

## **Engine Troubleshooting**

### **wont start, no spark**

- ignition not on
- kill switch off or dirty
- low battery
- fuse
- loose or corroded battery terminals
- old, dirty, worn spark plugs
- plugs wet
- wrong plug gap
- plug caps and resistors
- points pitted, dirty, wrong gap, broken cable
- point earthing to plate, terminal insulators broken
- coils
- condensers

### **wont start, spark**

- no fuel
- fuel delivery - filters, petcocks
- valve timing
- ignition timing
- compression - top end, rings, head gasket, holed piston
- carburetor settings
- float needle, leaky float, float settings
- pilot circuit blocked
- tank cap vent

### **spark one side only**

- plugs - worn, fouled, defective, dirty, wrong gap
- plug leads, cap and resistor
- points gap, pitting, dirty, earthing, broken wire
- condensor
- coil

### **hard to start**

- battery flat
- plugs - worn, dirty, gapping, too cold, kaputt
- points - pitted, dirty
- leads cracked, old, dirty
- coils, condensers
- broken or intermittent earth or connections at points, coil
- cam, valve, points timing out
- valve adjustment
- valve seats
- low compression

**starts, wont run**

- fuel delivery
- plugs worn or too cold
- tappet setting
- ignition timing
- yellow to safety relay

**rough idle**

- plugs – worn, dirty, gapped too wide, too cold
- spark weak - coils, leads
- points gap wrong, pitted
- ignition timing
- atu
- valves not sealing - worn valves, seats, guides
- tappet adjustment
- leaking manifolds both front and rear, butterfly shaft seals
- float height
- petcocks
- water in bowls
- idle adjustment incorrect
- pilot circuits blocked...take note if running cheap pod filters, they block the pilot air jets

**top end noise**

- loose tappets
- cam chain loose or worn
- cam/crank-shaft sprocket worn
- ping-spark knock
- worn gudgeon pin and/or small end
- piston knock - worn cylinder

**bottom end noise**

- big end bearing knock - esp noticeable at idle
- main bearings

**transmission noisy**

- gears worn, pitted
- main and/or counter -shaft splines worn
- primary gear worn
- noisy clutch

**runs and misfires on accelaration**

- battery low
- tank cap vent
- water in bowls
- blocked main jet
- diaphragm
- air leaks

- intermittent or loose connection in ignition wires
- ignition timing
- carb settings incorrect
- coils, condensers

#### **surges, runs unevenly**

- fuel delivery
- too lean
- air leaks - manifolds front and rear, butterfly shaft seals, vacuum barbs, diaphragm, choke seal, bowl connectors
- valve adjustment

#### **misfires, breaks up when running**

- low battery
- loose battery cable
- loose or intermittent contact in ignition circuit

#### **popping, misfires on deceleration**

- too lean
- exhaust leaks

#### **backfires or kicksback**

- too advanced
- atu not working

#### **overheats**

- too lean
- too advanced
- too retarded
- oil low or thin
- oil pump defect, blocked galleries
- carbon choking
- plug too hot
- atu not working properly

#### **poor operation - low speed**

- tank cap vent
- battery weak
- weak spark
- ign timing out
- plugs too cold or gap too big
- bad points contact
- valve adjustment
- valve timing incorrect
- valve seat leak
- worn valve guides
- pilot circuit dirty...take note if running cheap pod filters, they block the pilot air jet
- air mix screw not set right

- float level wrong
- air leak
- carb equaliser tube leaking or loose
- carburetor not level
- petcocks blocked
- dirty gas

#### **poor operation - high speed**

- ign timing retarded
- atu
- plugs too cold, gap too small
- points spring weak
- valve timing
- weak valve springs
- broken rings
- coils, condensers
- torn diaphragm
- butterfly valve not opening, not synchronised
- blocked or wrong main jet
- wrong needle setting
- choke on
- carbs not level
- float level too low
- fuel line, filter, petcock partly blocked
- air filter dirty
- dirty gas

#### **power loss**

- tank cap vent
- exhaust pipe loose or broken
- carbon clogging - engine, muffler
- air filter dirty
- ign timing
- plug gap
- valve adjustment, timing
- valve seating
- weak valve springs
- worn cylinder or rings
- blown head gasket
- float levels too low

#### **smoking - blue, oil consumption**

- too much oil
- rings - bore worn
- marked bore
- valve guides, seals

- crankcase breather blocked

#### **smoking - black**

- too rich
- engine is carbon clogged

#### **piston siezed**

- oil level too low
- oil pump not working
- overheating - too lean, too advanced, stuck valves, tappet clearance too small

#### **rings and bore worn**

- low. thin or contaminated oil
- oil pump defect
- no warm-up
- air filter damaged

#### **valves - bent, broken, burnt**

- weak springs
- overrevving
- hitting piston - wrong valve timing
- tight clearances
- too retarded

#### **con-rod bearings**

- oil low, wrong viscosity
- oil contaminated
- overrevving
- too advanced, misfiring at high speed

#### **crankshaft bearings**

- oil low, wrong viscosity
- oil contaminated
- no warm-up
- overrevving

#### **cam - lobes or bearings worn**

- oil low, too thin or contaminated
- no warm-up
- oil pump not working, oil galleries blocked
- tight tappet clearances