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PIATTI SERVICE BULLETIN NO. 7. February, 1957.

TO ALL PIATTI DEALERS.

SPARK PLUG WHISKERING.

The troubles experienced some years ago with spark plug whiskering are again causing some concern. These complaints decreased in number with the introduction of branded fuels and as the basic cause of plug whiskering is the lead content of the fuel, it is reasonable to suppose that the present complaints are brought about by general fuel shortages and consequent efforts to maintain a reasonable octane rating by the addition of extra tetraethyl lead.

We felt that all Dealers would like to be kept advised of the latest information on this point so that they advise customers that this trouble is by no means confined to Piatti only, but affects all two-stroke engines.

For your guidance, we quote some interesting extracts from an article which appeared in "Motor Cycle" on the 3rd January, 1952, on this subject.

> "While two-strokes are, as a matter of practical convenience, designed to run satisfactorily when lubricated with the brands and grades of motor oil at present readily available to the public, as the number of such units increases, the question of formulating grades of oil specially suited for two-strokes will, no doubt, receive the serious consideration of the oil industry, particularly in connection with the dispensing of ready-mixed petroil. It is well known that sparking plugs are considerably more liable to be fouled and require more frequent cleaning in two-stroke than four-stroke petrol engines, and that this is particularly the case with petroil lubrication. What is perhaps less generally known is that plug fouling is often, at least in part, due to the presence of tetraethyl lead in the petrol, and increases with the lead content of the fuel. Highly leaded fuels can also cause heavy combustion-chamber deposits, because, although these are usually black and appear to consist only of burned oil and carbon, chemical analysis almost always reveals a high percentage of lead compounds, often to the order of 40-60 per cent. of the total deposit."

> "During the recent war much plug trouble was experienced in small two-stroke electric generator sets used for air-field searchlights due to these sets frequently being run on readily available aviation spirit (which has a particularly high T.E.L. content) instead of an ordinary motor spirit which, at that time in particular, contained only a relatively small proportion of T.E.L. From the foregoing it will be clear that small two-stroke petrol engines would run best with petrol containing no tetraethyl lead at all. Unfortunately, such spirit is not available to the ordinary consumer. Moreover, the continual trend towards increasing the power output of two-stroke motor cycle engines has necessitated raising the compression ratio of these power units to a point where they require a petrol of at least 70 octane if undue pinking is to be avoided. At present it is not economical to produce petrol of such octane rating without the incorporation of some T.E.L. in the fuel."

The exact reasons why fuels of relatively high T.E.L. content give much more plug trouble and contribute much more to heavy combustion-chamber deposits in two-strokes than in four-strokes do not appear to be known. However, there seems to be little doubt that the greater incidence of plug fouling, etc., in two-strokes is due to oil spray entering the combustion chamber with the air-fuel vapour mixture and becoming in part deposited on the plugs."

Since 1952, much research has been carried out by engine, plug, fuel, and oil manufacturers and the following points have been established :-

1. Engine Operating Heat.

This is important as most whiskering takes place over a small range of temperature. Curiously enough, either slightly hotter or more often, cooler engine temperatures may be all that is required; therefore, correct adjustment of ignition and carburation is important.

2. Sparking Plug.

The special K.L.G. CF.50. Anti-Whiskering Spark Plug used on all Cyclemaster products, is less likely to whisker than any other type or make. In the very few instances where a change of plug has altered the symptons, it is thought that the heat range of the plug has caused slightly different temperatures at the plug points. Generally speaking, a narrow gap causes trouble; increasing the gap often affects an improvement, but care must be taken not to widen the gap so that the engine is difficult to start. For the Piatti engine, we now recommend .020" to .025", that is, .003" wider than previously specified. As all Dealers know, the CF.50. plug was introduced to minimise the risk of whiskers and in most cases, this plug gives trouble-free performance, if regular plug service is carried out taking care to free the loose earth disc and set the gaps correctly. The loose earth disc cannot stop whiskers forming, but it does disperse them before they cause a complete plug failure. (See Bulletin No. 5 for additional Service Notes.)

3. Engine Cleanliness.

This is important, both internally and externally. Dirt on the cylinder fins will cause over-heating and carbon inside both affects engine temperature and accumulates deposits in the combustion chamber which help the formation of whiskers. Some research reports indicate that on occasions, whiskers have contained a fairly high silica content. Therefore, cleaning and re-oiling of the carburettor air intake filter may be necessary. Dirty or contaminated petrol should obviously be discarded.

4. Combination of Additives and Fuels and Oils.

It will readily be understood that improvement may be obtained by changing anything which affects the chemical composition of the gasses which are burnt in the combustion chamber. In cases of trouble, we suggest therefore, that the fuel or oil, or both, are changed to another grade or make, for a trial period. There is no evidence that any of these are defective in any way, but the very slight differences in specification may alter the conditions inside the engine, so that whiskering does not take place. Generally speaking, we find that the cheaper grades of fuel provide improved operating results.

Further copies of this Bulletin are available on request.

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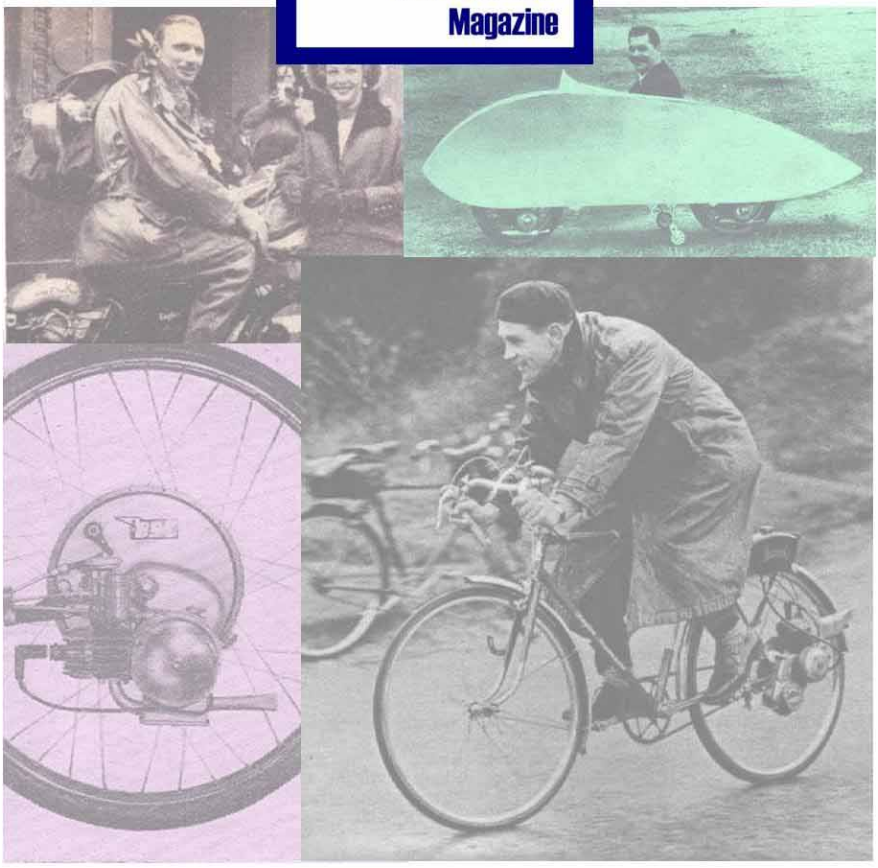

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