



SERVICE

**R65 UPRATED
MANUAL
GEARBOX**

**OVERHAUL
MANUAL**

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INTRODUCTION

How to use this manual

To assist in the use of this manual the section title is given at the top and the relevant sub-section is given at the bottom of each page.

This manual contains procedures for the overhaul of the gearbox on the bench with the engine removed. For all other information regarding General Information, Adjustments, Removal of oil seals, gearbox unit, consult the Repair Manual for the model concerned.

This manual is divided into 3 sections, Description and Operation, Overhaul and Data, Torque & Tools. To assist filing of revised information each sub-section is numbered from page 1.

The individual overhaul items are to be followed in the sequence in which they appear. Items numbered in the illustrations are referred to in the text.

Overhaul operations include reference to Service Tool numbers and the associated illustration depicts the tool. Where usage is not obvious the tool is shown in use. Operations also include reference to wear limits, relevant data, torque figures, and specialist information and useful assembly details.

WARNINGS, CAUTIONS and Notes have the following meanings:



WARNING: Procedures which must be followed precisely to avoid the possibility of injury.



CAUTION: Calls attention to procedures which must be followed to avoid damage to components.



NOTE: Gives helpful information.

References

With the engine and gearbox assembly removed, the crankshaft pulley end of the engine is referred to as the front.

Operations covered in this manual do not include reference to testing the vehicle after repair. It is essential that work is inspected and tested after completion and if necessary a road test of the vehicle is carried out particularly where safety related items are concerned.

Dimensions

The dimensions quoted are to design engineering specification with Service limits where applicable.

REPAIRS AND REPLACEMENTS

When replacement parts are required it is essential that only Rover recommended parts are used.

Attention is particularly drawn to the following points concerning repairs and the fitting of replacement parts and accessories.

Safety features and corrosion prevention treatments embodied in the car may be impaired if other than Rover recommended parts are fitted. In certain territories, legislation prohibits the fitting of parts not to the manufacturer's specification.

Torque wrench setting figures given in this Manual must be used. Locking devices, where specified, must be fitted. If the efficiency of a locking device is impaired during removal it must be renewed.

The Terms of the vehicle Warranty may be invalidated by the fitting of other than Rover recommended parts. All Rover recommended parts have the full backing of the vehicle Warranty.

Rover Dealers are obliged to supply only Rover recommended parts.

INTRODUCTION

SPECIFICATION

Rover are constantly seeking to improve the specification, design and production of their vehicles and alterations take place accordingly. While every effort has been made to ensure the accuracy of this Manual, it should not be regarded as an infallible guide to current specifications of any particular component or vehicle.

This Manual does not constitute an offer for sale of any particular component or vehicle. Rover Dealers are not agents of Rover and have no authority to bind the manufacturer by any expressed or implied undertaking or representation.

Gearbox identification

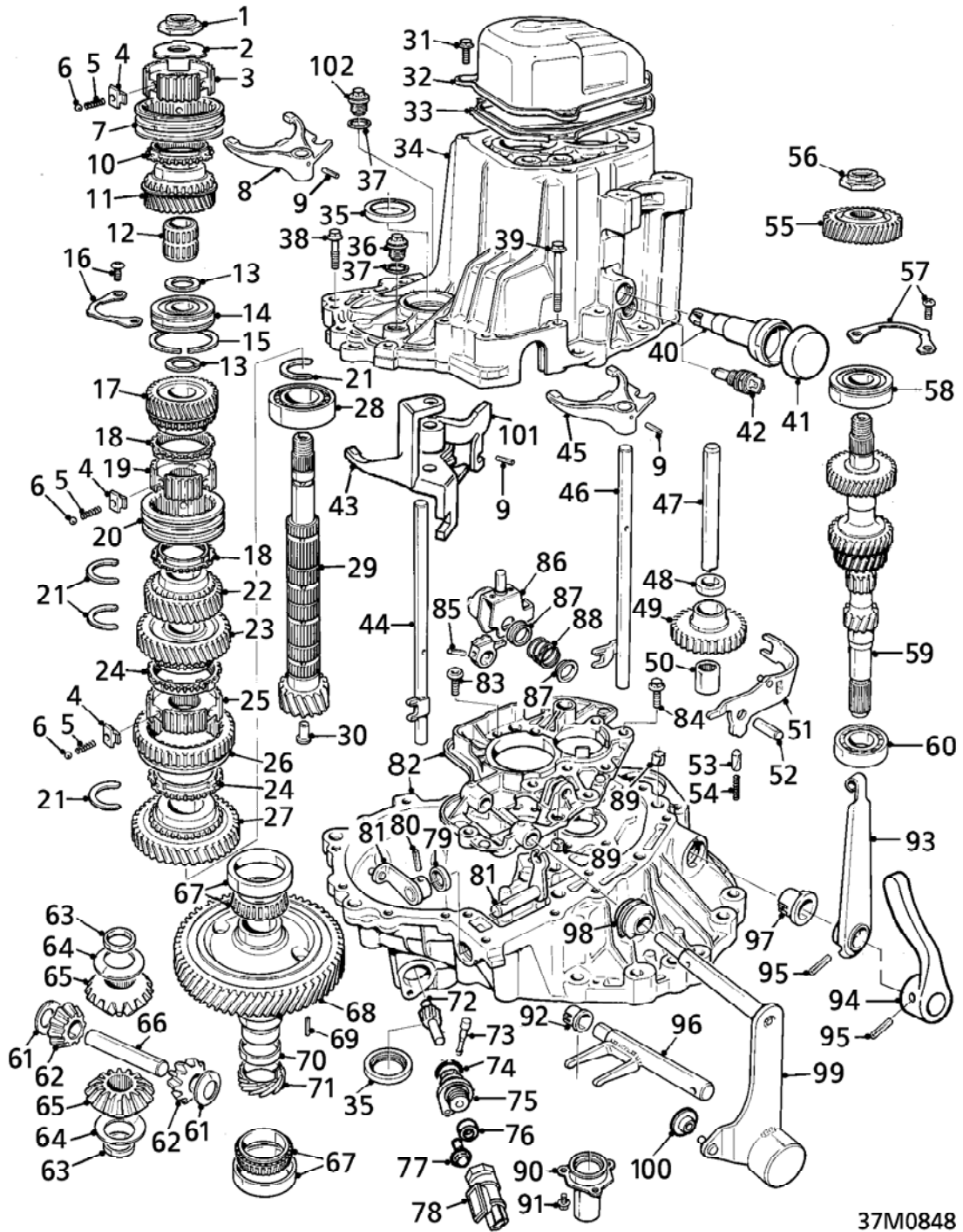
This overhaul manual is applicable to updated 5 speed R65 gearboxes having the following Serial No. prefixes:

5C35DU
5C35YU
5C37YU
5C39WU
5C39WUR
5C39WUH
5C39WUC.



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MANUAL GEARBOX



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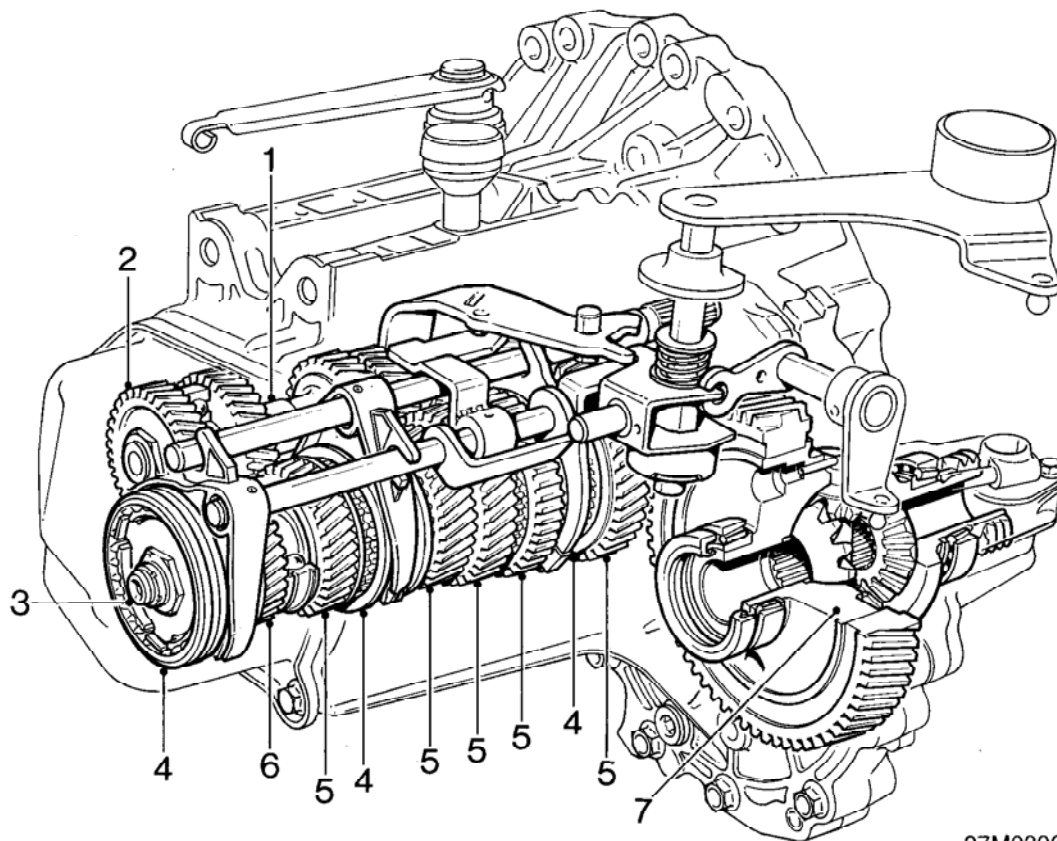


GEARBOX COMPONENTS

1. Locknut
2. Stop plate
3. 5th speed synchro hub
4. Finger
5. Spring
6. Ball
7. 5th speed synchro coupling sleeve
8. 5th selector fork
9. Roll pin
10. 5th speed synchro ring
11. 5th speed gear - output shaft
12. Needle roller bearing
13. Spacer
14. Output shaft bearing
15. Circlip - Output shaft bearing
16. Bearing locking ring and screw
17. 4th speed gear
18. 3rd/4th speed synchro ring
19. 3rd/4th speed synchro hub
20. 3rd/4th speed synchro coupling sleeve
21. Segment
22. 3rd speed gear
23. 2nd speed gear
24. 1st/2nd speed synchro ring
25. 1st/2nd speed synchro hub
26. 1st/2nd speed synchro coupling sleeve
27. 1st speed gear
28. Output shaft bearing
29. Output shaft
30. End piece - lubrication
31. Rear cover screw
32. Rear cover
33. Rear cover seal
34. Gearbox casing
35. Differential oil seal
36. Filler/level plug
37. Washer
38. Bolt - M8 x 40
39. Bolt - M8 x 70
40. Breather
41. Breather protector
42. Reverse light switch
43. 1st/2nd selector fork
44. 5th/reverse selector shaft
45. 3rd/4th selector fork
46. 3rd/4th selector shaft
47. Reverse idler gear shaft
48. Reverse idler gear thrust bearing
49. Reverse idler gear
50. Needle roller bearing
51. Reverse selector fork
52. Reverse fork pivot pin
53. Locking plunger
54. Spring
55. 5th speed gear - input shaft
56. Locknut - input shaft
57. Bearing locking ring and screw
58. Bearing
59. Input shaft
60. Bearing
61. Pinion thrust washer
62. Differential pinion
63. Centre tube
64. Gear thrust washer
65. Differential gear
66. Pinion shaft
67. Taper roller bearing
68. Differential housing and drive gear
69. Roll pin
70. Retaining ring
71. Speedometer drive gear
72. Speedometer drive pinion
73. Cable locating dowel
74. 'O' ring
75. Speedometer drive pinion housing
76. Speedometer drive pinion housing oil seal
77. Speedometer drive pinion housing screw
78. Vehicle speed sensor*
79. Oil seal
80. Roll pin
81. Shaft and selector lever assembly
82. Clutch housing and intermediate plate assembly
83. Screw - intermediate plate to clutch housing
84. Screw - intermediate plate to clutch housing
85. Roll pin
86. Combined interlock and detent
87. Plastic cup
88. Spring
89. Dowel
90. Guide sleeve and oil seal assembly
91. Guide sleeve screw
92. Ring lower
93. Clutch release lever - Mechanical clutch
94. Clutch release lever - Hydraulic clutch
95. Serrated pin
96. Clutch release fork
97. Ring upper
98. Gear selector lever seal
99. Gear selector lever
100. Dust cover
101. Reverse lever assembly
102. Drain plug

* If fitted

MANUAL GEARBOX



37M0396 B

Mechanical clutch version illustrated

OPERATION

The R65 gearbox comprises of an input shaft (1), with 1st, 2nd, 3rd and 4th gears being integral with the shaft. 5th gear (2) is splined to the shaft and secured by means of a locknut.

The output shaft (3), incorporates the synchronizers (4) and gears (5) which are free to run on the shaft, with 5th gear (6) running on a caged needle roller bearing.

The input shaft is supported on sealed ball bearings which are located in the clutch and gearbox housing. The output shaft is supported on one sealed ball bearing in the gearbox housing and a roller bearing in the clutch housing. Drive from the gears is transmitted to a conventional final drive (7) which is supported on taper roller bearings.

All free moving gears on the output shaft require no end-float adjustment, each gear being located on the shaft by segments.

Depending on application, either a mechanical or hydraulic clutch may be fitted.

Lubrication to the output shaft gears is via a through drilling and cross drillings in the output shaft, fed from a collection trough on the gearcase wall and a similar collection trough adjacent to the final drive pinion.

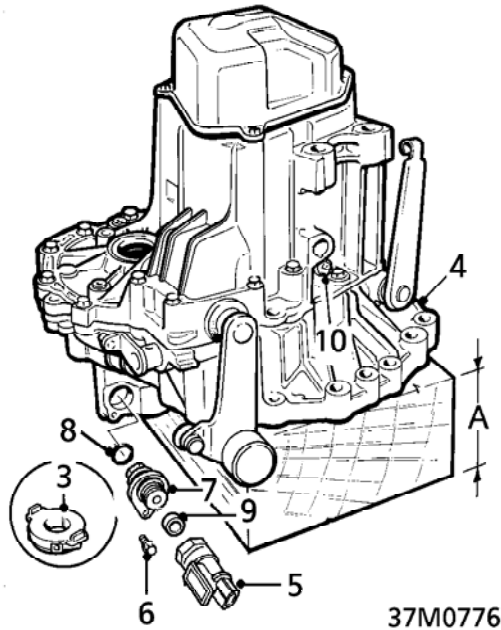
Oil level and drain facilities are positioned in the gearbox housing towards the rear end of the final drive side. The gearbox oil is filled for life and does not require changing in service.



GEARBOX DISMANTLING

Service repair no - 37.20.04

1. Remove gearbox assembly, see **MANUAL GEARBOX - Repairs** in the relevant Repair Manual
2. Thoroughly clean exterior of gearbox and clutch housing.

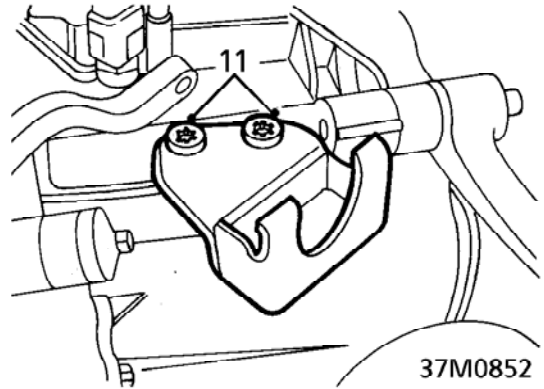


3. Remove clutch release bearing from release fork.
4. Position clutch housing on block of wood.

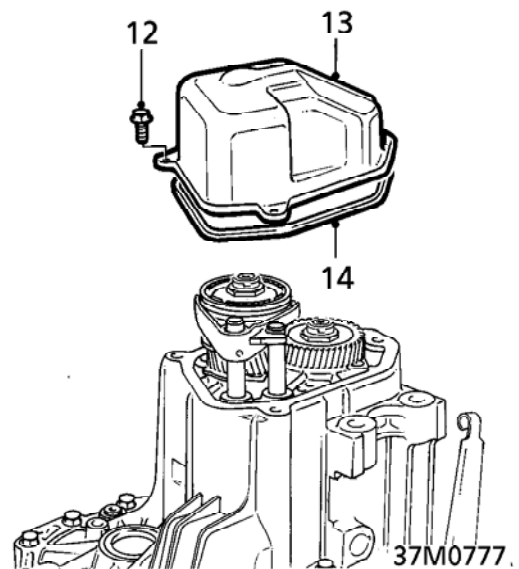


CAUTION: Dimension A must not be less than 80 mm.

5. Remove vehicle speed sensor (if fitted) from speedometer drive pinion housing.
6. Remove bolt securing speedometer drive pinion housing.
7. Withdraw drive pinion housing from clutch housing.
8. Remove and discard 'O' ring.
9. Prise oil seal (if fitted) from drive pinion housing; discard oil seal.
10. Remove reverse light switch.



11. *Hydraulic clutch:* Remove 2 Torx screws securing clutch slave cylinder mounting bracket; remove bracket.

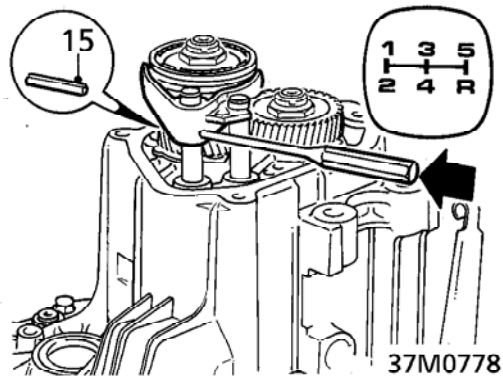


12. Remove 3 bolts securing rear cover.
13. Remove rear cover.
14. Remove rubber gasket.



NOTE: Gasket may be re-used if undamaged.

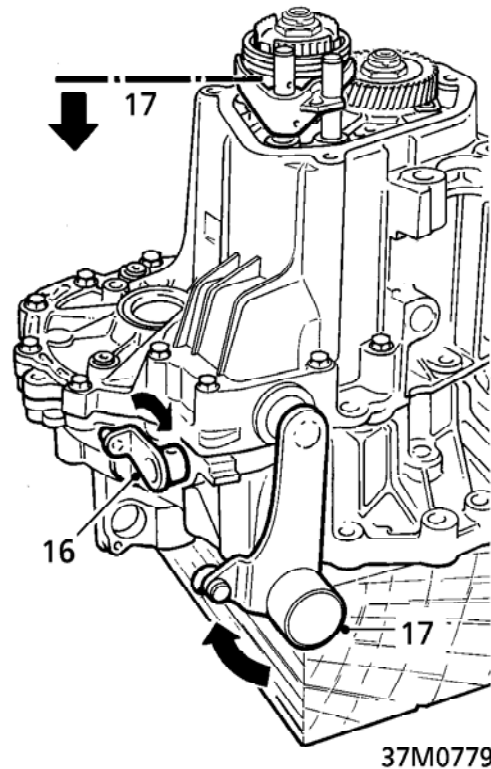
MANUAL GEARBOX



15. Using a punch, drive out roll pin securing 5th speed selector fork.



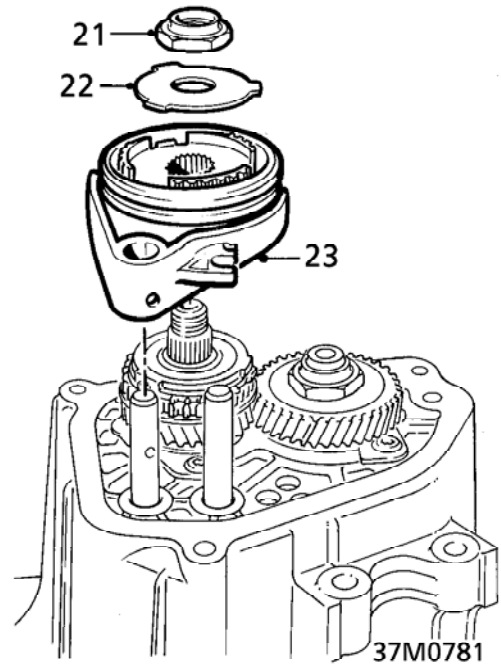
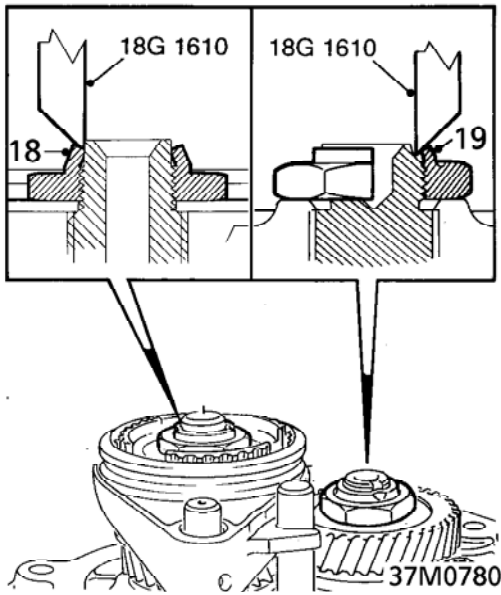
CAUTION: The selector fork and shaft are a matched pair and should not be interchanged.



16. Engage 1st gear.
17. Press down 5th speed gear selector fork and simultaneously move selector lever to engage 5th speed gear.



NOTE: Engagement of these two gears is necessary to prevent input and output shafts from turning.



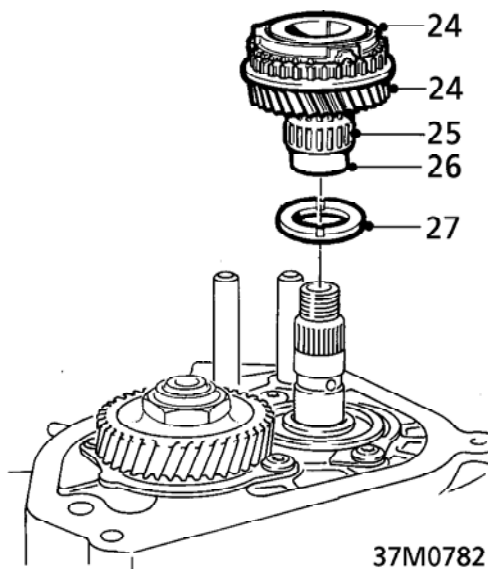
- 18. Release 2 detents in synchro hub retaining locknut using tool **18G1610**. Slacken, but do not remove locknut.
- 19. Release single detent in input shaft 5th gear locknut using tool **18G1610**; slacken but do not remove locknut.
- 20. Disengage 1st and 5th speed gears.

- 21. Remove and discard synchro hub locknut.
- 22. Remove stop plate.
- 23. Slide 5th speed gear synchro assembly and selector fork off selector shaft.

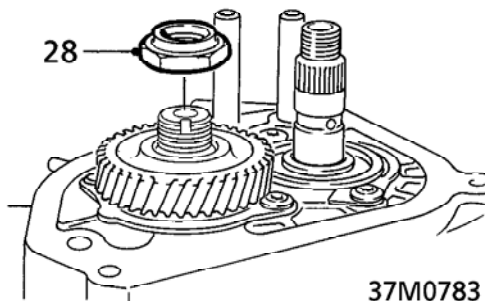


CAUTION: Do not separate synchro hub from coupling sleeve at this stage.

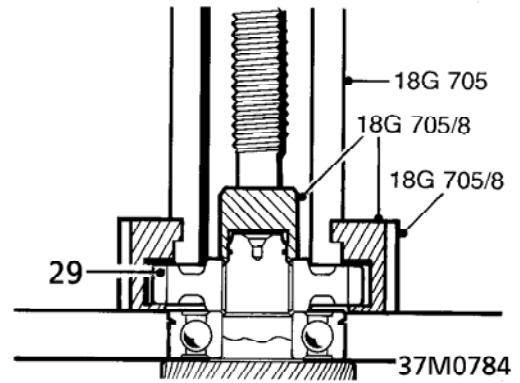
MANUAL GEARBOX



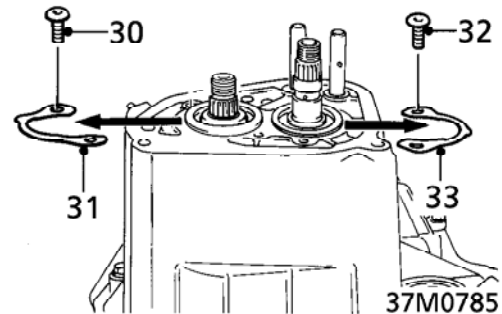
24. Remove 5th speed gear synchro ring together with 5th speed driven gear from output shaft.
25. Remove needle bearing.
26. Remove bearing collar.
27. Remove spacer washer.



28. Remove and discard locknut securing 5th speed gear to input shaft.

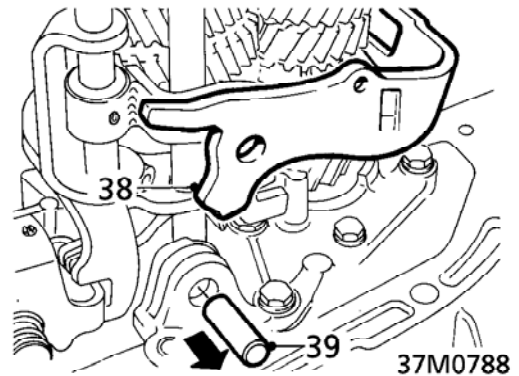
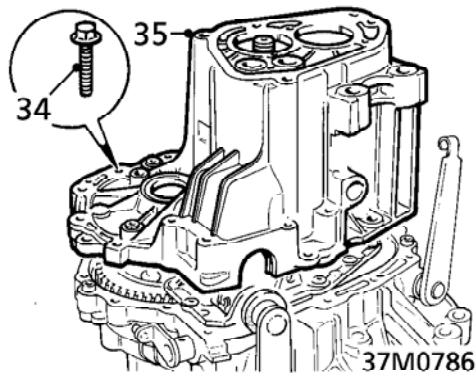


29. Using tool **18G705** and adaptor tool **18G705-8**, remove 5th speed gear from input shaft.



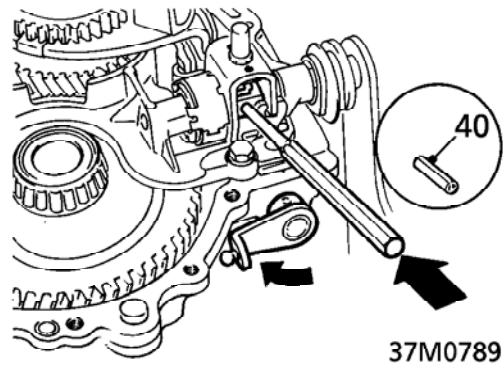
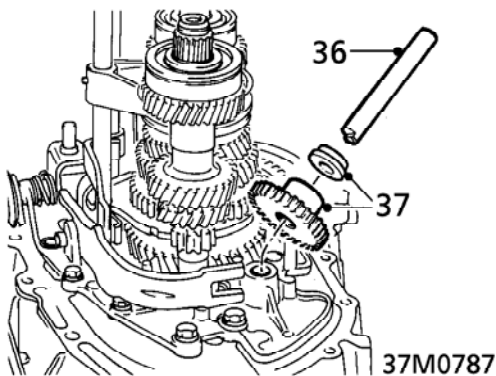
30. Remove and discard 2 Torx screws securing input shaft bearing locking ring.
31. Slide locking ring out of bearing recess.
32. Remove and discard 2 Torx screws securing output shaft bearing locking ring.
33. Slide locking ring out of bearing recess.

NOTE: This is smaller of two locking rings.



- 34. Remove 16 bolts securing gearbox casing to clutch housing, noting fitted position of 4 long bolts.
- 35. Using a soft faced mallet, tap gearbox casing upwards to break seal; remove gearbox casing.

- 38. Press reverse selector fork down to release pressure on pivot pin.
- 39. Withdraw pivot pin and release selector fork from clevis.



- 36. Withdraw reverse idler gear shaft from clutch housing.
- 37. Remove reverse idler gear thrust bearing together with reverse idler gear.

- 40. Using a punch, drive out roll pin securing gear selector lever to combined interlock and detent assembly; discard roll pin.

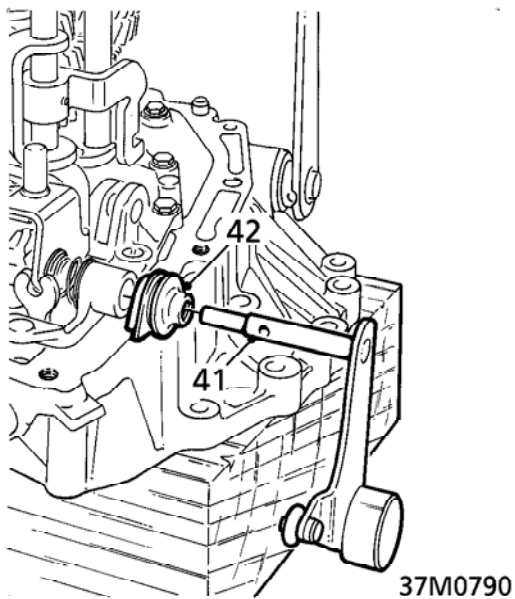


NOTE: Reverse idler gear contains a needle roller bearing which is not serviced separate to the gear.

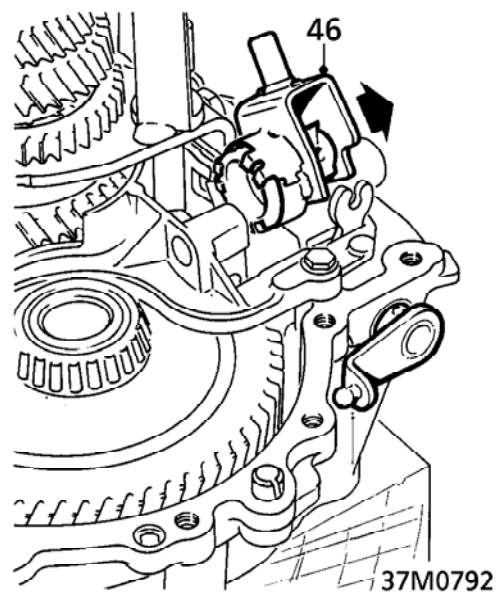


NOTE: Lever should be moved upwards slightly to gain access to roll pin.

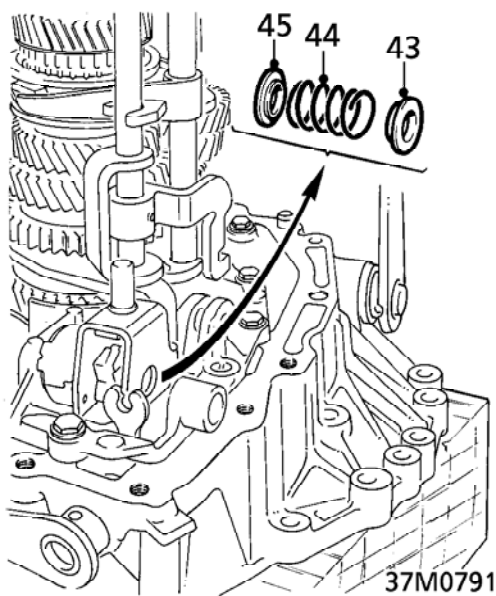
MANUAL GEARBOX



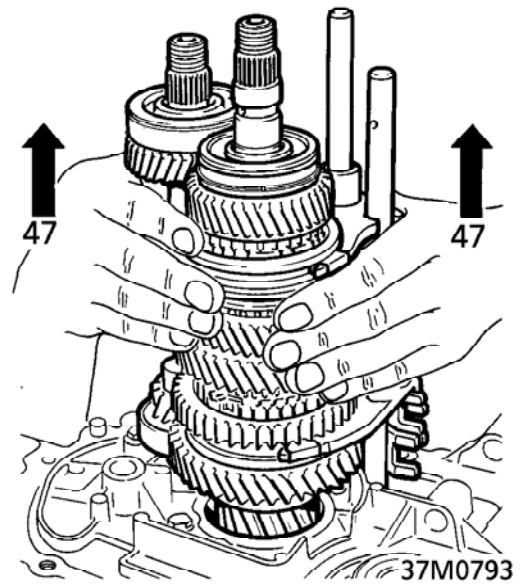
- 41. Withdraw gear selector lever.
- 42. Remove and discard selector shaft seal.



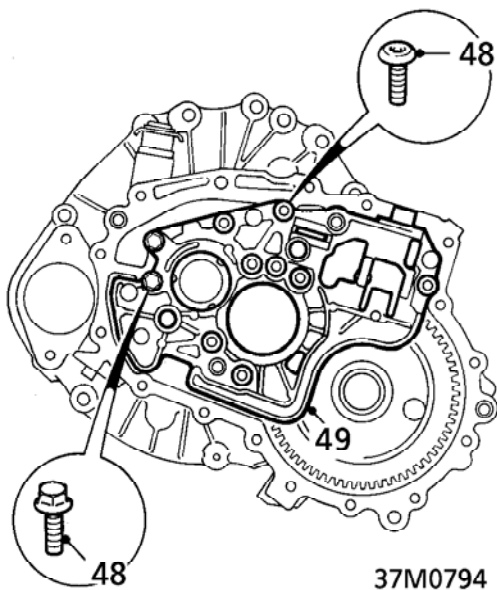
- 46. Move combined interlock and detent assembly sideways until it can be withdrawn.



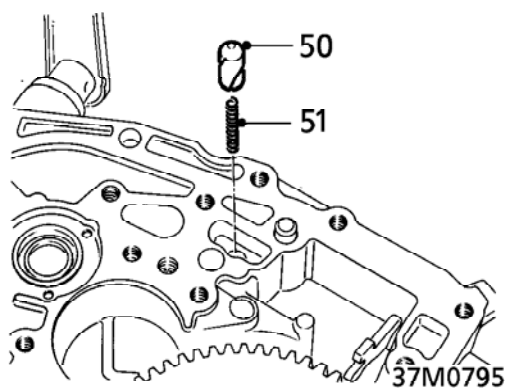
- 43. Remove plastic cup.
- 44. Withdraw bias spring.
- 45. Recover a second plastic cup.



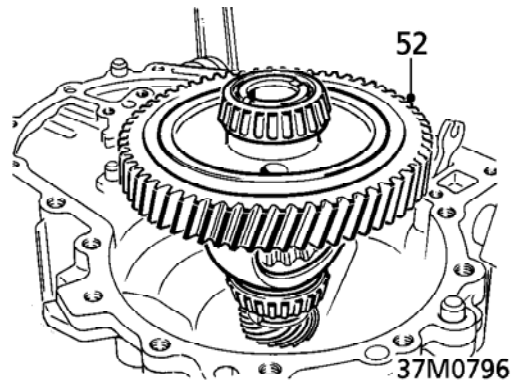
- 47. Lift input shaft and output shaft assemblies together with selector forks and shafts out of clutch housing.



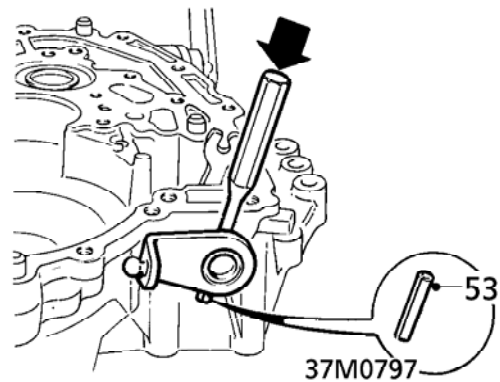
- 48. Noting their fitting positions, remove 9 Torx screws and 2 bolts securing intermediate plate to clutch housing.
- 49. Remove intermediate plate.



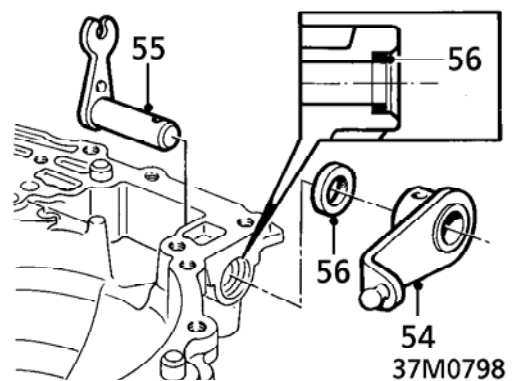
- 50. Withdraw reverse locking plunger.
- 51. Withdraw spring.



- 52. Carefully lift differential assembly out of clutch housing.



- 53. Using a punch, drive out roll pin retaining selector lever.



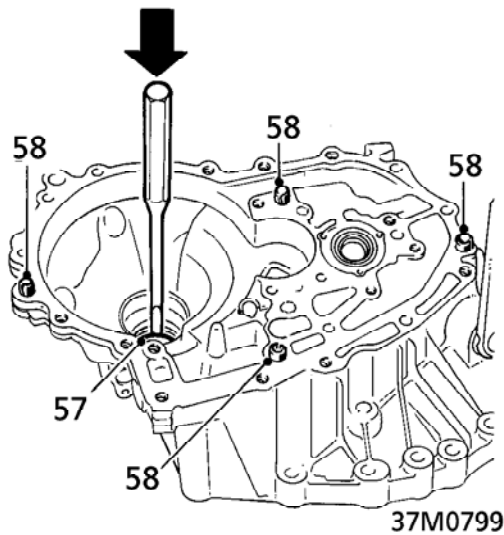
- 54. Remove selector lever.
- 55. Withdraw selector lever shaft.



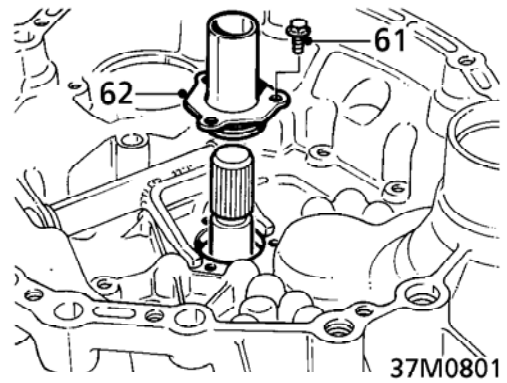
CAUTION: Selector lever and shaft are a matched assembly.

- 56. Remove and discard oil seal.


MANUAL GEARBOX

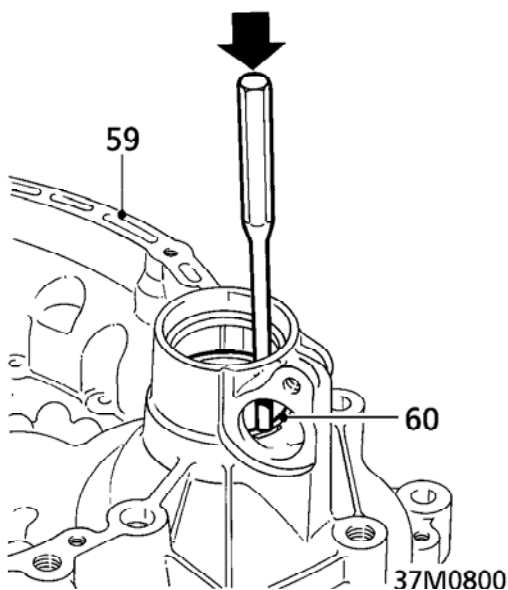


57. Using a punch, drive differential oil seal out of clutch housing; discard seal.
58. Remove 4 spring dowels from clutch housing.



61. Remove and discard 3 bolts securing clutch release bearing guide sleeve.
62. Remove and discard release bearing guide sleeve and oil seal.

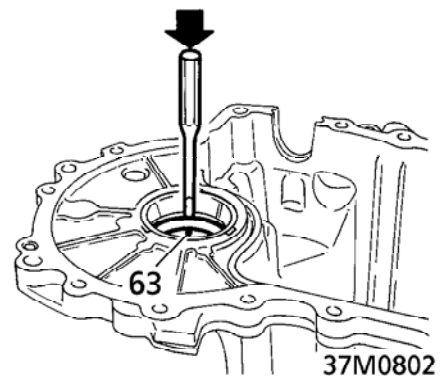
 **NOTE:** Release bearing guide sleeve and oil seal may only be replaced as an assembly.



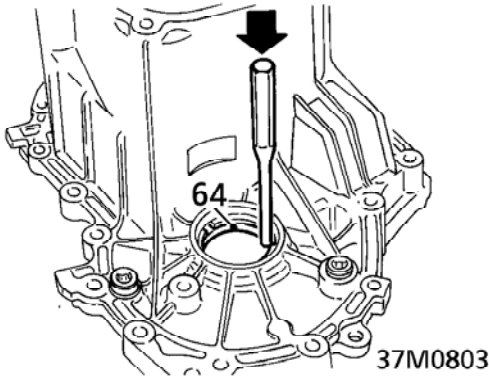
59. Invert clutch housing.
60. Using a punch inserted in slots in clutch housing, progressively drive out differential bearing outer track.



CAUTION: If differential bearings are to be re-used, do not remove bearing track.

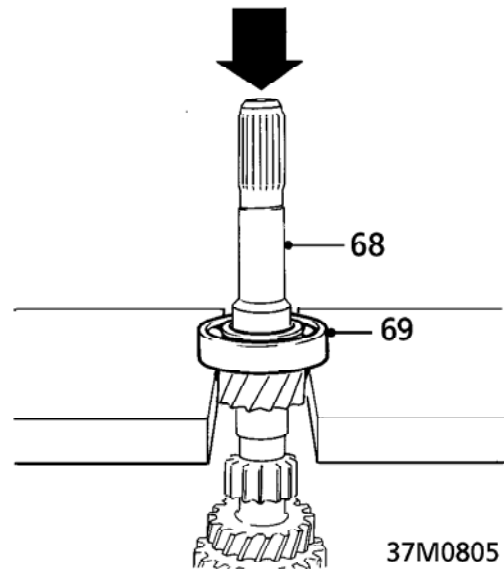


63. Using a punch, drive differential oil seal out of gearbox casing; discard oil seal.



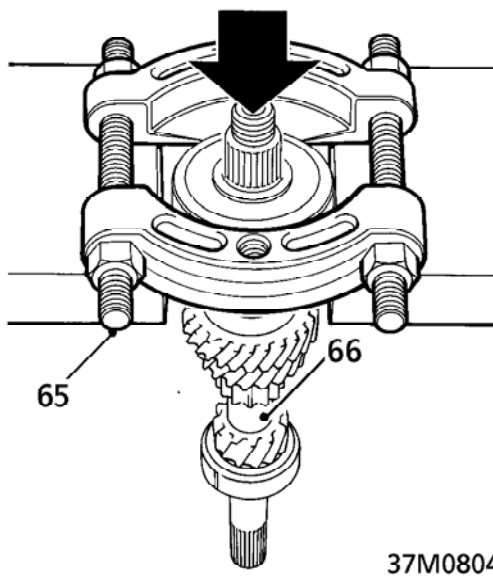
64. Invert gearbox casing; using a punch inserted in slots in gearbox casing, progressively drive out differential bearing outer track.

CAUTION: If differential bearings are to be re-used, do not remove bearing track.



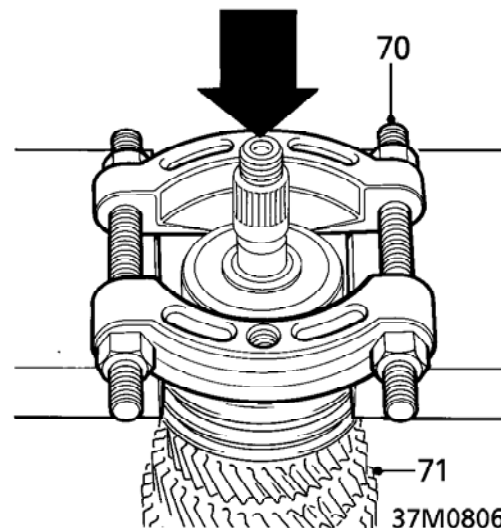
68. Position input shaft assembly on bed of press with bearing at 1st speed gear end of input shaft supported by bed of press.
69. Press input shaft assembly out of bearing.

CAUTION: Do not re-use existing bearing.



65. Clamp both halves of bearing separator around input shaft bearing - 4th speed gear end of input shaft.
66. Position bearing separator on bed of press and press input shaft assembly out of bearing.
67. Remove bearing separator.

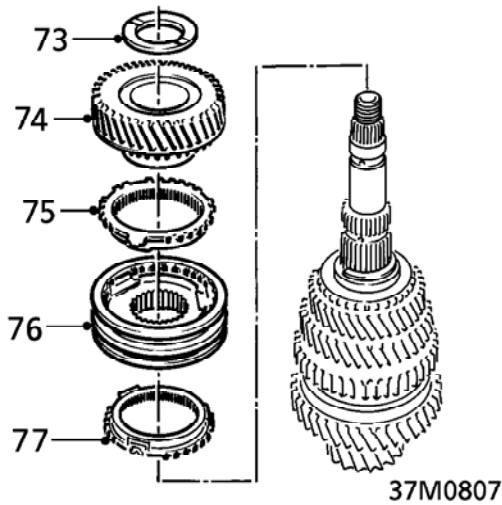
CAUTION: Do not re-use existing bearing.



70. Clamp both halves of bearing separator around output shaft bearing.
71. Position bearing separator on bed of press and press output shaft assembly out of bearing.

72. Remove bearing separator.

CAUTION: Do not re-use existing bearing.

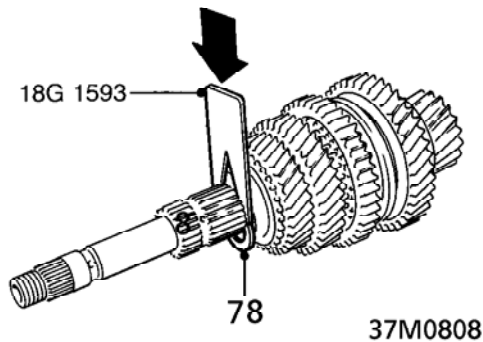


- 73. Remove spacer.
- 74. Remove 4th speed gear.
- 75. Remove 3rd/4th speed synchro ring.
- 76. Remove 3rd/4th speed synchro hub assembly.

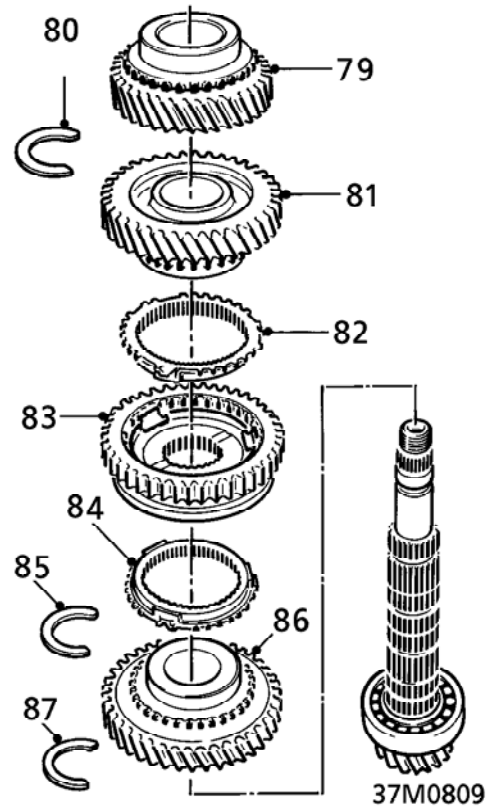
CAUTION: Do not separate synchro hub from coupling sleeve at this stage.



77. Remove 3rd/4th speed synchro ring.



78. Using tool **18G1593**, drive segment ring securing 3rd speed gear off output shaft.



- 79. Remove 3rd speed gear.
- 80. Using tool **18G1593**, drive segment ring securing 2nd speed gear from output shaft.
- 81. Remove 2nd speed gear.
- 82. Remove 1st/2nd speed synchro ring.
- 83. Remove 1st/2nd speed synchro hub assembly.

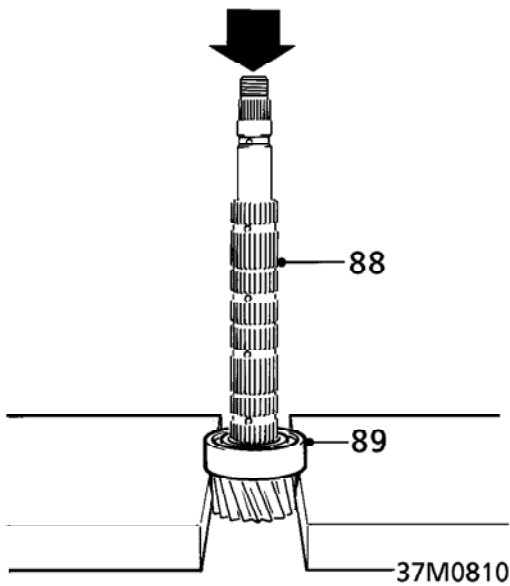
CAUTION: Do not separate synchro hub from coupling sleeve at this stage.



- 84. Remove 1st/2nd speed synchro ring.
- 85. Using tool **18G1593** drive segment ring securing 1st speed gear from output shaft.
- 86. Remove 1st speed gear.
- 87. Using tool **18G1593** drive segment ring retaining bearing from output shaft.



SELECTOR FORKS AND SHAFTS

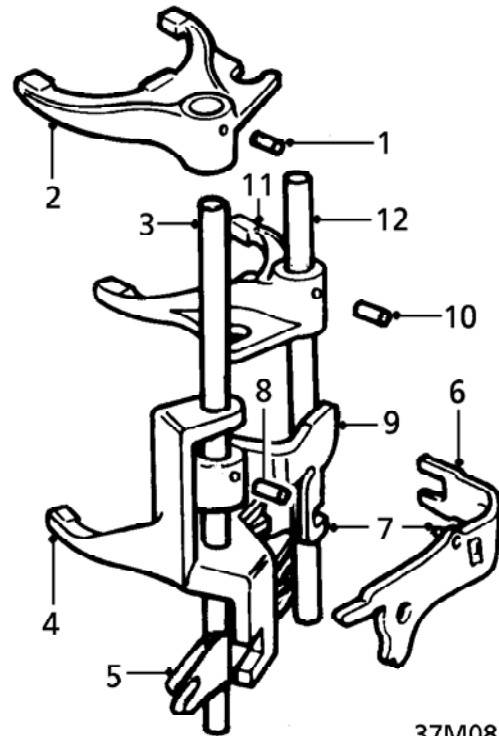


- 88. Position output shaft on bed of press with bearing supported by bed of press.
- 89. Press output shaft out of bearing.



CAUTION: Do not re-use existing bearing.

CAUTION: Each selector fork is matched to its shaft and must be renewed as an assembly. If a fork is removed from its shaft, renew the roll pin.



37M0811

Selector forks and shafts components

- 1. Roll pin
- 2. 5th speed selector fork
- 3. 5th, 1st/2nd and reverse selector shaft
- 4. 1st/2nd speed selector fork assembly
- 5. 1st/2nd speed selector fork control hub
- 6. Reverse selector fork
- 7. Reverse selector fork control stud and locating slot
- 8. Roll pin
- 9. Reverse lever assembly
- 10. Roll pin
- 11. 3rd/4th speed selector fork
- 12. 3rd/4th speed selector shaft

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Inspection

1. Check selector forks for wear and damage.
2. Check selector shaft locations on 1st/2nd and 5th selector fork for wear; check mating portions of 3rd/4th selector shafts for wear.
3. Renew components as necessary.

CLEANING COMPONENTS

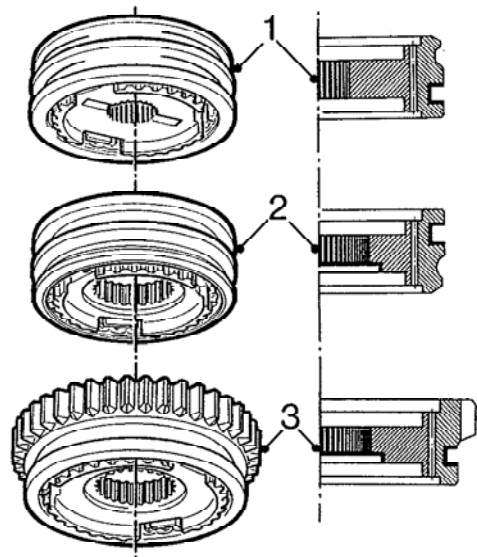
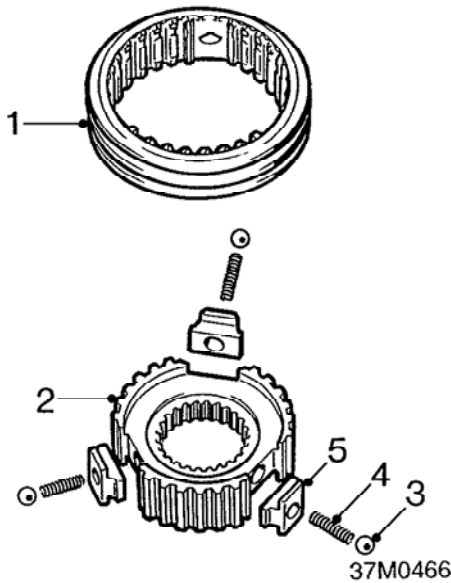
1. Clean all traces of silicone sealant from gearbox case and clutch housing mating surfaces.
2. Remove old Loctite from intermediate plate and its mating surface on the clutch housing using Loctite Chisel. Degrease both surfaces with Genklene or Loctite 706 then rinse in hot water and dry thoroughly.
3. Clean bearing locking ring screw holes using an M8 x 1.25 pitch tap. Degrease with Genklene or Loctite 706 then rinse in hot water and dry thoroughly.
4. Remove old locking material from clutch release bearing guide sleeve bolt holes using Loctite Chisel and an M5 x 0.8 pitch tap. Degrease with Genklene or Loctite 706 then rinse in hot water and dry thoroughly.
5. Pull protector off gearbox breather, ensure breather is clean and unobstructed; refit protector.



CAUTION: Never use petrol or paraffin as a cleaning/degreasing agent.



SYNCHRO ASSEMBLIES



37M0467

Synchro components

1. Coupling sleeve
2. Synchro hub
3. Ball
4. Spring
5. Finger

Synchro Assembly - Component Identification

- Coupling sleeves of 3rd/4th and 5th speed synchros are identical.
- All balls and springs are identical.
- Fingers of 1st/2nd speed synchro are different from fingers of 3rd/4th and 5th speed synchros.

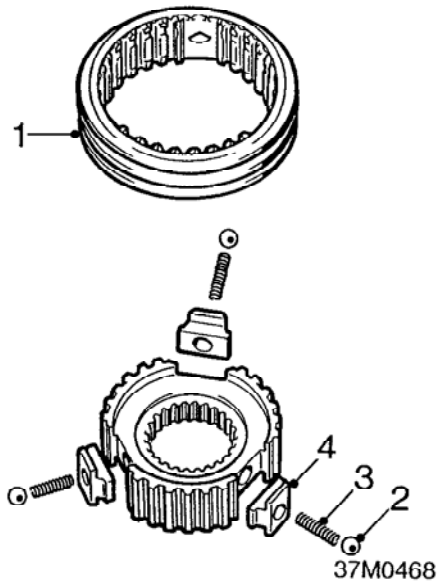
Synchro Assembly Identification

1. 5th speed synchro
2. 3rd/4th speed synchro
3. 1st/2nd speed synchro

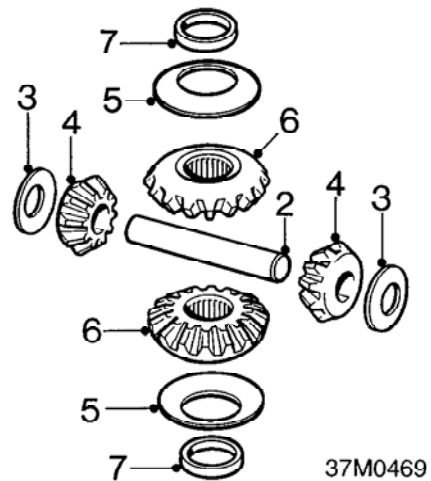
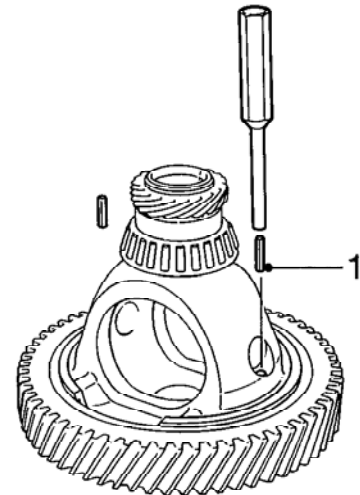
Dismantling

CAUTION: If original synchro assemblies are to be re-used, mark relative fitted positions of each hub and coupling sleeve.

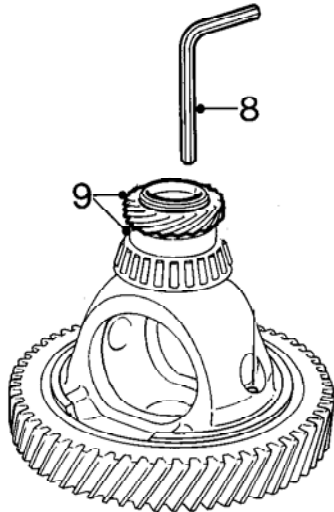
- Keep component parts of each assembly together.
- Place each synchro assembly in a suitable box before dismantling to avoid losing springs and balls.



1. Slide coupling sleeve off synchro hub.
2. Collect 3 balls.
3. Remove 3 springs from fingers.
4. Collect 3 fingers.
5. Repeat 1 to 4 for remaining synchro assemblies.

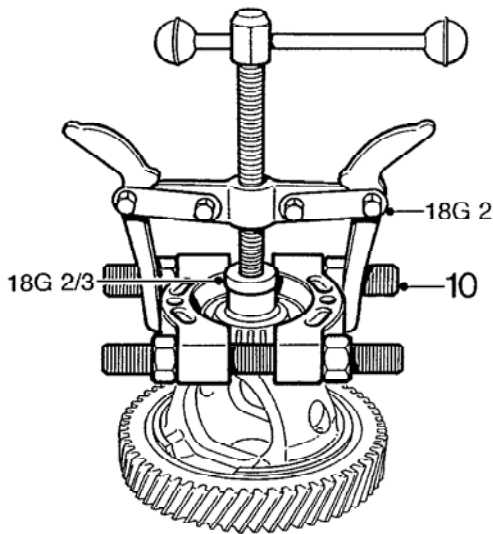


1. Using a punch, drive out 2 roll pins retaining pinion shaft.
2. Carefully drift shaft out of differential casing.
3. Remove 2 thrust washers.
4. Remove 2 differential pinions.
5. Remove 2 thrust washers.
6. Remove 2 differential gears.
7. Remove 2 centre tubes.



37M0470A

8. Using a 4 mm Allen key, lever speedometer drive gear retaining lugs out of differential casing.
9. Remove drive gear and retaining ring.



37M0471



CAUTION: The following need only be carried out if bearings are to be renewed.

10. Clamp both halves of bearing separator around differential bearing.
11. Assemble tool **18G2** and thrust button tool **18G2/3** to differential.
12. Remove bearing using tool **18G2**.

13. Carry out 10 to 12 for remaining bearing.



CAUTION: Drive gear and differential housing are a matched assembly, do not attempt to remove drive gear; if replacement is required, a new assembly must be fitted.

Inspection



CAUTION: Thoroughly clean all components; renew any component found to be damaged or worn. Components of matched assemblies must not be renewed individually.

Matched assemblies are:-

- Clutch housing and intermediate plate.
- Selector lever and shaft.
- Combined interlock and detent.

Check following for damage or wear:

- Splines and threads of input and output shafts.
- Plastic insert in end of output shaft.
- Teeth and splines of gears.
- Differential bearings.



CAUTION: If differential bearings are to be renewed, renew bearing outer tracks in gearbox casing and clutch housing.

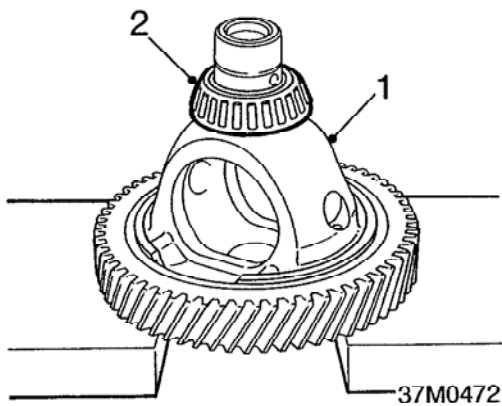
- Differential pinions and gears.
- Pinion shaft.
- Differential drive gear.
- Speedometer drive and driven gears.
- Thrust washers.
- 5th speed gear needle bearing.
- Bias spring and plastic cups.
- Segment rings.
- Selector shafts.
- Synchro hubs and couplings.
- Synchro hub fingers, balls and springs.
- Synchro rings.
- Rear cover gasket.
- Clutch release bearing.
- Reverse locking plunger and spring.
- Combined interlock and detent assembly.
- Reverse selector fork and lever assembly.

These components must be renewed during reassembly.

- Input shaft locknut
- Output shaft locknut
- Input and output shaft bearings
- Oil seals and 'O' rings.
- Drive/roll pins.

MANUAL GEARBOX

DIFFERENTIAL ASSEMBLY REASSEMBLING

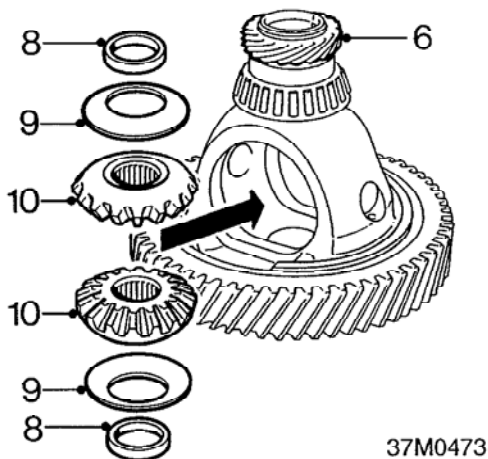


NOTE: If bearings were removed during dismantling, carry out operations 1 to 4.



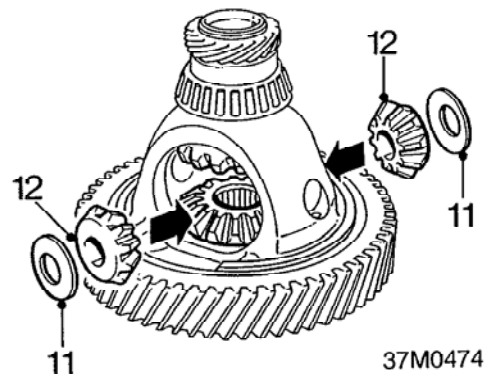
CAUTION: Do not de-grease new bearings.

1. Position differential casing on bed of press.
2. Position bearing squarely to differential casing.
3. Using a 32 mm socket or adaptor, press bearing fully on to differential casing.
4. Fit bearing to opposite side using procedure given in 1 to 3.
5. Smear all components with gearbox oil ; see **LUBRICATION**.

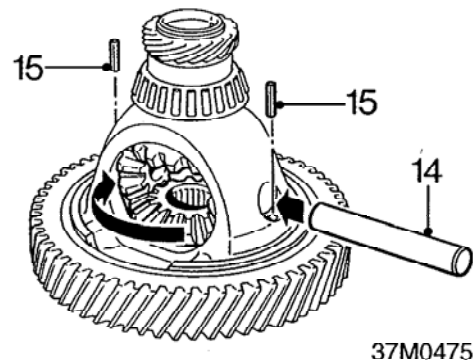


6. Position retaining ring and speedometer drive gear on differential casing.
7. Align locating lugs on drive gear with slots in differential casing and push drive gear and retaining ring into position.
8. Fit centre tubes to opposite sides of casing.

9. Position thrust washer on each differential gear.
10. Position differential gears in casing.



11. Position thrust washer on each differential pinion.
12. Position pinions in casing.



13. Rotate pinions and gears until pinion shaft holes in pinions and differential casing are aligned.
14. Insert pinion shaft.
15. Retain pinion shaft using new roll pins.



SYNCHRO ASSEMBLIES

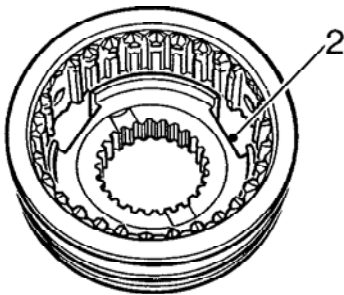
Reassembling



CAUTION: When reassembling synchro assemblies, note the following:

5th speed synchro hub is symmetrical and may be fitted either way round.

- Groove in 3rd/4th speed synchro hub must be on opposite side to selector fork locating groove in coupling sleeve.
- Groove in 1st/2nd speed synchro hub must be on same side as selector fork locating groove in coupling sleeve.

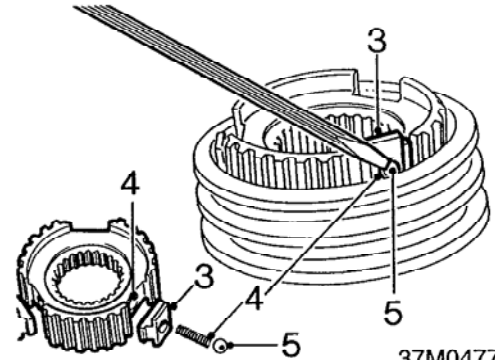


37M0476

1. Smear all components with gearbox oil , see **LUBRICATION**.
2. Position synchro hub in coupling sleeve.



CAUTION: If original synchros are to be refitted, ensure marks made during dismantling are aligned and synchro hub is correct way round in coupling sleeve.

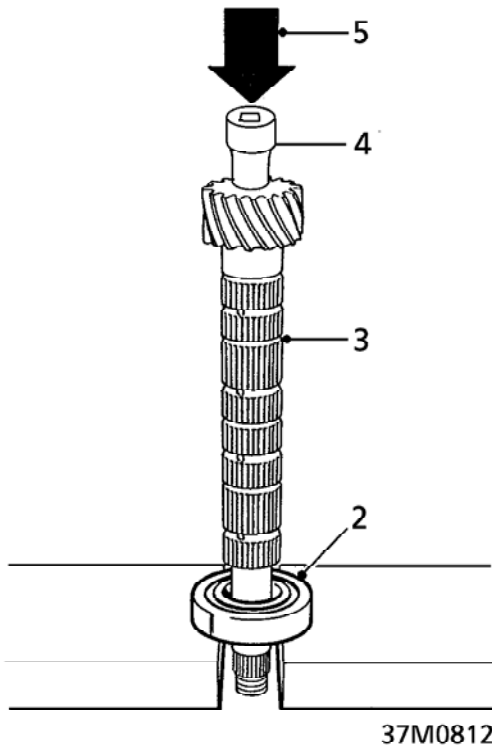


37M0477

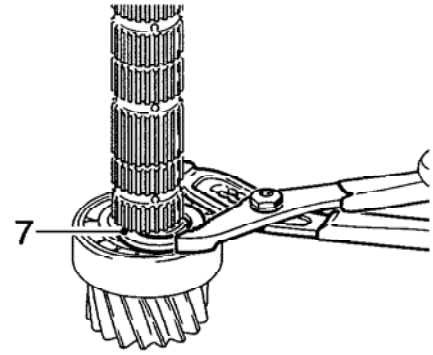
3. Position 3 fingers in slots in synchro hub.
4. Fit 3 springs ensuring they are fully seated in holes in fingers.
5. Compress springs and fit 3 balls; ensure balls locate in holes in coupling sleeve when springs are released.
6. Assemble remaining synchros using procedure given in 1 to 5.

MANUAL GEARBOX

GEARBOX REASSEMBLING



37M0812



37M0479

7. Fit segment ring to retain bearing.



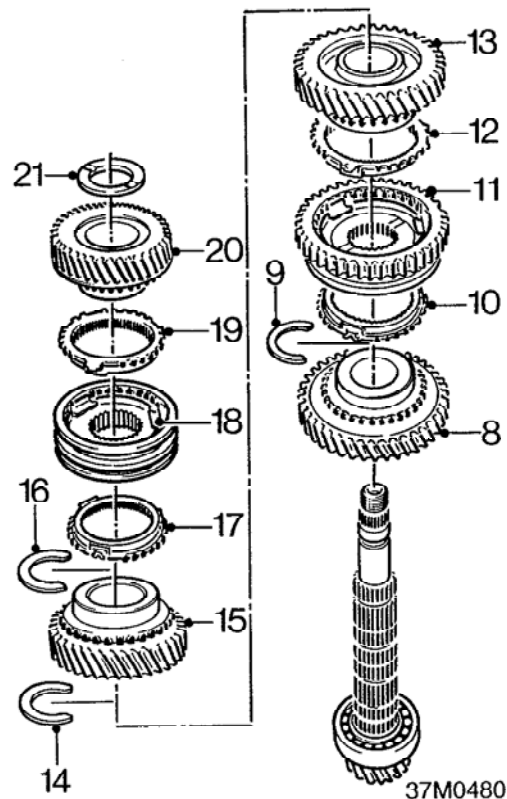
NOTE: Fit all segment rings using an adjustable wrench.

1. Smear all gearbox components except rear cover gasket with gearbox oil, see **LUBRICATION**.
2. Position a new output shaft bearing on bed of press.



CAUTION: Ensure press bed supports inner track of bearing.

3. Locate output shaft in bearing.
4. Position a 27 mm socket between output shaft and press to prevent press contacting nylon insert.
5. Press output shaft through bearing.
6. Remove output shaft from press.



37M0480

8. Fit 1st speed gear.
9. Fit segment ring.
10. Fit 1st/2nd speed synchro ring.
11. Fit 1st/2nd speed synchro hub assembly with selector fork locating grooves towards 1st gear.
12. Fit 1st/2nd speed synchro ring.



CAUTION: Ensure projections on both synchro rings engage with fingers of synchro hub assembly.

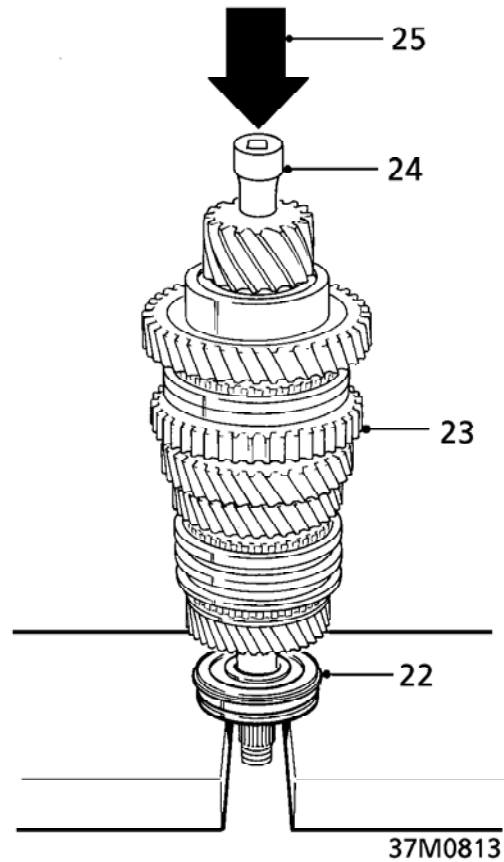


- 13. Fit 2nd speed gear.
- 14. Fit segment ring.
- 15. Fit 3rd speed gear.
- 16. Fit segment ring.
- 17. Fit 3rd/4th speed synchro ring.
- 18. Fit 3rd/4th speed synchro assembly with fork locating grooves facing away from 3rd gear.
- 19. Fit 3rd/4th speed synchro ring.



CAUTION: Ensure projections on both synchro rings engage with fingers of synchro hub assembly.

- 20. Fit 4th speed gear.
- 21. Fit a new thrust washer.

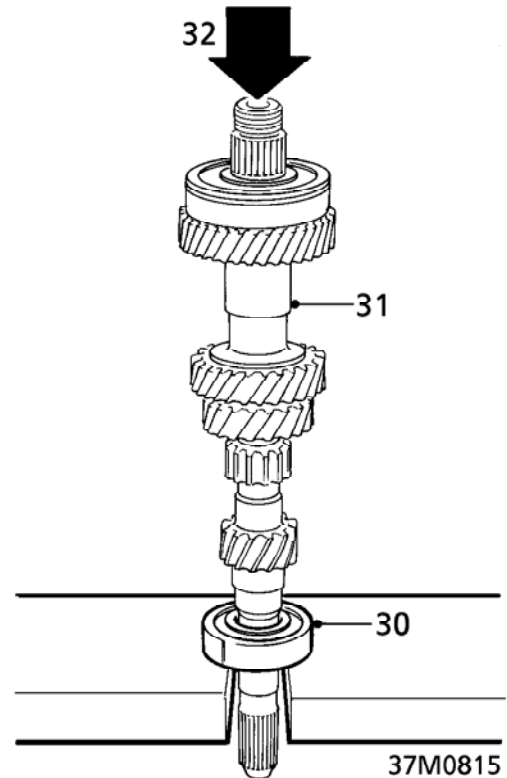
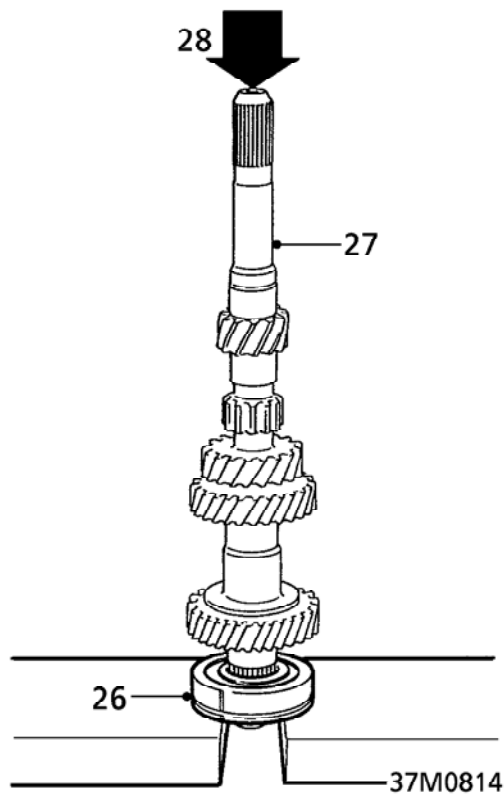


- 22. Position a new output shaft bearing on bed of press with circlip facing towards 4th speed gear when output shaft is fitted.



CAUTION: Ensure press bed supports inner track of bearing.

- 23. Locate output shaft in bearing.
- 24. Position a 27 mm socket between output shaft and press to prevent press contacting nylon insert.
- 25. Press output shaft through bearing, remove shaft from press.



26. Position a new input shaft bearing (4th speed gear end) on bed of press with circumferential groove in bearing facing away from 4th speed gear when input shaft is fitted.

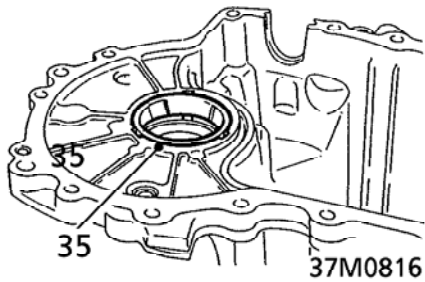
 **CAUTION: Ensure press bed supports inner track of bearing.**

27. Locate input shaft in bearing.
28. Press input shaft through bearing.
29. Remove input shaft from press.

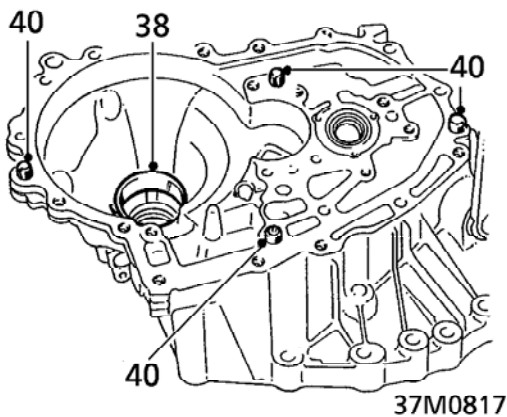
30. Position a new input shaft bearing (1st speed gear end) on bed of press.

 **CAUTION: Ensure press bed supports inner track of bearing.**

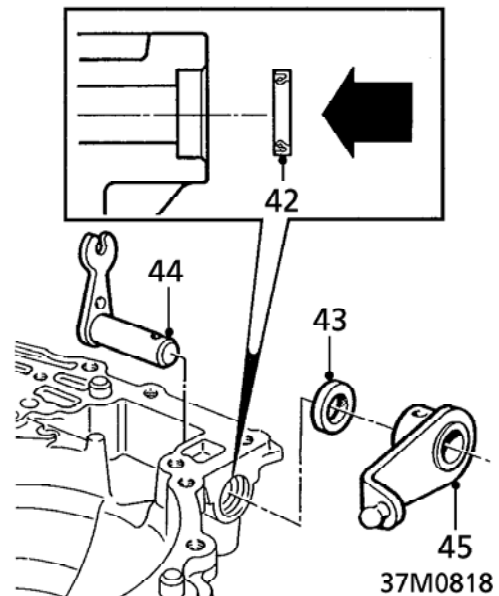
31. Locate input shaft in bearing.
32. Press input shaft through bearing.
33. Remove input shaft from press.



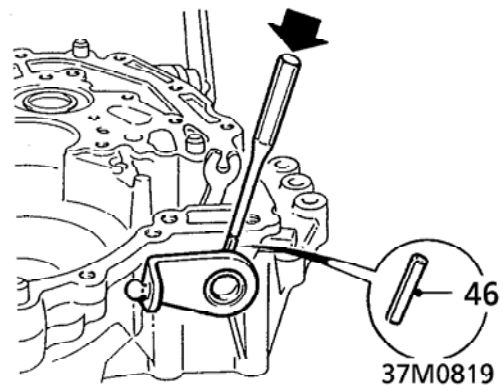
34. If differential bearing outer track was removed from gearbox casing, fit a new bearing outer track as follows:
35. Position new bearing outer track squarely in gearbox casing with large diameter of track facing upwards.
36. Using a soft metal drift, progressively drive bearing outer track into gearbox casing until it contacts shoulder of casing.



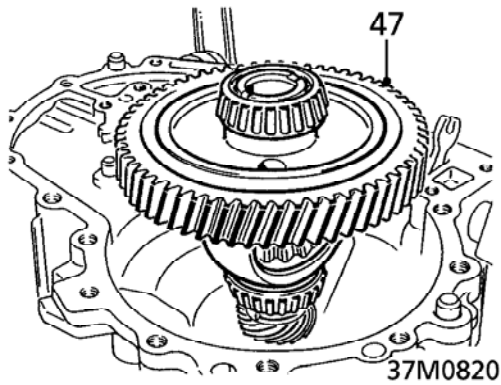
37. If differential bearing outer track was removed from clutch housing fit a new bearing outer track as follows:
38. Position new bearing outer track in clutch housing with large diameter of track facing upwards.
39. Using a soft metal drift, progressively drive bearing outer track into clutch housing until it contacts machined shoulder of housing.
40. Fit 4 spring dowels in clutch housing.



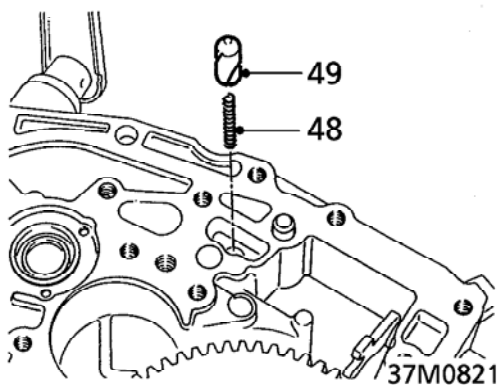
41. Smear a new selector shaft seal with gearbox oil, see **LUBRICATION**.
42. Locate seal in housing with lip of seal facing inwards.
43. Using a suitable socket, drive seal into recess until lip of seal contacts bottom of recess.
44. Fit selector lever shaft.
45. Position selector lever on shaft.



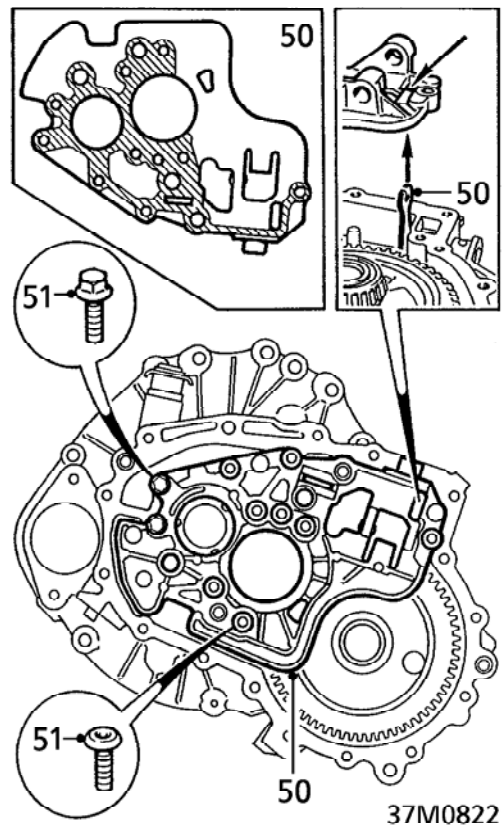
46. Secure selector lever to shaft using a new roll pin.



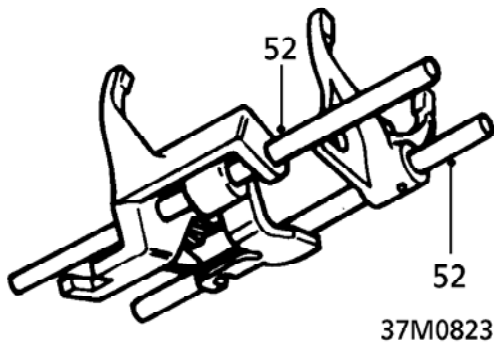
47. Position differential assembly in clutch housing.



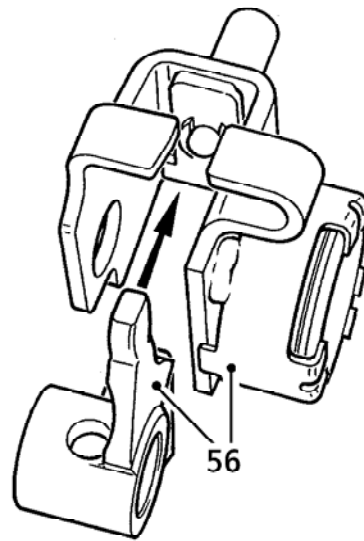
48. Fit reverse locking plunger spring.
49. Fit reverse locking plunger.



50. Apply a thin film of Loctite 549 to intermediate plate (shaded area on illustration). Position intermediate plate on clutch housing ensuring fork on selector shaft passes through aperture in plate.
51. Secure intermediate plate with 2 bolts and 9 Torx screws; tighten bolts to 28 Nm and Torx screws to 60 Nm.

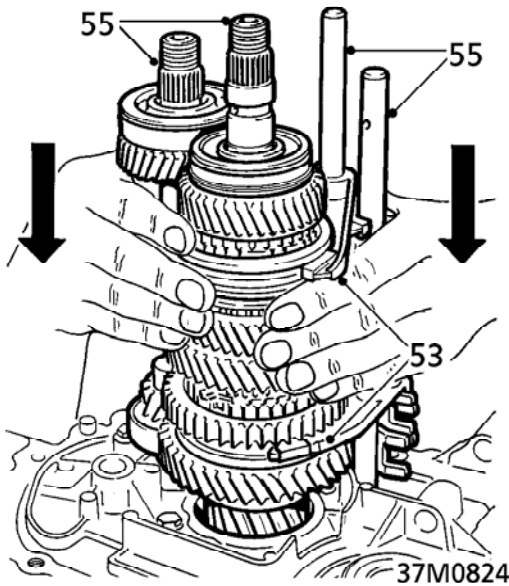


52. Connect 1st/2nd/5th/reverse selector shaft and forks to 3rd/4th speed selector shaft.

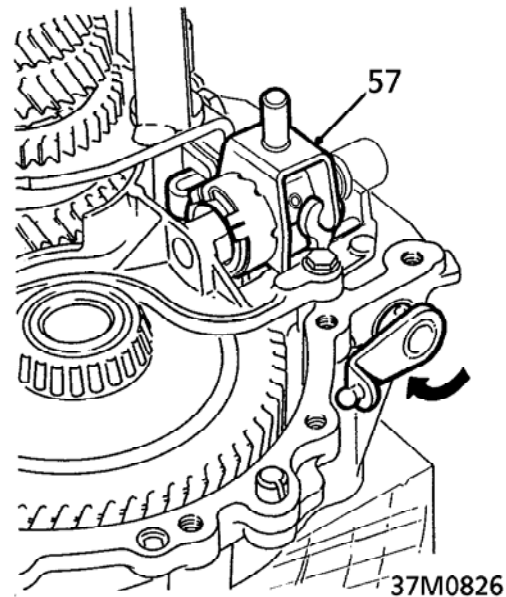


37M0825

56. Assemble combined interlock and detent, ensuring lever is correctly engaged with detent ball.



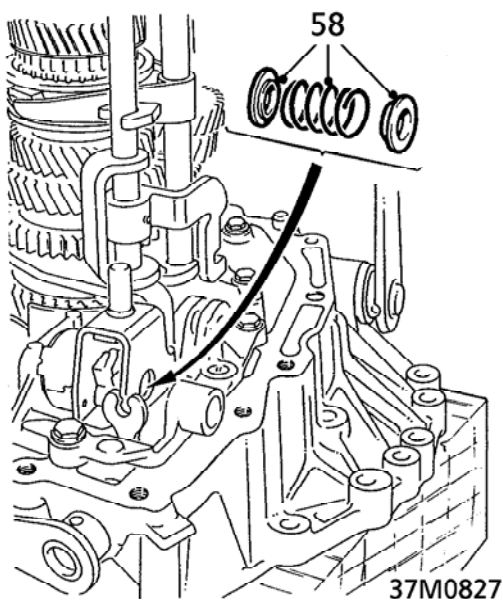
53. Locate selector forks in their respective synchro coupling sleeves.
 54. Engage gears on input shaft with their respective gears on output shaft.
 55. Ensuring selector forks and gears remain in engagement, fit assembly to clutch housing.



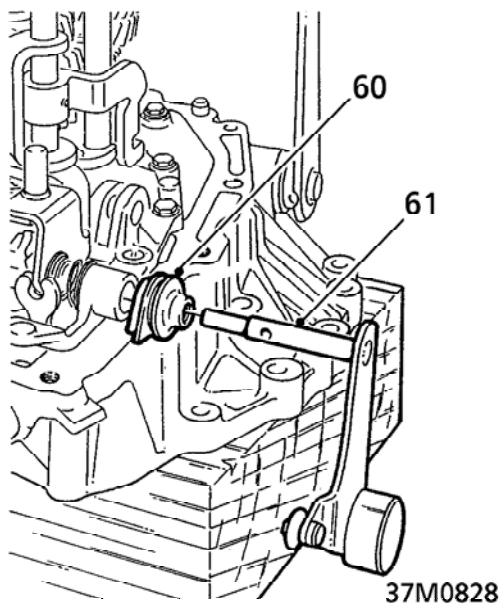
57. Fit combined interlock and detent assembly to clutch housing as illustrated.

NOTE: Move selector lever as necessary to engage detent pressing with fork of selector lever shaft.

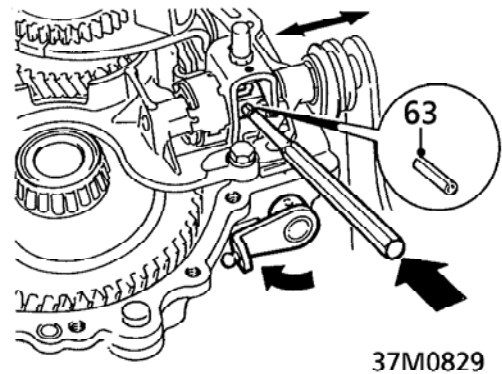
MANUAL GEARBOX



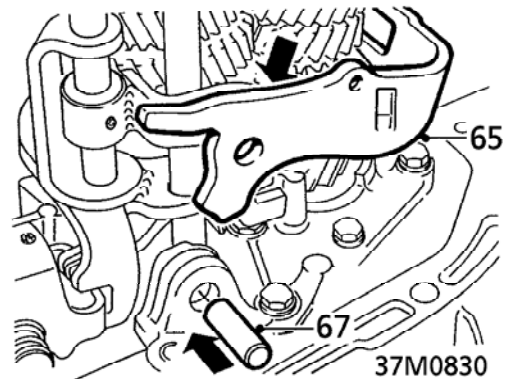
- 58. Assemble plastic cup, bias spring and second plastic cup.
- 59. Compress assembly and insert it between detent and lug on clutch housing.



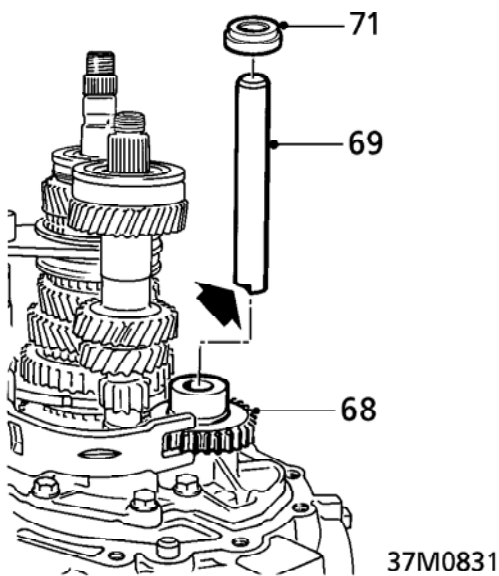
- 60. Fit new seal to gear selector lever.
- 61. Fit gear selector lever.



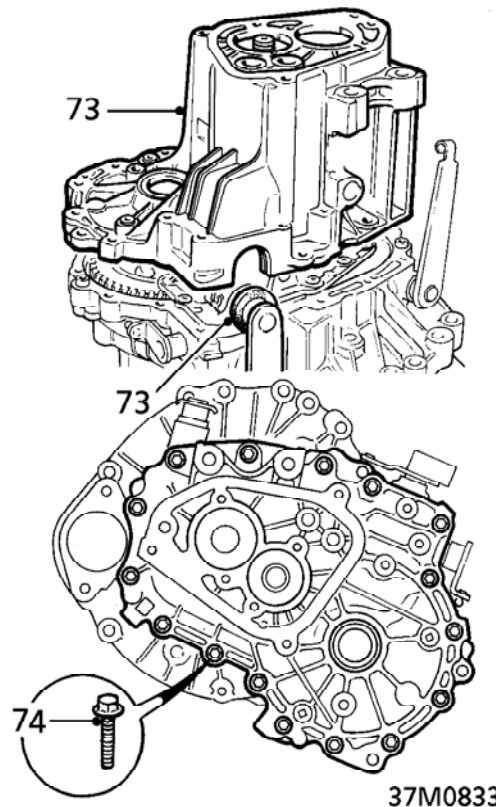
- 62. Align holes in gear selector lever and detent assembly.
- 63. Secure using a new roll pin.
- 64. Check that gear selector lever moves in and out with no trace of binding.



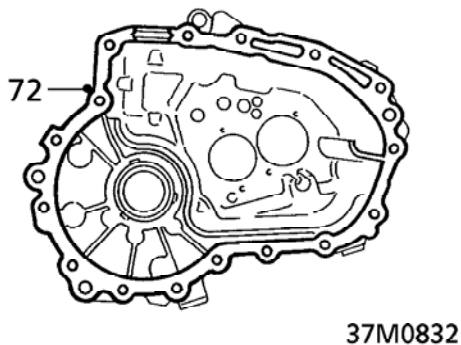
- 65. Locate reverse selector fork in clevis.
- 66. Press fork down until holes in fork and clevis are aligned.
- 67. Insert pivot pin.



- 68. Position reverse idler gear in reverse selector fork.
- 69. Fit reverse idler gear shaft.
- 70. Rotate idler gear shaft until spigot is felt to engage.
- 71. Fit reverse idler gear thrust bearing with narrow section of bearing facing upwards.



- 73. Ensuring that selector shaft seal is correctly located, position gearbox casing on clutch housing.
- 74. Fit 16 bolts to secure gearbox casing noting correct fitted position of 4 long bolts.
- 75. Working from centre outwards, tighten gearbox casing bolts by diagonal selection to 28 Nm.

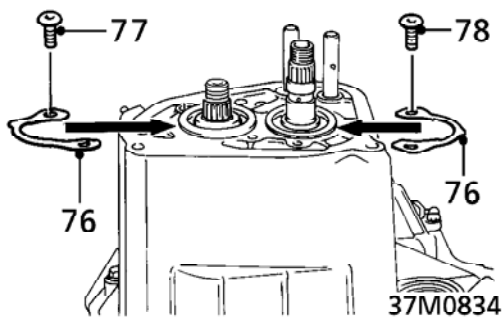


- 72. Apply a bead of silicone based jointing compound to mating face of gearbox casing.



CAUTION: Do not apply jointing compound to selector shaft seal location.

MANUAL GEARBOX

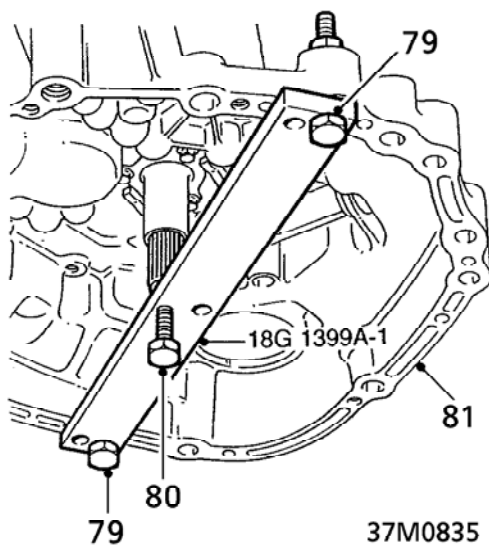


76. Using a punch and hammer, fit input shaft and output shaft bearing locking rings.

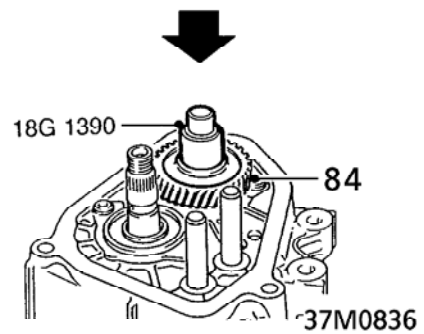


CAUTION: Chamfer on locking rings must face away from bearings.

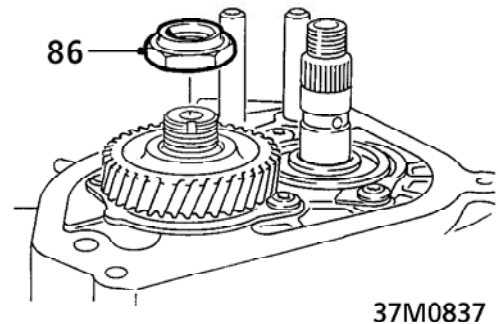
77. Fit new Patchlok Torx screws to secure input shaft bearing locking ring and tighten to 30 Nm.
78. Fit new Patchlok Torx screws to secure output shaft bearing locking ring and tighten to 30 Nm.



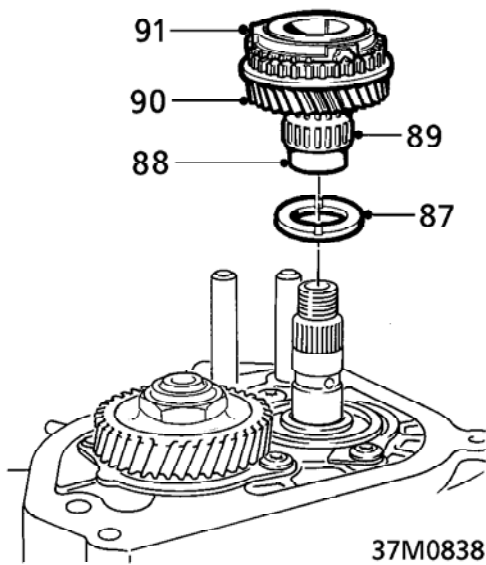
79. Fit tool **18G1399A-1** to clutch housing and secure tool using 2 bolts and 2 nuts.
80. Tighten centre bolt of tool **18G1399A-1** until it just contacts end of input shaft.
81. Invert gearbox.
82. Ensure that splines of input shaft and 5th speed gear are clean and oil free.
83. Position 5th speed gear on input shaft and align splines of gear and input shaft.



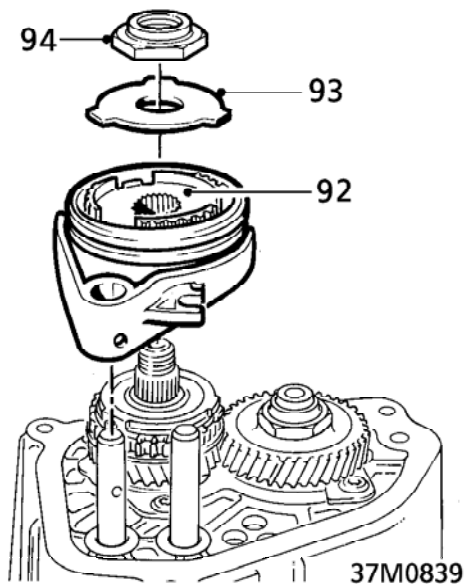
84. Drift 5th speed gear on to input shaft using tool **18G1390**.
85. Remove tool **18G1390** and tool **18G1399A-1**.



86. Fit but do not tighten a new input shaft 5th gear locknut.



- 87. Fit new spacer washer to output shaft.
- 88. Fit bearing collar.
- 89. Fit needle bearing.
- 90. Fit 5th speed driven gear.
- 91. Fit 5th speed synchro ring.



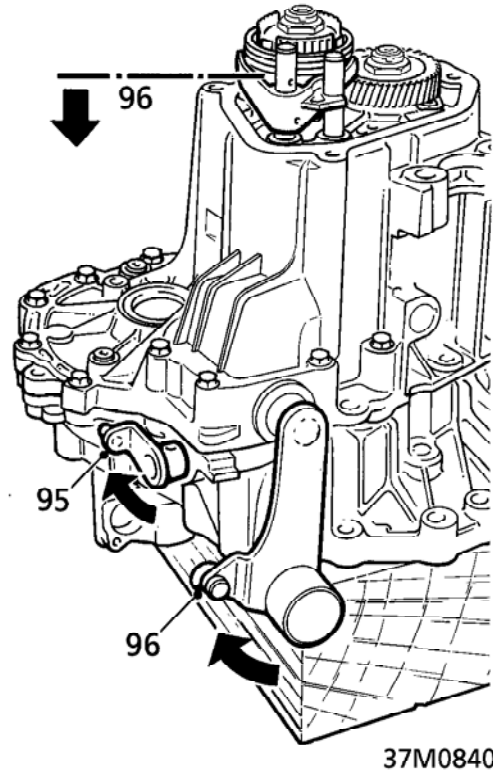
- 92. Fit 5th speed synchro assembly and selector fork on selector shaft.



CAUTION: Ensure cut-out in selector fork engages with 3rd/4th speed selector shaft and cut-outs in synchro ring engage with

fingers of synchro assembly.

- 93. Fit stop plate ensuring lugs on plate engage with cut-outs in synchro coupling sleeve.
- 94. Fit but do not tighten a new synchro hub locknut.

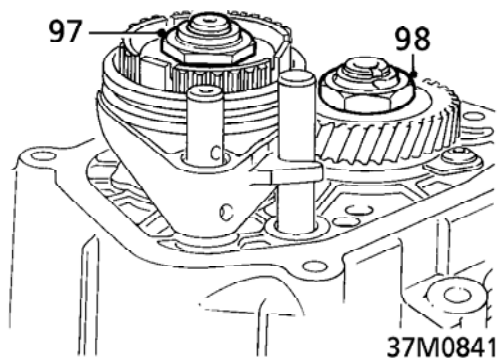


- 95. Engage 1st gear.
- 96. Press down 5th gear selector fork and at the same time move selector lever to engage 5th speed gear.

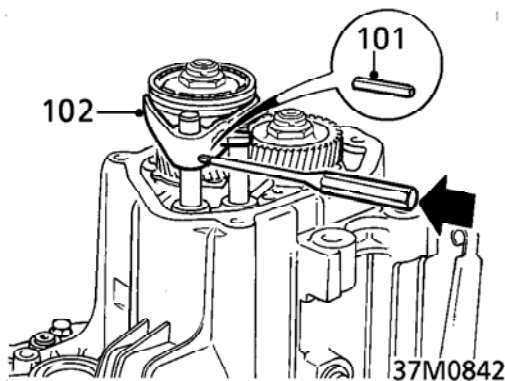


NOTE: Engagement of these two gears is necessary to prevent input and output shafts from turning.

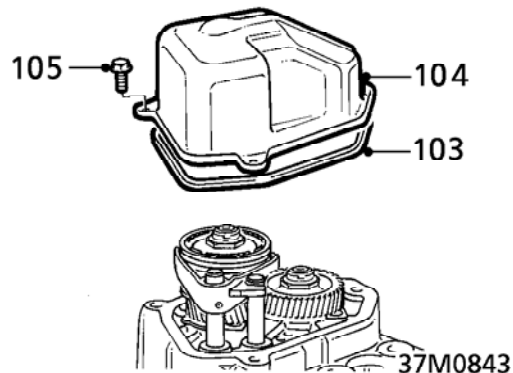
MANUAL GEARBOX



- 97. Tighten 5th speed gear synchro hub locknut to 130 Nm. Stake flange of locknut into both output shaft grooves using a pin punch.
- 98. Tighten input shaft 5th speed gear locknut to 130 Nm. Stake flange of locknut into input shaft groove using a pin punch.
- 99. Disengage 1st and 5th speed gears.



- 100. Align holes in selector fork and selector shaft.
- 101. Secure selector fork to shaft using a new roll pin.
- 102. Check for slight radial movement of 5th speed gear fork and shaft.

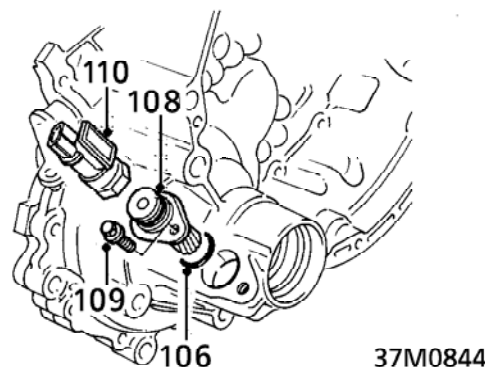


- 103. Position rubber gasket on gearbox casing.



CAUTION: Gasket must be fitted dry.

- 104. Fit rear cover.
- 105. Fit and tighten rear cover bolts to 28 Nm.

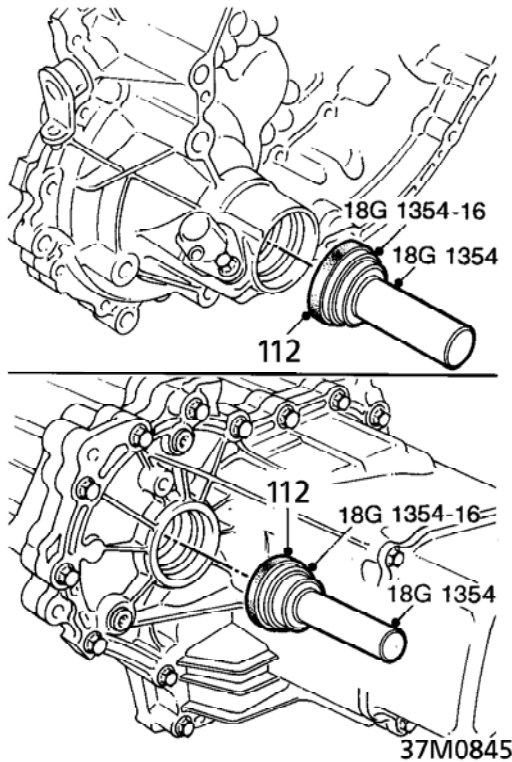


- 106. Smear a new 'O' ring with gearbox oil and fit to speedometer drive pinion housing.
- 107. Smear a new oil seal (if fitted) with gearbox oil and fit to speedometer drive pinion housing.
- 108. Fit speedometer drive pinion housing.

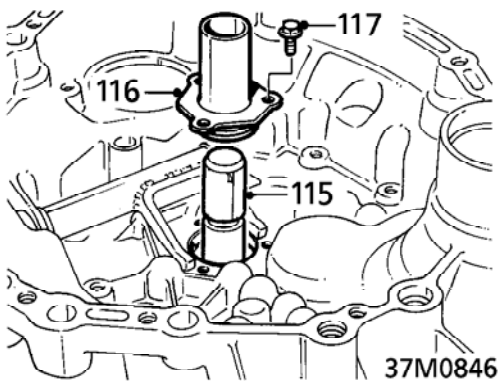


CAUTION: Ensure gears are meshing correctly.

- 109. Fit and tighten speedometer drive pinion housing bolt to 18 Nm.
- 110. Fit vehicle speed sensor (if fitted)



- 111. Smear new oil seals with gearbox oil , see **LUBRICATION**.
- 112. Locate seal on tool **18G1354-16**.
- 113. Drift seal into position in clutch housing/gearbox casing, using tool **18G1354-16** and tool **18G1354**.



- 114. Smear new input shaft oil seal with gearbox oil.

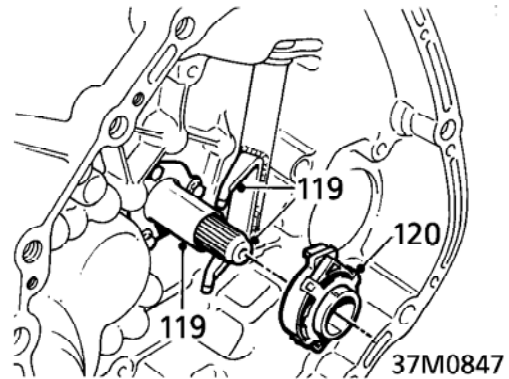
NOTE: The clutch release bearing guide and input shaft oil seal are only supplied as an assembly.

- 115. Mask splines of input shaft with adhesive tape to protect oil seal.
- 116. Fit clutch release bearing guide sleeve and oil seal assembly.

- 117. Fit 3 new clutch release bearing guide sleeve bolts and tighten to 5 Nm.

CAUTION: Patchlok bolts supplied with bearing guide and oil seal assembly must be used.

- 118. Remove adhesive tape from input shaft.



- 119. Smear clutch release bearing guide, input shaft splines and release fork with Molykote BR2 Plus Grease.
- 120. Fit new clutch release bearing ensuring release forks are correctly located in bearing.
- 121. *Hydraulic clutch:* Position clutch slave cylinder mounting bracket to clutch housing, fit and tighten Torx screws to 30 Nm.
- 122. Fit reverse light switch and tighten to 25 Nm.
- 123. Fit gearbox assembly, see **MANUAL GEARBOX - Repairs** in the relevant Repair Manual.



TORQUE FIGURES

Clutch release bearing guide sleeve bolts	5 Nm
Intermediate plate bolts	28 Nm
Intermediate plate Torx screws	60 Nm
Gearbox casing bolts	28 Nm
Bearing locking ring Torx screws - Patchlok	30 Nm
5th speed gear synchro hub retaining nut	130 Nm
Rear cover bolts	28 Nm
Speedometer drive pinion housing bolt	18 Nm
Input shaft nut	130 Nm
Reverse light switch	25 Nm
Gearbox filler/level plug	35 Nm
Clutch slave cylinder mounting bracket Torx screws	30 Nm

TOOLS

18G1610	Stake Nut Chisel
18G1392	Circlip Pliers
18G705	Basic Tool
18G705-8	5th Speed Gear Remover Adapter
18G1593	Gear Dismantling Fork
18G2	Universal Two-legged Puller
18G2-3	Thrust Button
18G1390	Thrust Button
18G1399A/1	Reaction Bar
18G1354	Basic Tool
18G1354-16	Differential Oil Seal Replacer

LUBRICANTS

Use one of the following BV 75w/80w oils for complete fill:

- UNIPART** Gear Oil 75w/80w
- ESSO** Gear oil BV 75w/80w
- SHELL** SF5288 75w/80w
- TOTAL** Transmission BV