

JC520TM15 TRANSMISSION

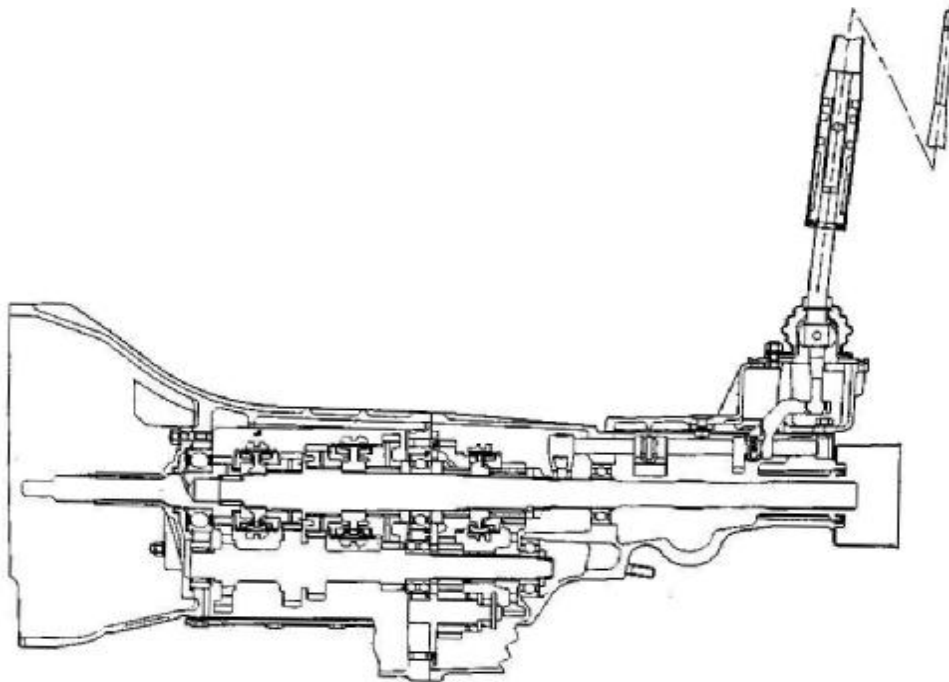
REPAIR MANUAL

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1 General

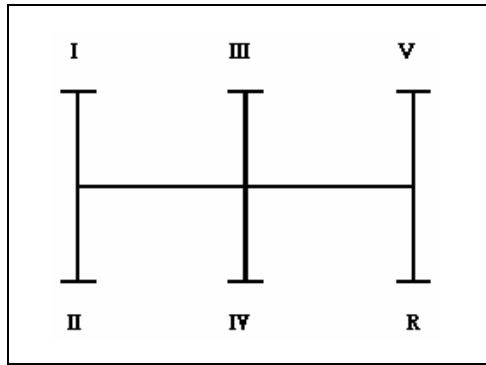
JC520TM15 gearbox is used on vehicles BQ6473G, BQ1023G, BQ6473RG and BQ1023RG.

Sectional View of Gearbox



Main Technical Parameters

		Speed Ratio I
Torque Capacity (gf.m)		20.0
Configuration		Manual
Drive Mode		2-Rear Wheel Drive
Number of Speeds		5
Speed Changing Ratio	1st Speed	3.967
	2nd Speed	2.136
	3rd Speed	1.360
	4th Speed	1.000
	5th Speed	0.856
	Reverse Speed	3.578
Speedometer Ratio	Gear Drive	27/8
Clutch Control		Hydraulic
Full Length (mm)		759
Weight (kg)		38 (excluding oil)
Noise (external hub vibration acceleration)		Refer to $\{\leq 9/s^2$ (below 40km/h)}
Gearbox Oil Specification		(GL-4) SAE (75W/85W)
Gearbox Oil Filling Method		Fill necessary amount from side plug hole. Oil Level: lower plane of plug hole
Gearbox Oil Filling Amount		2.3L



Speed Shifting Type

• Troubleshooting

(If abnormal conditions appear in the transmission and can not be solved by the user, contact the special service station or professional personnel. For the Illustrated Parts Catalogue and Part Numbers, refer to the Maintenance Manual.)

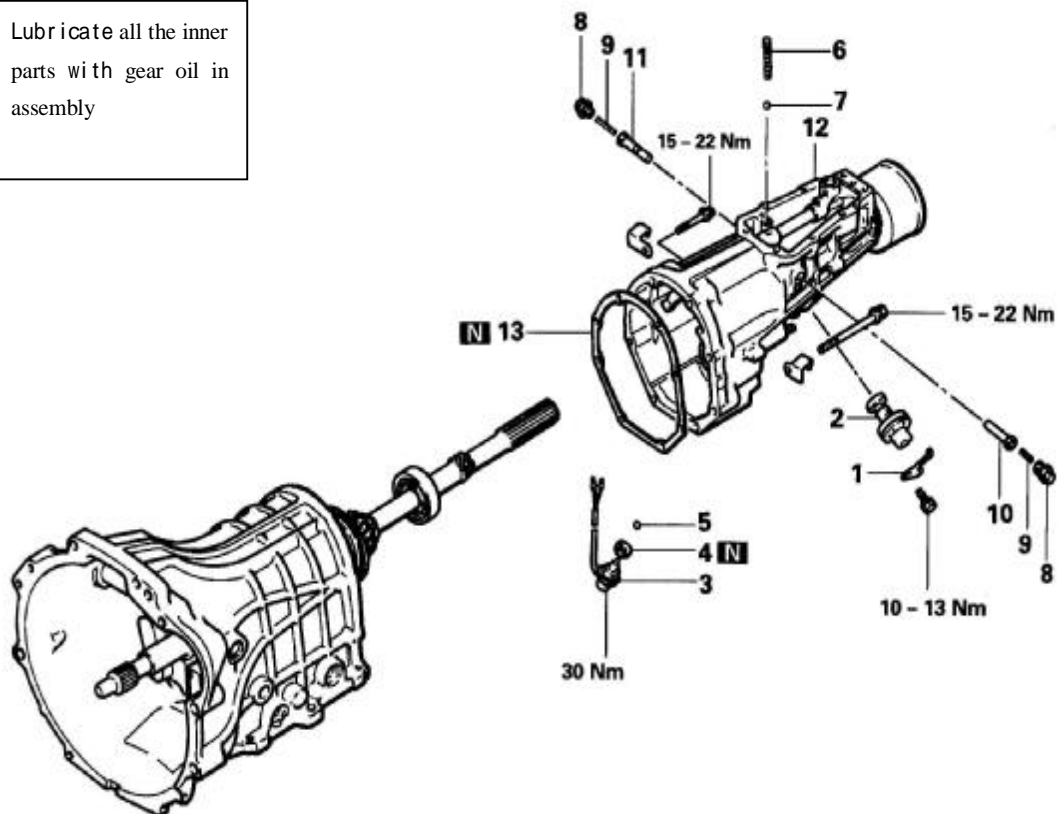
Trouble	Cause	Remedy
Back to Neutral Position during vehicle running	<ol style="list-style-type: none"> (1) The arc-shaped groove in shifting yoke shaft is worn excessively, the interlock pin is worn excessively and the lock ball spring is deformed. (2) The operating face of shifting yoke is worn excessively. (3) The meshing face of toothed ring or gear sleeve is worn excessively. (4) The gear is loose axially. 	<ol style="list-style-type: none"> (1) Check that the operating system pushes the gear shift rocker arm to its position, or remove the transmission and manually push the shifting yoke to engage a gear, and check for engagement condition. (2) If the engagement is not complete, check the shifting yoke for deformation or the operating face for excessive wear. (3) If the gear sleeve enters engagement fully, check inverted conical portion of the gear sleeve and engagement tooth for wear. (4) It is felt that the gap for driving is excessive, check the yoke shaft groove and the locating spring for wear or failure.
In case that there is no trouble in the clutch, gear shift is difficult with severe impact sound or it is difficult to shift to a certain gear. The transmission gives ① lawfull smash and ② even noise.	<ol style="list-style-type: none"> (1) Interlock pin is severely worn. (2) Some gear tooth is brocken. (3) Backlash is increased or gear damaged. (4) Bearing is worn. (5) Oil is not sufficient. 	<ol style="list-style-type: none"> (1) Locate the cause and remove. (2) Remove, check, clean and replace the damaged gear or bearing. (3) Replace or fill new oil.
Leakage	<ol style="list-style-type: none"> (1) Oil is too much and oil level too high. (2) Seal is worn excessively or damaged. (3) The sealant is not applied evenly or seal paper pad is damaged. (4) Vent plug fails (5) Engagement face is crashed and not trimmed timely. 	<ol style="list-style-type: none"> (1) Remove oil filler plug, and check the oil level. (2) Replace the seal. (3) Remove the mating parts, check and trim the crashed points and apply sealant. (4) Replace the vent plug.
The bearing is damaged abnormally.	<ol style="list-style-type: none"> (1) Oil is too dirty. (2) Lubrication is not sufficient or oil of bad quality does not meet the requirement. (3) Unqualified bearing is used. 	<ol style="list-style-type: none"> (1) Replace the oil. (2) Check the oil level, fill or replace the oil. (3) Replace the bearing.

2 Gearbox Removal

1. Gearbox Body (I)

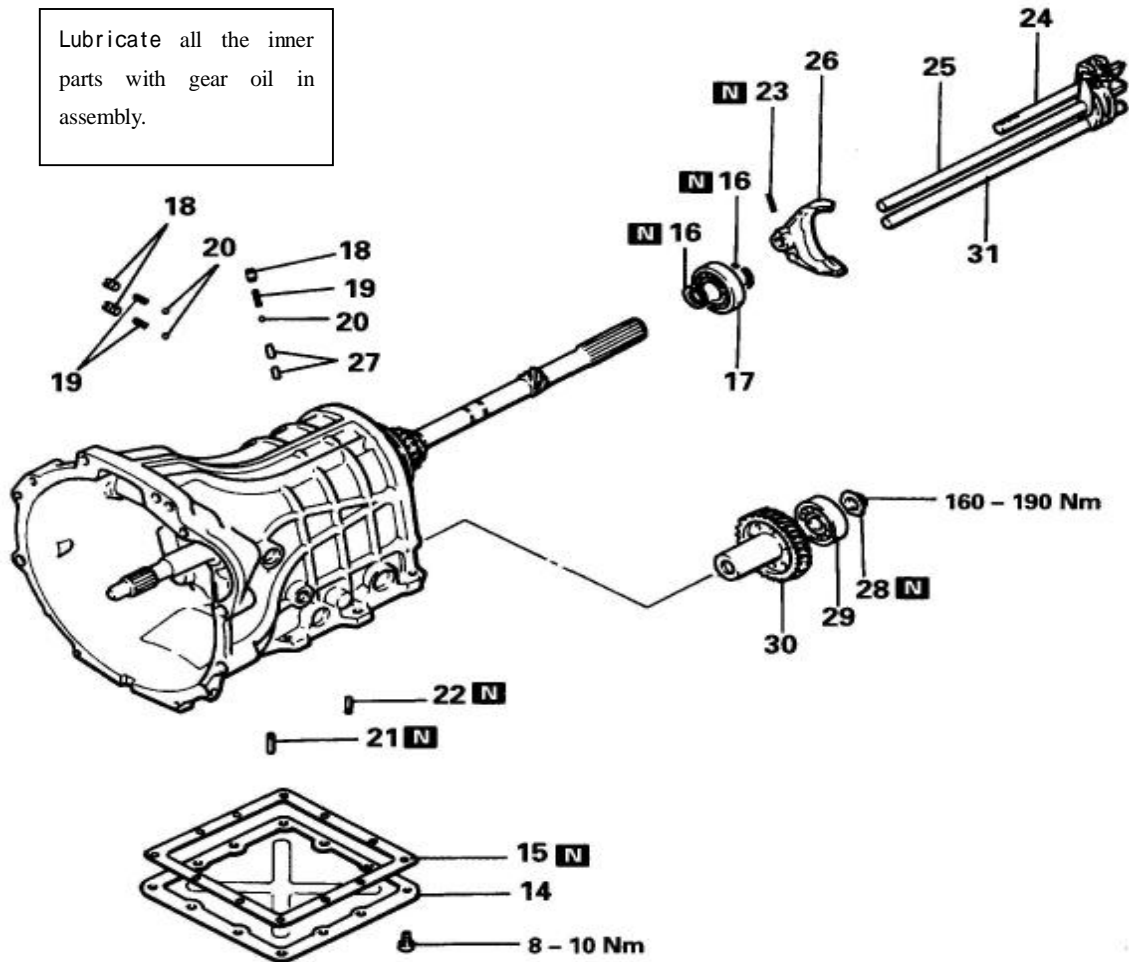
Caution: The torques shown in the Fig. are the stipulated torques.

Lubricate all the inner parts with gear oil in assembly



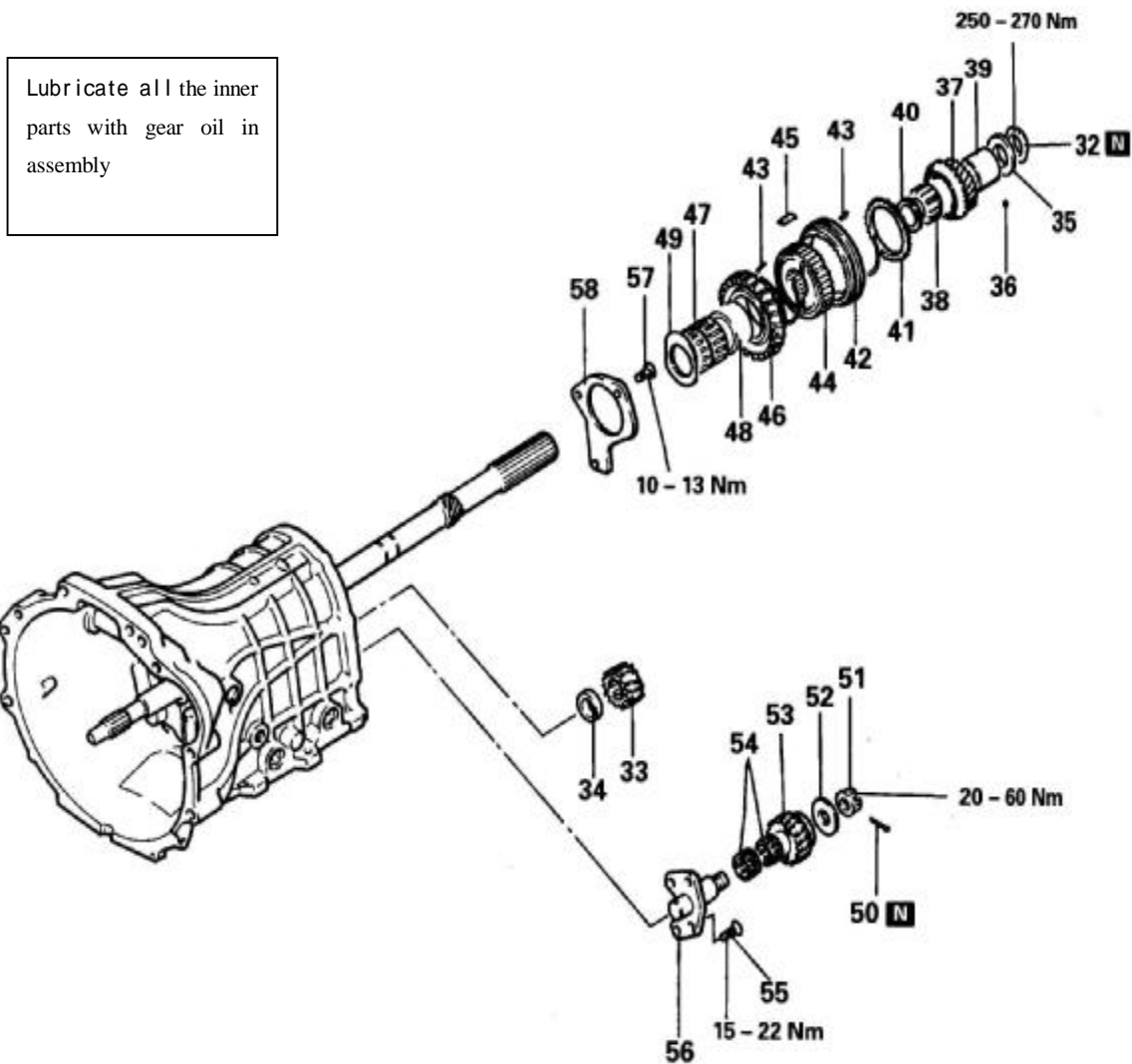
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|--|-----------------------------------|
| 1. Speedometer gear sleeve clamp | 2. Speedometer driven gear sleeve |
| 3. Backup lamp switch | 4. Seal pad |
| 5. Steel ball | 6. Damping spring |
| 7. Steel ball | 8. Seal plug (B) (2 pce/set) |
| 9. Neutral return spring (B) (2 pce/set) | 10. Neutral return plug A |
| 11. Neutral return plug B | 12. Extended casing assembly |
| 13. Extended casing seal pad | |

Gearbox Body (II)



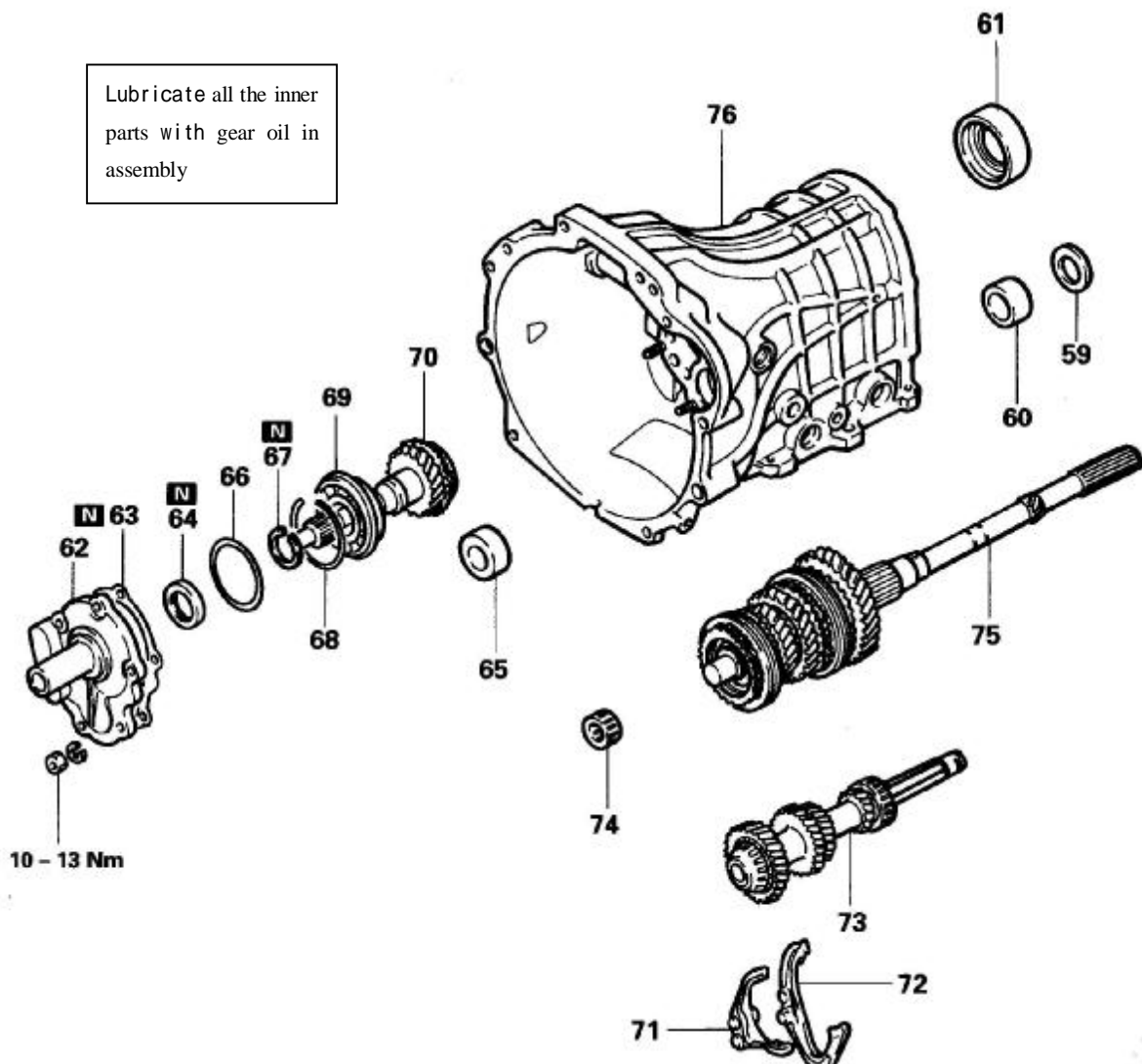
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|--|--|
| 14. Lower cover assembly | 15. Lower cover seal pad |
| 16. Retaining ring | 17. Main shaft rear bearing |
| 18. Lift plug | 19. Lift spring |
| 20. Steel ball | 21. Spring pin for 3rd/4th speed shifting yoke |
| 22. Spring pin for 1st/2nd speed shifting yoke | 23. Spring pin for 5th/R speed shifting yoke |
| 24. 5th/R speed shift track subassembly | 25. 3rd/4th speed shift track subassembly |
| 26. 5th/R gear shifting yoke | 27. Interlock plug |
| 28. Reverse shaft lock nut | 29. Radial ball bearing |
| 30. 5th speed reverse gear | 31. 1st/2nd speed shift track subassembly |

Gearbox Body (III)



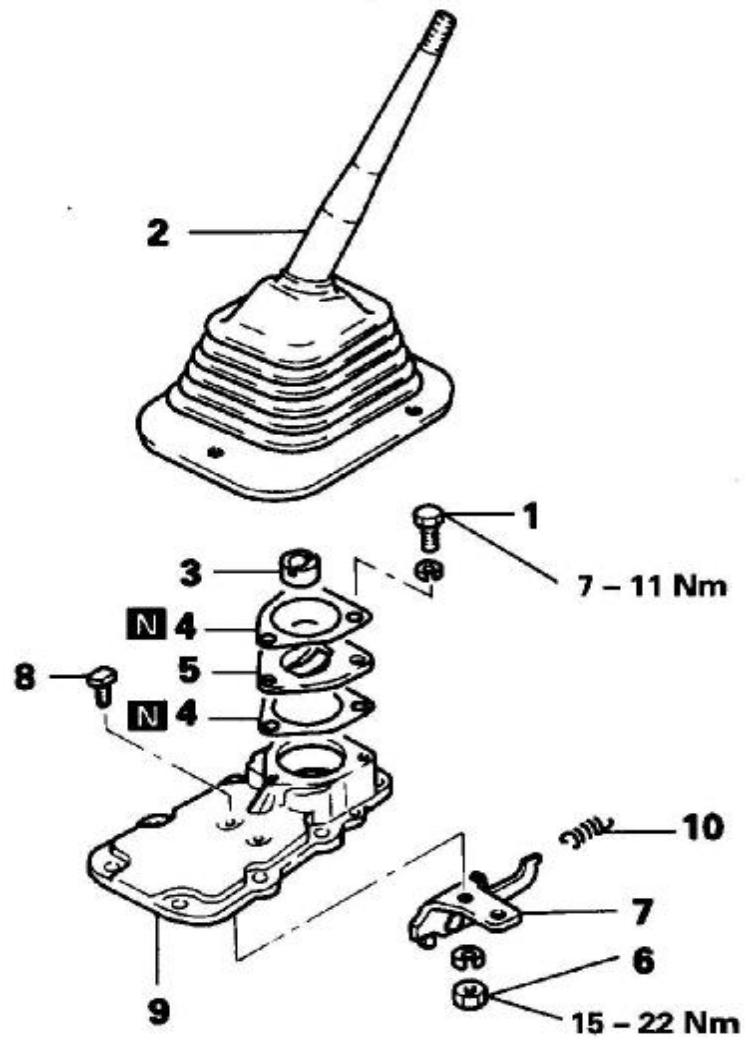
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|-------------------------------------|---|
| 32. Main lock nut | 33. Reversing gear of speed |
| 34. Gasket | 35. Gasket |
| 36. Steel ball | 37. 5th speed gear |
| 38. Needle bearing | 39. Bearing sleeve |
| 40. Bearing gasket | 41. 3rd/4th/5th speed synchronizer ring |
| 42. 5th/R speed synchronizer sleeve | 43. 5th/R speed synchronizer spring |
| 44. 5th/R speed synchronizer hub | 45. 5/R gear synchronizer key |
| 46. Reverse gear | 47. Needle bearing |
| 48. Bearing sleeve | 49. Gasket |
| 50. Split pin | 51. Grooved nut |
| 52. Thrust washer | 53. Reverse idle gear |
| 54. Needle bearing (2 pce/set) | 55. Bolt (4 pce/set) |
| 56. Reverse idle gear shaft | 57. Bolt |
| 58. Rear bearing seat | |

Gearbox Body (IV)



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|---|--|
| 59. Gasket | 60. Reversing shaft central bearing outer race |
| 61. Main shaft central bearing | 62. Front bearing seat |
| 63. Front bearing seat pad | 64. Seal |
| 65. Reversing shaft intermediate bearing outer race | 66. Gasket |
| 67. Retaining ring | 68. Retaining ring |
| 69. Driving gear shaft bearing | 70. Driving gear shaft assembly |
| 71. 3th/4th speed shifting yoke | 72. 1st/2nd speed shifting yoke |
| 73. Reversing shaft assembly | 74. Main shaft front bearing |
| 75. Main shaft assembly | 76. Transmission casing |

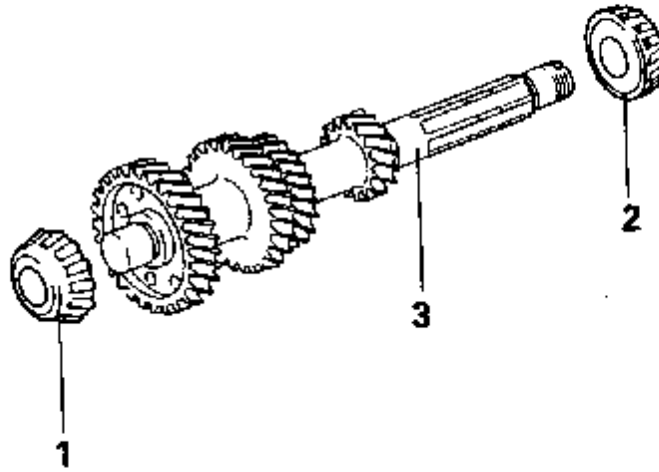
2. Shift Lever



- 1. Bolt (4 pce/set)
- 3. Control rod bush
- 5. Limiter plate
- 7. Stopper rack assembly
- 9. Extended casing cover

- 2. Control rod assembly
- 4. Pad
- 8. Nut
- 8. Special bolt
- 10. Return spring

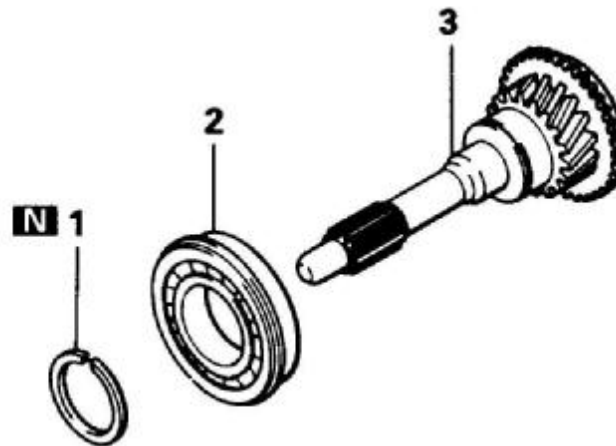
3. Reversing Shaft



1. Reversing shaft front bearing (1 pce/set)
3. Reversing shaft gear group

2. Reversing shaft central bearing (1 pce/set)

4. Driving Gear

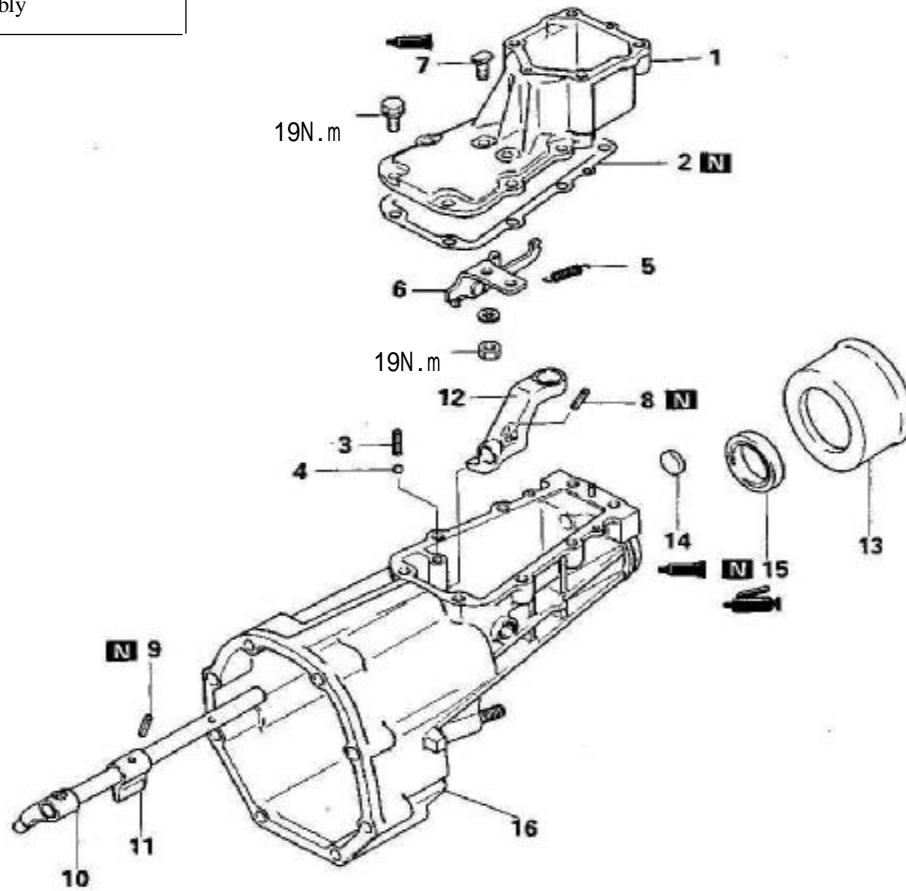


1. Retaining ring
3. Driving gear shaft

2. Bearing

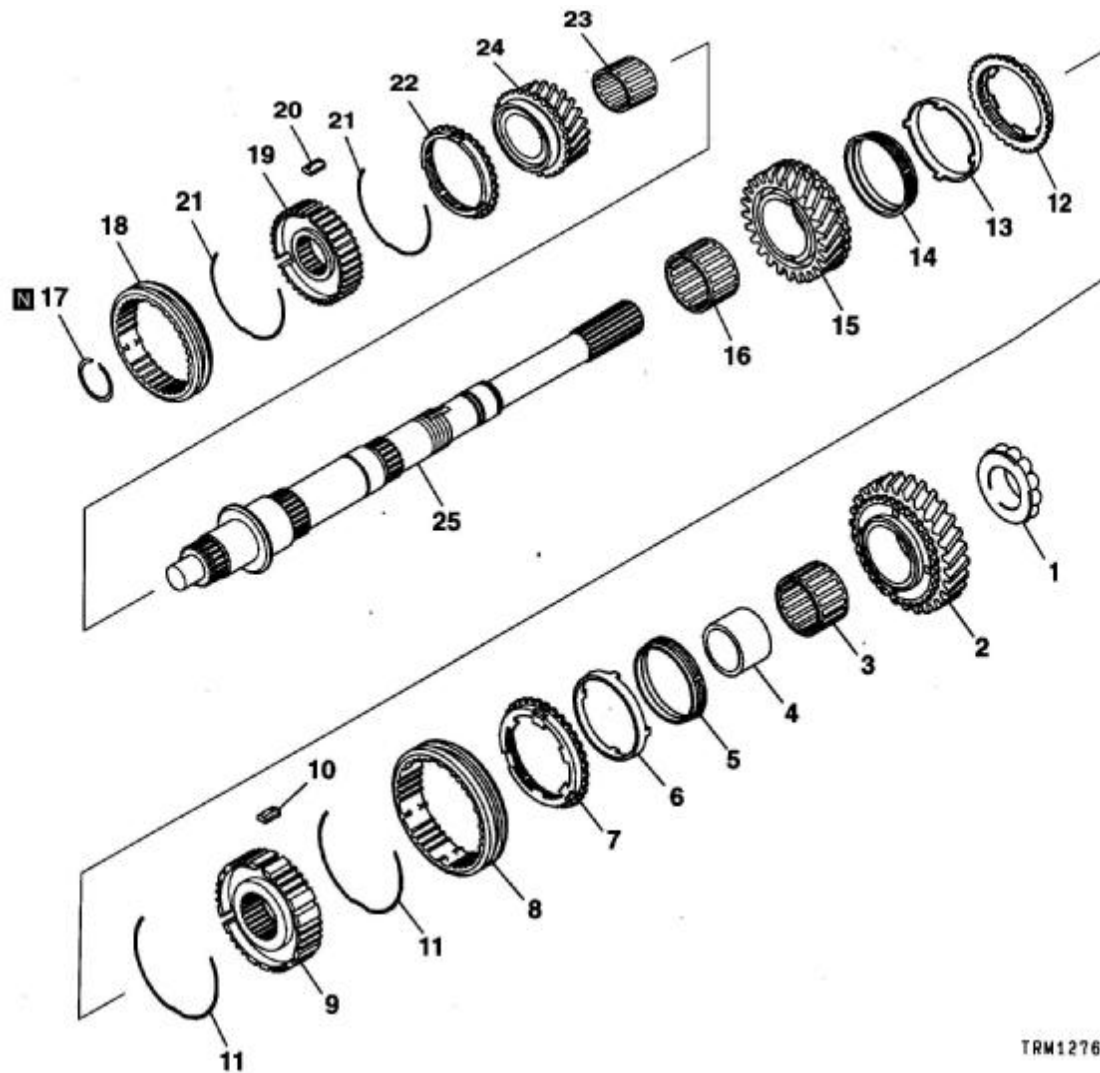
5. Extended Casing

Lubricate all the inner parts with gear oil in assembly



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|--------------------------|-----------------------------------|
| 1. Extended casing cover | 2. Extended casing cover seal pad |
| 3. Resisting spring | 4. Steel ball |
| 5. Return spring | 6. Stopper rack assembly |
| 7. Special bolt | 8. Lock pin |
| 9. Spring pin | 10. Control shaft |
| 11. Neutral return pawl | 12. Gear shifter |
| 13. Boot | 14. Control shaft cover |
| 15. Seal | 16. Extended casing assembly |

6. Main Shaft



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|---|---|
| 1. Ball bearing | 2. 1st speed gear |
| 3. 1st/2nd speed needle bearing | 4. 1st speed bearing sleeve |
| 5. Synchronizer inner ring (the same as 12) | 6. Synchronizer cone (the same as 13) |
| 7. Synchronizer outer ring (the same as 14) | 8. 1st/2nd speed synchronizer sleeve |
| 9. 1st/2nd speed synchronizer hub | 10. 1st/2nd speed synchronizer key |
| 11. 1st/2nd speedsynchronizer spring | 12. Synchronizer outer ring |
| 13. Synchronizer cone | 14. Synchronizer inner ring |
| 15. 2nd speed gear | 17. Retaining ring |
| 18. 3rd/4th speed synchronizer sleeve | 19. 3rd/4th speedsynchronizer hub |
| 20. 3rd/4th speed synchronizer key | 21. 3rd/4th/5th/R speed synchronizer spring |
| 22. 3rd/4th/5th speed synchronizer ring | 23. Needle bearing |
| 24. 3rd speed gear | 25. Main shaft |