

WORKSHOP MANUAL

KB, UBS

SECTION 07B

MSG TRANSMISSION WITH TRANSFERCASE



ISUZU MOTORS LIMITED



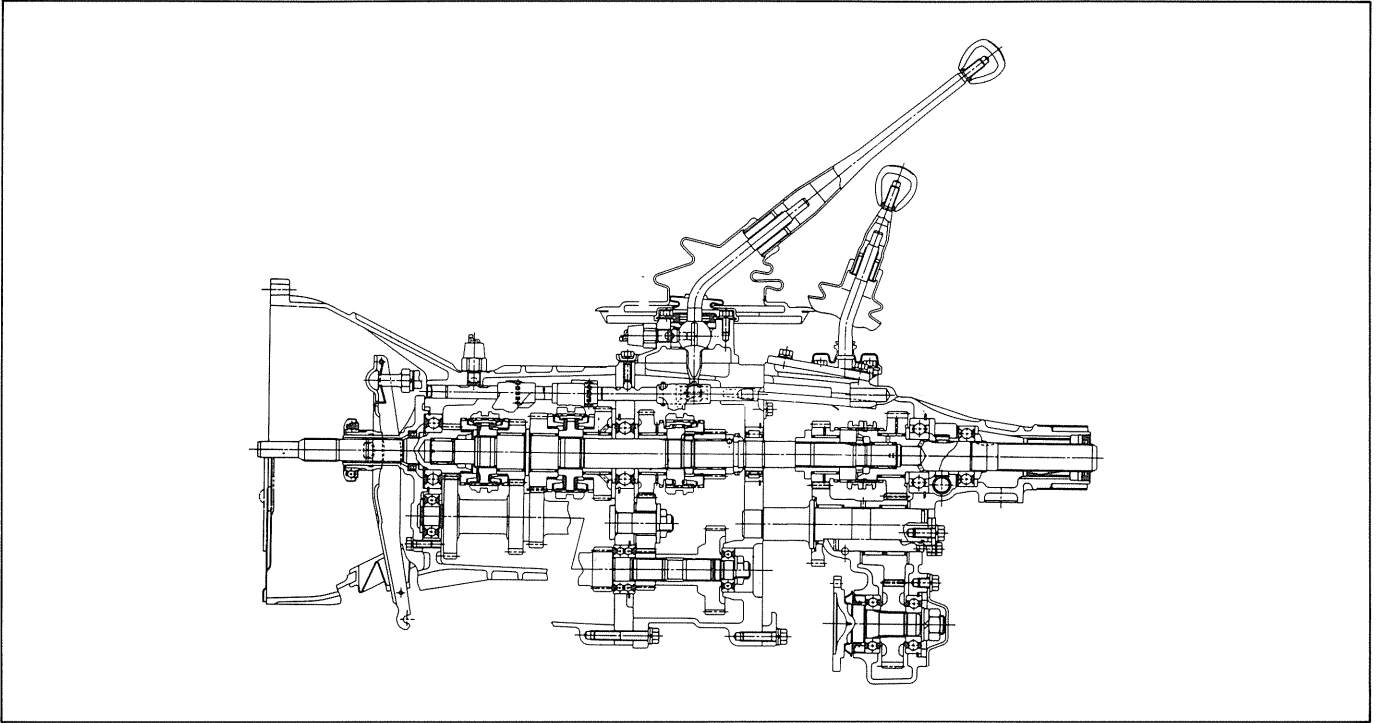
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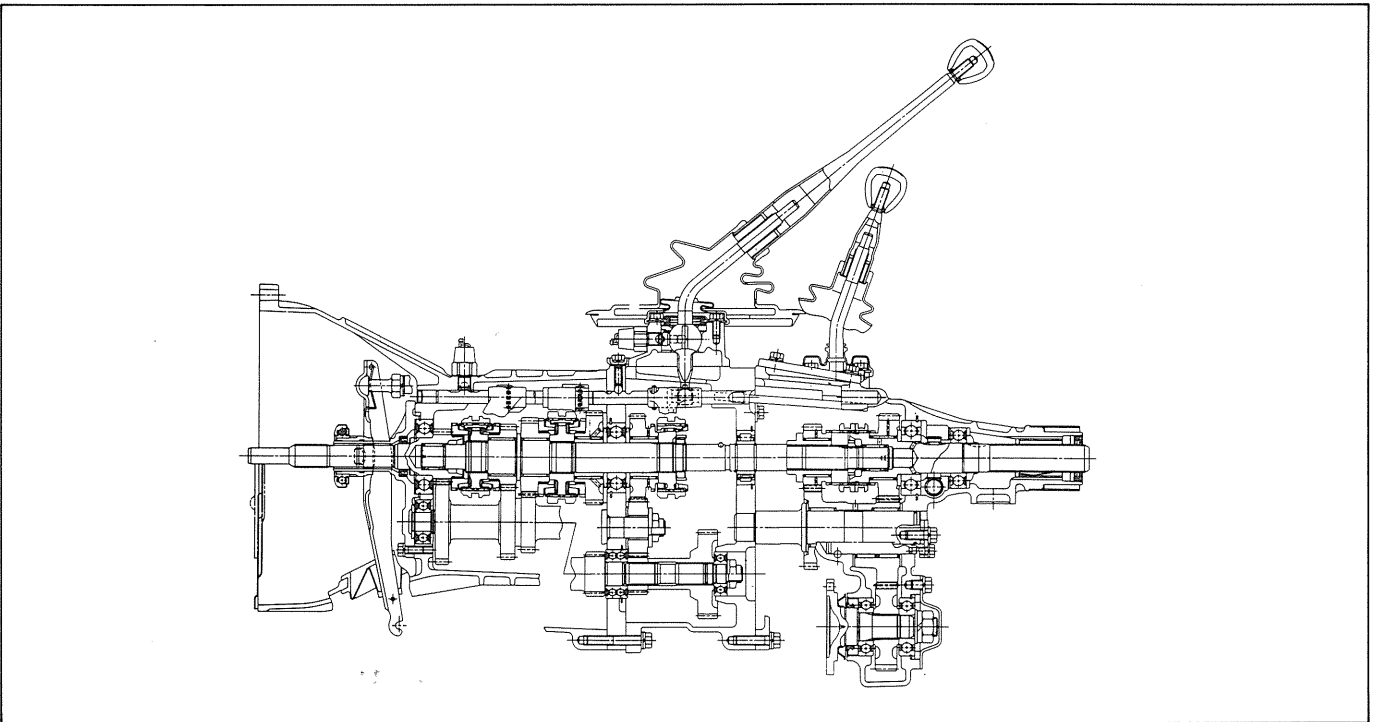
GENERAL DESCRIPTION

On the ISUZU KB and UBS models, the transfer mechanism is built into the rear part of the transmission assembly.

For 5 speed



For 4 speed

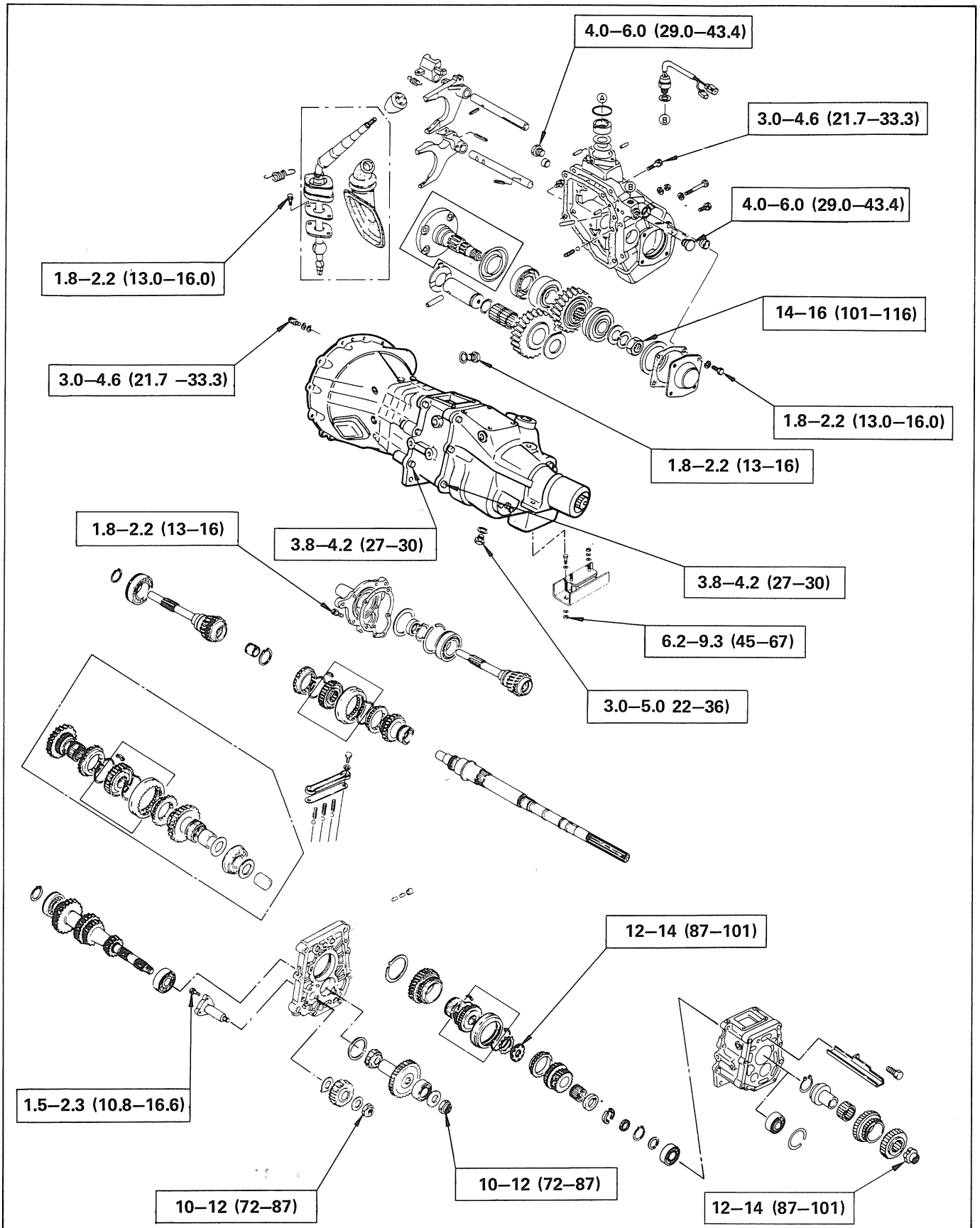


SPECIFICATIONS

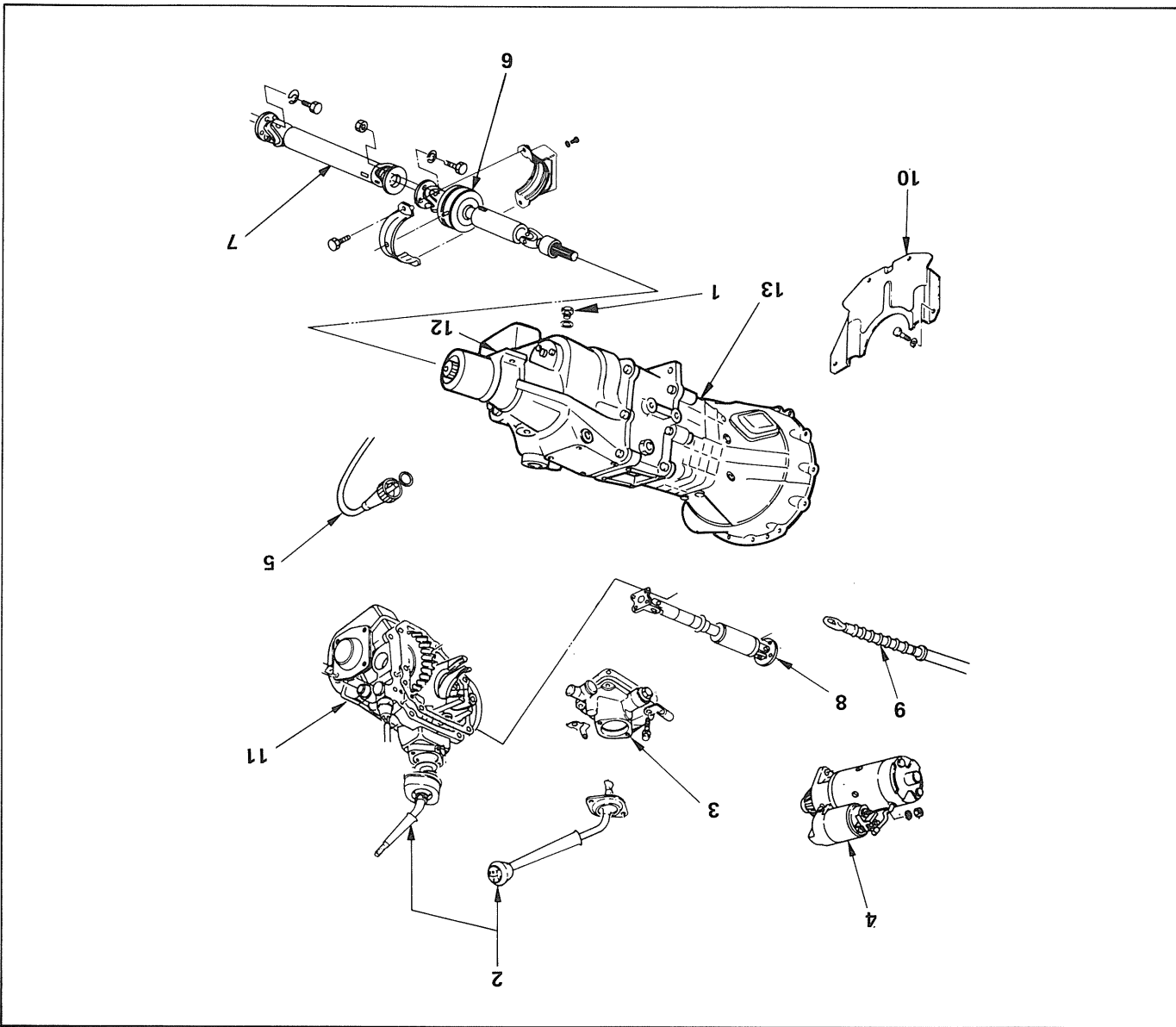
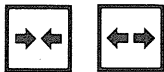
Model	MSG Transmission	Transfer Case																																																												
Type	Fully synchronized 4 and 5-forward gears with constant mesh type reverse gear.	Constant mesh type gears shifting between the 2 and 4 wheel drive mode. Movement of the two speed transmission between 'low' and 'high' is possible during 4 wheel drive operation.																																																												
Control method	Direct control with the gear shift lever on floor.	Direct control with the gear shift lever on the floor.																																																												
Gear ratio	<table border="1"> <tr> <td>1st</td> <td>4.697</td> <td>3.785</td> <td>4.122</td> <td>5K</td> </tr> <tr> <td>2nd</td> <td>2.841</td> <td>2.171</td> <td>2.493</td> <td></td> </tr> <tr> <td>3rd</td> <td>1.629</td> <td>1.413</td> <td>1.504</td> <td></td> </tr> <tr> <td>4th</td> <td>1.000</td> <td>1.000</td> <td>1.000</td> <td></td> </tr> <tr> <td>5th</td> <td>0.898</td> <td>0.855</td> <td>0.855</td> <td></td> </tr> <tr> <td>Rev.</td> <td>4.239</td> <td>3.720</td> <td>3.720</td> <td></td> </tr> </table>	1st	4.697	3.785	4.122	5K	2nd	2.841	2.171	2.493		3rd	1.629	1.413	1.504		4th	1.000	1.000	1.000		5th	0.898	0.855	0.855		Rev.	4.239	3.720	3.720		<table border="1"> <tr> <td>1st</td> <td>4.697</td> <td>4.122</td> <td>High</td> <td>1.000</td> </tr> <tr> <td>2nd</td> <td>2.841</td> <td>2.493</td> <td>Low</td> <td>1.870</td> </tr> <tr> <td>3rd</td> <td>1.629</td> <td>1.504</td> <td></td> <td></td> </tr> <tr> <td>4th</td> <td>1.000</td> <td>1.000</td> <td></td> <td></td> </tr> <tr> <td>5th</td> <td>0.898</td> <td>0.855</td> <td></td> <td></td> </tr> <tr> <td>Rev.</td> <td>4.239</td> <td>3.720</td> <td></td> <td></td> </tr> </table>	1st	4.697	4.122	High	1.000	2nd	2.841	2.493	Low	1.870	3rd	1.629	1.504			4th	1.000	1.000			5th	0.898	0.855			Rev.	4.239	3.720		
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Speedometer gear ratio	5/17 or 6/19 (for KB), 5/16 (for UBS)																																																													
Gear ratio	4.6L (1.22 gal.)																																																													
Oil Capacity	4.6L (1.22 gal.)																																																													

FIXING TORQUE

kg·m(ft.lbs.)



REMOVAL AND INSTALLATION

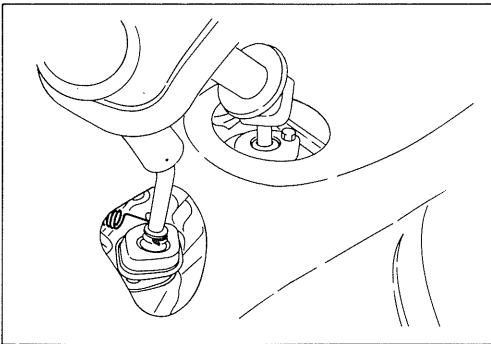


Removal steps

1. Transmission oil drain
2. Gear shift lever assembly
3. Quadrant box
4. Starter motor
5. Speedometer cable
6. Center bearing
7. Propeller shaft (rear side)
8. Propeller shaft (front side)
9. Clutch cable
10. Flywheel stone guard
11. Transmission side case
12. Frame bracket to transmission rear
13. Transmission to engine attaching bolts and nuts

Installation steps

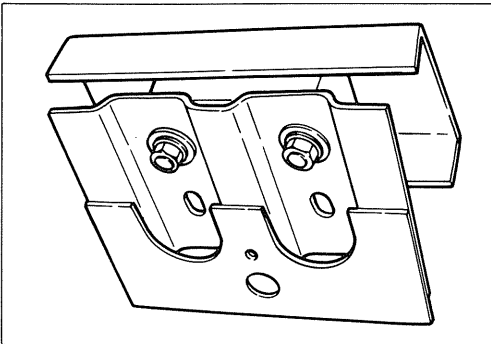
1. Transmission to engine attaching bolts and nuts
2. Gear shift lever assembly
3. Quadrant box
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13. Transmission to engine attaching bolts and nuts



Important operations — Removal

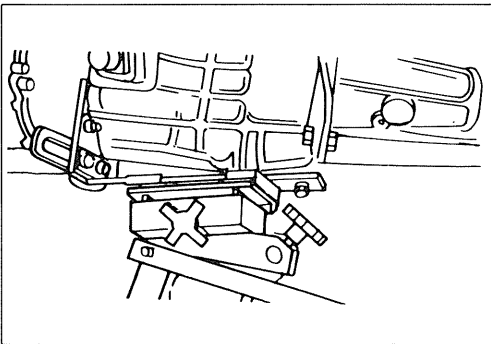
2. Gear shift lever assembly

Remove the return spring from the transfer gear shift lever, then remove the levers.



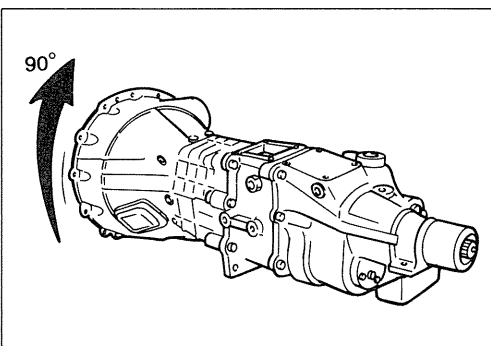
12. Frame bracket to transmission rear mount bolts and nuts

Remove the bracket to the transmission rear mount nuts and bolts.



13. Transmission to engine attaching bolts and transmission assembly

Support the rear end of the oil pan using a jack or equivalent.

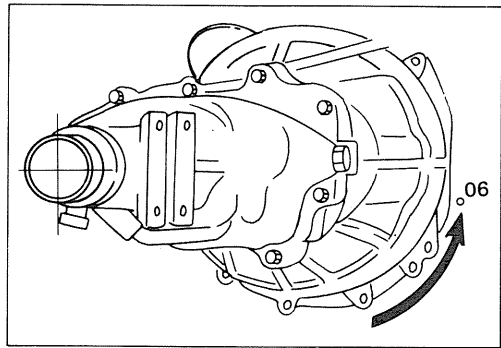


When removing the transmission, swing the transmission case 90 degrees clockwise for easier removal.

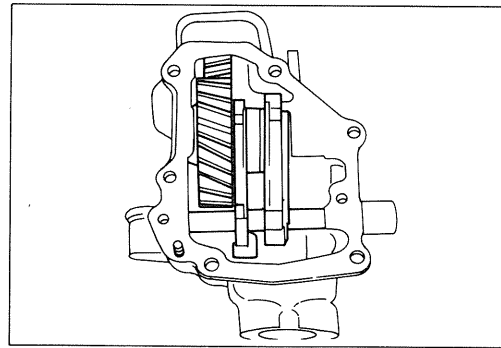
Important operations — Installation



13. Transmission assembly
Position the transmission, with transfer side case fitting face of the transfer case turned down, in the vehicle and slide the gliding top gear shaft forward into the pilot bearing.



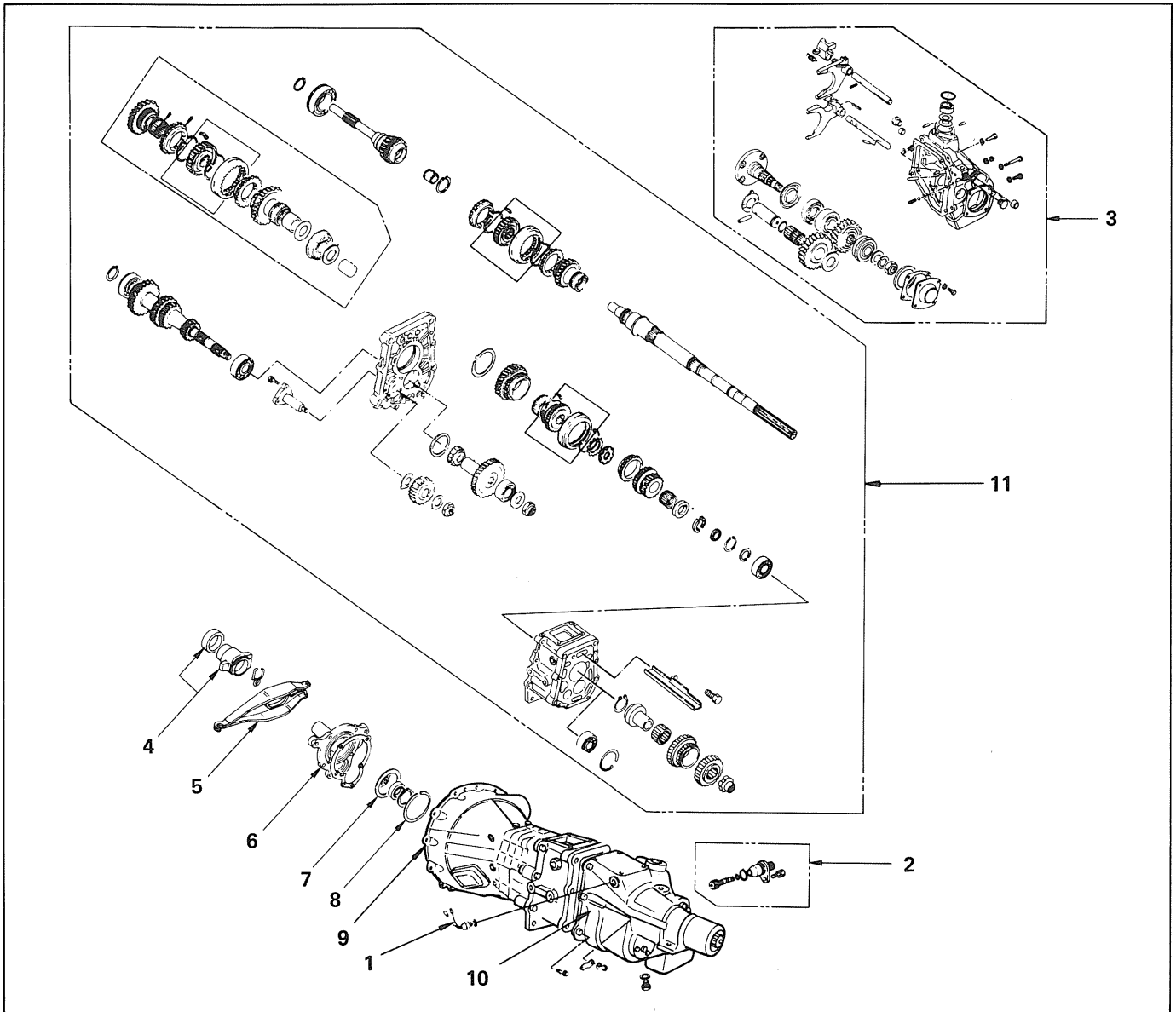
11. Transfer side case
Aligning the grooves in the shift arms shift arms and shift sleeves held in the 2H position.





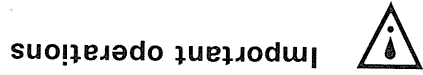
DISASSEMBLY

MAJOR COMPONENTS



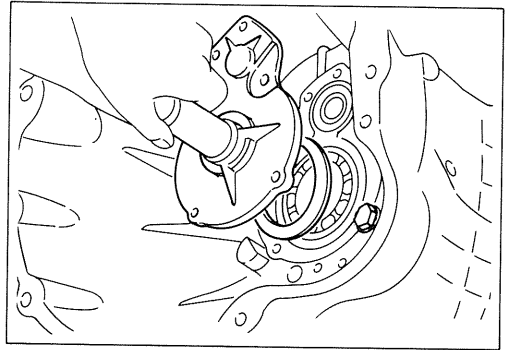
Disassembly steps

- | | |
|-------------------------------------|--|
| 1. Back-up light switch | 8. Snap ring |
| 2. Speedometer driven gear assembly | ▲ 9. Transmission case |
| 3. Transfer side case assembly | ▲ 10. Transfer case |
| 4. Shift block | 11. Main shaft assembly, cluster gear shaft assembly and top gear shaft assembly |
| 5. Withdraw lever | |
| 6. Front cover | |
| ▲ 7. Belleville spring | |

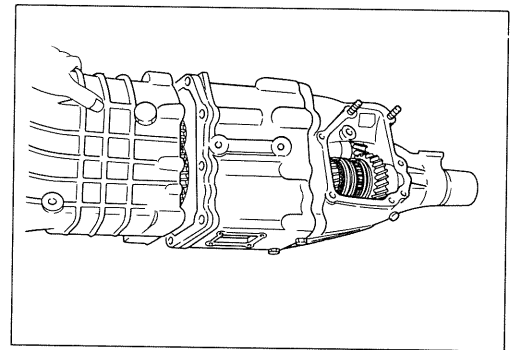


Important operations

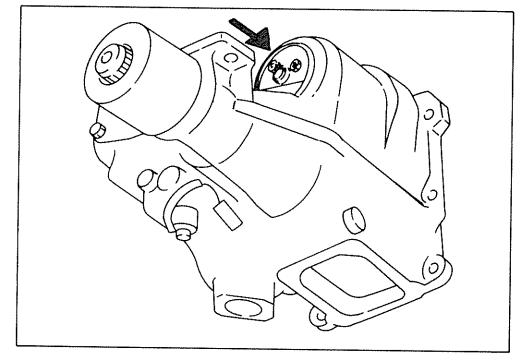
7. Belleville spring
Remove the bearing retainer and the retainer gasket and Belleville spring.



9. Transmission case
Remove the transfer case, the center support and the transmission case, then remove the transmission case and gasket.

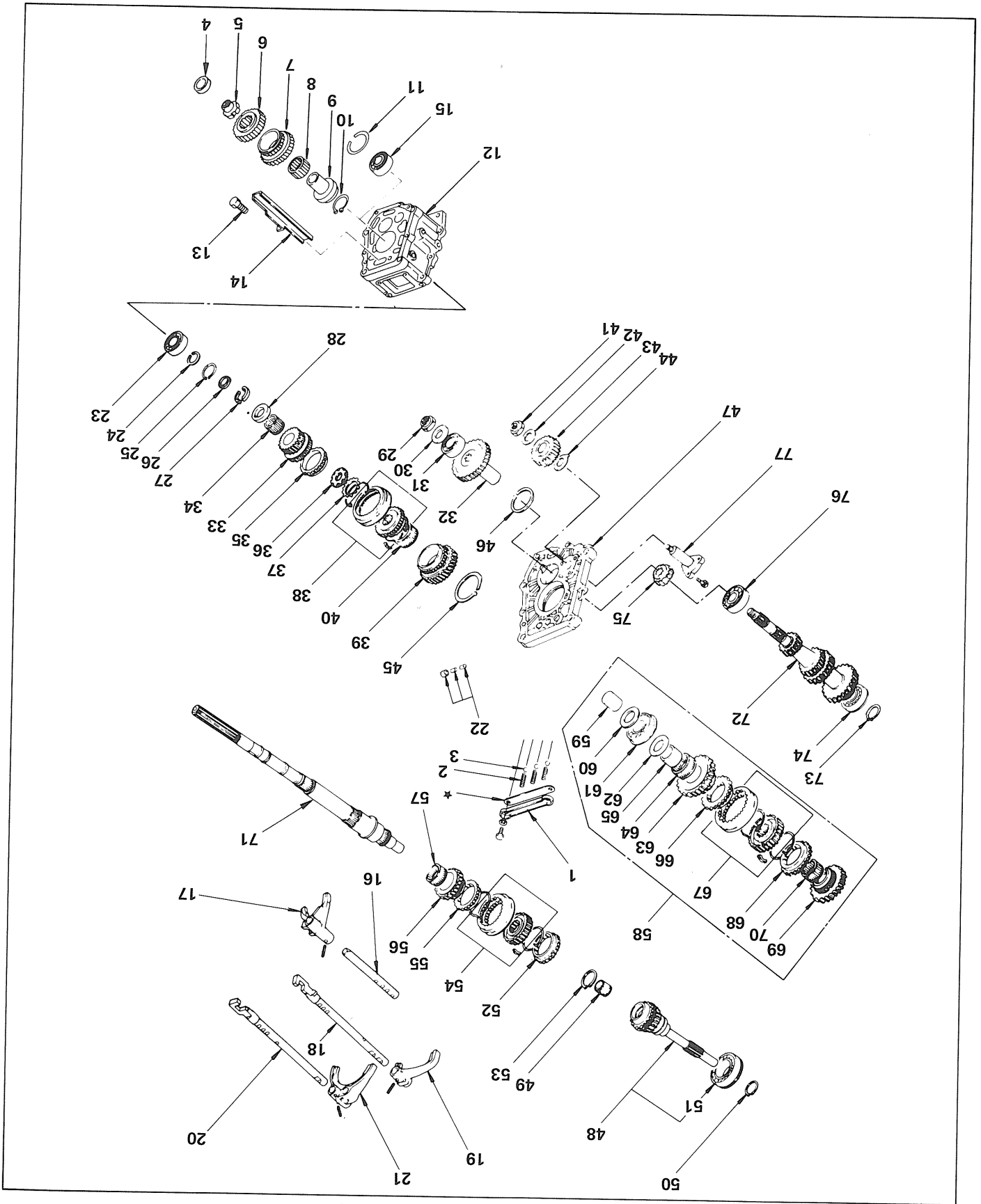


10. Transfer case
Remove the transfer countershaft lock plate and the distance plate.



MINOR COMPONENT (FOR 5 SPEED)

Main shaft gear assembly, cluster gear assembly and top gear shaft assembly.



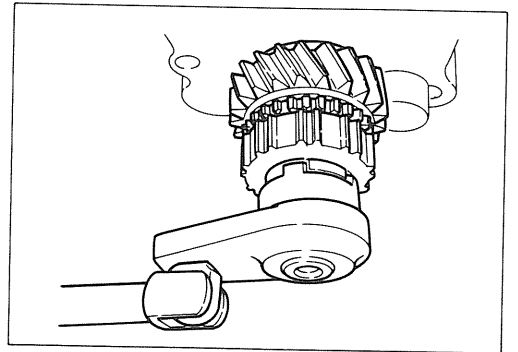
Disassembly steps

1. Plate ; detent spring
2. Spring ; detent ball
3. Ball ; detent, gear shift
4. Spacer ; pilot
- ▲ 5. Nut ; thrust input hub
6. Thrust input hub
7. Thrust input gear
8. Collar ; needle bearing
9. Collar ; thrust input gear
10. Ring ; snap
11. Ring ; snap adapter case
12. Adapter case
13. Bolt ; oil guide
14. Oil guide
15. Bearing ; ball, main shaft end
- ▲ 16. Shaft ; arm, gear shift, reverse-5th
17. Fork ; reverse-5th, shift
- ▲ 18. Shaft ; gear shift, top-3rd
19. Fork ; top-3rd, shift
- ▲ 20. Shaft ; gear shift low-2nd
21. Fork ; low-2nd, shift
22. Pin and plug ; inter lock
23. Bearing ; roller main shaft center
24. Ring ; snap, ball bearing
25. Ring ; snap, thrust ring
26. Retaining ring
27. Thrust ring ; 5th gear
28. Washer ; thrust, 5th
29. Nut ; self lock, counter
30. Washer ; plane, counter 5th gear
- ▲ 31. Bearing ; ball, counter end
- ▲ 32. Gear ; counter, 5th
33. Gear assembly ; 5th with synchronizer cone
34. Bearing ; needle, 5th
35. Ring ; block, 5th
- ▲ 36. Nut ; main shaft
37. Washer ; lock, main shaft
38. Synchronizer assembly ; reverse-5th
39. Gear ; reverse, main shaft
40. Bearing ; needle, low
41. Nut ; self lock, counter
42. Washer ; thrust, reverse idle, rear
43. Gear ; reverse idle, with bushing
44. Washer ; thrust, reverse idle, front
45. Conical spring
46. Ring ; snap, antilash plate
47. Plate ; intermediate
48. Shaft ; top gear, with synchronizer cone
49. Bearing ; needle, main shaft
50. Ring ; snap, bearing to top shaft
- ▲ 51. Bearing ; ball, top gear shaft
52. Ring ; block, top-3rd
53. Ring ; snap, main shaft
54. Synchronizer assembly ; top-3rd
55. Ring ; block, top-3rd
56. Gear assembly ; 3rd with synchronizer cone
57. Bearing ; needle, 2nd, 3rd
- ▲ 58. Gear assembly ; low-2nd
59. Collar ; needle bearing, low
60. Washer ; thrust, low
- ▲ 61. Bearing ; radial ball, main shaft
62. Washer ; thrust, low
63. Gear assembly ; low, with synchronizer cone
64. Bearing ; needle, low
65. Collar ; needle bearing, low
66. Ring ; block, low-2nd
67. Synchronizer assembly ; low-2nd
68. Ring ; block, low-2nd
69. Gear assembly ; 2nd with synchronizer cone
70. Bearing ; needle, 2nd, 3rd
71. Shaft ; main
72. Gear ; cluster
73. Ring ; snap, cluster gear
74. Bearing ; ball, counter front
- ▲ 75. Gear ; counter reverse
- ▲ 76. Bearing ; angular ball, cluster
77. Shaft ; leverse idle

Important operations

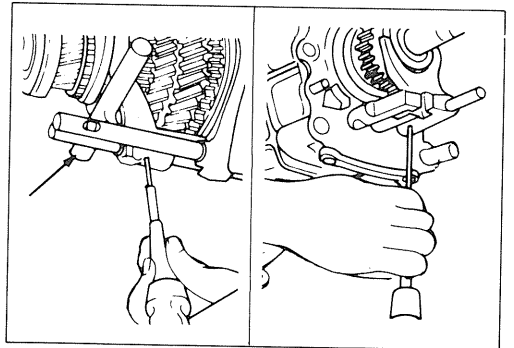


- 5. Nut ; thrust input hub
Wrench : 5-8511-0011-0
(J-29041)

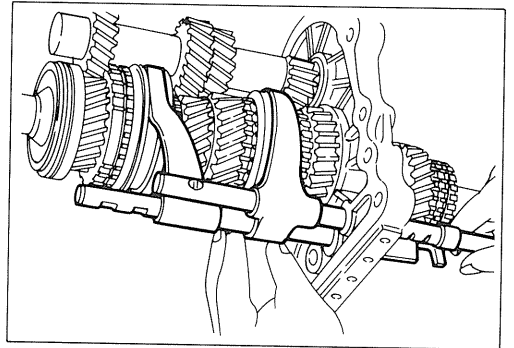


- 16. Shaft ; arm gear shift reverse — 5th
- 18. Shaft ; gear shift top — 3rd
- 20. Shaft ; gear shift low — 2nd

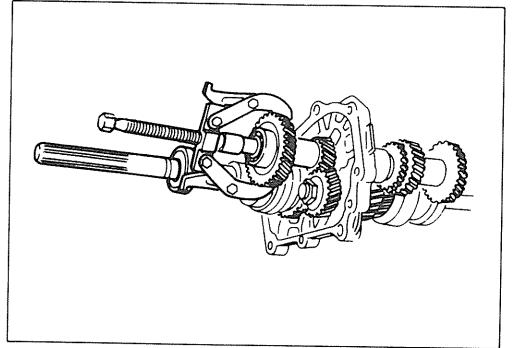
When removing the spring, hold a round bar against the end of the shift rod to prevent damage.
Spring pin remover : 9-8529-2201-0



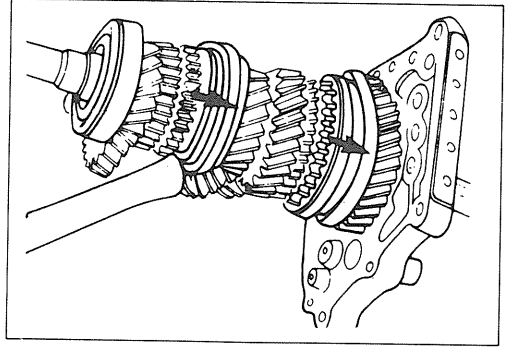
Carefully remove the reverse shifter rod forward to avoid losing the detent interlock pins.
Note: Remove the shifter rods carefully. Detent interlock pins are located between the shifter rods in the center support.

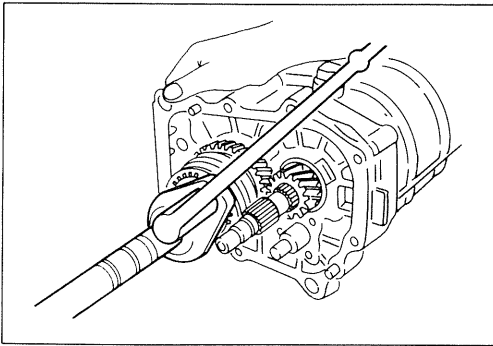


- 31. Bearing ; ball, counter end
- 32. Gear ; counter, 5th
Remover : 5-8840-0013-0
(J-22888)



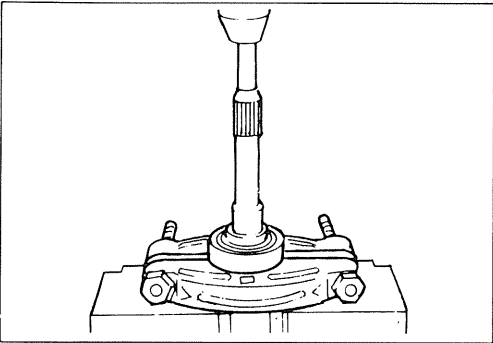
- 36. Nut ; main shaft
(1) Engage top/3rd synchronizer with the third gear and Low/2nd side synchronizer with the Low gear, then attach Tool to the main shaft and the counter gear.
Holding fixture : 5-8840-2001-0
(J-29768)





- (2) This operation is necessary to prevent turning of the shaft when removing main shaft rear and countershaft reverse gear lock nut.

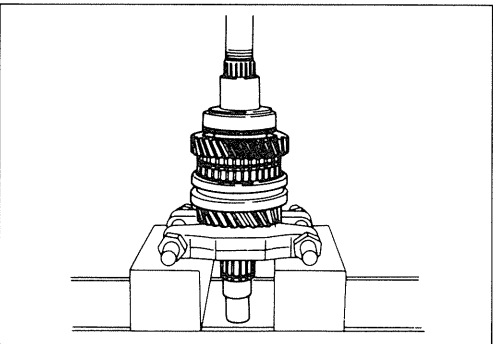
Wrench : 5-8521-9014-0
(J-33441)



51. Bearing ; ball, top gear shaft

Use a bench press

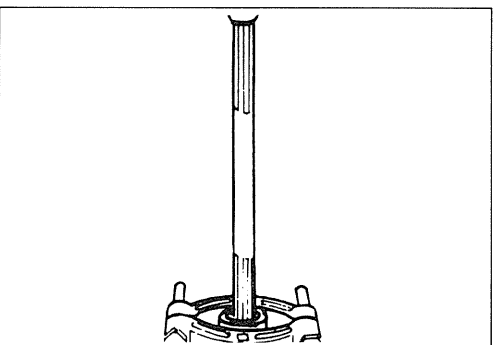
Remover : 5-8840-0015-0
(J-22912-01)



58. Gear assembly ; low-2nd

Remove the parts (57 through 64) from the main shaft together using special tool.

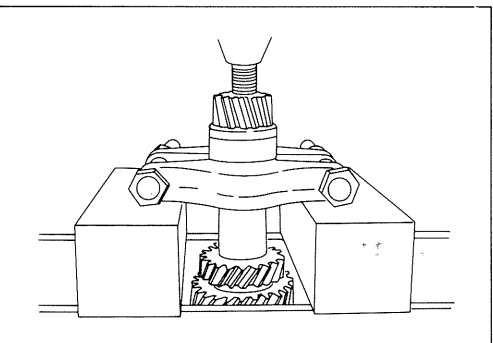
Remover : 5-8840-0015-0
(J-22912-01)



61. Bearing ; radial ball, main shaft

Use a bench press.

Remover : 5-8840-0015-0
(J-22912-01)



75. Gear ; counter reverse

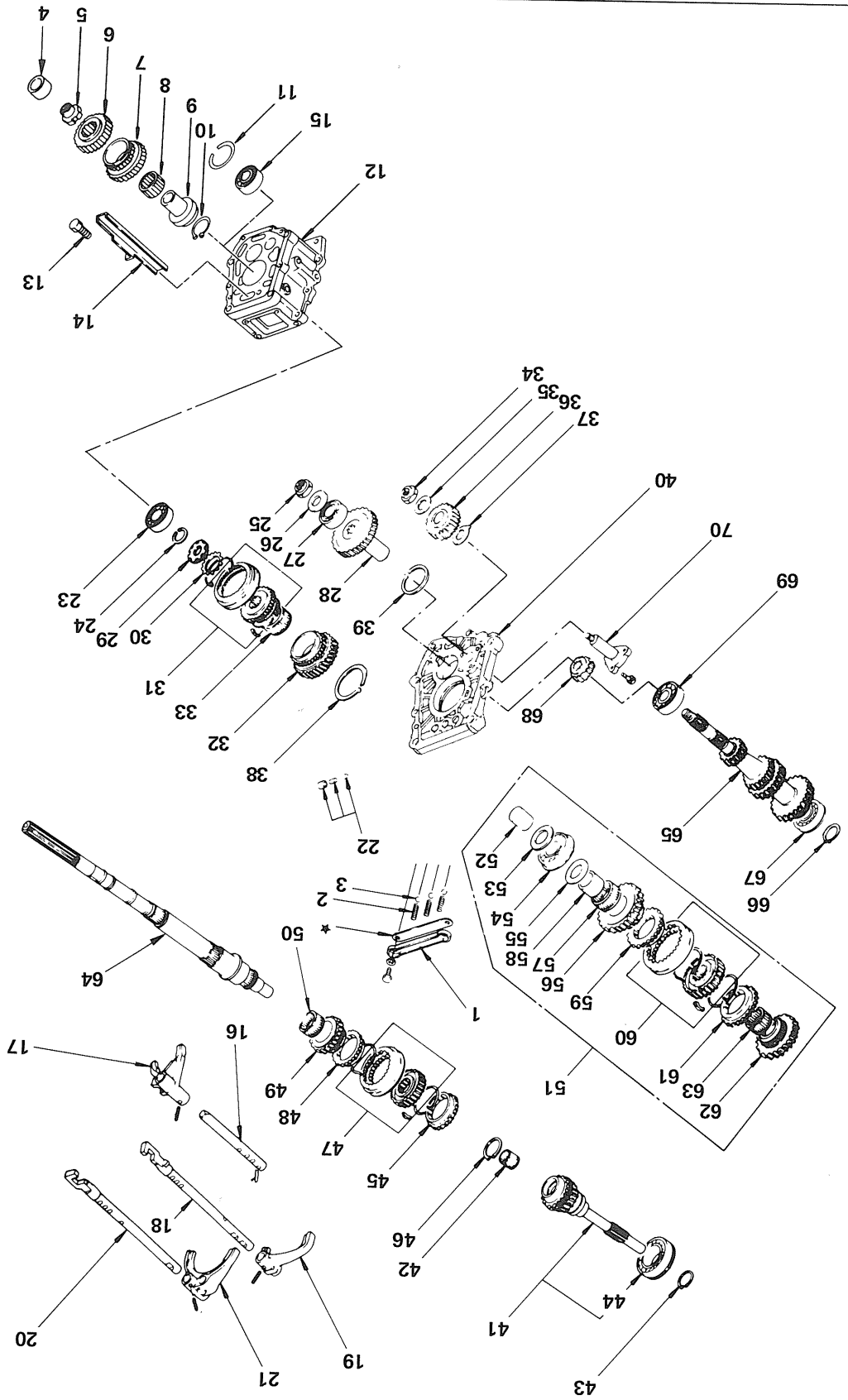
76. Bearing ; angular ball, cluster

Use a bench press for removal.

Remover : 5-8840-0015-0
(J-22912-01)

MINOR COMPONENT (FOR 4 SPEED)

Main shaft gear assembly, cluster gear assembly and top gear shaft assembly.



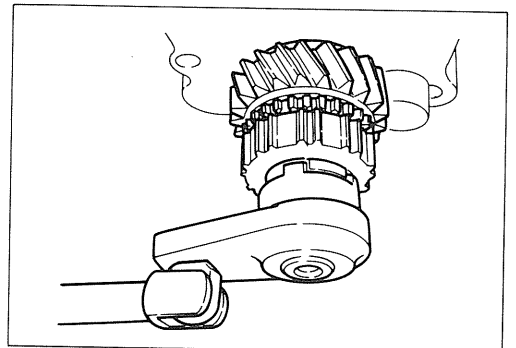
Disassembly steps

1. Plate ; detent spring
2. Spring ; detent ball
3. Ball ; detent, gear shift
4. Spacer ; pilot
- ▲ 5. Nut ; thrust input hub
6. Thrust input hub
7. Thrust input gear
8. Collar ; needle bearing
9. Collar ; thrust input gear
10. Ring ; snap
11. Ring ; snap adapter case
12. Adapter case
13. Bolt ; oil guide
14. Oil guide
15. Bearing ; ball, main shaft end
- ▲ 16. Shaft ; arm, gear shift, reverse
17. Fork ; reverse-5th, shift
- ▲ 18. Shaft ; gear shift, top-3rd
19. Fork ; top-3rd, shift
- ▲ 20. Shaft ; gear shift low-2nd
21. Fork ; low-2nd, shift
22. Pin and plug ; inter lock
23. Bearing ; roller main shaft center
24. Ring ; snap, ball bearing
25. Nut ; self lock, counter
26. Washer ; plane, counter
- ▲ 27. Bearing ; ball, counter end
- ▲ 28. Gear ; counter
- ▲ 29. Nut ; main shaft
30. Washer ; lock, main shaft
31. Synchronizer assembly ; reverse-5th
32. Gear ; reverse, main shaft
33. Bearing ; needle, low
34. Nut ; self lock, counter
35. Washer ; thrust, reverse idle, rear
36. Gear ; reverse idle, with bushing
37. Washer ; thrust, reverse idle, front
38. Conical spring
39. Ring ; snap, antilash plate
40. Plate ; intermediate
41. Shaft ; top gear, with synchronizer cone
42. Bearing ; needle, main shaft
43. Ring ; snap, bearing to top shaft
- ▲ 44. Bearing ; ball, top gear shaft
45. Ring ; block, top-3rd
46. Ring ; snap, main shaft
47. Synchronizer assembly ; top-3rd
48. Ring ; block, top-3rd
49. Gear assembly ; 3rd with synchronizer cone
50. Bearing ; needle, 2nd, 3rd
- ▲ 51. Gear assembly ; low-2nd
52. Collar ; needle bearing, low
53. Washer ; thrust, low
- ▲ 54. Bearing ; radial ball, main shaft
55. Washer ; thrust, low
56. Gear assembly ; low, with synchronizer cone
57. Bearing ; needle, low
58. Collar ; needle bearing, low
59. Ring ; block, low-2nd
60. Synchronizer assembly ; low-2nd
61. Ring ; block, low-2nd
62. Gear assembly ; 2nd with synchronizer cone
63. Bearing ; needle, 2nd, 3rd
64. Shaft ; main
65. Gear ; cluster
66. Ring ; snap, cluster gear
67. Bearing ; ball, counter front
- ▲ 68. Gear ; counter reverse
- ▲ 69. Bearing ; angular ball, cluster
70. Shaft ; leverse idle

Important operations

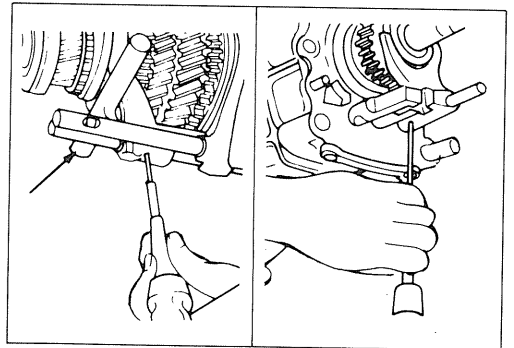


- 5. Nut ; thrust input hub
Wrench : 5-8511-0011-0
(J-29041)

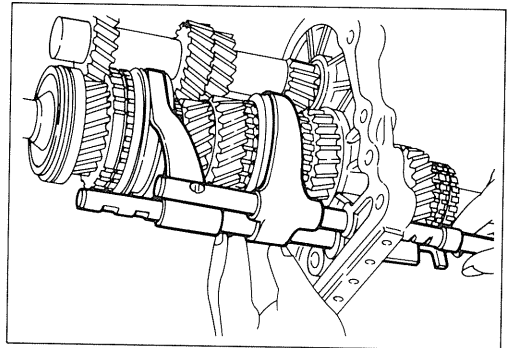


- 16. Shaft ; arm gear shift reverse
- 18. Shaft ; gear shift top — 3rd
- 20. Shaft ; gear shift low — 2nd

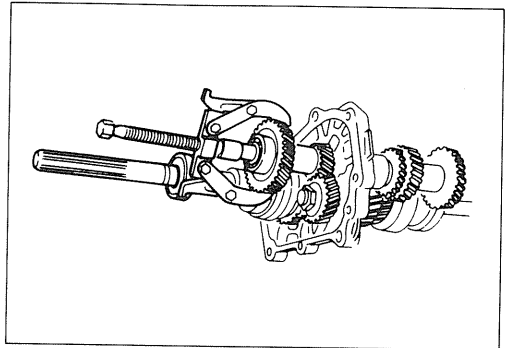
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Spring pin remover : 9-8529-2201-0



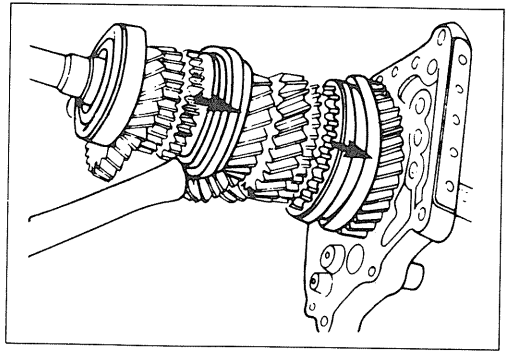
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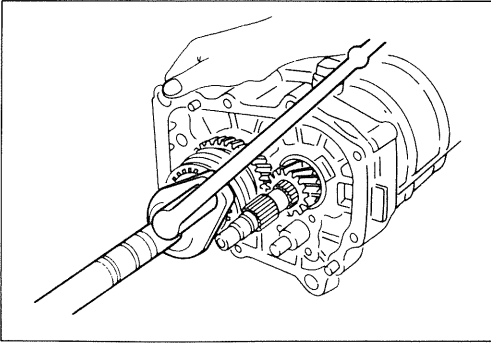


- 27. Bearing ; ball, counter end
- 28. Gear ; counter
Remover : 5-8840-0013-0
(J-22888)



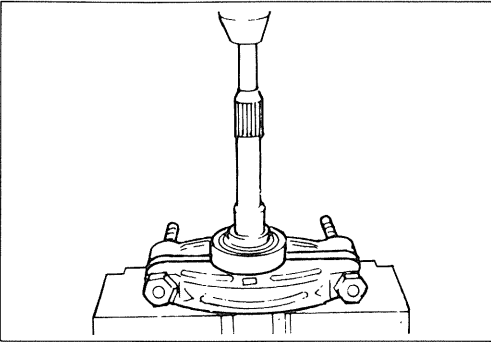
- 29. Nut ; main shaft
(1) Engage top/3rd synchronizer with the third gear and Low/2nd side synchronizer with the Low gear, then attach Tool to the main shaft and the counter gear.
Holding fixture : 5-8840-2001-0
(J-29768)





- (2) This operation is necessary to prevent turning of the shaft when removing main shaft rear and countershaft reverse gear lock nut.

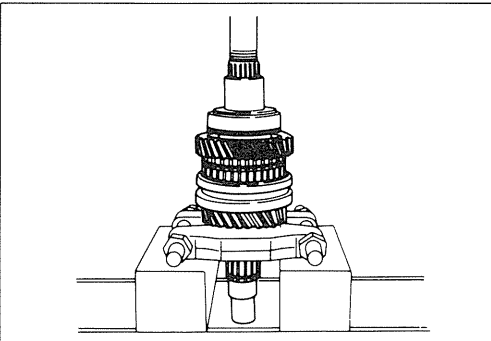
Wrench : 5-8521-9014-0
(J-33441)



- 44. Bearing ; ball, top gear shaft**

Use a bench press

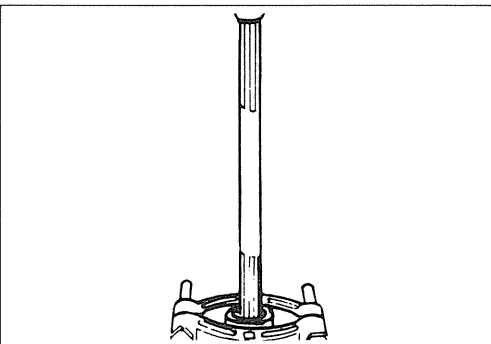
Remover : 5-8840-0015-0
(J-22912-01)



- 51. Gear assembly ; low-2nd**

Remove the parts (57 through 64) from the main shaft together using special tool.

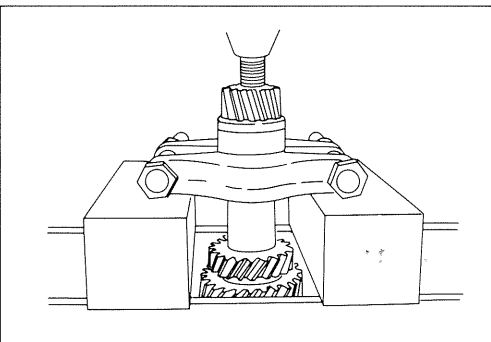
Remover : 5-8840-0015-0
(J-22912-01)



- 54. Bearing ; radial ball, main shaft**

Use a bench press.

Remover : 5-8840-0015-0
(J-22912-01)



- 68. Gear ; counter reverse**

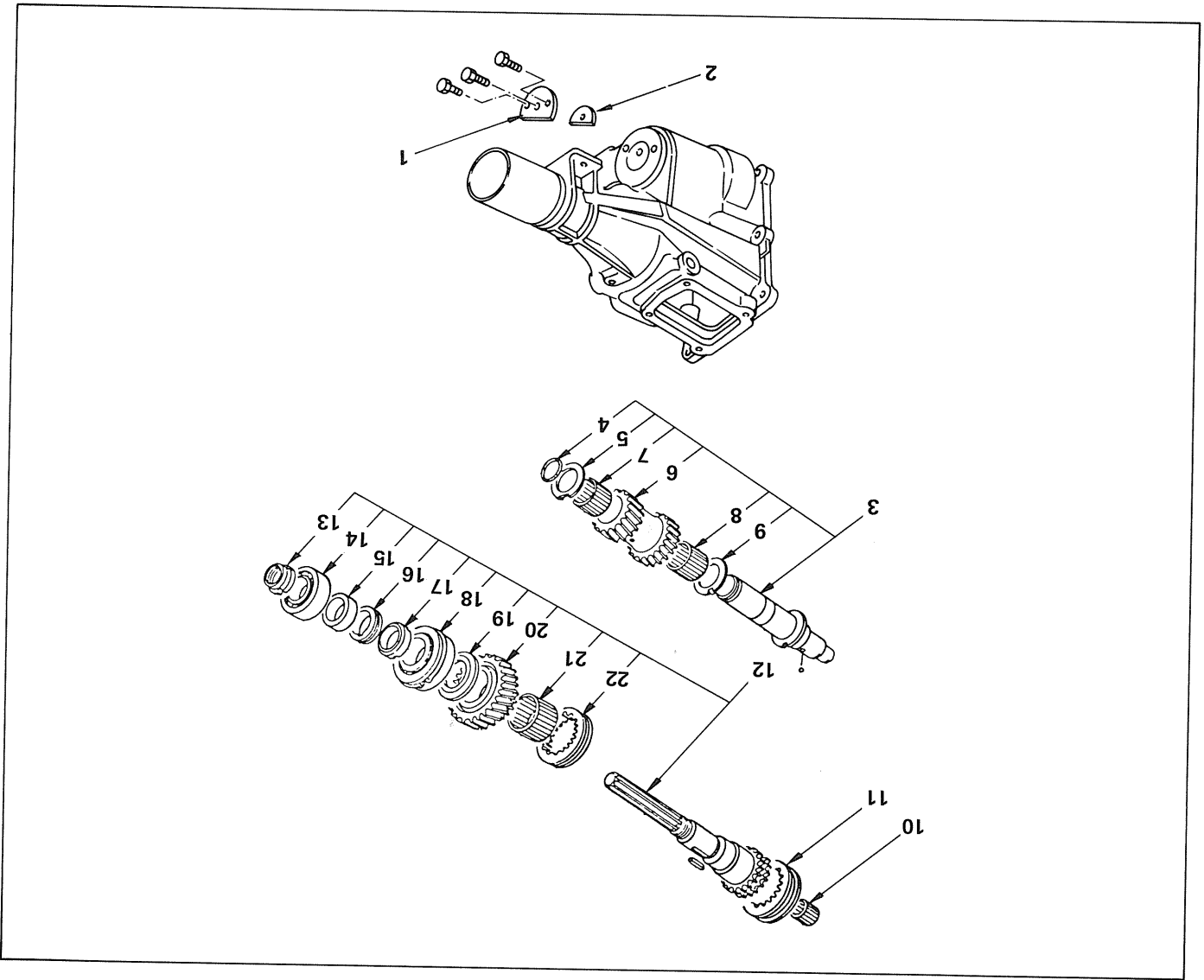
- 69. Bearing ; angular ball, cluster**

Use a bench press for removal.

Remover : 5-8840-0015-0
(J-22912-01)

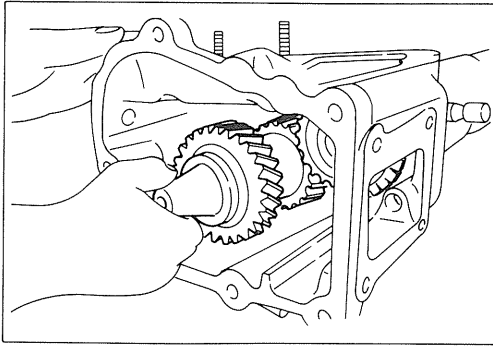
MINOR COMPONENTS

Transfer case



Disassembly steps

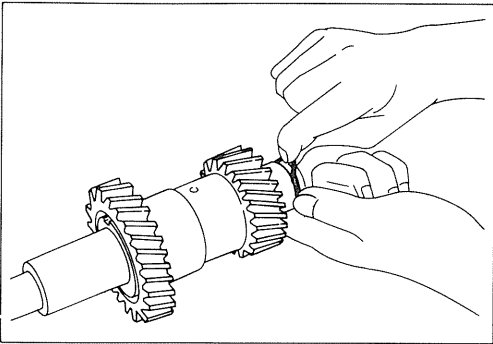
1. Lock plate
2. Distance
3. Transfer counter shaft assembly
4. O-ring
5. Thrust washer
6. Counter gear
7. Needle roller bearing
8. Needle roller bearing
9. Thrust washer
10. Needle roller bearing
11. High/Low sleeve
12. Output shaft assembly
13. Nut
14. Ball bearing
15. Spacer
16. Speedometer drive gear
17. Distance piece
18. Ball bearing
19. Thrust washer
20. Output gear
21. Needle roller bearing
22. 4x2/4x4 sleeve



Important operations

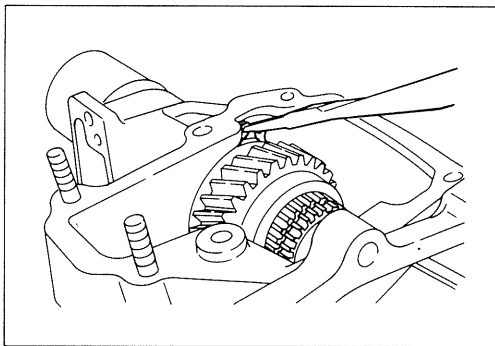
3. Transfer counter shaft assembly

Lightly tap the transfer countershaft assembly out through the shaft fitting hole in the case.



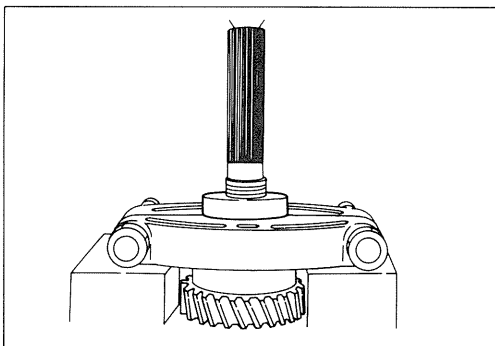
4. O-ring

From the transfer countershaft, remove the O-ring, thrust washer, countergear, needle roller bearings, and thrust washer.



12. Output shaft assembly

Expand the rear output shaft front bearing snap ring and remove the output shaft assembly forward.



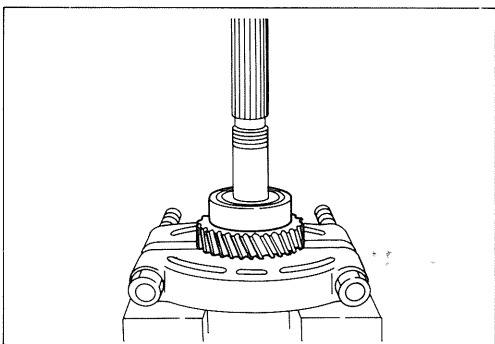
13. Nut

Nut hex : 41 mm (1-5/8 in.)

14. Ball bearing

Use a bench press.

5-8840-0015-0
(J-22912-01)



18. Ball bearing

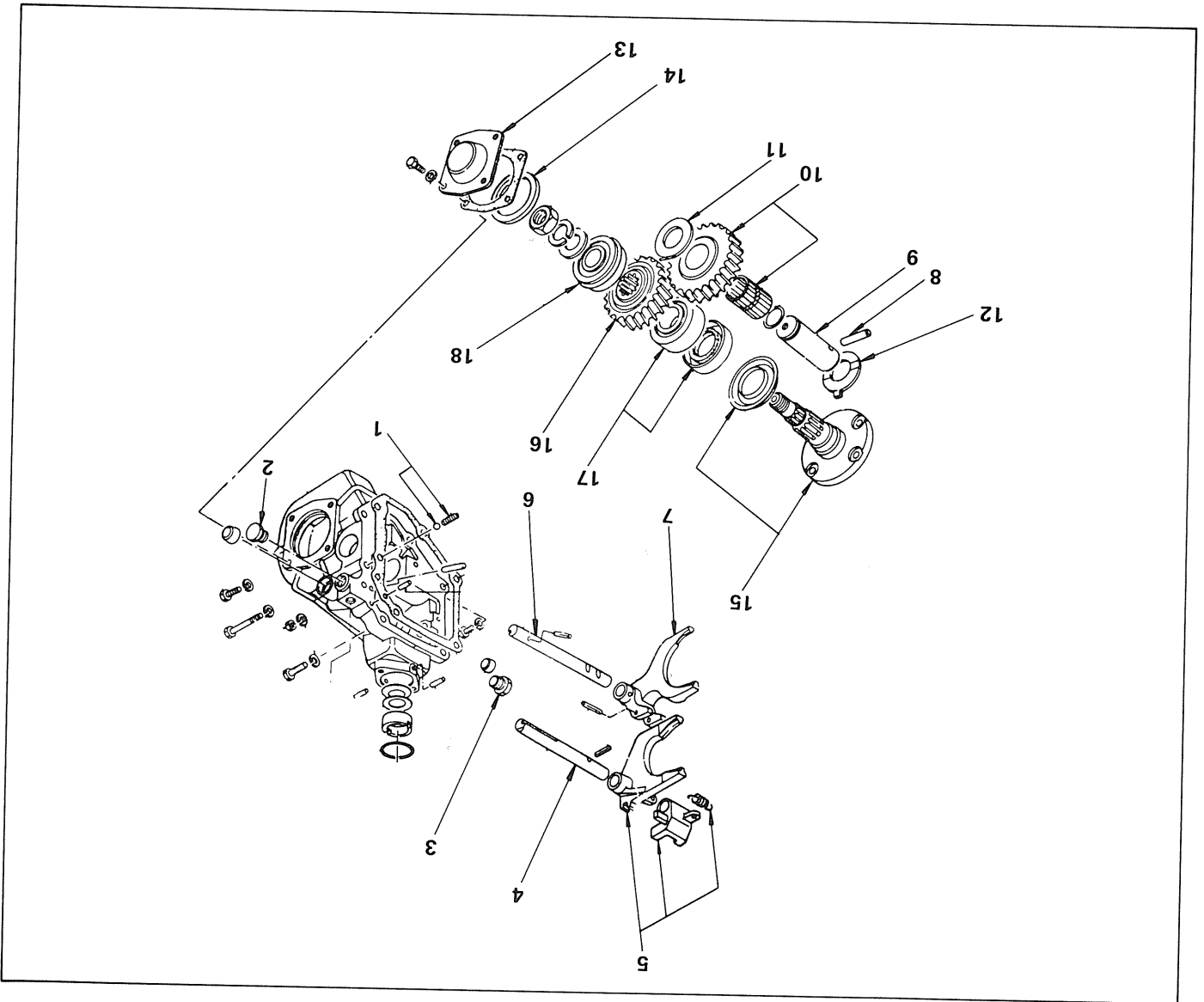
Use a bench press.

5-8840-0015-0
(J-22912-01)



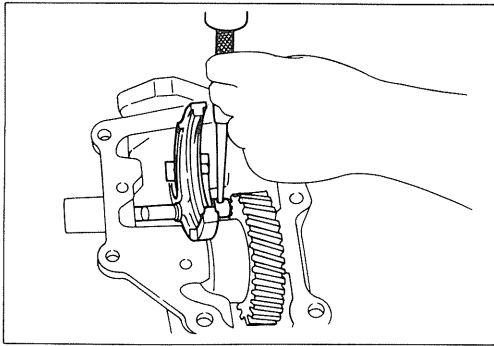
MINOR COMPONENTS

Transfer side case



Disassembly steps

1. Detent spring and detent ball
2. Screw plug
3. Screw plug
4. Shift rod
5. 4x2/4x4 shift arm and shift block
6. Shift rod
7. High/Low shift arm
8. Dowel pin
9. Idler gear shaft
10. Idler gear and needle roller bearing
11. Thrust washer
12. Thrust washer
13. Front output shaft cover
14. Distance piece
15. Front output shaft
16. Front output gear
17. Front output shaft front bearing
18. Front output shaft rear bearing



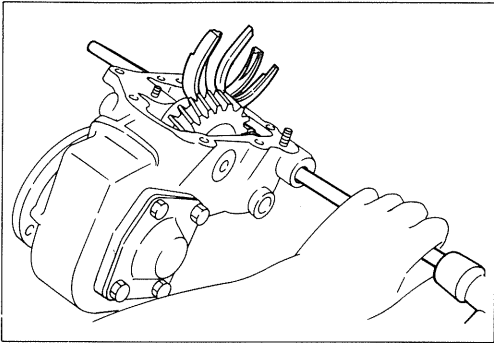
Important operations



4., 6. Shift rods

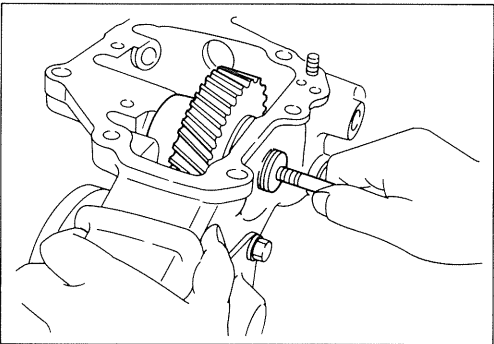
Remove the spring pin from the shift arm.
Spring pin remover : 9-85292-201-0

Drive the shift rod toward the output side.



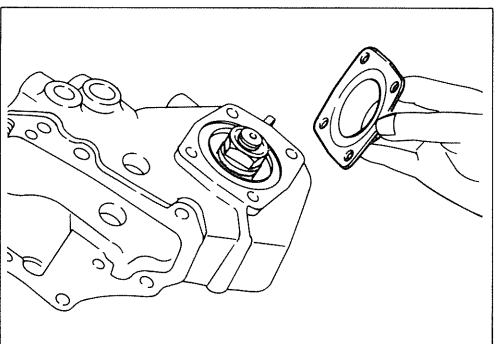
9. Idler gear shaft

Force out the shaft by turning in the 8 mm (P. 1.25 mm) bolt in the threaded hole at end of the idler shaft, then remove the thrust washers, idler gear and needle roller bearing.



13. Front output shaft cover

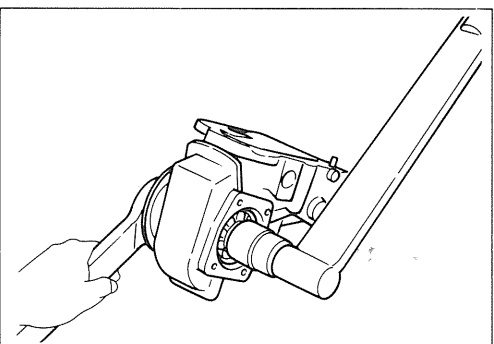
Remove the front output shaft cover, then remove the distance piece.



15. Front output shaft

Set or equivalent, to the flanged portion of the front output shaft and loosen and remove the shaft nut spring washer and plain washer.

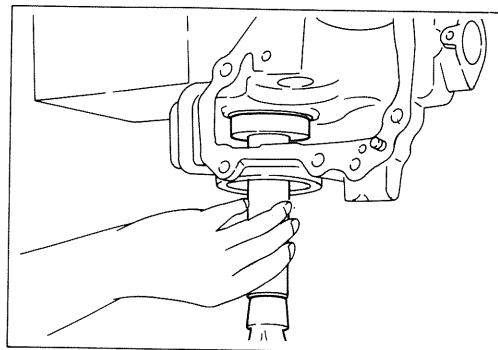
Wrench : 5-8840-0133-0
(J-8614-01)



- 17. Front output shaft front bearing
- 18. Front output shaft rear bearing



Bearing remover and installer: 5-8840-0010-0
(J-29040)
Grip : 5-8523-0007-0
(J-8092)





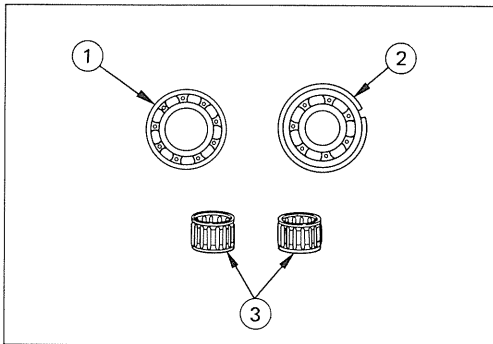
INSPECTION AND REPAIR

Make necessary adjustments, repairs, and part replacements if wear, damage, or other problems are discovered during inspection.



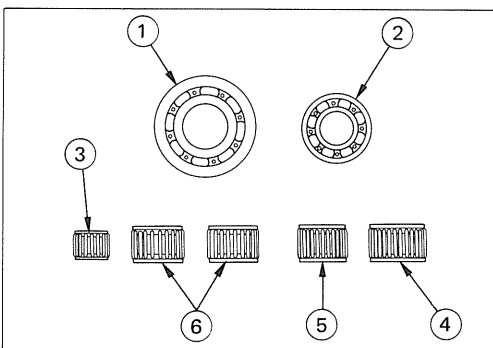
Visual check

Inspect the following parts for wear, damage or other abnormal conditions.



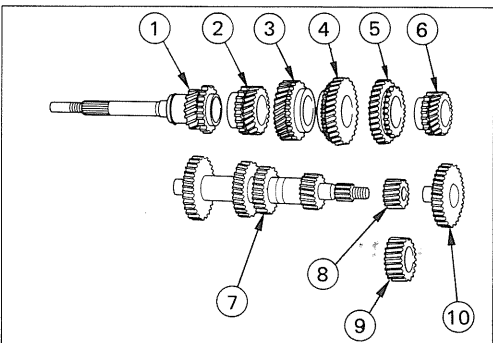
Transfer side case

1. Front output shaft front bearing
2. Front output shaft rear bearing
3. Idler gear bearing



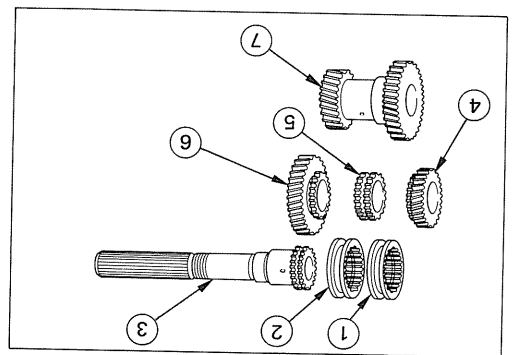
Transmission and transfer case

1. Rear output shaft front bearing
2. Rear output shaft pilot bearing
3. Rear output shaft pilot bearing
4. Rear output gear bearing
5. Transfer input gear bearing
6. Transfer counter gear bearing

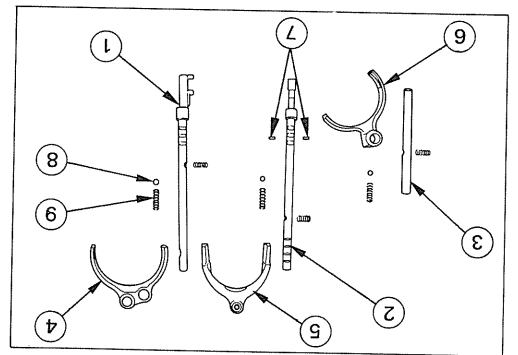


Transmission

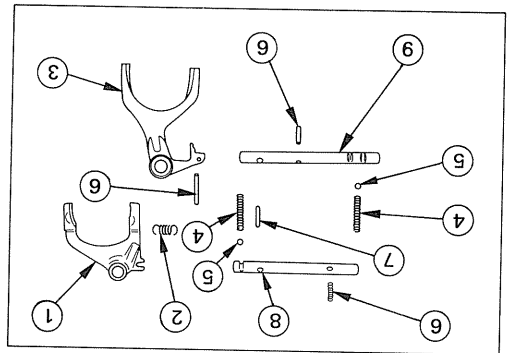
1. Clutch gear shaft
2. 3rd gear
3. 2nd gear
4. 1st gear
5. Reverse gear
6. Counter gear
7. Counter reverse gear
8. Reverse idle
9. 5th gear
10. 5th counter gear



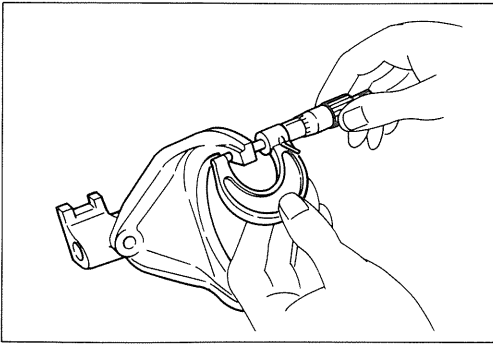
- Transfer case**
1. Range shift sleeve
 2. 4-wheel shift sleeve
 3. Rear output shaft
 4. Transfer input gear
 5. Clutch hub
 6. Rear output gear
 7. Transfer counter gear



- Transmission**
1. 1st/2nd shift rod
 2. 3rd/4th shift rod
 3. Rev./5th shift rod
 4. 1st/2nd shift arm
 5. 3rd/4th shift arm
 6. Rev./5th shift arm
 7. Interlock pin
 8. Detent ball
 9. Detent spring

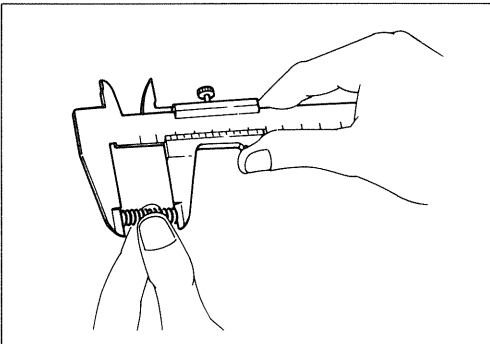


- Transfer side case**
1. 4-wheel shift arm
 2. Gear lock release spring
 3. Range shift arm
 4. Detent spring
 5. Detent ball
 6. Spring pin
 7. Interlock pin
 8. 4-wheel shift rod
 9. Range shift rod



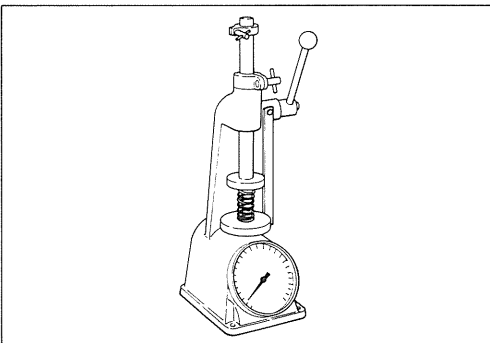
Shift arm thickness

		mm(in.)	
		Standard	Limit
Low/2nd		7.8-7.9 (0.307-0.311)	7.0 (0.276)
Top/3rd		7.1-7.2 (0.280-0.284)	6.5 (0.256)
Transfer	4x2/4x4 High/Low	6.7-6.8 (0.264-0.268)	6.0 (0.236)
Reverse/ 5th		6.8-6.9 (0.268-0.272)	6.3 (0.248)



Free length of detent spring

		mm(in.)	
		Standard	Limit
Low/2nd, Top/3rd		27.7 (1.091)	25.0 (0.985)
Reverse		27.7 (1.091)	25.0 (0.985)
Transfer		43.0 (1.694)	41.0 (1.615)



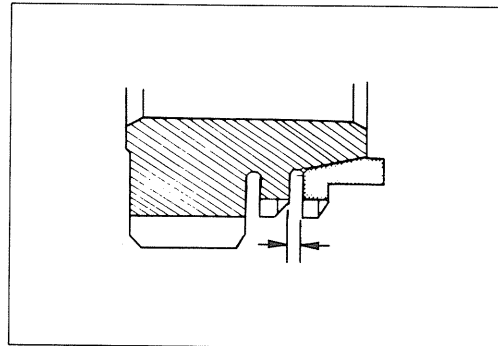
Spring tension

		kg(lbs.)	
		Set length mm(in.)	Standard
Low/2nd, Top/3rd		22.1 (0.871)	6.3-6.7 (13.89-14.77)
Reverse		22.1 (0.871)	6.3-6.7 (13.89-14.77)
Transfer		36.1 (1.422)	9-11 (19.84-24.25)

Standard		Limit
Low/2nd	1.7 (0.067)	0.8 (0.032)
3rd, 5th	1.5 (0.059)	0.8 (0.032)
Top	1.3 (0.051)	0.8 (0.032)

mm(in.)

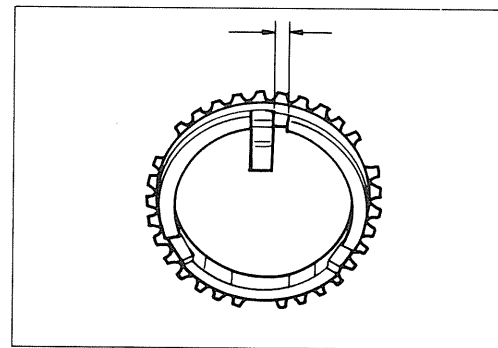
Clearance between blocker ring and dog gear



Standard		Limit
	3.51-3.79 (0.138-0.149)	4.0 (0.158)

mm(in.)

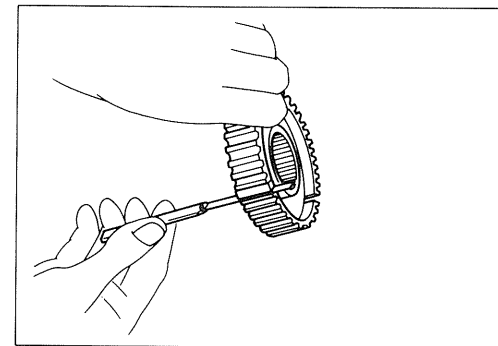
Clearance between blocker ring and insert



Standard		Limit
	0.01-0.19 (0.0004-0.0075)	0.3 (0.012)

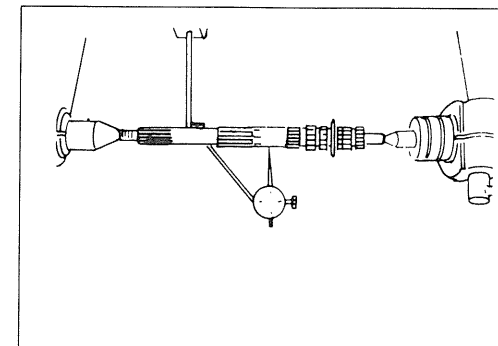
mm(in.)

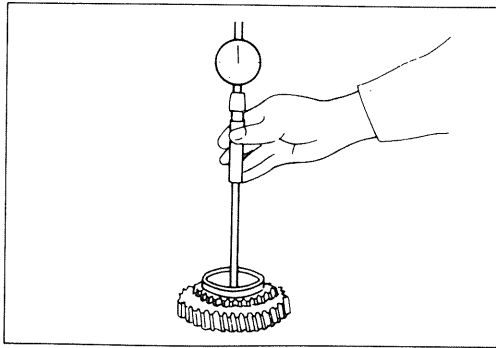
Clearance between clutch hub and insert



Limit	
	0.05 (0.0019)

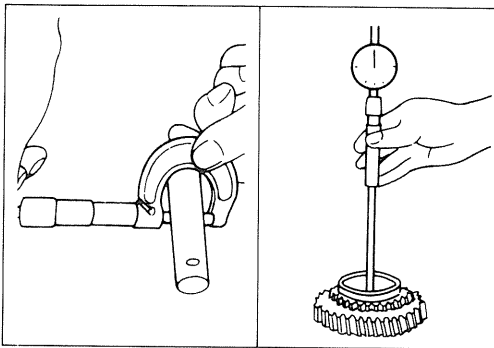
Main shaft run-out





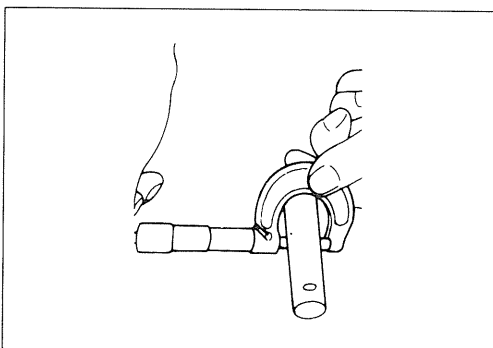
Gear inside diameter

	mm(in.)	
	Standard	Limit
Low, reverse	45.0–45.013 (1.773–1.774)	45.1 (1.777)
2nd, 3rd	41.0–41.013 (1.615–1.616)	41.1 (1.619)
Transfer Idler	33.0–33.025 (1.300–1.301)	33.1 (1.304)
5th	32.03–32.04 (1.2611–1.2623)	32.1 (1.264)



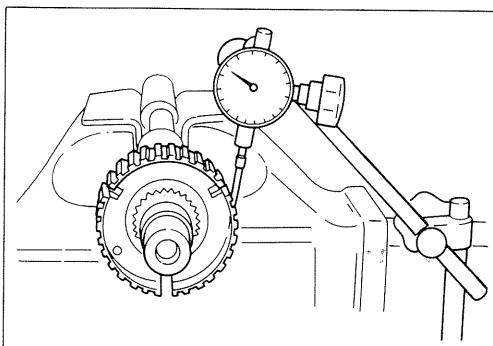
Clearance between bushing and idler gear

	mm(in.)	
	Standard	Limit
Reverse	0.041–0.074 (0.0016–0.0029)	0.15 (0.0059)



Transfer idler gear shaft outside diameter

Standard	mm(in.)	24.99–25.0 (0.984–0.985)
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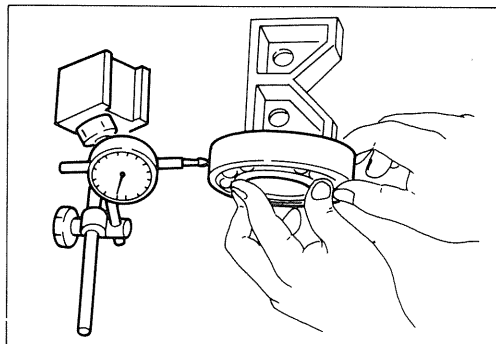
Play in splines

	mm(in.)	
	Standard	Limit
Clutch hub	0–0.19 (0–0.0074)	0.2 (0.0078)
Reverse gear	0.062–0.132 (0.0024–0.0052)	0.2 (0.0078)

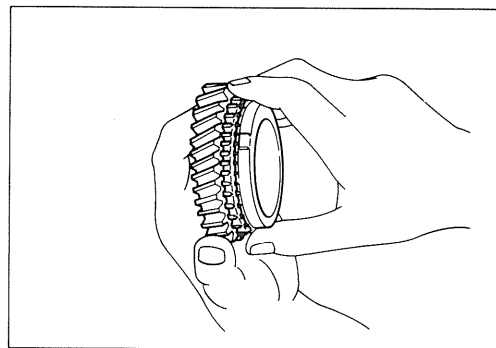
Play in ball bearing



Limit	mm(in.)
	0.2 (0.0678)



Limit	mm(in.)
	0.8 (0.032)

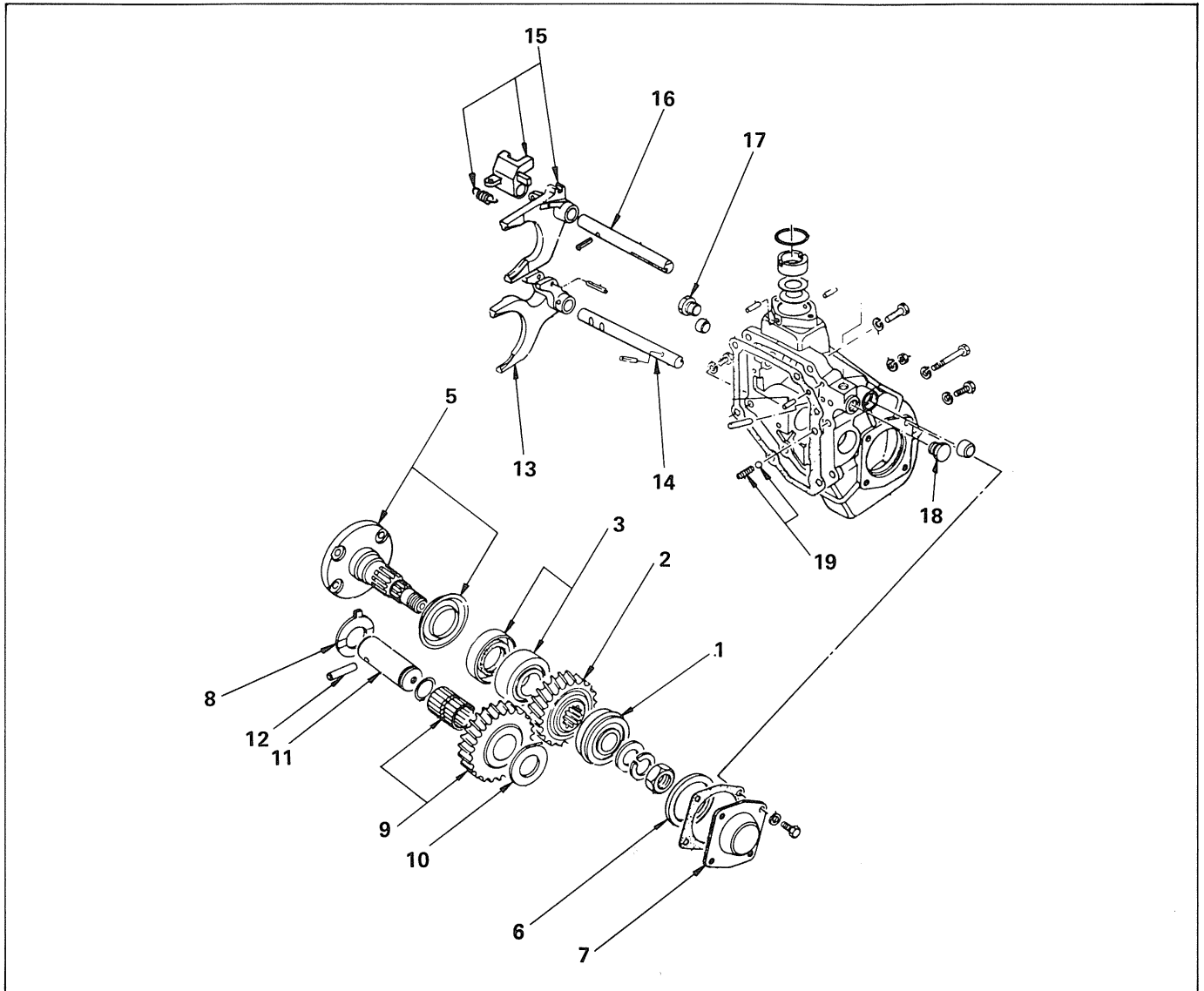




REASSEMBLY

MINOR COMPONENTS

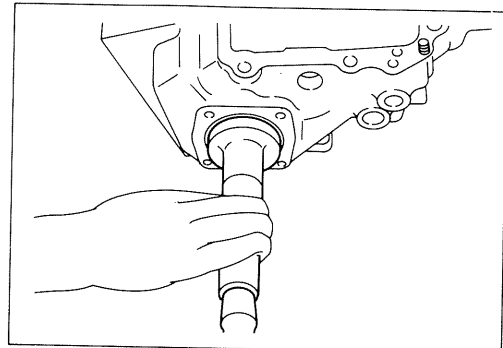
Transfer side case



Reassembly steps

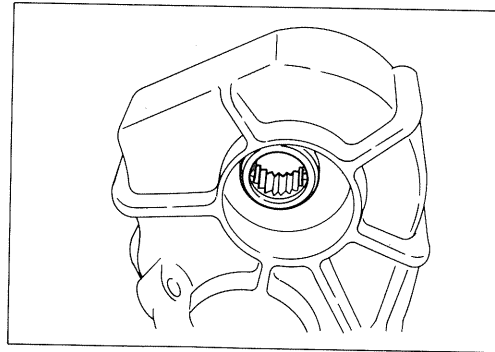
- | | |
|--|---|
| ▲ 1. Front output shaft rear bearing | ▲ 11. Idler gear shaft |
| ▲ 2. Output gear | ▲ 12. Dowel pin |
| ▲ 3. Front output shaft front bearing and oil seal | ▲ 13. High/Low shift arm |
| ▲ 4. Output shaft oil seal | ▲ 14. High/Low shift rod |
| ▲ 5. Front output shaft | ▲ 15. 4x2/4x4 shift arm and shift block |
| ▲ 6. Distance piece | ▲ 16. 4x2/4x4 shift rod |
| ▲ 7. Front output shaft cover | ▲ 17. Screw plug and plug |
| ▲ 8. Thrust washer | ▲ 18. Screw plug and plug |
| ▲ 9. Idler gear and needle roller bearing | ▲ 19. Detent spring and detent ball |
| ▲ 10. Thrust washer | |

Important operations

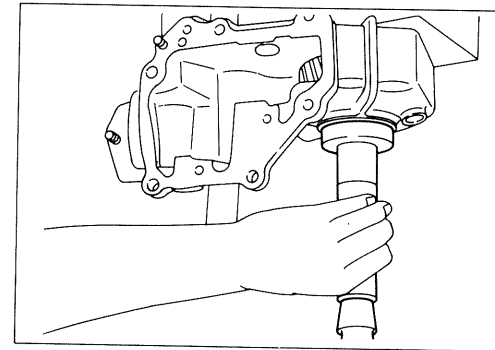


1. Front output shaft rear bearing
 Install the front output shaft rear bearing into position deep enough to touch snap ring.

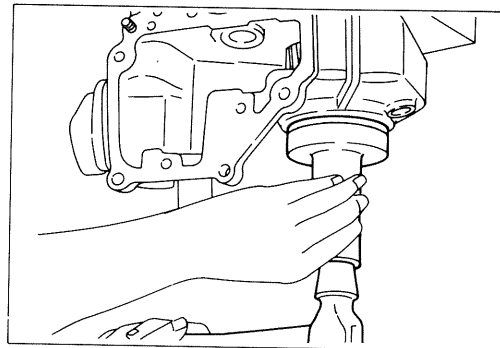
Bearing remover and installer : 5-8523-0010-0
 Grip : (J-29040)
 : 5-8840-0007-0
 : (J-8092)



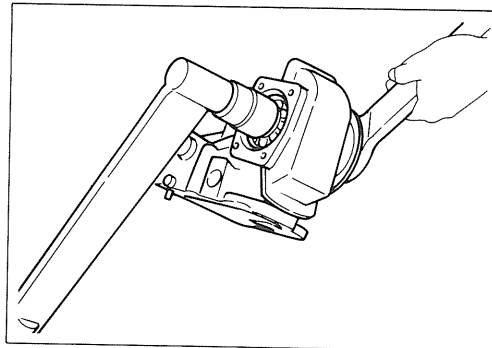
2. Output gear
 Install the output gear, so that its end without splines (on inner circumference) is turned toward front side (toward output shaft flange).



3. Front output shaft front bearing
 Drive the output shaft front bearing into position to touch output gear.
 Bearing remover and installer : 5-8523-0010-0
 Grip : (J-29040)
 : 5-8840-0007-0
 : (J-8092)



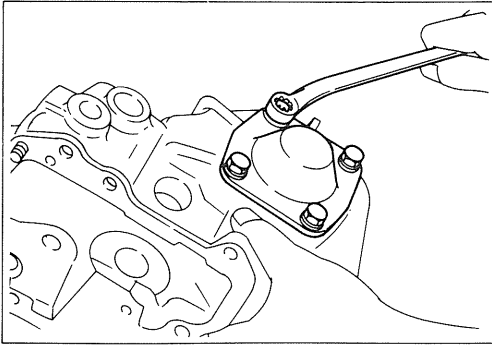
4. Output shaft oil seal
 Installer : 5-8523-0010-0
 Grip : 5-8840-0007-0
 (J-29040)
 : 5-8840-0007-0
 (J-8092)



5. Front output shaft

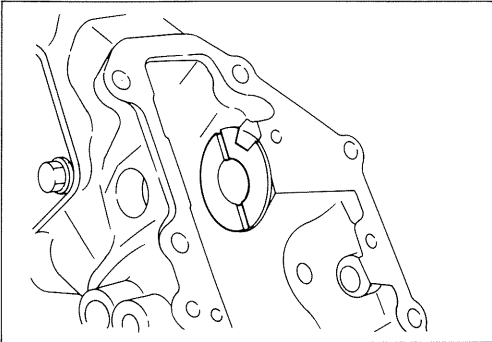
Wrench : 5-8840-0133-0
 (J-8614-01)

Torque	kg·m(ft.lbs.)
14-16 (101-116)	



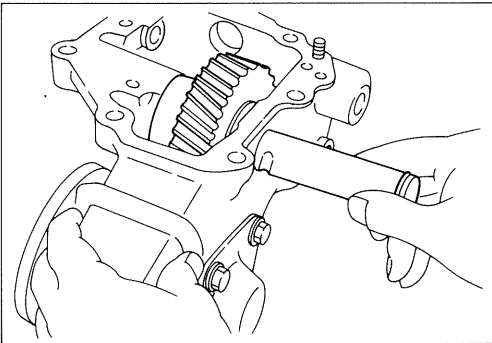
7. Front output shaft cover

Torque	kg·m(ft.lbs.)	2.5-3.1 (18-22)
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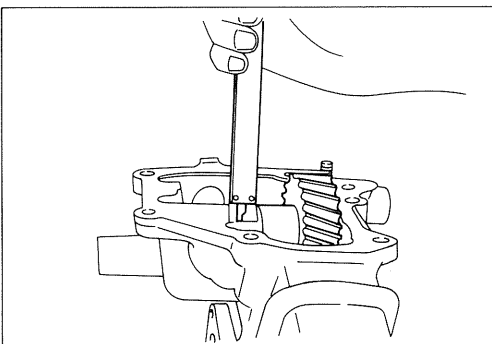
8., 10. Thrust washer

Apply grease to both faces of the idler gear thrust washer, then install the thrust washer, with the oil grooved face turned toward the gear, by aligning the stopper finger with the groove in the case.



11. Idler gear shaft

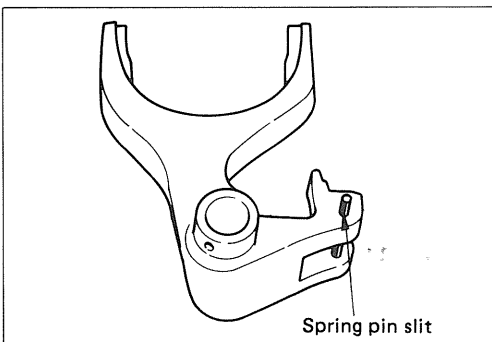
Coat the idler shaft O-ring with clean engine oil and install the idler gear shaft by aligning the dowel groove in the idler shaft with the dowel pin hole.



12. Dowel pin

Insert the dowel pin into the case and check that its projection is within the specified value.

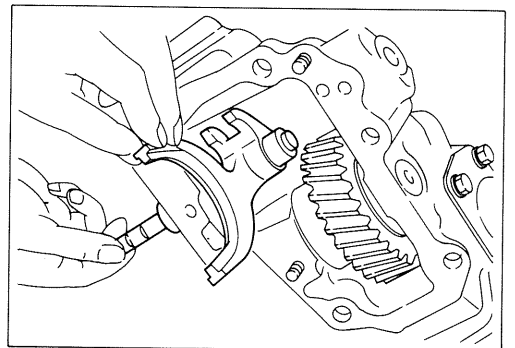
Projection	mm(in.)	9-11 (0.355-0.433)
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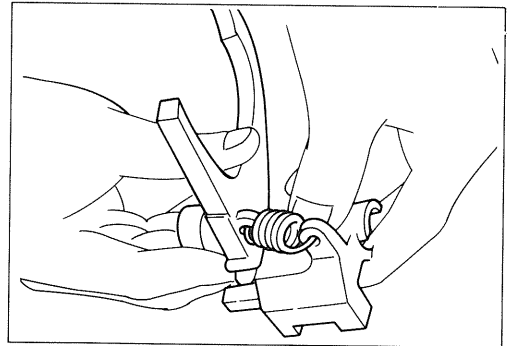
14. High/Low shift rod

Attach the range shift arm so that the slit in the spring pin is turned.

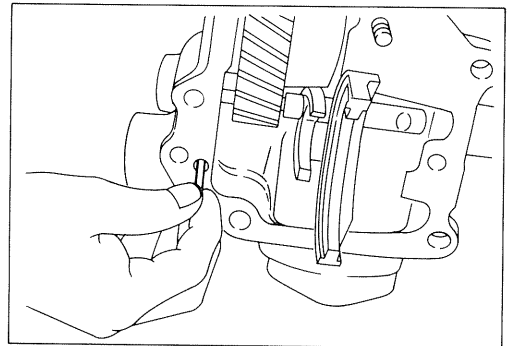
Attach and secure the shift arm shift rod in position with the spring pin.



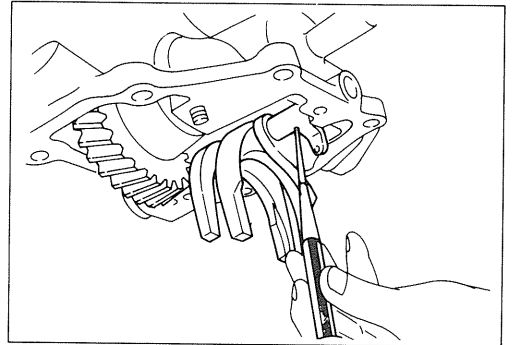
15. 4x2/4x4 shift arm and shift block
 Assemble the shift arm with the shift block, then attach the gear lock release spring.



16. 4x2/4x4 shift rod
 Insert the interlock pin, the shift rod detent ball and the detent spring in the case.

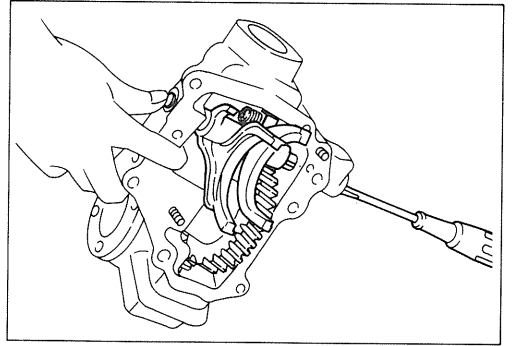


Insert and secure the shift arm, the shift block and the shift rod in position with the spring pin.



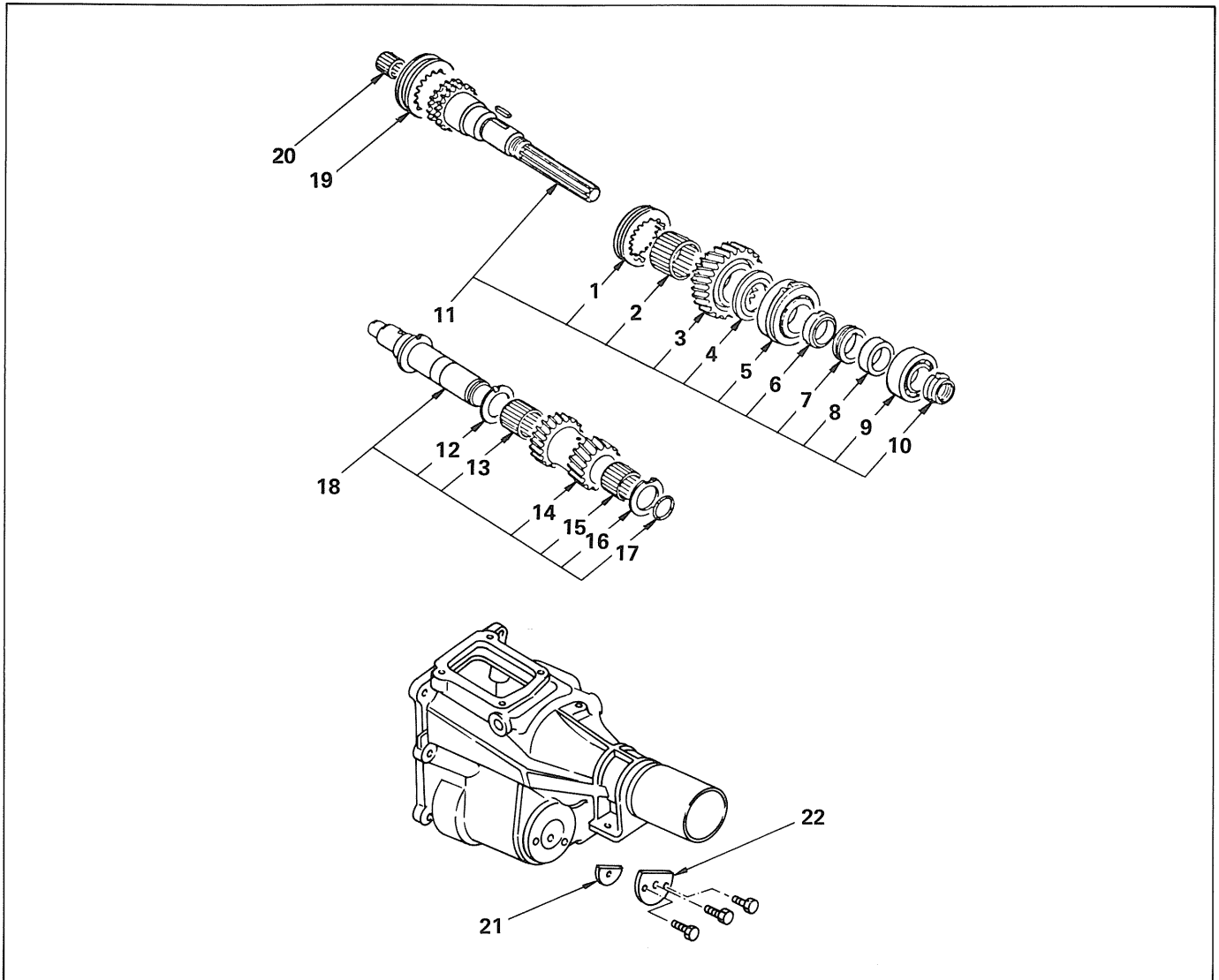
17., 18. Screw plug and plug

Screw plug torque kg·m(ft.lbs.)	4.5-5.5 (33-40)
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MINOR COMPONENTS

Transfer case



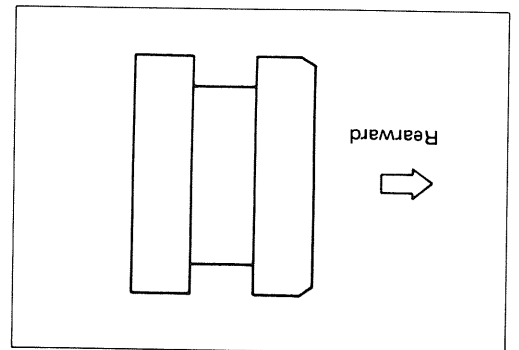
Reassembly steps

- | | |
|-----------------------------|------------------------------|
| ▲ 1. 4x2/4x4 sleeve | 12. Thrust washer |
| 2. Needle roller bearing | 13. Needle roller bearing |
| 3. Output gear | 14. Counter gear |
| ▲ 4. Thrust washer | 15. Needle roller bearing |
| ▲ 5. Ball bearing | 16. Thrust washer |
| 6. Distance piece | 17. O-ring |
| 7. Speedometer drive gear | ▲ 18. Counter shaft assembly |
| 8. Spacer | ▲ 19. High/Low sleeve |
| ▲ 9. Ball bearing | 20. Needle roller bearing |
| ▲ 10. Nut | 21. Distance |
| ▲ 11. Output shaft assembly | 22. Lock plate |

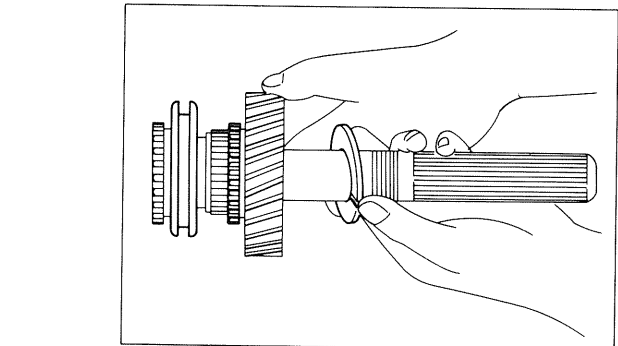
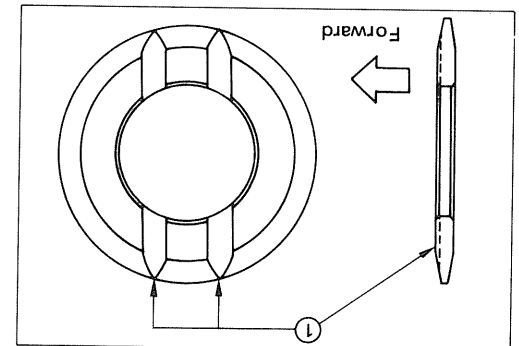
Important operations



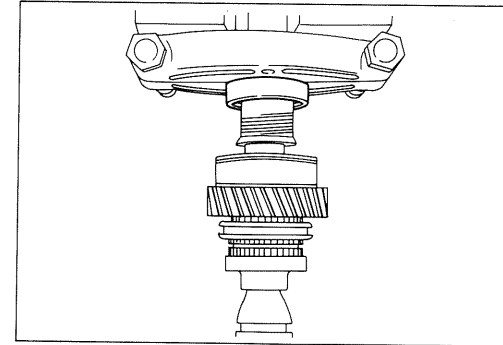
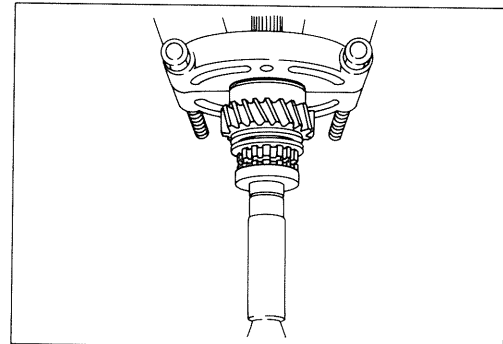
1. 4x2/4x4 sleeve
Attach the 4x2/4x4 sleeve, so that the side with the chamfering is turned rearward.



4. Thrust washer
Attach the thrust washer, so that the side with the oil groove is turned forward. ① Oil groove



5. Ball bearing
Attach the output shaft front bearing to the output shaft, so that the snap ring groove is turned to the rear.



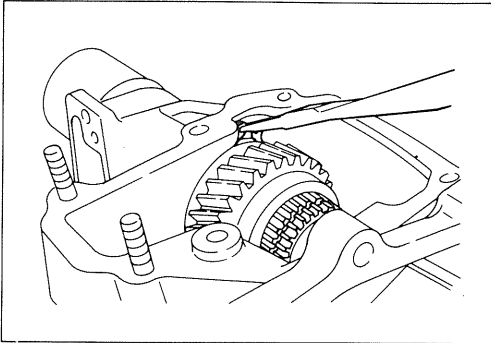
9. Ball bearing
Press the output shaft rear bearing into position with the face seal turned to the rear.



10. Nut

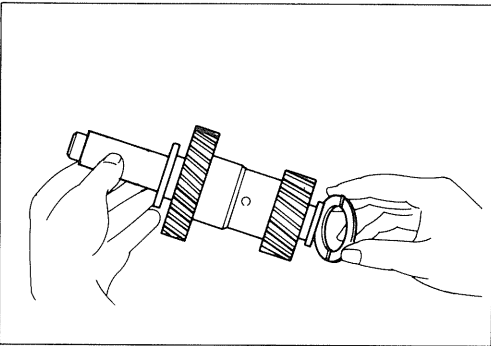
Nut hex : 41 mm (1-5/8 in.)

Torque	kg·m(ft.lbs.)	14-16 (101-116)
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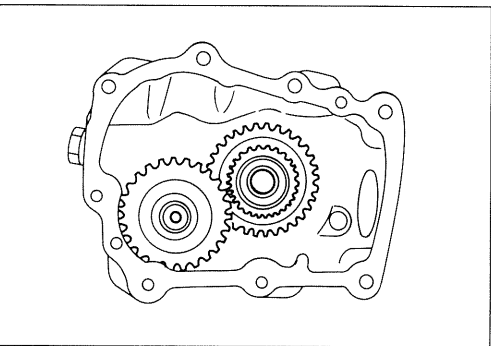


11. Output shaft assembly

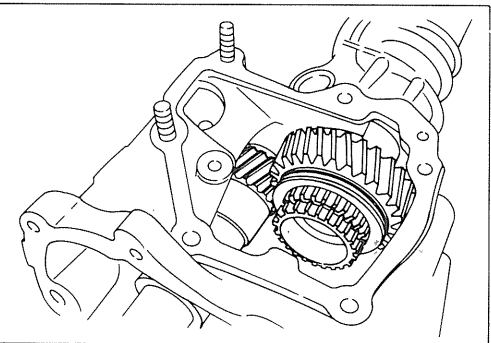
Insert the snap ring on the transfer case into the groove in the output shaft front bearing.



18. Counter shaft assembly



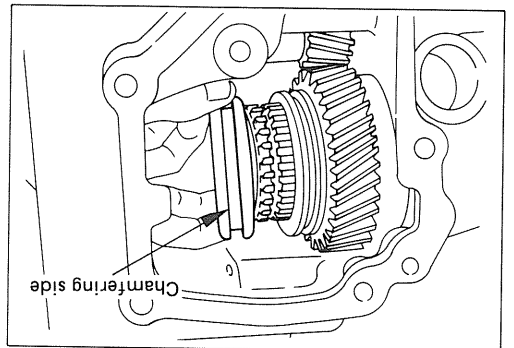
Install the counter shaft assembly in the case, so that the cutaway portion at front end of the counter shaft is turned in the direction shown in the figure.



19. High/Low sleeve

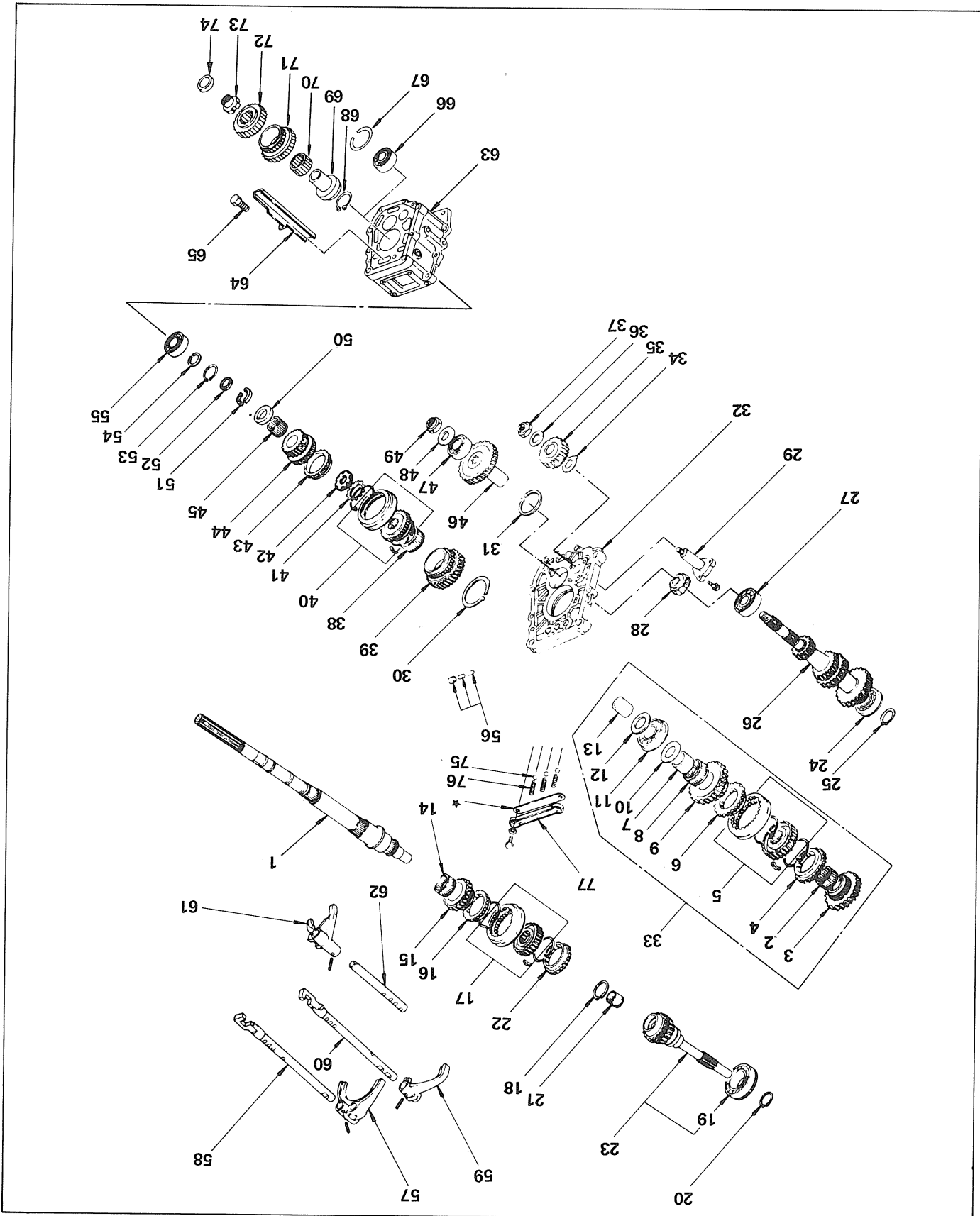


Install the range shaft sleeve on the output shaft, so that the end of the sleeve with the heavy chamfering on the outer circumference is turned toward the front.



MINOR COMPONENTS (FOR 5 SPEED)

Main shaft gear assembly, cluster gear assembly and top gear shaft assembly.



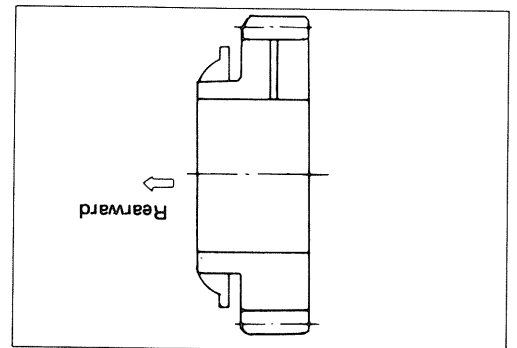
Reassembly steps

1. Shaft ; main
2. Bearing ; needle, 2nd, 3rd
- ▲ 3. Gear assembly ; 2nd with synchronizer cone
4. Ring ; block, low-2nd
- ▲ 5. Synchronizer assembly ; low-2nd
6. Ring ; block, low-2nd
- ▲ 7. Collar ; needle bearing, low
8. Bearing ; needle, low
9. Gear assembly ; low with synchronizer cone
- ▲ 10. Washer ; thrust, low
- ▲ 11. Bearing ; radial ball, main shaft
- ▲ 12. Washer ; thrust, reverse
- ▲ 13. Collar ; needle bearing, reverse
14. Bearing ; needle, 2nd, 3rd
15. Gear assembly ; 3rd with synchronizer cone
16. Ring ; block, top-3rd
- ▲ 17. Synchronizer assembly ; top-3rd
- ▲ 18. Ring ; snap, main shaft
- ▲ 19. Bearing ; ball, top gear shaft
20. Ring ; snap, bearing to top gear shaft
21. Bearing ; needle, main shaft
22. Ring ; block, top-3rd
23. Shaft ; top gear, with synchronizer cone
24. Bearing ; ball, counter front
25. Ring snap, cluster gear
26. Gear ; cluster
- ▲ 27. Bearing ; angular ball, cluster
28. Gear ; counter reverse
- ▲ 29. Shaft ; reverse idle
30. Ring ; snap, main shaft
31. Ring ; snap, cluster gear
- ▲ 32. Plate ; intermediate
33. Gear assembly ; low-2nd
34. Washer ; thrust, reverse idle, front
35. Gear ; reverse idle, with busing
36. Washer ; thrust, reverse idle, rear
- ▲ 37. Nut ; self lock, counter
38. Bearing ; needle, low
39. Gear ; reverse, main shaft
- ▲ 40. Synchronizer assembly ; reverse-5th
- ▲ 41. Washer ; lock, main shaft
- ▲ 42. Nut ; main shaft
43. Ring ; block, 5th
44. Gear assembly ; 5th with synchronizer cone
45. Bearing ; needle, 5th
46. Gear ; counter, 5th
47. Bearing ; ball, counter end
48. Washer ; plane, counter 5th gear
- ▲ 49. Nut ; self lock, counter
- ▲ 50. Washer ; thrust, 5th
51. Thrust ring ; 5th gear
- ▲ 52. Ring ; snap, thrust ring
53. Retaining ring
54. Ring ; snap, ball bearing
55. Bearing ; roller main shaft center
56. Pin and plug ; interlock
57. Fork ; low-2nd, shift
- ▲ 58. Shaft ; arm, gear shift, low-2nd
59. Fork ; top-3rd, shift
- ▲ 60. Shaft ; arm, gear shift, top-3rd
61. Fork ; reverse-5th, shift
- ▲ 62. Shaft ; arm, gear shift, reverse-5th
63. Adapter case
64. Oil guide
65. Bolt ; oil guide
66. Bearing ; ball, main shaft end
67. Ring ; snap adapter case
68. Ring ; snap
69. Coller ; thrust input gear
70. Coller ; needle bearing
71. Thrust input gear
72. Thrust input hub
- ▲ 73. Nut ; thrust input hub
74. Spacer ; pilot
75. Ball ; detent, gear shift
- ▲ 76. Spring ; detent ball
- ▲ 77. Plate ; detent spring

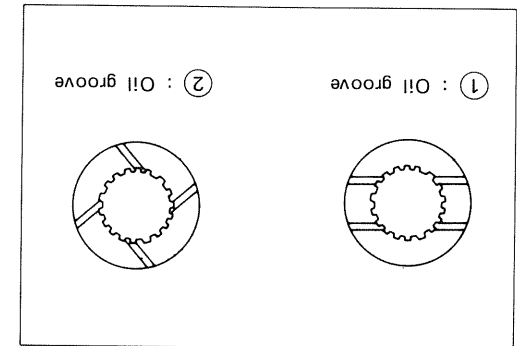
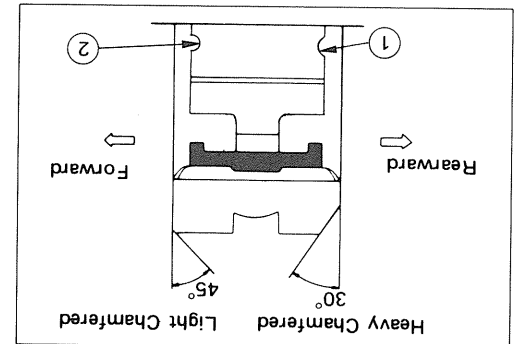
Important operations



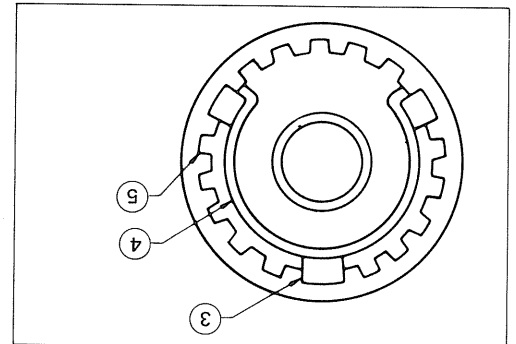
3. Gear assembly : 2nd with synchronizer cone
Taper cone face of the second gear should be turned to the low gear side (rearward).



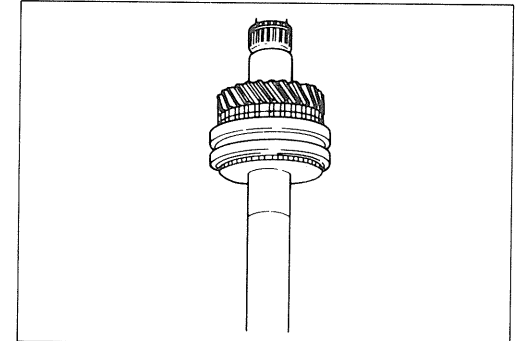
5. Synchronizer assembly : low-2nd
(1) When reassembling the synchronizer assembly, the side of the clutch hub with the oil groove must face the heavy chamfer of the sleeve.

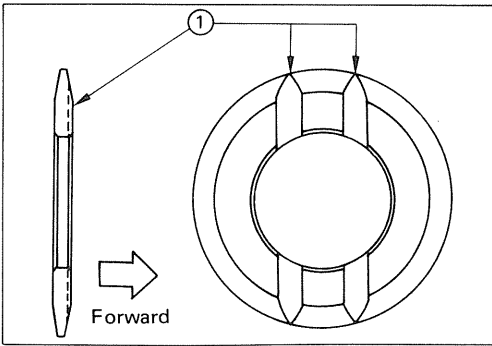


(2) Check that the inserts are fitted properly into the insert grooves in the blocker ring and that the insert spring is fitted to the insert keys as shown in this figure. Then check that the clutch hub and sleeve slide smoothly.
(3) Install the synchronizer assembly on the shaft, so that face of sleeve with light chamfer on the outer edge is turned to the front of transmission.
③ : Insert key
④ : Insert spring
⑤ : Clutch hub



7. Collar : needle bearing, low
Use a bench press.
Collar installer : 5-8840-0178-0 (J-33851)

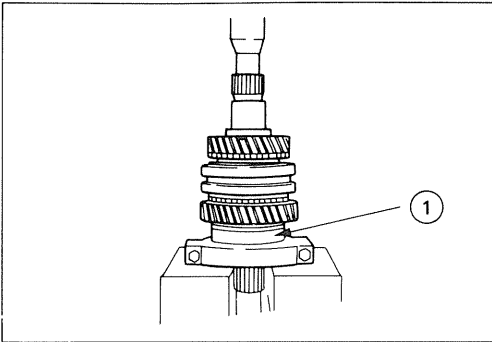




10. Washer ; thrust, low

Install the thrust washer, so that its side with oil groove is turned forward.

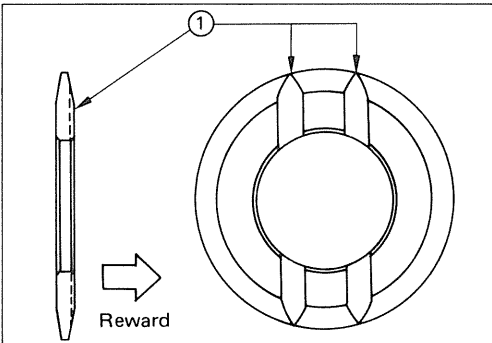
① ; Oil groove



11. Bearing ; radial ball, main shaft

Set the main shaft ball bearing to the separator, so that its face with snap ring groove is turned to the front of transmission, then install the bearing on the shaft using a bench press.

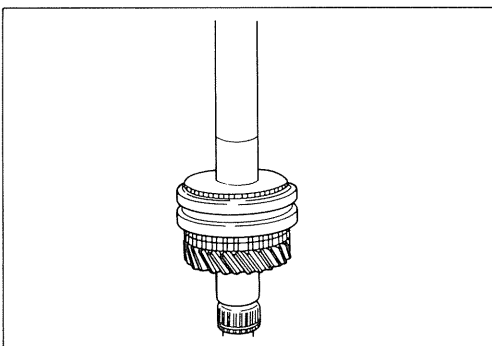
① ; Snap ring groove



12. Washer ; thrust, reverse

Install the thrust washer, so that its side with oil groove is turned forward.

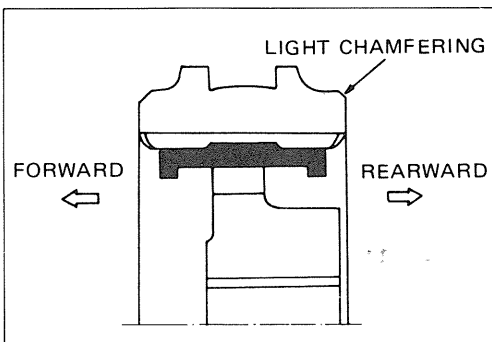
① ; Oil groove



13. Collar ; needle bearing, reverse

Use a bench press.

Collar installer : 5-8840-0178-0
(J-33851)



17. Synchronizer assembly ; top-3rd

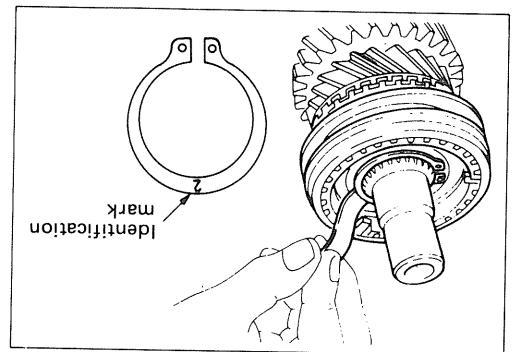
When reassembling the synchronizer assembly, the side of the hub with the higher boss must face the light chamfer of the sleeve.

18. Ring : snap, main shaft
 Clearance between top/3rd clutch hub and snap ring.

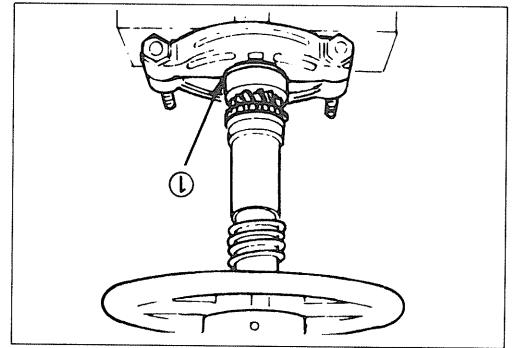
Standard	mm(in.)	0-0.05 (0-0.0019)
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Thicknesses of available snap rings:

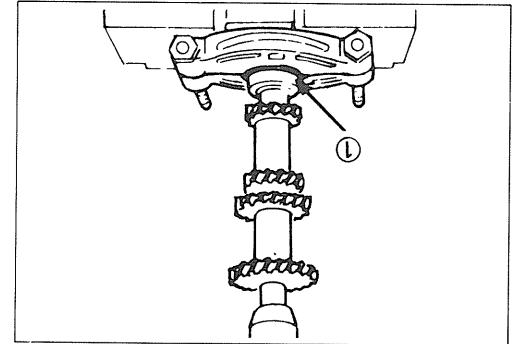
Identification mark	Thickness	
	Millimeters	Inches
1	1.50	0.059
2	1.55	0.061
3	1.60	0.063
4	1.65	0.065



19. Bearing : ball, top gear shaft
 Install the top gear shaft ball bearing, so that the side with snap ring groove is turned to front.
 ① : Snap ring groove

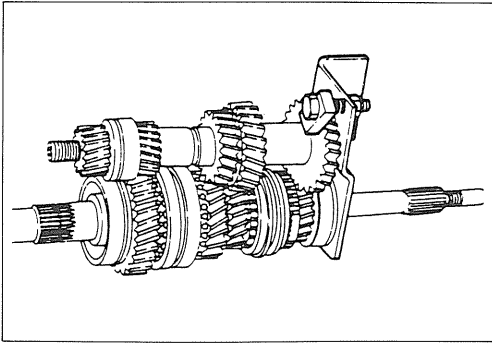


27. Bearing : angular ball, cluster
 Install the cluster gear rear bearing, so that the side with snap ring groove is turned rearward.
 ① : Snap groove



29. Shaft : reverse idle

Torque	kg-m(lbs.)	1.8-2.2 (13-16)
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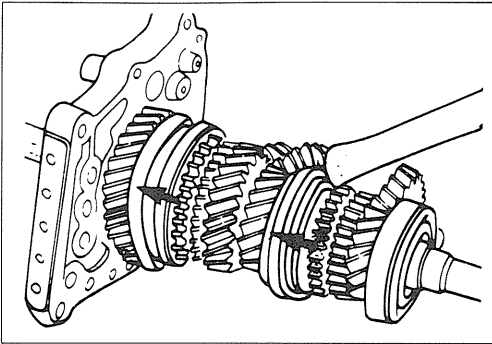


32. Plate ; intermediate

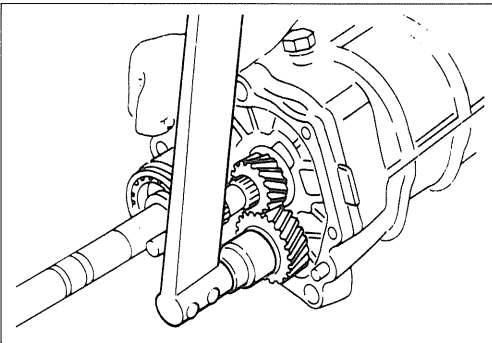
Mesh the counter-gear with the mainshaft assembly and attach Tool to the mainshaft and the counter-gear.

Place Tool with the mainshaft and counter-gear assembled in a vise, then install the intermediate plate.

Holding fixture : 5-8840-2001-0
(J-29768)



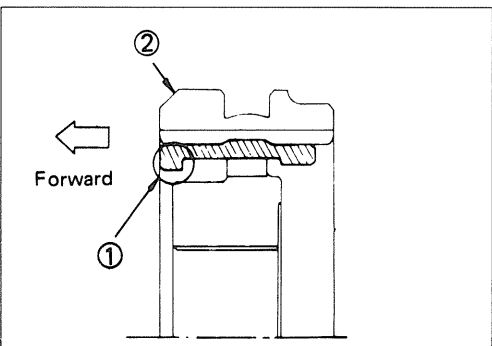
Engage the Top/3rd and Low/2nd synchronizers with the 3rd and Low gears, then attach and tighten the lock nuts to the specified torque as follows.



37. Nut ; self lock, counter

Torque	kg·m(ft.lbs.)	10-12 (72-87)
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Discard the used nut and install new one at reassembly.



40. Synchronizer assembly ; reverse-5th

When reassembling the synchronizer assembly, the side of the clutch hub with higher boss must face the heavy chamfer of the sleeve. The shorter shoulder side of the insert should be on the same side.

- ① ; Shorter shoulder side
- ② ; Heavy chamfering

41. Washer ; lock, main shaft

Caulk 2 portions.

42. Nut : main shaft

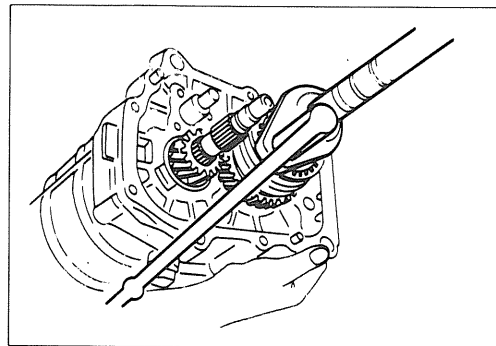
Lock the nut with lock washer after tightening it to the specified torque.

Wrench : 5-8521-9014-0
(J-33441)

Torque	kg·m(ft.lbs.)
	12-14 (87-101)

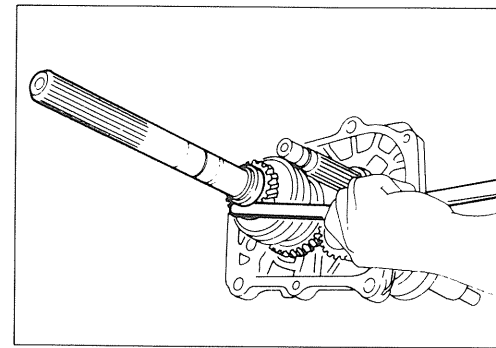
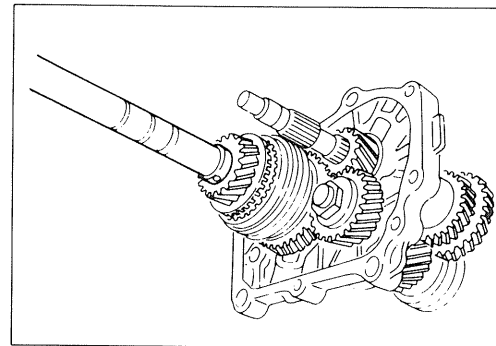
49. Nut : self lock, counter

Torque	kg·m(ft.lbs.)
	10-12 (72-87)



50. Washer : thrust, 5th

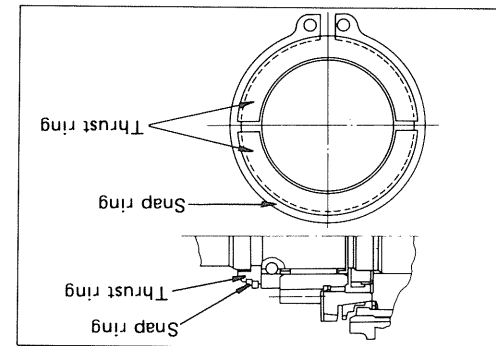
Install the lock ball and thrust washer on the mainshaft using a snap ring.

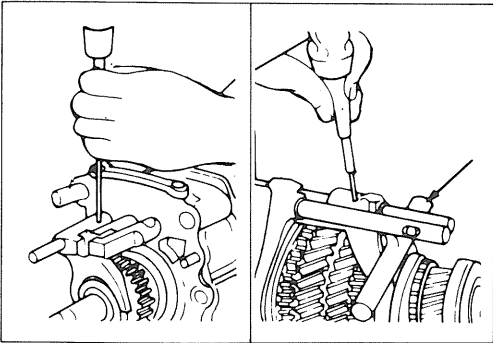


52. Ring : snap, thrust ring

The opening of the snap ring should be positioned at right angle to opening of the thrust ring.

Clearance between 5th gear and thrust washer.	
Standard	mm(in.)
	0.10-0.30 (0.004-0.012)
Thicknesses of thrust washers available.	
(mm)	7.8 , 7.9 , 8.0 , 8.1 , 8.2 , 8.3
(in.)	0.307, 0.311, 0.315, 0.319, 0.323, 0.327



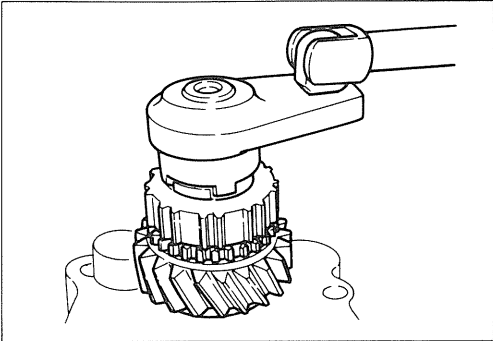


- 58. Shaft ; arm, gear shaft, low-2nd
- 60. Shaft ; arm, gear shift, top-3rd
- 62. Shaft ; arm, gear shift, reverse-5th

When installing spring pin, hold a round bar against lower face of shift rod end to protect it against damage.

Discard used spring pin and install a new one at reassembly.

Spring pin installer : 9-8529-2201-0

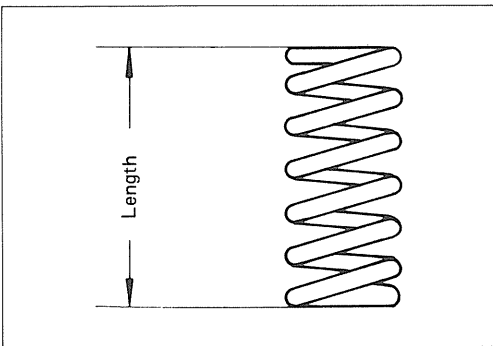


- 73. Nut ; thrust input hub

Wrench : 5-8511-0011-0
(J-29041)



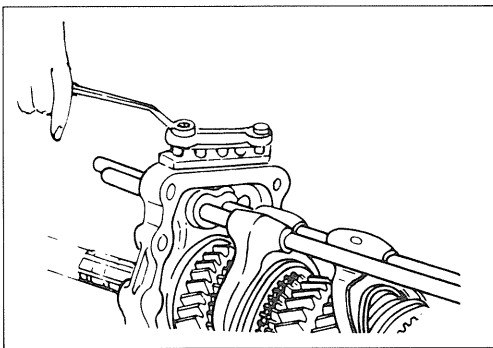
Torque	kg·m(ft.lbs.)	12—14 (87—101)
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- 76. Spring ; detent ball

The detent spring for Rev./5th is shorter in length when compared with those for Low/2nd and Top/4th.

	mm(in.)
	Spring length
Low/2nd, Top/3rd	30.5 (1.202)
Rev./5th	27.7 (1.091)

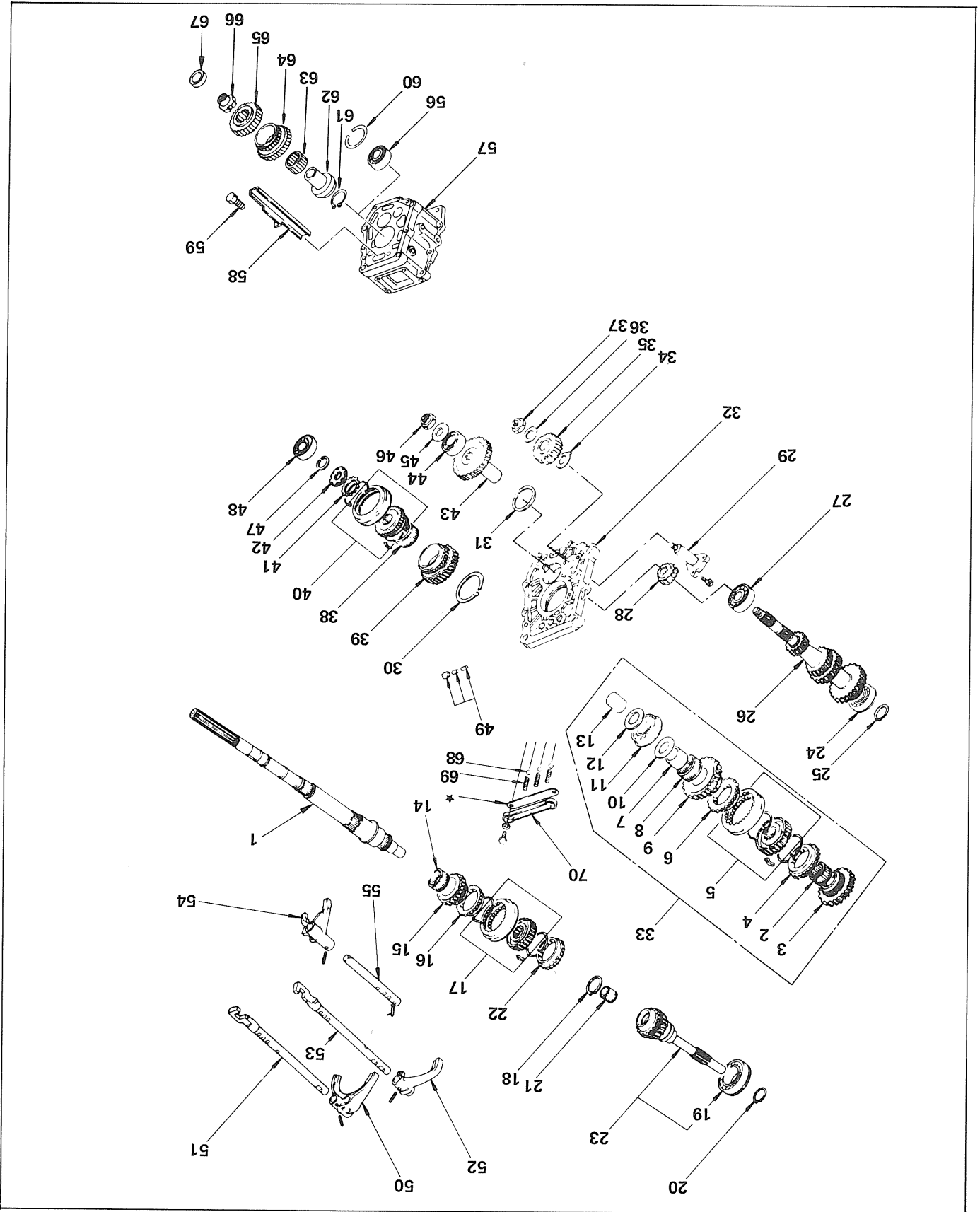


- 77. Plate ; detent spring

Torque	kg·m(ft.lbs.)	1.8—2.2 (13—16)
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MINOR COMPONENTS (FOR 4 SPEED)

Main shaft gear assembly, cluster gear assembly and top gear shaft assembly.



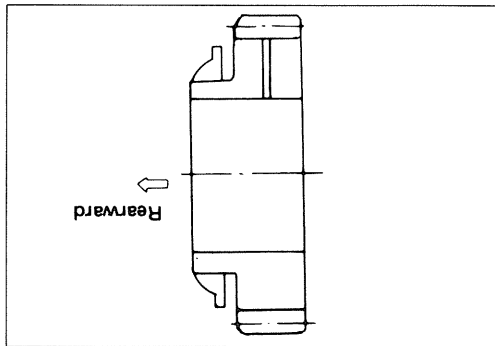
Reassembly steps

1. Shaft ; main
2. Bearing ; needle, 2nd, 3rd
- ▲ 3. Gear assembly ; 2nd with synchronizer cone
4. Ring ; block, low-2nd
- ▲ 5. Synchronizer assembly ; low-2nd
6. Ring ; block, low-2nd
- ▲ 7. Collar ; needle bearing, low
8. Bearing ; needle, low
9. Gear assembly ; low with synchronizer cone
- ▲ 10. Washer ; thrust, low
- ▲ 11. Bearing ; radial ball, main shaft
- ▲ 12. Washer ; thrust, reverse
- ▲ 13. Collar ; needle bearing, reverse
14. Bearing ; needle, 2nd, 3rd
15. Gear assembly ; 3rd with synchronizer cone
16. Ring ; block, top-3rd
- ▲ 17. Synchronizer assembly ; top-3rd
- ▲ 18. Ring ; snap, main shaft
- ▲ 19. Bearing ; ball, top gear shaft
20. Ring ; snap, bearing to top gear shaft
21. Bearing ; needle, main shaft
22. Ring ; block, top-3rd
23. Shaft ; top gear, with synchronizer cone
24. Bearing ; ball, counter front
25. Ring snap, cluster gear
26. Gear ; cluster
- ▲ 27. Bearing ; angular ball, cluster
28. Gear ; counter reverse
- ▲ 29. Shaft ; reverse idle
30. Ring ; snap, main shaft
31. Ring ; snap, cluster gear
- ▲ 32. Plate ; intermediate
33. Gear assembly ; low-2nd
34. Washer ; thrust, reverse idle, front
35. Gear ; reverse idle, with busing
36. Washer ; thrust, reverse idle, rear
- ▲ 37. Nut ; self lock, counter
38. Bearing ; needle, low
39. Gear ; reverse, main shaft
- ▲ 40. Synchronizer assembly ; reverse
- ▲ 41. Washer ; lock, main shaft
- ▲ 42. Nut ; main shaft
43. Gear ; counter
44. Bearing ; ball, counter end
45. Washer ; plane, counter gear
- ▲ 46. Nut ; self lock, counter
47. Ring ; snap, ball bearing
48. Bearing ; roller main shaft center
49. Pin and plug ; interlock
50. Fork ; low-2nd, shift
- ▲ 51. Shaft ; arm, gear shift, low-2nd
52. Fork ; top-3rd, shift
- ▲ 53. Shaft ; arm, gear shift, top-3rd
54. Fork ; reverse, shift
- ▲ 55. Shaft ; arm, gear shift, reverse
56. Bearing ; ball, main shaft end
57. Adapter case
58. Oil guide
59. Bolt ; oil guide
60. Ring ; snap adapter case
61. Ring ; snap
62. Coller ; thrust input gear
63. Coller ; needle bearing
64. Thrust input gear
65. Thrust input hub
- ▲ 66. Nut ; thrust input hub
67. Spacer ; pilot
68. Ball ; detent, gear shift
- ▲ 69. Spring ; detent ball
- ▲ 70. Plate ; detent spring

Important operations

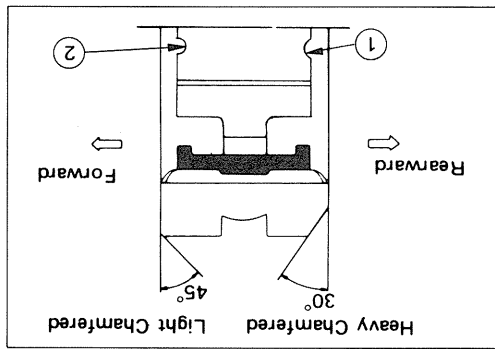


3. Gear assembly : 2nd with synchronizer cone
Taper cone face of the second gear should be turned
to the low gear side (rearward).



5. Synchronizer assembly : low-2nd

(1) When reassembling the synchronizer assembly, the
side of the clutch hub with the oil groove must face
the heavy chamfer of the sleeve.



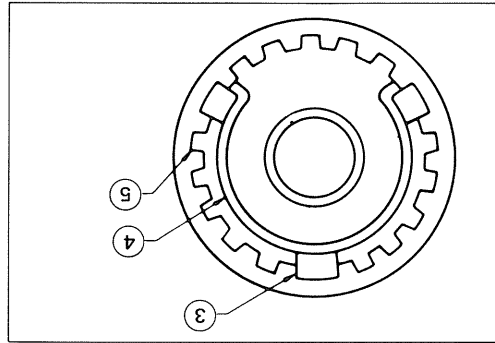
① : Oil groove ② : Oil groove



(2)

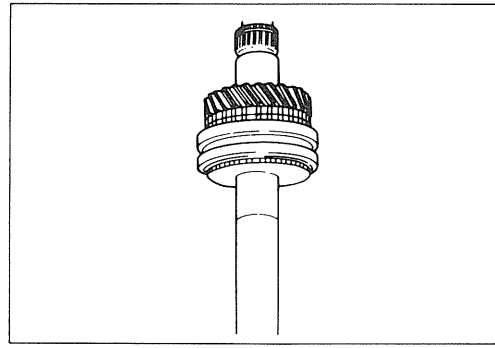


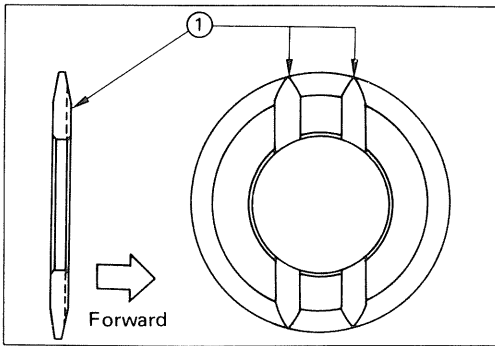
Check that the inserts are fitted properly into the
insert grooves in the blocker ring and that the insert
spring is fitted to the insert keys as shown in this
figure. Then check that the clutch hub and sleeve
slide smoothly.
(3) Install the synchronizer assembly on the shaft, so
that face of sleeve with light chamfer on the outer
edge is turned to the front of transmission.
③ : Insert key
④ : Insert spring
⑤ : Clutch hub



7. Collar : needle bearing, low

Use a bench press.
Installer : 5-8840-0178-0
(J-33851)

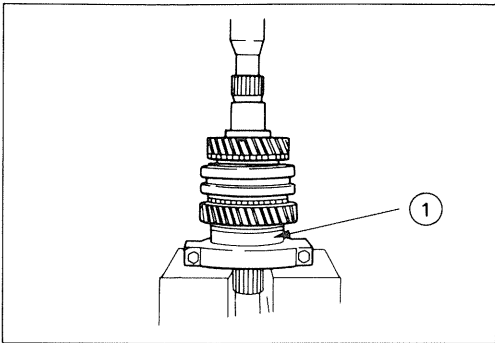




10. Washer ; thrust, low

Install the thrust washer, so that its side with oil groove is turned forward.

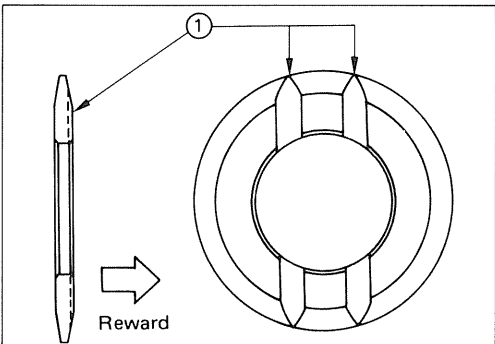
① ; Oil groove



11. Bearing ; radial ball, main shaft

Set the main shaft ball bearing to the separator, so that its face with snap ring groove is turned to the front of transmission, then install the bearing on the shaft using a bench press.

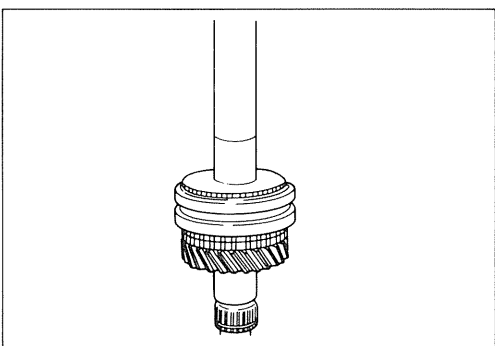
① ; Snap ring groove



12. Washer ; thrust, reverse

Install the thrust washer, so that its side with oil groove is turned forward.

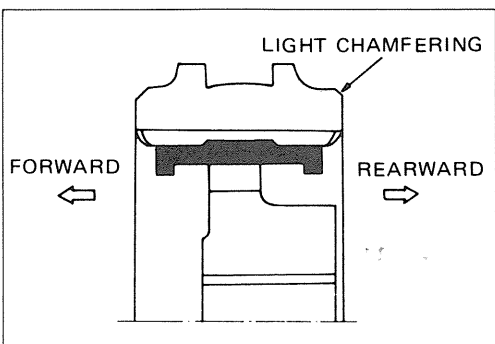
① ; Oil groove



13. Collar ; needle bearing, reverse

Use a bench press.

Installer : 5-8840-0178-0
(J-33851)



17. Synchronizer assembly ; top-3rd

When reassembling the synchronizer assembly, the side of the hub with the higher boss must face the light chamfer of the sleeve.

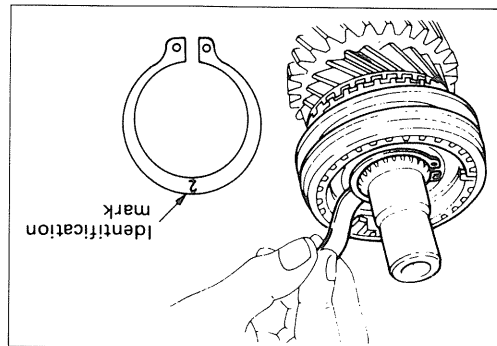
18. Ring : snap, main shaft



Standard mm(in.) 0-0.05 (0-0.0019)

Thicknesses of available snap rings:

Identification mark	Thickness	
	Millimeters	Inches
1	1.50	0.059
2	1.55	0.061
3	1.60	0.063
4	1.65	0.065

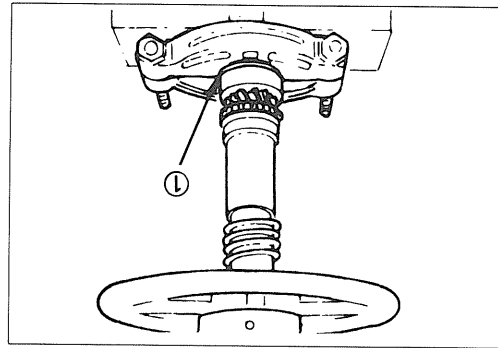


19. Bearing : ball, top gear shaft



Install the top gear shaft ball bearing, so that the side with snap ring groove is turned to front.

① : Snap ring groove

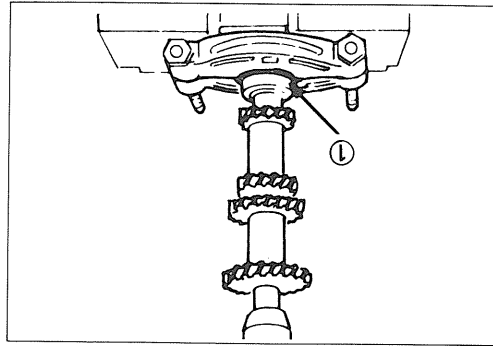


27. Bearing : angular ball, cluster



Install the cluster gear rear bearing, so that the side with snap ring groove is turned rearward.

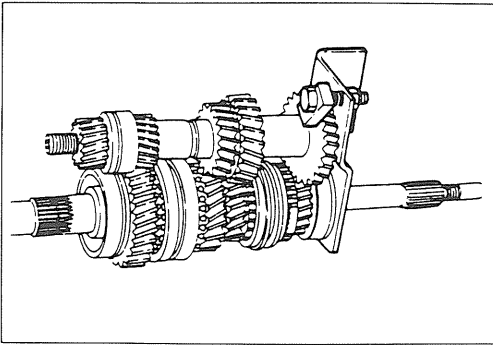
① : Snap groove



29. Shaft : reverse idle



Torque kg·m(lbs.)	1.8-2.2 (13-16)
-------------------	-----------------

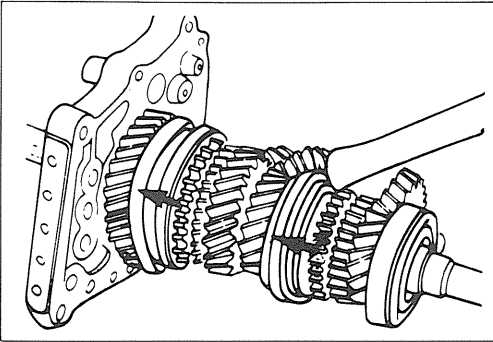


32. Plate ; intermadiate

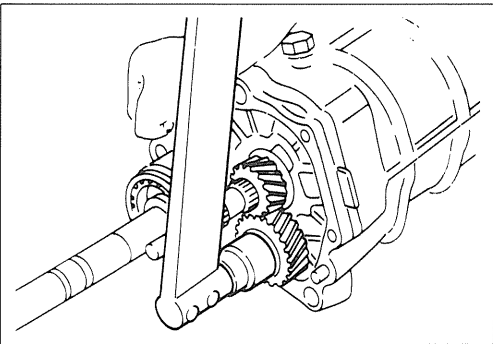
Mesh the countergear with the mainshaft assembly and attach Tool to the mainshaft and the countergear.

Place Tool with the mainshaft and countergear assembled in a vise, then install the intermediate plate.

Holding fixture : 5-8840-2001-0
(J-29768)



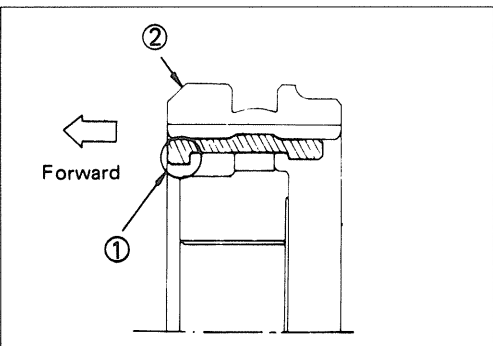
Engage the Top/3rd and Low/2nd synchronizers with the 3rd and Low gears, then attach and tighten the lock nuts to the specified torque as follows.



37. Nut ; self lock, counter

Torque	kg·m(ft.lbs.)	10-12 (72-87)
--------	---------------	---------------

Discard the used nut and install new one at reassembly.



40. Synchronizer assembly ; reverse

When reassembling the synchronizer assembly, the side of the clutch hub with higher boss must face the heavy chamfer of the sleeve. The shorter shoulder side of the insert should be on the same side.

- ① ; Shorter shoulder side
- ② ; Heavy chamfering

41. Washer ; lock, main shaft

Caulk 2 portions

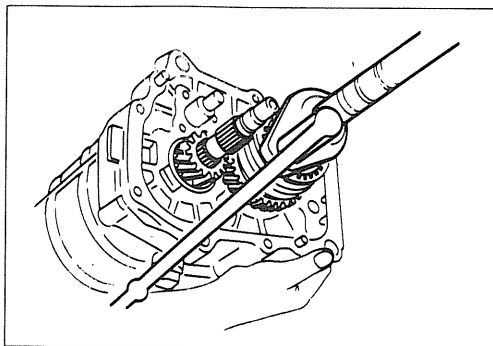
42. Nut : main shaft
 Lock the nut with lock washer after tightening it to the specified torque.

Wrench : 5-8521-9014-0
 (J-33441)

Torque	kg·m(ft.lbs.)
	12-14 (87-101)

46. Nut : self lock, counter

Torque	kg·m(ft.lbs.)
	10-12 (72-87)

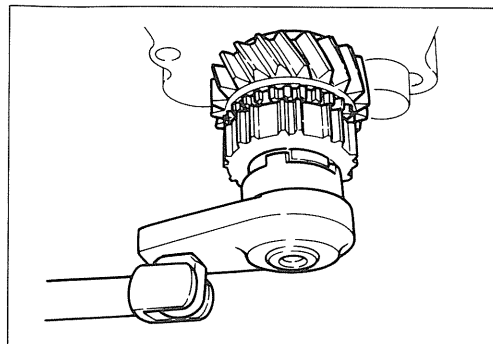
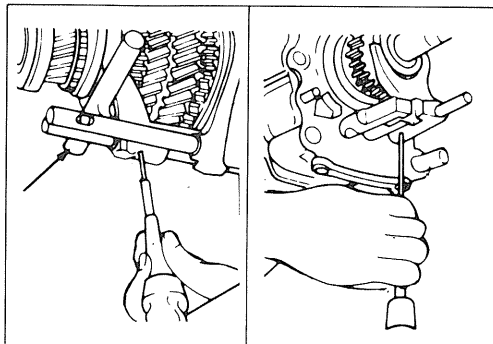


- 51. Shaft : arm, gear shift, low-2nd
- 53. Shaft : arm, gear shaft, top-3rd
- 55. Shaft : arm, gear shift, reverse

When installing spring pin, hold a round bar against lower face of shift rod end to protect it against damage.
 Discard used spring pin and install a new one at reassembly.
 Spring pin installer : 9-8529-2201-0

66. Nut : thrust input hub
 Wrench : 5-8511-0011-0
 (J-29041)

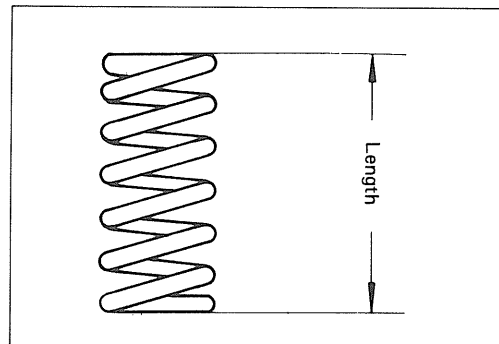
Torque	kg·m(ft.lbs.)
	10-12 (72-87)

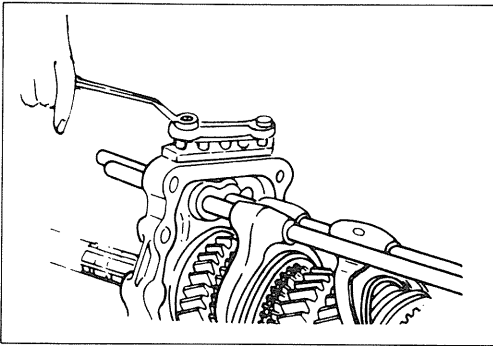


69. Spring : detent ball

The detent spring for Rev./4th is shorter in length when compared with those for Low/2nd and Top/3rd.

Spring length	mm(in.)
Low/2nd, Top/3rd	30.5 (1.202)
Rev.	27.7 (1.091)

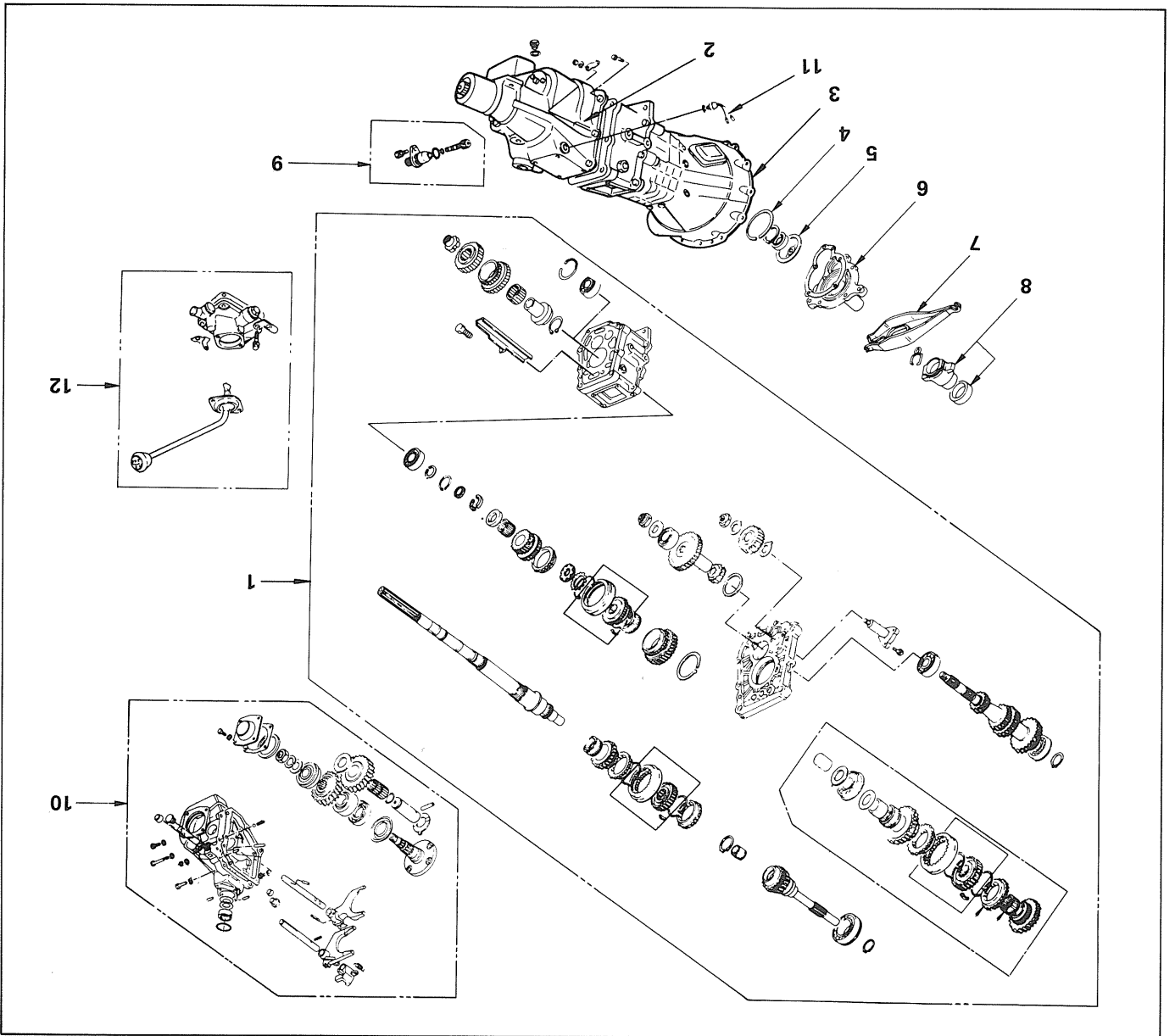




70. Plate ; detent spring

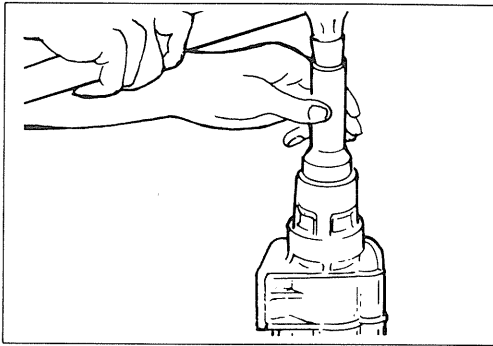
Torque	kg·m(ft.lbs.)	1.8—2.2 (13—16)
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MAJOR COMPONENTS



Reassembly steps

1. Main gear shaft assembly, cluster gear assembly and top gear shaft assembly
2. Transfer case
3. Transmission case
4. Snap ring
5. Belleville spring
6. Front cover
7. Withdraw lever
8. Shift block
9. Speedometer driven gear assembly
10. Transfer side case assembly
11. Back-up light switch
12. Shift lever and quadrant box



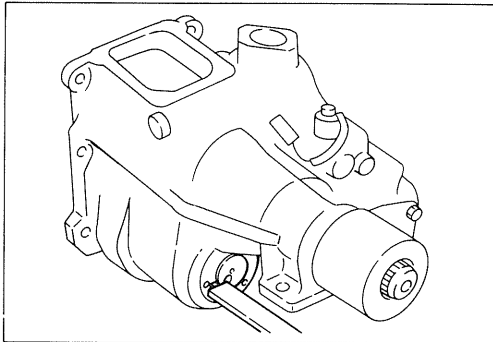
Important operations



2. Transfer case

Installation of transfer case rear oil seal.

Installer : 9-8522-1273-0
(J-29769)

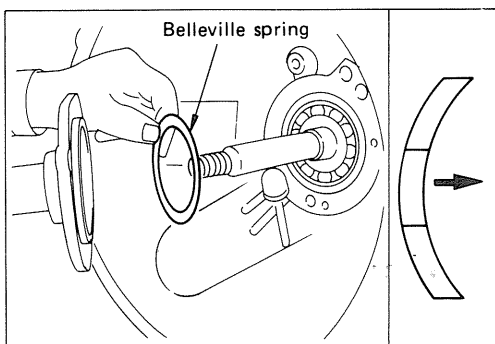


Tighten evenly the four bolts holding the transfer case and intermediate plate.

Push the transfer counter shaft assembly into the transfer case, measure the distance between the rear face of the transfer case and end of the transfer countershaft and select the distance piece by referring to the following table.

Standard	mm(in.)	0.1—0.35 (0.004—0.014)
----------	---------	---------------------------

mm(in.)		
Thickness of Distance Shim	Measured value (A)	Marking color
3.6 (0.142)	3.3—3.5 (0.130—0.138)	Red
3.8 (0.150)	3.5—3.7 (0.138—0.146)	Orange
4.0 (0.158)	3.7—3.9 (0.146—0.154)	Yellow
4.2 (0.166)	3.9—4.1 (0.154—0.162)	Green
4.3 (0.170)	4.1—4.2 (0.162—0.166)	Blue



5. Belleville spring

Install the belleville spring with dished side turned to bearing as illustrated in the drawing.

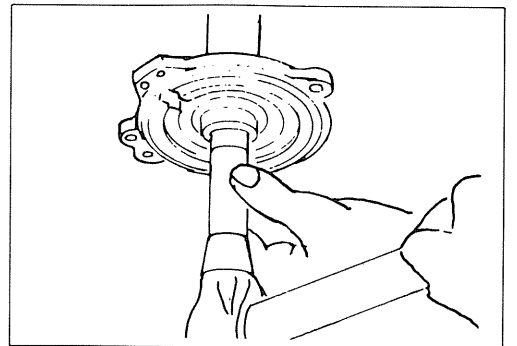


6. Front cover

Install the front cover oil seal.
 Setting tool : 5-8840-0026-0
 (J-26540)

Torque	kg·m(ft.lbs.)
1.5-2.3	(10.8-16.6)

Apply adhesive (seat end No. 22) to the threaded portion of the through bolt on the left lower side of the transmission case (as viewed from front side of the case) before installation.



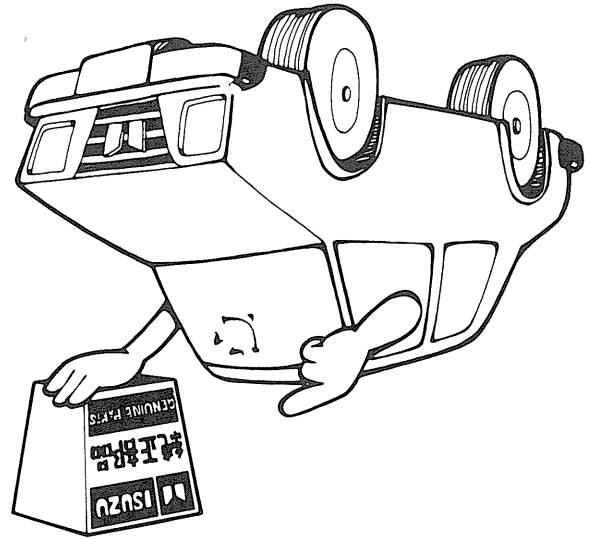
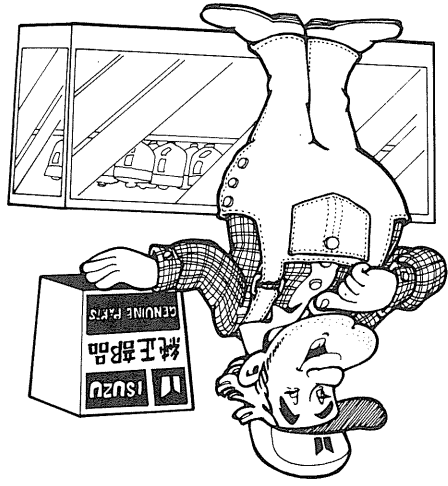
8. Shift block

Apply grease to the inner face of the shift block.
 Check that hook on the withdraw lever is fitted to the support properly.



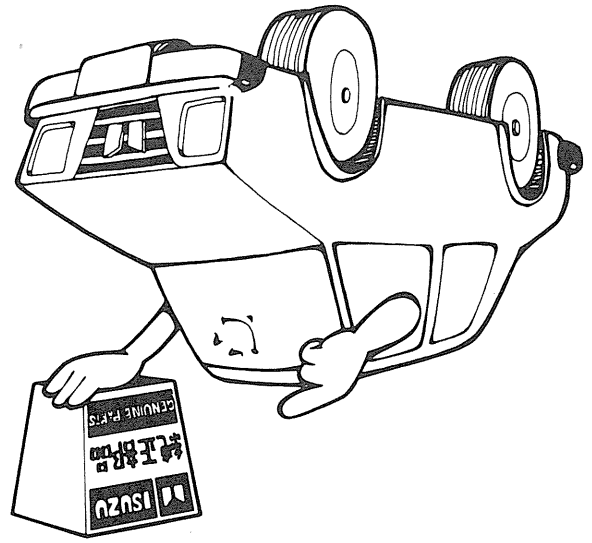
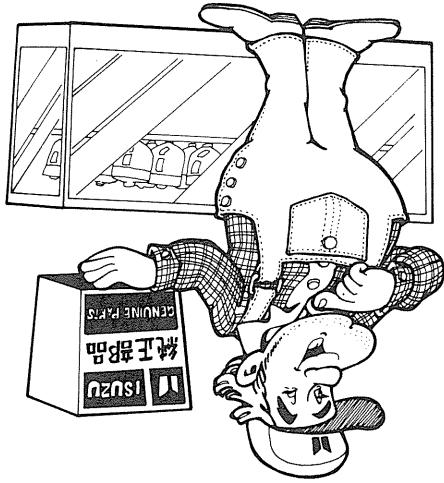
TROUBLESHOOTING

Condition	Possible Cause	Correction
Hard Shifting	<ol style="list-style-type: none"> 1. Clutch 2. Synchronizers worn or broken. 3. Shift shafts or forks worn. 	<ol style="list-style-type: none"> 1. Adjustment 2. Replace 3. Replace
Slips out of Gear	<ol style="list-style-type: none"> 1. Shift shafts worn. 2. Bearings worn. 3. Drive gear retainer broken or loose. 4. Excessive play in synchronizers. 	<ol style="list-style-type: none"> 1. Replace 2. Replace as necessary. 3. Tighten or replace retainer. 4. Replace
Noisy in All Gears	<ol style="list-style-type: none"> 1. Insufficient lubricant. 2. Worn countergear bearings. 3. Worn or damaged drive gear and countergear. 4. Damaged drive gear or main shaft 5. Worn or damaged countergear. 	<ol style="list-style-type: none"> 1. Fill to correct level. 2. Replace countergear bearings and shaft. 3. Replace worn or damaged gears. 4. Replace damaged bearings or drive gear. 5. Replace countergear.
Noisy in Neutral	<ol style="list-style-type: none"> 1. Damaged drive gear bearing. 2. Damaged or loose pilot bearing. 3. Worn or damaged countergear. 4. Worn countergear bearings. 	<ol style="list-style-type: none"> 1. Replace damaged bearing. 2. Replace pilot bearing. 3. Replace countergear. 4. Replace countergear bearings and shaft.
Noisy in Reverse	<ol style="list-style-type: none"> 1. Worn or damaged reverse idler gear or idler bushing. 2. Worn or damaged reverse gear. 3. Damaged or worn countergear. 	<ol style="list-style-type: none"> 1. Replace reverse idler gear assembly. 2. Replace reverse gear. 3. Replace countergear assembly.
Leaks lubricant	<ol style="list-style-type: none"> 1. Excessive amount of lubricant in transmission. 2. Loose or broken drive gear bearing retainer. 3. Drive gear bearing retainer gasket damaged. 4. Center support gaskets either side. 5. Rear extension seal. 6. Speedo driven gear 	<ol style="list-style-type: none"> 1. Drain to correct level. 2. Tighten or replace retainer. 3. Replace gasket. 4. Replace gaskets. 5. Replace. 6. Replace O ring seal



..QUALITY PARTS YOU CAN TRUST..

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KUTX4-WE-65G

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