

Tech tyres – FAQ's

TECH TYRES FAQs

Here you can check out FAQ's on tyres and how they effect gearing and how they make a Scooter handle.

Does tyres size affect my gearing?.... Yes they do

You can raise or lower your gearing easily by fitting a different profile tyre. In the old days a 400:10 tyre was regularly fitted to raise the gearing, modern 100/80:10 tyre can be used to lower the gearing and a 3.50:10 or 100/90:10 can be used to raise the gearing, but there is not a lot in it. The difference can be likened to raising or lowering your engines front sprocket.

If my scooter doesn't pull 4th gear well, can I improve it by changing a tyre size?.... Yes

If you use a 100/90:10 or a 3.50:10 which has a similar diameter and rolling circumference and your scooter struggles in 4th then try a lower profile 100/80:10 tyre on the rear. Altering a tyre size on the front makes no difference to gearing only handling. (But could effect how accurate the speedo may read)

If my scooter seems to scream and over revs in 4th gear can I raise my gearing with a tyre size?....Yes you can.

Increase the size on the rear to a 100/90:10 or 3.50:10. If you are already using these tyres then you need to look at your gearing (or check out the clutch set up) Same tyre sizes can vary from manufacturers, not all 350:10 tyres are the same height so can be swapped to alter gearing.

What is the difference between high and lower gearing?....It depends how you look at it.

This is the correct way:

High gearing is when the gearbox and drive ratio have a low number, the worst case is a Lambretta GT200 gearbox with a drive ratio of 4.44:1.

Low gearing is when the gearbox and drive ratio have a higher number, the worst case is a Lambretta GP125 with 6.14:1.

This means for the GT box in 4th gear, the crankshaft has to turn 4.44 times to spin the rear wheel once, whereas the GP125 crankshaft has to spin 6.14 times per one wheel rotation. The GT engine has a hard life to pull the high gearing but the GP125 has an easy life to pull the gearing.

If you do not know what gear ratio you have then you can do this (with the engine turned off) rock the bike and go through the gears until 4th is selected, lift the rear wheel with a jack stand, then turn the engine (with the plug removed) to count how many times the engine turns to one revolution

of the rear wheel. Mark the mag housing and flywheel to see the number of turns. 5 exact turns of the engine to one turn of the rear wheel will equal 5.00:1. Treat the flywheel as a clock but imagine it is divided into 10 this will give a very accurately final gear ratio figure. (It won't tell you your gearing just the final drive ratio) see gearbox section

What does the term over geared mean?

The classic example of over gearing is when your scooter drives perfectly well in 1st, 2nd and 3rd then when you put it into 4th the engine dies and doesn't pull. This is made worse when riding two up or climbing a hill! (Not to be confused with a gearbox that has a bad jump between gear ratios i.e. the Gp/Sx150 and Spanish Li150 gearbox or a poorly set up and designed engine)

What is perfect gearing?

Every engine is different. Various factors affect gearing:

- Engines pulling power, expressed as torque. (i.e. a torquey engine)
- The weight the Scooter needs to carry
- Tyre diameter and rolling radius
- Gear ratio

Tyres are basically the same except for the rolling radius. There is only so much rubber that will fit between the engine, hub and mudguard. Usually a large capacity engine with a lot of torque can pull higher gearing. An engine made to rev and produce power high up in the rev range may not have the low down torque, so a higher revving gearbox may be required and the same could apply to a gutless standard engine.

I ride both two up and on my own, I know the extra weight effects pulling power what can I do?

Extra weight will always put a strain on a Lambretta engine. In the grand scheme of things a Lambretta is not a very powerful engine so by adding a passenger the engine will naturally find it harder to pull, especially up hill, into the wind and if you are out of the engine's power band. For these reasons, gearing is very important and a tyre effects gearing so much. If you find you are happy with the gearing driving on your own, but the engine doesn't like two up riding why not keep a spare tyre with a lower profile! It is much easier to change a tyre than it is to change a gearbox or sprocket set. A lower profile tyre gives less drag or load on the engine and allows the engine to spin more freely as the overall gear ratio is lowered. Changing the tyre profile is a much easier job to do than splitting your gearbox to change gear ratios.

In theory there is no difference between a 350:10 and a 100/90:10 but there is a big difference between a 400:10 and a 350:10 (100/90:10) and between a 350:10 and a 100/80:10 tyre sizes. As mentioned manufacturers alter tyre sizes so always check a few out fitted to rims to see the tyre size.

LOAD RATINGS

What does load ratings mean?

Load rating is a standardised test to find a safe load rating for a tyre. A tyre's diameter, width and construction of carcass will dictate the final load rating

2. Can you over load a scooter based on the tyre's load rating?

The load rating shown on the side wall is the load of one tyre. Two tyres of a Scooter effectively doubles the load rating of a Scooter as it spreads the load over 2 tyres. These load ratings are more than adequate spreading the load over two tyres even fully loaded up with two people and baggage. Ideally a tyre load is spread 50% front 50% rear. Even if you imagine there is more weight over the rear you could say split it 75% rear 25% front, load rating should cover this within reason, providing the driver and passenger is not 200kg each, then your pushing the tyre load range let alone your rear shockers power of resistance!

3. Should I worry about load ratings when buying a tyre?

No not really, load ratings are over safe and it's doubtful you could over load a Scooter and safely ride it anyway. A low load rating is code 50 which is 190kg per tyre, 380kg total weight. This could equate to two fat blokes of 125kg each plus the scooter! BUT can two 20 stone blokes fit on a Scooter? If they could the tyres can still take the load... but just, so add more air in the tyres!

TYRE SIZE QUESTIONS

Does the front tyre need to be the same size as the rear?

No, the modern Scooter way of doing it, is to use a larger diameter and wider tyre on the rear. But it is not uncommon to see a larger diameter tyre on the front, but try to use a narrower tyre if possible.

What size tyre should I use?

Originally Lambretta's used 3.50:10 tyres front and back, which for a long time we have been limited what could be fitted. Aftermarket 4.00:10 are available but are now out of favor with the manufacturers so very few are made these days. With the introduction of metric tyre sizes a number of tyres can now be used. These can be 3.50:10, 90/90:10 100/90:10 and 100:80:10. It's worth measuring your existing rolling circumference to compare tyre circumferences.

Which tyre size combination can I use.

There are three ways to use tyre sizes:

- Fit the same tyre front and back
- Fit a wider tyre on the rear

- You can use the same type of tyre front and rear or mismatch tyre types to suit your riding. Usually softer fronts and harder rears

What does the tyre sizes mean on the side wall?

For example 100/90:10 61 P.....

- 100 = Width in mm's
- 90 = Height ratio, shown as a percentage of tyre width
- 10 = 10 inch tyre diameter
- 61 = Load index
- P = Speed rating

Why are there are two types of tyre sizes?

Well there is old original Imperial tyre sizes and now in recent years metric sizes..... times change like miles and kilometers, pounds to kilograms! For example:

- Imperial. 3.50:10, means the tyre width is $3\frac{1}{2}$ inch wide (88.9mm) the tyre profile on an imperial tyre is 100% of the width, which in this case is $3\frac{1}{2}$ inch tall (88.9mm) And the ten is a 10 inch wheel rim.
- Metric. 100/90:10, means the tyres width is 100mm (4 inch) and has a tyre profile of 90% of the tyres width, in this case it would be 90mm tall and has a 10 inch wheel rim.

Compare the two, the metric version is only 1.10mm taller! Not so much on a tyre height or in one revolution but add up a full mile of revolutions and it will effect distance and gearing! But all manufacturers are different and make different tyre sizes even though there is supposed to be a manufacturing standard! Also check the width 88.9mm to 100mm..... the metric version is 10.1mm wider roughly $\frac{3}{8}$ of an inch! 10.1mm will make a massive difference in fitting between a hub, mudguard and mag housing!

Why do metric tyres give a wheel rim diameter in inches?

A good question we do not know, probably from the old days in the 50's and 60's once a size is set it's hard to convert everything over, imagining converting the UK from miles into Kilometers! 10 inch = 254mm add this to the tyre height of say a 100/90:10 90mm top and 90mm bottom is 434mm this could give your rolling circumference if needed for a gearing calculation. But as I've said this is theory always measure your blown up tyre and rim.

My rear tyre wears more than my front tyre, Why?

Simple, the rear tyre has all the weight on it and is the driven wheel! Therefore it creates more heat and has more wear and tear. Choose a harder compound tyre for the rear to help the tyre last longer. Add two people and luggage and it gets a even harder life.

BEST TYRE/COMBINATION QUESTIONS

I like to sling my scooter around corners what is best?

A full Race spec tyre made from a super soft compound is ideal for front fitment with one slightly harder on the rear. This type of tyre is suited to be used as it has excellent grip and prevents front wheel wash out, along with full grip and slide control on the rear. Don't expect these race tyres to give high mileage on the rear because of its soft compound. If you require a longer lasting tyre on the rear then use a combination of a 3.50:10 soft front with a 350:10 100/90:10 or 100/80:10 on the rear with a slightly harder compound. The added benefit of a soft tyre on the front is better braking when really using a hydraulic front brake! For riders wanting to race around in wet conditions then use a more all round wet weather tyre design, there's soft compound versions and grip designed to shred water in corners but remember these have more tread which mean less rubber contact in dry conditions.

I just sit in a straight line for high miles and don't really race around corners, what is best for me?

Use a combination of these set ups:

1. Front and rear 3.50:10
2. Front and rear 100/80:10
3. Front and rear 100/90:10
4. Front 3.50:10, Rear 100/80:10 or 100/90:10
5. Front 3.50:10, Rear 4.00:10
6. Front 4.00:10, Rear 4.00:10

BEST TYRE/COMBINATION QUESTION

I like to go fast in straight lines and into corners, what is the best set up?

Use a combination of these set ups:

1. Front and rear, 3.50:10
2. Front 3.50:10 and Rear 100/80:10 or 100/90:10

WHEEL RIM QUESTION

There are different wheel rims available, which is best?

You have a few choices;

- standard width split rims
- wide split rims
- tubeless rims

Use this combination to give the best handling:

- Front and Rear, standard rims
- Front standard rims and Rear wide rims.

Using a wide rim on the front makes the bike snake around like you keep

riding on white lines and cats eyes, this doesn't happen with the standard rim on the front. Using lower profile 100:90 – 100:80 on the front will make this effect even greater. Fit a wider tyre on the front and back and it will make a bike try to stand up going round corners.

What effect does a wide rim have?

A wide rim effectively makes the tyre have more area that contacts the ground (called the foot print) This gives more grip. A wider rim effectively lowers the profile of the tyre, so the rolling circumference alters and so does gearing which can also be an advantage.

Does a wide rim fit the scooter ok?

There are different ways to fit a tyre onto a Lambretta.

- A wide rim with a 3.50:10 should fit straight onto a Lambretta OK
- With 100mm wide tyres, assemble the wheel with no air pressure in the tyre and pump it up once fitted to the hub
- With 100mm wide tyres, it's an advantage to remove 2-3 fins on the hub, along with a small part of the mag housing so the tyre slides in easy with full air pressure (sometimes the rear mudguard may need trimming to do this) This is well worth doing as swapping tyres at the side of the road after a puncher can be a real pain
- Wider tyres can rub on the engine casing, this can be cured, you can grind the area off the casing 2mm should do. Rear hub bearing positioning, engine casing machining, layshafts, rear hubs and rear hub cones all vary. One tyre can be clear and another can rub, you can space the hub out using MB extra thick cone washer.

Does tyres sizes effect my gearing?

Yes they do. You can raise or lower your gearing easily by fitting a different profile tyre. A 100/90:10 tyre can be used to raise the gearing slightly and a 100/80:10 can be used to lower the gearing. The difference can be likened to raising or lowering your engines front sprocket.

If my scooter doesn't pull 4th gear ok can I improve it by changing a tyre size?

Yes, if you use a 100/90:10 or a 3.50:10 which has a similar diameter and rolling circumference and your scooter struggles in 4th then try a lower profile 100/80:10 tyre on the rear. Altering a tyre size on the front makes no difference to gearing only handling. (But could effect how accurate the speedo may read) Fitting a 100:80 tyre will lower the ride height on cornering, be warned.

GEARING QUESTIONS

If my scooter seems to scream and over rev in 4th gear can I raise my gearing with a tyre size?

Yes you can, increase your size on the rear to a 100/90:10 or 3.50:10. If you

are already using these tyres then you need to look at your gearing or clutch set up. You could try a 400:10 on a Vintage Retro Scooter.

GEARING QUESTION I ride both two up and on my own, I know the extra weight effects pulling power what can I do?

Extra weight will always put a strain on a Lambretta engine.

In the grand scheme of things a Lambretta is not a very powerful engine so by adding another body the engine will naturally find it harder to pull, especially up hill, into the wind and if you are out of the engines power band. For these reasons, gearing is very important and a tyre effects gearing so much. If you find you are happy with the gearing driving on your own, but the engine doesn't like two up riding why not keep a spare tyre with a lower profile! It is much easier to change a tyre than it is to change a gearbox or sprocket sets.

Tyre sizes vary from manufacturers even though the tyre says the size. You can adjust gearing by swapping makes of tyres. Always compare each tyre fitted to rims fully pumped up or get to know your rolling radius for tyres you are considering. Do not compare tyres on their own without fitting them to rims and pumping them up, these vary well beyond a joke.

You can read more about tyres here

- Tyres – whats right
- Tyres – Types and styles
- Tyres – Tubeless
- Tyres – Fitting split rims
- Tyres – Fitting tubeless rims
- Tyres – Tyre store

Mark Broadhurst. If you have any questions mail mark@mbscooters.co.uk