



VEE LINE

NUMBER 33

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DIRECTOR'S CORNER

Whether it is an indication of a new trend or of a situation of long standing only now coming to my attention, I can't say, but there have been an unusual number of letters recently concerning "rule-bending." Not rule *breaking*, exactly, but the type of rationalization mentioned last month by which some devious train of logic is used to justify a part or modification which is obviously not in accord with the *spirit* of the rules.

The people who use this perverted system of rules interpretation aren't attempting to change the rules for Formula Vee — just for their own particular Formula Vee. They don't *want* their interpretation adopted by everyone — they'd lose their advantage if it were. They don't attempt to determine whether their interpretation will be accepted; they go ahead on the premise that they may not be caught, and if they are they can scream their way out of trouble — "I *didn't* modify my fan; I only removed a cooling duct component!" And too often they get away with it.

Within the past six months we have had the following list of "bends," and probably others which haven't come to my attention:

1. 1300 heads which "came" on a 1200cc engine.
2. 12-volt batteries, which effectively eliminate the drag of the generator without actually "doing" anything to it (shot down in the 1967 rules, but included for illustration).
3. Generator with worn out brushes — same result, same excuse. ("Nothing was *done*...")
4. Slotted wheels, which "came" on a 1200 car.
5. Cam "polished and balanced" on a cam grinder. ("Polishing and balancing are legal!")
6. Rear suspension shielded by the body shell; ("Fairing" doesn't actually mean what you and I think it means!)
7. Body width attained at only one spot by addition of a fin — otherwise, Formula Jr!
8. Body rules in general ignored. ("You *can't* actually 'enclose' the engine!")
9. Fan blades removed. ("They're cooling duct components!")

When Formula Vee was a foundling — before it was adopted by SCCA — the original set of rules ended with the admonition:

"It is by no means intended that these specifications should provide ground for engineering ingenuity and experimentation. Nor does the phraesology of these specifications include secondary meanings. No attempt should be made to extend the actual common meaning of them. Any interpretation of these specifications should be made within this spirit."

It's a pity that statement was omitted when the rules were included in the GCR. The great majority of Vee owners obviously accept this concept, without having it spelled out, but there are a few who feel that it is for suckers only.

So what are we going to do about it? Ask SCCA to close the individual loopholes as they appear? Adopt some kind of blanket prohibition against loophole hunting? Or award trophies to the most successful loophole hunters — as we're probably doing right now in some cases? It will soon be time again for SCCA's consideration of next year's rules. What would *you* like to have them do about it?

SOME NEW PROBLEMS

Today's mail brings two letters from the San Francisco Bay Area (Harriet Gittings and Howard Hatch) regarding identical problems. Howard's is in more detail, and he's personally involved in one of them, so we'll take his letter:

"Dear Don — This past weekend at the National race at Cotati three cars suffered failure of the steering arm on the spindle near the ball joint attachment. All were on the right side and all about in the same place. Two of the cars use long bolts to drop the tie rod attachment and the third uses stock mountings. All three cars had relatively new parts (mine was less than a year old, with three races and some practice).

"My first question is: Are the newer spindles weaker in this area? Are these isolated cases? Can these parts be beefed up? Is it possible to use stronger parts, like Transporter spindles, in their place?

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AROUND THE WORLD

From South Africa: At the Autumn (March 4) Rand meeting 18 Vees competed. Two had 1300cc engines and ran as a separate "section." The first 1300 beat the first 1200 by less than 33 seconds in a 24 minute race. They were expecting at least 30 cars at a May event.

From Europe ("Formel Vau Europa Express"): "... You know that the winning car at the 'Ring' had to be disqualified because it did not conform to the regulations. Nobody had protested — the organizers themselves decided to subject the first three cars to a rigorous scrutiny. The scrutineering of winning cars is wholly in accordance with the Formula Vee regulations and maintains the integrity of the sport by ensuring that each of the protagonists has the same weapons at his disposal. An appeal to entrants and drivers! Read the regulations through carefully before building your car. . . . Formula Vee is still in its infancy. . . Formula Vee racing will be a successful popular sport just as long as fairness and sporting behaviour are its guiding principles. Let us keep this up!"

From Australia: Aub Revell, one of the first Vee enthusiasts and builders in that country, and by now an old friend, sends *twelve* applications for Active Membership! Also a note — "I am the 'Somebody' mentioned in the January VeeLine. The Solex Float Assembly (Brass), part numbers 51638-1 and 52180, have completely eliminated this cutting out problem in New South Wales. I don't know whether the same numbers would apply in the States, but I believe they are from a Solex carb as fitted to a BMC car."

From New Zealand: Barry Munro is the King of the Vees at present — he is the only one who has his car completed. Others are coming along, though.

From Ireland ("Wheel" magazine): "Since I last wrote to you there is considerable interest in Formula Vee here. Six builders are going ahead with their own cars and two small engineering garages intend offering kits. Formula Vee, now started in England, is for the 1300 engine, but it is more than likely that we will stick to the 1200 engine. The choice of tyres will be limited to radial-ply covers as genuine racing tyres are extremely expensive and difficult to obtain."

From Hungary: The Magyar Auto Club of Budapest put on the first Formula Vee race held behind the Iron Curtain. The 17-car field was all from Austria, with Gunter Huber (who was second to Joachim Rindt at Nassau) coming in first. The race was "excitedly followed by many thousands of spectators."

SOME NEW PROBLEMS (Continued from Page 1)

"My second question has to do with a car which was protested, and if the decision is not against this car, the result may have an effect on all Vee owners.

"The protest was against the intake manifold and heads. Everyone who looked at them said they were 1300's, but the owner claims that in mid-1965, just before the change to 1300's, some of the cars had these parts, and they are therefore legal. The OD of the manifold looks a lot bigger than the legal ones, and it enters the heads on an angle from the outside of the car toward the center. It seems none of the officials could make a ruling at the course! I would appreciate the effort if you could find out the answer."

Howard Hatch, Sacramento, Cal.

Well, there is still something new in Formula Vee! There have been three or four reports of spindles breaking off at the location of the inner bearing, but this is the first I've heard of the steering arms coming unraveled! (That takes care of question 1-B.) I can't imagine any inherent weakness cropping up in newer spindles which wouldn't have been evident in the older ones, though I suppose it would be possible that a different steel formula is being used, or a different heat-treating method. I certainly don't have anything definite on this question, at any rate. As for substituting Transporter parts, aside from the fact that the rules specify only *sedan* components, they wouldn't fit. That leaves the question of beefing up what we have.

According to Section 4.3 (a-6), "Standard steering arms may be altered. . ." which, in my opinion, would include reinforcing them. Now before we go any further, let's all understand this: I'm NOT advising you to do ANYTHING to your steering arms, so let's not have anything like, "I did what you said, and the steering broke and wrecked my car and you owe me a new one!" OK?

OK! So if you DO decide to work on your steering arms, here are a few generally accepted points you might want to consider:

Plain old "mild steel" (angle-iron, flatbar, carriage bolts, black pipe, etc.) is a low-carbon steel which won't harden, temper, crack, check, or crystallize, no matter how you "heat-treat" it. You can heat it white hot and dunk it in ice water, and it will still be "mild." But most automotive parts aren't made of mild steel. They're made of "alloy steel," which is something else again.

You can't play rough with alloy steel - it's like making an omelet, as compared to frying eggs. It can be "burned" by too much heat. Cooling it too rapidly will cause surface cracks and leave it hard and brittle. Cooling it too slowly will leave it soft. To make it rougher, there are at least a hundred recipes for "alloy steel," and each one requires a different heat-treatment in order to take maximum advantage of its particular properties.

Give up? Well, it's not all that bad - we can take a sort of "middle ground," and while we won't get the maximum out of the piece of steel, we can do better than the minimum, too.

So let's assume that we're going to weld a reinforcing strap onto the steering arm. Right off the bat, welding on any kind of steel will cause stresses in the metal, aside from the effects of the heat on its structure. So we will NOT weld across the arm, at any point - only along its length. A welding bead *across* it would invite a crack to start at that point. Welding up one side, around the eye for the ball joint, and down the other side would be all right, though it might shrink the hole a bit. Incidentally, we will use only a "low-hydrogen" rod - and if you don't know what that is, get the job done by someone who does.

To minimize the stresses and effects of the sudden heat, we will first heat the entire arm and strap to the point where the oil and paint are smoking nicely before starting to weld, and immediately afterward we will heat the entire welded area with a torch (as gradually as possible) until in deep shade a dull red color can be seen. We will then leave the piece exposed to the air, but out of any drafts, until it cools. We will NOT, by ANY means, cool it by dunking it in water! During the process the spindle itself will progress through a number of gorgeous shades of color, but we won't worry about it. In fact, we might do well to treat the whole piece in the above manner, to relieve stresses and minimize cracking, except that the machined surfaces would scale and warp out of their true dimensions.

This method is a shotgun approach to heat treating, and will no doubt result in less than the maximum strength of the arm. However the problem of breaking is probably due to the metal being too hard and brittle. This may leave it too soft, but we've yet to hear of problems due to the arms bending. It might be that merely the "heat treatment" alone, without additional reinforcement, would prevent cracking - which leads to another thought:

Have these broken arms already been subject to some form of home "heat-treatment," by any chance? Have the eyes been heated in order to adapt them to installing the ball joints on the under side, or in order to enlarge the holes to take larger bolts, for instance - and have they then been cooled rapidly? If so, it might be a good idea to dye-check or magnaflux the other arm, to see if it has started to crack. If not, it might be saved by annealing as above.

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ENDORSEMENT

"Dear Don: Please change my membership to active, as I'm now a Formula Vee owner. I bought Rick Abney's Formcar.

"In my original letter I asked about VW manuals. After trying a couple of others, I've settled on 'Henry Elfrink's Volkswagen Technical Manual' as being the most informative. I would have bombarded you with a stack of questions, but Rick Abney and Dan Fowler have been very patient and have given me detailed answers.

"Look for me at the back of the pack!"
Don Almy, Bloomington, Minn.

SAFETY NOTE

Our new President, Harvey Templeton, hasn't been nearly as voluble as his predecessor, but you can tell he's a good executive - he delegates his work -

"Dear Don: . . . One bit of advice to FV owners. If you have driven a lot of races in your car, have your spindles, steering arms and torsion arms Magnafluxed. We were astonished at the number of cracks that showed up in the ones we had done. Also tie rod ends have a high mortality and crack rate.

"Best wishes for a great year -
Jewel Templeton
Chief Assistant to the
New Lord High Executioner"

(Who was it who said, "No man is a hero to his secretary"?)

STOLEN

A few notes lifted from Harriet Gittings' newsletter, "Vee World," the unofficial news organ for the unorganized "group" of Vee racers in the San Francisco area:

She has located a couple of sources of Nomex equipment at reasonable prices - \$22.50 for underwear, \$3.50 for socks, \$65. for the suit - at L & H Safety Uniform Co., Box 118-A, Route 1, Imperial, Pa. Or for \$25.00, underwear and socks from the Atlas Underwear Corp., 893 N. Downing St., Piqua, Ohio.

Montgomery-Ward is selling 40hp VW engines, rebuilt, for \$379. (Watch it - they are very likely not rebuilt with genuine VW parts.)

Harold Clements reports that his float valve stuck, flooding the engine with gas and causing a fire. (Gas squirts out of the little slanted pipe in the throat of the carb. A piece of flexible tubing from it, extended overboard, might be worth while as a safety measure. Filing the hinge, as described in #31 VeeLine, might prevent it too.)

Glen Biren (chief contender in the NW Pacific Division) has a very considerate wife. She managed to schedule the arrival of the latest addition to his pit crew between races.

MODIFICATION?

"Dear Don: According to the new GCR, the minimum capacity of one combustion chamber in the head is 43cc. Upon measuring, I found my 4 to be from 49.5 to 50cc, with valves and spark plugs in place. In your opinion, is there any legal way to reduce the volume to the minimum specifications? I had considered machining the seating surface of the head, but this would appear to be, at best, questionable legally. Have you any information that will help me?"

Don Sanford, Tallahassee, Fla.

I'm glad you said "In your opinion. . .," as that's all I can give you. And according to the May issue of "Sports Car," the only way you can get an opinion from SCCA is to get someone to protest you (after you've already done whatever is in question); then you (or the protester, as the case may be) appeal the decision of the Stewards of the meeting (whichever way it goes) and the Court of Appeals will decide whether or not the practice was legal, and the penalties against you are to stand. Sounds reasonable — doesn't it? Anyhow —

In my opinion there is no question as to the legality of *having* heads with a combustion chamber of 43cc. The question is whether you can obtain it by machining, or must search through a flock of heads until you find a pair which came from the factory that way. I don't believe the rule was intended to restrict 43cc heads to only those who are able to find them, so I would assume that it would be legal for those who can't to machine their heads to achieve the same result. I would assume that where a measurement is specified, permission to attain that measurement is implied, if not actually stated. This would surely come under "unless specifically authorized," in Sec. 4.1.

Jim Patterson (Deputy Competition Director for SCCA) is quoted in the #29 issue as saying, ". . . you can't use an illegal means to attain a legal end. . . ; you can't make an illegal modification to install a legal part." He was referring, however, to installing 40hp valves in 36hp rods on 40hp cranks — adapting parts to engines they were not designed for. Here we're talking about "modification" to attain conformity with both the VW specs and the SCCA rules, and it should make no difference whether the part was made perfect at the factory — or at some local shop.

Now to your particular problem (aside from legality). How did you measure your heads? In Europe the "combustion chamber" includes the space between the piston and the top of the cylinder (4.65cc, min.) but here we refer to the chamber in the head itself, only. VW specifies this at 43 to 45cc, so I'm wondering about your 49.5 to 50. If your heads are actually that far off, you'd better start with some normal ones — that much reduction will call for a lot of machining, and possibly some problems in fitting the heads to the cylinders; but if you *are* that far from the minimum, you should certainly notice a difference!

In machining you will have to cut the entire flat area in the head — not just a ring for seating the cylinder. In that case, the remaining center part would protrude into the headspace at the top of the cylinder, reducing the actual volume even further. Aside from being construed illegal in that respect, it could easily be contacted by the piston at high speed. Both cylinders will have to be machined the same depth, of course, or the head won't seat properly on the cylinders.

When measuring, it is hard to tell just when the liquid level reaches the level of the machining, so get a glass or plastic plate, slightly smaller than the cylinder diameter, and lay it in the head above the liquid. If 43cc of liquid doesn't contact the total area of the glass, you're safe.

Here's a guide to the amount of improvement possible: with 43cc, the compression ratio is 7.24:1; with 45cc, 7:1; and with 47cc, 6.75:1. I didn't check at 50cc. Hey, you *are* talking about the 40hp engine, aren't you? If it's the 36hp, the VW specs say 45.7 to 47cc, and I certainly wouldn't interpret the rules to say you could bring the 36hp to the 40hp specs in this case, either, even if the rules don't indicate the difference. Otherwise, more power to you (no pun intended).

DNF?

There are any number of causes for Vees failing to finish a race — aside from driver errors. Blowing an engine, if done really spectacularly, can give you almost hero status; but the most common failures can be downright embarrassing, especially if you're well up in front when they happen.

Failure of the throttle linkage has to be in first place. If your car is one of the 99% equipped with the standard VW pedal setup, there are several steps you can take at least to cut down the odds. First, and most obvious, would be to replace the throttle pedal with a man-sized one, with linkage to match, but that is somewhat of an undertaking. However you can help even the standard assembly a great deal.

If you haven't yet bent the pedal assembly by pressing harder than necessary trying to get one more mile an hour, you will. So install some kind of positive stop, as near to the tip of the pedal as possible. Don't rely on the built-in stop in the linkage — it won't take it if you become really eager.

Second, make some kind of a shield for the cable where it hooks to the linkage, and for several inches back. In the VW it is hidden and shielded from harm inside the tunnel, but in your Vee it is very vulnerable to nudges from your heel, not only while "heel-and-toeing," but when getting in and out of your car.

Another weak spot is the attachment of the wiring to the coil. (Your coil is firmly and tightly attached to the fan housing already, isn't it?) The little clips, if you will examine them closely, are made with a positive latching device built in — they don't depend on friction alone to hold them on. However, with use, these little latches tend to loosen. Judicious use of

the point of a knife will restore the latching action to the point where you can feel them snap into place. Some owners go so far as to solder the clips permanently to the coil, but this slows up disassembly of your engine somewhat. Leave plenty of slack in your wires, of course, so that movement of the engine in its rubber mounts won't jerk the wires loose.

A major contributing cause is fuel starvation, which can arise from several sources. (Including just plain running out of gas!) Fuel pump problems are hard to foresee, but a flexible fuel line which has shrunk to the point where it is tight between the engine and frame is pretty obvious — especially if it isn't firmly clamped to the fittings. Another less obvious source of trouble can actually be a device intended to eliminate trouble — a fuel filter. Those "in-the-line" filters with the small paper elements inside are so effective that even water may clog them, and they can easily become impervious to gasoline, due to being filled with microscopic particles which don't even show. The fuel pump is already equipped with a very fine mesh screen, which can easily be cleaned. Anything which will pass the screen will pass through the rest of the fuel system, and anything which won't falls to the bottom of the chamber; so throw the extra filter away, if you have one.

If you're going to "DNF," do it in a big way! Don't let it be due to some easily prevented failure like these. It gives Formula Vee a bad name.

BAHAMAS VEE GRAND PRIX

I didn't see it myself, but I was told a couple of weeks ago that a prominent racing publication carried a story to the effect that the successor to the "Nassau Speed Weeks" — the "Grand Prix for Formula Vee" — has been cancelled. If it has, "Red" Crise apparently doesn't know it. He wrote a week later asking for information on the Vee rules around the world, including any possible changes between now and December. As he so often states, in the Bahamas, HE makes the rules; but it is a good sign that he is at least interested in what goes on in the rest of the world, anyhow.

The latest information is that there will be events for both the 1200cc and 1500cc engines. The rules for the 1200 will be the same as last year — strictly legal (FVI) engines, but most anything else goes — wheels, exhaust systems, bodies, etc. In fact, on one occasion he stated that megaphone exhausts will be mandatory.

However, look for something radically different in the 1500cc class. "Red's" thought at this time is to allow unlimited modification of the larger engine — "anything you can put in there." His intention, he says, is to make it comparable to Formula I (this is Formula Vee?).

As to entries, he says, "We are playing to top bracket drivers and owners although inviting everyone to attend. . . . I will have every top driver in the world in a Vee." I'd bet he will, too!

SOME NEW PROBLEMS (Continued from Page 2)

Now as to the 1300 heads which "came" on a 1200 engine - I'm not even going to comment on whether or not they *could* have. You know what? I don't know why it took me three years to catch on (what's *your* excuse?), but we've been clawing at the bars on the window and haven't even tried the door! The key is in the first sentence in the first section of the Formula Vee rules! Try this on your friendly race steward:

"4.1 DEFINITION: A formula for single-seat open-wheel racing cars based on *standard* Volkswagen 1200 series type I sedan components. . ." The key word, of course, is "*standard*."

I don't believe there is much room for debate on the meaning of the word "standard," but one dictionary defines it as "having no special or unusual features; ordinary; regular; typical; as, the *standard* model of an automobile."

For the sake of avoiding argument, then, let us grant the possibility that in late 1965 a few of the last 1200's sold in this country *may* have come equipped with ball-joint front suspension, slotted wheels, disc brakes, and even 1300 heads. (The rest came equipped with complete 1300 engines.) The point is that by no stretch of a loop-hole could these few cars be considered "*standard* Volkswagen 1200 series type I sedans." For the benefit of the fine-print artists who want to argue this point, I will concede that Volkswagen is even yet building a "Standard 1200 Sedan" (Standard with a capital "S") but it has never been offered for sale in this country. If it were, it does *not* have ball suspension or slotted wheels or disc brakes or 1300 heads - it is strictly an austerity model. And if it were, and if it did, it still could not be considered "*standard*" (with a small "s").

So in the future, instead of stooping to argue about whether or not a VW 1200 was ever equipped with high compression pistons, let's concentrate on that word "*standard*!" "Are high compression pistons *standard* Volkswagen 1200 series type I sedan components?" Don't call your competitor a liar if he claims his engine came with an Isky cam - just sympathize with him for being stuck for a new *standard* one.

As to determining what *is* standard, it may take a VW parts man half a day to chase down a specific part and determine whether or not it could ever have been installed in a 1200, but it won't take him long to look up the "standard" part number - he probably has it memorized by now and can go directly to the proper shelf and show you the part itself. For that matter, any Volkswagen mechanic would know whether or not a part was *standard* - and so should any Vee owner!

Let's give that word "standard" a real workout! Tell your Stewards about it! It won't answer *all* the questions, by all means, but it should settle a lot of the controversy concerning the Volkswagen components, at least.

NEWCOMER

There's a new Vee on the market - the "Shark," built by Continental Parts and Cars, 5919 Barton, Shawnee Mission, Kan. No details are included in their brochure, but the price may help them get a foothold in the Vee market. Nothing radical about the design, but distinctive enough that it won't be confused with any of the others. Just might be a comer!

SAFETY NOTE

A safety requirement in California racing circles might well be adopted by anyone using "Heim Ball Joints" anywhere on his car. It is merely the inclusion of a large washer under the head of the bolt which passes through the ball, for the purpose of retaining the outer part of the joint in the event of the ball loosening in its socket.

UNCLASSIFIED ADS

FOR SALE: Autodynamics - most competitive and sanitary in the country. See at C. J. Motors, 2566 Telegraph, Berkeley, Cal., or call (415) 848-3931 - ask for Harry.

FOR SALE: Bobsy, '65 components, professionally rebuilt. Camber compensator, R-2's, upholstery, Honda battery, tow bar, \$1300. Without engine, \$950. Trailer \$135. Bill Maisey, 306 Duke St., Alexandria, Va. (703) 836-0590.

FOR SALE: Formcar, raced 3 times, no time on rebuilt engine. New components. Tow bar. Pictures available. \$795. Joe Raines, 4300 Dolly Ridge Rd., Apt. 3, Birmingham, Ala.

FOR SALE: Fomcar, race-prepared, 2-wheel-trailer, 2 spare wheels and tires. \$1200. Howard Hoover, 4217 Glenwood Dr., Indianapolis, Ind. (317) 546-2261 eves, (317) 636-2441 days.

AMERICAN REPRESENTATIVE for Australian "Elfin" Vee: Don Mansell, 2040 Hagen Lane, Flossmoor, Ill. 60422.

THAT MAN AGAIN

Ex-prez Whit Tharin is making a pretty fair comeback for a man who has retired from Vee racing a couple of times. At last report he had five straight wins in SE Div. Nationals. After this season he says he's going to give up Vee racing. Sure, he is!

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