1953 ROAD ROCKET

BSA SUPER FLASH

FORTY cubic inches produce FORTY horsepower at the rear wheel and make this, the B. S. A. "Super Flash", the World's finest, fastest, most tractable in traffic, most manoeuvrable production motorcycle!

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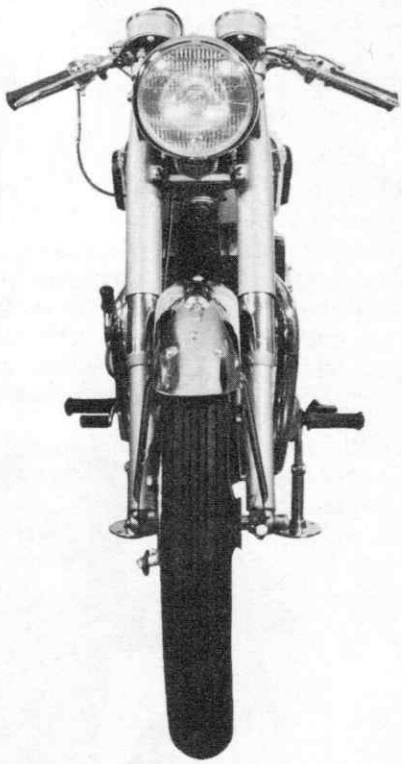

Price F.O.B. Nutley, N. J. Jacksonville, Houston, or Oakland, California.

$975.00

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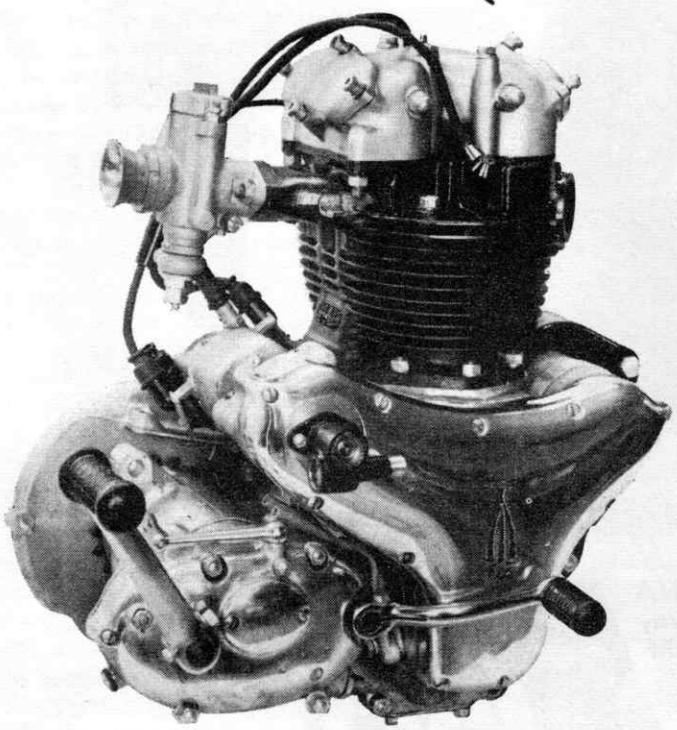
REPRINTED FROM AMERICAN Motorcycling FEBRUARY 1953

MOTOR OF THE MONTH . . .

Hopped Up 40 Incher Has New Performance And New Looks

BSA SUPER FLASH



This is what BSA means when they say "bolted up unit construction." Note big T.T. Carb and manual advance mag. Tach. drive comes off mag pinion. Extended-head casting forms manifold.

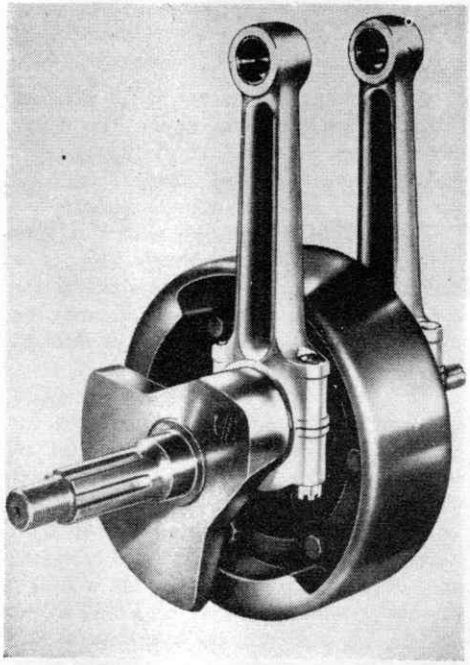
By Roy Bradbury

General Manager, Rich Child Cycle Co.

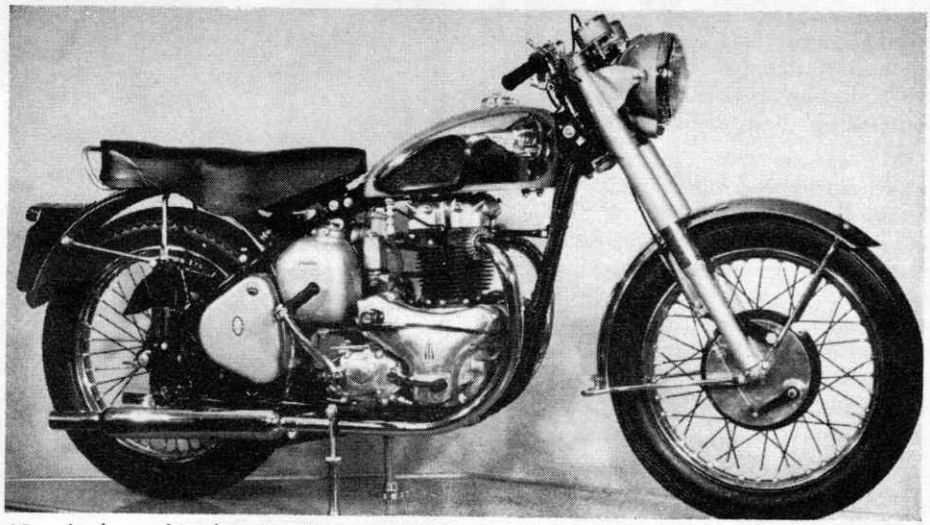
SELDOM has a new motorcycle met with such immediate success as did the BSA Golden Flash when it made its bow to the American public some two years ago. And this was not just because the Flash happened to be a good looker. It quickly showed that it had some other desirable qualities as well. It was speedy, very speedy, and reliable—the kind of model that keeps on going as long as you see that the gas and oil tanks are filled and check your tire pressures regularly.

It was economical for its size and performance. The number of miles you could cram into a gallon of gasoline was a revelation to the seasoned heavyweight motorcyclist. It immediately won the hearts of every kind of rider because of its excellent road manners, for there never was a motorcycle with greater rideability. It was easy to handle at all speeds on every conceivable type of road or track. It was a comfortable machine in every sense of the word. It induced a state of mental well being on account of its almost automatic steering and the hydraulically damped telescopic forks and rear suspension system provided real physical comfort by ironing out road irregularities so effectively.

Such is the Flash pedigree. It betokens a breed of motorcycle with incomparable antecedents, and the latest arrival, the Super Flash, brilliantly maintains that tradition and makes its own amazing contribution to the legend that has grown up



Rugged big end is plenty strong enough to handle added horses. Crank is single forging.



New looks to this gleaming bobbed up hot rod include chrome tank and fenders, side by side tachometer and speedometer, dual seat with passenger rail and Amal T. T. carburetor.

around these forty cubic inch BSA motorcycles.

As the name implies, the Super Flash is a specially tuned supersports version of the famous Golden Flash. In design it follows the same basic specifications but the technical layout of the motor has been specially developed to provide a noteworthy increase in power output. The BSA engineers have every reason to be gratified at the manner in which they have been able to add so much to the performance of this unit without any sacrifice of flexibility, reliability, or any of those other features which have become symbolic of the Flash tradition.

Like the other BSA twins, the Super Flash is an even-firing verticle twin with the four speed transmission built in bolted-up unit construction with the motor. This mode of assembly possesses all the advantages of the integral unit system, including rigidity, constant chain alignment and so forth, but as the crankcase and transmission shells are bolted together at flat machined faces, they are easier to handle during manufacture, and for maintenance and service purposes by the private owner and repairman.

The connecting rod and crank assembly is particularly rugged and easily capable of handling the forty horsepower or thereabouts that the engine develops. The crankshaft is a one piece forging in high grade alloy steel developed for strength and resistance to fatigue, and the central flywheel, incorporating a balance weight additional to those on the crank webs, is securely bolted to an integral flange formed between the two crank journals.

The driving end of the crankshaft, which is seen in the cut, runs in a roller journal bearing of ample dimensions and is splined to take the primary cush-drive. The other end of the shaft, the extremity of which is just visible, is supported in a large babbit lined steel bushing with hardened end face to take the crank thrust. On (See SUPER FLASH, Page 31)

Here's what the new Super Flash looks like from the rider's seat. Instruments, tachometer, speedometer and ammeter, are centrally located and easily read without removing eyes from the road. The low bars might be alright for flat out flying but a good high touring bar should be optional.

the crank journals, which are specially heated and accurately ground to size, are the two connecting rods, machined from aluminum alloy forgings, and with split lower ends, having replaceable steel-back indium-flashed lead-bronze liners.

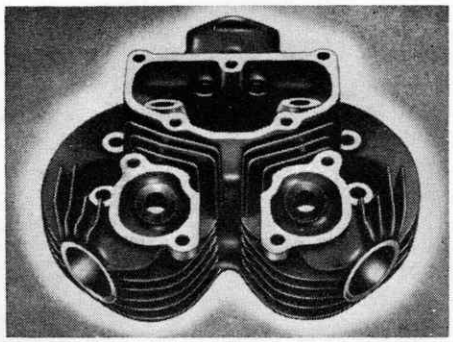
The advantages of the flash of indium which diffuses into the surface of the lead-bronze lining of the lower end bearings is most important in extra high performance motors such as the Super Flash, for this rare metal, more precious than silver, has the property of conferring on the bearing an extremely high pressure resistance, which is invaluable especially during the running-in process for it protects it against sudden overloading.

Coupled to the small ends of the connecting rods by hardened alloy steel piston pins are the two silicon alloy split skirt pistons. These give a compression ratio of 8:1, and are designed, in conjunction with the other combustion features about to be described, to give the highest possible power output on premium grade gasoline.

The high efficiency of the BSA twin power units is due, among other things, to the shallow cylinder head design with comparatively narrow angle valves. This layout insures a compact combustion space with a surface area per unit volume ratio approaching the ideal and it also permits correct valve port design without undue overall motor height. These features are retained in the Super Flash, and additionally the intake and exhaust valves are of larger diameter than on the standard line of motors, which allows the power curve to rise to a much higher rpm before beginning to tail off. Hence the enormous power output, and the high revs of which the motor is capable.

To extract the full value in horsepower from high compression pistons and large valves, it is necessary to have suitable valve timing, and many a motorcyclist with an experimental turn of mind has been disappointed in the past because he forgot this important fact. In the same way, the installation of racing cams alone will have little effect on the output of a motor, unless, indeed, it be a detrimental one. But if everything is set to match, the story is quite different, and racing cams with high pistons and large valves will produce results. The camshaft installed in the Super Flash is the result of years of experimentation, and it undoubtedly makes the motor perform, for forty horsepower at well over 6,000 rpm is certainly going some. That's one horsepower per cubic inch of piston displacement, highly commendable for any motor.

A motor must be strong enough mechanically to handle the power developed in its cylinder without wilting, for any distortion, with consequent misalignment, will absorb power. Hence the particularly rugged crankcase shell with its reinforced wall on the drive side and the generous support for the main bearings. The same applies on the timing side where the box section of the timing gear case makes for great rigidity. The timing gears comprise a train of four pinions, the first on the crankshaft end, the second an idler driving the camshaft pinion and finally the magneto pinion. Coupled to the idler pinion shaft on the outer side of a bushing in the inner timing cover, and thus lying in a secondary timing case, is a chain sprocket and drive for the generator situated at the front of the motor. The drive for a tachometer is built into the outer timing case cover and is taken from the magneto pinion.



The arrangement of the finning around the three individual valve spring chambers encourages a generous flow of cooling air over the vital surfaces of the cylinder head.

The all-important matter of lubrication has been given very special attention on these models. The oil pump is of the double gear type, one portion for supply and the other to return to the tank, and it is driven by skew gears from the crankshaft in the lower portion of the timing gear case. The supply portion feeds oil, through internal lines drilled in the aluminum, first to the crankshaft main bushing and then through drillings in the crankshaft to the two lower end bearings. Thereafter this portion of the oil supply escapes into the crankcase and is churned into mist for general splash lubrication.

A by-pass is taken from the supply line at a point where it passes a pressure release valve, and this is fed through the timing case cover to the single camshaft, which lies in back of the cylinders, throwing a jet of oil on to the timing gear pinions on its way. At the camshaft, the oil is fed into a trough in which the cams dip and obtain lubrication for themselves and their tappets. From the end of the trough the surplus oil is splashed into the interior of the motor, the orifice being in such a position that the lubricant reaches the walls of the left hand cylinder, thus augmenting the supply at this point. This evens up the oil supply to the two cylinders because the one on the left, being at the end of the first oil line from the pump, may not get quite so much oil from its lower end bearing.

A third supply is taken by an external line to the overhead rocker gear. This is bypassed from the return line to the tank, and after lubricating the overhead mechanism it drains back into the crankcase.

To work in conjunction with this very thorough lubrication system there is a timed mechanical breather installed in the timing gear case. This is driven from the camshaft pinion, and it discharges through internal lines on the rear drive chain.

The design of the finning on the cylinders and heads deserves special mention, for obviously the temperature control on an extra high power motor such as the Super Flash is a matter of great importance. In order to minimize distortion due to temperature gradients between the cylinders, the BSA engineers decided on a single camshaft at the rear, thus providing a free air passage between the cylinders at the front. The four pushrods are enclosed within a single centrally disposed tower cast into the block at the rear, and the air stream between the cylinders divides and continues past each side of this tower.

As for the head cooling, an examination of the illustration shows how cunningly the designer has managed to pass the greatest possible amount of air over the maximum possible area without there being any enclosed pockets whatsoever, which is a unique and extremely effective arrangement.

There you have what is probably the greatest change offered by any manufacturer for 1953. And again it appears that this new super tuned BSA was designed primarily to satisfy the demands of American riders as were the standard 650 cc. verticle twins produced by BSA.