Fitting, Engines – Setting up – 3

TECH ENGINE SETTING UP PART 3

800 – 1000 miles……..

At this point you should ideally retighten everything from the rebuild. Engines heat up and cool down, this can loosen some fasteners especially if packers and gaskets are used. It maybe a pain, but its not as much as a pain as a blown motor – you have been warned!

Always retorque…….

- Cylinder head nuts
- Cylinder inlet manifold nuts and bolt
- Reed manifold nuts/screws
- Exhaust nuts
- Side casing nuts/screws
- Wheel rim nuts/screws
- Exhaust fasteners

Once youve done around the 1000 miles of varying speeds in varying conditions as per procedure if your happy the motor is running well its time to set it up by fine tuning the jets.

1) With the engine fully warmed up – set the main jet, run on a quiet – smooth – flat road. Hold the throttle fully open in 3rd gear. If you want dip your head down to really get full speed. The engine should just have a slight miss fire – like the choke is on, it's called 4 stroking like a machine gun fire. If this is happening, then drop a main jet at a time until it just cleans and still revs out. This is all presuming the engine is good, with a good exhaust tune combination. Most MB motors are like this, others with miss matched porting and exhausts may do some funny things. You have to work out is the engine running off the pipe and wont rev or do you have an electrical problem. This can be common place, if the CDI is braking down it won't let the engine rev fully and is telling you it's running rich – if your coming down on the main jet beyond what is considered normal then suspect the CDI or electrics. This can only really be done on the road as it doesn't always show up on a dyno. Notice I've not mentioned a dyno at all. The road is your dyno, you do not sit on a dyno driving to a rally!

2) With main jet set you can really sort the idle/pilot jet as main jets can effect this low running area. The motor should tick over smoothly, it should, when you slightly lift the slide and let go return to the same idle speed. If it doesn't return and feels woolly/weak and takes some time to return to idle then it could be weak. You can adjust the air screw in the correct way to slightly richen up the idle system. If the air screw makes no difference then try one size different on the idle/pilot jet. If there is a lot of fuel spitting out of the slide then its rich, lift the slide and drop it, it the motor comes down too quick and wants to stall like the choke is on the

idle/pilot jet is too rich.

Idle jets are harder to set up on a piston ported engine, especially if the inlet port is too big. Symptoms can be you have to over rev the motor to set off otherwise it stalls. Reed valves work with weak and rich idle systems, Reeds usually need a jet bigger than a piston ported version or thereabouts.

If your checking your main jet flat out, if the idle is good you should be able to shut off and the revs come down. ALWAYS cover the clutch when your doing this. Ideally you nip the clutch in and blip the throttle, use your rear brake and let the engine come down to tick over area/road speed. The classic of a weak idle is – flat out – shut off and grind your engine down to next to nothing, the engine runs out of fuel and a melted piston. Under normal town/country roads its fine, its when your flat out on a motorway and shut off. Do the blip/brake trick if your not sure.

3) The hardest part is connecting the smooth setting off at next to no revs coming off the idle/pilot system to get to the main jet flat out. You've got to get through the slide/atomiser/needle/needle position – this can be the hardest area to set up. Some under jet in the running in procedure but because they are up and down on the throttle they may not notice. Then when run in they stick to the same cruising throttle position they have a problem, constant speeds are a killer. You can try on a long run at 40mph for few miles, if all is good try 45 then 50, 55, 60, 65mph etc if your having no problems, let the motor cool and look at the plug it should be a chocolate Brown – but colours depend on oil used and mixture and how you ride. I'm not a big fan of plug colours – modern oils don't always show a real colour – I've seen a Green plug – unheard of! It was the oil! IF the plug shows a Grey or White colour or light Brown – be careful – think of the speed you was driving at and throttle position and do something about it, its running weak.

Ignore the slide for now, adjust the needle clip either way and or the needle and atomiser. Usually the same sort of combinations are working on the Race-Tour kits as an example on a PHBH28/30mm

- Piston ported Av264 atomisers with a X13 or X7 P1/2 (with fine adjustment X7/13 or X13/2)
- Reed valved Av266 atomisers with X2 or X13 P1/2 (with fine adjustment X7/13 or X13/2)

Never take it as gospal, always try rich and work down – SLOWLY. As your riding a good set up would be the motor just splutters a little under normal riding between 30 – 60mph from 1/4 to 3/4 throttle. If its spluttering so bad its hard to clear until your well onto the main jet then the atomiser/needle is too rich, it's like you left the choke on. Too weak and it feels like the motor is struggling to go anywhere and you may be dropping down a gear to find revs and get the main jet to come in clear – this is DANGEROUS! Especally if your doing motorway speeds. Its nice to drive flat out or really fast in the 2nd-3rd lane of the motorway and to be able to shut off and there would be a sllght splutter which you can hold at speed and it either stays the same or your can ride through it slowing down.

Always remember clutch in – blip – blip – brake if your not sure.

Always remember running rich cools the motor – BUT can wash oil off the cylinder.

Always remember jetting alters with the weather and altitutes, a well set up engine shouldnt be effected too much unless its extreme!

Hopefully by now you have a well set up engine.

If you have no idea what I've tried to tell you – please get a proffesional or someone who knows what they are doing to help you.

MAIN JET TABLE

MAIN JET TABLE

CARB MAKE	CARB TYPE	CARB SIZES	MAIN JET SIZES USED weak		rich	MAIN JET SIZE INCREMENTS	THREAD DIAMETER
Amal	All	22 - 38mm	110	-	500	In 10's	
Dellorto	Standard	16 - 22mm	50	-	130	In 1's, 2's and 3's	5mm
Dellorto	P Range	20 - 24mm	70	-	138	In 1's, 2's and 3's	Push in
Dellorto	Big Bore	22 - 39mm	80	-	200	In 2's and 3's	6mm
Mikuni	TMX	35mm	250	-	380	In 10's Genuine in 5's BGM	
PWK type	PWK type	24 – 30mm	100	-	172	In 10's Genuine in 5's BGM	

AMAL NEEDLE JET/ATOMISER TABLE

AMAL NEEDLE JET (ATOMISERS) TABLE

AMAL CARB TYPE	AMAL CARB SIZE	AMAL NEEDLE USED	AMAL NEEDLE JET SIZES USED weak					rich
MK2	22 - 26mm	2B1	105	106	107	108	109	Short type
MK2	28 - 34mm	2D1	105	106	107	108	109	Long type
Smooth bore	34 - 38mm		105	106	107	108	109	Long type

DELLORTO NEEDLE JETS/ATOMISER TABLE

DELLORTO NEEDLE JETS (ATOMISERS) TABLE

DELLORTO CARB TYPE	DELLORTO CARB SIZE	DELLORTO NEEDLE JETS (ATOMISER JETS) weak						rich
PHBL	22 - 25mm	AQ260	AQ262	AQ264	AQ266	AQ268		
PHBH	26 - 30mm	AS260	AS262	AS264	AS266	AS268	AS270	Long type
PHBH	26 - 30mm	AV260	AV262	AV264	AV266	AV268	AV270	Short type
VHSA / VHSB	28 - 39mm	DQ260	DQ262	DQ264	DQ266	DQ268	DQ270	Long type
VHSA / VHSB	28 - 39mm	DP260	DP262	DP264	DP266	DP268	DP270	Short type

COMMONLY USED

PWK TYPE NEEDLES

	NEEDLE LETTER	NEEDLE TAPER IN DEGREES	TOP GROOVE TO BEGINNING OF TAPER	NEEDLE DIAMETER	
RICH	HKJ	2.45	25.85mm	2.445mm	RICH
	HLJ	2.45	27.20mm	2.445mm	
	JJK	3.00	25.40mm	2.455mm	
	JJL	3.00	25.40mm	2.465mm	
to	JJM	3.00	25.40mm	2.475mm	to
	JJN	3.00	25.40mm	2.485mm	
	JJQ	3.00	25.40mm	2.505mm	
	JJS	3.00	25.40mm	2.525mm	
	JLJ	3.15	27.20mm	2.445mm	
WEAK	KLK	3.15	27.20mm	2.455mm	WEAK

Commonly used needles in piston port and reed engines

AMAL POWER JET TABLE

AMAL POWER JET TABLE

AMAL CARB TYPE	AMAL CARB SIZE	FROM	-	TO
MK2	28 - 34mm	15	-	120

CHOKE JET TABLE

CHOKE JET TABLE

CARB MAKE	CARB SIZE	CARB TYPE	CHOKE JET USED		
			weak		rich
Amal	22 - 26mm	MK2	15	-	60
Amal	28 - 34mm	MK2	15	-	70
Dellorto	22 - 25mm	PHBL	35	-	60
Dellorto	26 - 30mm	PHBH	35	-	60
Dellorto	28 - 32mm	VHSA	45	-	55
Dellorto	34 - 39mm	VHSB	45	-	55
PWK type	24 - 30mm	PWK type	35	-	55

IDLE/PILOT JET TABLE

IDLE (PILOT) JET TABLE

CARB MAKE	CARB SIZE	CARB TYPE	FROM weak	-	TO rich	AIR JET USED
Amal	22 - 26mm	MK2	10	-	40	-
Amal	28 - 34mm	MK2	15	-	70	-
Dellorto	22 - 25mm	PHBL	40	-	65	-
Dellorto	26 - 30mm	PHBH	40	-	80	-
Dellorto	28 - 32mm	VHSA	35	-	50	CD1
Dellorto	34 - 39mm	VHSB	35	-	50	BE3
PWK TYPE	24 - 30mm	PWK	35	-	50	-

SLIDE TABLE

SLIDE TABLE

CARB MAKE	CARB SIZE	CARB TYPE	SLIDES AVAILABLE						
Amal	22 - 26mm	MK2	2	2.5	3	3.5	4		Zinc
Amal	28 - 34mm	MK2	3	3.5	4	-	-		Zinc
Amal	28 - 34mm	MK2	3	3.5	4	-	-		Chrome
Dellorto	22 - 25mm	PHBL	30	40	50	60	-		Alloy
Dellorto	26 - 30mm	PHBH	30	35	40	45	50	55	Alloy
Dellorto	28 - 32mm	VHSA	50	55	60	-	-	-	Alloy
Dellorto	34 - 39mm	VHSB	30	35	40	45	50	-	Alloy
Mikuni	35mm	TMX	-	-	-	-	-	6	Alloy

COMMONLY USED

To see what sets are available within a working range used for most Scooter carbs

In the table below there is an error on slides, Dellorto slides are…… smaller the number the richer the slide is

CARB SIZE	DELLORTO		STAGE TUNE	CHOKE JET Weak - rich	IDLE JET Weak - rich	AIR JET	SLIDE Weak - rich	NEEDLE Weak - rich	NEEDLE JET Weak - rich	MAIN JET Weak – rich	POWER JET	NEEDLE VALVE Small - large
25mm	PHBL	No holes drilled in air filter box	3 - 4	50 - 60	48 - 55	-	40 - 50	D22 - 26 - 36 - 37	AQ262 - 264	80 - 92	-	2.50 - 3.00
25mm	PHBL	5 x 16mm holes drilled in air filter box	3 - 4	50 - 60	48 - 55	-	40 - 50	D22 - 26 - 36 - 37	AQ262 - 264	92 - 105	-	2.50 - 3.00
28mm	PHBH	Open bell mouth	4 - 5	50 - 70	50 - 60	-	40 - 50	X7 - 13 - 2 - 25	AV262 - 266	115 - 125	-	3.00 - 3.50
30mm	PHBH	Open bell mouth	4 - 5	50 - 70	50 - 60	-	40 - 50	X7 - 13 - 2 - 25	AV262 - 268	120 - 130	-	3.00 - 3.50
28mm	PHBH	MB remote filter	4 - 5	50 - 70	50 - 60	-	40 - 50	X7 - 13 - 2 - 25	AV262 - 268	115 - 122	-	3.00 - 3.50
30mm	PHBH	MB remote filter	4 - 5	50 - 70	50 - 60	-	40 - 50	X7 - 13 - 2 - 25	AV262 - 268	118 - 125	-	3.00 - 3.50
30 - 32mm	VHSA	Open bell mouth	ALL	60	40 - 45	CD1	55	K21 - 22 - 28 - 23 - 27	DQ262 - 266	140 - 165	-	3.00 - 3.50
34mm	VHSB	Open bell mouth	ALL	60 - 70	40 - 45		40 - 50	SEE TABLE	DQ264 - 266	155 - 200	-	3.00 - 3.50
	BGM / KEIHIN											
24mm	PWK	Open / filtered	ALL	fixed	35 - 40	-	std	JJK, JJL, JJM, JJN	fixed	110 - 125	blank off	fixed
28mm	PWK	Open / filtered	ALL	fixed	35 - 40	-	std	JJK, JJL, JJM, JJN	fixed	115 - 130	blank off	fixed
30mm	PWK	Open / filtered	ALL	fixed	35 - 40	-	std	JJK, JJL, JJM, JJN	fixed	118 - 135	blank off	fixed
	AMAL											
26mm	MK2	Open bell mouth	3 - 4	50 - 60	20 - 25	-	2.5 - 4	2B1	106	140 - 180	-	2.5
30mm	MK2	Open bell mouth	4 - 5	50 - 60	25 - 35	-	3 - 4	2D1	107	200 - 250	-	2.5
30mm	MK2	Open bell mouth	4 - 5	50 - 60	25 - 35	-	3 - 4	2D1	107	160 - 210	60 - 70	2.5
34mm	MK2	Open bell mouth	4 - 5	50 - 60	25 - 35	-	3 - 4	2D1	107 - 108	290 - 350	-	2.5
34mm	MK2	Open bell mouth	4 - 5	50 - 60	25 - 35	-	3 - 4	2D1	107 - 108	200 - 250	60 - 70	2.5
34mm	MK2	Open bell mouth	TS1	50 - 60	25 - 40	-	3 - 4	2D1	107 - 108	340 - 400	-	2.5

COMMONLY USED JETS

Fitting instructions for Race-Tour kit – go here

Fitting instructions for Other cylinder kits – go here

Any questions email mark@mbscooters.co.uk