



MOTORCYCLES BICYCLES

BSA HAP ALZINA



IMPORTERS

3074 BROADWAY

Oakland 11, California, U.S.A.

WESTERN UNITED STATES

MEMO FROM "PARTS"
IMPORTANT FILE IN YOUR PARTS BINDER

SERVICE BULLETIN NO. 5

4 September 1957

VALVE SPRINGS - "BENT" VALVES - BROKEN PISTONS

The subject of proper operation of an overhead valve engine is not always too well understood by riders and sometimes gives rise to a service problem for the dealer that is not of his making or his responsibility. Dealers should, for the relief of future uncalled-for service obligations, fully inform every customer **AT TIME OF DELIVERY** on some of these fundamental facts and thus establish the responsibility for damage (and consequent costs) exactly where it belongs . . . with the rider of the machine.

This is a rather lengthy preamble to properly set the simple facts of the problem in its proper focus.

It deals with the matter of over-revving on the engine that sets in valve float, permits the bouncing valve to tip a piston and sets off a whole chain reaction that may be only a bent valve, could be a broken piston and might even be a broken cylinder head.

NONE OF THESE ARE DEFECTS IN MATERIAL OR WORKMANSHIP. NOR ARE THEY A PART OF THE DEALER'S FREE SERVICE OBLIGATION IF THE CUSTOMER HAS BEEN PROPERLY INFORMED BEFORE DELIVERY.

The dealer can do this with the safety of logic because the dealer can, in initial instruction to the rider, accurately forecast exactly what will happen and why and it therefore becomes difficult for an unwarranted service claim to arise when the situation, condition and results have been fully explained PRIOR TO DELIVERY.

The causes are several; some of it is just plain over-revving, that of winding the engine beyond its limits in the lower gears, letting it rev up under full throttle to the point of valve float and until the "floating" valve bumps into a piston. Just as often it is a "missed" shift . . . the rider winding out in the lower gears right up to the maximum, missing the shift into the next gear and for an instant the tachometer goes right off the dial. Again the same result - valve float and damage in one form or another.

AND JUST AS OFTEN IT IS A SPILL, THE ENGINE LYING ON ITS SIDE UNDER FULL THROTTLE, VALVES BANGING INTO THE PISTON, OIL RUNNING AWAY FROM THE PUMP AND MULTIPLE DAMAGE FACTORS OCCURING.

IT IS IMPORTANT FOR THE DEALER TO KNOW AND THE RIDER TO UNDERSTAND THAT THIS DOES NOT ALWAYS SHOW UP INSTANTLY AS DAMAGE.

The rider gets just a momentary clatter, eases off and the machine seems to run about as well as ever. But the bent valve or the damaged piston is there. And the damaged piston may "cock" in the bore slightly and "oval out" the pin bushing. Later he complains of a loss of power or perhaps bad idling (the bent valve will ruin a guide in short order) or he was "just riding along at 20 MPH" when the valve broke ... there are dozens of versions and they are always when the rider is touring at minimum speed. All of these overlook the primary cause which may have been sometime back.

ALL ENGINES HAVE MAXIMUM OPERATING LIMITS. EXCEED THESE AND THERE IS A MECHANICAL PENALTY THAT MUST BE PAID FOR BY THE OPERATOR.

It is immaterial who builds the engine, what its name or type. If it is a modern, high-compression overhead valve engine THERE IS NO ROOM IN THE COMBUSTION CHAMBER - that's why it's high-compression. Everything just "misses" everything else; the valve is going back on the seat as the piston is coming up, the valve is coming off the seat as the piston is going down. Let any of these get out of synchronism from causes such as valve bounce or float and two objects will try to occupy the same space at the same time.

VALVE SPRINGS CAN ONLY OPERATE PROPERLY AND FOLLOW THE CAM UP TO A CERTAIN MAXIMUM. EXCEED THAT MAXIMUM AND A DAMAGED ENGINE IS THE RESULT.

Production valve springs such as come in motorcycles as standard equipment have more narrow limits than expensive custom-made springs. If you have riders who want fully custom performance they should want and should expect to pay for the custom type valve springs that will permit higher continuous service limits. Production valve springs have a limited life; what is a safe RPM for them when new is something else in three months and rider interested in competition or sporting events where a good portion of the engine life is spent at high revs should be cautioned to CHANGE THE VALVE SPRINGS FAR MORE OFTEN than the touring rider.

WHEN THE DEALER ENCOUNTERS A HIGH PERFORMANCE REQUIREMENT HE SHOULD SUGGEST THE INSTALLATION OF S & W VALVE SPRINGS. THE COMPONENTS ARE LISTED BELOW:

GOLD STAR ENGINES		List Price	ROCKET ENGINES		List Price
2	65-2490 Collars	\$ 1.34 each	4	65-1349 Collars	\$ 1.42 each
1	65-1848 Keeper (Intake)	.92 pair	4pr.	65-1848 Keepers	.92 pair
1	65-2459 Keeper (Exhaust)	.92 pair	4pr.	S & W Special Valve	
2	S & W Special Valve Springs	2.25 pair		Springs	2.25 pair

ENGINE MAXIMUMS ----- 6500 RPM

It is important to remember that the installation of S & W special valve springs is NOT a solution for over-revving; there is no such answer. Over-rev and damage will ensue regardless of the type of spring employed. They do, however, afford a better safety margin as contrasted to standard.

SOME OF THE FOREGOING CONSTITUTES THE "FACTS OF LIFE" OR THE "BIRDS AND THE BEES" EXPLANATION FOR MOTORCYCLE RIDERS. EXPLAIN THEM WHEN DELIVERY IS MADE AND YOU WILL NOT BE ASSUMING AN UNWARRANTED SERVICE OBLIGATION LATER. VALVES ARE STRAIGHT, PISTON CROWNS ARE UNDEDENTED WHEN INSTALLED: THEY BECOME BENT OR DAMAGED ONLY BY ABUSE AND SUCH ABUSE SHOULD BE PAID FOR BY THE PERPETRATOR, IN THIS CASE THE OPERATOR.