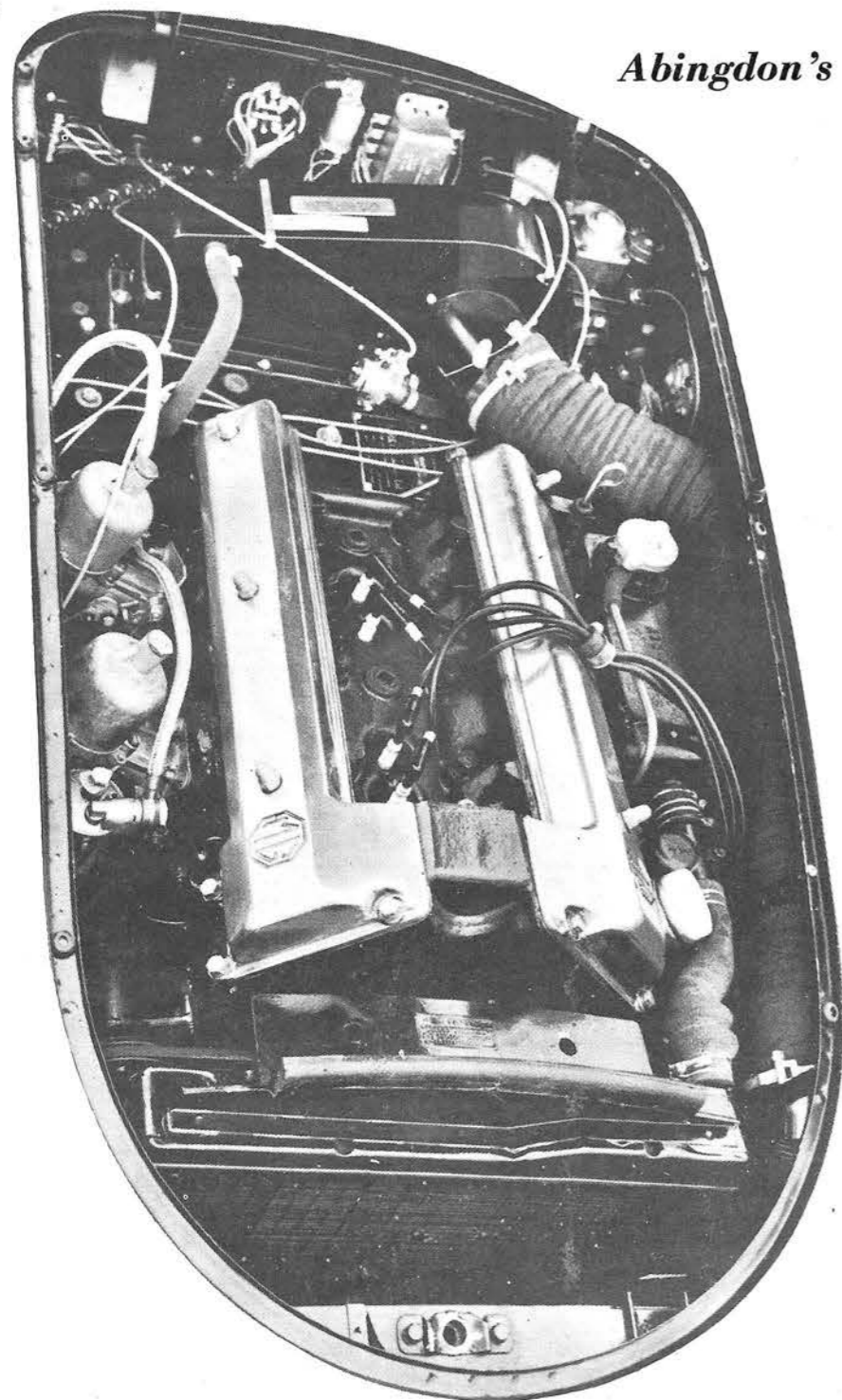


# SCI ROAD TEST: TWIN CAM

# MGA

*Abingdon's most muscular Midget.*



Here it is: 1588 cc and 107 hp of racing potential. Widely spaced valve covers, manifolding completely fill MGA engine room.

FOR THE MAN who merely takes a quick look at the products of the MG car company produced since 1936 and who has a smattering of knowledge concerning what went on at Abingdon during the halcyon days prior to that date it is easy to call the marque either stagnant or "commercial" and let things go at that.

From 1929 to 1936 the cars bearing the brown and cream octagon had made things very hard indeed for racing handicappers who had to revise their MG performance estimates upwards with boring regularity only to find that Kimber and company had with equal regularity managed to field something even hotter than before. Then came the Nuffield reorganization and the end of a formal racing and development organization as far as the men of Abingdon themselves were concerned. Help was given as before with open-handed and open-minded generosity to those who wished to race the marque but the factory crew must concern itself with production and the business of building cars for money.

Gone were the days when the production lines found themselves hard put to keep up with the stream of ideas and new designs that poured from the facile minds of H. N. Charles and his design staff. Gone were the taut sports and racing cars with their single overhead cam engines that could twist up a 7000 rpm storm and pump a gutty 120 to 140 horsepower from a miniscule 750 to 1100 cc's. No more J-4's, mighty K-3's or sizzling Q's and R-types were to roll out the doors and onto the tracks. The year 1936 was the year of the rocker-box and the beginning of the bread-and-butter sports car. It was the year of the TA.

Not, mind you, was it the end of the MG Midget. Not at all. It's just that things weren't quite the same.

Yes, to the man who just looked at the surface it was easy to say that the men of Abingdon had gone commercial, that things had changed. But to those who looked beneath the surface it was quite clear that they hadn't changed all that much. The minds in the back room were still as facile as before, the slide rules as well used.

If any proof of this was needed, one has only to look at the MGA. Merged with the mighty BMC combine, John

Thornley's men came up with a new car to fit the new production components and did it in little more than a year. All BMC products must use basic BMC parts and this standardization includes engines, gearboxes, rear ends and the like as well as minor equipment. None of this materiel bore any relation to past practice. Yet, *Voila*, there was the MGA.

To your truly shriven MG owner all of this was horrifying. Nuffield had been heretic enough but this last merger was unspeakable. They reckoned without Messers Thornley, Enever et al. And they also did not notice or refused to see the significance of something else. In 1955 the men of Abingdon showed up at LeMans with three sleek alloy bodied cars labeled EX 182. The summer before they had arrived on the salt at Bonneville with a chunky, brick-like streamliner tagged with the designation EX 179. Both bore the BMC B-type engine which later sat between the rails of the MGA in somewhat more civilized garb. Later, something called an MGA appeared at the Ulster TT. Outwardly it was EX 182 but inside it carried an engine with the unmistakable dimensions and covers of a DOHC head. And in the summer of 1956 EX 179 appeared again on the salt with a similar piece of equipment tucked into its chunky insides. And in 1957 came EX 181, a ground missile of the most advanced type and again equipped with that portentous dual cammed engine, this time equipped with a monster 305 cubic-inch-per-revolution Shorrock blower! Output: 290 bhp. Speed? Something in hand over 240 miles an hour.

They had changed at Abingdon, had they? Not much they had! The same men, with a few exceptions, who had bolted together the last R-type, were at the same old stand doing the same old things. And with the same aims in mind — building sports racing cars at competitive prices.

And early this July the news was let out. That double-cammed head for the BMC block was to be a production item—not a conversion piece but equipping an entirely new automobile. Well, not en-

tirely new but with enough engineering changes in mounting, gearing and suspension to obviate attempts at shade tree conversion from the standard MGA, which, by the way, continues to form the bulk of the company's output.

In short, after 22 years, the reign of the rockerbox was over at Abingdon. The Marque of the Octagon was once again represented by a production racing sports car. Not that post-Nuffield MG cars have not been raced—they have been and on occasion successfully and well. But, to face facts squarely, they haven't been competitive except on rare occasions with other marques of their own class. The difference is in the point of view—the rockerboxes were street sports cars that could be raced; the early single-stick cars and the new MGA Twin Cam are racing sports cars that can be street-driven.

What hath Abingdon wrought? Basically they have turned out an improved MGA that will go, according to the gear ratios used, some 20-odd miles an hour faster and (again according to the gear ratios used) will do it considerably quicker, especially in the driving ranges of between 40 and 100 miles an hour. Having made the car go that much quicker, they also figured to stop it equally as fast and to this end they have mounted as standard Dunlop disc brakes on all four corners.

Two specific items combine to give the car its speed. First, since nothing beats cubic inches except rectangular money, the basic BMC B-type block has been punched out to a new bore size of 2.969 inches (up from 2.87) for a total displacement of 1588 cc's or 96.906 cubic inches. Then they tossed in the rectangular money with the double overhead cam head. This little item gives the engine 1500 rpm more at the top end.

The head, being the big item, is worth close study. The head itself is of aluminum alloy attached to the block by ten studs. The valves are run in at an included angle of 80 degrees and operated through shimmed cups by two chain-driven camshafts. Clearances are set by changing the shims which are supplied in a large variety

of sizes. Each camshaft runs in three renewable white-metal bearings and is driven by a  $\frac{3}{8}$  inch pitch Duplex roller chain from a half-speed shaft in the left side of the block. This half-speed shaft is driven in turn by a pair of reduction gears from the crankshaft. The tach, distributor and oil pump are also driven by this shaft. Pistons, of course, are special items with three compression rings and one oil ring and are equipped with full floating wrist pins. Compression ratio is given as 9.9 to 1. Hung off the right side of the head is a large log-type manifold bearing two big H6 S.U. carburetors and set up with mounting flanges to take an even larger size. This being an MG and the MG people being the sort of blokes they are new and better things are planned for the engine in the future, hence the big mounting flanges. Makes one wonder what a Stage Four would do considering the effect of such tuning on the pushrod version. As it is, this small bear pumps out 107 bhp at 6500 rpm.

How does this road eater go? Very well indeed, all things considered. SCI's test car was really and truly just that—a racing test bed. One of the first batch to arrive in the U.S., it was bound to have bugs and did. Not bad ones, mind you; just the bugs expected from a fresh production line item.

We picked the car up from Hambro Automotive Corporation in virtually the same shape it had been shipped. It sat in the garage looking, except for the knockoff hubs, just like any MGA. We slid into the seat and about the only immediately noticeable difference was the tach which was orange-lined at 6500 and red-lined at 7000 rpm. Yanking the starter-pull (when *will* they trade that thing off for a proper button?) started the engine into a busy 900 rpm idle and a heady aroma of Castrol "R" arose from underneath. Sliding the butter-soft gearbox into low we eased out the garage doors and into the street, treating the throttle with all the caution rated by a drag machine. It wasn't necessary—the car was as docile as any rocker-head MGA. This applied all

*Editor bends the Twin Cam MGA through tight hairpin at Lime Rock during lap-time tests. Added weight of new engine caused considerable lean but the car stuck and handled well, even with "street" tires.*



through New York City traffic with the added benefit of being able to stay in a given gear for a longer period of time and over a considerably wider range of speed.

Cruising out into suburbia, we ranged through Third and Fourth gears according to the speed laws on various stretches, keeping the tach wavering between 2500 and 4500. The twin cam engine with its slightly larger size pulled steadily and seemingly equally over this entire range. It was when the 4500 rpm mark was passed that the new engine began to reveal its capabilities, though. If the factory's power curve can be applied to this particular car, the horsepower rating shoots up from 76 to 98 bhp in the space between 4000 and 5000 rpm. This boost can be felt immediately—where the standard pushrod engine car begins to taper off, the twin cam version is just starting to belt out its new-found power. It's not a mad, bellowing slam in the back but a smooth, deceptive rush that can get you from 40 to 70 mph in just over four seconds, using Third gear in the optional close ratio box. Depending on the gearbox used and the rear axle ratio chosen, Third gear is good for anything from 75 to 85 miles an hour, more than fast enough for

we headed off for Lime Rock with the Twin Cam in company with Andy Woods, Hambro service executive. For this trip the car was in standard trim—in fact substandard as facts later proved. It hadn't been touched except for the addition of oil, water and fuel since it had come off the dock. Further it showed only about 600 miles on the meter and the first few hundred of those miles had scarcely been normal break-in driving. Gearing was the standard box and the 4.3 rear axle ratio.

Buckling on crash helmet and stuffing a bag of laundry at left hip to cut side sliding, yours truly began circulating the course, slowly at first and then progressively more quickly until the comfort-discomfort threshold was reached (a somewhat lowered point than normal due to lack of seat belt). The result was six consecutive laps varying between 1:22.5 and 1:23.0. This is representative of fair-to-good time with a rocker-head MGA set up for competition. Not spectacular but indicative of much, much more potential—in other words, fresh off the boat, with nil preparation and with a driver not overly familiar with the car under competition conditions, the "TC" turned in a series of lap times that were competitive

swapped on the site.

At the track the engine fired up with a noticeably sharper, biting rap, denoting valve and ignition timing that was right on the mark. Within three laps we were circulating two full seconds quicker than before and this on a course that was still damp from an early-morning rain. Not bad for a start. Then the rear end gears were swapped for the 4.5's. With the nose-cone all set up we had what was in effect a semi-quick-change rear end and the swap was completed in less than an hour.

Time was short so a lap time was taken with only one standing lap and one flying lap, the flying lap being clocked. Results: another second chopped off the time.

Still using the close ratio box we tried some more standing starts. Bear in mind that the optional box is terrific for racing once under way, but all the gear ratios have been shoved upward toward the high end. Starts with this rig in low are much like using Second gear in the standard box. The time to 30 mph was *still* four seconds flat but just about then the machine really started to charge—it took just eight more seconds to hit 70. Zero to 60 was 9.7 seconds, an improvement of almost four seconds over the time set by the car

tion work; slightly increased weight and the fiercer thrust of the car peel down a standard road tire, even the excellent ones with which the car is equipped, in one hot practice session.

In the East, where the courses are short and tight, the car should be ordered with the 4.5 rear end and the standard gearbox to allow jackrabbit starts and quick jumps between corners. In the far West where the courses are longer, the 4.5 rear axle and the close ratio box are in order, though the standard transmission will do the job on the twistier, shorter circuits.

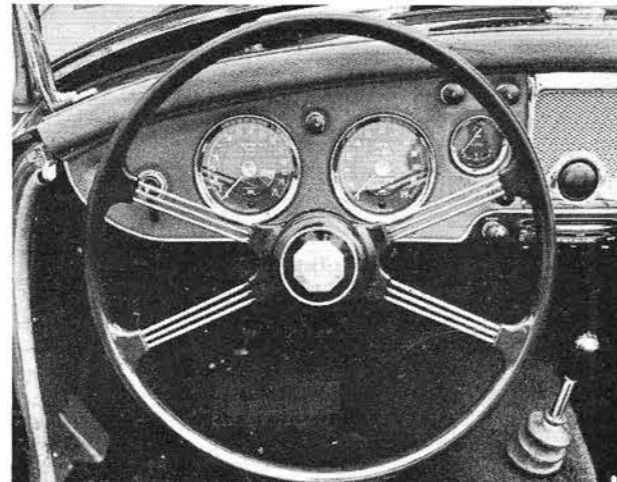
As for brakes, don't worry about them. These Dunlop discs are beyond doubt the best production sports car binders in the world, particularly when the dense competition pads are used. They're exactly the same as those used on this reporter's competition Austin-Healey Six-port and will haul that muscular machine down to cornering speed from 115 miles an hour in just a shade over 50 feet hour after hour. They'll do the same for the Twin Cam as well—probably better for that matter due to the lighter weight of the MG. In our regular 10-stop test they showed nil fade and not a fraction of an inch pedal loss. After this we went out and turned an hour's worth of fast laps. Still no fade.

From all we can tell at this point (there'll be more to come) it looks as if inter-marque competition is returning to the small-bore class. The potential in class of the new Twin Cam MGA will be limited only by the potential of the man behind the wheel and of the man who has charge of the horses under the hood.

—John Christy



Externally the Twin Cam looks little different from the standard version except for the center-lock wheels.



Another tip-off is the tachometer, which is orange-lined at 6500, red-lined at 7000 rpm.

highway passing and, used injudiciously, quick enough to make big black marks on a driver's license. At no point in traffic did the car buck, miss or seem to be lugging except for a slight hesitancy off the mark at traffic lights when too little engine speed was given on clutch engagement. And at no time, even in crawling rush hour crowds did the car tend to overheat as do some other highly tuned machines. In normal street trim with muffler, moderately soft plugs and normal carb needles the temperature stayed at 180° regardless of whether the car was pushed hard in gear or idled down in high.

However, what we were really interested in, as were the service department crew at Hambro, was how the car stacked up on a race course in both normal street and racing trim. Consequently one fine morning

with prepared versions of the standard MGA. Standing starts at first were another matter due to a couple of factors, one being the totally untuned engine, the other being a soft "street" type clutch that wouldn't bite until the engine had lugged down to 2000 rpm. The result was a four-second crawl to 30 mph.

Then we turned the car over to the tender administration of Ed Brown, the man who prepared last year's Austin Healey team cars for Sebring. Ed spent a day setting things to the specs as supplied by the gospel according to Abingdon, adding a straight-through pipe to the tuned exhaust system and stuffing an optional close ratio gearbox under the tunnel. Then back to Lime Rock again with an extra nose-cone for the rear end set up with 4.5 to 1 gears, this last item to be

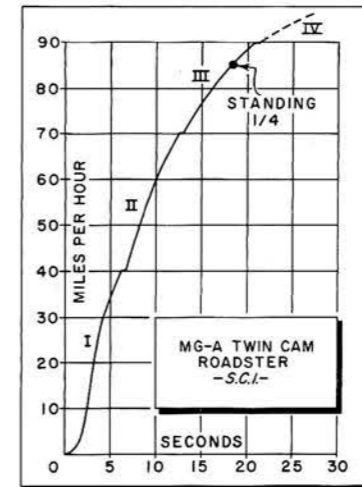
in untuned street trim.

After these runs, we huddled with Andy, Ed and Frank Harrison, Hambro Service Manager to see what we could sift out of the mass of data. The conclusions were pretty obvious. The car as presently set up with standard gearbox, soft clutch and 4.3 to 1 rear end is ideal for cross country high speed cruising in the Continental fashion and for rallying. For serious racing the set-ups should vary depending on the area involved.

In all cases the competition clutch is almost a necessity—the Twin Cam pumps enough power on engagement to start the normal street clutch slipping after a few racing-type starts. It doesn't slip once under way but it doesn't bite quick enough to slam the car off the mark. Racing tires are a "must" for serious competi-



Hubs depart from past practice, using pin drive on disc wheels.



**MGA TWIN CAM ROADSTER**

Price at East Coast POE (Basic) . \$3345  
Price at West Coast POE . . . . . \$3345  
U.S. Importer: Hambro Automotive Corp.

**PERFORMANCE**

**TOP SPEED:**  
(Estimated, with 4.3 to 1 axle) 120 mph

**ACCELERATION:**

From zero to	seconds
30 mph . . . . .	4.0
40 mph . . . . .	6.1
50 mph . . . . .	8.3
60 mph . . . . .	9.7
70 mph . . . . .	12.9
Standing 1/4 mile . . . . .	18.8
Speed at end of quarter . . . . .	85.0

**SPEED RANGES IN GEARS:**  
(Standard gearbox)

I . . . . .	0-31
II . . . . .	10-55
III . . . . .	20-85
IV . . . . .	25-120 (est.)

**SPEEDOMETER CORRECTION:**

Indicated Speed	Timed Speed
30 . . . . .	30
40 . . . . .	40
50 . . . . .	50
60 . . . . .	60
70 . . . . .	70.5

**FUEL CONSUMPTION:**  
Hard driving (racing laps) . . . 12 mpg  
Average driving (under 60 mph) . . . . . 23 mpg

**BRAKING EFFICIENCY:**  
(10 successive emergency stops from 60 mph, just short of locking wheels)  
Nil fade, Nil pedal loss

**SPECIFICATIONS**

**POWER UNIT:**  
Type . . . . . Four-in-line, water cooled  
Valve Arrangement . . . . . Double overhead cam  
Bore & Stroke . . . . . 2.97 x 3.5 in (75.4 x 88.9 mm)  
Stroke/Bore Ratio . . . . . 1.2/1  
Displacement . . . . . 96.906 cu in (1588 cc)  
Compression Ratio . . . . . 9.9/1  
Carburetion by . . . . . Two H6 Su  
Max. Power . . . . . 107 bhp @ 6500 rpm  
Idle Speed . . . . . 800 rpm

**DRIVE TRAIN:**

Transmission ratios test car	optional ratio
I . . . . . 3.64	(2.45)
II . . . . . 2.21	(1.62)
III . . . . . 1.38	(1.27)
IV . . . . . 1.00	(1.00)
Final drive ratio (see text) . . . . . 4.3	(4.55, 4.88, 5.12)
Axle torque taken by . . . . . Springs	

**CHASSIS:**  
Frame . . . . . Box section  
Wheelbase . . . . . 94 in  
Front Suspension . . . . . Coil Springs, IFS  
Rear Suspension . . . . . Unequal length wishbones  
Shock absorbers . . . . . Semi-Elliptic Leaf Springs  
Steering type . . . . . Lever and piston  
Steering wheel turns L to L . . . . . 2.7  
Turning diam., curb to curb . . . . . 32 feet  
Brakes . . . . . Dunlop disc, 4-wheel  
Tire size . . . . . 5.90 x 15

**GENERAL:**  
Length . . . . . 156 in  
Width . . . . . 58 in  
Height . . . . . 50 in  
Weight, as tested . . . . . 2200 lbs  
Weight distribution, F/R as tested . . . . . 51/49  
Fuel capacity . . . . . 12 U.S. gallons