



# VEE LINE

NUMBER 91

APRIL 1972

## DIRECTOR'S CORNER

This will certainly go down in SCCA history as the Year of Rules! For the first time, rules proposals have been aired as just that, and comments have been solicited *before* their adoption! (For most of the classes, at least). And from all reports, the response has been overwhelming.

The Racing Drivers' Club has followed our lead, and instead of criticizing the proposals piecemeal they have come up with a completely new proposal for Production category rules. Rather surprisingly, they tend toward Formula Vee concepts, rather than toward the increasingly sophisticated modification which has become characteristic of that class.

No comments were requested by SCCA on Formula Vee rules, since they proposed no radical changes for our class — and they probably knew they would get them anyhow. This would certainly appear to be the logical time for our presentation of an entirely new rule format for Formula Vee.

So here's the last installment of the proposed rules revision. There has been quite a lot of response, mostly favorable but some, of course, definitely against some of the proposals. Not all the favorable comments have been presented, but the opposing ones have, just to give everyone food for thought.

As soon as there has been ample time for comment on this last section—probably with the June issue—a postcard ballot covering only the controversial items will be sent to you. The results of that ballot will determine the final wording to be presented to SCCA, and then you'll have another opportunity to vote simply "Yes" or "No" on the whole thing.

If you know of any non-members who need a good excuse to join FVI, now is the time to get them signed up. Anyone else is certainly free to send his opinions to SCCA independently, of course, but they would probably be of more effect if included as part of our united effort, and we can always use more members.

## CHEAP INSURANCE

If yours happens to be one of the cars running around without some kind of protection for the shifter mechanism, just consider the results if you get bumped from behind by some overeager draftee at 100 m.p.h. If the shifter is only pushed into neutral, you could probably get your foot off the throttle in time to prevent serious engine damage, but if it should get pushed up into third gear — (We won't even think about first!)

If your excuse is that your car is too near the maximum legal length to add on a nerf bar, how about a large "washer" surrounding the shifter, flush with the end of it when in fourth gear, attached to the transmission with three struts?

## ENDORSEMENT

Joe Leonard, 1971 USAC Champion, was quoted at the California 500 race as saying, "I don't believe in midgets, and sprints . . . In my opinion they're not the preparation for championship cars that many say they are. I think Formula Vees . . . which are really built more along the lines of championship cars, would be a better proving ground for championship racing. There are a lot of excellent drivers in Formula Vees who could step right in and do a good job on the Marlboro Championship Trail."

That boy's been taking smart pills!

## BACK ISSUES

If you have a complete set of back issues of the VeeLine, hang onto it. It may become a collector's item some day, worth, perhaps, almost as much as it cost you. There won't be any more complete sets of back issues—we just can't afford it.

As time goes on we are running out of more and more of our original stock, and are at the point where each month we have had to get two or three issues reprinted. In minimum batches of 200, it costs 25¢ a copy. If we could sell *all* of them at that price, we would break even, except that by the time they were sold out we would have had to get another couple of dozen issues reprinted, which we would have to sell out completely before we could break even, and so on and on.

So—from now on orders for complete sets will be filled as completely as possible and the balance of the remittance will be refunded. (They're 25¢ each, postpaid, in case you didn't know.) As of now, we're out of Nos. 2, 5, 33, and 45, and are running short on several other issues.

## The VEE LINE of FORMULA VEE INTERNATIONAL

DON CHEESMAN, Director  
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## MEMBERS' SOAPBOX

"Dear Don—I don't remember anything being said about emulsion tubes. Different sizes are offered, but I don't know which is best, or how to find out.

There seemed to be a lot of trouble with broken spindles and such things several years ago. Did your "Another Cure" in #39 get to the problem, or do these breakages still occur?

Marc D. Robertson, Madison, Wisc."

*Why did you have to go and bring up emulsion tubes? This is the first time the subject has been mentioned in eight years! In other words, I don't know anything about them, either. Any volunteers?*

*Haven't heard anything about broken spindles for a long time, or what people are doing to eliminate them, if anything. I rather suspect that heating them and then rapidly cooling them (mentioned in an article on steering geometry) may have had something to do with the problem, since there seemed to be more problems with the steering arms than with the stub shafts.*

"Dear Don—I've been out of touch with Vee racing since last August, when I came back to Greece, but have been reading Auto-week ads for milled manifolds for \$50 to \$75. In view of the fact that there must be either considerable expense or work to use this manifold, and that the basic design is a hinderance to good gas flow and performance anyhow, I propose the following change in the rules: (1) Intake manifolds may be free, and (2) either one or two standard 28mm carburetors may be used. This may not be within the spirit of the class, where things are intended to be "stock", but a chemically milled manifold is about as non-stock an item as you will find anywhere in any class.

Most Vee owners have spare parts, such as carbs, coming out their ears, or at the local junk yard you could probably get one for a couple of bucks. Manifolds could be fabricated from any suitable tubing of any desired diameter and length.

The benefits would be better performance per dollar, tunability for various tracks by using different manifold lengths, probable lower overall cost, and create stimulus to Vee builders and tuners. I think this would be the kind of rule change which would make all Vee drivers, builders, owners and fans smile with delight, and would benefit everyone in the class.

J. T. Ulmer, Athens, Greece"

*I have to agree with you that the milled manifolds were a big mistake. We've found out the hard way that it's not all that simple*  
(Continued on page 2)

## MEMBER'S SOAPBOX

(Continued from page 1)

to do it yourself, and as you say, the commercially modified ones are expensive. However, I don't feel, personally, that two carbs would be any better. Aside from the difficulty, for the average owner, of tuning even one carburetor correctly—much more so, two—anything which would raise the operating r.p.m. range appreciably above what we have now would increase racing costs simply by reducing the life of the engine. An engine which might go as much as 75000 miles in a VW, at normal speeds, may go as much as 1000 miles in a Vee between rebuilds, when run up to 5000 r.p.m. I haven't had any good dope on Super Vees recently, but a year or so ago they were lucky to run a weekend with a 7000 r.p.m. redline. That will give you some idea of what even a mild increase in engine speeds could cost you.

"Dear Don—I recently had to replace a bent intake valve, and as a result, arrived at a valve grinding operation which was not exactly as recommended. I would like your opinion, please.

"The seat, guide, etc., appeared in excellent condition so that sending the head to a shop didn't seem necessary. I simply placed the new valve in the head, chucked the stem in my drill, ran the drill, and pulled on the valve to seat it. I ran it for short duration, never very fast, and lifted the valve off the seat between runs. The only thing that wasn't accomplished was rotating the valve in both directions.

"Is there anything obviously or drastically wrong with this procedure? It's so simple that I wonder why it isn't done all the time.

Hank Roddiger, St. Louis, Mo."

"Sounds OK from here, provided you didn't overdo it. Valve grinding, to restore really damaged seats and valves, is an obsolete practice, since the introduction of "hard seat grinders" for the head, and "valve refacers" for the valves. Normally, if the equipment (and operator) are first class, a refaced valve can be mated to a reground seat without any further "grinding". If any at all is needed it will be only a few turns, probably all you had to do.

Any appreciable amount of grinding will leave a groove in the seating surface of the valve which tends to catch carbon particles and stuff, which prevents seating, which causes burning, which requires another valve job. The alternate direction of rotation provided by a conventional valve grinder minimizes the chance of particles of grinding compound becoming embedded in the valve face or seat, and cutting grooves in the other one. With today's hard seats that's not as critical as it was when valves seated directly on the cast iron material of the head.

"Dear Don—I believe there are many existing overweight cars that have already been considerably lightened to bring them close to the 825 lb. min. Now to allow them to be swiss-cheesed another 25 lbs. could mean disaster. If driver "X" lowers his car's weight to 800 lbs. and then sells to driver

"Y" who weighs 125 lbs., driver "Y" has to add 75 lbs. of ballast. That is equal to a piece of boiler plate 30"x15"x1/2" thick. Where do you suppose one could bolt this mass safely on a Vee? For safety reasons alone, why not leave min. weight of car at 825 lbs. and set total weight (car and driver) at 975 lbs. minimum?

(2) Don't you think the other two seat angles should be included in the rules? And why not specify seat widths (.040" to .060" intake, .060" to .080" exhaust)?

(3) A standard Vee oil filter kit sounds like a great idea.

(4) Have you tried turning a hot Vee engine with a wrench on the generator pulley? What if you pick up some oil on the belt during a race? Perhaps this rule should read, "... with plugs removed."

John Paget, Vancouver, British Columbia" I don't think that weight has any relationship to safety. As I've mentioned before, we had Petunia (a Formcar, yet) down to 800 lbs. once, before we got around to weighing her, without sacrificing any essential parts. On the other hand, one well known make of Vee (of legal weight) almost established a reputation for dropping the driver on the track in the middle of a race before the structural deficiency was corrected. No one can guarantee that all Vees would still be safe if reduced to 800 lbs.—but no one can guarantee that for 825 lb. cars, either.

As to that 75 lbs. of ballast, the proposal refers only to "removable" ballast, such as might be preferable where two drivers use the same car. What would prevent driver "Y" from installing a full-sized battery, a heavier rear shifter guard, a "bumper" inside the nose, a roll cage, additional side members along the cockpit, or a number of other such things in place of a single plate? He could even pour melted lead in the frame tubes. I think most Vees have room somewhere in the cockpit for any additional plate he might want to install. As to the safety of this added weight, wouldn't the total be the same as it was when driver "X" was at the wheel?

Your proposal for a 975 lb. total weight wouldn't do anything for anyone weighing over 150, which is below the average, already. It's the heavier drivers who need the benefit of weight equalization.

(2) The VW manuals show that drawing of valve seats with four (count 'em!) seat angles, even though only three are mentioned. However the later heads actually have a straight bore, with only the 45 degree seat ground in. As a practical matter, in order to keep the seat narrow, VW shop practice is to use the additional angles, as required, for repair jobs, and since they are in all the manuals they have to be considered legal for Formula Vee. On the other hand, a STOCK head has to be legal, too. As to the width of the seats, it would be fairly easy to determine if a seat were in the middle of the specified range but, as a Scrutineer, how would you determine whether a seat was .060" wide, or only .059"? Aside from that, does it matter, really, since valve reseating is something ev-

eryone has to do, and there is no question of expense involved?

(3) Like a "standard" cam, a "standard" oil filter kit would first have to be specified by SCCA (very unlikely) and then it would have to be made available to everyone. It would have to fit into every Vee, with no alterations or variations, and probably in some specific location. The proposed wording limits the size (1 quart) and eliminates cooling capacity by requiring flexible hose for connections and specifying "no cooling fins." Within those limits, what can go wrong?

(4) There's no time limit on turning the engine over, so you could do it slowly and allow the compression to leak away. Removing the spark plugs would accomplish the same purpose, of course, but wouldn't you rather do it the easy way? Like a lot of these items, this was written with the Scrutineer, as well as the competitor, in mind. As for oil on the fan belt, if you lost that much during a race you should have been black-flagged before you finished, if that blown piston didn't stop you first.

"Dear Don—Why not more than three cells in the battery if the total voltage isn't higher than six? I bought some nickel-cadmium cells for \$1.50 each, Government surplus. Each cell is 1.2 volts and weighs 2 lbs. Five of them in series makes up a six-volt battery, for \$7.50. Besides being cheap, they are safe—sealed with a rubber "O" ring and plastic screw, so if turned upside down they won't leak. I have used them for two years, with very little charging, and they really turn the engine over. They are in use on five other Vees, with the same results.

Even if you use two Honda batteries in parallel you get six volts, but twice the amperage for starting, with no increase in voltage across the coil so no performance advantage.

I think the fan-belt thing should really be pushed. People are running loose belts and making up for it with ram air pipes, etc. The temperature goes up and engine reliability goes down, and they blow. If you want to stay even near the front you have to go along with it, but you spend all your spare time rebuilding engines, and up goes the cost of racing. It should be an easy thing to police if we can get it in the GCR for next year.

I think the "claiming price" is the greatest! How about \$950 for the complete engine, less the starter, but including the exhaust system.

Jeff Carlin, Merritt Island, Fla."

I see your point on batteries, Jeff, but as usual, this was brought about because of someone taking advantage of loopholes. Up until last year it was "any six-volt battery", so people, as you mentioned, were using TWO batteries, but with trick wiring to increase the coil voltage. With the change to "any SINGLE six volt battery" for this year, they still relied on the dictionary definition of a battery ("one or more cells operating together as a source of direct current") to confuse the scrutineer. Unless your cells are

clearly marked "1.2 volt", a scrutineer would have to be armed with a voltmeter to check you out, as he would with any other combination of more than 3 cells. Again, this wording was at Frank Schulteis' suggestion, as the result of his scrutineering experience.

You've put the reason for the fan-belt proposal better than I did. Anyone have any questions on it NOW?

OK, we have \$950 for a claiming price. Any more proposals?

"Dear Don—After I slid into a curb at Austin, Texas, and bent a wheel and drum, I replaced both, but found that when I tried to adjust the brakes the wheel would turn only half a turn. I loosened it about four clicks and it would turn about 70%, four more clicks and it would turn about 90%, and two more before it would turn all the way around.

I removed the whole drum and axle to see if the axle was bent. It wasn't. I checked the drum to see if it was machined off center. (It was new.) That was OK. I reassembled them and checked with a dial indicator. Run-out was well within specs, but the condition was still there. I thought of the possibility of warping the drum with the lug nuts, so checked those with a torque wrench. Still no luck.

Now for the funny part—even with the brake loosened that much, hard high speed braking is still OK. The condition still exists, and it is about to run me up the wall!

George Dana, Orange Park, Fla."

We covered this some time ago, but I can't find it now, and a lot of the newer members wouldn't have seen it, anyhow.

Use of a bent wheel can cause an out-of-round condition in a brake drum, but in order to be as much as you describe it would have to be obviously out of shape. (When the wheel is drawn tightly against the drum, most of the distortion is taken out of it, of course, but the strain on the drum will spring that a little, too. Only a couple of thousandths will show up as a "high spot" when the wheel is turned.)

In your case, the clue is the "new drum". If your old drum was worn even a little bit oversize, the shoes were worn-in to fit it. Their curvature was of a greater radius than that of the new drum. If you had laid one of them inside the drum you would have found that it made contact only at the ends.

When the wheel (drum) is turned, as soon as contact is made with the leading edge of the shoe it tries to drag it along. Since the trailing edge can't move, this wedges the shoe into the drum until it DOES match the curvature. With only a slight difference, such as you apparently had, this makes turning the wheel by hand very difficult, but may not affect the braking appreciably. With a really great difference it can cause a wheel to lock up to the point where only putting it in reverse will loosen it.

Any time you replace a drum, and keep the original shoes, be sure to check this out. Use a slip of very thin paper for a feeler gauge. If the shoe is tight at the ends, but

has a gap in the middle, use a file on a couple of inches of each end of the shoe to bring the contacting surface near the center of the shoe. If the shoe contacts in the center, but not at the ends, don't worry about it. It will wear in to fit.

Your best bet, of course, is to get a worn drum refaced, and then get new shoes contoured to fit it, but this isn't always practical on a race weekend.

(Continued on Next Page)

### SPEAKING OF VALVE SEATS

Frank Schulteis, John Timanus, Dave Tallaksen, and others, are having a bit of a problem defining that intake port measurement—"not more than 29mm diameter not less than 1/2" from the valve seat and from the intake manifold face". For that matter, the definition originally proposed here won't work either.

On the later heads the intake port at the manifold end spreads out to more than 29mm wide before you get entirely around that first bend, and is greater than that (wider) until you get almost to the bottom of the valve seat, like within a quarter inch, or so.

So how about specifying only that "The intake port may not exceed 29mm diameter at the manifold matching face, and at and including the bottom edge of the valve seat"? Any better suggestions?

### FROM FIRESTONE

"Dear Mr. Cheesman—I have your letter of Mar. 8 concerning Formula Vee tires and just wanted you to know of our present plans. Since we are still in the throes of developing a Formula Vee tire here in Akron, we are additionally working on development of a Formula Vee tire in our Racing Division, Brentford, England, and from what they tell us, they should have a Formula Vee tire ready and back here in the States, possibly in June. We will keep you posted.

W. R. McCrary, Director of Racing"

### SUGGESTED REVISION OF FORMULA VEE RULES

(Continued from last month)

K. Lubrication system may be modified as follows:

1. Any standard VW oil pump which can be fitted without alteration of the crankcase may be used.
  - a. A modified or substitute pump cover incorporating a single outlet to an oil filter may be installed.
  - b. The normal outlet passage in the pump body may be plugged.
2. A standard automotive oil filter, of not more than 1 qt. capacity, and a suitable mounting bracket, may be installed. Cooling fins are not permitted on any component.
  - a. Only flexible hose, reinforced with wire braid, and suitable fittings, may be used for connecting the filter and the engine.
  - b. All components must be contained

within the body lines, at the rear of the firewall.

3. An oil sump extension may be fitted in place of the oil strainer cover plate, provided the extension is not greater in diameter than the strainer cover plate, and the capacity does not exceed 250 c.c. (1/2 pint). The oil strainer may be modified, or omitted, and the oil pump pickup tube may be extended into the sump extension.
4. Any piston and spring may be used in the pressure relief valve.
- L. Flywheel may be lightened to not less than 12 lbs.
- M. Any standard 180mm (7.09") VW clutch may be used. Operating method and components are free, including modification of operating shaft and/or arm.
- N. Balancing of only the clutch, flywheel, crankshaft, connecting rods, pistons, and crankshaft pulley is permitted. No more material may be removed than is necessary to achieve balance.
- O. Specifications for valve movement in relation to crankshaft rotation (in the Scrutineer's Handbook for Formula Vee) can be met only by the use of stock VW cams bearing the markings 113 109 101C. (Part #113 109 101D includes timing gear and above cam.)
- 5.11 EXHAUST system is free, except that it must terminate 1" to 3" behind the rearmost part of the body.
- 5.12 FUEL TANK(S) must be installed inside the perimeter of the frame.
- 5.13 The use of the following non-standard VW replacement parts is allowed. These must be normal replacement parts and shall not result in any unauthorized modification of any other component:
  - A. Fasteners (nuts, bolts, screws, etc. These need not be metric).
  - B. Wiring.
  - C. Gaskets and seals.
  - D. Fuel lines and oil pressure lines and associated fittings.
  - E. Spark plugs.
  - F. Piston rings.
  - G. Wheel bearings.
  - H. Connecting rod bearings and crankshaft main bearings, of same type and size as standard VW, including standard undersizes and oversizes.
  - I. Fan Belts.
  - J. Valve guides, of same dimensions as standard VW.
- 5.14 GENERAL
  - A. Firewall, roll-bar, floor, seat-belts and harness, fire equipment, mirrors, fuel system, etc., must also conform to other sections of the GCR, as required.
  - B. Painting and/or plating of any exterior surface is permitted.
  - C. Specifications in "Scrutineer's Handbook for Formula Vee" (and amendments thereto) are hereby incorporated into and made a part of the Formula Vee rules.

## MEMBERS' SOAPBOX

(Continued from Preceding Page)

(The following is the rest of the letter from the guy who wanted to add VW rotary engines to Formula Vee — if they're ever available.)

"... You mean to tell me that Petunia is the original Petunia from eight or so years ago? Someday I've got to talk with you. I've always wanted to get into a discussion on why older Vees stop winning, even though, in theory, they should't. Somebody who has stuck with a Formcar since the beginning and has seen everything else come and go should be pretty expert on why later Vees are beating him. I heard somewhere that Formcars are on the heavy side, but I'm skeptical of that as I should think that they would have been built right down to the limit.

I heard another interesting theory: How often does a first rate engine find its way into a formcar? Could Van Camp pull the engine out of his Lynx, drop it into a Formcar, hop in, and still make the ARRC? Interesting thought! I'm hoping older cars can be competitive with enough work—my little monster will be an Autodynamics MK V when it's finished.

Last November, my chief gopher and I were building a wood mock-up of a Vee I had designed when my mechanic called up at about 10:00 P.M. and told me there was a Vee chassis in the paper for 100 bucks. I figured I could hardly build one for that price, so we went over to this slummy house and this here huge mountain man (complete with whiskers) showed us the thing. It seems that somebody had brought it to a fellow down in Tennessee who sandblasts tombstones to be blasted. The owner never claimed it, so mountain man saw that the engine mounts were for a VW and bought it for use as a dragster. However the project bogged since he had no source of parts (he didn't even know about FV!) so he sold it to us. (It was quite funny; he kept insisting that someone in Tennessee had tooled it up and there was no way we could convince

him that the frame was one of Ray Caldwell's little gems.)

After we identified it as an Autodynamics we put an ad in Autoweek for parts and got an answer from a speed shop in Mississippi who had an almost complete AD MK V kit, except for the frame, which the fellow said had been sold to a junk dealer from Chicago! We paid \$500 for the kit.

Just when we needed VW parts, somebody junked a '59 with late model transmission, almost on our doorstep. When we needed tires, Burt Richmond came up with nine, in good shape, at ten bucks apiece, and he threw in an old crank (which turned out after magnafluxing and regrinding to be excellent). If our luck continues like this, my finances may yet outlast this project.

Curt Fredrickson, Chicago, Ill."

*If your luck continues like this you'll be winning races with that 'ET mill!*

*I doubt that a mint condition Formcar would be as fast as a Lynx, even with the same engine and driver—after all, we sat bolt upright way back there in those days, with not only the driver's head, but his shoulders as well, sticking out of the cockpit above the body lines. I'm not convinced that any Formula car can be made very aerodynamically "clean" with all those wheels and suspension sticking out and breaking up the air flow, but getting the driver down out of the wind has to help a little. Other than that, though, what's the difference between one Vee and another? It's no myth that Formcars were overweight, by about 50 lbs. and don't ask me why they weren't made to conform with the rule! Actually, the mystery is why the rule wasn't made to conform to the Formcar, since it came before the rules were made!*

*Yes, Petunia is the original Petunia from eight years ago, minus what has been pruned away for weight reduction. She now has an aluminum gas tank, aluminum trailing arms and shock mounts and aluminum steering shaft. A number of non-essential frame members, including the rear support for the transmission, have been eliminated, and I doubt that any of the original front suspen-*

*sion is still there. I believe the flywheel is the only part of the original engine that we're still using, but the transmission (except for substitution of transporter 3rd gear) is the same. She's been narrowed 3", and now the top of John's helmet is only 1 1/2" above the top of the engine shroud, due to relocating the steering arm and pedals, and substituting a new seat. The roll bar has been replaced, of course, (twice) and a smaller steering wheel was substituted, but except for a little trimming and patching, the body panels are still the same. Yep, she's still the original Petunia, all right! (See picture in #79 VeeLine.)*

*She hasn't won a race for several years, but she sometimes startles the cars which do, and nearly always finishes somewhere in the first third of the pack, still in sight of the leaders. Considering her 225 lb. driver, and her track-tuned engine, we don't feel that she does too badly. (If we get "weight with driver", and ever get that dyno built, we'll have no alibis.)*

## UNCLASSIFIED ADS

FOR SALE: Zink, 3 or 4 years old, just rebuilt. Strong engine, clean, in great shape. Trailer available. Dick Poland, 944 Sierra Road, #7, Concord, Cal. 94520 (415) 687-6277.

FOR SALE: '71 Zink w/'72 Zink engine, never raced. Tools, driving gear, trailer. Best offer. Bob Chiesa, 328 Hartford Ave. SE, Des Moines, Iowa 50315 (515) 282-6320.

FOR SALE: Lynx, spotless, 6 new tires, '72 roll bar, trailer and spares, \$2250. Spare '65 stock engine, \$200. Complete '63 VW, \$200. M. A. Minnicino, Route 1, West State Road, Allegheny, N.Y. 14706. (716) 373-8242.

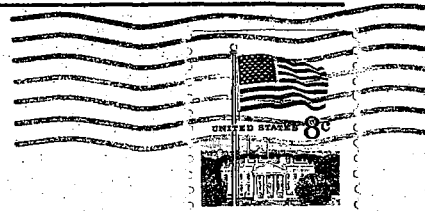
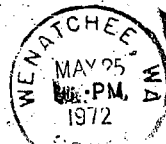
FOR SALE: Modified Formcar, 2 engines, many spares, '71 specs. Complete, \$1200. Dale Sawyer, 420 E. Main St., Auburn, Wash. 98002 (206) 854-5920 days, 939-3856 eves.

*Ads in this section are free, member or non-member, if they pertain to Formula Vee and are non-commercial. The only intent is to bring unwanted Vees and lonely would-be owners together.*



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