

TECH TIPS No 17a
HOW TO CHECK THE CONDITION OF THE
FIRST GEAR IN THE GEARBOX.

You have seen an advert in the 500 magazine "500 or 126 gearbox for sale in good condition £150."

How do you know it is a 500 or 126 gearbox it could be mish-mash box. It could be a 500 g/box with a 126 bell-housing and visa versa.

Ignoring the bell housing, looking at the outside of a 500 and 126 g/box I cannot see any difference. So you have to look inside the g/box.

On the top of the gearbox there is a black cover plate, it is fastened down by four 6mm screws (10mm spanner), remove the screws and cover.

Look inside, and the gearwheel you want to see is on top, it is a shaft with three gearwheels, the one we are interested in is the small one in the middle, this is the one that wears. See sketch below.

To find out whether the box is 126 or 500 just measure the diameter of the wheel. 126 is 31mm. and a 500 is 28mm. They both have 10 teeth.

To determine whether it will jump out of first gear.

If you view the drawings "looking inside the gearbox" and "wear on the first gear". You can see that the 1st driver gear which is 16mm wide, is dual purpose, the backend half of the 1st gear is used by 1st/reverse sliding gear which is situated underneath the 1st gear. The 1st/reverse gear uses the front half of the 1st gear, which is at the side. Both these gears are 9mm wide.

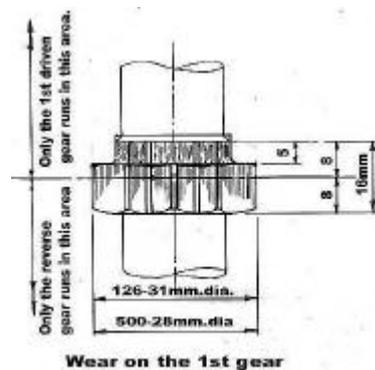
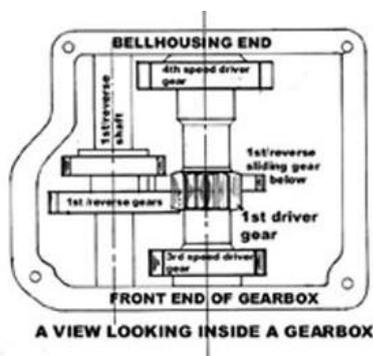
It doesn't matter how much pushing and pulling of the gear selector; neither gear will pass over the centre of the 1st gear.

The 1st gear can wear just short of the centre line, by then you will have no 1st gear.

Because the 1st/reverse sliding gear has three times more teeth, the wear is not as great, as on the 1st gear.

On the drawing "wear on the 1st gear" it show a dimension of 5mm this is the point when the 1st gear will start to jump out of gear.

So if you are buying the gearbox. The wear should not be greater than 2.5mm.



Details of a 500 gearbox input shaft.

The 1st drive gear has 10 teeth x 28mm diam. by 16mm wide.

The 4th speed driver helical gear has 24 teeth x 60.3mm diam. by 11mm wide.

The 3rd speed driver helical gear has 20 teeth x 51mm diam. by 11mm wide.

Details of a 126 gearbox input shaft.

The 1st drive gear has 10 teeth x 31mm diam. by 16 mm wide.

The 4th speed driver helical gear has 39 teeth x 58.2mm diam. by 11mm wide.

The 3rd speed drive helical gear has 20 teeth x 51mm diam. by 11mm wide.

So when you go for a gearbox take a rule and a calliper.

The type of oils used in 500 and 126 gearboxes

When you take the black cover off the gearbox, take a sniff and see what type of oil was used. If the smell is acidic that means the oil is a extreme pressure (EP) oil. If the smell is just oily that is straight oil.

A 500-gearbox oil should be a SAE 90 EP. Fiat recommend "W90M oil"

A 126 gearbox oil should be a SAE 90 (not EP) oil.

Fiat recommend. "oliofiat ZC 90"

The EP oils have this acidic quality, this type of oil loves to eat away non-ferrous metals, e.g. Brass bushes and gears.

Things to look out for when were refitting a gearbox.

What damages the first gear in the gearbox? It is trying to get it into gear, when the gearbox is not aligned to the gear-stick settings. So the following checks should be carried out.

1. Check the condition of the rubber block gearbox mountings, and see if they are still bonded to the steel fixing plate. If they are coming detached from plate, replace.

2. Remove the flexible link from gearshift control rod, you will need a 10mm and a 13mm spanner. Now check that the rubber is still bonded to the steel plates, if it is breaking away, replace the link.

3. There should be no trouble with the swinging link rear engine mounting on a 500; unless you have been rammed in the rear; then it should be checked for damage.

NOTE: If you have had accident, where you have run into or backed into something. Always check the linkages between gearshift and gearbox.

How to set up the linkages on the gearbox.

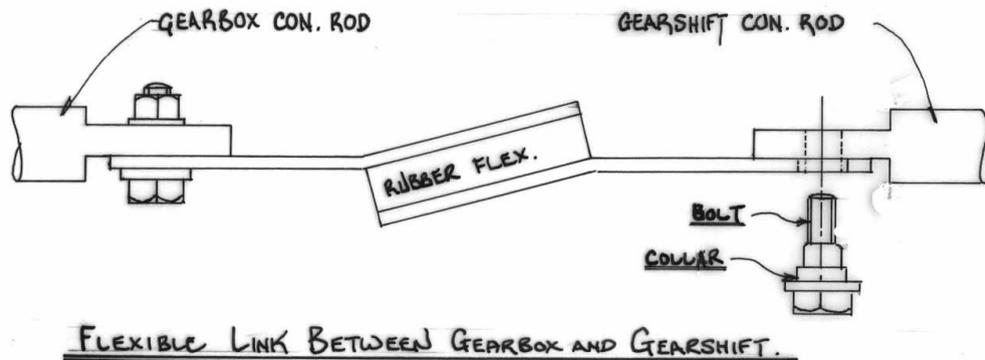
Before you refit the gearbox, it should be in the following condition.

- a. The gearbox mountings should be fitted, but slack.
- b. The flexible link should fitted to the gearbox and tight.
- c. The gearbox should be in neutral.

d. Open up the access under the rear seat if one is fitted (Tech Tip 15).

THE ENGINE AND GEAR-BOX IS NOW IN PLACE

- a. The rear engine mounting is fitted and tight.
- b. Tighten all the bolts on the gearbox mounting.
- c. Put the bolt into the link and the gearshift control rod, do not tighten.
- d. Put into reverse gear; remove the bolt out of link and gearshift control rod.
- e. Push the gearbox control rod home so that the gear is in position.
- f. Align the hole in the link and the hole in the gear shift control, making sure that the gear stick is pushed hard in to reverse gear position. If inline fit the bolt and tighten.
- g. If the holes are not inline. Then slacken off the gear lever support screws (13mm spanner) which are situated behind the carpet on driver's side of the tunnel.
- h. Holding the gear stick in **reverse gear**, tap the slack support screws the way you want them to go till the holes are inline on the link and the gear shift control rod.
- i. Tighten the gear lever support screws, making sure that the screws do not move in the slots.
- j. Check the alignment again and fit the bolt and tighten.



The original write-up was in the club news No 50 The modifications to the write-up March 2001. Written by Brian Rylance 1224.from Warrington 01925 655447