BSA

DEALER PARTS and SERVICE BULLETIN

Hap Alzina 3074 Broadway Oakland 11, Calif.

INDEX

No. 34
10 February 1960

= SUBJECTS =

ALTITUDE EFFECT ON MOTORCYCLE ENGINES

The effects of altitude on engine operation is not always a thoroughly understood subject by many motorcycle owners. Motorcycles are set up for sea-level conditions and may require certain changes for maximum performance at other altitudes. The horsepower loss is approximately 3% per thousand feet and thusly a 45 Hp. engine at sea-level becomes about a 38 Hp. engine at 5000' and may call for changes in carburetor jets, sparkplug heat range and perhaps gear ratio.

The General rule on jet size decreases is: 5% @ 3000'; 9% @ 6000'; 13% @ 9000' and 17% @ 12,000' with the final and finite sizing of the jet to be accomplished by careful sparkplug readings. Compression is lower at 5000' and may call for a slightly warmer sparkplug heat range. Engine power is lower at 5000' and may call for some slight reduction in the gear ratio.

The "reading" of sparkplugs is amply dealt with in almost every sparkplug chart and need not be dealt with here. It is simply the appearance of the sparkplug indicating the conditions inside the engine. However - the method of taking the reading is often incorrect and may be briefly stated: Install the recommended heat range sparkplug, TIGHTENING IN THE HEAD TO THE CORRECT FOOT POUNDAGE AS INDICATED BY A RELIABLE TORQUE WRENCH. This is a definite "must". Run the engine at maximum power for a sufficient distance to be sure the operating temperature is properly up. Then, at MAXIMUM POWER, the rider should simultaneously "kill" the engine and release the clutch. DO NOT CLOSE THE THROTTLE. Release the clutch and kill the engine with the magneto earthing button, doing both swiftly and simultaneously. Then extract the plug and inspect according to standard reading practises, white core or bleached look indicating too lean a mixture, light brown reasonably correct and black, sooty or oily indicating too rich a mixture. (Consult your sparkplug charts for more detailed reading instructions).

Dealers in high-altitude areas should exercise particular care in instructing cross-country riders travelling from high altitudes to low altitudes, cautioning them about the necessity for attending engine adjustments before attempting maximum power or even road speed operation at low altitudes; such caution may save an expensive repair bill and a dealer responsibility. It will be remembered that the high altitude motorcycle is running far too lean at sea-level, too lean and probably with too warm a plug. This sets up a pre-ignition condition that can seize the engine, burn valves, rings and pistons.