



DIAGNOSTIC CHART



Normal

Using Unleaded Petrol



Normal

Using Lead Replacement Petrol



Normal

Using Lead Replacement Petrol



Symptoms

Causes

Remedy

- Hard starting
- Misfiring
- Black exhaust smoke

Carbon Fouled



- Rich mixture
- Retarded ignition
- Low compression
- Too cold a spark plug

- Check float level
- Check choke
- Check ignition timing
- Check air cleaner
- Check compression
- Replace spark plug with correct heat range

- Hard starting
- Misfiring
- Grey / white exhaust smoke
- Loss of oil

Oil Fouled



- Worn rings
- Worn piston
- Leaking valve stem seals
- Over-filled oil sump

- Replace worn components
- Replace spark plug with correct heat range

- "Pinking" under acceleration or climbing hills
- Engine run-on after switching off

Overheated



- Lean mixture
- Advanced ignition timing
- Too hot a spark plug

- Check jets are not clogged
- Check float level
- Check ignition timing
- Replace spark plug with correct heat range

- Misfiring
- Loss of power
- Hard starting
- Noise in engine

Damaged



- Foreign particles inside cylinder
- Broken or damaged valve

- Replace spark plugs
- Remove foreign or damaged components

- Melted spark plug
- Damaged piston crown
- Damage to cylinder head

Under Tightened



- Spark plug incorrectly torqued
- Spark plug only hand tightened
- Dirt or carbon in threads of cylinder head

- Replace spark plugs
- Tighten spark plug to correct torque
- Replace damaged components
- Check compression on all cylinders

- Hard starting
- Reduced fuel economy

Worn



- Normal electrode wear
- $\pm 0.03\text{mm} / 1\ 000\text{km}$
- Fuel deposits (carbon, lead, additives & salts)

- Replace spark plug with correct heat range

- Redish brown stain above metal shell on insulator

Corona Stain



- Oil particles suspended in the air adhere to the insulator due to high voltage

Corona Stain

- No deterioration to the function of the spark plug
- Change spark plug ONLY at recommended service intervals