

# In depth Engine – Inlet Rubbers

## LAMBRETTA CARB MOUNTING RUBBERS

From day one standard Lambrettas have always used solidly mounted carburettors. And for many years tuned Lambrettas used solidly mounted carbs.

It wasn't until the early 80's when the Amal MK2 came out that we saw rubber mounted carbs. Okay the Japs had been at it for some time, but as we all thought the Amal MK2 was the best carb in the world we all went down that route on the bigger tunes when we wanted to go faster!

But there was problems – the carb was heavy and was never designed to be held just by a rubber. It was designed to be suspended by a rubber airbox taking the weight on the other side! The other problem was the Amal carb came with Wurth thin jubilee clips which cut into the rubber!

In the early days of tuning, solidly mounted Dellorto PHBH carbs were very popular. These were okay on mild non revving engines with standard or old powerless box pipes. Even some of these carbs were 4 stroke types not really suitable for Lambrettas but they worked – put that down to 4 star petrol!

But issues arose with certain tunes – ridden at certain revs using expansion chambers. At these rev ranges the engine created internal vibrations in the float bowl – this caused the fuel to froth in the float bowl especially with small fuel valves used at the time and the fuel turned in fuel and air – not solid fuel.

One particular Honda stage 5 I did was super reliable with a Clubman. Once moved to an expansion chamber it would ride for miles and miles then at certain speeds in certain conditions it would seize the piston. Eventually after checking everything we swapped to a rubber mounted carb with exactly the same jetting – the problem was cured!

For me that was it – I never went back to solidly mounted carbs and these problems disappeared. But others carried on with solidly mounted carbs and still use them today – and they still have the same problems with their engines that they had in the 80's! Okay on mild, low revving, low horse powered tunes not driven to the max!

Amals were good at the time but heavy, crude and would wear out. We used them for years until we found the Dellorto VHSB carbs and made manifolds to suit the very popular at the time – TS1 cylinder. The problem was the VHSB was big and hard to fit and jet in. We found the smaller, easier to set up VHSA carbs which was much better! These fitted into the Amal rubber mounts so you could use the original manifolds or the better MB inlet manifolds.

Today nearly all Lambretta cylinder kits and inlet manifolds use a rubber mounted carb of some description.

This doesn't come without issues that have always been around, carb rubbers

spit which hasn't helped with modern ethanol fuels which attack rubber.

#### VERY IMPORTANT – FITTING TIPS FOR CARB RUBBERS

It's very easy to post a photo on Facebook saying 'look at this has anyone else seen this'? Well to say that you haven't had a Lambretta long! The rubber is a weak link as the carb is not supported! Add a filter on a carb and you're not just adding weight but you are adding a longer lever shaking the carb even more!

Take a short piece of steel mounted in a vice, grab a mole grip and try to bend the steel back and forth – it's hard to move let alone break it. Take a long length of steel, and keep shaking it back and forth and you will eventually break the steel near the vice – its the same effect – but rubber is easier to break especially if you're adding a knife to it like an over tightened jubilee clip!

Most of the time you can put rubbers splitting down to any of these facts. Here's our advice.....

- Always fit carbs, manifolds and rubber manifolds dry! That's no oil, fuel or grease on the rubber. A dry rubber on alloy grips tight so you don't have to over tighten, even a fine smear of petrol means the clips need tightening up even more which will split the rubber. So if your carb is on and off whilst you jet in, keep wiping the parts
- Always use wide Jubilee clips, thin clips cuts into the rubber
- Fuels distort the rubber, once distorted they get weaker, MB rubbers use fuel resistant rubber
- Tighten the carb so you can only just twist the carb in the rubber, then nip it a bit more so the carb doesn't move without using lots of pressure. Remember when an engine gets hot you may need to nip up the rubber a bit again
- To take the weight, if you can, glue some foam or soft rubber to the head cowling to support the carb – this stops rubbers splitting in use. Or if theres no way of doing this use a MB holding bracket
- If in doubt – always carry a spare!

#### CARBS USING RUBBER MOUNTS

There's lots of carbs these days using rubber mounts, especially if it's a larger carb that's aimed at a performance engine.

#### DELLORTO CARBS

Dellorto do various carbs, both in solid and rubber mounted versions most commonly the 22 – 26mm PHBL and the PHBH 26 – 30mm. VHSA and VHSB never came solid mounted.

- Rubber mounted PHBL 22 – 26mm carbs use a spigot of 30mm
- Rubber mounted PHBH 26 – 30mm carbs use a spigot of 35mm
- Rubber mounted VHSA 28mm carbs use a spigot of 35mm
- Rubber mounted VHSA 30 – 32mm carbs use a spigot of 40mm
- Rubber mounted VHSB 34 – 39mm carbs use a spigot of 44mm, some carbs use

a twin groove some use a single groove, MB rubbers suit either carb with a single groove

## AMAL CARBS

The old Mk1 and previous models used a flange solid mount. The MK2 moved to a rubber mount. Amal offered 3 size carbs, 22 – 26mm, 28 – 34mm, 36 – 38mm.

- Rubber mounted MK2 22 – 26mm carbs used a spigot of 35mm
- Rubber mounted MK2 28 – 34mm carbs used a spigot of 40mm
- Rubber mounted MK2 36 – 38mm carbs used a spigot of 45mm

## MIKUNI

Mikuni have been around a long time, they have made rubber mounted carbs for just as long. Mikuni carbs vary in their rubber mount designs. The spigot usually tends to be shorter than their equivalents which does cause a problem. If you use the popular Mikuni TMX 35mm with the common Amal designed rubber you need an alloy ring fitting in the mount first, this takes up the room Mikuni lack and prevents the rubber giving up and splitting. The older versions used a longer spigot and the carb needs machining to suit modern rubbers. MB didn't bother much with the smaller 24mm carbs or the 28/30mm carbs mainly due to all the extra spares required. We did move from the Dellorto VHSA 34mm to the 35mm Mikuni and we stuck with it for the TS1/RB motors.

- Rubber mounted TMX 35mm carbs used a spigot of 40mm

## KEIHIN CARBS

There's a multitude of Keihin carbs out there from Genuine which are very good to at least 6 copies. Some inferior, but some of the commonly used versions were very good – Stage 6, Koso, bgm and Polini. The advantage they have is they are lighter. But these carbs do have their faults. These are usually the popular 28 – 30mm carb size. Because of the faults explained in our carb section – we stopped selling, using or giving advice on these carbs – use them at your peril, especially if you use one on a powerful engine with a small float valve. They also offer smaller and larger carbs up to 40mm, both still very good especially the large Airstriker carb. But because of spares we don't stock them.

- Rubber mounted PWK 28 – 32mm carbs use a spigot of 35mm

## MORE CARBS

These days there are more carbs. The world is full of new heavier smart carbs! Is there any need? Does it lift any power over what we've always had. Well maybe! But to be honest there's nothing wrong with the good old Dellortos, set up right they are good enough for any all round Lambretta. If we are talking full spec race motors then yes you are going to aim for the better bigger carbs to suit you. These sell in such small amounts we don't even stock them so don't make rubbers.

Carb rubbers can be modified to suit different carbs. The Dellorto VSHA has a groove in a different place to the Amal rubbers used. You can carefully cut the groove out and still use the rubber – as the clip deforms the rubber into the carb groove.

## RUBBERS OFFERED FROM MB SCOOTERS

Over the years we bought rubbers from lots of suppliers selling mainly Malossi. All of them kept increasing prices but quality never went up. We would talk to them about quality but it made no difference and they never kept enough stock to suit our sales – so we had them made.

We've tried different manufactures and different materials and different hardnesses over the years. We moved to Viton to cure the fuel issues with rubbers. These were coloured Brown so we could keep an eye on any comebacks, which there wasn't. To improve even more we moved from Viton to an improved rubber, as we found Viton in some circumstances didn't have strength. Now with our new rubber we coloured them Black to blend in with bodywork rubbers.

We constantly try to improve our rubbers. But with heavy handed people out there, we're constantly chasing our tails as there is no such thing as the perfect carb rubber that is not supported! The trick is to hold the weight of the carb if you can and do our tips above.

With carbs on the left hand standard side this is fine, you can use a self sticking foam pad or soft rubber on the head cowling if the carb sits above the cowl. This holds the carbs weight but at the same time it can vibrate with the engine as it needs too. It's the same as a carb mounted in a motorcycle engine, rubber mounted off the cylinder and held in place with a rubber mounted air filter box. If the carb sits a little off the head cowling and a block of foam won't work then you need a special bracket like the MB version and these suit the Reed valve converted cylinders.

With carbs on the right side for the TS1, RB, SS, SST, SRT, Imola, Monza there isn't much you can do. You can't do much about supporting the carb. Add to the fact that most people set up engines with carbs resting on the cables – then with the engine moving up and down it's constantly working on the carb rubber making the carb fall off or help splitting it. With our TS1 inlet manifolds we addressed this by lifting the carb away from the cables.

In extreme circumstances you could loctite the rubber to a manifold thats constantly wanting to come off. You only need a fine smear for this to work.

There's a multitude of carb rubber designs.

- Rubber tube type mounted onto a manifold and onto a carb
- Rubbers which are flange mounted to a manifold and tube mounted to a carb
- Rubbers specially made to suit certain reed cylinders

## TUBE MOUNTED RUBBERS

- MBP0160 – fits Dellorto PHBL 22 – 25mm, Mikuni TMX24mm. Single lip carb

side, no lip inlet manifold side. 30mm spigot size

- MBP0161 – fits Dellorto PHBH 26 – 30mm, VHSA 30mm, PWK 24 – 30mm. Single lip both sides. 35mm spigot size
- MBP0162 – fits Dellorto VHSA 30 – 32mm, Amal Mk2 28 – 32mm, Mikuni 35mm. Single lip both sides. 40mm spigot size
- MBP0495 – fits Dellorto VHSB 34 – 38mm. 44mm spigot size, MB rubbers suit either a single or double lipped carb. Double lipped rubbers don't fit single lipped carbs

#### TUBE TYPED STEPPED RUBBERS

To get around fitting different carbs to different non matching manifolds. Like a TS1 these should use 40mm to 40mm to fit an Amal carb. These days people are rightly fitting a smaller carb and find the same power. So now you can fit a 30mm carb with a 35mm spigot to a 40mm manifold. Yes its not strictly right but it works. Fitting a 30mm carb to a 25mm inlet manifold can increase power so thats a rubber with 35mm one end and 30mm the other. Or you can use a stepped rubber to mount to the standard 40mm manifold then use the larger 34mm Dellorto with a 44mm spigot. This saves buying a special inlet manifold to suit.

- MBP0435 – fits 30/35mm spigots
- MBP0327 – fits 35/40mm spigots
- MBU0089 – fits 40/44mm spigots

#### FLANGE TYPE RUBBERS – 60mm BETWEEN BOLT CENTERS

We used the standardised 60mm bolt hole centres to suit what others we're using so our rubbers fitted everything on the market. 60mm works from our smallest carb 22mm to our largest carb rubber at 36mm. Originally we used an alloy flange inside the rubber like Mikuni did, it wasn't long before we realised alloy just wasn't strong enough and distorts – so today our flange rubbers are now made with a steel flange.

With some of our MB flange rubbers we redesigned them to help seal on our manifolds better. Our 4 rubbers are all interchangeable on the same manifolds. We have put a locating sealing lip on the face of the flange. This lip fits into a groove in some of our flange manifolds. This lip is shaped into the manifold bore, as you increase the rubber size there is still a lip until you go over 30mm carbs. Then the flange rubber doesn't have this lip, the internal hole of the rubber mates to the manifold and you can flow the manifold a bit if you want. You can carefully cut this thin rubber lip off if fitted to a manifold with no locating groove.

As 60mm is quite a big gap, flange manifolds can distort in the middle – to get around this we added a small lip on the gasket flange area so they seal even better.

You can fit the rubbers dry or use some fuel resistant sealer.

- MRB0817 – fits 30mm spigots
- MRB0833 – fits 35mm spigots

- MRB0819 – fits 40mm spigots
- MRB0874 – fits 44mm spigots

## SPECIAL REED MANIFOLDS

With our MB Shorty reed assemblies you can bolt the rubber direct to the rubberised reed block onto the casting and they should seal. Over time these things can slightly distort so we suggest using a fuel resistant sealer or as they come in the assembly use our special white gaskets.

- MBP0464 – special carb rubber to suit MB Shorty reed valves, side draft, fits Dellorto PHBH 26-30mm, Dellorto VHSA 28mm, PWK 22-30mm, carbs can be supported with a rubber block with a MB bracket
- MBGM0074 – the old carb rubber to suit the MB Shorty reed valves, was down draft, fits Dellorto PHBH 26-30mm, Dellorto VHSA 28mm, PWK 22-30mm. Carb banjos are close or touch to some head cowlings, they may need to be modified. Also used on Vespa PX/PE reed valves, you can support the carb with rubber to stop the carb touching steel which you don't want

## FUEL RESISTANT SEALERS

With Lambretta engines nearly every joint should be sealed, especially if no gasket is used. Sealers vary in quality and how they work in certain places. Even gaskets need a sealer just to be on the safe side. And it's always a good idea to do a pressure test on the cylinder once assembled and always look at the carb rubber joints.

What sealer to use? Plenty give advice – plenty have no idea what they are talking about as they are not qualified on the subject. I've used many different sealers over 40+ years. Some good and some bad – it takes years of experience, skill and know how to work out if a sealer is good enough for the job its been used for. I've used cheap sealers on cylinders for years then fuels changed and there was a need to step up.

Some sealers wash away with fuels, some go hard and brittle, some just disappear.

In the end I came to the conclusion – a cylinder, cylinder head, base packer and head gasket is moving all the time as an engine gets hot and cools down. Some engines run hotter than others and some use different fuels. There is so much going off that you can not see. What is needed is a sealer that resists fuels and one that doesn't really go off so its constantly still working at all temperatures. I used to use loctite as a head sealer but I saw issues as it goes hard, with this compression and expansion going off all the time on the cylinder it created leaks – leaks cause melted pistons.

Some well know sealers get mentioned all the time as good – Welseal, Hylomar, 3 bond, Yamabond, Hondabond or Billy bond and others. Some of it is such a pain to clean off on a rebuild it takes so long I hate using them and they don't always work! I've used a special sealer that cost £250 for a small tube – yes it was brilliant but we found cheaper sealers that work just as good.

We used and sold Reinzosil but it got hard to find.

Today we use and sell an excellent sealer called Athesil for us at this time it ticks all the boxes for petrol, expansion and parts under pressure.

IS THAT IT?

By now you should know a little bit more on a very simple part of a Lambretta engine. Hopefully you can now have a trouble free engine. I've not split a rubber on my own bike for 20 years and that was a Malossi item. I heard it high revving, stopped, saw a split and swapped the rubber before the rest of the crew caught me up coming home from Austria. To my knowledge I don't think any engine Ive set up and sent out has spit a rubber either. And my very good friends and customers who I have ridden with, with my engines haven't split a rubber either.

Rubbers can be reliable in the right hands, having said that – yes you can not control the manufacturing processes sometimes. When we see a problem, trust me I'm on the email talking about improvements.



*Tube type carb mounting rubber, same size both sides*



*Stepped tube rubber, to fit 2 different sizes*





*Flange manifolds from small to large using the same 60mm center holes*



*Flange manifold showing the thin sealing ring just out of the main hole*



*MB Special Shorty side draft inlet manifold*



*The back of the Shorty inlet manifold showing the large flat surface area to seal, but you can use a gasket as well*



*MB Flange inlet manifold showing the extra sealing ring cast into the manifold*

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