

Cambridge Lambretta Workshops



There is a wide choice of gearboxes available for all series 1, 2 and three machines. The trouble is with Lambretta is that of course they have stopped production which means finding your choice of gearbox has become harder and more expensive. The two or three main gearboxes for good all round performance in particular are commanding high prices, so to achieve gear changes for performance conversions, rather than change complete gearboxes, you can change the front and or rear sprocket to raise or lower gearing.

Depending on the level of tune, exhaust used or type of performance you require, i.e touring or round town, final drive ratio's can be between 4.6 and 5.3

The table below shows Italian gearbox ratios for all four gears, plus we have added some notes to help you see what gearbox works in which way

Scooter	1st Gear	2nd Gear	3rd Gear	4th Gear	Notes
Li 125 Series 1 & 2 Li 125 Series 3, early	17.38	10.73	7.48	5.65	A
Li 150 Special, (Pacemaker), Late Li 125, Series 3	13.94	9.67	7.04	5.65	B
SX150, Li 150 Special, GP150	15.33	10.73	7.97	5.65	A
Li 150 Series 1, 2 & 3	13.94	8.98	6.67	5.21	B
TV175 Series 1, 2 & 3, SX200	12.52	8.76	6.3	4.82	C
Li 125 Special GP125	15.33	10.73	7.97	6.13	D
GP200	13.06	9.14	6.20	5.22	D

a) Not really the best gearboxes to use for tuned motors due to the spacing of gears. Li 125 can be used with 18/47 to give similar set up to SX200, ie touring.

b) Good gear box, although Pacemaker can have a weak third gear, generally this is the best to use. They have become very hard to find, so the use of the Li150 is the next best.

c) The TV/SX box is quite tall, it will work ok with exhausts or tunes that make power low down, it will be to tall for other applications. Can be used as a touring gearbox.

d) Li Special and GP125 actually share the same gearbox as the GP200, they just use different sprockets. The GP200 gearbox is a good revvy all round gear box and can be used on any standard, or tuned motor with good results.

The easiest and cheapest way to affect the ratio's is quite simply your rear tyre, 4.00x10 will raise the overall ratios, 300x10 will lower them. (The use of a 4.00x10 tyre will need the bump stop of the engine casing grinding off!)

A more efficient and controllable way to adjust the way your gearbox works by lowering or raising the ratios by means of fitting different front or rear sprockets.

Front sprockets.

These raise the gearing the more number of teeth it has, and it quite a high percentage. Sizes available are :- 14T** 15, 16, 17, 18, 19, 20, 21.

Rear sprockets

These lower the gearing the more number of teeth it has, but in lower percentage then the front. :- 44, 45, 46, 47, 48, 49, 50.

By choosing different geaboxes and or the large number of variation on sprockets, you can alter your ratios to suit you and the conditions you use your scooter, as well as power made. It does'nt always equate that bolting on a performance kits will need the raito to be raised to gain more speed. In fact the opposite can be found in sme cases, in that lowering your gearing will give you more top speed in certan curcumstances. For example a scooter with a bolt on kit and expansions made to rev harder, may well require lower gearing in order to rev out in top gear. The extra speed will come from the engine revving harder. If the gearing is to tall, the scooter may well not rev as hard, thus a lower top speed is seen. On scooters with a lower revving kit / exhaust combination, higher gearing can be used as the scooter will make its power lower down, and probably will not be cable of "reving out" to the restriction of how it works. In this case the higher top speed is gained by the torque of the set up.

**** (we would recommend having a 14T machined with the front collet other wise the sprocket can spin round.)**

The trouble with fitting different sprockets is then finding a chain that will fit the combination used can be tricky. Where we have quoted a stretched chain, this is a worn chain that normally would be to large to use on standard set ups due to it being to long for tensioner adjustment. Geniune Innocenti chains are actually very good quality, so as long as all links look secure, all rollers have no damage, it is more then likely quite safe to use. Beware of new pattern chains on the market, some are not very good quality at all, ask your supplier for more details.

No chain available	14	46
80	15	
Stretched 80	16	
81	17	
Stretched 81	18	
82	19	
Stretched 82	20	

No chain available	14	48
80	15	
Stretched 80	16	
81	17	
Stretched 81	18	
82	19	
Stretched 82	20	

80	14	47
Stretched 80	15	
81	16	
Stretched 81	17	
82	18	
Stretched 82	19	

81	14	49
Stretched 81	15	
82	16	
Stretched 82	17	
83	18	
Stretched 83	19	

83	20
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84	20
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All gearboxes between series three Lambretta machines are interchangeable, they should really be changed as complete units though, even in most cases down to the endplate that holds them in place. You cannot unfortunately change one gear at a time (except in some rare cases), i.e. if you want a higher fourth gear you cannot just take that from a different set up to gain more speed. Even though many gears may share the same number of teeth, they (again rarely) are not interchangeable one at a time, for example a GT 2nd gear has the same amount of teeth as the SX150 3rd gear, but the actual gears are not the same.

In the tables below you will find listed gearboxes as per each machine, these are as would have been fitted to the scooter leaving the Innocenti factory. Many racers and tuners swap gearboxes with modified machines to gain the best from their set ups, and it is fair to say unless you have modified your machine in some big way, you will gain nothing from changing the gearbox to a different type. There are some exceptions to this last statement, but it all depends on your individual machine.

For you to want to change the ratio, you would have had to have some sort of conversion to your machine, i.e. not just a new carb, racy exhaust and a bit of a tune. Capacity changes (i.e. 125 to 150cc) Imola and TS1 conversions (amongst the two more popular ones) and the fitting of a side car would probably be the main reasons for changing gearboxes. Even then it is not absolutely necessary to change the whole gearbox itself, many different overall ratios can be affected by simply changing the front or rear sprockets, again it depends on your machine and the reason for the need to change.

OK in the explanations below you will see the primary drive listed, this is your front and rear sprocket, the smaller the front the larger number the rear. The four (in most case) gears and ratios are then inside tables, the group teeth is some times referred to as the cluster or Xmas tree.

Li125 series 1,2 and early series 3 gearbox
All of these gearboxes use the primary drive ratio of 15/46.

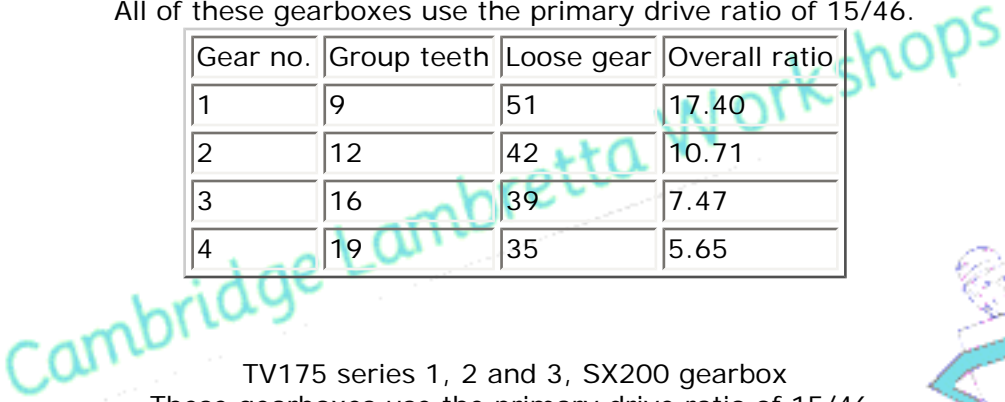
Gear no.	Group teeth	Loose gear	Overall ratio
1	9	51	17.40
2	12	42	10.71
3	16	39	7.47
4	19	35	5.65

TV175 series 1, 2 and 3, SX200 gearbox
These gearboxes use the primary drive ratio of 15/46.

Gear no.	Group teeth	Loose gear	Overall ratio
1	12	49	12.52
2	14	40	8.76
3	18	37	6.30
4	21	33	4.82

GP125 and Li125 special gearbox
These gearboxes use the primary drive ratio of 15/46.

Gear no.	Group teeth	Loose gear	Overall ratio
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1	10	50	15.33
2	12	42	10.71
3	15	39	7.97
4	18	36	6.32



Late 150 Special, SX150 and GP150 gearbox
These gearboxes use the primary drive ratio of 15/46.

Gear no.	Group teeth	Loose gear	Overall ratio
1	10	50	15.33
2	12	42	10.71
3	15	39	7.97
4	19	35	5.65

GP200 gearbox info

This gearbox uses the primary drive ratio of 18/47.

Gear no.	Group teeth	Loose gear	Overall ratio
1	10	50	13.05
2	12	42	9.13
3	15	39	6.79
4	18	36	5.22



Li150 special (pacemaker) and late series 3 gearbox.
All of these gearboxes use the primary drive ratio of 15/46.

gear no.	Group teeth	Loose gear	Overall ratio
1	11	50	13.95
2	13	41	9.67
3	17	39	7.04
4	19	35	5.65

TV/GT200 gearbox

This gearbox uses the primary drive ratio of 15/46.

Gear no.	Group teeth	Loose gear	Overall ratio
1	13	47	11.09
2	15	39	7.97
3	19	36	5.81
4	22	32	4.46



Li 150 series 1, ,2 and 3 gearbox

These gearboxes uses the primary drive ratio of 15/46.

Gear no.	Group teeth	Loose gear	Overall ratio
1	11	50	13.95
2	14	41	9.00
3	17	37	6.67
4	20	34	5.22

Optional gearbox on Rallymaster.

This gearboxes uses the primary drive ratio of 15/46.

Gear no.	Group teeth	Loose gear	Overall ratio
1	9	51	17.40
2	12	42	10.71
3	17	37	6.67
4	20	34	5.22



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