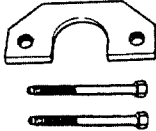
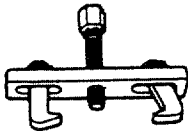
2. Ball Bearing

Use a suitable drift and hammer to install the ball bearing.

1. Bearing Snap Ring



SPECIAL TOOLS (CONT.)**TRANSFER CASE**

ILLUSTRATION	PARTS NO.	PARTS NAME
	5-8840-0015-0 (J-22912-01)	Bearing remover / installer
	5-8840-2279-0 (J-38592)	Transfer case oil seal installer
	5-8840-2156-0 (J-37219)	Wrench
	5-8840-2159-0 (J-37223)	Rear output shaft end bearing installer
	5-8840-2293-0 (J-39209)	Punch, end nut
	5-8840-2281-0 (J-38594)	Front output shaft oil seal installer
	5-8840-2292-0 (J-39208)	Rear oil seal installer
	5-8840-2192-1 (J-37486-A)	Bearing installer adapter
	5-8840-2157-0 (J-37221)	Transfer flange holder
	5-8840-2155-0	Input shaft end bearing remover
	5-8840-2027-0	Puller

TFTRN-WE-989IR

You are requested to order this manual using the manual number that is shown above.

This manual is applicable for vehicles in all countries except the USA, Canada, Europe and Thailand.

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