JRC Carburetor Tuning

The following information is offered as a guide for a practical interpretation of the workings of JRC SUPERIOR PWK carburetors. Many people are intimidated by carburetion jetting. One of the easiest ways to work through your jetting frustration is to not view jetting as one big mystery. Jetting should be broken down into many small questions, which when thought through with some technical instruction and common sense can be deciphered into to the appropriate carburetor settings.

AIR SCREW: The air screw is a small (5mm in diameter) slotted brass adjustment screw located on the inlet side (air cleaner) of the carburetor. The airscrew is a fine-tuning adjustment designed to allow the carburetor to be slightly adjusted for variances in atmospheric conditions. The airscrew works with the pilot/slow speed system of the carburetor, mainly affecting the engines initial starting, idling and initial power delivery. Proper adjustment of the airscrew can offer direct feed back on the necessary setting required for the pilot jet. The airscrew is adjusted in a rather straightforward manor.

The ideal procedure for setting the screw in the correct position is to warm up your engine to the proper operating temperature. Then turn the idle up so it is idling about 500 RPM's higher than normal. Next turn the airscrew all the way in until it bottoms out, once bottomed out slowly back the screw out a ¼ turn at a time (give the engine 10-15 seconds between each ¼ turn of the screw, to allow the engine to catch up with the adjustments). Continue backing the airscrew out until the engine idles at its highest RPM. The preferred setting window is between 1 and 2 turns. If the engine idles at its highest RPM from 0-1 turns out this means the pilot setting is on the Lean side and a larger pilot jet should be installed. If the engine idles at its highest RPM at over 2 turns out, this means the pilot setting is on the Rich side and a smaller pilot jet should be installed.

If you get no RPM fluctuation when adjusting the air screw there is a very realistic chance that there is something clogging the pilot/slow speed system. Clean the system thoroughly with contact cleaner and blow out with compressed air. Carburetor must be disassembled.

If the airscrew adjustment process is unsuccessful and leaves you confused. Set the screw at 1 ½ turns out and consult a professional for further assistance.

PILOT JET: The pilot jet is a medium size (¾-1") brass jet located inside the float bowl next to the needle jet/main jet location. The pilot jet meters the fuel required for engine starting, idling and the initial throttle opening 0-1/8. A lean pilot jet setting will cause your engine to surge at very low RPM's, bog or cut-out when the throttle is opened quickly and have trouble idling down. A rich pilot setting will result in hard starting, plug fouling at low RPM's, sputtering as the throttle is cracked opened.

The pilot jet is not difficult to set. With proper air screw adjustment and a close initial setting from your engine tuner, fine-tuning should be painless. Once set the pilot jet is not terribly sensitive. You should only be required to adjust the setting when confronted with large weather changes or altitude swings of over 2000 ft. If adjusting the pilot jet gives inconsistent feed back, or does unexplainable things. Check and clean out the pilot/slow speed system thoroughly with contact cleaner and blow out with compressed air.

Pilot jet sizes are numbered in the following pattern; #42, #45, #48, #50 etc. repeating the pattern. Sizes

available are from #15 to #50.

NEEDLE: The jet needle is the most important component in determining your carburetors jetting. The needles function has a large effect on the carburetors jetting from ¼ to ¾ throttle. In the following paragraphs we will explain the needles functions and how to adjust them.

LENGTH: The needle length is determined by the clip position (grooves at top of needle) setting on the upper portion of the needle. On most needles there are 5 clip positions. The top clip position is referred to as #1 and is the Leanest setting. The clips are referred to in numerical order with the bottom position being #5, the Richest (refer to attached jetting chart illustration). The clip/length setting covers the largest percentage of jetting in your carburetor. With an emphasis at ½ throttle, the clip (length) setting will bleed both up and down to some degree to cover a wide portion of the midrange jetting. When the clip/length setting is Lean the machine will be very zingy sounding.. Lean in the midrange will also rob power and cause the machine to run hot and seize easily

When the clip/length setting is Rich the machine will have a lazy feeling in the midrange. Exhaust note will be a little flat sounding. In extreme cases of richness the engine will even sputter or kind of crap out in the midrange. The safest way to set the clip position is to richen up the clip position setting until the machine loses a little power (feels lazy/unresponsive) then lean it back one position. Ideally you like to run the needle setting in either the 3rd or 4th clip position, if possible. The needle clip jetting is especially critical to your machines reliability because on average more time is spent in the midrange than any other part of the throttle. Most machines pull very hard in the midrange, putting quite a load on the engine. This makes a lean condition very detrimental to your reliability.

MAIN JET: The main jet affects the jetting in the upper quarter of the throttle position. Coming into play at ¾ throttle on through to full open throttle. Even though most people relate the main jet to their carburetor in general. The main jet is only responsible for the last ¼ of the jetting. The main jet does not effect the jetting for starting and idling. It plays no part on low RPM or mid RPM jetting either. The main jet is very important to your machines overall tuning, but should never be over emphasized at the expense of needle tuning or other facets of your carburetion tuning.

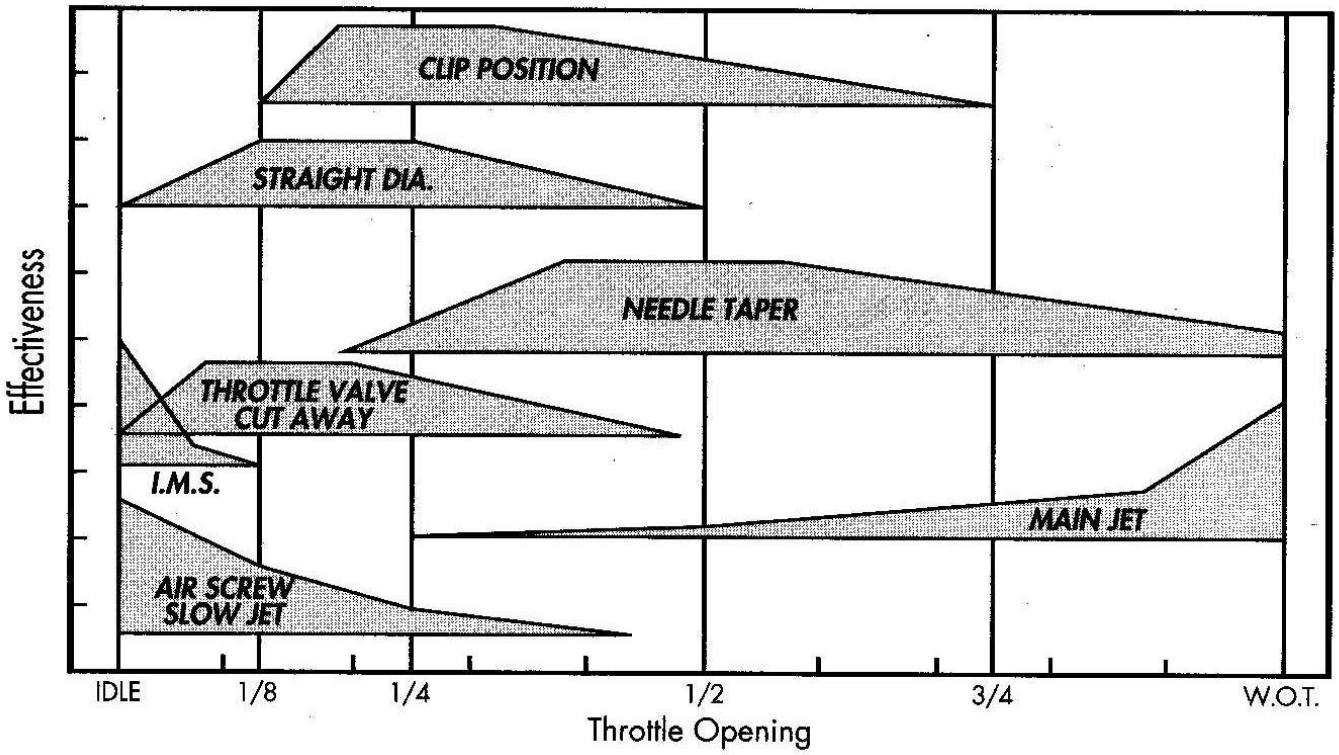
When the main jet is Lean the engine will experience detonation or "pinging". Exhaust note will be of a higher, tinier type note. Engine will over heat easy and can be down on horsepower. A moderately lean main jet can cause engine seizures. A severely lean main jet can cause the engine to burn a piston (whole in top).

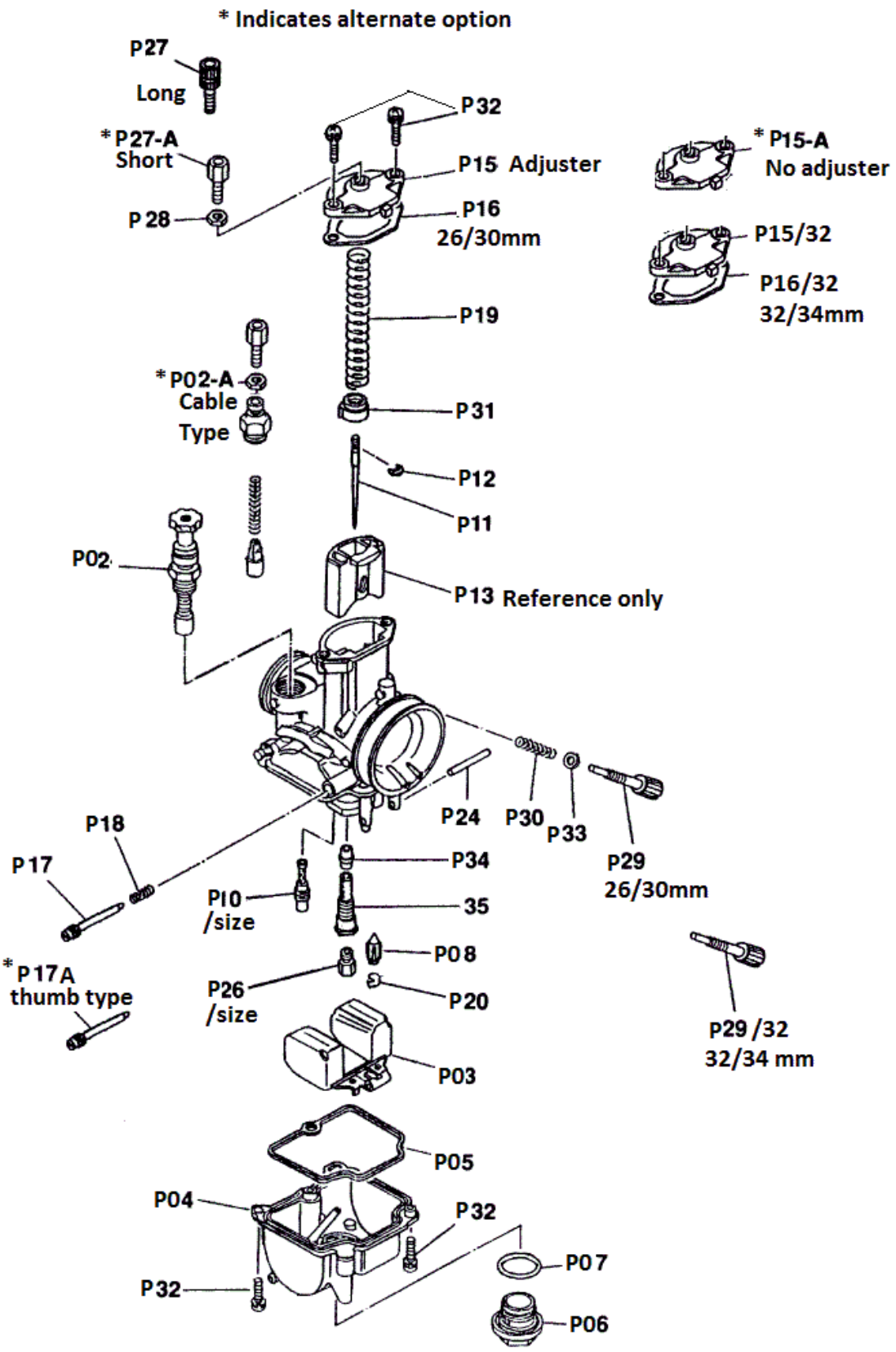
When the main jet is Rich the engine will be a bit flat or lazy at ¾ to full throttle, giving off a flat, dead sounding exhaust note. When the main jet is severely rich the engine will sputter in the high RPM’s and have a lot of trouble making power up top.

The safest way to get the main jet setting as near correct as possible is to richen the main jet setting up until the engine begins to lose power and not rev to as high of RPM as before. On a single cylinder machine this will signal that the jetting is beginning to get rich. Depending on your riding application you can lean it down a bit from there or leave it for conditions requiring extra fuel (desert racing, long high speed runs, etc.)

As a general rule, richen the jetting up as long as the engine likes it and continues to run just as well or better than the smaller size main jet previously installed. When the engine no longer continues to improve its performance you will know you have gone to far.

Make	Pilot	Needle jet	Needle	Needle pos	Main	elevation	Unit	Special instructions
BSA A10 650	35	std	std	center	125	2000	30mm	
BSA A65T	35	std	std	center	118	2200	30mm	
BSA A65L	30	std	std	center	130	2200	30mm	
BSA B25	25	std	std	center	110	2200	26mm	
BSA B44	30	std	std	center	135	2200	30mm	
BSA B50T	30	std	std	bottom	130	1000	30mm	
BSA B50MX	35	std	std	bottom	140	1000	30mm	
Triumph T100C	30	std	std	center	115	2200	30mm	
T100R	30	std	std	center	110	1000	26mm	
TR6/T110/6T	35	std	std	center	135	2200	30mm	
T120	35	std	std	center	137	2200	30mm	
TR7	40	std	std	center	140	2200	30mm	
T140	40	std	std	top	130	2200	30mm	
T160	30	std	std	top	110	2200	26mm	
T20 Cub	25	std	std	top	90	2200	26mm	
Moto guzzi 850	38	std	std	center	130	2200	30mm	
Velocette 500	35	std	std	bottom	140	1000	30mm	
Vincent 1000	40	std	std	center	140	1000	30mm	
Norton 750 com	35	std	p11/32	Center	132	2200	30mm	
Norton 850 com	35	std	p11/32	center	132	2200	30mm	
Norton 850 com	35	std	p11/32	center	132	2200	32mm	Special manifold
Norton sncarb	40	std	p11/32	top	130	2200	32mm	Special manifold
Matchless 650	35	std	std	center	135	1000	30mm	
Ariel 4 cyl	40	std	std	center	140	1000	30mm	
Ducati 250	40	std	std	center	135	1000	30mm	




* Indicates alternate option
P27
Long
* P27-A
Short
P 28
P32
P15 Adjuster
P16
26/30mm
* P15-A
No adjuster
P15/32
P16/32
32/34mm
P19
* P02-A
Cable
Type
P31
P12
P11
P02
P13 Reference only
P24
P30
P33
P29
26/30mm
P18
P17
P34
P10
/size
35
P08
* P17A
thumb type
P26
/size
P20
P29 /32
32/34 mm
P03
P05
P04
P32
P07
P32
P06

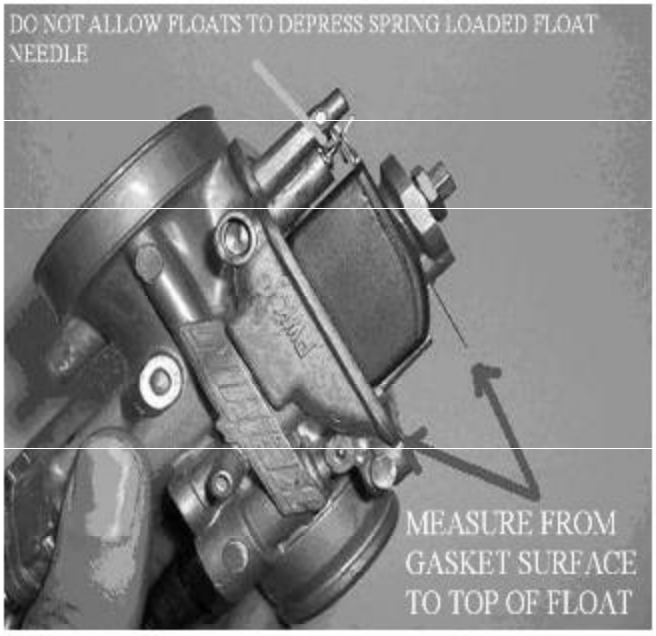
JRC SUPERIOR CARBURETOR TUNING GUIDE

JRC Superior carburetors are only pre-jetted if the application is specified upon ordering. If no application was given it was supplied with factory specs. Jetting is done for the stock motorcycle not taking into account any modifications that you bike may now have. Jetting also varies by state depending on fuel formulation.

The following is a guide line for JRC Superior PWK carburetors. Peform jetting in the order given below.

1) Correct Float Level

The correct float height for the PWK 28-34mm range is 19mm. Measure float height from the bottom of the carburetor float to the float chamber gasket surface. When checking the float height the float must be resting but not compressing the spring loaded pin in the float needle. If adjustment is needed do so by gently bending the metal tab the rests on the float needle pin. When it comes to removing the float chamber invert the carburetor so the floats do not foul the overflow tube in the float chamber. If you have a problem with fuel overflowing the carburetor it is possible that the float is being held open by the brass tube that sticks out of the float chamber. Bending this tube or float gently should rectify this problem. You should be able to hear the float flopping when you lightly shake the carb up and down. If fuel continues to flow the float height is incorrect or there is debris in your fuel tank. Readjust or in the latter in stall an inline filter.



2) Idle Speed

Set the idle speed to proper rpm by adjusting the Idle Speed Screw (Pilot Air Screw). Turning the screw in and out controls the amount of air to the Idle or Slow Circuit. This screw is located on the left side towards the air cleaner end . Turn the screw out leans the mixture and out richens the mixture. This portion of tuning in for when the throttle slide in the closed position .

3) Off Idle To 1/4 Throttle

The Slow Jet is most effective in this throttle range. When you want a richer mixture in this range use a larger Slow Jet (higher number is larger jet). The opposite holds true for a leaner mixture. The Slow Speed can be adjusted by manipulating the Pilot Air Screw and the Pilot Jet size. Turning the screw out leans the mix, in richens the mix. If this screw has to be turned out more than three turns go to a smaller pilot jet. Start with the screw all the way in.

4) 1/4 to 3/4 Throttle

The Throttle Needle Clip position and the Main Jet are the effective means for adjusting this range. There are other needles and slides on the market but we have not really seen a need for these other means of tuning. The Needle Clip and Main Jet are so effective in this range that alternative slides ans needles are not really necessary.

If the engine runs too rich above 1/4 throttle raise the clip to the next higher groove. This lowers the needle in the needle jet leaning the mixture. Always start this portion of tuning with the clip in the middle position.

The Main Jet is effective from 1/2 to above 3/4 throttle. Increasing the size enriches the mixture. It always better to be little rich than lean. It is also best to only change one component at a time.