



VEE LINE

NUMBER 57

JUNE 1969

DIRECTOR'S CORNER

As was mentioned elsewhere, the future for Formula Vee may very well hold some surprises. While literally everyone now agrees that Formula Vee is great—probably the greatest thing to hit the racing scene since the rear-view mirror—only a small segment of the racing population (the majority of Formula Vee owners) thinks that it couldn't be even greater!

In spite of the spine-chilling noises now emitted by Vees, they still lack "spectator appeal"—a shortcoming which will require further steps to correct. Having failed to achieve the illusion of speed with more noise, our next step is obvious—give the spectators the real thing! You can expect to see some unusual pressure exerted in this direction in the next few months.

Generally speaking, the disciples of change are those with some axe to grind, rather than Vee owners who want to go faster. Among these would be race promoters and some of our club officials, with an eye on gate receipts, and perhaps a Vee builder with some new innovation which isn't quite within the scope of the present rules. Even the Volkswagen organization is taking an unusual interest in the Vee rules this year—in addition to the obviously desirable objective of coordinating European and U.S. rules, they would like to see Formula Vee demonstrating "current Volkswagen production components," rather than the obsolete '61 through '65 parts.

Then we have those with no particular personal interest in Formula Vee, either way. They just feel very strongly that the name of the game is "progress," also known as "improving the breed," and "change" in their vocabulary is synonymous with "improvement." Formula Vee has been essentially the same for six years now, so it's obviously time for a change of some kind!

There are, to be sure, some Vee owners with those opinions, too, as the results of our annual ballot always indicate. We certainly don't get unanimous opinions on every item. As was announced in the No. 53 VeeLine, a "new FV club" was organized in Maryland (with VW participation and assistance) with the avowed purpose of "providing liaison between area FV drivers and FVI and the SCCA." If it has anything in common with FVI it hasn't taken the trouble to establish any "liaison."

The point is, FVI doesn't have the only pipeline to SCCA. These other organizations and individuals are exerting pressure, too, for their favorite rule changes. There's no argument, from any source, that FVI doesn't represent the *largest* segment of Vee owners; but you may have noted that there's some reluctance about accepting our influence in direct proportion to our numbers. One SCCA official gave me one clue— he said, "As soon as you announce the results of your poll, I'm deluged with letters and phone calls from those of your own members who voted on the losing side."

SO—to make this year's ballot really effective, we have to do three things. First, let's be getting more members. Second, let's be seeing to it that they all vote. And third (and evidently most important) let's not assume, when the results are announced, "Well, that's settled." Instead, let's get on the horn, or write, to your favorite Car Classification Committee member and tell him how and why you voted—*especially* if you voted on the *majority* side of some important issue. It's evidently the dissatisfied minority which has been making the most noise.

On the other hand, of course, if you really don't care what happens to Formula Vee. . . .

FORMULA FORD

Has the new Formula Ford taken your part of the country by storm, too? They're not quite as numerous as Vees here, but there's no reason for a FF owner to feel lonesome!

It's a bit early to predict their future, but it looks like they might shake up the Formula racing picture somewhat. Of course, the Formula C's have some alibi for being passed by a Ford—even though they're all-out modified, they have a third less displacement. But how about the Formula B's? The fastest B is still ahead of the leading Ford, but they get pretty well stirred together back in the pack. With just a touch more modification. . . ?

The Fords have pretty well outgrown the "economy" label, already—a Lotus Wedge from California (faster than scat!) is rumored to be worth \$7000! Remember when "Formula Junior" was dying because of the rising costs? It was getting to the point where a good competitive car might cost as much as \$5000! (What do you suppose the buyers of those \$2950 economy model Fords are thinking, about now?)

MEMBERS' SOAPBOX

"Dear Don—Meant to send this in for last year's rules ballot, but forgot about it—Wheelbase dimensions, minimum."

"A friend is building a special. In designing it, we would have liked to use about a 2" longer wheelbase to allow a more reclining driving position. The 83.5" was OK for the Formcar, with its sit-straight-up position—you could have half-way decent leg-room, and still get the engine out. An 86" maximum would allow a better driver position, with engine removal forward and up. I don't think it would give any special advantage to anyone, either."

"So that's my proposal for the next ballot. Hope it gets as many votes as my 'rear track correction.'"

N. Chris Paulhus, Acton, Mass.

I can promise you two votes, Chris. As you may have noted, we've exhausted every possibility with Petunia, and still barely get John below the original Formcar rollbar. That's not exactly a lay-down position!

THE ROSE CUP

Well, the Rose Cup Races at Portland, Ore., are over for another year. It wasn't by any means the biggest event in the world for Vees, but it had to be one of the best. It was originally planned as a three-way event, including "Conference," the Oregon Region of SCCA and the Northern California Chapter of the Formula Racing Assn.; but it turned out that the Oregon Region scheduled a National Race at Seattle International Raceway for the same weekend, instead. Even so, there were twenty-seven Vees—from Oregon, Washington, California, and Idaho—in the money race for the Vees on Sunday, which was conducted by the FRA. (There was also a full schedule of Conference races on Saturday, and events for FRA Formula B, C and Ford on Sunday.)

Prize money for the Vees started at \$150 for first, down to \$20 for tenth place, with an additional \$350 from Riviera Motors (the Northwest VW Distributor) for the first three places. Bob Klingler (Livermore, Cal.) took home \$450 for a spectacular drive from 22nd place on the grid during the first half of the race and then a duel with Larry Wilson (Sacramento) for first place during the last half. A couple of seconds back Norm Babcock squeezed out a third from Tupper Robinson. John Baker, in the only Formcar (Petunia), took seventh place, forty dollars, and best of all, came home ready to go racing again with no repair work! Dewey Harless—an exceptional announcer and race commentator while not busy driving his Formula C—described both Saturday's and Sunday's Vee races as "the best of the day."

They put on a good show, all right, from the spectator's point of view. The fact that money was involved didn't noticeably improve the driving any; but on the other hand, such a display seemingly goes with any Vee race, anywhere, anymore. Most of the seven DNF's were put out of the race by contact with another car. Luckily, no one was even scratched but one driver got his steering wheel and windshield bent, and tread marks on his helmet from the front wheel of another car which was driven through his cockpit.

If you missed it, you'll have another chance next year—the Portland Rose Festival is already making plans for it. They thought it was great!

REMINDER

Have you registered with VWoA as a National points driver yet? Better do it right away if the answer is no. Remember, there's *money* at every National, clear down to tenth place! All you have to do to get your share is: place tenth or better, make sure that VWoA gets a copy of the race results, signed by a race official, and be on record with them as one of the contenders. Just send your name and address to: Formula Vee, Public Relations Department, Volkswagen of America, Inc., Englewood Cliffs, N. J. 07632.

HOW THE PROS DO IT

(Innes Ireland, one of Europe's top Formula 1 drivers, is being interviewed by writer Maurice Smith for "Autocar"—an English motoring magazine.)

MS: Assuming you know the circuit, and you have got used to a new car, how do you judge what gears you should be using for what corners? Is this by trial and error?

II: You will have found out when the power of the engine comes in. Let's assume that the power band is from 5000 to 7500 rpm. If you find when going round a corner that you are down to 4500 or 4000, the engine is obviously going too slowly. The next time you come around, you remember that the *speed* you feel happy at is only 4500 in top gear—well, that is no good—so you change down into third.

MS: This is a bit different from road practice, where on an unfamiliar road in an unfamiliar car the rule generally is to get into a gear lower than you think you will need. But you can't do this in a racing car.

II: No you can't—it is quite different. You must remember that on the road seconds don't count, but in a racing car they do. Going around a corner at 4500 in top, or in any gear, may be perfectly comfortable and the car holds the road well; but you spend two or three seconds waiting for the revs to build up until you are in the power band, which isn't acceptable if you are trying to get the most out of a car.

MS: On the same subject—that is, learning the circuit and matching the car to it as well—what are you thinking about when you try to decide your exact change points and braking points? Do you tend to memorize an actual physical point on the road and assume that your speed will be about the same every time?

II: Yes, I do. If there aren't any landmarks that I can readily pick out, then I often go by marks on the road, such as the joint in the tarmac or the change in color of the road surface. You must always try to be consistent; you must find your ultimate braking point, which you can only do with practice. You know then that you can always go to that point before putting the brakes on; not 5 or 10 yards earlier, or even 5 or 10 yards later, which is worse.

MS: I seldom can tell to what extent a driver has got all the stops out at any given time. You see people brake much later, perhaps outbrake a man to pass him when he has been holding him back for a long time. How much do you have in hand for braking? Could you always brake fairly safely, say, 10 yards later?

II: Yes, normally you can, unless you are having a really terrific ding-dong with somebody. In the normal course of events, even in a race, drivers are at about 9/10ths of their ability. There is always that 1/10th, but you obviously don't start off in a race using it. If you get to a situation where there is somebody in front of you, and you know that if you do get in front you can pull away, then you start driving at 10/10ths and looking for an opportunity when he makes a slight mistake or you can outbrake him. Invariably if you outbrake somebody going into a corner, and you can go inside him, you can pass him; so obviously, previously you have been braking a bit early. But you will often overbrake; you get in front of him all right, but you will find that you will go around that corner slower.

MS: And will he then pass you again as you come out of the corner?

II: No, by just getting in front of him you make him go slower, too.

MS: A thing that I personally have found difficult whenever I have been able to drive a fast car on a circuit is to get smooth braking and down-changes before bends. Do you heel-toe, or do you brake a bit and then change gear? If you are coming into a slow hairpin from something like 100 mph, how do you get the smoothness and in what sequence do you do the braking and changing down?

II: Normally, when you have established the braking point, it's just a question of getting the maximum brake pressure on the pedal without locking up the wheels. There there is just a smooth rhythm. Your first brake application knocks off a fair amount of speed and then you just roll your foot onto the throttle pedal to change down.

MS: In other words you heel-toe, with one foot on two pedals at the same time.

II: Yes, that's right. You can't just jump on the brake pedal at speed or you will be flung off the road. You have to ease it on to begin with—quite hard, but not maximum pressure. You get rid of the first 20 or 30 mph and then you gradually increase the pressure on the pedal as the car becomes more stable. You get into this rhythm of changing gear every 25 to 50 yards down through the box while braking progressively all the time. Now, with Formula 1 cars at Spa, for instance, you come up the hill to La Source where your braking marker is about 200 yards from the corner. You are doing about 150 or 160 mph and you have to take the corner in 1st gear. On a car with a six-speed box, I would go from 6 to 4 and 4 to 2, and then down to 1. If you can miss out gears like this you can get a harder pressure on the brake pedal for a longer time. Effectively you have got a shorter braking distance.

MS: To what extent do you depend upon engine braking, and do you change down as early as possible, or as late as possible?

II: In the case of Formula 1 cars, where I said you go from 6 to 4 to 2, you tend to leave it fairly late, as the idea is to keep maximum pressure on the brakes for as long as possible. So with the business of going down through the gears, you are not really relying on the engine for braking effect, other than to stabilize the car.

MS: At what time, when you are learning a circuit, do you start putting two or three bends together, rather than taking each corner individually? Is this an instinctive thing from the beginning?

II: This is not obvious the first time you drive around. Each corner is a corner in its own right. It is only when you get to know the circuit that you realize, say, that there's one corner where if you went around it at maximum you would be in the wrong part of the road for the next. The important thing is to get out of the *last* corner of a series as fast as possible into the straight ahead of it. So it may be better to sacrifice the third corner back, go around that more slowly, and come out only half-way across the road. Then you can accelerate almost flat out towards the second-last corner and you are doing maximum speed getting onto the straight.

MS: Can you give any general guidance on how deep to go into a long single bend? If you go deep into it early and almost tweak the car around, you have got three-quarters of the bend to start pouring on the mower more and more until you know you are clear.

II: Yes. I think the general rule is that you go into the corner as deeply as you can without getting yourself out of shape. When you start locking wheels, you start to get your whole self out of rhythm. One of the great things about racing is getting into a rhythm.

MS: When you have got a succession of bends, as at the Nurburgring, and you are obviously working very hard, you haven't really time to look at a rev counter. Do you go by sound, or feel, or what?

II: A lot of it by sound; but if you have got a succession of these corners, they would all be at about the same speed, if they are all close together. You would work on speed, but in practice you would have seen that coming up to the third one the rev counter is getting pretty near maximum. Obviously, as you get to know the circuit better you go faster, so you know where you might have to feather off a bit. You get up to maximum revs so many times that your ear does become acclimatized to the noise of any particular engine and this is your main guidance to rpm if you are in a situation where you cannot look at the rev counter. Normally you look at the rev counter at every gear change.

MS: At the very top end of the rev range you are getting the maximum power, though not maybe the maximum torque. Does it pay you to go up to the red-line for every gear change, or is it better to change a little earlier?

II: If you went up to the red-line and you were half-way around a corner, then obviously it is not practical to change gears in the middle of a corner. In a case like that, just before you turn into the bend—if it was a bend where you could keep on accelerating—you would change up several hundred revs early so that you would go into the corner having just changed up, and you are back hard on the throttle.

MS: As you build up experience on a given course with a given car, do you depend on the man with the stopwatch to tell you that you are getting faster, or can you yourself analyze at which parts of the circuit you are getting better and at which you are not?

II: You always know when you are not doing something right; you just feel that you are not getting around fast enough, or you are uncomfortable. If you have taken a corner badly, it feels uncomfortable and wrong, so that you then have to analyze what is wrong and why. There is always a reason if you analyze it. The next time around, if you have said to yourself, I ought to go in later and make the apex farther around, you come around, and do just that.

MS: When you have got it right, there is a feeling of smoothness?

II: Yes, and you are comfortable again.

MS: Having got this all worked out to a nicety in practice so that things seem to be just perfect, you have then got to get onto the track with a lot of other chaps who must muck up your line and braking points. Doesn't that seriously upset all your previous calculations?

II: Very seldom are the speeds that have been set up in practice achieved in an actual race.

(Continued on Page 4)

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GEARING AND STUFF

Most of you Active Members, at least, have seen the official list of gears and brake drums, and other comments furnished by Volkswagen of America and printed in SCCA's magazine, "Sports Car." There are several interesting items there, if you took the trouble to study it.

For one thing, evidently the traditional "sedan" and "transporter" third gears, for the later "tunnel" transmission, have been superseded by a single set of gears for both categories. It has a ratio between the two former sets, but closer to the "transporter" (1:1.26, as compared to 1.22 and 1.32). The statement regarding the former gears—that they are no longer available as replacement parts—probably refers to factory supplies. It will probably be some time before distributor and dealer stocks are exhausted, in case you want a set of either in the near future.

If you're planning to protest someone for illegal gearing, you'd do better to arm yourself with a degree wheel (VeeLine No. 52) and the chart on gearing in VeeLine No. 51, and get the Stewards to check according to those figures first. (Have you had occasion to pay for a transmission overhaul lately)? If the car doesn't conform to those figures and your competitor still claims he's legal, you can then demand a teardown—and let *him* pay for it. Better take these figures along, too, though, in case he's using the "new" gears.

Trans.	Diff.	Overall Ratio	Turns plus Deg.
1.26	4.375	5.51	2 273
1.26	4.125	5.20	2 216

You can check that the synchromesh components are "in place and operating on at least three gears" by jacking up one rear wheel, and with the engine idling, slowly put the car in gear without use of the clutch. The synchro should have enough friction to pick the rear wheel up to speed so that the gears will engage smoothly. Which is a good enough reason for some people to eliminate it.

*(The GCR states that a protestor "may request that the automobile be disassembled, inspected, or any other test be made. . . .")

In this same article we finally have, after all these years of trying, an answer as to whether or not complete removal of the rear shock mounts are legal! Note that saying it is in the "Driver's Meeting" doesn't actually incorporate it into the rules, but now perhaps it will be included for 1970.

You people who have bought the "1300" ribbed rear brake drums because your dealer no longer stocks the plain ones for the 1200 Beetles are in a rather sticky situation. Note that it isn't your drums which are illegal, exactly—they're in the same category as the later crankcases with the replaceable camshaft bearings and the new gears mentioned above. They're the current replacement part. However, your *track* measurement would be 1/2 inch over the legal limit. If we had them on Petunia, we'd probably take a chance and run them the rest of the season, anyhow, if we were allowed to. However, we've replaced bent ones a couple of times with used ones of the old style, and would do it again. Aside from the obvious fact that they're cheaper, they are also weaker (which is no doubt why the ribs were added), and that ain't bad! A bent drum is a lot easier to replace than a bent axle. There comes a time in every Vee's life when something has to give, and it might as well be a \$5.00 used brake drum.

This leads to an added tidbit of information. If you have had trouble with brakes grabbing, did it by any chance happen after a change in brake drums? We found out the hard way that substituting a drum in good condition for one which was pretty well worn led to that problem. The shoes, worn to fit the larger diameter of the old drum, touched only on the ends in the new one, and in doing so they were "wedged" outward by the cylinder, exerting abnormal pressures on the tips, rather than an even pressure throughout their length. The rotation of the drum pulled them even tighter, to the point where the return spring didn't do its job. A few minutes with a coarse file on the first couple of inches of each and of each shoe took care of that. New shoes in old drums don't fit exactly, either, but the pressure is in the center, where it doesn't cause any trouble. You just have to adjust them more frequently at first until they are worn to a full contact.

If you want to be really gung-ho, you can get your drums reground when you get new shoes and then get the shoes contoured to fit. However, it is of doubtful benefit, except that it shortens the "break-in" period. Brake drums with even obvious grooves worn into them are perfectly OK, if they are smooth and polished. (Rough, scored streaks such as are caused by metal-to-metal contact of worn out shoes to the drum or imbedded gravel in the lining is something else, of course.) Worn drums have been, in effect, "turned" on their own centers, and may very well be more nearly perfectly round than new ones, especially if you have made an effort to make them so.

Sometime, just for the heck of it, tighten just a couple of lug bolts, and try to adjust your brakes. You'll find that the drum is obviously distorted—has high and low spots. Tighten one more bolt and you'll detect a change. The way to get your drums worn to a perfect circle, then, is to mount the same wheel, in the same relative position on the drum, with the bolts tightened in the same sequence, to the same torque, every time. (A few laps with your rain-tires once in a while won't hurt anything—it takes a lot of miles to wear a drum noticeably.) Mark each wheel with its location on the car, mount it always with the valve stem in the same relationship to the brake adjusting hole, and then make every effort to keep it in that position. You'll find your brakes getting constantly smoother, and much more predictable.

Oh—one more thought! The only way gravel can get into your rear drums is through the emergency brake cable hole, and there's no way it can get out. So why not beat out a little cover from a piece of soft aluminum, attach it with a sheet metal screw, and *keep* it out?

IMSA

No, that's not a new word—not yet, anyhow. However it may very well become one, like NASCAR or USAC or SCCA. (All right—SCCA isn't a word.) Anyhow, it stands for the newest of automobile racing organizations—International Motor Sports Association.

Its plans and program are still somewhat indefinite, but with John Bishop (formerly Executive Director of SCCA) as its president and the Frances (of Daytona) on its board, it doesn't exactly appear to be a fly-by-night club.

Its announced intention is to provide

NERF BARS?

No comments yet from any of you on nerf bars, so here are a few thoughts, sparked chiefly by the Rose Cup race.

Formula Vee needs them, before someone gets killed, to put it bluntly. Yes, there have been two fatalities in Vees already, in the past six years, neither of which, so far as I know, was caused by another car. However, anyone watching a present day Vee race can only wonder, "How much longer can we be so lucky?"

Certainly nerf bars won't be of much use to a driver crossways on the track, with the rest of the pack bearing down on him and no room to pass. They won't stop an overtaking car from ramming the one ahead, or from climbing onto it or over it. They can, however, decrease the chance of locking wheels; and to that extent, at least, protect the leading driver from one behind who may be overtaking him too enthusiastically.

We're talking, of course, about a simple guard in front of the rear wheels, attached rigidly to the frame, and angled from a point on the body perhaps midway between the front and rear wheels to a point just in front of and inside of the outer edge of the rear tire. Under the present rule, no part of the frame or body can extend past the center line of the tires. A guard reaching even that far would help, no doubt, but to be really effective it should extend at least to the outer edge of the tire tread.

Most cars, even now, have some sort of "nerf bar" protecting the rear of the transmission. If yours hasn't, you'd better give it some thought. One of the cars at the Rose Cup was disabled when another rammed it from the rear and broke off the casting which guides the shifting rod. That driver was lucky, in a way—it might have happened on a straight at 5000 rpm, and instead of breaking the shift mechanism off, it might have pushed his transmission into third gear. This would instantly wind his engine to nearly 7000, to the accompaniment of weird protesting noises from both the engine and the transmission.

With nerf bars in the rear, and on both sides, shouldn't we also have bumpers in front? In my opinion, they should be positively forbidden! The thought of crunching \$50 worth of fiberglass has to be *some* deterrent to even the most enthusiastic driver. A Vee race has too much in common with the "Dodgem" cars already!

The VEE LINE of
FORMULA VEE INTERNATIONAL
 Don Cheesman, Director
 Box 291
 Ephrata, Washington 98823

professional-type racing for Formula Vee, Formula Ford and "small sedans," probably, in the beginning at least, in conjunction with other professional races.

One of its first signs of action is the scheduling of a meeting of Formula Vee and Ford manufacturers, plus some other interested people, to "discuss the rules." There's no indication, as this is written, whether it intends to set its own rules for these classes or cooperate with SCCA in later rules discussions, but the future for Formula Vee appears from here to be interesting.

(All the dope in the next issue—I'll be there.)

HOW THE PROS DO IT

(Continued from Page 2)

There can be oil; you're running on full tanks; the circuit is in poor condition. Invariably you will find two fellows going tooth and nail at each other, having a hell of a scrap, but going slower than they were individually. If you are having a scrap with someone, you can't just follow the exact line that you want to be following, so in those circumstances you have to make the best of a bad job. Invariably you are going a bit slower.

MS: Are you intentionally keeping a bit in hand when you have got chaps all around you—a margin for error?

II: I don't know if you are keeping anything in hand in case of any errors. If there are three cars in a group every one of them is probably driving at 10/10ths and is far more alert, if that is possible—and it is possible. You are that much more keyed up, and even if you do start getting out of shape, somehow or other you can get it back more quickly than if you are all on your own.

MS: Is there more than one way of going through any given bend at maximum speed in a given car? For example, if somebody does completely upset your line, can you gather that corner together and get through as quickly on a different approach, and with a different way out?

II: Normally you can only do this on a very fast corner. For the corner at the end of the straight at Monza, the comfortable way in the 1½-litre cars was to go in there virtually flat out, approach on the extreme left of the road, gently slide in to make an apex on the right, and then gently back out to the left again. That is the ideal way of doing it, but in one race I remember I was slipstreaming Gurney pretty well all the time, and he was slipstreaming me. I used to come out of his slipstream before that corner, and could usually go by him, yet on lots of occasions I'd only get level and we'd literally go around the corner side by side. I was following the actual inside radius of the corner. On other occasions he had been doing the same to me, so that I was having to go around on the outside.

(To be continued)

1969 U.S. TEAM TO NURBURGRING



Bill Campbell



Harry Ingle



Steve Rieper



Bill Greer



Jim McDaniel



Ray Weaver

U. S. VEES

RETURN TO EUROPE

As departure time for the U. S. Vee team draws close (July 23), preparation of the cars becomes more feverish. Evidently even in this league, there's never time for everything; but somehow everyone meets the deadline. Cars have to be painted to an agreed-upon color scheme, tool and spares boxes have to be built, and above all, engines have to be prepared and suspension components have to be changed to unfamiliar specifications.

Vee preparation in Europe, due to their permitted mixing of parts of various models, is somewhat more complicated than it is here. A European engine, for instance, contains: crankcase, connecting rods, pistons, cylinders, camshaft and pushrods from the 1200 engine; crankshaft, heads, valve train, oil pump from the 1300; manifold and carburetor from the 1500cc engine, with appropriate machining, shims, spacers, etc., to make them fit to each other. Valve guides may be reduced in diameter or width (streamlined) but not in length. The volume of the combustion chamber (in the head) may be reduced to 40cc—which gives a healthy 8.25:1 compression ratio—and the combustion chamber may be reshaped. This is generally done to give a "hemi" shaped chamber. Enlarging the chamber necessitates seating the cylinder much deeper in the head to attain the 40cc volume, which requires machining off the face in order to provide clearance for the cylinder fins; and the manifold must be shortened to allow for the heads being that much closer together.

The principal suspension change for the U. S. cars will be substitution of longer rear axles and tubes to attain the wider track of the 1300 Beetles.

Last year the U. S. drivers used engines obtained from European builders. This year it will be an All-American effort. Bill Scott pretty well demonstrated the ability of U. S. drivers, but it remains to be seen how our engine builders stack up with the Europeans.



**Formula Vee
International**

BOX 291
EPHRATA,
WASH. 98823