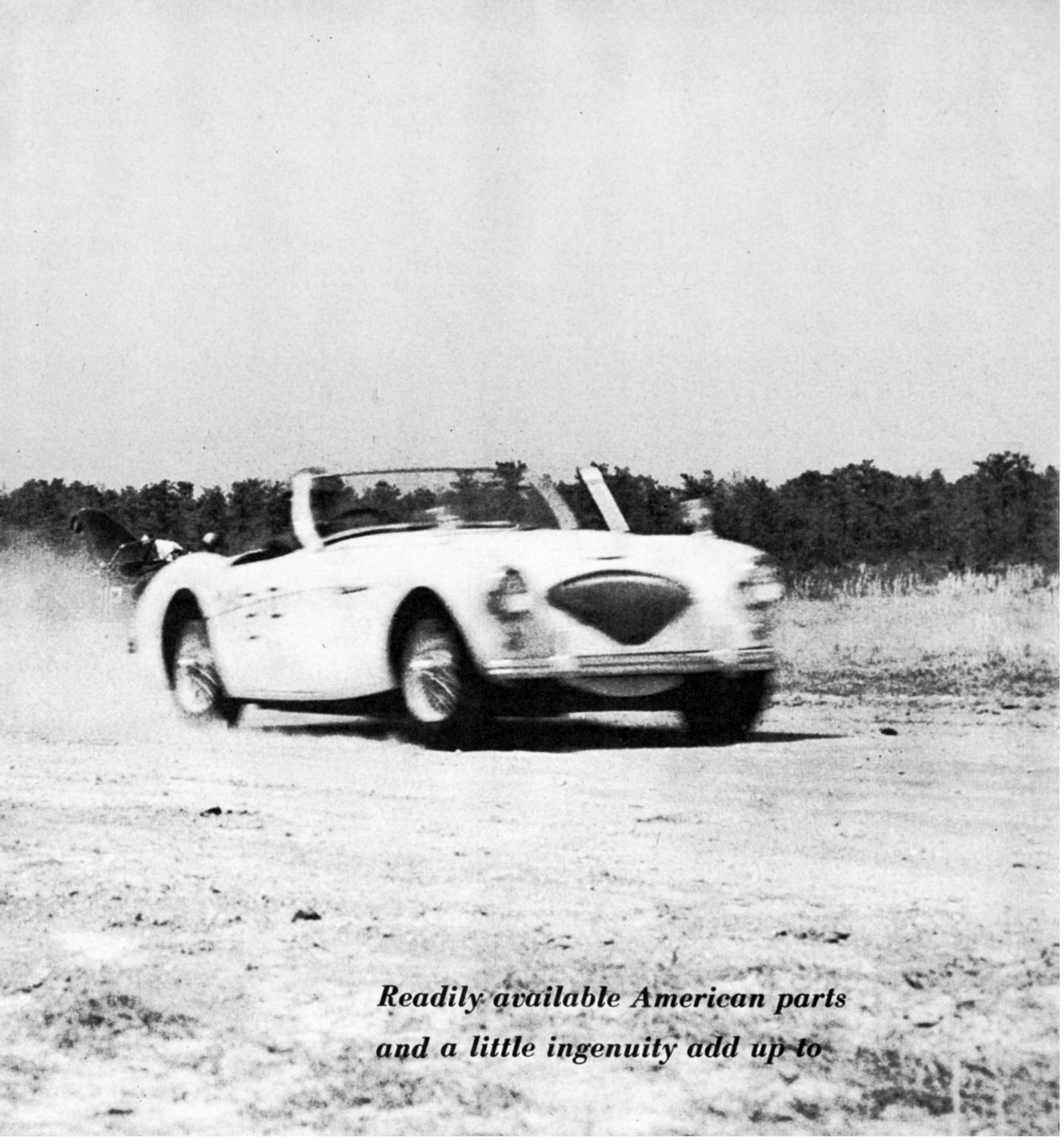


Readily available American parts and a little ingenuity add up to

More Horses for the Healey

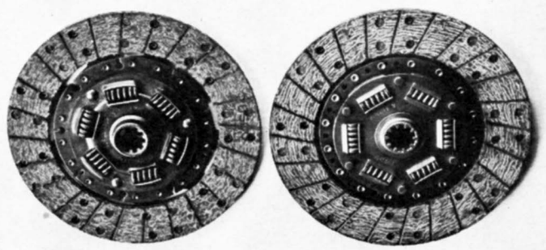
THE urge to wring the last ounce of performance from the brain-child of some designer harassed by the restrictions of weight, reliability and economy is an ultra-modern phenomenon that could best be explained by a psychologist. However, the fascinating part of all this to the observer is the wide range of variations on the hop-up theme.

Seldom do tuners agree on method; in fact, tuners seldom agree on anything except that increased horsepower at the flywheel (lightened) and lbs./ft. torque are all the answer that is needed in defense of a system. If these actually are reasonable criteria, the men who build engines by selecting the most suitable parts regardless of the parts' ancestry haven't been getting the credit they deserve. And the strange idea that it is sacrilege to use American parts in a foreign car even when the American parts are better has sent some really helpful information underground.

The approach of Ken Swanson of Consolidated Motors of Long Beach, California, to hopping up an Austin-Healey is enlightening. By using a matter-of-fact appraisal of parts supply practicality and economics, Swanson has come up with a lot of ingenious answers. What he's proved is that readily available American parts, with a minimum of effort, can be used as speed equipment on the Austin-Healey. In the process of extracting 60 to 70 percent additional horsepower from the Austin-Healey, he resorted to specially made or hard-to-get parts only on a few occasions.

Swanson's method of dealing with the Austin-Healey engine is simple and direct throughout. Recently, for example, it has become fashionable to split siamesed intake ports to feed one cylinder at a time. Swanson, on the other hand, makes no attempt to do this but does a healthy porting job, which the Austin-Healey head can easily stand. The ports and intake manifolds are carefully matched and polished. He uses late model Chevrolet chrome steel exhaust valves. Since they are ⅛ inch greater in diameter than the

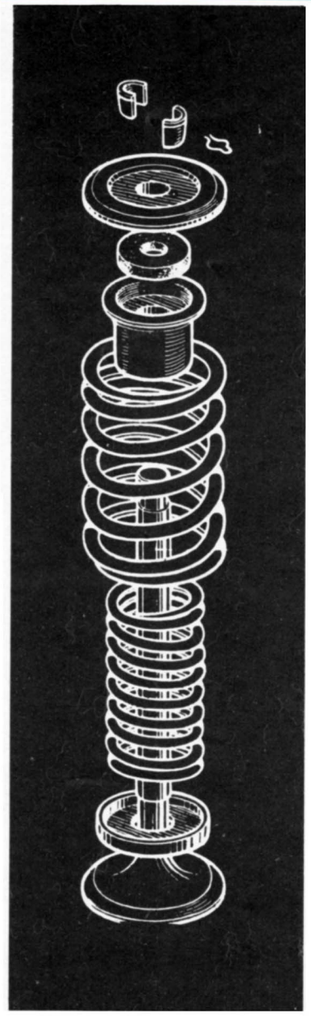
Plymouth and A-H clutch plates lined with same material. Detroit disc, right, has shorter heavier springs, and stronger body to withstand extra 650 lbs. pressure from clutch.



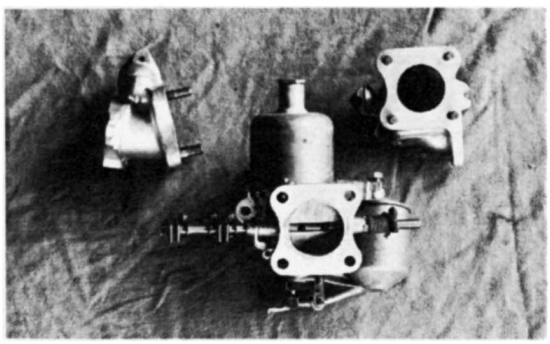
PARTS LIST

VALVES:	**1954 Chevrolet chrome steel specification**	
VALVE LIFTERS:	**Buick (chilled iron)**	**GM 1393910**
PUSHRODS:	**Buick**	**GM 1310479**
VALVE SPRINGS:	**Oldsmobile (1953 and later). Outer spring and inner damper spring — 110 lbs. pressure. With Chet Herbert Chrysler inner spring included — 165 lbs. pressure.**	
IGNITION:	**Lucas 60,000 volt oil coil Lucas Le Mans Spring number (distributor) 421596 Lucas Spring toggle**	
PISTONS:	**Merryman Engineering**	
RINGS:	**Perfect Circles**	**k200CM compression PC 85 Oil Ring**
CLUTCH:	**Plymouth hub**	**Standard 1940-1952**
	Lining	**American commercial grade, segmented**

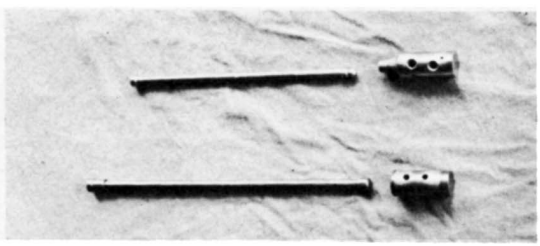
Exploded diagram of stock valve setup. In modified form, 110 lbs. pressure is gained with late model Oldsmobile outer spring, and can be used for street driving without excessive wear.



Merryman piston at left, A-H piston at right. Merryman piston is 1/16 shorter in wrist-pin height, has unrelieved skirt.

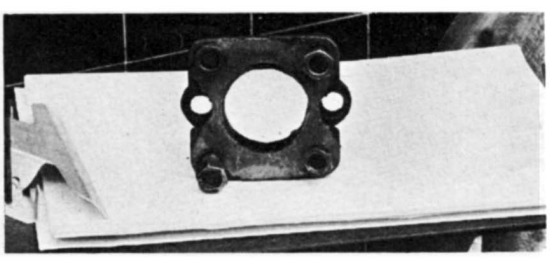


The Le Mans specification SU carburetor and manifolds. These are not easily bought or duplicated, but it can be done.



About a 30% saving in weight was saved by using the Buick pushrods and lifters shown on the left. Stock A-H at top.

By using flat-crown Merryman piston, at right, a compression of 9.3:1 was obtained. Piston uses stock American rings.



Shown here is the intake manifold Swanson made before he could get the Le Mans type inlet plumbing.

stock valve, a considerable amount of metal is removed from the port after the new seat has been fly-cut. The only really important consideration in reshaping the port is making sure that too much metal is not removed from directly under the seat. The Chevy valve stems are shortened and new keeper grooves cut, a matter of only a few minutes work in any machine shop. Valve spring pressure is increased from 90 to 165 pounds by the use of triple nested helical springs.

The three spring set consists of the late Oldsmobile outer spring and dampener spring, with the other inner spring a Chet Herbert Chrysler inner spring. This set would normally be recommended only for use with a roller tappet setup where spring pressures of 165 pounds and over can be used to a real advantage. Here the combination of chilled iron Buick lifters and steel billet Austin-Healey cam will stand up reasonably well – at any rate, well enough for competition considerations. For street use the late model Oldsmobile outer spring and dampener will give 110 pounds pressure without any chance of excessive wear.

Swanson uses Buick lifters with stock Buick pushrods and thus saves a considerable amount of weight. For street use the larger diameter Buick rocker-cup end is used to take advantage of the silence gained by the better oil cushion. For racing, he substitutes the lighter Austin-Healey upper push-rod end. The disadvantage of the greater unsupported length of the Buick pushrod is probably outweighed by the fact that there is little side thrust on the lifter from valve spring pressure, since the pushrod rides the bottom of the lifter. Besides, it's pretty interesting to be able to walk into the nearest GM parts house and instruct the man to go through his happy parts bin and bring you out a set of light weight lifters for your Austin-Healey.

The camshaft is a re-grind from the stock billet. Swanson does not alter valve lift, but does increase valve duration. In the vernacular, it's a "270," meaning that each valve is open for 270 degrees of crankshaft movement. There is no change in the rocker ratio and the tappet settings are a conservative .015 . . . only .003 over stock. The intake valve opens 25° BTDC and closes 65° ABDC. The exhaust opens

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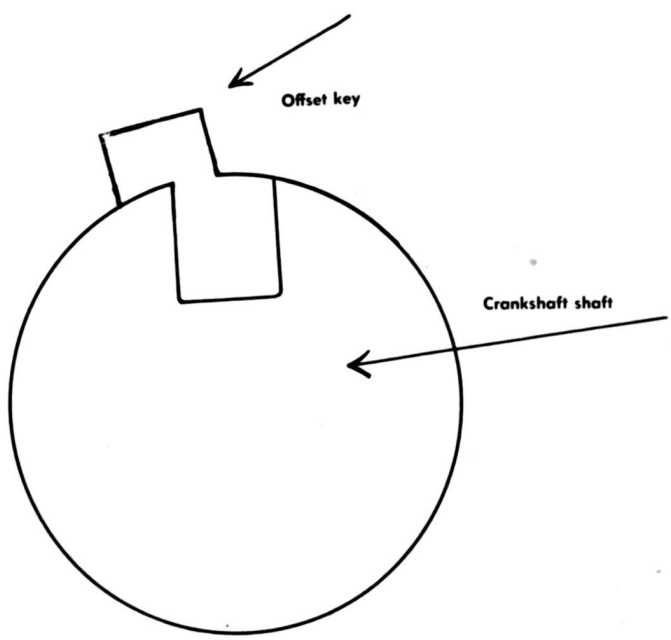
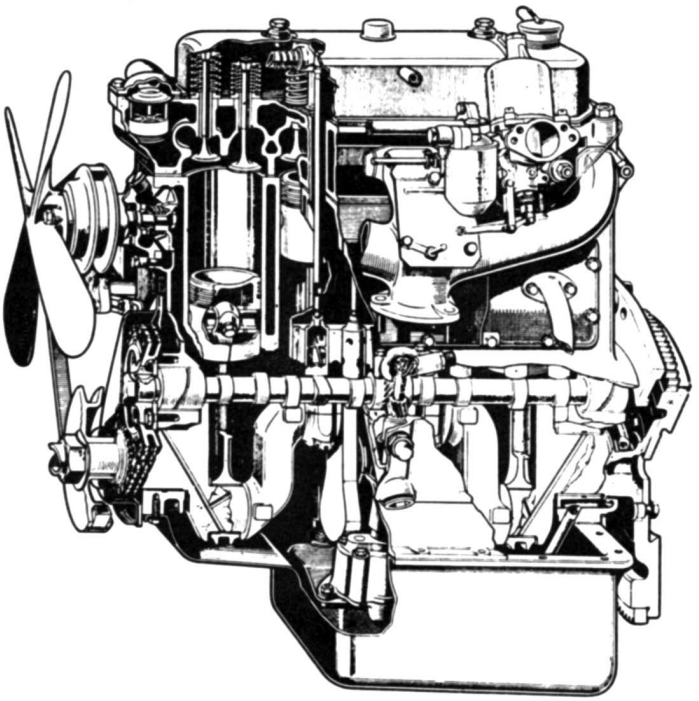


Offset key used to change ignition timing in small increments.



Cutaway of Austin-Healey '100' engine showing stock works. American parts can be used as speed equipment with a 60 to 70 percent gain in horsepower.

CLUTCH ASSEMBLY EXPLODED

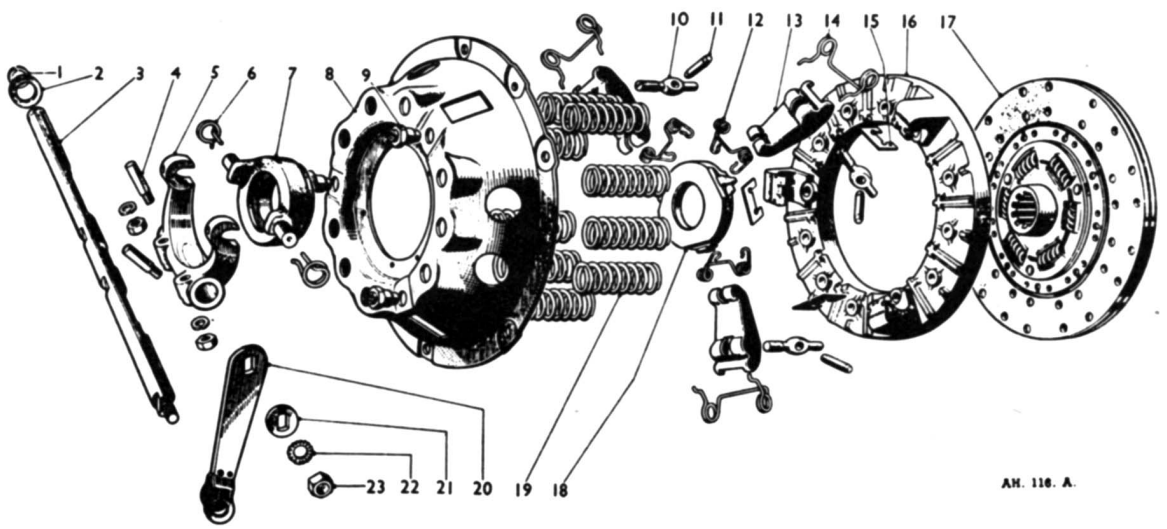


Fig. 2. Components of the clutch.

1. *Shaft circlip.*
2. *Washer.*
3. *Operating shaft.*
4. *Withdrawal fork cotter.*
5. *Withdrawal fork.*
6. *Release bearing retaining spring.*
7. *Release bearing and cup.*
8. *Clutch cover.*
9. *Eyebolt nut.*
10. *Eyebolt.*
11. *Release lever pin.*
12. *Retainer spring.*
13. *Release lever.*
14. *Anti-rattle spring.*
15. *Strut for release lever.*
16. *Pressure plate.*
17. *Clutch plate with linings.*
18. *Release lever plate.*
19. *Thrust spring.*
20. *Operating lever.*
21. *Operating lever washer.*
22. *Shakeproof washer.*
23. *Operating shaft nut.*

Healey

(Continued from page 11)

60° BBDC and closes 30° ATDC. For the owner who has a preference for a particular grind, there are at least a half dozen reputable cam grinders that have developed a number of variations for the Austin-Healey.

Extensive research failed to turn up an American stock piston that was dead reliable. Therefore, Swanson made arrangements with Merryman Engineering of Ontario, California, to cast suitable pistons that would use American rings. With these flat-crown pistons —as opposed to the stock "dish-crown" type, a compression ratio of 9.3 to one is gained and the critical distance between piston crown and wristpin center is 1-15/16 inches as compared to the stock height of two inches. Two compression rings and one oil ring are used instead of three compression rings and one oil ring on the stock piston. The rings are Perfect Circles.

For both street or racing use, ring clearance is .010 of an inch. These special pistons are available from .020 to .080 oversize, but special rings are needed for the .050 overbore because of insufficient depth with the stock ring of this size. However, stock rings for .060 and over are available. The piston running clearance is .004 of an inch. As a matter of record, .080 overbore gives a swept volume of 2740 cc's (168 ins.), a significant increase where every inch counts.

Two Le Mans — specifications 1¾ inch SU carbs are used with the Le Mans manifolds. A fuel block with regulator is used to avoid feeding the carburetors in series, the rear carburetor showing a tendency to starve at high speed with the regular setup. Le Mans type manifolds are sometimes difficult to come by and are not easy to duplicate, but the illustration shows it can be done.

The engine is statically and dynamically balanced by the electronic method. It's important to remember that the thrust loads on the connecting rod and main bearings with an unbalanced engine make it advisable to replace the bearings after balance is achieved. Otherwise, oil pressure could be affected at high rotational speeds.

Long stroke engines have a tendency to be hypercritical in regard to ignition advance. This is definitely true of the Austin-Healey engine. Proper degrees of crankshaft advance are difficult to

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dently drag for pink slips with all but a couple of U.S. production cars, but he'd better learn to feather the throttle when he's accelerating in Low Range. When you make a heavy-footed start in Low there is brief but unmistakable wheelspin, and you're better off settling for Drive. It's in the long haul that Low shines, regardless of the

Manual-shift transmission, optional on the D500, has a second gear ratio slightly higher (lower, numerically) than the kickdown of the automatic box, and is naturally preferable on all counts but driver convenience. Stick-shift permits you to exploit engine compression fully, and with the car's superb brakes, you can get terrific mountain and winding-road averages.

Chrysler is making a fantastic selection of gear ratios available for the D500, running through close gradations from 3.07 to 4.89 to one. The standard rear axle of the Powerflite D500 comes with a 3.73 to one, 8¼-inch ring gear, and optional ratios in this size range from 3.54 to 4.78. The heavy duty rear axle on the D500-1 usese an 8¾ inch ring gear, with ratios of 3.07 to 4.89 readily obtainable and a short-track 5.83 gear available on special order. This multitude of optional gears for both hot Dodges leaves no doubts concerning the seriousness of the company's attitude toward racing.

The D500 is a thoroughly comfortable car to drive. There is nothing harsh or bumpy about its ride. A notable chassis characteristic is that if you rock the steering wheel from right to left, the body does not pitch heavily back and forth on the springs, as nearly all Detroit touring cars do. As in cornering, the body remains agreeably flat. There was only one bit of looseness in the chassis and this occurred at very low speeds, when, for example, applying the brakes to check transmission creep. Then the body took a hard, short pitch forward and rocked back. This, of course, is a trifle. Another is that engine idle with the 252-degree cam is a shade rough, but everything smooths out when you crack the throttle.

Dodge workmanship, finish, and detail appointments are of the best quality. The D500's resale value and therefore its value as an investment are closely competitive with comparable makes. The division's skillful and economical use of engine and chassis components available within the Chrysler Corporation makes the price of the D500 laughably low. The car is a match in all ways for anything you can buy in its price range and as a performer it is practically unique.

With the D500, Dodge has performed the remarkable feat of building a record-breaking competition car and a new type of production touring car at the same time. It is *not*, remember, a power kit conversion of a normal touring car. It's designed from the ground up as a high-performance road machine that can be used for commuting to work, for winning its class at the local drag strip, or for making a top showing in a tough rally or race. And if you've got to have even more performance at the cost of comfort and low speed response, you can get all the D500-1 options. —*G.B.*

(Continued from page 65)

get. A full tooth on the distributor makes a change of over 10 degrees and this usually occurs when the most you need is a matter of two or three degrees. Swanson beat this problem of splitting the teeth by the use of an offset key on the crankshaft shaft, thus making it possible to pick up or drop a couple of degrees at a time. Dynamometer tests definitely proved that the laborious hand filing of offset keys was profitable.

Swanson's extensive experiments with the ignition characteristics of the Austin-Healey brought another interesting bit of information to light. He claims that it takes only two minor modifications. These changes involve only the advance control spring and spring toggles on the centrifugal weights of the automatic advance mechanism. Both of these parts are available from Lucas

The specifications sheet will show a more than suitable selection. Swanson suggests that the 4.125 or 4.1 be used for a car driven mostly in the city and at 3.66 for a highway car.

The handling of the stock Austin-Healey is sometimes harshly described. The substitution of Austin A-40 coil springs in the front reportedly works wonders and when combined with the Le Mans stabilizer bar and shock absorbers apparently leaves little to be desired. Increased torque makes it advisable to add an extra spring leaf at the rear or fit the commercially available Traction Master.

The American parts used by Swanson in the Austin-Healey are not just substitutes, they're better parts. This strange idea that American replacements suddenly become inferior when they're used in a foreign car may have been valid when foreign imports consisted mainly of Type 35 Bugattis, Hispano V-12's and Rolls-Royces, but things have changed since then. It seems silly to lock the door on a billion dollar parts house because it might not be maintaining the breed. #