

# CB Model Gearbox Rebuild

By frogcow

Specs : G11 Cb23 manual gearbox

[Full Screen Mode](#)

- 1<sup>st</sup>: 3.090
- 2<sup>nd</sup>: 1.842
- 3<sup>rd</sup>: 1.230
- 4<sup>th</sup>: 0.846
- 5<sup>th</sup>: 0.707
- FD: 4.50

First things first, download the gearbox manual from the FAQ, for the manual transmission you only need pages 3-1 to 3-65 so a good idea would be to get this printed out and bound in some plastic to protect from workshop use. Follow the manual step by step substituting the special service tools (SSTs) for tools you are likely to have lying around the garage.

The rebuild can be undertaken by anyone with the basic tools, a screwdriver kit, socket set and ratchet, an air compressor helps the process along, especially removing the lock nuts on the input and output shafts. Some machining was necessary due to excessive wear on the casing and on the filler plug thread. Any local machining shop should be able to complete these duties with no problems.

Getting some straight cut gears made up with different gear ratios was what I first set out to achieve but after some research into this avenue decided to just give the gearbox a freshen up mainly due to cost, the first gear would be nice a little higher (around 2.807), I took the shafts to an engineering company who quoted me a price a lot more than the cost of the gearbox and they could not guarantee it would hold, mainly because there was not enough meat on the gear between the gear and the shaft for a new gear to be cut. Because most gears out of Daihatsu gearboxes are interchangeable it is possible to alter the ratios for the cost of a 2<sup>nd</sup> hand gearbox, (all charades, applause, feroza) possibly others. The next thing I looked into was changing the diff, to a 4.900 (CL 11 diesel non turbo charade). This would give the same affect as a short ratio gearbox but 1<sup>st</sup> is apparently over very quickly. This was not undertaken due to sourcing a diff from a car that is very rare in this country. The gearbox remained in stock form.

Overall the charade gearboxes have seen some decent power, and are capable if respect is shown changing gears and general maintenance is undertaken. At the start of your gearbox rebuild you need to decide what you are going to be using the car for (i.e daily driver, racing on track or hill climbs etc) and decide on your budget and direction of use. Any gearbox has the ability to be modified but the costs are quite significant when compared to the cost of the car.

Some of the parts that were needed were unavailable through Daihatsu due to them being discontinued, some had to be ordered from Japan. There is a list of part numbers and a number of digital photos of my gearbox rebuild. If you need any more info please email me through the Daihard website.

## PART NUMBERS FOR CB23 GEARBOX

Part name	Part number	Page number in manual	Key number on page
Needle roller bearing	<b>9004364034000</b>	3-31	14
Input shaft bearing	<b>9710306205000</b>	3-24	3
Needle roller bearing (G100,G200)	<b>9004364072000</b>	3-13	5

Needle roller bearing (G11)*	9004364052000	3-13	5
Output shaft cover (G100)	3313487701000	3-13	6
Output shaft snap rings (2)	9004520107000	3-31	7 & 12
Input shaft snap ring	9004520105000	3-24	10
Output shaft washer (G100)	3334587702000	3-31	13
Washer filler/drain plugs	9004430178000	3-12	1 & 2
Washer backup lamp switch	9004430178000	3-12	6
Speedo drive oil seal (bore)	9004312001000	3-14	Step 5
Slotted spring pins * (4)	9004254007000	3-39	Fig 3-134
Short driveshaft seal	9004311228000	3-13	2
Long Driveshaft seal	9004311147000	3-13	3
Input shaft seal	9004310036000	-	-
Gear selector linkage seal	9004311146000	3-16	Fig 3-56
Gear selector boot *	discontinued	-	-

**\* indicates difficulty in finding parts, Daihatsu say they are discontinued**

The guts were stripped and washed and scrubbed in general kerosene with a toothbrush, the insides of the casing were sprayed with Motortech degreaser and then washed with hose:





The entire casing was sandblasted using 1mm paving sand, a cheap sandblaster gun from Repco and a small 2.5hp air compressor:

The separation of the two casings had to be done by the gearbox specialist it was taken to because it was stuck tight. They also gave me a few pointers and tips for free. The filler plug thread was covered in some varnish because it had been stripped; this casing was taken to an engineering firm for an insert and new thread:



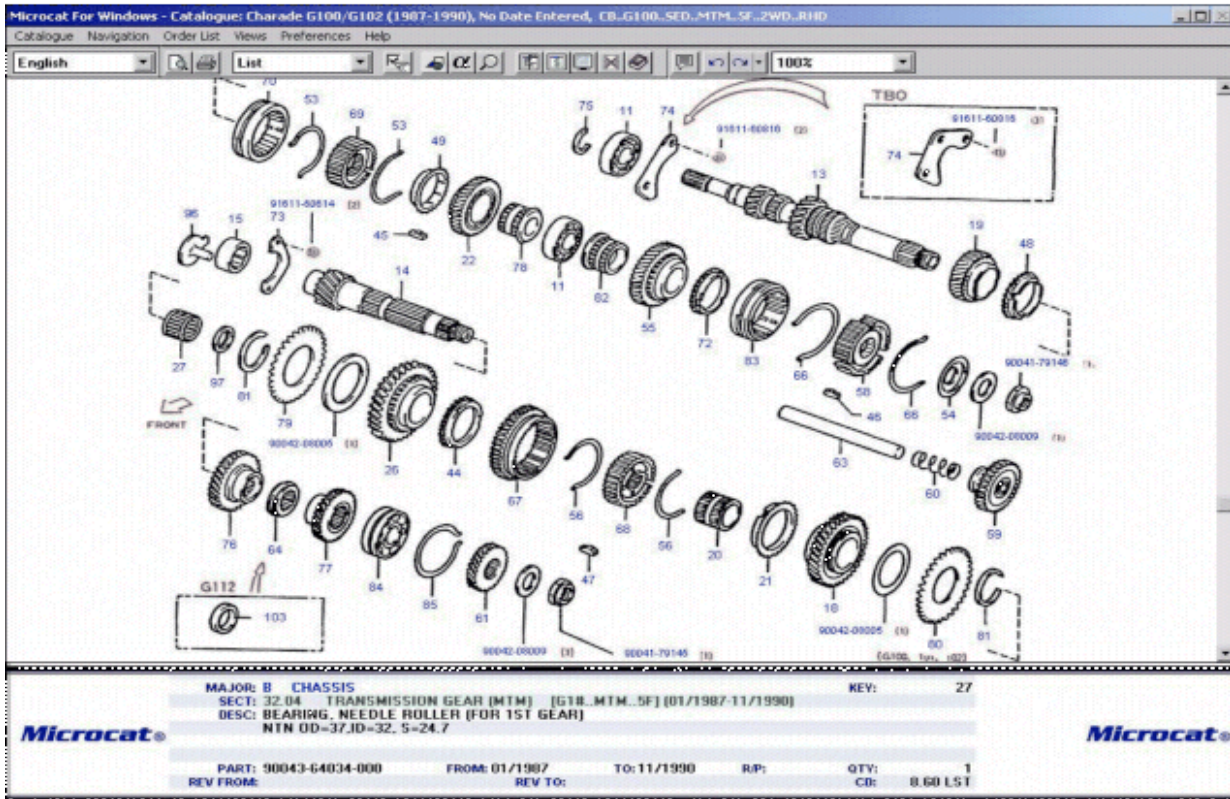
The bearings on the end of the shaft slid off by using the weight of the gears by dropping the shaft on a piece of hardwood on the ground, disassembly of the gears was followed

by checking the limits on all the gears, clutch hubs, sleeves, bushes, bearings, synchronizer rings, shifting keys and forks with a digital vernier and replacing anything that was outside limits.

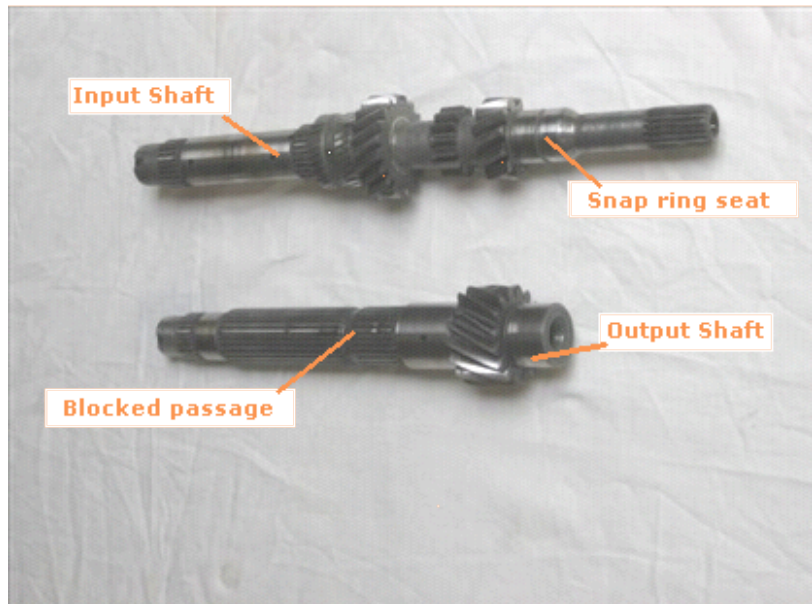
There was excessive wear on the casing under 5<sup>th</sup> gear and the shift fork and clutch hub for 5<sup>th</sup> were below the limits allowed in the manual, 2<sup>nd</sup> hand replacements were found.

Apart from the problem with the wear surrounding fifth gear the G11 box didn't have a washer 87 found in the G100 box and output shaft cover (no 96). The gearbox had signs of being opened up post factory, blue, red and clear gasket glue remnants were found:





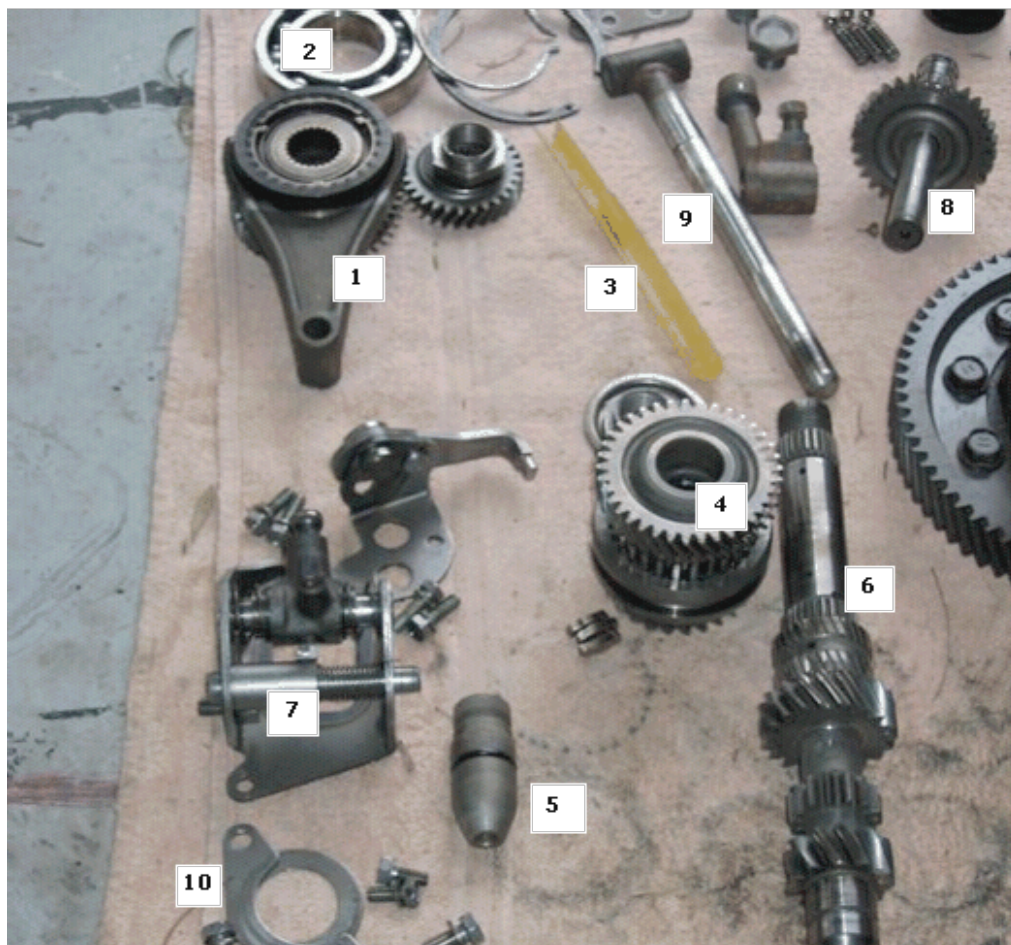
The hole that feeds oil to this bush was completely blocked with some black bits of plastic. Snap rings were replaced with new ones by using two screw drivers the same height, and hitting them both at the same time whilst the shaft was locked in a vice, a cloth was placed around the shaft when locked into the vice to avoid scratches. Same with removing the snap rings, care was taken not to scratch the journal area around the seat. As you can see from the picture below there is a seat for one on the input shaft towards the right end. The shaft on the bottom of the picture is the output shaft; it has two snap rings, one in the first gear assembly and one in the second gear assembly.



All the seals and the majority of bearings were replaced. All parts were washed once to remove the grime and then again just before assembly in new kerosene, parts were dried and reassembled, silastic was used (the three bond glue 1216 the manual refers to was never made in this country and Daihatsu does not import it), small amounts of high temp wheel bearing grease were applied to each bearing. The final touch was 2.7 litres of redline gear oil, this oil lasts up to 400,000km and can be reused by draining through a stocking before sieving back into the gearbox.

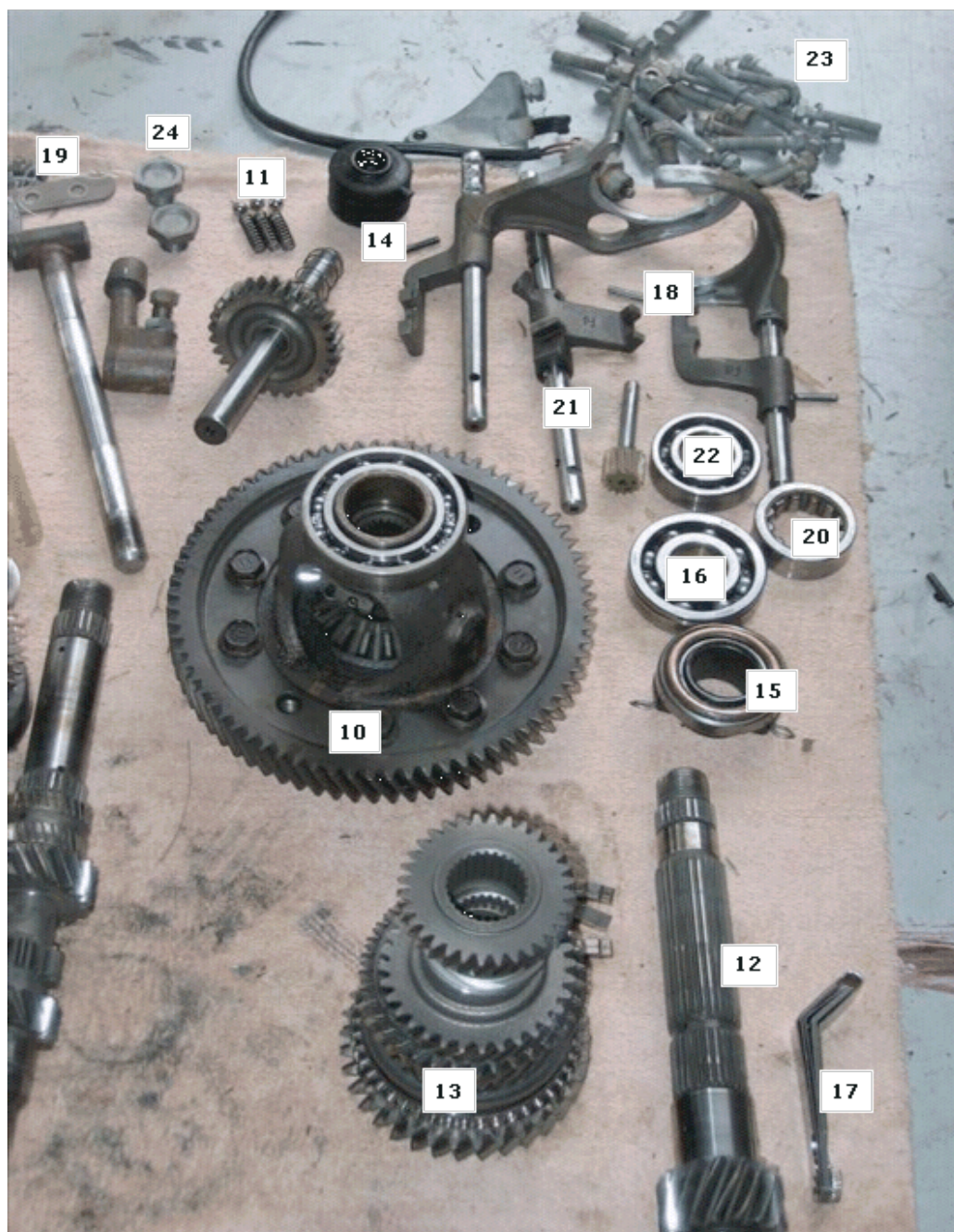
According to the manual there are only several differences between the cb23 and the cb61, cl61, cb80 gearboxes apart from the gear ratios, these are a stronger input shaft bearing lock plate (three bolts instead of two) and for cb80 gearboxes the 4<sup>th</sup> gear has some extra welding. Gear ratios below

were taken from a previous post on the Daihard website FAQ. There was a difference between G100 and G11 cb23 model gearboxes this was the needle roller bearing that the output shaft fits into, its different, the g100 uses a bigger bearing for the bigger shaft and can not be used in the G11 gearbox.



1	5 <sup>th</sup> gear assembly, shift fork, clutch and clutch hub and one of the lock nuts	6	The input shaft
2	The largest bearing in the gearbox, one of two on the diff	7	Selector support assembly
3	Case cover oil pipe	8	Part of the control linkage, 1 of 4 parts
4	Gear assembly from the input shaft	9	Shifting bell crank
5	The speedometer shaft sleeve	10	Output shaft needle roller bearing cover





11	Compression springs and balls	18	The other three of the four parts of the control linkage
12	Output shaft	19	Lock bail plate
13	Gear assembly off the output shaft	20	Needle roller bearing on output shaft
14	Shifting crank boot	21	Speedometer gear
15	Clutch bearing	22	Roller bearing from input shaft
16	Bearing on the output shaft under 5 <sup>th</sup> gear	23	Gearbox casing bolts
17	Feeler gauges	24	Filler and drain plugs