

Spark Plugs

The Bible tells us---

" Where no counsel is, the people fail : but in the multitude of counsellors there is safety.

" (Proverbs 11:14)

So to prevent you from failing Spark Plug reading here is a multitude of counsellors in picture form.

I got all this from a Free hand out I recieved from NGK Spark Plugs back in 1977. I think their Hot-but-OK plug pictures are a bit too hot for me. But who am I to nay say NGK ? Enjoy !

Introduction

The appearance of the firing-end of a spark plug graphically reflects the condition of an engine, the suitability of the spark plug heat rating, and whether or not the carburetor and ignition timing are properly adjusted.

This pamphlet is intended to assist you in correctly choosing your spark plugs and determining the performance condition of your engine.

■ Even plugs which present a good appearance, such as those shown in Figures 6 ~ 24, can quite often be covered with a lead deposit which causes misfiring.

■ Wet plug firing-ends such as shown in Figures 1 ~ 3 are normally attributed to one of the following causes:

- (1) Excessive choking.
- (2) Trouble within the ignition system.
- (3) Oil pumping past worn piston rings and valve guides.

■ The causes of sooty plugs like those shown in Figures 4, 4 and 5 are usually the result of:

- (1) A plug with a too high heat rating is being used and the plug firing-end does not reach

its self-cleaning temperature (above 400 450°C) due to light load conditions.

- (2) Use of a too rich air-fuel mixture of rich than 8:1~10:1
- (3) Trouble in the ignition system.
- (4) Improperly functioning cooling system resulting in excessive cooling.

■ The firing-end burns illustrated in Figures 25 and 26 may be a result of:

- (1) Too low heat rating, permitting the plug exceed the highest limit for optimum operating temperature of over 850~1000°C due to excessively heavy load operations.
- (2) A too lean air-fuel mixture.
- (3) Ignition timing too over advanced.
- (4) Abnormal combustion such as knocking.
- (5) Cooling system trouble, which causes engine overheating.

■ Overheating conditions shown in Figures 28 a 29 are due to intense knocking and pre-ignition following situations identical to those in Figures 25, 26 and 27 where increased temperature of spark plug firing-end results in melting of the electrode.



1
Oil Fouled



2
Oil Fouled



3
Carbon Fouled



4
Too Cold



5
Too Cold



6
Cold or Rich
But OK



7
Cold or Rich
But OK



8
Cold or Rich
But OK



9
Good



10
Good



11
Good



12
Good



13



14



15



16

Real Good

The Best

Best

Best



17
Best



18
Good



19
Good



20
Good



21
Kinda Hot
But OK



22
Hot or Lean
But OK (?)



23
Hot or Lean
But OK (?)



24
Hot or Lean
But OK (?)



25
Too Hot or Lean
Pre-Ignition Range



26
Too Hot or Lean
Pre-Ignition Range



27
Too Hot or Lean
Pre-Ignition Range



28
Too Hot or Lean
Pre-Ignition Range



29
Too Hot or Lean
Pre-Ignition Range

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