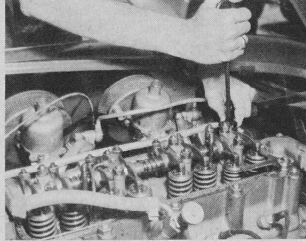
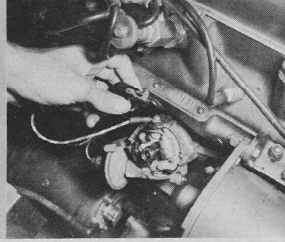


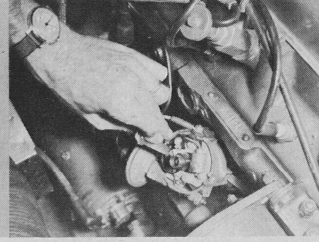
Proper valve adjustment is essential to performance.



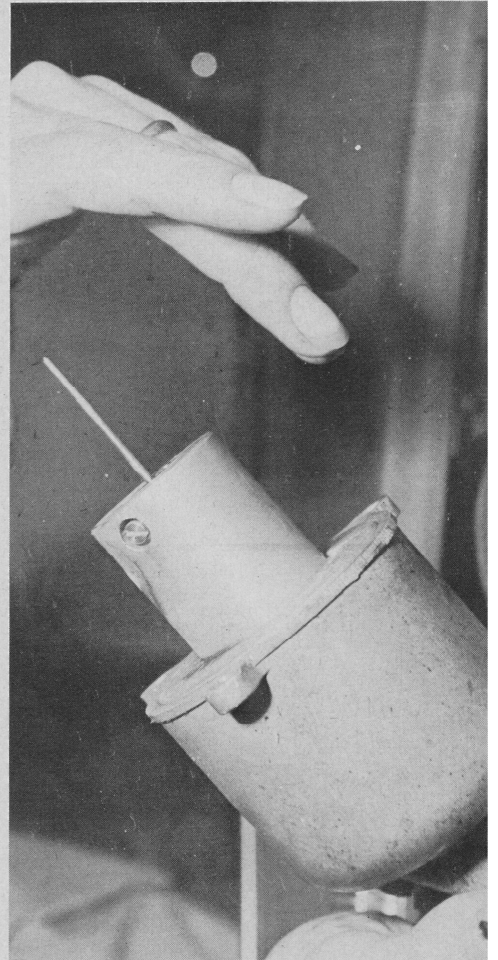
Distributor should be carefully checked in tuning.



Point gap and faces should be accurately checked.



"Spinning in" the plunger on the S.U. Carburetor will assure necessary smooth operation.



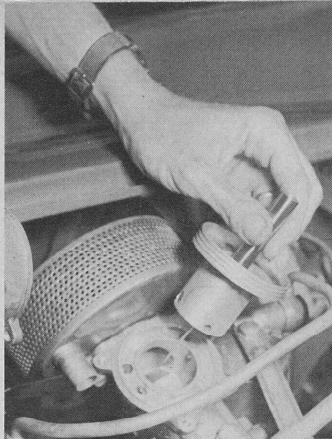
Tuning techniques---

Austin-Healey

PREPARING a car for competition is generally thought of as being confined to more or less extensive modifications to the engine, but this is only one phase of competition tuning, even though the rest of the work generally has been ignored in writing about it.

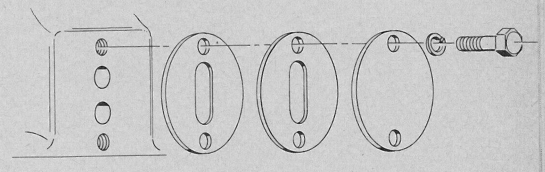
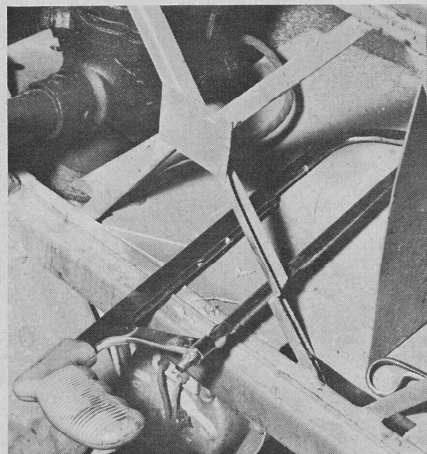
With the introduction of the Austin-Healey 100 a lot of activity developed in the stock class D events, making it apparent that some of the cars seem to run better than others. This is partially due to the drivers—and sometimes an exceptionally good driver can make a poor car look good—but unless you feel that you can give the other drivers odds, it's the preparation that makes the difference. Here are some ideas on preparation, and although these tips are based on the Manhattan Austin-Healey driven so successfully by Maj. Bill Kincheloe, a good many of them will apply to any car, either for racing or everyday driving.

The first step in tuning is not confined to changing the



The carburetor should receive extra cleaning and attention.

For racing the oil filter should be by-passed with metal plates.



To install the Le Mans kit without removing engine, cut away radiator brace.

plugs the day before the race, but begins when the car is delivered. If you intend to punish the car later in racing, it should be babied during the break-in, because no amount of tuning and adjustment will compensate for an improperly seated bearing or a scored piston.

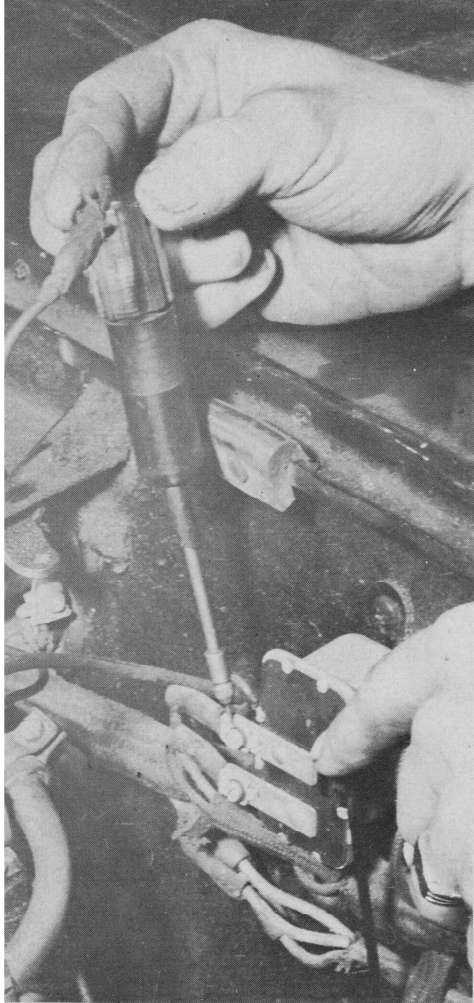
"Breaking in" doesn't mean that you have to decant strange and wonderful lubricants through the engine, or creep around at 20 mph. in low gear, but there are some rules that *must* be followed if you want to get the performance and life you paid for.

One of the most important points in breaking in a new car is to use the choke sparingly. The quicker you get it back into position the better, and the minute the engine comes to life enough to idle, the choke should be closed. Using this gadget more than is necessary not only wastes gasoline, but will lay down a base coat of varnish that has no place in an engine. Save the varnishing for the

floors at home.

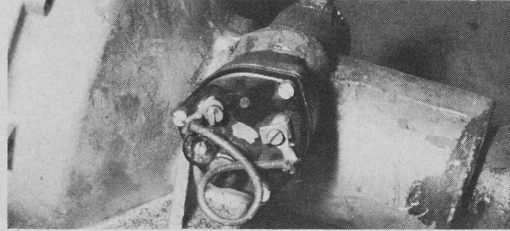
When you've got the engine going and idling smoothly, you have to exercise some masterful restraint—just because it's going doesn't mean that it's ready to pull the car around yet. *Wait* until the engine warms up! This may be hard on you, and may produce an advanced case of the fidgets, but it's absolutely necessary. We'd recommend taking up smoking if you haven't already. Even on a cold morning the car will be about right by the time you finish a cigarette (king size) and fiddling with matches or a lighter will give you something to do. Incidentally, it's a good idea to continue this warm up period even after the engine's broken in, because until the manifolds and carburetor are at operating temperature the mixture is a hit or miss proposition.

When you've got the engine warmed up, the car can be moved, *gently*, and a minimum 1,200 miles at under 2,500



The overdrive switch should be adjusted with a test light to assure factory performance.

A jumper lead across the governor switch will allow overdrive at any speed.



rpm. should be the rule. Remember that you're breaking in the whole car and not just the engine. Don't slam on the brakes. In the first place, the Austin-Healey has more than enough brake area to stop the car gradually, and the linings and drums should have a chance to set before you try them at their maximum.

All this may sound like a lot of bother, but when you consider the record of Kincheloe's car, and the fact that it is constantly in use as a demonstrator between races, you can see the results of care. The car has never burned oil, even during races and although the linings were changed once, the linings were still quite thick, the change being entirely a safety measure for the tight course at Cumberland, Md.

After you've covered the 1,200 miles, you can open it up a bit, but increase the speed and use of the brakes gradually, until at about 3,000 miles you've reached the red line limit on the tach. Don't try going over the red line just to see if the car will do it. It will, and if you need them in a race, the extra turns are there, so just take it for granted and save that part of the engine for emergencies.

Now you can start reading entry blanks, eyeing safety belts and crash helmets and the like, but give yourself time to finish the other preparations. Here the keynote is thoroughness, and you should approach the final adjustments with the idea that no bolt should be left unturned.

This is literally true. Get out the wrenches and go over the car from stem to stern. Replace any chewed up bolts and be sure all are tight. Be generous with lockwashers, and, if the course is a rough one, you might even drill the fastenings for cotter pins or safety wire. Oil all the threads before you tighten them up. If you have to change things during a race you don't have to wrestle with a frozen screw or chisel off a bolt. Beg, borrow or steal a torque wrench for the head bolts and run them up to about 75-foot lbs. Be sure to follow the tightening diagram, though, or you'll have horsepower leaking out around the gasket, and that won't help the performance a bit.

When you've finished with the nuts and bolts you should know pretty well where everything is, so start over the wiring. Every electrical connection should be tight, and here you'd better check to see that the connections are really that and not just a lot of wires at the same place. Dirt on the tags at the end of the wires may give you an off-again, on-again performance. Don't ever make a connection by just wrapping the wire around a screw. The tags are easy to obtain and you shouldn't even consider not using them. While you're working on the wiring, get a bottle of shellac, and give all the wires a good coating.

SPORTS CARS

Even if the chance of leaking a little juice around the tail lights, wouldn't seem to matter, it can, and has, cost races.

Now you're ready for some of the refinements of tuning. Like the tightening of nuts and bolts or shellacking wires, these are things that are sometimes overlooked and shouldn't be.

Tape the radiator and heater hoses. One broken hose and you're out of competition. The plastic tapes on the market today are fine for this, but heat resisting friction tape works well. Don't just tape the middle of the hoses, either—remove the clamps and cover the hose completely.

Next, remove the oil filter and support arm. The illustration shows a suggested by-pass you can make up to use during the race, and although you won't have any filtering action on the car, you'll be better off. The filter will, under hard cornering, strike the frame, and since it is cast aluminum, you'd be gambling against pretty heavy odds to leave it in place.

The windshield can and should be changed on the Austin-Healey for racing since this is a little advantage that the Healey has over most of the stock cars. You can save pounds by substituting a small area screen and still run in the stock class. Anything else the rules will allow you to take off and leave in the pits will be a help, too. Spare tires, side curtains, the top and the like should be removed before the race if it's allowed.

Another thing that should be done to a competition car with Rudge wheels is to smooth out the hubs and splines. You can do the job in a few hours, using regular valve grinding compound and grease. Just coat the hub threads and wheel splines and remove them and reinstall them until the hubs will spin off smoothly. You shouldn't have to swat the hub with a hammer more than twice during the race to free the wheel. You'll want a couple of extra wheels in the pit, inflated to 29 psi., and, of course, the splines should be worked over with the valve compound, too. And *don't* forget to balance all of them.

Finally comes the timing and carburetion. On this car the setting for everything but the plugs was left at the factory recommendations. The plugs (KLG FE70) were set at 22 thousandths, but here you'll have to experiment. Since the Austin-Healey has no timing mark, it's a good idea to set the spark by trial and error, preferably over the race course, but any stretch that will allow you to use most of the speed range will do.

The carburetors were left as is after some disappointing trials with the plunger springs removed. S. U. makes enough needles to satisfy anyone, so if you feel that you can better the performance, don't hesitate to try out a few other combinations.

The last touch to the car itself is to short out the electric solenoid to the overdrive speed governor. You can do this by connecting a wire across the terminals, or if you want this left on all the time, you can mount a small toggle switch on the drive-shaft tunnel, and cut the governor in and out at will. This comes in handy if you're forgetful, because with the governor shorted out, you can get into overdrive with the engine speed way too low.

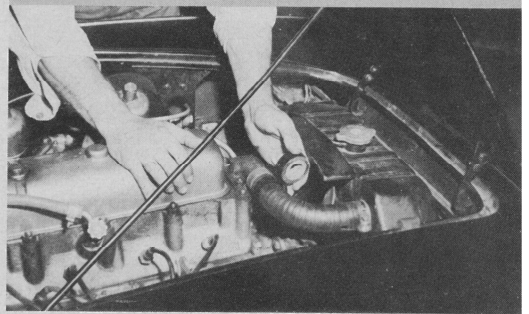
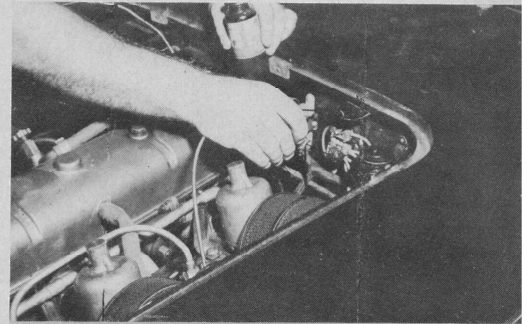
Finally, change the oil before each race—all the oil, in the crankcase, the transmission, and the rear end, and set up your pit to include plenty of fresh oil and water.

The car is ready to go now, and setting up the pit and your signals are pretty much up to you. In the shorter sprint races you won't need much in the way of spares. You should have a roll of baling wire for tying things back together, spare coil, plugs (already gapped) and points, and a set of fuses. It's a good idea to include a spare fan belt, a roll of friction tape, a chamois and, of course, plenty of rags. And with just a little luck and a lot of careful preparation you might come home a winner.

—☆—

ILLUSTRATED — SEPTEMBER 1955

Wires should be tight and coated with shellac as an extra precaution.



All radiator and heater hoses should be taped to prevent bursting.