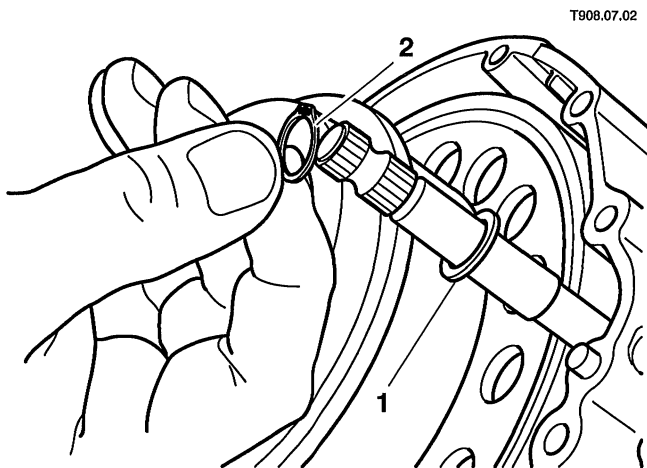


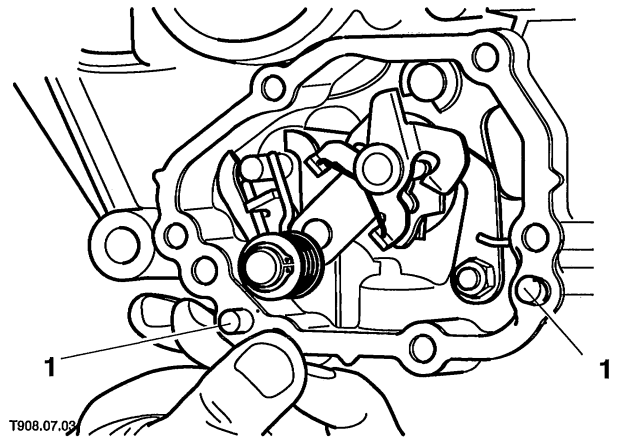
Installation

1. Ensure the detent arm is correctly installed and the gearchange shaft centralising pin is tightened to the specified torque.
2. Slide a washer onto the gearchange shaft then insert the shaft into the crankcase. Align the spring with the centralising pin and push the shaft fully into position.
3. Slide the other washer onto the left-hand end of the gearchange shaft then fit the circlip. Ensure the circlip is correctly located in the shaft groove.



- 1. Washer
- 2. Circlip

4. Check the operation of the gearchange mechanism.
5. Ensure the locating dowels are in position then fit a **new** gasket.



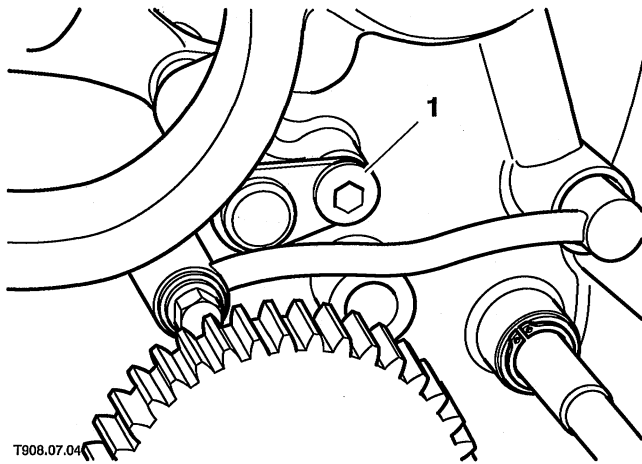
1. Locating dowels

6. Fit the gearchange mechanism cover and tighten its bolts to **9 Nm** (Scrambler **12 Nm**). Ensure the wiring clip is fitted to the correct bolt.
7. Install the front sprocket (see final drive section).
8. Refit the clutch and clutch cover (see clutch section).

SELECTOR FORKS

Removal

1. Disassemble the crankcase halves.
2. Remove the screw and slide out the retaining plate from the left-hand end of the selector fork shaft. Discard the screw.

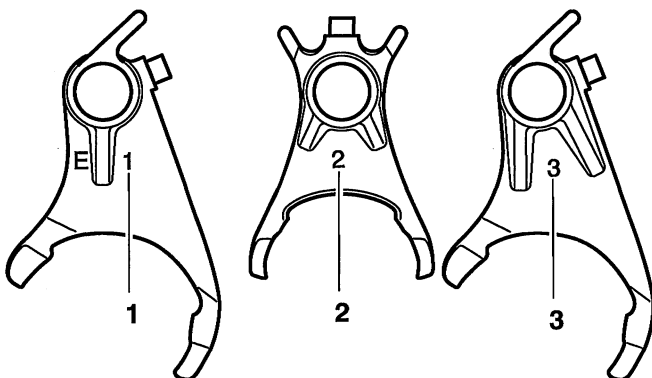


1. Retaining plate screw

3. Note the identification number on the right-hand side of each selector fork; the forks are numbered 1 to 3 from left to right.

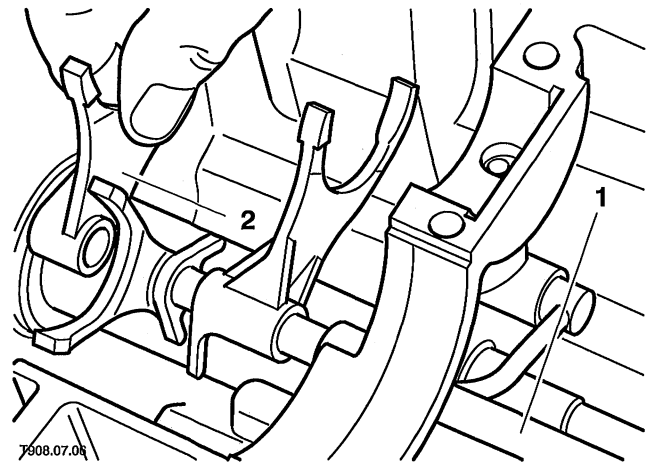
NOTE:

- If the numbers are not clearly visible, mark each fork with a marker pen to ensure it is refitted in its original location.
- Selector forks from engine number 128237 are not marked.



1. Left fork marking
2. Centre fork marking
3. Right fork marking

4. Slide out the shaft and lift out each selector fork as it is released from the shaft end.



1. Shaft

2. Selector fork

Inspection

1. Inspect the selector forks and shaft for signs of wear or damage and measure the width of the fork ends. Renew any worn components.

Selector fork end thickness

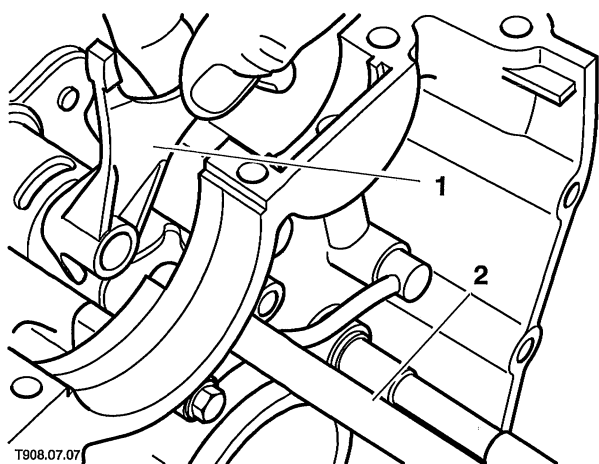
Standard	5.80 to 5.90 mm
Service limit	5.70 mm

Installation

NOTE:

- The selector forks are all different and are not interchangeable.
- Always assemble the transmission in neutral.

1. Fit the selector fork shaft to the crankcase, ensuring its slotted end is facing left.
2. Fit the left-hand selector fork to the drum in the orientation previously noted. Slide the shaft into the fork.

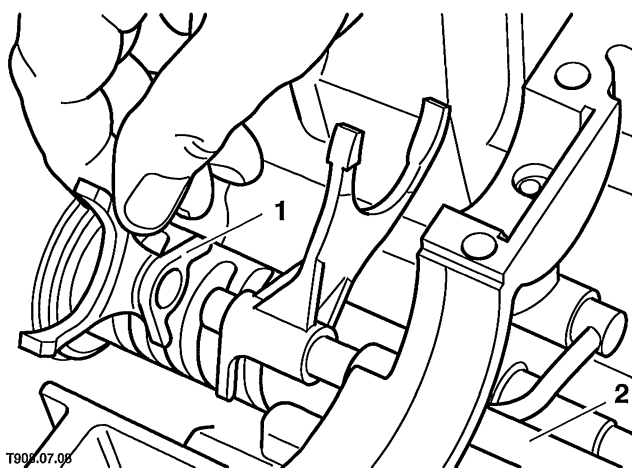


T908.07.07

1. Left selector fork

2. Shaft

3. Fit the centre selector fork to the drum in the orientation previously noted. Slide the shaft into the fork.

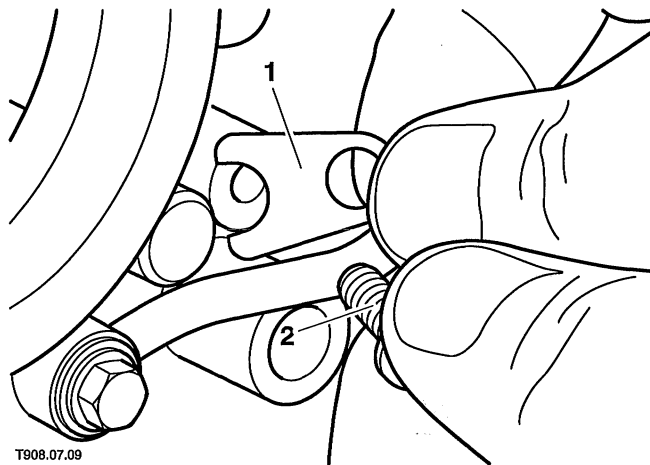


T908.07.08

1. Centre fork

2. Shaft

4. Fit the right-hand selector fork to the drum in the orientation previously noted. Slide the shaft into the fork.
5. Slide the selector fork shaft fully into position.
6. Engage the retaining plate with the groove in the selector fork shaft then fit the **new** retaining screw. Tighten the screw to **12 Nm**.



T908.07.09

1. Retaining plate

2. Screw

7. Reassemble the crankcase halves.

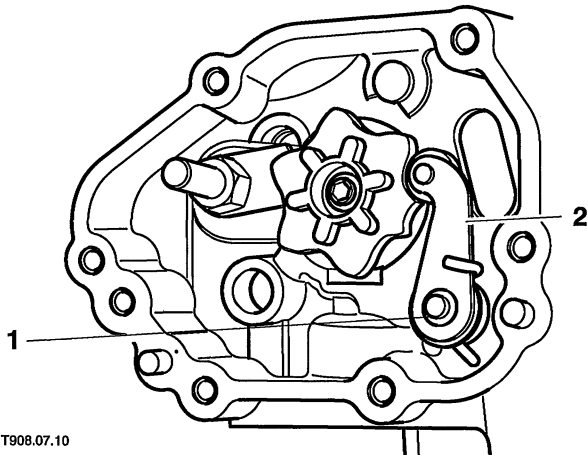
SELECTOR DRUM

Removal

NOTE:

- The detent arm components can be removed without disassembling the crankcase halves (if required).

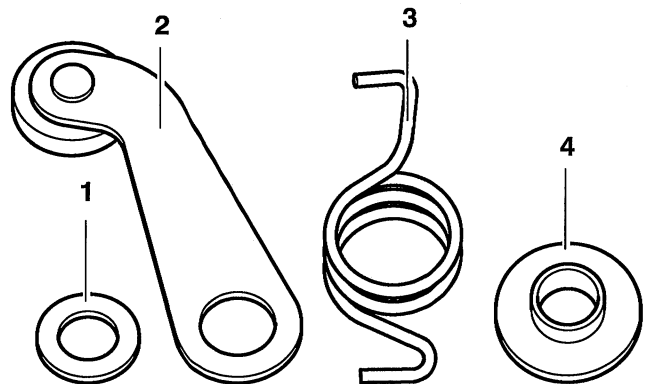
1. Disassemble the crankcase halves.
2. Remove the gearchange shaft.
3. Remove the selector forks.
4. Unscrew the neutral switch from the base of the crankcase. Discard its sealing washer.
5. Slacken the detent arm bolt a few turns then carefully free the detent arm from the selector drum cam to relieve the spring pressure.



T908.07.10

1. Bolt/stud (both have been fitted during current production).
2. Detent arm

6. Remove the bolt and washer then remove the detent arm, shouldered collar and spring.

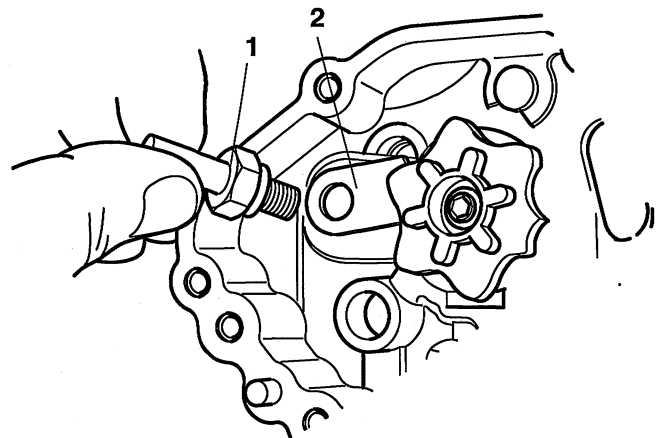


T908.07.11

1. Washer
2. Detent arm
3. Spring
4. Shouldered collar

NOTE:

- Note the orientation of the detent arm components as they are removed. The same orientation must be retained on assembly.
7. Unscrew the gearchange shaft centralising pin and remove the selector drum retaining plate.



1. Centralising pin
2. Retaining plate

8. Prevent the drum from turning using a soft faced lever placed through the central hole in the drum itself. Slacken and remove the retaining bolt and remove the selector cam from the drum. Discard the bolt.

- Manoeuvre the selector drum and bearing out of position by sliding the drum assembly back and forth in its housing.

Inspection

- Check all components for signs of wear or damage, paying particular attention to the selector drum grooves. Renew any worn components.

Installation

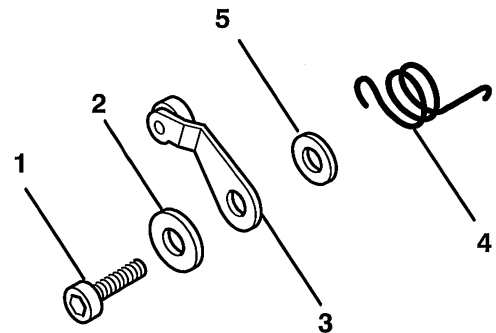
- Manoeuvre the selector drum into position in the crankcase then fit the bearing.
- Fit the selector cam. Ensure the cam is correctly engaged with the pin then fit a **new** bolt, prevent the drum from turning as for removal, and tighten the new bolt to **12 Nm**.
- Engage the retaining plate with the drum bearing then refit the centralising pin. Tighten the pin to **23 Nm**.
- Fit the spring ensuring its smaller end is facing outwards.



1. Spring

- Fit the shouldered collar to the inside of the detent arm.

- Engage the detent arm and collar with the spring then install the washer and **new** bolt. Screw the bolt in a few turns then locate the detent arm correctly on the selector drum cam. Ensure the arm is correctly engaged with the selector drum and shouldered collar then tighten the bolt to **12 Nm**.



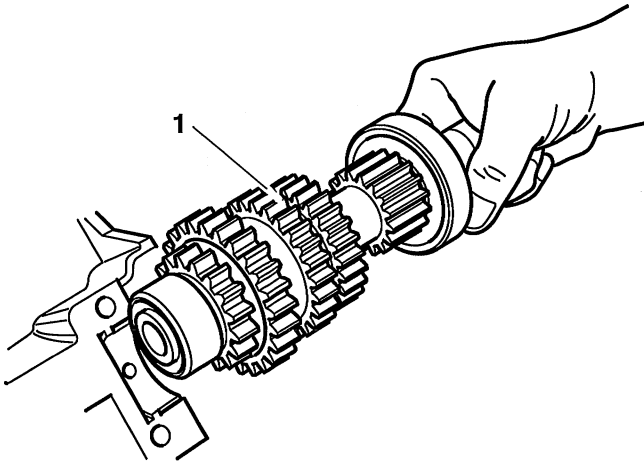
- Screw**
- Washer**
- Detent arm**
- Spring**
- Washer**

- Check the detent arm pivots smoothly and is securely held against the cam by the spring before proceeding.
- Fit the neutral switch with a **new** sealing washer and tighten to **10 Nm**.
- Install the selector forks and gearchange shaft.
- Reassemble the crankcase halves.

TRANSMISSION SHAFTS

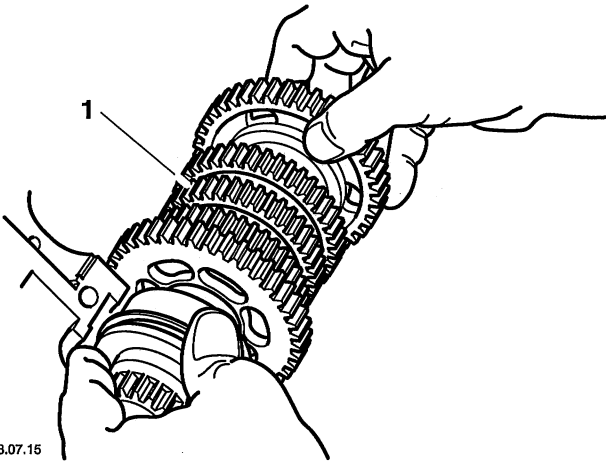
Removal

1. Disassemble the crankcase halves.
2. Lift out the input shaft. Take care not to lose the bearing outer race from the right end of the shaft or the half-ring from the left side of the crankcase.



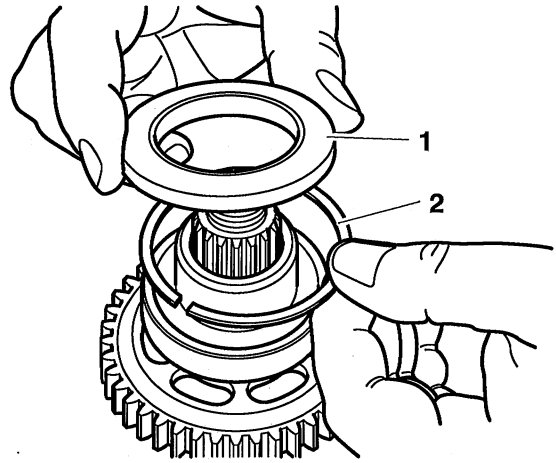
1. Input shaft

3. Lift out the output shaft taking care not to lose the bearing outer race from the left end of the shaft.



1. Output shaft

4. Remove the oil seal and retaining ring from the output shaft right end. Discard the seal.



T908.07.16

1. Oil seal
2. Retaining ring

Inspection

1. Inspect the input and output shaft gears for signs of worn or damaged teeth, dogs or selector fork grooves. If any sign of damage is found, disassemble the shaft so that the affected components can be renewed.

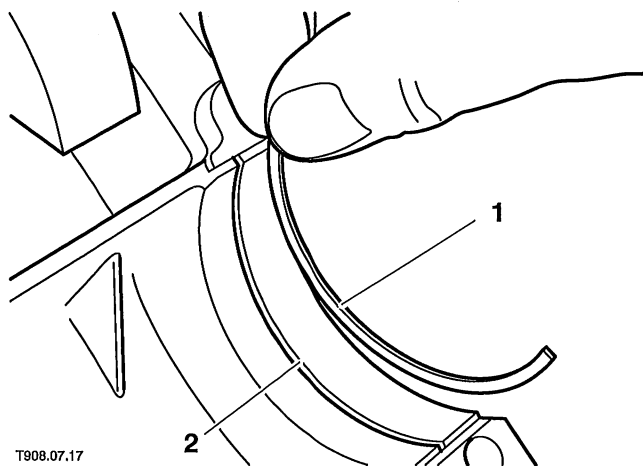
T908.07.15

Installation

NOTE:

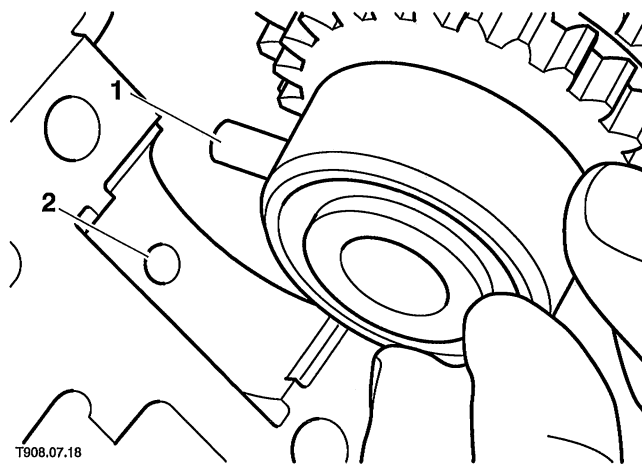
- **Always assemble the transmission in neutral.**

1. Fit the retaining ring to the right end of the output shaft.
2. Lubricate the lip of the **new** oil seal with clean engine oil then ease the seal onto the output shaft spacer.
3. Ensure the bearing outer races are fitted to the shafts with their chamfered edges outermost. Also ensure the locating pin is pushed securely into each race.
4. Lower the output shaft assembly into position. As the shaft locates in the crankcase, align the pin in the bearing outer race with its hole and the retaining ring and oil seal lip with their crankcase grooves.
5. Ensure the output shaft is correctly located.
6. Fit the input shaft bearing half-ring to its groove in the crankcase.



1. Half-ring
2. Crankcase groove

7. Lower the input shaft into position aligning the pin in the bearing outer race with the crankcase hole and the bearing groove with the half-ring.



1. Outer race pin
2. Crankcase hole

8. Ensure both the output and input shafts are correctly seated and their gears are correctly meshed before assembling the crankcase halves.

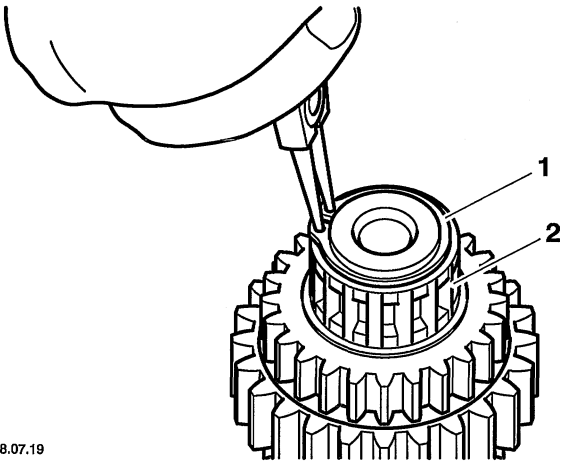
INPUT SHAFT

NOTE:

- Note the orientation of all components as they are removed from the shaft. The same orientation must be retained on assembly.

Disassembly

1. Remove the input shaft from the crankcase.
2. Remove the bearing outer race from the right end of the shaft.
3. Remove the circlip then slide off the needle roller bearing.



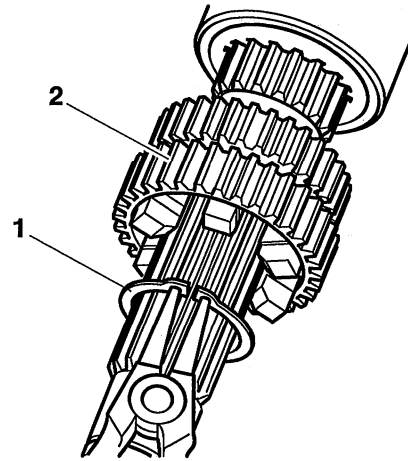
T908.07.19

1. Circlip

2. Needle roller bearing

4. Remove the washer followed by the 2nd gear.
5. Remove the circlip then slide off the splined washer.
6. Remove the 5th gear then slide off its splined bush and splined washer.

7. Remove the circlip and slide off the combined 3rd/4th gear.



T908.07.20

1. Circlip

2. 3rd/4th gear

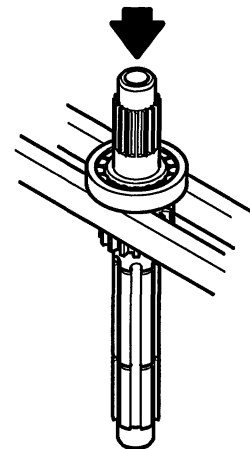
8. To separate the input shaft and bearing, support the bearing then press out the shaft.

NOTE:

- The bearing must be renewed if it is removed from the shaft.

WARNING: When using a press, always wear overalls, eye, face and hand protection. Objects such as bearings can break-up under load and the debris caused during break-up may cause damage and injury to unprotected parts of the body.

Never wear loose clothing, which could become trapped in the press and cause crushing injury to the hand, arms or other parts of the anatomy.



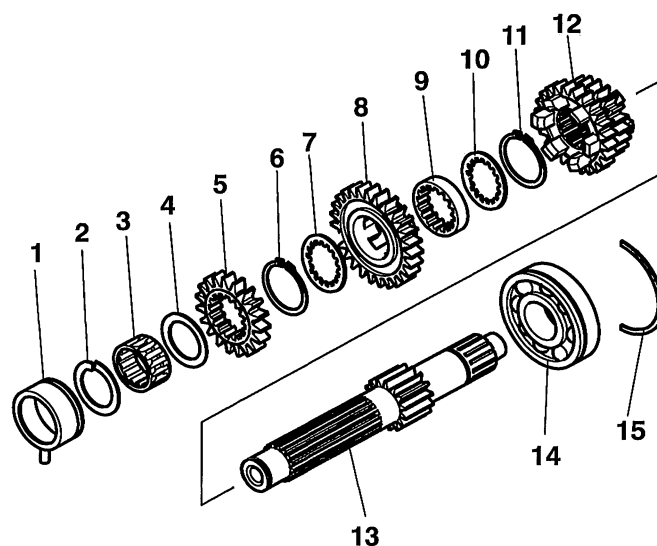
06.12-1

Pressing off the input shaft bearing

Inspection

1. Examine all gears, bearings and bushes for damage, chipped teeth and wear beyond the service limits. Replace all suspect components and always use new circlips to assemble the shaft.

Assembly



Input shaft components

1. Outer race
2. Circlip
3. Needle roller bearing
4. Washer
5. 2nd gear
6. Circlip
7. Splined washer
8. 5th gear
9. 5th gear splined bush
10. Splined washer
11. Circlip
12. 3rd/4th gear
13. Input shaft
14. Bearing
15. Half-ring

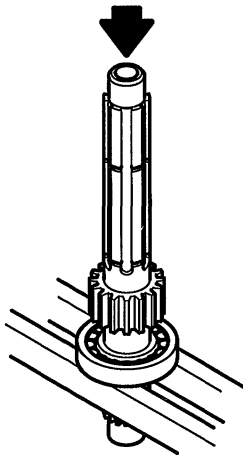
NOTE:

- Lubricate each gear and bush with clean engine oil during assembly.
 - The circlips used on the input shaft have a flat side and an angled side. Illustrations throughout the assembly text indicate which way the angled side should face.
1. Support the inner race of the **new** bearing, ensuring its ring groove is facing upwards

2. Locate the input shaft in the bearing, with its clutch end facing downwards. Press the shaft into position until its integral 1st gear contacts the bearing.

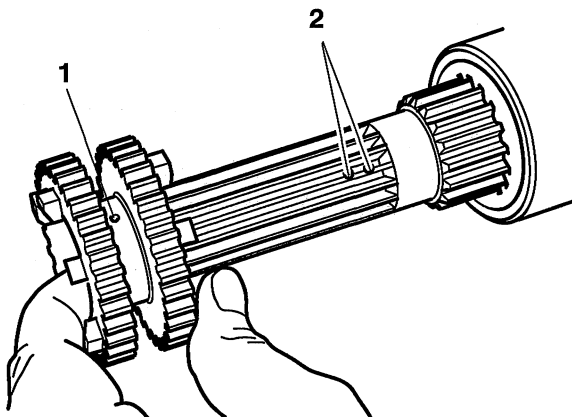
! WARNING: When using a press, always wear overalls, eye, face and hand protection. Objects such as bearings can break-up under load and the debris caused during break-up may cause damage and injury to unprotected parts of the body.

Never wear loose clothing, which could become trapped in the press and cause crushing injury to the hand, arms or other parts of the anatomy.



Pressing on the bearing

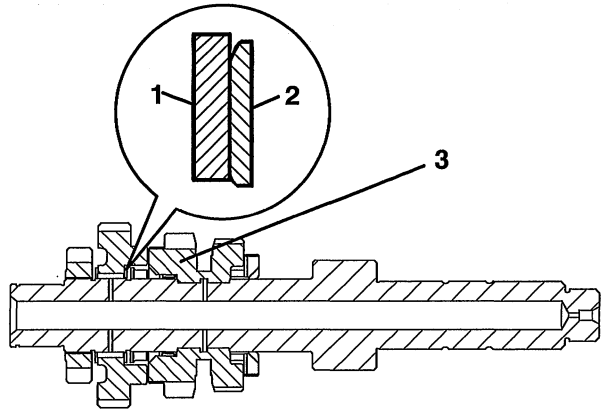
3. Fit the combined 3rd/4th gear with its smaller 3rd gear facing the integral 1st gear. Ensure that, when engaging the gear with the shaft splines, the oil hole in the gear DOES NOT ALIGN with the oil holes in the shaft.



T908.07.21

1. 3rd/4th gear oil hole
2. Shaft oil holes

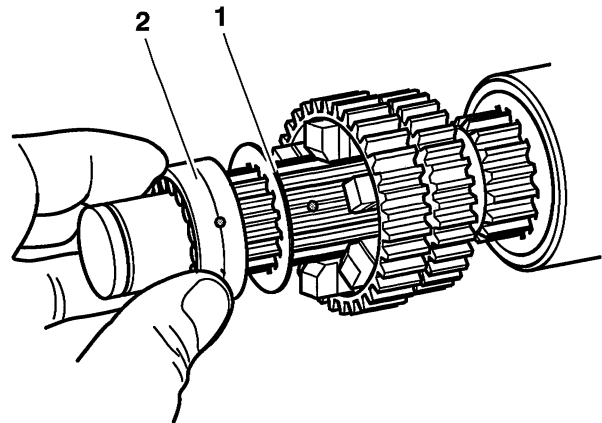
4. Secure the 3rd/4th gear in position with a new circlip, orientating the circlip as shown below.



coqj

1. Splined washer
2. Circlip
3. 3rd/4th gear

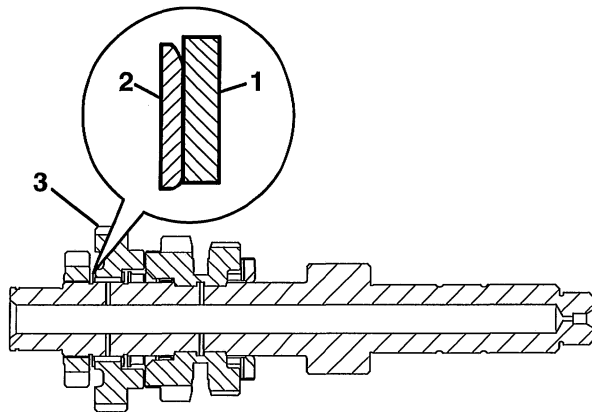
5. Fit the splined washer then slide on the 5th gear splined bush taking care to ALIGN THE OIL HOLE IN THE SHAFT WITH THE CORRESPONDING HOLE IN THE BUSH.



T908.07.22

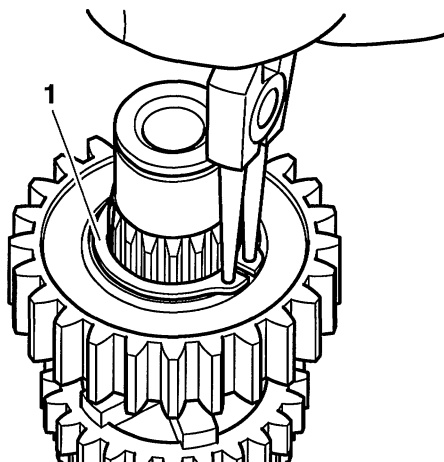
1. Splined washer
2. 5th gear splined bush
6. Fit the 5th gear with its dogs facing the 3rd/4th gear and locate it on the bush.

7. Fit a splined washer and secure 5th gear in position with a **new** circlip, orientating the circlip as shown below.



ccqj

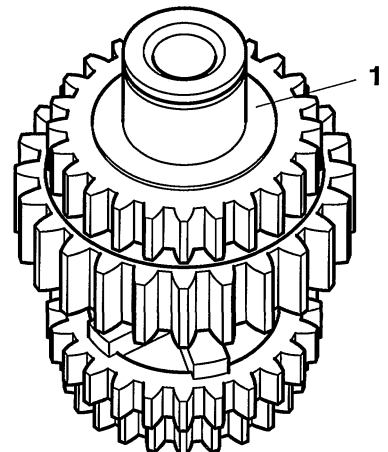
- 1. Splined washer
- 2. Circlip
- 3. 5th gear



T908.07.23

- 1. Circlip

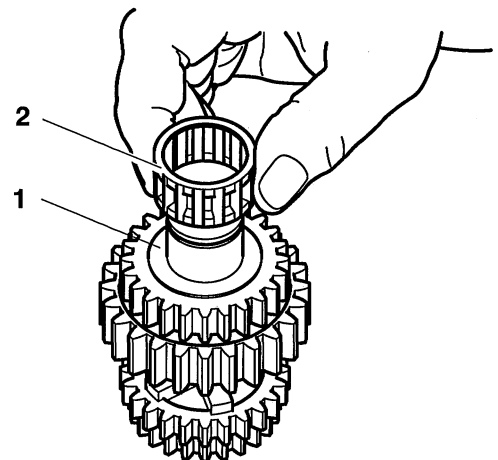
8. Fit the 2nd gear with its side with the slight protrusion facing away from the 5th gear.



T908.07.24

- 1. 2nd gear protrusion

9. Slide on the washer and fit the needle roller bearing.



T908.07.25

- 1. Washer
- 2. Needle roller bearing