

Developments – Clubmans

TECH ENGINE CLUBMAN DEVELOPMENT

We're not going to tell people how to make a Clubman Exhaust. Its not a secret, here's a insight to the amount of time and effort that has gone into the latest developments in Clubman designs by Mark Broadhurst.

One exhaust may suit an engine which doesn't suit another! This could be based around port timings, gearing or how someone rides their bike and other factors. Mark's been making Clubman style exhausts since the early 80's when his Standard exhausts and a very old 50mm Ancillotti Clubman kept cracking and because of this Mark wanted to know how to weld and fabricate as he was sick of asking work colleagues to weld this and that.

And that's how he can weld, self taught through help with work colleague's. If you're going to learn – do it the hard way, learn on rusty bits and pieces of metal.

Anyway, its a long period of time to learn how Clubmans work or Big Boxes as they have become known since our MBgm Clubman was produced. These days Mark doesn't offer a Clubman hand made service as he's too busy. Mark has made hundreds of Clubman exhausts often getting mistaken for another certain person within Doncaster. But this is no problem. Marks always liked the wolf in sheep's clothing approach to all things Lambretta and engineering..... a fast impressive quiet bike over a noisy hard to ride peaky monster.

Years of making and trying slightly different Clubman designs lead to lots of dyno developments in 2010 to find the ultimate Clubman.

This started by taking various Clubmans and comparing results.

There was days, weeks and months of testing and reworking these exhausts Mark learnt so much more about them. Even 2-10mm here and there can transform an engine. Mark tested everything, tailpipe lengths and diameters. Baffle designs, front cone and U bend lengths and diameters. When he first set out he totally expected to get the results required by making an expansion hidden by the standard box!

The results we totally unexpected even though a multi tapered Clubman gave 28bhp on a TSl...! There's not much Mark doesn't know about these Big Box Clubmans – its a total science and different to all his Expansion knowledge that he has learn't through testing over the 30 year period.

Here's just some of many months and years of testing, the end result was the MBgm Big Box Clubman.



SIL Indian big bore exhaust, showing a small cone leading into the main exhaust box and a strange angled U bend which makes fitting the main exhaust difficult. These really worked nice on a mild tune.



The very popular AF or KBA Indian Clubman, although not a bad Clubman and good as a budget pipe it is not the best on the market. The Indian big bore can show a better power spread and is much quieter



This is the Italian Casa Clubman with a really wide stubby cone, these are known to fall apart.



This is a AF / KBA Clubman, these are made by the same firm KBA Auto's. AF Clubmans are made exclusively for AF and the company then floods the UK with their version.... Exclusively! Right. This is a version we modified at the

front and inside to improve this version



We have modified all types of Clubmans this is the Italian Sito version,

providing all the modifications are done correctly they all work... within reason



You can use any standard 150 type box and convert it to a Clubman. We have used Indian, Sita, Casa and any others that comes along



The Italian Sito Clubman is very popular, sometimes a pig to fit and as with lots of Standard style exhausts may need some persuading! This exhaust gives a high peak power of 7500rpm + and a low torque figure. Its ok, better than the AF KBA version but the torque drops so quick it makes pulling 4th gear hard especially if you over gear it. Scootopia copied this version! This ones had some internal mods tested.



Here's a fact, the best power comes from a gutless exhaust body... but the noise is beyond a joke so to reduce it, we tried lots of ideas. This silencer is really complicated, its hidden under the bike and is not visible! Does it

work?



As part of finding ways to reduce noise we tried lots of ideas, at the end of

the day it needs to be simple, reliable and fit, not like this. This one had lots of boxes added onto the side to test area and volume



We originally started life with multi tapered down pipes using our Expansion chamber knowledge, which we expected to develop an exhaust crushed into the box, we even made expansions the correct size to fit in the space, but moved on.



This shows the amount of times we have cut and modified the internals just on this one pipe



These are just some of the pipes we tested over a 3 month period..... no one can tell us how to make an Clubman exhaust but we could tell you. Without the testing, development and experience, all you can do is try, try and try again

and keep trying, without time and a dyno you could not learn what we have done. Whatever you do will always be a compromise somewhere! and we know that as well.

The upshot of all this development work was Mark found a design that is quiet and works like no other exhaust. Our MBgm Big Box Clubman is designed to give a nice wide spread of power to work on as many unknown engines as it is fitted to. This spread can be improved if the port timings are corrected and you can make a nice engine – even better.

Done correctly you can give a flat topped torque curve giving revs and torque at the same time..... That was until others read this article and over time have taken our Clubman and developed their own one off designs. But it is always swings and rounds abouts, these expansion type exhausts only really work on high exhaust ports therefore loosing that all important low down rideable power spread that our MBgm Clubmans are designed for.

MBgm Version 1 worked great but the manufacturers miss one main important thing and that was internal exhaust wading – so was noisy!

Mark was asked by Scooter Center manufacturers of the MBgm Clubman to make it more quiet. This was done, with a mechanical internal silencer system. V2/3 worked the same as V1. V1/2 had modifications to brackets and tail pipe. The noise was reduced but demand was for a much quieter exhaust. V4 came with a standard tail pipe, this was designed by SCK – it did not work as good as the mid range was lost but the noise was improved. Mark found why this happened and could again improve the V4.

In an effort to find power and still reduce noise they did a reverse silencer like an expansion chamber under the engine. This was called the V4 Sport. Power did get near V1-3 and the noise went down! But they did not work on every engine – one worked one didn't! Riding one you had the noise under you all the time.

We've explained it's swings and round abouts with Big Box Clubmans and a lot depends on port timings, shapes and sizes, compression ratios and carb sizes. Some Clubmans like the KBA/AF Clubman gives a real nice low down power ideal for an engine working around town and cities, put on a bike on the open road and the power runs out of steam the faster you tried to go.

Others like the Sito Plus/Scootopia has less power low down but gives higher revs. It revs but the torque drops as the revs go up, so the bike is fine in most conditions but add some weight, wind or a hill and it looses power!

Gori's came in 2 types, one worked like the Sito, the other offered lots of revs and noise but lost out on torque but worked on big exhausts ports better.

The Avanti came, made in the UK, we tried working with that manufacturer and gave up. Again Avanti offered 2 versions and again you had a lowered powered version against a higher powered version. But 9/10 times the best never matched the MBgm Clubman. The lowered power version was better than the

Sito/Scootopia versions.

As the MBgm Clubman took the market for many years! SIP did their usual and nearly did an exact copy of the V4 – yes power was down but was well made and quiet. Again they copied the V4 Sport which did work really well giving great power – but it was done with a massive design fault and would create heat inside the engine.

From 2010 Mark tested and tested different Clubmans that came available and he tested and tested modifications to his own MBgm V1/3 which worked on everything. It wouldn't be a surprise if 5000 new tests of Clubmans were done to try and improve the V1/3 out put and spread of power.

Slowly – little by little Mark learnt even more, by going backwards – he moved forwards.

The V1/3 had a false peak at around 4000 rom, great for town work but this showed a dip in the all important torque curve. The trick is – improve the torque yet keep revs. After hours of testing and dyno runs throughout 2019 – 23 we managed to smooth out the false peak, which spread power from no revs to over 8000rpm. This made a better horse power graph and improved the torque curve and found on most engines 2-3bhp from 4-8000rpm. Doesn't sound much but it's massive on a 20bhp engine!

There was various ways to design the newer Super Clubman. Shortened U bends, cut mid section, lengthened rear sections it went on and on. In the end we settled for a modified Clubman that worked.

As we were testing, we were developing a touring expansion chamber – totally the same story but separate, with hundreds of hours testing verses the Super Clubmans.

At the time of this update 2023 Mark has designed an expansion to look like a Clubman with underneath silencer and over the top silencer.

This gives even more power where people need it. Extra power from 4000 – 7000rpm, losing nothing lower down and nothing on the over rev.



Modified MBgm Clubman, gives extra pier and looses nothing



It was the same on the U bend side more clearance was needed, so Mark lifted the U bend as well.



Setting up the new pipe for the end can



The finished item, ready to race



This is the development of the expansion chamber to compete with a Clubman in terms of power spread not peak power.

Thats 40 years of development for you!

If you have a question ask Mark mark@mbscooters.co.uk