Typical problems and cures

- **Engine cuts out**
  - Main jet blocked, Tap or tap filter blocked, Carb filter blocked, Air inlet in tank filter cap blocked, Water in fuel, Float chamber filled with two stroke oil (caused by not turning fuel tap off). Possible ignition fault also

- **Engine will not tick over unless choke is on**
  - Pilot jet or pilot feed passage is blocked, Pilot air screw not adjusted correctly, Worn throttle slide, Carb top loose

- **Engine ticks over but will not rev**
  - Throttle cable broken, Throttle slide detached, Silencer blocked, Ignition fault

- **Engine "4 Strokes"**
  - Choke on or stuck on, Choke cable to tight, Air scoop under seat blocked, Air filter needs replacing

- **Engine misses or backfires**
  - Dirty or faulty spark plug, Air hose detached or split, Air filter missing. See also faults for engine cuts out.

- **Engine will only run with choke on**
  - Crank case oil seals blown, Main jet blocked, Air filter missing, Hose split or missing

- **Engine will not start when hot,**
  - Float needle needs replacing, Throttle slide worn, See also faults for 4 stroking

- **Engine smokes**
  - Too much oil in your petrol, Drive side oil seal blown allowing oil to leak into crankcase, Choke stuck on

- **Engine will not switch off when hot**
- Overheating (need decoeke), Wrong grade of spark plug, Engine running weak - air filter missing other air leak at manifold or carb top, Exhaust pipe loose

- Throttle does not open fully

Incorrect fitment of slide spring, fuel tap interfering with carb tie rod ass, Throttle cable detached at handlebar end. **Factory settings for standard Lambrettas with no modifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>Carb fitted</th>
<th>Choke Size</th>
<th>Slide</th>
<th>Needle</th>
<th>Atomizer</th>
<th>Main Jet</th>
<th>Pilot Jet</th>
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http://www.youtube.com/watch?v=LYbh9fIWUFY&feature=player_embedded
http://www.mopedarmy.com/wiki/Carburetor
http://www.mopedarmy.com/wiki/Needle
http://www.mopedarmy.com/wiki/Upjet
http://www.mopedarmy.com/wiki/Vacuum_leak

Bing info

SHA info

Mikuni info
http://www.mopedarmy.com/forums/read.php?1,822846,825856#msg-825856
http://www.germanscooterforum.de/Lambretta_LI_GP_SX_TV_f2/Einstellungstipps_Mikuni_TM_24_28_t130952.html

Bearings

Crazy porting

Port timing math

Making Peugeot 101/102/103 take off at higher RPM's.

Sticking stock clutch remedies for Peugeot 101/102/103.
http://www.mopedarmy.com/wiki/Sticking_stock_clutch_remedies_for_Peugeot_103

Stock Peugeot 103 Variator Mod's

Exhaust pipes / Expansion chambers
http://www.mh-aerotools.de/airfoils/javapipe_en.htm
http://www.macdizzy.com/cylinder_map.htm
http://www.mopedarmy.com/wiki/Calculating_port_timing
http://www.mopedarmy.com/wiki/Expansion_chamber
http://www.mopedarmy.com/wiki/Polini_64cc
http://www.mopedarmy.com/wiki/Polini_64cc_expansion_chamber_exhausts

Polini 64cc
Reeds.

Squash band's

V1 stock clutch mods.

V1 wiring
Points, Red to to HT-coill, Blue to 12vt 35watt head light #796 if spinning over 9.5K use 50watt #795, black to rear lights #67 #1004 or #1003LL
Note if headlight blows out it wont run, but if you ground the blue wire it will get you going.
47mm and bigger kit's time @ 21deg's BTDC not 23deg's

Piston mods/Ringland porting.

Piston rings.
Old SAE paper

I like moly-faced ductile iron and steel rings, moly works very good because it is porous, holds oil so it's more scuff resistant.
Piston rings alone can account for up to 40 percent of an engine's friction.
Thinner rings exert less tension against the cylinders = more HP.
Some have a special coating on the sides to keep them from sticking as they bounce up and down in the piston lands.
Good pistons today are made with more silica "hypereutectic" alloy pistons have less thermal expansion close to 15 percent less than standard F-132 alloy pistons.
SO hypereutectic pistons can be installed with a tighter fit by .0005" to .0015" depending on the application.
Hypereutectic moly coated pistons with gs on the side can handle even less clearance.
High temperature fatigue strength of hypereutectic alloys is better than either cast or forged alloys.
By drilling tiny gas ports in the ring lands, less side clearance is needed and ring sealing is improved. There is also less ring flutter at high rpm.
Ring gaps top or single ring gap .008" to .012" and make the lower ring's gap bigger by .002" to .004" so pressure doesn't buildup between the rings.
This will help the top ring to hold its seal and flutter less at high rpm.
You will have better hi RPM compression, piston cooling and less ring blow-by.
Nikasil which is a very hard surface finish. Pistons normally run with chrome plated rings (also a hard surface) and because of this you need to blast WOT to run the two parts "hard" to bed in to each other. Normal running in will not allow the parts to bed in to each other and will cause piston ring blowby. This will allow excess pressure into the cylinder wall gap causing oil to be pushed down an out.
If a Nikasil engine seizes, usually the piston melts onto the niskil surface and the bore can be reclaimed by removing the deposited piston metal off the bore.
Lot's of new ring coating's are available Japan likes gas nitrided, Europeans like a mix of ring facings: moly, chrome and nitride.
New diesels run composite coatings that combine ceramics, moly and other ingredients to increased ring life.
some rings/coating wont work with Niskil or chrome cylinders.
Chrome was used in the 1970's to line cylinders.
Chrome on chrome is a no no, chrome is not porous and wont hold oil.

Center bleed pipe's.
Tune it in, do some porting, put a kit & pipe on it, look in the WIKI, read lot's of old post and links to see what worked for others.

How to convert AC to DC with a DIY Rectifier and or install a 12v Regulator, light coils mods and wiring.

Spark plug chop reading.
A colder plug will show color faster then a hotter plug and you chop it so it has pinch more red than tan in the color and it will be close to 2 jet sizes rich.
Now go one plug hotter and your plug will read/be leaner, and safe, if the plug is not to hot for the compression and or peak RPM power.
I like running a pinch cool and rich on my plug chops, so if my engine get's hot on a long hill etc I'm tuned so it wont smear & seize.

Setting up timing on E-50 & ZA-50's.
You need to find your TDC get a buzet gauge or use a piston stop.
Install piston stop turn fly wheel left mark it turn it right mark it TDC will be dead center
of the L&amp;amp;R marks.
Now punch two marks on the flywheel at 15mm=15deg and 19mm=19deg clockwise from the flywheel TDC mark if it's a E50, counterclockwise on a ZA-50.
Time it at 18deg's to start and use a timing light!
To get the hottest spark gap the points at .016" to .017"
Use a B7HS in winter and a B8HS on hot days over 80f, gap the plug at .018" to.022"

Spark plug chop reading.
Best spark plugs with points, NGK BU8H #6431.
And this one is special for low power CDI's, NGK BUZ8H #7447. No more dead plug at hi rpm's.
But you need to use the NGK resistor Boot PN#LB10EH 8351 with the BU8H &amp;amp; BUZ8H plugs.

Timing before jetting.

Timing will effect jetting symptoms.
Oxygen makes things burn faster.
Less oxygen makes things burn slower.
You get the best power at 11:1 to 13:1 with most pump gas setups.
Pump gas combined with 9:1 to 11:1 compression needs 20° to 16° BTDC for a proper power stroke burn with a mix of 11:1 to 13:1 with most pump gas setups spinning under 10.5K RPM's.
Over 10.5K you need to retard timing cuzs things burn hell faster in two strokes.
But you need less timing as the pipe starts supercharging/hitting in the powerband to.
Hell at 14K you might need just 12° BTDC with your setup.
This is why CDI's retard timing at higher RPM's
So if your timing is to late to give a proper burn in the power stroke.
It will give you the symptoms of being rich in the idle &amp;amp; throttle mid rang.
So you set the needle leaner, this makes the gas burn faster giving it more burn power in the power stroke.
But it makes to much heat in the cylinder.
And it will probably gave it a good blip on the stand to.
If you have to much timing you will find yourself jetting rich to slow the burn down.
It all needs to work together for things to work proper.
This why i post to set your timing before jetting.


Timing with points, for the 64 cc polini kits, I fond the sweet spot heat range for timing Is 17.5deg's= 1.25mm or 17.5mm of flywheel rotation BTDC to 14deg's= 0.79mm or 14mm of flywheel rotation BTDC,
And K-star's and other kits any thing 19deg's= 1.44mm or 19mm of flywheel rotation BTDC to 16deg's= 1.03mm or 16mm of flywheel rotation BTDC.
Timing CDI i fond the sweet spot heat range for timing these trets CDI's timing for the 64 cc polini kits
Is 17.5deg's= 1.25mm or 17.5mm of flywheel rotation BTDC to 14deg's= 0.79mm or 14mm of flywheel rotation BTDC for
And any thing under 20deg's= 1.60mm or 20mm of flywheel rotation BTDC to 16deg's= 1.03mm or 16mm of flywheel rotation BTDC.
For most kited motors ruining under 11.2:1 compression & 11,500rpm's.
Timing for lowend will kill at hi rpm with heat every time.
Crankshaft timing conversion chart,
Degs to piston travel for puch E-50 & ZA-50
14 degs BTDC=0.789 mm of piston down BTDC.
15 degs BTDC=0.905 mm of piston down BTDC.
16 degs BTDC=1.028 mm of piston down BTDC.
17 degs BTDC=1.159 mm of piston down BTDC.
18 degs BTDC=1.298 mm of piston down BTDC.
19 degs BTDC=1.444 mm of piston down BTDC.
20 degs BTDC=1.598 mm of piston down BTDC.
21 degs BTDC=1.758 mm of piston down BTDC.
22 degs BTDC=1.930 mm of piston down BTDC.
23 degs BTDC=2.106 mm of piston down BTDC.

This HPI has a 2 retarding curves start at 1.6mm piston down BTDC and tune/jet it in!
Then work your way up watching you temp's plug chops/jetting, don't run with more than 2.1mm of piston down=23 degs BTDC MAX.
https://www.treatland.tv/v/vspfiles/assets/images/hpi-instructions.jpg

PHBG carbs
19mm Phbg most piston port setups tune in with a #40 slide with a AU262 or AU260 atomizer, most use the W9 or W7 some need a W3 and or #50 slide,
Most 17.5mm PHBG tune in with a AU260 or AU258 atomizer, and #30 or #40 slide,
W9 some use W7-W3.
Plot/idle jet start with the adjustment screw out 1-1/2 turns,
pilot jets range 38 to 48, If rich at idle with the plot/idle jet adjustment screw out 3/4 of a turn or less, install a leaner pilot jet, If a 38 pilot is rich install a leaner/smaller number atomizer or a higher number slide and install a 40 to 45 plot/idle jet adjustment screw out 1-1/2 turns, The rang of plot/idle jet adjustment screw is 2-3/4 to 3/4 turn's out.
And lower the clip 1 or 2 notches.
Install a higher number plot/idle jet if lean at 2-1/2 or more turns out on the adjustment screw, if plot/idle jet is over 50 install a richer/bigger number atomizer or a lower number slide and install a 40 to 45 plot/idle jet with the plot/idle jet adjustment screw out 1-1/2 turns,
NOTE= Slide and Atomizer will dictate/control/change the range of the plot/idle jet.