VEE LINE

NUMBER 99 DECEMBER 1972

DIRECTOR'S CORNER

This should go in the UNCLASSYFIED section, really, but probably more of you will notice it here: "WANTED: Director for Formula Vee International."

I've threatened this before, but this time it's on the level. I'm going to have to give this thing up.

The fact that I'm unhappy with the Vee rules, and with SCCA, and that I've about given up on ever getting Petunia to Atlanta, isn't really a reason (at least I don't think it is) but it does make the decision easier, I'll admit. The basic reason is simply lack of time. You've noticed the VeeLines are a couple of months behind schedule now?

My real job—the one which buys the beans—has gradually expanded in the past year or so to the point where I'm bringing it home at night, spending time on it that I used to have for cranking out this kind of stuff. On top of that, my wife, who does all the real work for this organization, has also taken a job which involves evening and weekend work. And to top that, I'm due for a transfer to some other part of the State sometime in the next few months. As I've said at every election of officers, *sometime* a new Director will be needed, and, all things considered, this seems to be the time.

I sincerely hope that somewhere in this organization there is someone who is not entirely satisfied with the way it has been run and who feels that he could do it better, and that he will take this opportunity to prove it. And I hope that he *will* do it better! This racing class hasn't gone down the drain, by any means! Someone with a different approach, with better raport with SCCA, could very well be able to make it bigger and better than ever before!

If you would like to take over this position, get in touch with our President, right away. He's Burt Richmond, 111 E. Wacker Drive Chicago, Ill. 60601. If you think you might be interested, but aren't sure, call me evenings or weekends, and I'll be happy to give you all the details. Phone (509) 884-6453.

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Many thanks to all you people who have written in with your votes of confidence in FVI and what it has stood for, even though you are making it even harder to come to this decision.

WHAT A PUTDOWN!

"Dear Don—Don't think it still can't be done! This year I wanted to go faster so I put a 1600 Type 1 engine in my last year's Vee (a "Phoenix MK4C" which I built myself) added some bigger tires, and raced it as a Super Vee.

The first race, a Regional, the flywheel came off. The second race went fine and I finished first in class, second overall, in the F, A, B, C, and SV race. Now that's what I call fun! The next race was a National, and I finished a trailing 4th, but still in the points. At the end of the season I was third in points and on my way to Atlanta!

Tech at Atlanta was a little troublesome. Frank Schultheis insisted that my car wasn't a Super Vee, and it took $25 and a meeting of the Stewards to prove otherwise.

The racing was fun, the weather was bad, and I finished 8th in the Super Vee race out of about 20 starters!

Upkeep on the engine was tremendous! It *required* rebuilding every 2 races. An old saying among Super Vee racers is "He who starts doesn't necessarily finish", or something like that. At Atlanta they were dropping like flies.

Next year I plan to take it easy and go back to Vee racing and with the money I will save from the switch perhaps buy a Winebago, or something.

Don Maguire, N. Kingstown, R.I."

Don, I'll have to admit I checked the record before accepting that story. I found that you finished third, all right, (one point behind second place) in the N.E. Division, and also that you did it against some good competition! That division had 11 cars running for National points —more than any of the others.

I never saw it mentioned anywhere else —were the sportswriters unaware that you were running a 1600cc Formula Vee, or did they just choose to ignore it? What a low blow to inflict on those drivers behind you!

The VEELINE of FORMULA VEE INTERNATIONAL

DON CHEESMAN, Director
1347 Fairmont Ave.
East Wenatchee, Wash. 98801

CALL TO ARMS!

Formula Vee may yet be saved! While the rest of us sadly accepted our fate, Charlie Young, of Glendale, Cal., refused to give up. He wrote to his SCCA Area Governor, Ed Leslie, about fan belts, and got an encouraging reply! "Dear Mr. Leslie: I am currently preparing a Formula Vee in order that I might get my competition license. If it weren't for the fact that Formula Vee, due to the restrictive nature of its rules, is such a relatively inexpensive class in which to race, there would be no way that I could possibly compete in road racing. Therefore, I was quite alarmed when I read in the VeeLine that the Competition Board had recommended that the use of a fan belt be made optional on Formula Vees. This sort of rule change is the sort of thing that will take even Formula Vee out of the financial reach of people like myself, if we hope to remain even reasonably competitive. This will lead to ducted-air cooling like on Super Vees—and their short engine life speaks for itself.

It is possible that Mr. Cheesman is mistaken, but in the case that he is not, I would like you to know that I feel that there must be a reason for Formula Vee to be the first or second most popular class in The SCCA. I therefore hope that you will work to keep Formula Vee like it is—a class in which a racer without a lot of money can compete in more than two or three races a year and have some chance of finishing fairly well. Sincerely, Charles Young.'

"Charles—Our competition Board meets Feb. 11, and I'm having Bob Tomlin go into your suggestions. Thanks for putting it so factually. Vee is a problem with its restrictive rules, and we will reconsider fan belts. Sincerely, Ed Leslie".

OK, all you little people, so what are YOU *going to do now? First, get out your copy of "Sports Car" and get the addresses and/or phone numbers of* YOUR *Area Governors and/or members of the Competition Board and add your weight to Charlie Young's. They all get VeeLine, so you can assume that they will know what you're talking about.*

This thing goes to the printer tomorrow morning, and I'll put on all the pressure I can to get him to make it a rush job, but even so, the time schedule is going to be very tight. So—if you get this too late for a letter to your officials, squander a buck or two on a phone call. It might save you a hundred or two on an engine rebuild!

COMMON PROBLEM?

Had a note from one of the people we raced against last season, who had been complaining about handling problems with the used car he had bought. Seems it went completely and suddenly out of control in the corners every once in a while, for no apparent reason. He said he had finally found the trouble—"A lucky photograph finally gave me the answer!"

His rear suspension was going positive on him, just as it did on many of our cars years ago. Its been a long time since I heard anyone mention that problem—so long, in fact, that it hasn't been mentioned here, and may be so taken-for-granted that other newer members may not have considered it if they are having handling troubles.

The onset of positive camber was a sometime thing, even in the good old days. It took a good hard turn, on smooth dry pavement, with good tires, to bring it on. What happens, of course, is that the centrifugal force, being opposed by the tire where it contacts the pavement, becomes great enough to "tip" the outside rear wheel, which causes the car to raise up as the axle tilts. As soon as this starts to happen, the force increases—once enough force is generated to start the wheel tipping, the center of gravity is raised, and the "leverage" is increased and it almost instantly goes as far as it can. It's like tipping over a box—once it's past center it gets increasingly hard to stop it.

Aside from the decreased traction from the tilted tire, it seems that the car actually jumps upward, taking most of the weight off the wheels for a moment, and causing instant spin-out. It's very annoying!

We still use a cable on Petunia, as a restraint against excessive positive camber, but our method of checking its action would work on any type of suspension. We simply put a jack under the transmission and raise the rear wheels clear of the ground. We adjust the cable so that in this position we get about a degree of positive camber. If you're using a Z-bar—especially if it's adjusted to carry some of the weight of the car—you may very well find that it allows a lot more than that.

MEMBERS' SOAPBOX

"Dear Don—I've just purchased a Vee, so you can change my membership to Active, and I want to share an opinion, as well.

We purchased an old-new car-trailer combination for $1000, and while there are some updating mods in the works we should hit the track for well under $1500. I chose Formula Vee because it is the least expensive, yet most reliable and competitive class in SCCA racing.

At least it used to be. The rules liberalization which has taken place over the past few years will probably make Formula Vee a class like all the others in SCCA, with a few hot dogs always in the lead and the literal amateur in his "poor man's Formula I" trailing along behind. Those of us who haven't the money or the expertise to field a "trick" race car must apparently be satisfied with playing spear carrier. Is this what Colonel Smith had in mind when he created Formula Vee?

Jim Harvey, Seattle, Wash."

I guess you know I couldn't agree with you more! No, this definitely isn't what Col. Smith had in mind! He knew that strict attention to the smallest deails in preparation would pay off—that some cars, as well as some drivers, would be better than others, but he envisioned a class in which anyone who could afford to race at all could have as good a car as anyone else without spending huge gobs of money. In one of our first seasons here in the Northwest, when we had only eight or ten cars, every driver in the bunch won at least one race! THAT *is what he had in mind!*

"Dear Don—A short time ago I bought a used Vee. The engine was fitted with an odd distributor and the previous owner did not know what it was from, except that it was a VW distributor. The local VW parts houses are unable to identify it. It is a Bosch mechanical and bears the number VE4 BRS 383. Its most distinguishing characteristic is its two-piece cap, with the wires coming out together on one side from under an extension on the cap. I wonder if you can identify it for me and give me a little information on it. Is it good for a Vee? If I do need to replace it, what would be the best one to get?

Also, could you give me any tips on setting up the rear suspension, fitted with a Z-bar?

I certainly appreciate your help along this line, and your attempts to keep Formula Vee within the financial reach of people like me.

Charlie Young, Glendale, Cal."

That one beats me, too, Charlie. I can't find a thing on it! I've seen them, though, on a couple of Vees. Doesn't it also have a thin bakelite plate which installs below the rotor, between it and the points?

*As for a replacement, as was mentioned a month or so ago, the "Scrutineer's Handbook" lists only two "legal" distributors with mechanical advance. However, I'm sure you could justify "*ANY *standard VW distributor", if it came to that. (You could have a tough time justifying the one you have, though!) In my opinion—and I could get a lot of static on this—there's little, if any, choice between any of the mechanical advance distributors.*

There could be some mechanical features of which I am not aware—possibly one may have sharper cam lobes causing the points to float at high speed, or perhaps there's a type which develops flutter in the advance mechanism or something, but basically, all the distributor has to do in a Vee is make a spark. The "advance curve", which is knowingly discussed in many articles on the VW engine, is really immaterial for racing. For any of them the advance is "all in" before 3000 rpm, and if you are racing in the 2000-3000 range no distributor in the world is going to help you. In the racing range (3500 on up) the advance mechanism is against the stop and there is no "curve".

The advance mechanism—or perhaps we should call it "retard"—is pretty necessary for starting the engine, especially with a low battery, so be sure it works freely in any distributor you may want to get. Check the shaft for play, because two or three thousandths of side play in the shaft causes that much variation in the point gap, which can change your timing by several degress each time the shaft wobbles. Check it against your VW dealer's list of distributors which have been used in the past (he has a book called "Without Guesswork" which shows them) if you want to be absolutely sure it's legal, and don't worry about it.

Suspension adjustment, with or without a Z-bar, is strictly a matter of experimenting. I believe the current practice is to set the Z-bar with little or no pre-load in either direction, but in the past I've seen two men on the car, "loading" it, while the clamps were being tightened. On the other hand, there was also a time when the opposite was true—the Z-bar was adjusted so that in effect it was the springing medium.

One thing to watch for is mentioned elsewhere— check for positive camber ("tuck-under") by raising the rear of the car and watching how the wheels hang. If you get more than a degree of positive, you'd better add a cable, or a chain on each side, or some other kind of limiting device, or else readjust the Z-bar so that it will do the job.

Thanks for your support, but I haven't really been trying to keep FV within the the reach of people like you—I've been trying to keep it within the financial reach of John and myself. Purely a selfish motive!

"Dear Don—If you're going to talk about ram cooling the engine, let me add my two-bits worth. (Some rather involved mathematical computation for arriving at the size of the duct followed. Don).

I considered that the intent of the Vee was to travel at an average (important) speed of 70-80 mph, so a ram tube 5.71" diameter would be desired. I obtained a flexible duct slightly larger than 5" diameter (after all, I'd be averaging closer to 80 mph, wouldn't I?) fashioned an adapter for the fan inlet (which is approximately 6¼" in diameter) and mounted the flex duct inlet on the roll bar. After three laps of private practice at MAR, the engine was cooked! The oil was foaming and smoking, the engine was

making funny noises, and the fan housing was hot enough to fry an egg on.

The duct was removed and the fan was replaced, but at the next race the engine came apart in the first practice lap and was destroyed.

Without the fan as the *main* cooling component, it appears difficult and expensive to alter the existing configuration to obtain enough flow area to satisfactorily cool the engine. The fan still pulls in a lot of cooling air at idle, when the scoop is useless, and you do not *always* travel at 70-80 mph! I'm not saying that it can't be done, but the fan is a valuable component.

Right now the ram scoop is back on the car *with* the fan operative (very loose belt) and with the generator completely dismantled, leaving only the shaft and housing. I haven't tried it yet, but Spring is just around the corner.

By the way, my design utilizes furnace pipe, flexible duct, and other hardware store odds and ends, and it doesn't look bad!

Hank Roddiger, St. Louis, Mo."

Hank, you simply don't have that "spirit of racing"! I'll bet you even favor "weight with driver"! Giving up after blowing only one engine just doesn't show the right attitude. Of COURSE *it can be done! Why do you think someone(s) pressured the Competition Board into reversing the recommendations of the "Ad Hoc Committee" and approving a no-belt rule? It works on Super Vee, doesn't it—and some of them get as much as two races on a single engine!*

Get in there and fight, man! If it can be done, somebody is going to do it, and he's going to be King of the Mountain until someone else does it, and they'll fight it out until someone else gets in the act. Those who don't want to can watch. THAT *is the spirit of racing! As I've been told several times, "If they can't afford to race, they shouldn't be racing".*

"Dear Don—Thought you might like to hear about my experience running without a fan belt. I had just built a scoop for the Lynx out of 6" flex tube—just bent it around to the fan opening and fiberglassed it in place. I started a half-hour race with a loose, greased, stock belt and the scoop. 22 minutes into the race I lost two bearings—found the belt hanging on the generator housing.

I would guess I ran two or three laps without the belt, but have no way of knowing for sure since there was no burst of power when it let go, and my lap times (kept by my wife, who is very good at it) were all within ½ second of each other. The huge scoop obviously wasn't enough, and the power gain isn't enough to make it worth the risk.

I now run a skinny belt, which gives a deep pulley effect, along with the scoop.

With my carburetor scoop I get flat-spotting after backing off and hitting the throttle, but it doesn't seem to hurt anything. Any ideas?

Larry Bradley, Wyandotte, Mich."

I read Hank Roddiger's letter (elsewhere) first, and was considering suggesting that he try a larger scoop and duct. Then I opened yours—in the same mail—and found that you had taken care of that possibility.

As was mentioned last month, I'd be inclined to think that Super-Vee type cooling—direct ducts and shrouds to the cylinders and heads—would be the way to go. I doubt that it is possible to force enough ram air through the fan and housing to do the job, without some boost from the fan, which gets back to a horsepower loss over the direct system. With the present fan housing in the way, and the current body styles, this may be a bit difficult, but I'll bet you'll see it done by the end of the season. (Probably fan housings and fans will be dropped from the rules for next year if this thing isn't stopped soon.)

As to your "flat-spotting"—I would doubt that the ram air is responsible. It feels, on your face, helmet, or hands, that there has to be a lot of pressure in that high speed airstream, but actually it amounts to only around two or three inches of water, or about ¼" of mercury, or the change in pressure which you might get from a change of a few hundred feet in altitude. The velocity added to the pressure may give some additional effect—and, of course, ANY *amount of boost is beneficial in Formula Vee. However, it probably won't make enough difference to cause any carburetion problems.*

Does your throttle pump work properly Does it squirt for at least a full second, no matter how fast you open the throttle, or just dribble a few drops? Dirt in that system which would keep the check valves from closing could give you trouble of that nature. I can only think of one other possibility, and I don't want to insult you—but you're not using a vacuum advance distributor by any chance, are you?

"Dear Don—It was with empathy that I read of the plight of Curt Fredrikson at the Road America Driver's School. Having raced for a number of years, I too have shared many anxious and frantic moments as well as skinned bones and sleepless nights in sometimes vain efforts to ready a Vee for a race.

I realize that you don't accept commercial messages, but since the R & R Bug Haus is a spare time overgrown hobby, I think you would be doing FVI members a service by advising them that if they are racing at Road America and get in a bind, help is only 12 miles away (about 2 miles from the airport Curt mentioned).

Anyone needing a part or help for a Vee can call me during race weekends (day or night) and if we've got it, they've got it! Discount to FVI members. If major repairs are needed, our entire crew is willing to work all night, if need be.

I enjoy the VeeLine very much and most of the information has been applied to several of the Division's cars and engines which we have built.

I too share your dismay at the high cost of racing. What price fun?

Richard W. Meyer, 7012 Sunset Road, Kohler, Wisc. 53044 (414) 458-7954"

I don't consider that a commercial, Dick—it's a public service message. Any of you people who think you might be racing at Road America—nail this on your shop wall, or paste it on the underside of a panel.

"Dear Don—I would like to replace the spring-shock units on my Formcar. Shocks and adjusters are no problem, but I don't know about springs. Could you tell me what spring rate to use, and where I might look for some?

Skip Mesick, Lynchburg, Va."

Spring rate, in its simplest form, is just the distance by which a spring is deflected by a force applied to it. It is normally expressed as pounds per inch, or even just as "pounds", referring to the weight required to deflect a given spring one inch. Doubling that weight will deflect the same spring two inches, three times the weight, three inches, and so on. OK? So now you want to know what "rate" you should use on your Vee. It seems that all you have to do is figure out how much weight each spring will have to carry, how far you want it to settle under the weight, and how much more settling you want to allow capacity for to take care of bumps.

To save you that trouble, I can tell you that Autodynamices uses at 140 *lb. spring rate. On the other hand, Lynx has three spring rates available, each suitable for a different type of track. If you take a good look at some other cars you'll probably find that their springs are obviously different from either of those cars. Note, too, that some of them have the springs nearly vertical, so that the load is directly proportional to the weight on them, and others (Zinks, for example) have the springs at a considerable angle, so that there is a leverage factor increasing the force on the springs above what it would be if they were vertical. Makes you wonder, doesn't it?*

Now let's make this even more complicated. Theoretically, as we said above, an additional unit of weight (100 lb. spring", for example) will compress the spring another inch beyond the normal riding height. If you hit a bump which will compress the spring an inch, then, it will exert 100 *lbs. of force* UPWARD *on the chassis, tending to raise the car momentarily. If the bump were only of momentary duration, like running across a narrow board, the wheel would bounce back down to the pavement, and the effect on the car wouldn't be too noticeable, but if it were like running onto a new layer of paving an*

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MEMBERS' SOAPBOX

(Continued from Preceding Page)

inch high, so that the wheel couldn't drop back down, the car would raise up—not just the inch, to compensate for the increased height of the pavement, but nearly two inches, due to the compression (bounce) of the spring. It would drop down again, past its normal riding height, then up again, and down, until friction dampened out the bounces and normal ride height was restored. That's why shock absorbers were born, and that changes the whole "spring rate" picture.

Shock absorbers don't really absorb shock—just the rebound from a shock. There's a piston inside, with a check valve in it which allows the piston to move easily through the surrounding oil when the shock is compressed, but closes, and makes the piston move slowly when the shock is extended, like when the car wants to bounce after a bump. OK, you knew that all the time.

Just for drastic illustration, though, let's invent a shock which won't allow any rebound at all—not even slow recovery. It's like a ratchet, which will allow the spring to compress as much as it wants to, and then holds it there. Now let's run over several of those narrow boards, spaced a foot apart.

When we hit the first one the wheel raises up, naturally, and drops back down again, naturally, but due to the ratchet the spring remains compressed and the car comes down, too. An inch lower, in fact. OK, so now the spring has been compressed an amount equal to the weight of the car, plus another 100 lbs. The next board we run over may compress the spring another inch, adding, in effect, another 100 lbs. to the load, but pretty soon that spring is going to be so stiff that the wheel, suspension, car, and all will raise up when we hit one of the boards. To put it another way, we now have a spring with a "rate" so high that the forces we're using won't compress it at all. Even after that first bump it takes more than 100 lbs. of force to compress it at all, and 200 to compress it another inch.

Shock absorbers do the same thing, except that they do allow recovery to the original position, eventually . In the case of that first bump, rebound would be relatively slow, but the spring would be at normal height and ready for the next bump in a fraction of a second. However, if those boards were spaced so closely that rebound wasn't complete when the next one was hit, each one would compress the spring farther until a point was reached where the increased stiffness of the spring caused the shock to act enough faster so that partial recovery would equal the amount the spring was compressed at each bump. In other words, we now have the effect of using a spring with a much higher "rate" than it had on the first bump. If you're sceptical about this, watch closely the next TV commercial you see showing a car running over railroad ties or other closely spaced bumps. You'll see the wheel climbing up into the fender a bit farther on each of the first bumps until it reaches a point of equilibrium between the increased stiffness of the spring and the increased speed with which the shock lets it rebound.

So what does it all mean? Well, probably it means that the exact spring rate isn't exactly exact, because it varies to suit varying conditions, for one thing. For another, it points out the difficulty of predicting just what spring rate would be best, from a purely mathematical projection. One automobile manufacturer claims the springs are "computor selected" for each automobile, but you can bet that a lot of data found by extensive testing and experimenting (just as you might do at the track) was fed into that computor, along with the mathematical formulas.

Does that answer your first question?

As to where to get them, if you're going to use them in the original location, probably the original springs will do you as well as new ones—the only way to tell for sure is to get different ones, and test them. When we remodeled Petunia we relocated the springs ahead of the axle, using the original shocks (which we still have, by the way) but the difference in leverage (considering the ball-joint of the trailing arm to be the fulcrum) increased the pressure—not the weight—on the springs so we had a pair made up at a local steel fabricating shop. They are the same as the original Monroe Load Leveler springs, except that they are made of 3/8" steel instead of 5/16".

Various styles of "helper springs" are available at auto parts houses, mail order firms, etc., or if you want to copy some particular make of Vee, you can get the complete assembly from the manufacturer.

UNCLASSYFIED ADS

FOR SALE: Autodynamics, with Z-bar, extra heavy front sway bar, 8 wheels, new 7 pt. restraint system last year, Purple K fire extinguisher, 44HP (true) engine by Bill Noble. Bob Griesenbeck, 420 Claremont, Salina, Kan. 67401, (913) 827-9532.

FOR SALE: '70 King Vee, never bent. Hyd clutch, Z-bar, Smith's instruments, lowered front end, Goodyears, new wheel bearings, front suspension parts and brake cyls. Two schools, 4 races, since new. Without engine, $1050, with stock engine, $1200 or best offer. Will deliver reasonable distance from NYC. Tony Spiridigliozzi, 138 Primrose Ave., Mt. Vernon, N.Y. 10552, (914) 664-1152.

FOR SALE: Autodynamics, with new Koni shocks, new engine, 1-year old engine and trans. Latest Goodyear dry and last year's rain tires Car and trailer, $1850. John Downing, 3347 N.E. Siskiyou, Portland, Ore. 97212.

FOR SALE: Lynx Type A, with fresh engine and trans., slicks and wets. Professionally maintained. $1500. Trailer available. Frank Vella, 14017 Manning, Detroit, Mich. 48205. 527-7943 before 4 p.m., 756-7155 after 6.

FOR SALE: ARRC Zink, meticulously maintained. 52HP Killion engine, latest body mods. Trailer, tires, and spares available. $3300. Ray Dona, 26 Highland St., Berlin, Mass. 01503, (617) 838-2992.

FOR SALE: Crusader kit components, completely assembled and sorted, plus exhaust system, Konis, foam-filled tank, and belts, $850. Complete with Jim Wild engine, $2000. Bob Klingler, 5236 Charlotte Way, Livermore, Cal. 94550, (915) 447-3853.

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