



SERVICE DIVISION

DEALER TRAINING

AID # S1016

SUBJECT: GEARBOX

MODEL: TRIUMPH TR7

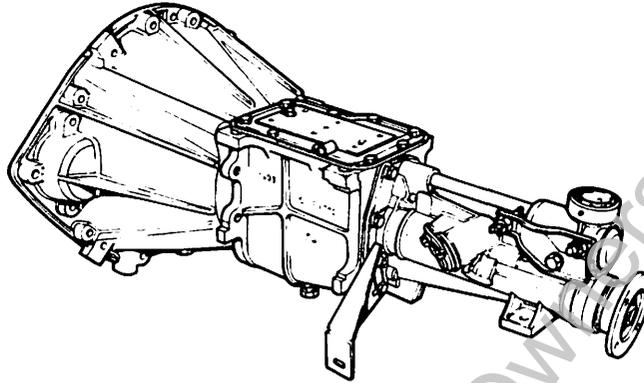
AUSTIN

JAGUAR

MG

LAND ROVER

TRIUMPH



The gearbox is a derivative of the GT6, Spitfire and Marina types.

SPECIAL TOOLS REQUIRED

18G1205	Flange Holder
18G284	Slide Hammer
18G284AW	Adaptor
18G284AA	Remover
BLT2041	Hand Press
18G1199	Circlip Remover
18G1198	Circlip Replacer
18G1197	Bearing Replacer
18G47BP	Reaction Tool

TIGHTENING TORQUE FIGURES

Bell Housing Bolts	24 - 32 lbs/ft.
Rear Extension Housing Bolts	15 - 20 lbs/ft.
Top Cover Bolts	6 - 9 lbs/ft.
Rear Flange Nut	90 - 120 lbs/ft.
Reverse Idler Shaft Bolt	10 - 14 lbs/ft.

Oil Type - SAE 90 Hypoid

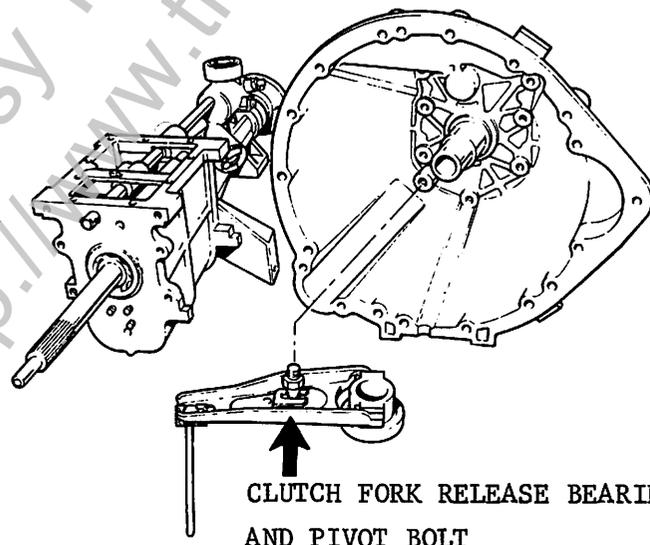
Capacity - 2.5 Pts.

DISMANTLE

1. Remove drain and filler plugs. Fit filler plug to drain hole and support gearbox in a vise by the filler plug.

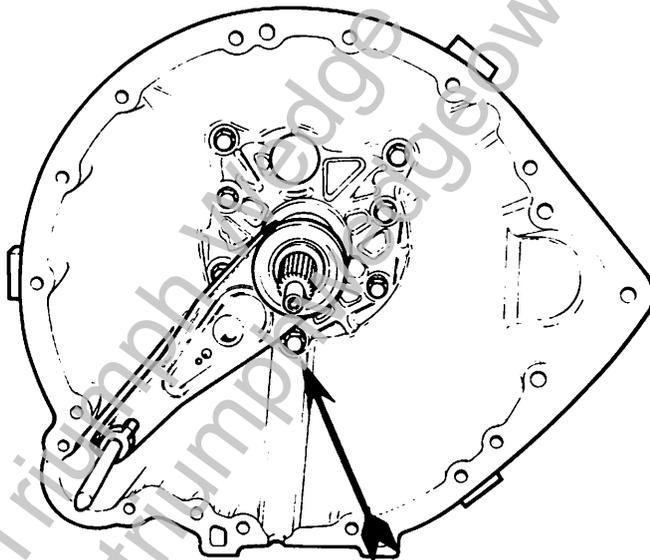
NOTE: If drain plug is used to support gearbox, damage to second speed laygear will occur when the layshaft is withdrawn and laygear drops.

2. Remove clutch fork, complete with ball-headed bolt, and release bearing. Damage may occur if items are removed separately.



3. Remove Bell Housing

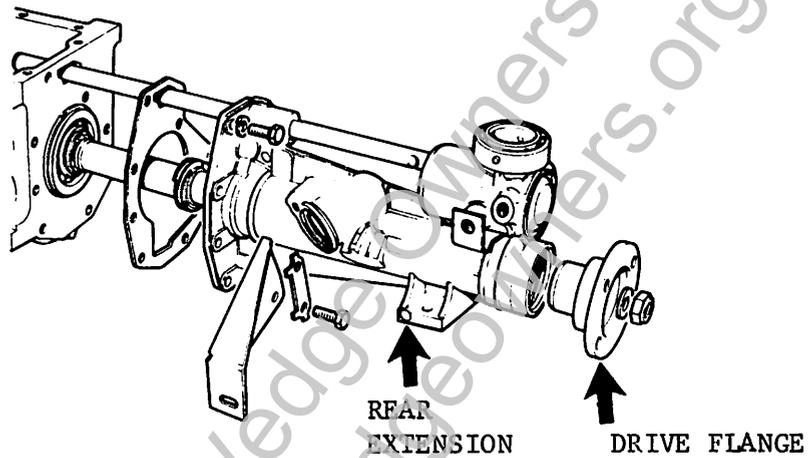
NOTE: The bottom bolt is black and fitted with a copper washer because it is below oil level. This bolt also has a 'Nyloc' peg to lock its position. The bolt must be renewed once removed. The remaining six bolts have spring washers.



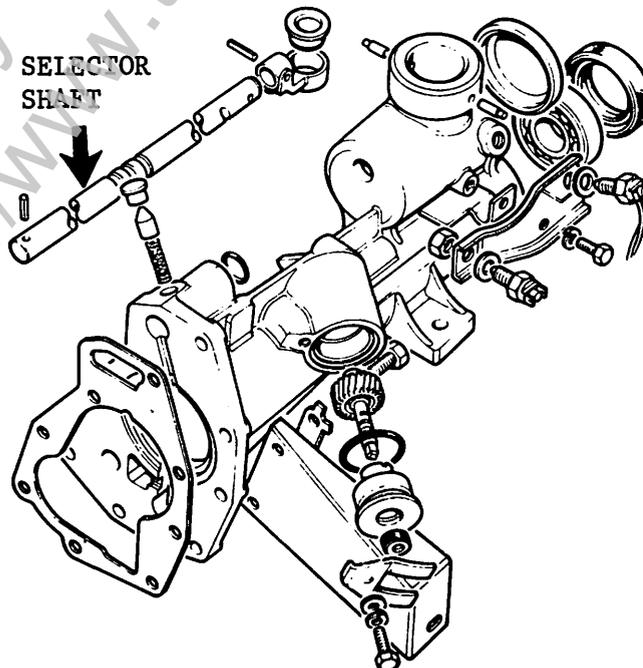
BLACK BOLT WITH COPPER WASHER

4. Remove the three laygear load springs. These springs apply pressure to the laygear front thrust washer which slows the gear down faster allowing smoother engagement of reverse.
5. Remove gearbox top cover. Check that breather is clear.
6. Remove interlock plate.

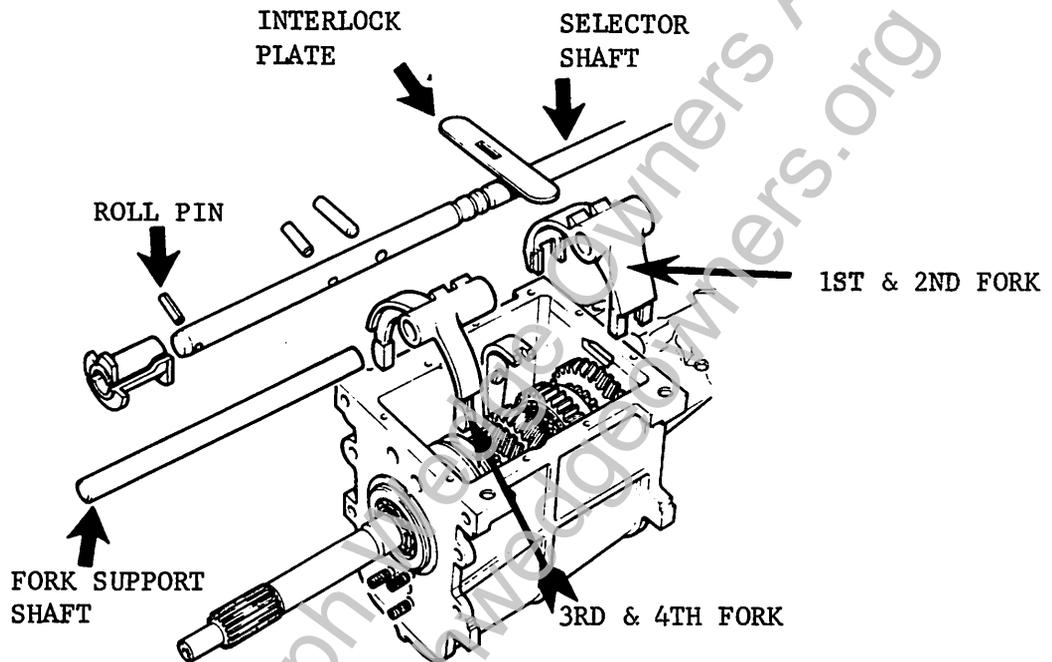
7. Remove rear drive flange.



8. Remove the eight rear extension housing bolts including exhaust bracket.
9. Remove speedo driven gear (optional).
10. Remove selector shaft roll pin.



11. Remove selector fork support shaft. Place forks against gearbox case.

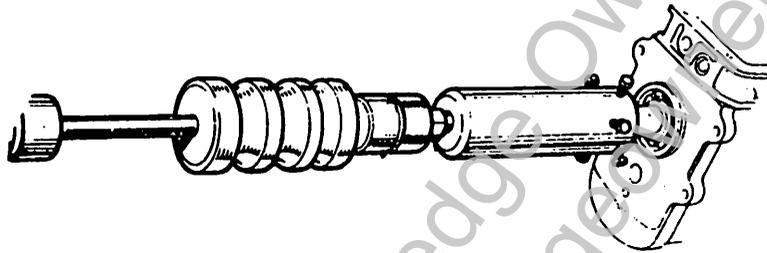


12. Remove rear extension housing and selector interlock spool.
NOTE: Spool half-moon goes to the rear and down.
13. Remove selector forks and reverse spacer.
14. Fabricate a dummy layshaft and remove layshaft leaving dummy shaft in laygear to retain needles.

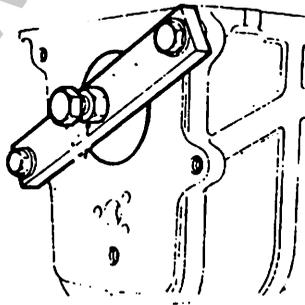
15. Remove input shaft. Note spacer washers either side of input bearing.

Large - Inner = 0.975" dia x 0.122" thick

Small - Outer = 0.836" dia x 0.107" thick



16. Fit mainshaft reaction tool. Turn center screw until contact is made with mainshaft and tighten locknut.



17. Remove reverse gear shaft.
18. Remove gearbox rear bearing circlip and snap ring.

19. Using hand press and adaptors, remove mainshaft rear bearing, speedo drive gear and selective washer.
20. Remove mainshaft reaction tool. Lift out complete gear train, keeping all gears held together.
21. Remove reverse lever and gear.
22. Remove laygear complete with thrust washers.
23. Strip mainshaft. From rear end of mainshaft remove oil washer, 1st gear, 2 split collars and synchro ring.
24. From front end of mainshaft remove 4th speed synchro ring, 3rd and 4th sliding hub assembly and 3rd speed synchro ring.
25. Remove 3rd gear retaining circlip, 3rd gear cupped washer and bush.
26. Remove 2nd gear and 'Top Hat' bush and selective washer with its locating ball.
27. Remove 2nd speed synchro ring and 1st - 2nd sliding hub.

CONSTRUCTION DETAILS

All gears have a machined cut to aid oil feeds to the bushings. All synchro rings are the same. Minimum gear to synchro ring clearance is .025". All gears have mitred dog teeth corresponding with mitres in the synchro hubs which gives an improved retention in gear and allows for a lighter gear change mechanism effort.

SYNCHRO HUBS

Are different from one another in three respects:

1. The balls and springs which govern the loading of the synchro ring to gear, are of different lengths and must be maintained with their respective hub:

1st - 2nd speed hub = 3 short springs

3rd - 4th speed hub = 3 long springs

2. Loading of the synchro hubs are different:

1st - 2nd hub = 19 - 27 lbs.

3rd - 4th hub = 19 - 21 lbs.

3. In both hubs the extended nose of the center portion is fitted facing the front of the box:

The 1st - 2nd hub outer portion must have the teeth fitted towards the front of the box.

The 3rd - 4th hub outer portion can be fitted either way around but the identification groove is normally fitted facing the front of the box.

BUSH TO GEAR END FLOAT

3rd gear bush = .002" - .006"

2nd gear bush = .002"

Use the reverse gear as a pedestal to check the clearance.

BUSH TO MAINSHAFT END FLOAT

After checking bush to gear end float, fit 2nd - 3rd speed selective washer located by ball. Fit 2nd and 3rd speed bushes, fit cupped washer (inverted), break old circlip in half and fit half circlip in groove and measure end float which should be 0 - .006". Fit a new circlip on final assembly.

Adjust by selecting one of the following selective washers:

<u>PART NUMUBER</u>	<u>SIZE</u>
UKC0934	0.198" - 0.20"
UKC0935	0.201" - 0.203"
UKC0936	0.204" - 0.206"
UKC0937	0.207" - 0.209"

1ST GEAR END FLOAT ON MAINSHAFT

Fit the two split collars. 1st gear and oil washer with dummy bearing inner race clearance should be 0.004" - 0.013". The oil washer is non-selective and must be renewed if clearance is above limits.

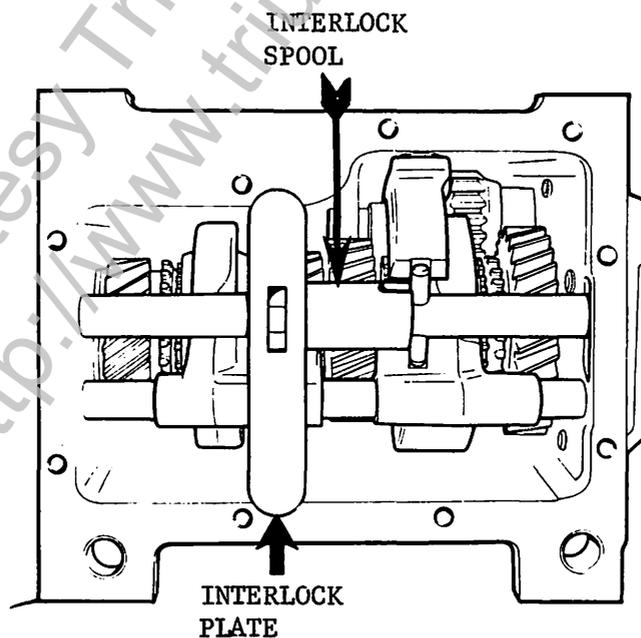
GEARBOX REAR BEARING CLEARANCE

With bearing assembled to mainshaft and case, the end float between the rear circlip and bearing should be 0.000" - 0.002". Washer sizes are:

<u>PART NUMBER</u>	<u>SIZE</u>
88155805	0.119" - 0.121"
88155806	0.121" - 0.124"
88155807	0.125" - 0.127"
88155808	0.128" - 0.130"

28. Refit 1st - 2nd sliding hub and 2nd speed synchro ring.
29. Fit selective washer with locating ball, 2nd gear and 'Top Hat' bush.
30. Fit 3rd gear and bush, cupped washer and circlip. Ensure circlip raised end faces front of box.
31. Fit 3rd gear synchro ring and 3rd - 4th gear sliding hub and 4th gear synchro ring.
32. Fit split collars 1st speed synchro hub, first gear and oil washer.
33. Re-install laygear and thrust washer into box. There are 25 needle rollers at each end of the laygear and laygear end float should be 0.007" - 0.015".

34. Install reverse lever and gear.
35. Install assembled mainshaft ensuring gears are held together.
Fit mainshaft reaction tool.
36. Fit snap ring to rear bearing (dished side to rear). Install rear bearing, selective washer circlip and speedo drive gear to mainshaft.
37. Remove mainshaft reaction tool.
38. Fit reverse gear shaft.
39. Fit input shaft. Ensure large and small bearing spacers are on the correct side of the spigot bearing.
40. Install layshaft. Roll pin to rear and down.
41. Install selector forks and reverse spacer.
42. Fit rear extension housing, interlock spool (half-moon to rear and down), roll pin and exhaust bracket.
43. Fit selector fork support shaft and interlock plate.



44. Fit rear drive flange and speed driven gear.
45. Fit gearbox top cover.
46. Fit laygear load springs and bell housing, fitting new black bolt with copper washer to bottom hole position.

NOTE: Tape clutch splines to protect front seal.

47. Fit clutch operating mechanism.
48. Fit drain plug to drain hole, filler plug to filler hole, installing the correct quantity and grade of oil.

