BSA

DEALER PARTS and SERVICE BULLETIN

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= SUBJECTS =

VALVE SPRINGS

Valve springs play a most important part in highly-stressed engines, perhaps one of the most important parts. The very inherent factor of a spring ..... something without concealed parts that can be held in the hand for visual inspection .. often leads to the erroneous mechanical conclusion that a spring is a spring and nothing more than that. Nothing could be farther from the truth. Springs can all look alike, from the very cheapest "wound wire" on up to springs that sell for ten or twenty times as much ... and each will have performance characteristics in keeping with their cost.

The S&W Valve Spring is the outstanding quality spring on the market today. It has physical imitators, the "just as good" etc. that sell for half the money and are so closely identical in appearance that not even the S&W manufacturers can always tell the difference until a laboratory analysis is made and the outstanding facts of quality immediately show.

But - while it may take laboratory analysis to determine the quality internally the mechanical differences can often be assessed well in advance, often the most expensive way in the form of bent valves, broken pistons or ruined engine top-ends. Sub-standard valve springs often compress as much as a quarter-inch without use and without heat, merely taking a "set" from the ordinary mechanical aspect of being under compression. The results of such set can be well imagined when high revs are sought ... failure to follow the cam, tipping pistons, etc. Even though actual mechanical failure does not take place immediately, sub-standard springs can drop maximum power off sharply.

In one recent test the installation of quality S&W springs picked up 400 revs in a highly-stressed engine with no other change - same engine, same temperature, same conditions, the only change being the installation of quality springs that followed the cam contour and thus assured that the timing was controlled.

When conditions of sub-standard performance display themselves in an engine, the valves and springs should be one of the first points of suspicion before major mechanical alterations are attempted. Touching in the valves to insure a good seal combined with the installation of good valve springs will often completely resolve the problem.

In a stressed engine that has been tuned for maximum power it is an almost obligatory requirement; anything less can defeat all efforts at tuning and, at the excessive revs required of highly-tuned engines, can introduce an expensive mechanical hazard. From a cost standpoint S&W springs are usually cheaper in the long run; it is not uncommon to receive a full seasons racing from a single set whereas sub-standard springs may have to be changed as often as every race-meet if maximum top-end performance and engine safety are to assured.

BE SURE THE SPRINGS YOU INSTALL ARE WHAT YOU PAID FOR
AND WHAT YOU DESIRE FOR YOUR ENGINE...NOT "JUST AS GOOD"
OR "SATISFACTORY", BUT THE BEST... WE RECOMMEND S & W.

Factories do not own machines that can manufacture bent valves, nicked or crushed-in piston heads. As originally manufactured, valves are asymmetrical and pistons heads uniform. A glance through any parts stock will establish this as a truth for both owner and dealer. Therefore REGARDLESS OF HOW THE ENGINE WAS BEING OPERATED AT THE TIME OF FAILURE the primary cause was overspeed at some previous time. The engine CANNOT create this condition .... only the OPERATOR. With the prevalence of sports cam diagrams in today's engine valve springs should be watched with care and for extreme or even medium-sports service S&W springs should be installed for the extra margin of safety from valve float. They will not eliminate the problem completely; no valve spring can do that. They will, however, permit of a wider latitude to overcome operator errors.

DAMAGED LOWER ENDS are another problem seldom encountered except with the sports type. Mechanical aspect of the problem in generally in "scuffed" lower end rod inserts that fail under apparently innocuous circumstances. This, most generally, is caused by a spill that tosses the rider and leaves the machine on its side with engine running and the OIL SUPPLY DROPPED AWAY FROM THE OIL PUMP INLET. Full pressure lubrication is a standard engineering principle that assumes a sealed system running about 50 psi,keeping metal inserts in suspension by the sheer force of pressure. So long as this pressure is maintained there is no metal-to-metal contact. Interrupt this supply - even for a moment - and instantly a thin bearing shell must assume the entire bearing load with the result that the soft bearing metal is "dragged" or "wiped" onto the shaft. Once this process has started it will rapidly continue to the failure point. Regardless of the circumstances of ultimate failure - a week, a month or six, depending on how abrupt and how long the termination of the oil supply THE PRIMARY CAUSE DEVELOPED FROM THE EXIGENCIES OF SPORT SERVICE.

Crankshafts and bearings when new are smooth, microscopically ground and completely unblemished. Assume no interruption in the oil supply and they should remain in this state for thousands upon thousands of miles. The original finish is proven by a visual inspection of new parts, the service expectation confirmed by the tens of thousands of satisfactory service miles rendered by standard touring engines.

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None of these are, in reality, problems of defects in material or workmanship. No reputable factory, distributor or dealer ever willingly disregards his normal service obligations. Equipment is manufactured to high standards under controlled conditions to reflect lasting credit upon the product. Conditions of manufacture can be controlled; conditions of owner-useage are beyond control. Purpose of these brief paragraphs is to acquaint the dealer more fully with the finite differences between normal service obligations and owner-occasioned mechanical penalties and to suggest the logical method of owner education.

Seldom, if ever, are engines damaged wilfully. More generally damage is a lack of knowledge on the part of the owner, a failure to understand the limitations of all OHV engines and the mechanical penalties that may ensue from improper operation. The dealer can render a genuine owner service in his pre-delivery talk by pointing up these factors, not as a spectre that is to haunt the owner and prevent his maximum use and enjoyment of the machine, but merely to inform him of the differences between use and abuse... to add to the owners knowledge of the limitations that are present in all engines and to suggest that keen, knowledgeable operation of his engine can add to his pleasure and insure many miles of trouble-free service as contrasted to expensive and unnecessary repairs. Weight is added to the dealer's words by the accurate forecasting of the primary causes that result in certain effects. It only takes a few minutes to pass along the pertinent information from these few paragraphs. The result could be a satisfied owner with a much better knowledge of what his machine dollars have bought and often a dealer free of a service obligation not of his making.