SPORTS CAR

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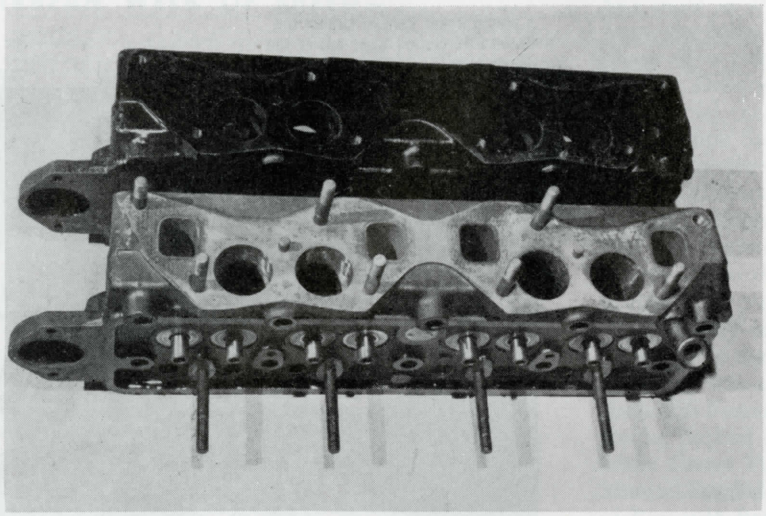
CHICAGO REGION SCCA

SPORTS CAR CLUB OF AMERICA

FEBRUARY 13-16

SCCA ANNUAL MEETING



Stock cylinder head of a TR-4 above. Probably untouched by human hands. Below shows what a little porting will do.

1963 PRODUCTION CATEGORY RULES—

The Quarter-inch Drill Faces Life

Articles & photos by **R. W. Kastner**

"Pass the emory cloth, mother. I'm grinding the carbon off my torque tonight."

FOR MANY years hundreds of production car owners have tried vainly to race competitively on a restricted budget. They could afford neither the top flight, ready-to-win vehicles nor the basketful of optional racing parts that would make their cars winners. So, with much rattling and grumbling, mixed with "I'm a better driver but he has a better car," and "If only I had his loot!" they retired to slot racing or to eating the high-blown dust at the back of the field.

This dust kicked up by the winners or "hot dogs" is a particularly distasteful dust and certainly does nothing for the ambitions of a coming Fangio. In 1958, a few of the dust breathers conferred with others of their unfortunate circumstances and found that even the "hot dogs," the winners, were not really entranced in spending great quantities of money on new cars and equipment when, in truth, there was little recognition from their fellow competitors. It was decided by the fraternity to devise a set of regulations that would enhance the mechanical ability of the individual while affording all competitors the same opportunities for gains in performance. The group quickly discovered that what it was talking about the rest of the world had been doing for years. If you like, they saw the wisdom of many FIA rules before the rest of the country did and, because they were a relatively small group, they could move quickly to put what they wanted into effect. Thus, the first set of U.S. "do-it-yourself" rules was born.

The rules were the brain child of a "hot dog" whose interest in the sport and desire to see all competitors on an even footing made it possible for others in his class to be more competitive and later to beat him occasionally. Ed Barker of Hermosa Beach, Calif., is the man who should be given credit for carrying through these first changes in the regulations. Ed was a winner in his Porsche and continued to be so. He was the guiding light to helping others race on a limited budget and do it with success.

The rules were cussed, shouted down, thrown about, shredded to small bits, rewritten, cussed again, and rewritten but during all this furor the racing was getting more and more competitive. Sports cars that had not been in the top ten for two years were suddenly making a show. The attitudes of mechanics, owners, drivers, well wishers, hangers on, spectators, workers were given a real lift. The racing was great. The competition tremendous. The days of "buying the trophy" were over.

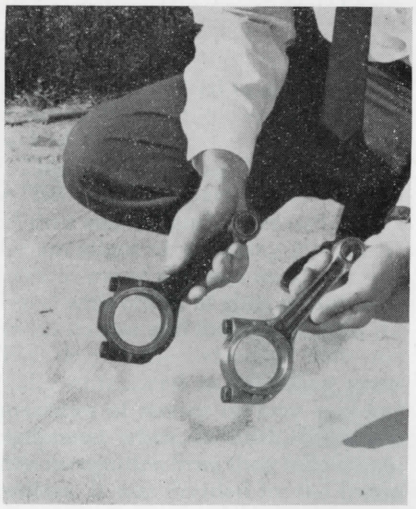
Since the origination of this type of regulation four years ago, many changes have been made. A lot was learned from the FIA rules from which much of the original inspiration came anyway. Finally, rules that prevailed for the first time for Areas 9 and 10 in 1962 were completely rewritten, laced with parts of Appendix J to suit American conditions and, out of gatherings of member committees representing the entire country came forth the 1963 production car regulations. Rules and drivers lived happily ever after.... If they don't, it won't be the rules' fault. But that makes me a wise guy and I'm way ahead of my story....

The majority of the production cars being raced are of the mass-made, series production type. These were designed, built and priced for consumption throughout the world. Because of the intent of design and nature of mass production, only so much handwork can be accomplished for a specific number of rosbucknics, yen, pounds or dollars. Therefore, we have countless owners with willing hearts, a reasonable willingness to part with some money for little things like tires, spark plugs, oil and perhaps an occasional frivolity like a fan belt or new points for the dear old thing; but their kindly, mass produced gem is at best mild mannered and probably worse. Well, shout "Huzzah!" because, buster, you can bring old Ned out of the barn and into town tonight. The revolution is upon the people.

The new production car regulations are just what the man had in mind

when he said, "Go forth to race with vigor and sportsmanship but dare you not break your head nor the family budget." These rules make the difference between the hand-crafted, exotic production (really GT) cars and the honest-to-goodness production cars. Now each can go the way easiest for him: the money route; or, figuring on doing 75 per cent of his own work, the preparation route. These rules give a nice allowance to all types and all makes but their primary function is to make the mass-produced cars competitive. This they do by allowing the bits of handwork that separate winners from also-rans.

Certainly there is nothing unmannerly in calling a crook a crook. What difference if he steals the hub caps from your Oldsmobile or your trophy through disregard of the regulations? Poor sportsmanship doesn't really cover the cheater. The cheater is a thief in the night who will run like a deer given the chance. But in this case he will only do it if you let him. You can't stop this thief if you are not protected by good straight-forward regulations that are enforceable. These rules can be enforced for they do not try to control the unenforceable. Any third-grade mathematician can check gear ratios on the spot with nothing but a piece of chalk to aid him. Deliberate lightening, gutting, improper use of optional equipment or unauthorized equipment are easily checked and quickly dealt with. The homemade speed parts are as easy to spot in most

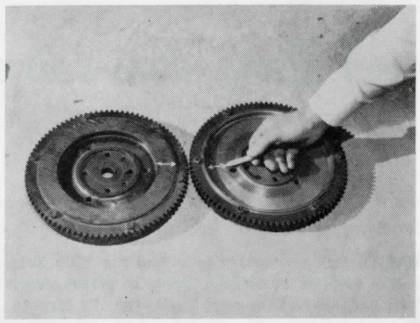


Polished and balanced, the stock con rod becomes a competitive instrument. It loses a bottom boss in the process, too.

cases as an exploded ketchup bottle in a Kleenex factory. Why put up with it? Throw the bum out.

It is equally and legally true that the new rules allow a great amount of leeway. They let the individual be his own engineer. Try out those ideas that you have been waiting to run modified to try out. You want to whittle away the valves until they look like potato chips? Do it! You will probably get those few hundred extra rpm that you wanted without going to high spring pressures. Just because your car's manufacturer didn't whittle off this excess material doesn't mean it can't be done in relative safety.

You have the formula for gas flow through a valve area and port and your engine doesn't meet the standard of the formula? Hog out the port the way you wish to meet your needs. This doesn't have to be done in a haphazard manner. There are countless books on the subject of internal combustion en-



Some awkward pounds can be removed from the TR-4 flywheel (see chalk marks). To be exact, seven pounds—at a great benefit in acceleration.

gines and more on the artful hobby of hopping-up. So the book is describing a Ford and you are racing a Sprite. So what? They are relatives. Both use valves, pistons, gasoline and all that other jazz and though you cannot copy exactly, the theory applies.

Our new regulations give you the opportunity to show that you are not only the better driver but that you are a bit smarter, too. How can there be a "speed secret" when you aren't allowed to do anything but change jets and spark plugs? Some secret! Your own specific grind of camshaft (ground on the original, of course) with maybe a couple of other items, can be a big secret. You don't even have to be clever, let alone intelligent to cheat; but it takes care and planning to pull out the extra ponies that these rules allow. Several of the English books on racing cars refer directly to minor and even major modifications on current production engines and until this time you could not use this information. You can now apply this information and at a cost of practically nothing.

"You want to whittle away the valves until they look like potato chips? Do it!"

The majority of production car owners do their own speed work and maintenance and these new rules will put more emphasis on this do-it-yourself bit. For years, there have been accusations that only a few favored people get certain "available" options. Prominent among "optionally available options" have been high compression pistons. Such gems and block boring are expensive. Let "them" have "their" fancy domes. Now you can go another route.

Your local machine shop will mill a cylinder head or block for eight or ten bucks and give you one-day service to boot. Eureka! Higher compression! Your buddy has had higher compression for years and you couldn't have it. Now you are even. Of course, this is going to be a hardship on a lot of drivers because no longer will the old alibi of more options in the other man's car hold up. You have to drive to win in the final throw of this whole game.

Lighten the rocker arms, cam followers, push rods, valve collars, valves, con rods, pistons, crankshaft, flywheel, and clutch. That alone is a nice evening's work and it will pay off. You will build a better car in that it will not only give that much-looked-for performance but as part of the performance will give added reliability. Now don't yell at the rules if you grind a rod down to the size of a cigaret, then hang a six-pound piston on it and it breaks the rod. You have to use your head and not go grinder happy. Make use of all the information that is available. Stop listening to every nut who thinks he is an engineer unless he can prove it with results. It will save you time, heartache and money. And this:

The public free library is your friend. There are approximately 13 years of reading just on combustion chamber design and gas flowing. Do your own digging and follow a reasonable check-out technique. Write down all your measurements and descriptions so that you do not make the same mistake twice and so that you can return to any point of tune at will. The rules state that you can run an oil filter. Do they say how big? Do they say of what material? Then take advantage of this. Shocks are left open except for type. Look into the various adjustable types that can give you an advantage in chassis tuning for rough or smooth, fast or slow courses. The elapsed time for one lap is what counts.

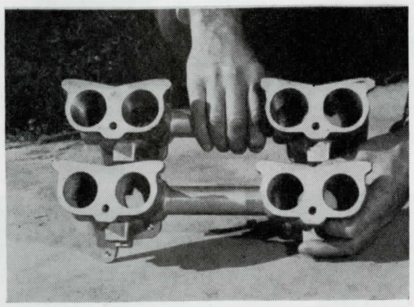
Don't overlook the chassis. The manufacturer lists heavy duty springs, shocks, anti-sway bar and limited slip differential? He doesn't say that they will produce the best adhesion when all used together but it sure seems a lot of people think so. Look into this type of error in thinking as much as into the rules themselves.

The best sales pitch for the economy feature of these new rules I believe to be a direct comparison between average prices for special equipment and those that an owner can "derive" from the original equipment by removing metal.

Average retail		Owner cost (material) under 1963 regs.
$175.00	Ported high compression cyl. head	$20.00
60.00	Enlarged intake and exhaust manifold	6.00
30.00	Special polished and shaped valves	2.00
Not avail.	Polished rocker arms	1.50
Not avail.	Lightened cam followers	6.00
16.00 ea	Lightened and polished connecting rods	ea. 1.00
20.00	Heavy duty valve springs	12.50
Not avail.	Lightened valve collars	1.50
32.50	Light weight flywheel	8.00
32.50	Heavy duty clutch	6.00
Not avail.	Vented brake backing plates and air scoops	1.00

You can be a dollar-a-hour, do-it-yourself owner-driver mechanic under these rules. If you want to claim more than a dollar an hour for your time, feel free. But be sure to add each racing weekend and the towing time at the same hourly rate. That's your investment in trying to do something well (even if the "bolt-it-on-and-go" boys never seem to realize it).

The comparisons above show the advantages in being able to do the handwork yourself. The cost of equipment to do this can be anything from the most exotic Dunmore high-speed grinder ($75) to the borrowed or rented quarter-inch drill. In any event, it will be necessary to purchase about four pointed grinding stones mounted on quarter-inch shanks and a couple of bucks worth of wet or dry sanding paper with perhaps a dollar's worth of strip emory cloth for smoothing out the ports after grinding.



Looking from the new, larger cylinder head ports back out to the stock intake manifold (below), it's obvious the manifold must be eased out to match (above).

The rules refer to carburetor size. To the best of my knowledge, this means the choke size or that area immediately to the rear of the butterfly. Okay, so we can't beat the butterfly out to make it larger and then bore out the choke diameter. But it certainly is well within the meaning of the rules to diminish the size of the throttle shaft and taper or thin the butterfly itself. This is not changing the *size* of the carburetor. If the carb started out as a 42mm choke and you remove the butterfly completely, it is still a 42mm choke. This is handwork and you'll no doubt wind up with a sore index finger after the job is done with emory cloth and 500 grit wet and dry paper. But it is worth the trouble and the lazy competitor will not have this little advantage. No dollar restriction is put on these little modifications. The majority require old-fashioned work. The take-away-but-don't-add theory applies to the balance of the drive line but don't start punching holes in the prop shaft just to see what's inside.

You can change the body work only as defined in the rules through the use of optional equipment, meaning body panels (if listed in the book). You cannot cut holes and install little scoops that squirt air here and there. You cannot add heat shields or baffles or cold air tubes. Baffles in the sump? Yes, there are a lot of production cars that really need this aid and the rules allow you to baffle as long as the capacity of the sump is not increased.

Looking here and there on the car, how about the number of blades on the water pump impeller? Do you need that many or can they be cut down in number or reduced in size? Water pumps eat horsepower and so do oversize fans. That's clue number 37½.

In the past, we have always accepted a welding repair if the repair was only what it appeared to be and metal had not been added to change the internal or general shape of the component. As an example, if you were porting out the intake manifold and suddenly you had the sunshine streaming in, it would be acceptable to have this hole welded up. It would not be acceptable to weld up the hole, then grind it out again, then add more metal, and grind it out once more to increase the size of the manifold. The same applies to a cylinder head repair. If you suddenly hit water, there is no desire to see you throw away the complete head when a five dollar repair would make it satisfactory for use. But to grind out and to change the configuration of any component is illegal. This is readily checked and it doesn't require a metalurgical expert to spot what the operation has been. The same applies to valve seats. Although technically this is adding, it has always been taken as a repair within the spirit of the rules. The purpose of the rules is to reduce the cost of racing, not to create additional hazards.

Having a bit of bearing trouble with a pushrod Porsche? Get the roller crank back in there. Sure it's legal. These are all the same model now and you can interchange parts. The crank will make those high revs just that much safer and mean that many fewer engine overhauls.

Having trouble with that high-lift camshaft in the MG-A? All that is necessary is a relief on the top of the block and that's legal. Take away but do not add. . . .

Warning: Don't get excited about camshaft ads and claims. Some are great but the same grind just doesn't work for every car. Check with your car manufacturer. If he doesn't have what you need he will probably have a suggestion.

Remember, you can take away but not add. So, don't think about drilling a hole in that nice little spot and installing a cap screw with a special flinkintickler on it. The hole, that's okay. But don't put anything in the hole.

While thinking about the rear end,

there is another little spot covered by the rules that can eat up big gobs of horsepower: the drive line and U-joints. Any angle of the U-joints will reduce horsepower to the rear wheels. The transmission can usually be lowered or raised by "fooling" with the mounts but, remember, no adding. The same applies to the rear end. Ninety-nine per cent of those who read this will never bother to check out this last point. The one guy who does, and does something about it, is going to give everybody bad news. Attention to details of this kind will make a startling difference on a 4000-foot straight.

I wish to point out that the text of this article carries only my own interpretation of the rules and certainly cannot bind the national organization; but I have had a great deal of experience with this type of regulation so I believe that most technical inspectors will agree with my viewpoint. I might add that I have defeated protests on my personal car and on the car I now prepare, so....

My parting thought is that if you cannot make a class-winning car from what was a tail-end Charlie, then you are not trying or you're just lazy.

I expect to have 30,000 people say I am all wrong in everything or in great part so I'll try to ignore all the rabble-rousing letters that the mailman will no doubt be delivering. This will also be necessary because I, too, have a car to prepare. Good luck to those of you hep enough to realize how much you have gained with the 1963 production regulations. Everyone else, boil in oil.

MARCH 64 SPORTSCAR

Response

—letters to the editor

GT Coupe Kit

Dear Dic,

I would like to mention in answer to Woody Adams' letter about two-seater Formula Vees that Wendell Burgess (Western U.S.A. licensed constructor for the Formcar Formula Vee) is designing a two-seat kit car using virtually all of the Formula Vee components. The car won't be exactly what Woody Adams visualized, but it will look like a cross between a Ferrari GTO coupe and the Eric Broadley-designed Ford-Lola (not Ford's restyled version of the Ford GT Prototype Le Mans car). The body will be in fiberglass and the chassis will be stretched slightly to allow more passenger space and for room to fit either a VW, Porsche or Corvair engine to the VW/Porsche type transaxle. In fact just about any engine can be fitted because the design will allow for a front-mounted radiator.

The whole idea of the Wendell Burgess designed GT coupe, called the Gazelle, will be to offer a kit car at the lowest possible price for the enthusiast to finish off to his own taste, yet be just as up to date in the looks department as possible.

Wendell is now making templates of his mockup. The chassis itself was tried out last fall in an autocross with a stock VW engine where it gave a very good impression of itself.

I hope this doesn't sound too commercial, but after seeing the English car builders in action over a two-year period I can't help but enthuse when I see American car builders like Burgess and hear nice things about such cars as the little Bobsy project. These fellows are capable in time of equaling the feats of Chapman who started off the same way. They deserve our support and enthusiasm.

Sincerely yours,

Danny Collins
Denver, Colo.

1963 SPORTS CAR Awards

BEST PHOTOGRAPHY	Dave Gulick (So. Illinois Region) August issue work with "June Sprints Road America"; also, June cover; "Slippin' & Slidin' with SIR" May issue
Honorable mention:	John Hearst (N. Y. Region) May issue cover and inside Sebring work
	Gunter Mohr (Northwest Region) Sept. issue work with "V-8s and Genies on the Pacific"
	Pierre Perrin (Milwaukee Region) Oct. issue, work with Road America 500; November issue work with U. S. Grand Prix
	Bill Hewitt (San Francisco Region) January issue cover; also Stockton race coverage, July issue
BEST ILLUSTRATION	Dick Corson (Northern New Jersey Region) April, July and December covers
Honorable mention:	Ron Kambourian (N. Y. Region) November cover
	Bill Seay (New York Region) "On the Marque" department; also October cover
	Peter Helck, September cover
BEST TECHNICAL ARTICLE	R. W. "Kas" Kastner (Cal Club Region) January issue "The Quarter-inch Drill Faces Life"
Honorable mention:	Ernest Feleppa (N. Y. Region) January issue "Electrical and Ignition Theory in Physical Terms"
	James T. Crow, June issue "Biopsy on Barriers"
	Dr. James Benedict (Glen Region) for the "Medi-Tech" series throughout the year
BEST RACING ARTICLE	Frances Walker (ex-North Car., now So. Illinois Region) June issue "N.C. National at V.I.R."
Honorable mention:	Skip Eberle (New England Region) October issue "Twelve Championships at Thompson"
	Barbara Causey (Indianapolis Region) September issue "This is Show Biz"
	Bill Ong (Kansas City Region) September issue "Tall in the Saddle"
BEST RALLY STORY	Ken Recu (Chicago Region) February issue "A Season on the Circuit"; also September issue "Sand Swings, Maggy Swings, Chryslers Win All Sorts of Things"
Honorable mention:	Joseph G. Scott & Charles E. Trame (Western Ohio Region) February issue "A Rally Primer"
	Bob Shenton (with an assist from William Shakespeare) (Washington Region) July issue "Spinning a Line on the Lure of Virginia Reeling"

On the Radio

Mr. Lloyd Loring
Dear Lloyd:

Your novel approach to our mutual public relations problems, using radio spot announcements linking a *local* activity, the South Bend Region, with automotive safety, is a hit here in Indianapolis, too. Thanks to you, your idea, and the time you gave to pre-