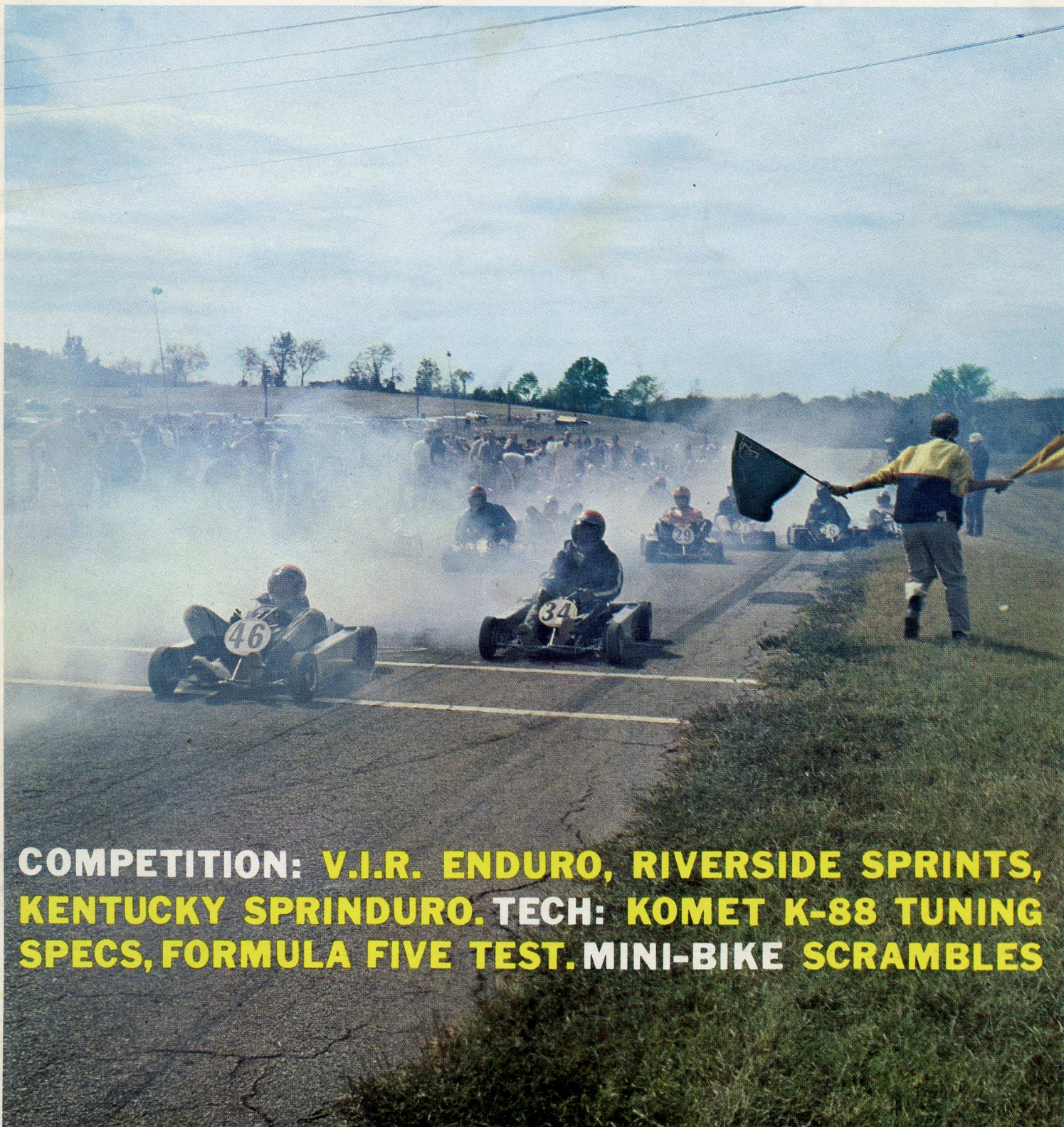


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JANUARY 1969  
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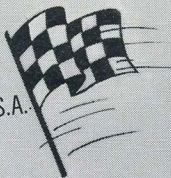
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JANUARY 1969

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### 19 FORMULA FIVE CAR TEST

A karter's impression of test driving a new Formula Five machine...

### 25 TUNING THE KOMET K-88

Modern Karting Tech Editor Jim Petitti spent many long hours in researching this vital data for Part I of this series on the Italian Kart Engine...it's care and feeding. This information has never before been available to Komet owners and should prove to be most useful and valuable technical data. The concluding Part II will be published next month.

### 28 RIVERSIDE CHAMPIONSHIP SPRINTS

Staff photographer Randy Deluca recorded this action at a recent IKF Championship Sprint program at nationally known Adams Kart Track, Riverside, California--former site of the IKF Sprint Nationals.

### 31 PERSONALITY PROFILE: JUNIOR NEAL

A dedicated karter from South Carolina is in the January Modern Karting spotlight. Junior Neal is a veteran of eight years of campaigning...has won his share...but still seeks that elusive "National" Championship title.

### 32 MINI-BIKE SCRAMBLES

Dirt racing the mini's is becoming a big time sport in Southern California as attested to by these photos (courtesy MINI-BIKE GUIDE). Site of the event was Huntington Beach Cycle Park and was co-sponsored by Ron's Mini Cycle City.

### 34 KENTUCKY SPRINDURO

Bluegrass State karters played host to over 85 street racing enthusiasts for this "first" at Middletown, Kentucky.

**THE COVER:** *Off the grid in a cloud of blue smoke and running at Virginia International Raceway at recent IKF Championship enduro (featured in this issue).*

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# publisher's column

□ This January 1969 edition of Modern Karting contains a belated Christmas present for Komet engine owners. MK's technical editor Jim Petitti has outdone himself with an in-depth presentation of tuning data for the K-88 (starting on Page 21). We realize that to some this feature will look, on the surface, like pretty dull reading—but to the Komet owner or prospective owner it represents a breakthrough in technical data heretofore not available. The information presented on these pages was not copied from an original source—in fact it was painstakingly researched item by item in a study that encompassed several weeks.

□ Modern Karting wishes to extend its congratulations to incoming IKF President Ken Eaton, a long-time karter and supporter of the national sanctioning body. This will be a year of growth for karting, Modern Karting and the International Kart Federation and we sincerely hope that industry and members give Ken Eaton all the support possible to make his transition into the post held by Hank Blatt as smooth as possible. Blatt will remain on the Board of Directors of IKF.

□ Winternational fever is in the air and now that the sites have been selected there's nothing left to do but start preparing the equipment for the start of a big, big season of racing. Of course our own Modern Karting World Championship "600" set for popular Hanford Motor Speedway the weekend of Feb. 15/16 promises to be a tremendous opener for the 1969 karting season and leaves adequate time to gear up for the Sprint IKF Winternationals approximately two weeks hence. The Western Sprint event will be staged at Kerman Kartways, Kerman, California on March 1/2 while the Eastern Sprint contest will hold forth once again at Lamar County Kart Speedway, Barnesville, Georgia. The IKF Enduro Winternationals will run at Riverside Raceway in the West and Virginia International Raceway in the East the latter part of March. All in all it adds up to a big sendoff for the new karting year.

□ Of course, its news to no one now that the 1969 IKF Enduro Grand Nationals will be produced at Indianapolis Raceway Park—in fact Indy will host the Enduro Championships two years running so if you really want to plan the family vacation ahead - into 1970 - be sure to wind up your travels in the

Hoosier State to compete with the best enduro karters in the nation—they'll all be out in force for the traditional July 4th race meet.

And as for the Sprint Grand Nationals, IKF has announced the selection of G & J Kartways, Camden, Ohio as the site of the 1969 version. So, for the second year running the Sprints will hold forth in the East.

□ A familiar name in karting is back on the scene again, being produced by its originator—"Big J"—in Findlay, Ohio. The Lancer is the machine, and we remember well what a potent racing iron Bob Jeffery built back in karting's halcyon days. For a time the Lancer was produced under the Rupp banner but more recently the machine has rested quietly on the Mansfield, Ohio "shelf", so it is with much elation that the return of the Lancer is heralded in these quarters. Big J sez it will be produced on a limited production run basis which is certainly in keeping with what may turn out to be a trend in competition kart production for 1969. At least four new karts were marketed last year on this basis and from all appearances quite successfully, too.

□ And, last but hardly least, the staff of Modern Karting wants all its readers to have a most successful karting year.

Jack Pelzer

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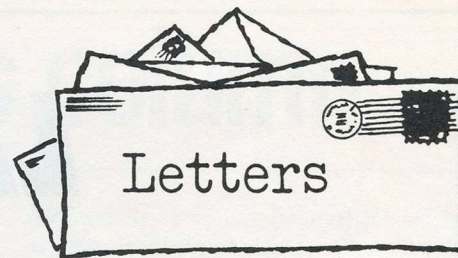
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Dear Mr. Pelzer,

We would like to congratulate Mr. Bob Feeny for his article in your October issue of MODERN KARTING. He did a great job considering the facilities available to him.

We would like to make this one correction which we are sure was not an intentional error on his part. At the nationals when our kart was totaled it was a family by the name of Wispelaere who so generously loaned us a kart so that we could still compete. Their daughter Sandy, immediately upon hearing of our plight offered John her kart to compete with.

We would also appreciate it if you would acknowledge this letter in your future issue and we would like this family to know how deeply we appreciated their generosity.

If in the future this family ever needed help we would be the first in line but in the event this occasion should never arise (we hope not for their sakes it shouldn't) this is the only way we could think of to let them know how grateful we all are. In our eyes they proved the sportsmanship of karting.

Thank you for your courtesy  
The family of John Lenbard

Dear Mr. Pelzer:

We, the Lions Club of Princeton, Indiana, wish to thank you for the very nice coverage of our Kart Race in your November issue of Modern Karting.

The pictures and story was most appreciated by myself and the club.

We hope to have a bigger and better Kart Race this coming year and hope you will again cover the race.

Thanks again for your consideration. The street race was enjoyed by most residents in Princeton and surrounding areas and they are asking for another.

Sincerely,  
Landon Warren  
Chairman  
1968 Kart Race  
Princeton Lions Club

Dear Mr. Pelzer,

I am very pleased by your magazine and the articles contained in it. However, your description of the Las Vegas Race leaves me a little upset. Your race coverage by Mr. Mackie is very poor. Your story on the Stock Lite race is completely wrong other than the fact that you have me winning it. The main reason I am upset is you have me running



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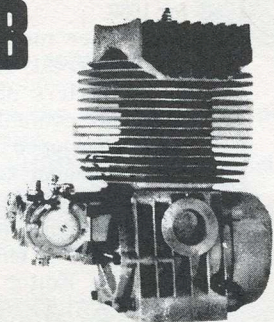
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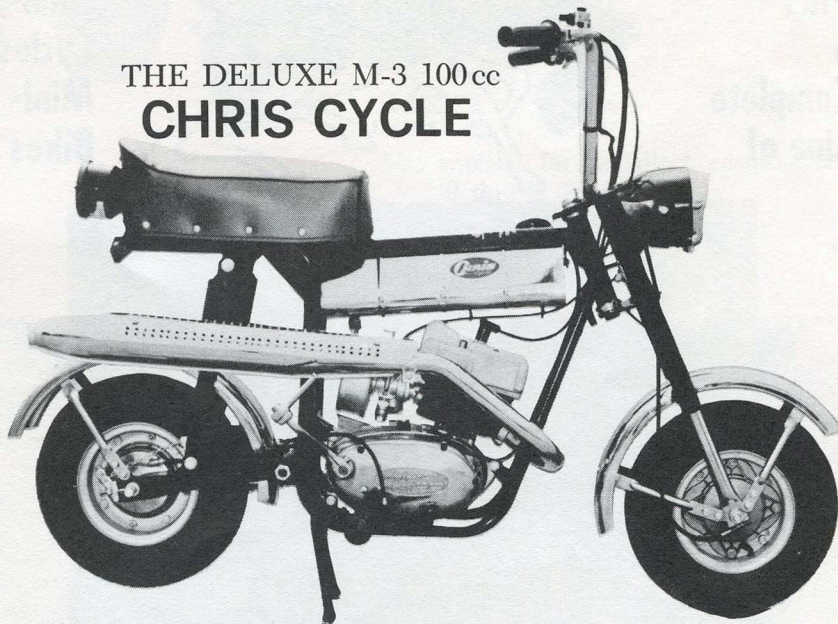
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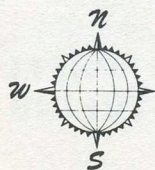
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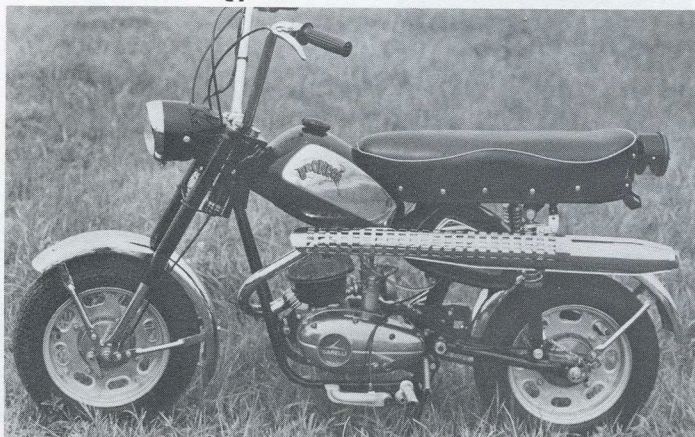


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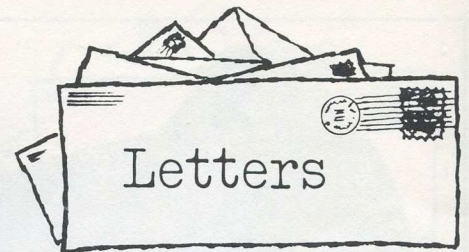
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a Dart-Parilla. Since I drive for Caretta and use their equipment sponsored by them I feel you should mention this in your next issue of the magazine. I was driving a Caretta-Parilla. I realize its very hard to get race results exactly as they happen and I commend you on giving us as fine a story as you did.

James Welsher

Dear Sir,

Through the kindness of Mr. Ken Burden I was given a copy of your November issue of Modern Karting.

As the Hon. Secretary of the Hong Kong Kart Club Ltd. I must express our appreciation and how pleased we are with your editorial on our 2nd Hong Kong International Karting Prix. Our only hope is that the results of the races will not preclude any future participation of US karters competing in this part of the world, for indeed we have already been promised entries of the New Zealand and Australian champs for 1969.

The race meeting in all aspects has been a great success especially for Asian karters as this was their first chance to evaluate their equipment and their experience in the light of European and American karters. We are indeed sincerely grateful to the US Karting Industry including your Magazine for making the US entries possible.

As the Editor of the Club's HONG KONG KARTER Newsletter may I also take this opportunity to request your permission to reprint in our newsletter any article or news item which will be of particular interest to our members. Due acknowledgement will of course be made of the source of information. At the same time I will put your address on our mailing list so that you will receive regularly our Club's magazine which give views and news of karting in Asia and Hong Kong in particular.

Best wishes,  
Kho Kiem An, Hon. Secretary  
Hong Kong Kart Club Ltd.

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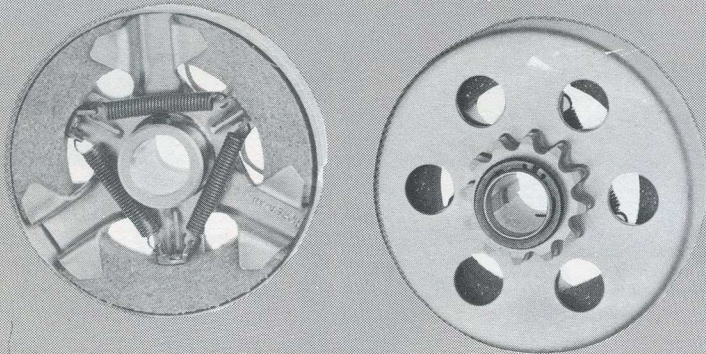
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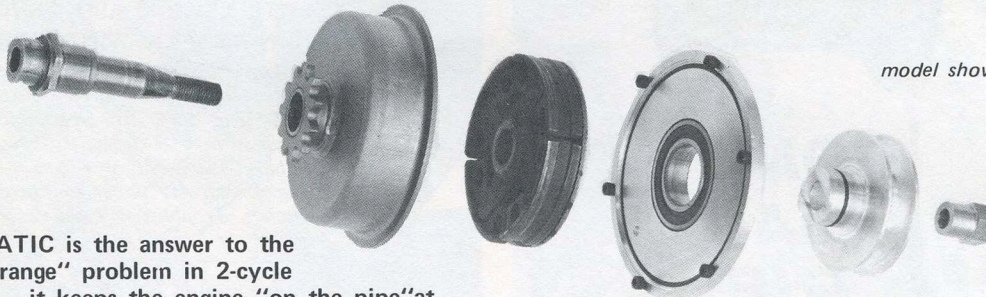
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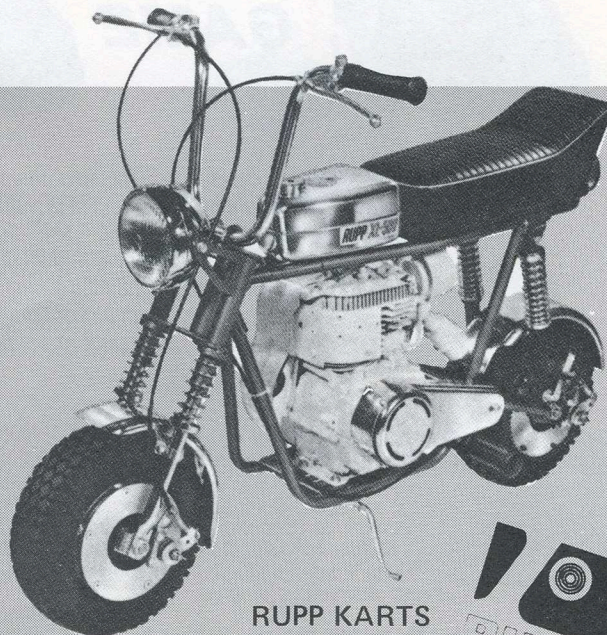
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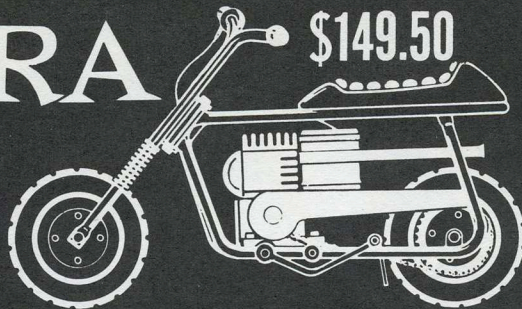
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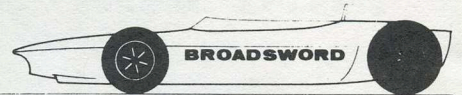


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# FORMULA 5 NEWS



**F/5 ACTION AT V.I.R.:** Both beautiful little F/5 cars at Virginia International Raceway on the weekend of November 16-17 were built in a heckuva rush and neither one was finished, really. Johnny Jacumin proceeded as far as possible with a hurry-up (unsuspended) chassis prior to receiving his gorgeous (red) F/5 Broadsword body shell by Greyhound bus on November 11th. During the next three days, Johnny made a super effort and, while he couldn't complete the car entirely, he *did* get it track-ready . . . just barely!

To avoid having to meet the 350 pound weight minimum for FKE-II and since he already had a 6.1 cubic inch

### LATE NEWS FLASH --- F/5 CARS TO RUN AT V.I.R. WINTERNATIONALS

*Modern Karting was informed at presstime that there will be two Formula Five races to be held during the upcoming IKF Winter-nationals at VIR Raceway, Danville, Virginia. A half-hour event of F/5 cars only will be staged each day under the direction of F/5 officials. Trophies will be awarded thru 5 places.*

(Mac) engine handy. Johnny decided to run this first (test) race in FKE-I. Even so, he had to add some excess weight to qualify. With time at such a severe premium, he elected to make do with a temporary exterior fuel tank (not legal under Formula Five rules) and was forced to forget about mounting the rear body cone. There wasn't time to even think about a windscreen or rear view mirrors, but on Friday, November 15th, he packed up his half-finished (totally untested) car and headed north-



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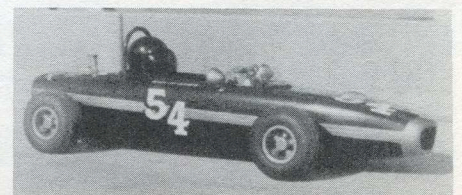
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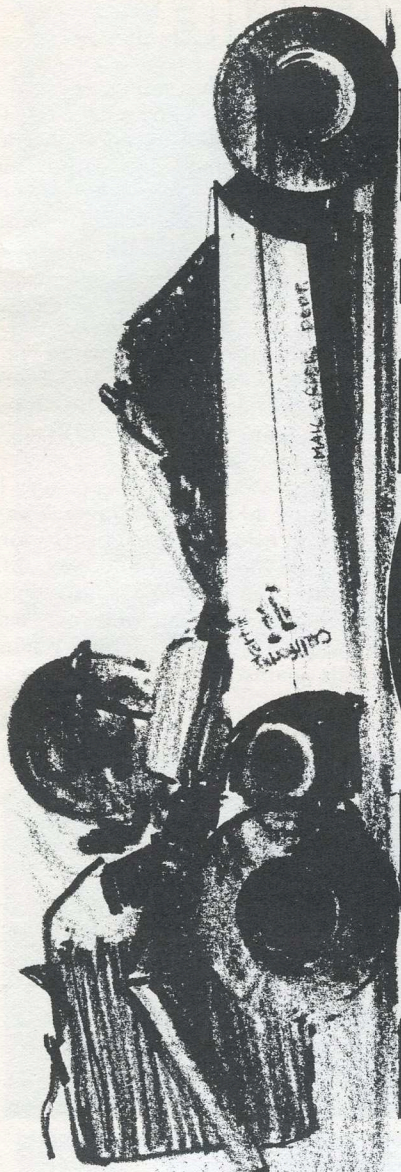


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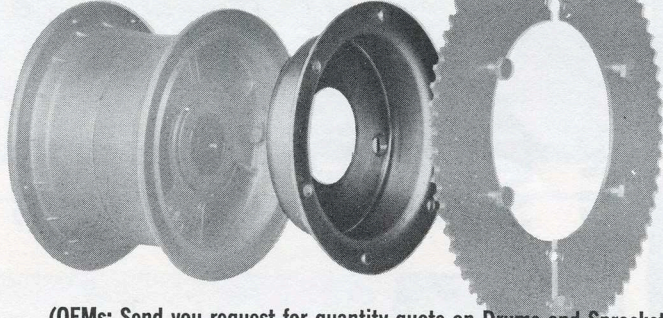
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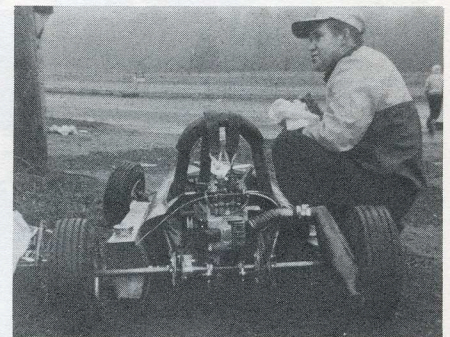
DEPT. MK, 1775 S. 1st ST., SAN JOSE, CALIF. 95112

MODERN KARTING/12

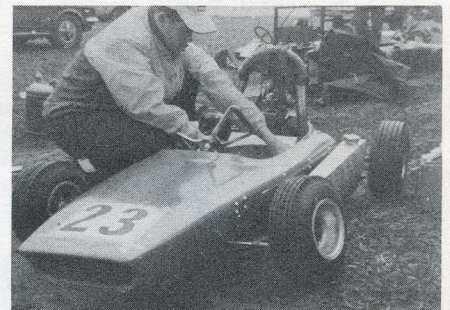
**F/5 NEWS**

ward for the race in Virginia. There were seven entries in FKE-I. Johnny's engine is not exceptional and he was experiencing some carburetor trouble but, with the race nearly over, he was leading the field when a loose piece of safety wire on the track surface punctured a tire and he was out. However, he did win a trophy . . . fourth instead of first . . . but more importantly, he demonstrated the aerodynamic advantages of F/5 body shells. This bears out what Formula Five Directors have been "preaching" (often to "deaf ears") . . . that without going to a more powerful engine, you can turn quicker laps if you're driving an F/5 car! Johnny is well satisfied with his first (rush) effort. Soon, he'll be building an entirely new F/t chassis, this time *with* wheel suspension and incorporating an internal fuel tank . . . and he'll compete in the Winter Nationals against other F/5 cars, not in FKE-I.

**INTERESTING LAP TIMES:** The other superb-looking F/t Broadsword—



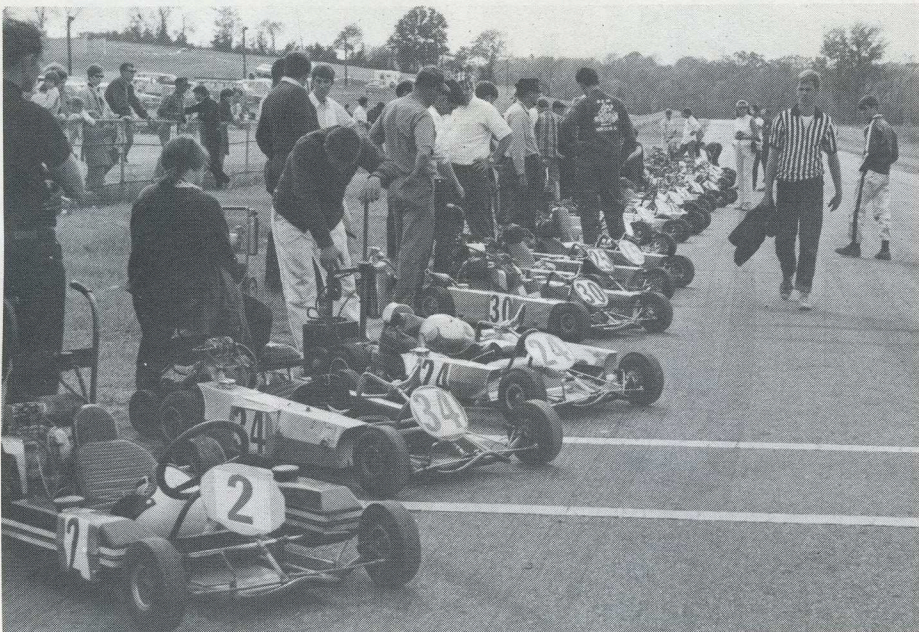
Johnny Jacumin at Virginia International Raceway.



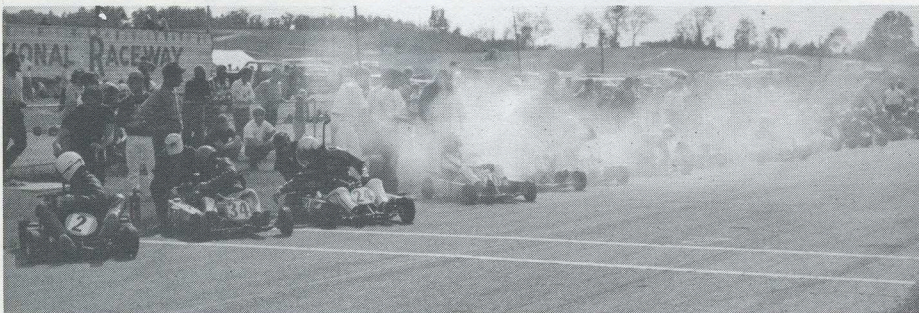
The side tank is strictly temporary

the orange one built by Al Noah and driven by Bobby Nelson—had a pinch more power. It was barely ready to try, but during several laps while its under-size engine was pumping healthily, the car turned Virginia International Raceway in less than 3 minutes—on a wet track. Plenty of single engine karts are hard put to equal such a lap time in the dry! An accomplished B-Open driver, Bobby is *wild* about the sleek little car and "sold" on Formula Five . . . per-

Continued on Page 45



A-Open heavy on the grid at V.I.R.



Crankin' up a cloud of exhaust and waiting to charge. (A- Open heavy).



The run for the gold is on! Left to right: Barney Peeler III (34) Jim Clark (24), Terence Holt (30), Jimmy Reid (15).

lenging as Virginia International Raceway. Cudos to them!

First thing Sunday a.m. came the twin engine show . . . and "show" is the word, too. Its some kinda thrill to see passing on the L-O-N-G main straight where speed *difference* reaches as much

as fifty mph and the front runners are nudging 140! You should see Junior Neal and Bobby Nelson come bearing down full chat, set up flawless drifts, and flip their steeds through laps so consistently you can junk your stopwatch. Both are talented experts,

**JUNIOR AMERICAN REED:**

Johnny Faber  
Jimmy Lawrence  
Harold Troglia, Jr.  
Robert Koch  
Denny Griffith

**JUNIOR STOCK:**

Ricky Rudd  
Jeff Neal  
Kenny Faison  
Mike Baldea

**SENIOR AMERICAN REED:**

Harold Troglia, Sr.  
Alex Vella  
Ben Griffeth  
Skip Wilson  
Ken Gilbert

**A STOCK LITE:**

Doug Smith  
Tommy Cosgrove  
John Baldea  
Dean McCall  
Leo Lillard

**A STOCK HEAVY:**

Leo Lillard  
Harold Troglia, Sr.  
Charles Downey  
John Brin  
John Helmsorig

**A OPEN LITE:**

Bill Miller  
Don Huffman  
Bob Rush  
Clint Dalton  
Louis Smiley

**A OPEN HEAVY:**

Terence Holt  
Don Idol  
Jim Clark  
Don Huffman  
Norman Parnell, Jr.

**B LIMITED:**

J. R. Bodenhamer  
Chuck McCalment  
Dave Gough  
Stan Causeway  
Mary Ann Blanton

**B STOCK:**

Charlie Koch  
Bill Jarvis  
Bob Lawrence, Sr.  
Spence Garrison  
Steve Starling

**B OPEN:**

Bobby Nelson  
Jerry Weavil  
Don Idol

**C OPEN:**

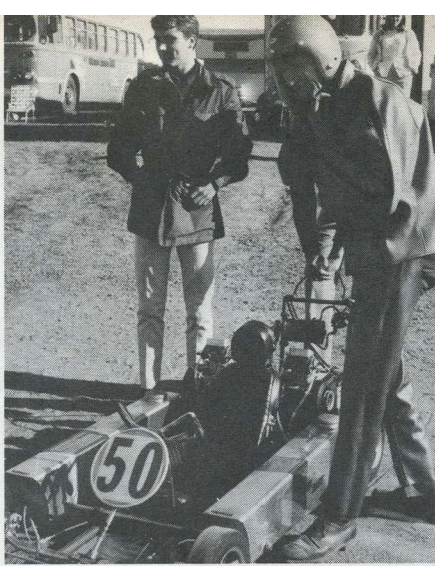
Junior Neal  
Vince Heflin  
John Blanton  
Ralph Staton  
Stan Willis

**FKE III**

Al Noah



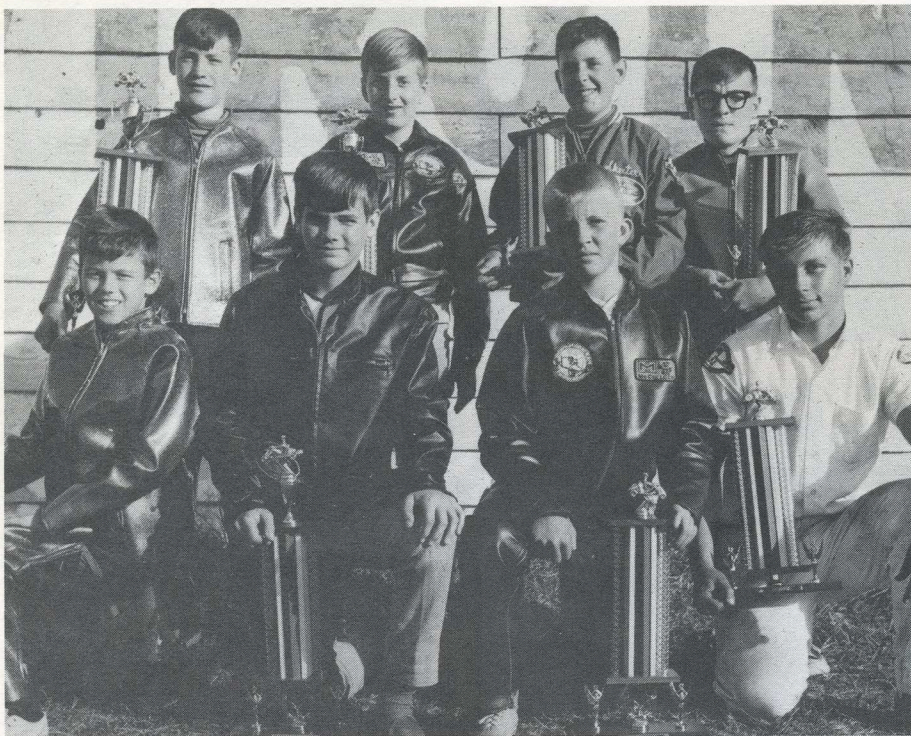
Bobby Nelson has a string of impressive victories in B-Open. He was quite disappointed with the small class this time though, but was first in his division, 2nd only to the C winner.



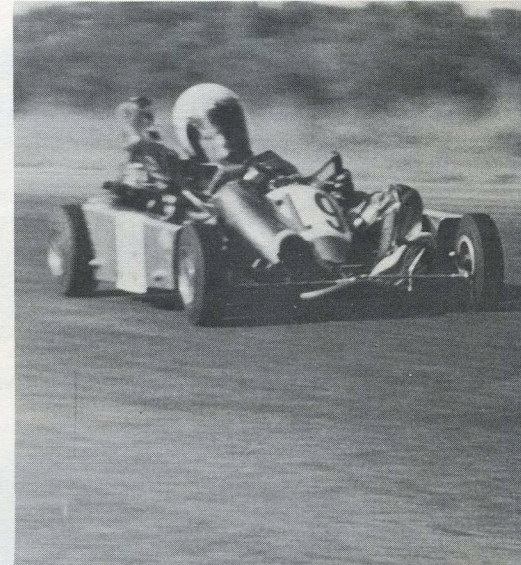
Tall Dan Klutz, Winston-Salem Kart Distributor is a good guy — and a strong competitor in C-Open.



Jack Faber is Maryland's new IKF Governor. Here he helps in the engine tear-down after his young son's victory at V.I.R.



Junior American Reed, Standing: Johnny Faber (1st), Jimmy Lawrence (2nd), Bob Koch (4th), Dennis Griffith (5th), front row: Fr. Stock, Ricky Rudd (1st), Jeff Neal (2nd), Kenny Faison (3rd), Mike Baldea (4th).



Ricky Rudd sets up for turn one. He won in Junior Stock.

Thirty three year old "Junior" won C-Open in comfort despite a fast thinking trip through the boondocks in averting a mishap. Bobby was smooth as silk all the way to his victory in B-Open, taking the checkered second overall among the thirty twin engine drivers. Charlie Koch captured B-Stock with Bill Jarvis second. Runnerup trophies in the open classes went to Vince Heflin and Jerry Weavil. (Hope we've spelled Jerry's name correctly.)

Al Noah was all alone in FKE-III. In a way, it was a dandy day for his competitors to stay at home because he blew the gearbox on his X-6 Suzuki. Normally, Al shifts 37 times a lap at V.I.R. and has recorded some might impressive times, but his laps were few and pretty hairy-looking sans gears, burning out the clutch before Al was forced to call it a day.

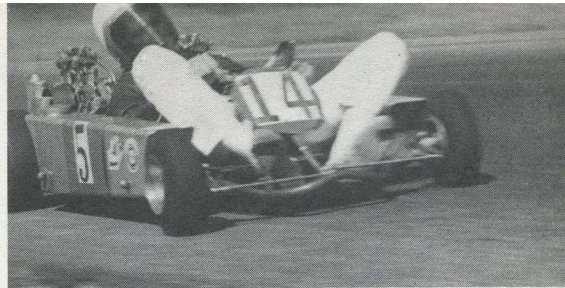
Eleven o'clock was Stock-Heavy/Open-Lite time . . . a good-looking 28-kart



Johnny Jacumin does a great job with the flags.



B-Limited on the grid.



Junior Neal Won C-Open with an average speed of 78 mph!



The junior drivers charge off like there's no tomorrow!



Barney Peeler III—Pre-race favorite in A-Open-Lite.

field, evenly divided. Leo Lillard took the stock class candy with his strong-pumpin' Komet. Pre-race prognostication probably favored 22 year old Barney Peeler III in Open-Lite, but he didn't finish due to mechanical malfunction. Bill Miller shoved his Mac-91 across the line in front of Don Huffman's to win the class.

V.I.R. is a big sprawling chunk of handsome real estate and the scoring bus is stationed midway down the back straight, some 1200 yards and several rolling hills away from the pits and starting line. Flagman Johnny Jacumin starts the packs, drives to the bus location where he signals the end of each race, and returns the score sheets to the pagoda tower for prompt announcement of results and almost immediate trophy presentation.

Inside the scoring bus are four superbly efficient karting ladies . . . Mrs. Louise Blanton, Mrs. Mildred Koch, Mrs. Johnny Jacumin, and Mrs. Tom Neal. These dedicated gals can accu-

ately score a pack of 60 to 80 karts for a solid hour . . . without a hitch and *without a scoring chicane!* They work in two teams, enabling them to double check everything, and their system is so unique and effective that Modern Karting hopes to print a story describing it in an upcoming issue.

Okay . . . back to the competition. After lunch time and a brief practice session, Senior-American-Reed and B-Limited formed up and moved off in a cloud of you-know-what. 45 drivers went into the fray and the B-Limited lead changed hands *ten times!* J. R. Bodenhamer was in front when it counted, with Chuck McCalment up snug behind. Many Ann Blanton (Louise Blanton's daughter-in-law) gave no quarter to the guys, and took herself a well deserved trophy. Harold Troglia won American-Reed, followed by Alex Vella and Ben Griffeth, all herding Mac-91 mills, of course.

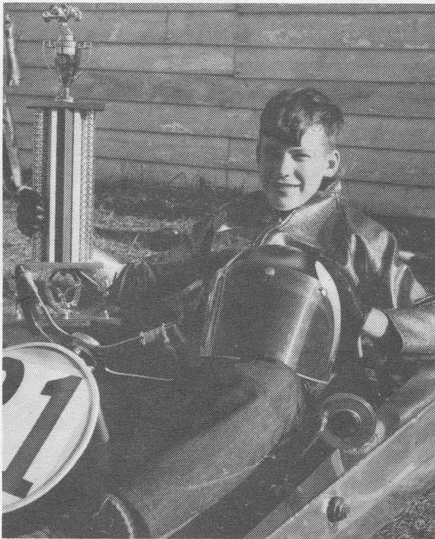
There were two immaculate green-trimmed karts in Open-Heavy, capably

driven by Terence Holt and Jim Clark (you read it right, the guy's name is Jim Clark) who finished first and third with Don Idol sandwiched in between. Sixteen A-Stock-Lite machines went off the grid last and wound up the excellent weekend program not too long before dark. Doug Smith, Tommy Cosgrove, and John Baldea were one-two-three while others were packing their equipment to head homeward.

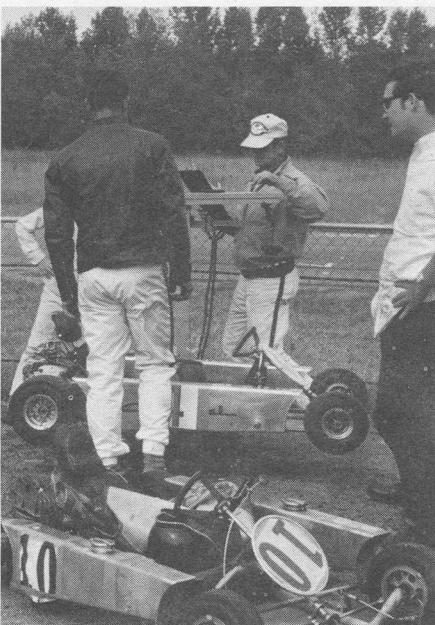
The coveted hardware was awarded class by class and underweight disqualifications deprived a few, particularly in B-Open. Drivers thoroughly enjoy the competition at V.I.R. . . . a 3.2 mile skill-track . . . and they like their Governor and the organization of his races. Newcomers are welcomed warmly and soon discover a couple of turns which aren't overly forgiving. If you like happy, challenging, go-for-broke enduro karting, don't miss the next date at Virginia International Raceway. You'll want to come back again . . . and again!



Young Ricky Rudd won A-Stock-Junior.



14 year old Johnny Faber displayed his exceptional driving ability while winning Junior American Reed by a comfortable margin.



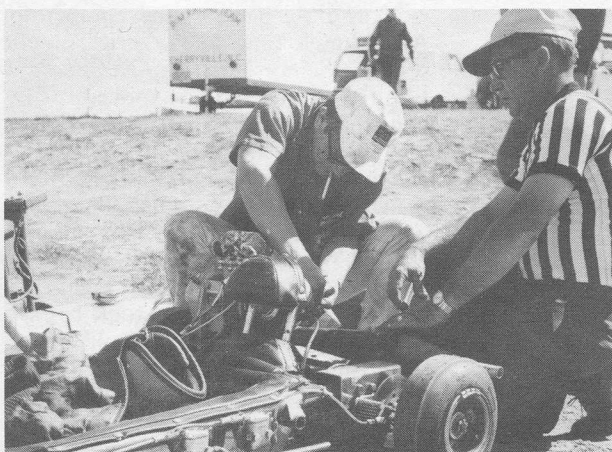
There were a few disqualifications at weigh-in time.



B-Stock (standing left to right) Charlie Rock, Bill Jarvis, Bob Lawrence, Spence Garrison, Steve Starling. Kneeling: B-Open Champ Bobby Nelson (left) and Runnerup Jerry Weavil.



C-Open, first thru fifth, left to right: Junior Neal, Vince Heflin, John Blanton, Ralph Staton, Stan Willis.



Barney Peeler III (left) and his dad, the Governor.





We'll have a windscreen next time.

TECHNICAL DATA SUPPLIED BY AL NOAH  
 "Photos by Johnny Jacumin and Jack Faber"

## MK TESTS THE "BROADSWORD" F/5

Bobby Nelson is an outstanding, smooth-driving B-Open Champion you'll be reading about in an up-coming issue of Modern Karting. You've already seen Al Noah in print (August 68 M.K.), a knowledgeable craftsman and innovator who digs small (quick) racing cars a bunch. Bill Cowling had his share of editorial exposure before Modern Karting came along, and he contributed significantly to chassis design in the early days of karting. Our appreciation goes to these three talented enthusiasts—for making this accurately documented test article a reality.

Here's how the test car "happened": Bill visited Al in October and was introduced to strong running Bobby at Virginia International Raceway. Al is partial to the F/5 Broadsword shell but he's too tall for it—not 5'-8½" Bobby, though. Plans are quickly formulated, on the spot. The season wind up at V.I.R. is less than five weeks away, the body molds are in Evansville (Indiana) with

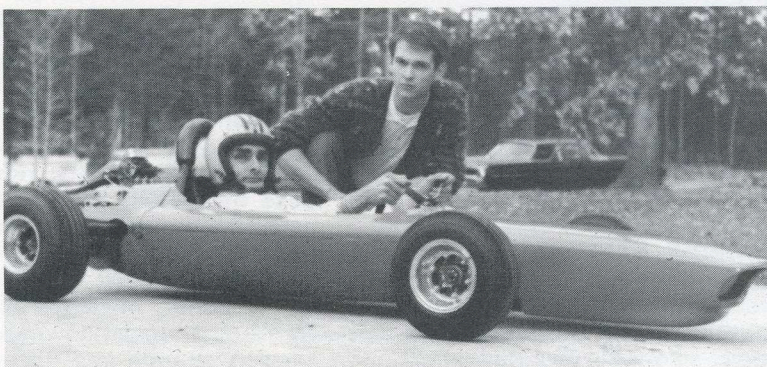
Bill, and there's a semi-sophisticated chassis to be built from scratch.

Most of the crash-program load fell on Al's capable shoulders. By the time he received his Broadsword body in bright orange fiberglass, scarcely two weeks remained in which to complete the chassis and finish up a first class "FIVE." During that time, Bobby, who lives near Al in North Carolina, got himself custom fitted in the cockpit and devoted what time he could to the rush-rush project. There were several long distance phone calls between Al and Bill, too.

An engine was needed in a hurry—one strong enough for a meaningful test run. Being a most accomodating gentleman, Dan Klutz agreed to supply the test mill . . . a Mac-91 which had been bored 60 over, rendering it illegal for IKF's A-classes and too far under displacement to be competitive in B-Limited. The little mill was all set up and ready to go, Margay box and all, so thanks to Dan for his cooperation.

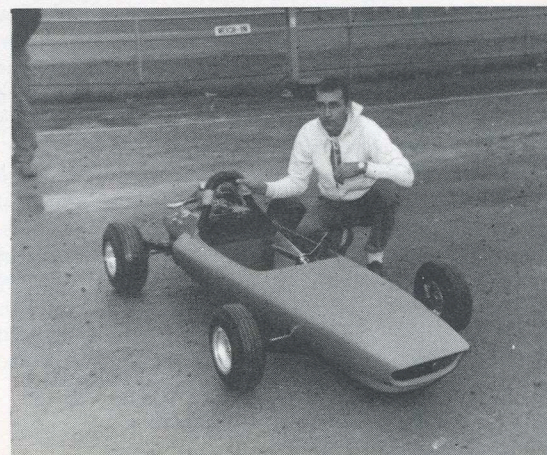
Al worked like fury and, although it departed sans windscreen and mirrors, the slick little F/5 car, hopefully track-ready, made its maiden journey to V.I.R. Even with the bore job, engine displacement was under 6.3—well below F/5 limits and nearly two cubic inches less than others in the FKE-II category. But this car was at the track to be tested under competitive conditions not to haul home a trophy, necessarily. Up to now, it hadn't gone a yard under its own power!

It certainly was a beautiful little racing machine. Early Sunday morning, Bobby Nelson took it onto the racing surface to see what it would do. The big sprawling course was wet as sop and covered with puddles but that didn't dampen spirits nearly as much as it hampered performance. Driving enclosed on a fully suspended chassis was quite a new sensation for Bobby, so he made no effort to crank on any strong laps. He was getting acquainted with the car, waving at karters as he passed them, and obviously enjoying his Sunday drive normously!



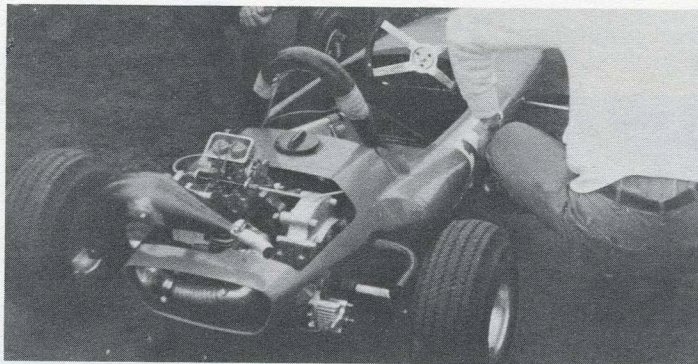
F/5 Broadsword, driven by Bobby Nelson, built by Al Noah.

V.I.R. lap time: 2:57 in the wet!





F/5 body shell is from a flawless mold. . . chassis is fully suspended.



Test engine had a displacement of less than 6.3 cubic inches.

The little F/5 Broadsword was moving along so well, Al didn't realize that Bobby was taking it gently. On the stopwatch, he saw 3:02 . . . 2:58 . . . 2:57 . . . "good golly, that's as quick as most A-Open entries clock in the dry and, rigged for FKE-II, the F/5 car weighs a heckuva lot more than the single engine karts its moving through!"

After a few more laps under three minutes, Bobby pits and Al gets excited. "Let's see how much that 2:57 will come down when you stand on it a little more. Nuts, practice time has ended. Well, its grid time. We'll see what it'll turn during the race." But before the FKE field had made a full lap, the Mac was beginning to suck in excess air. A few minutes later, the Margay expansion chamber was all but falling off and the test was history . . . a stuck piston inside a scored jug! "Ain't that the way it goes when you rush your fool head off?"

For a totally untried, not quite finished car with an undersize engine, this test must certainly be construed as a successful one. Expansion chamber problems involving air leaks have prevented many a seasoned karter from finishing his race, so there's nothing unique on that score. Cooling, incorporating a recessed

scoop underneath was more than adequate.

Except for the extended heel bubble beneath the nose opening, body shells identical to the one on the test car are available now . . . from a set of flawless molds, recently completed to accommodate F/5 enthusiasts. The test chassis adheres accurately to a standard F/5 design offering, but with altered rear suspension ala Al Noah. This was a typical "FIVE" and you'll be seeing more performers like it (and superior to it, too) as newly completed cars take to the tracks in growing numbers. The "handwriting is on the wall" it would seem as the Formula Five Organization reports sharply increased interest and building activity. Should you be interested, F/5's mailing address with additional news appears elsewhere in this issue of *Modern Karting*.

**MODERN KARTING: Knowing you to be a veteran karter with an impressive record, we're anxious to find out what you think of your first ride in a Formula Five Car.**

**BOBBY NELSON:** I enjoyed the car more than anything I've ever driven. I didn't realize how different it would

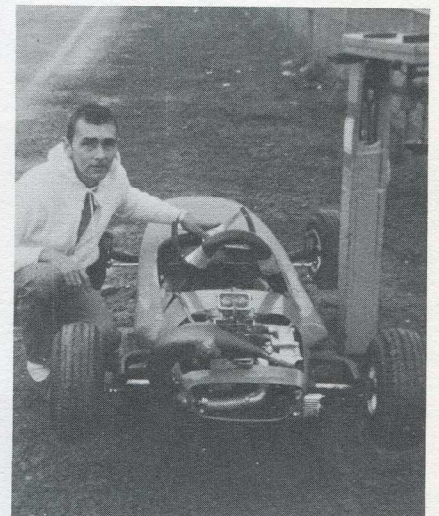
be from driving my enduro kart. It sure was a lot of fun . . . a very interesting experience.

**MODERN KARTING: Can you be more specific? How was it different?**

**BOBBY NELSON:** The way it handled was "out of this world" . . . really wonderful! I experimented with everything from gentle four-wheel drifts to spectacular broadslides. The little car was totally controllable and felt just fine doing some things I wouldn't dare try in my kart. I could hang it out as little or as much as I wanted to . . . without fear of losing it.

**MODERN KARTING: Beyond the enjoyment it involved, do you feel that the handling characteristics you describe improved your lap times significantly?**

**BOBBY NELSON:** Og yes . . . definitely. I could take a lower, quicker line through all the turns, and being able to see the front wheels up ahead in my line of vision seemed to help me



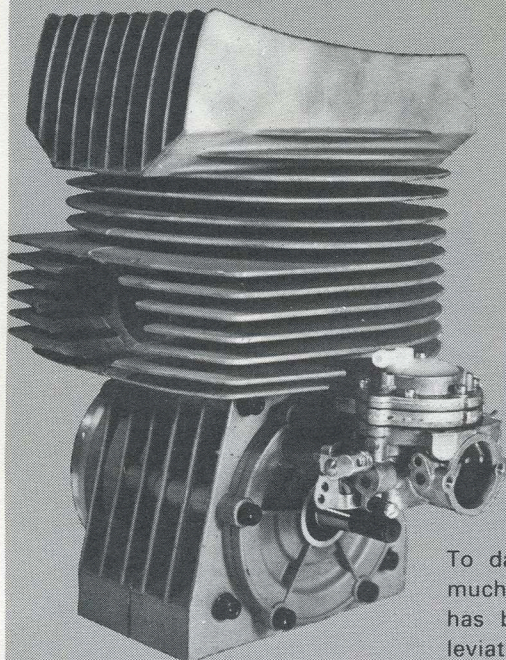
Total test weight: 353 pounds.

set up for turns more accurately. Watching the front coil springs work was fascinating. They were firm enough to feel real good and kept the tires in more constant contact with the racing surface. The car was vibrationless and had a completely smooth, sure-footed feeling . . . the kind any driver would appreciate.

**MODERN KARTING: How did you like being fully enclosed in a body shell as opposed to driving an open kart?**

**BOBBY NELSON:** I liked it better . . . a lot better, in fact. For one thing, there was almost no wind noise. This was a strange new feeling. I could hear a variety of engine sounds . . . sounds I'd never heard in my kart.

*Continued on Page 37*



# TUNING THE KOMET

## Bench-Tuning Data for the Do-It-Yourselfer

Part 1 By JIM PETITTI

To date very little data has been published on Italian kart engines, especially much needed tuning and/or set-up information. We know because the mailbag has been making rude noises about the problem for some time now. To alleviate the situation somewhat Modern Karting is kicking off a series of two-part articles on each of the Italianos. We begin with the Komet K-88 engine. Part one lists tuning specifications and general information, part two the results of a dynamometer survey on a tuned and untuned version of the same engine.

### CRANKSHAFT CLEARANCES & ALIGNMENT

Crankshaft Endplay . . . . .002" to .006" (.05 mm to .15 mm)  
 Endplay Adjustment . . . . . By shim  
 Shims Available . . . . .004", .008", .012" (.1mm, .2mm, .3mm)

#### Needle Bearing Clearances . . .

Wrist Pin to Connecting Rod . . . . .0005" (.013 mm)  
 Crankpin to Connecting Rod . . . . .0005" (.013 mm)  
 Service Note! . . . . . Wrist and crank pin needle bearing assemblies are available in three different needle roller diameters to facilitate clearancing

### PISTON & CYLINDER MEASUREMENTS

Piston to Cylinder Clearance . . .0015" to .003" (.04mm to .075mm)

Service Note! . . . Measure piston at bottom of skirt at a right angle to wrist pin bore. On engines with minimum clearance (.0015") an extensive break-in period is required. For short break-in time set clearance at .0025"

Piston Ring End Gap Clearance . . .007" to .025" (.17mm to .65 mm)

Piston Ring to Ring Land Clearance . .001" to .003" (.03 mm to .1mm)

Piston Pin to Piston Fit . .Thumb push at room temperature  
 Maximum Allowable Cylinder Wear (taper) . . . . .0015"  
 Piston Diameter (new std. piston) . . .1.96" (+/-0.0005")  
 (see service note above)

Maximum Allowable Wear . . . . .002" (see service note above)

Oversize Pistons Available . . .50.9mm, 51mm, 51.1 mm, 51.2 mm

Compression Pressure . . . . . 100 to 160 lbs.  
 Service Note! . . . Komet engines running in excess of 160 lbs. compression pressure risk severe detonation problems.

### Komet K-88 Specifications

Engine . . . . . Komet - mfg. by Sesim; Milano, Italy  
 Model . . . . . K-88  
 Type . . . . . Horizontal single cylinder, two stroke/cycle air cooled engine. Loop scavenged, Rotary disc valve induction

Rated Horsepower . . . . . 15 @8200 rpm  
 Maximum Torque . . . . . 6 ft. lbs. @ 7800 rpm  
 Bore . . . . .1.98" (50.8 mm)  
 Stroke . . . . .1.91" (48.5 mm)  
 Piston Displacement . . . . . 5.99 C.I. (98.25 cc)  
 Compression Ratio . . .10.5:1 (computed on effective stroke)  
 Exhaust Port Duration . . . 158° (79° from B.D.C. to closure)  
 Transfer Port Duration . . . 120° (60° from B.D.C. to closure)  
 Boost Port Duration . . . .117° (58°30' from B.D.C. to closure)  
 Inlet Duration . . . . .195° (port opening to full closure)  
 Exhaust Port Opens . . .101° (1.303" or 33.09 mm) after T.D.C. +/-0.020"  
 Transfer Port Opens . . . . 120° (1.523" or 38.07mm) after T.D.C. +/-0.020"  
 Boost Port Opens . . . . 124°30' (1.611" or 40.92 mm) after T.D.C. +/-0.020"  
 Blow Down Time . . . . . 19° (+/-1°)  
 Disc Valve Opens . . . . . 50° after B.D.C. (+/-1°) is fully open . . . . . 101° after B.D.C. (+/-1°) begins to close . . . . . 15° after T.D.C. (+/-1°) Closes . . . . . 65° after T.D.C. (+/-1°)  
 Disc Valve Opening . . . . . 142° (+/-1°)  
 Inlet Port Opening) . . . . . 50° (+/-1°)  
 Lubrication System . . . . . Oil mist (fuel/oil mixture)  
 Recommended Fuel Mixture . . . . . 12:1  
 Recommended Lubricant . . . . . SAE 30 W 2-cycle oil  
 Recommended Fuel . . . . . Premium grade gasoline  
 Combustion Chamber Volume . . . . . 9cc (+/-1cc)

## CARBURETOR

Type . . . . . Double diaphragm Tillitson instrument with butterfly throttle control

Model . . . . . HL227

Main Jet Needle Orifice . . . . . #52 drill (.0635")

Idle Jet Needle Orifice . . . . . #65 drill (.035")

Venturi Diameter . . . . . 7/8" (22.2 mm)

Throttle Bore Diameter . . . . . 1" (25.4mm)

Venturi Discharge Nozzle Outlet . . . . . .003" Sq. In.

Inlet Orifice - High Speed Circuit . . . . . #44 drill (.086")

Inlet Orifice - Low Speed Circuit . . . . . #60 drill (.040")

Low Speed Primary Bypass Port . . . . . #70 drill (.028")

Low Speed Secondary Bypass Port . . . . . #60 drill (.040")

Idle Circuit Air Bleed . . . . . #65 drill (.035")

Inlet Seat Orifice Diameter . . . . . .3/32" (.094")

Inlet Valve Control Arm Adjustment. Flush with floor of body casting (+.010")

### Initial Settings

High Speed Needle . . . . . 1 1/4 turns from closed

Low Speed Needle . . . . . 1 1/4 turns from closed

Special Service Note! . . . . . Inlet passage in venturi discharge nozzle must align with inlet passage in body casting.

Carburetor Pressure Test . . . . . 6 lbs. for 3 minutes. Maximum permissible leak-down-1 lb.

## MAGNETO

Type . . . . . 6 volt Pagani-CEV flywheel magneto with external (energy transfer) ignition coil

Model . . . . . 6076

Ignition Primary Coil:

Rated Output . . . . . 5.2 volts @ 2600 rpm  
8.3 volts @ 8000 rpm

Coil Resistance . . . . . .2 ohms

Coil Core Clearance (air gap) . . . . . .010" to .012" (.25mm to .3mm)

Ignition Coil:

Primary Resistance . . . . . .8 ohms

Secondary Resistance . . . . . 4800 ohms

Coil Power Test . . . . . Steady fire over (6mm 3 pt. gap @ 500 rpm  
8mm 3 pt. gap @ 3000 rpm)

Cranking Voltage Check . . . . . Steady fire over 5mm gap (use Wico test plug part #S-14821)

Low Tension Wiring Connection . . . . . Black wire to coil - gray wire to ground

Recommended Spark Plug(s) . . . . . Auto-Lite AG 701 (break in)  
AG 603 (hot)  
AG 403 (normal)  
AG 203 (cold)

Spark Plug Reach . . . . . 3/4"

Electrode Gap . . . . . .024" to .027" (.3mm to .4mm)  
(Note! Do not reset side pin electrode plug gaps as pin may work loose and ruin cylinder head)

Flywheel Magnets . . . . . 4-pole, permanent type - riveted into flywheel

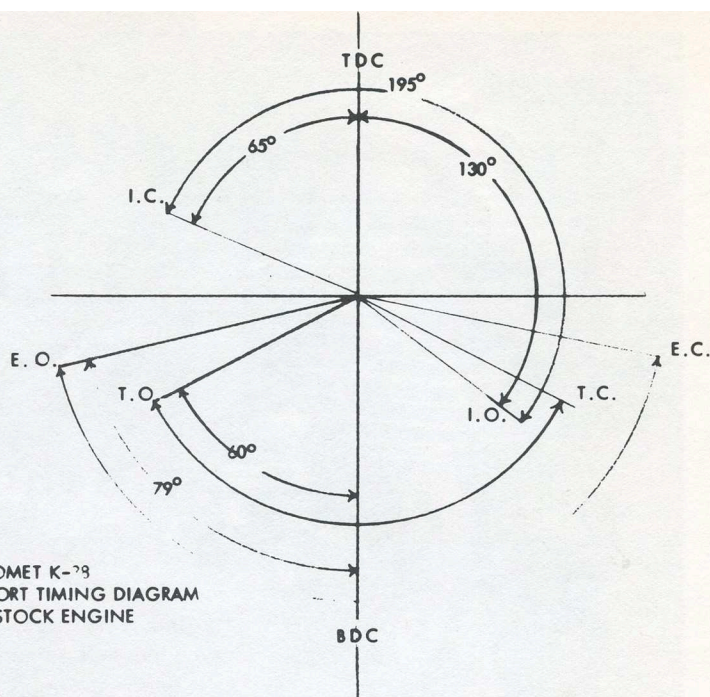
Contact Breaker Point Gap . . . . . .012" to .015" (.3mm to .4mm)

Contact Breaker Point Spring Tension. . . . . .35 oz. minimum (measured at center of contact point with Sunnen spring gage)

Condenser Capacitance . . . . . 23 .23 to .27 Mf. (+/-10%)

Firing Point (ignition timing) . . . . . 23° 30' (.096" or 2.4mm) B.T.D.C.

Ignition Advance or Retard . . . . . | Movable stator plate



KOMET K-73  
PORT TIMING DIAGRAM  
STOCK ENGINE

## EXHAUST SYSTEM DATA

Exhaust length (as measured along centerline from header flange to tip of muffler)

Monza A (flat ended muffler) . . . . . 31 1/2" (+/- 1/2")

Monza B (bullet ended muffler) . . . . . 30 1/2" (+/- 1/2")

Can Type Muffler (header length only) 12" (+/- 1/2")

To:

Increase Low End Power . . . Add 1/2 to 1" to header length

Increase Top End Power . . . Remove 1/2 to 1" from header length

## CRANKCASE PRESSURE TEST

Starting Pressure . . . . . .10 lbs.

length of test . . . . . .5 minutes

max. allowable leakdown . . . . . 1 lb.

## FACTORY RECOMMENDED PORT TIMING

(for stock appearing class)

appearing class)

Exhaust Port Opens . . . . . .96° (1.190") after T.D.C.

Transfer Port Opens . . . . . 120° (1.523") after T.D.C. (stock timing)

Boost Port Opens . . . . . 113° 120° after T.D.C. (finger ports see ill. below)

## TORQUE SETTINGS

8mm Cylinder Head Nuts . . . . . 150 in. lbs. (1.70 Kg. m.)

8 mm Engine Base Nuts . . . . . 150 in. lbs. (1.70 Kg. m.)

6x18 mm Rotary Valve Cover Allen Screws . .60 in. lbs. (.67 Kg. m.)

6x45 mm Rotary Valve Cover Allen Screws . . 60 in. lbs. (.67 Kg. m.)

6x55 mm Crankcase Allen Screws . . 60 in. lbs. (.67 Kg. m.)

Flywheel nut (or clutch adapter shaft) . .490 in. lbs. (5.70 Kg. m.)

Sprocket nut . . . . . 490 in. lbs. (5.70 Kg. m.)

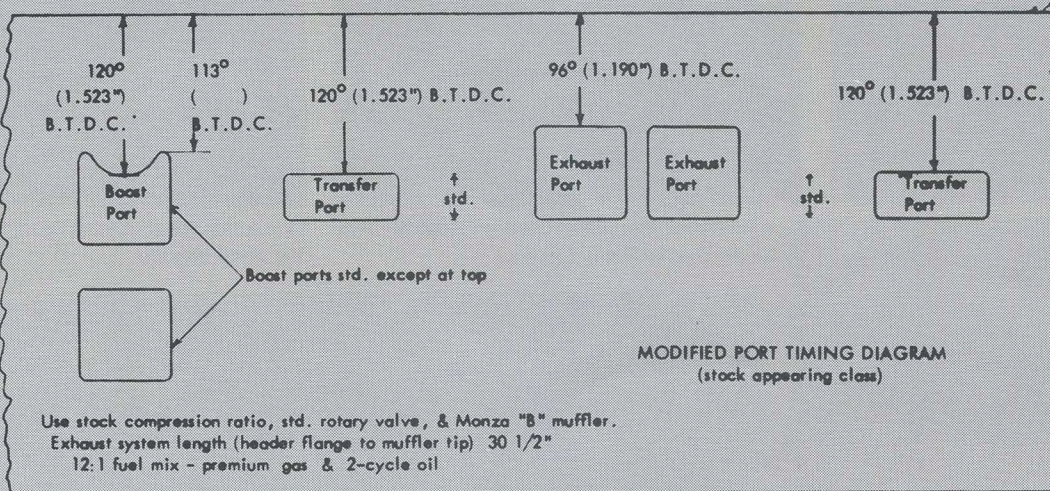
6x18mm Exhaust Header Allen Screw . .60 in. lbs. (.67 Kg. m.)

Spark Plug . . . . . 300 in. lbs. (3.5 Kg. m.)

## IGNITION TIMING CHART (figures expressed in degrees, millimeters and thousands.)

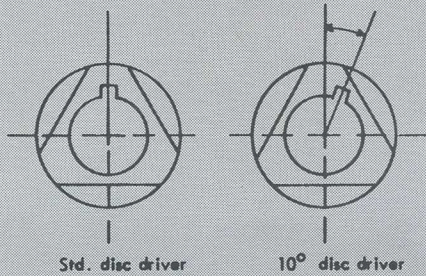
20° - 1.745 mm - 0.069"	26° - 2.919 mm - 0.115"	
21° - 1.921 mm - 0.076"	27° - 3.142 mm - 0.124"	
22° - 2.104 mm - 0.083"	28° - 3.373 mm - 0.133"	
23° - 2.297 mm - 0.091"	} Normal Timing range	
24° - 2.498 mm - 0.102"		29° - 3.610 mm - 0.142"
25° - 2.798 mm - 0.110"		30° - 3.850 mm - 0.152"

See Page 27 for additional Komet K-88 data.

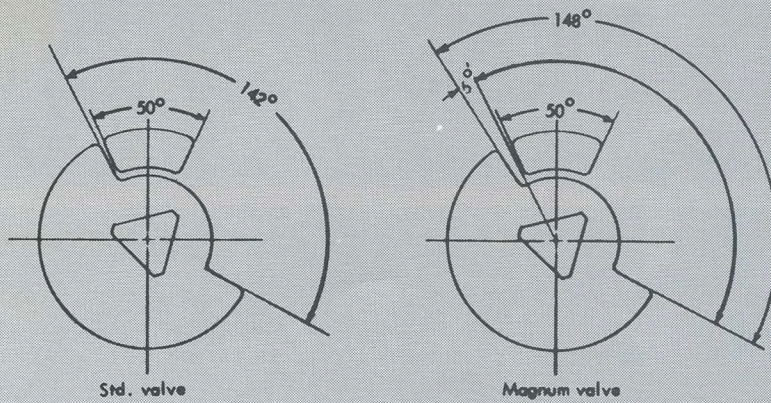


OPTIONAL RACING PARTS

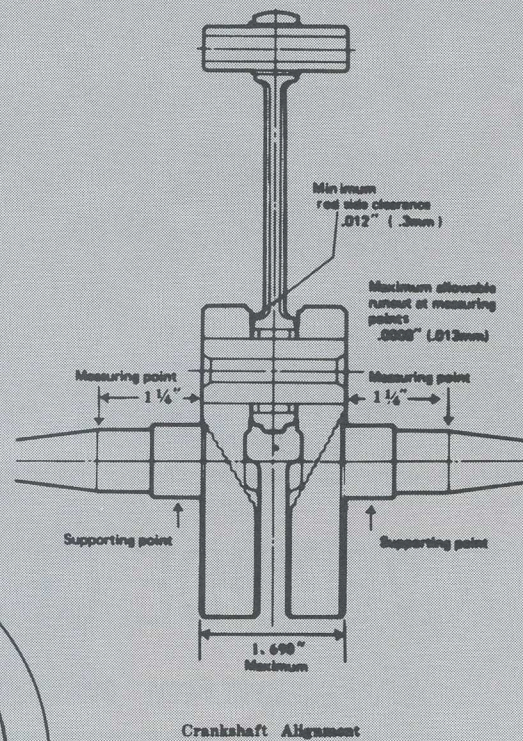
10° ROTARY VALVE DISC DRIVERS



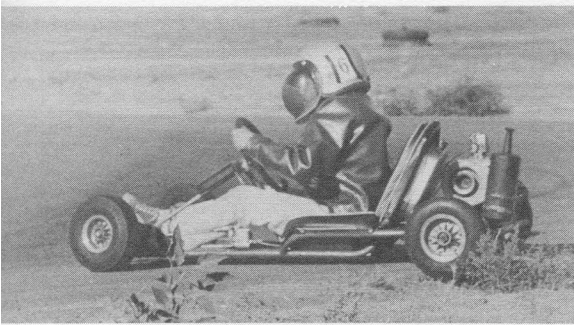
MAGNUM ROTARY VALVE



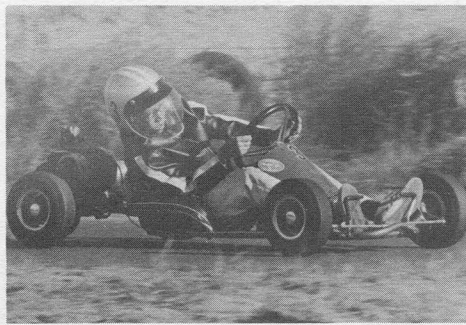
Note - Magnum valve opens 6° more on trailing edge only



TUNING THE KOMET



Bill Shaw, 2nd in Rookie competition, spins around in turn three.



Dave Pehrmon, first place winner in Rookie Class, shows his championship form.



Kyle Adkins beat out the Stock Jr field for first place honors.



Drivers meeting at Adams Kart Track, Riverside, California prior to start of November championship sprint meeting.

# RIVERSIDE CHAMPIONSHIP SPRINTS

**A MODERN KARTING PICTORIAL**

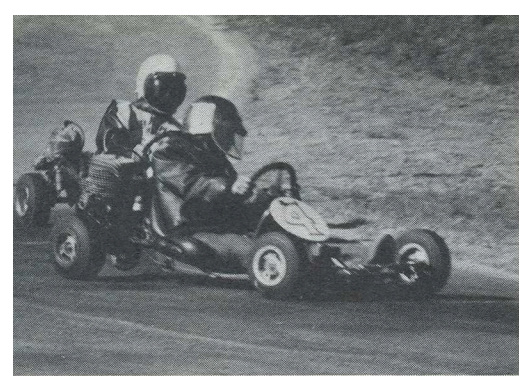
Photos by RANDY DELUCA



Rod Whorton won American Reed Jr class.



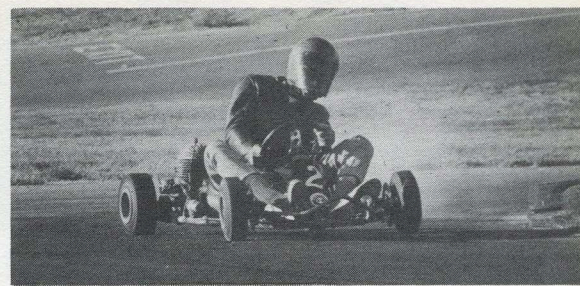
Kyle Adkins followed by Rod Whorton in Jr Reed heat.



Mike Harris leads Forrest Saylor thru a turn in Stock Jr action.



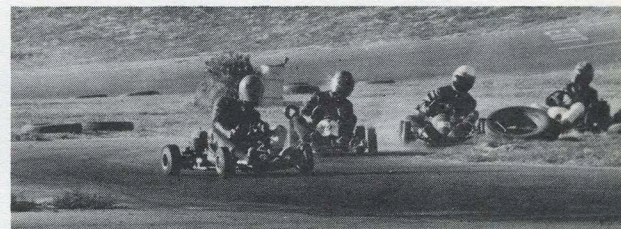
Larry Elliget took home the Sr Reed 'gold'.



Hard charging Jim Welsher took the Open Lite title.



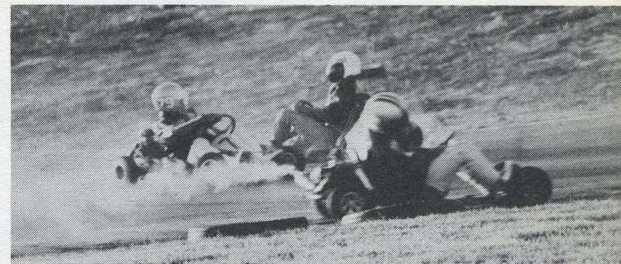
American Reed Sr parade lap with Walt Meyers on the pole.



Quartet of Open Lite drivers includes Jim Welsher, followed by Larry Elliget, Don Moormeister and Kathey Hartman.



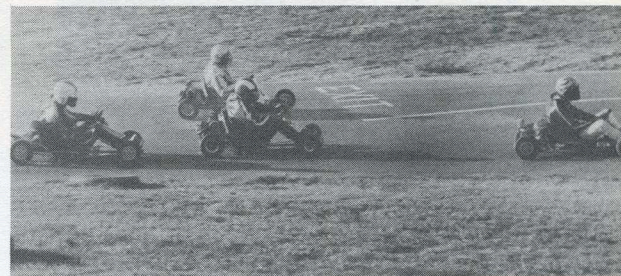
Sr Reed field thins out as Elliget leads this group thru a turn. Walt Meyers is to Larry Elliget's left and mostly hidden from the camera Grayden Gains and John Barber start to close the gap.



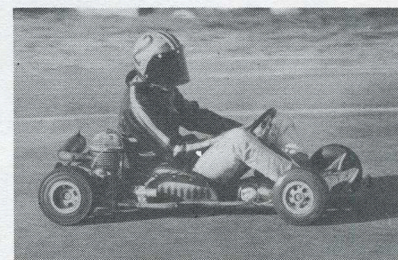
Open Lite road jam.



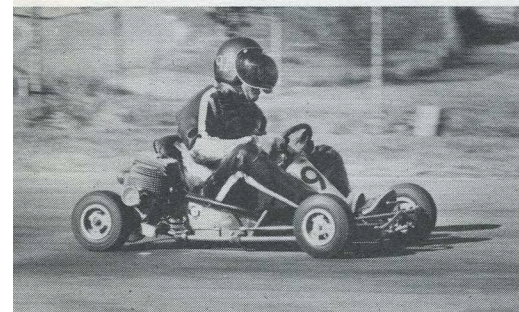
Ricky Tate looks over his shoulder at Kathey Hartman while churning down the straight. Tate took first in Stock Lite class while Kathey scored second.



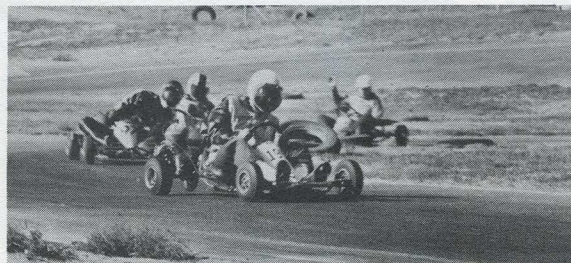
John Barber has a close lead over this Open Heavy field of Joe Pacheco, Tom Wilms and Keith White.



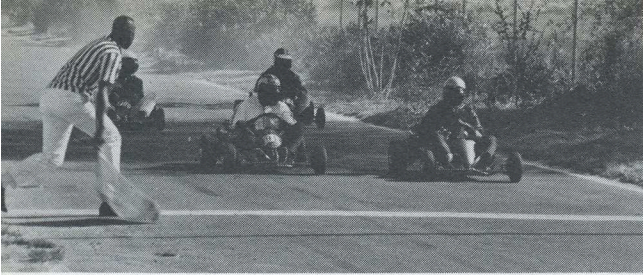
John Barber walked off with the Open Heavy title.



Howard Matzger placed 3rd in Stock Lite.



Stock Heavy action has Russel Saylor leading Howard Matzger and other drivers out of a turn in a fast-paced heat.



C Open gets the green flag from DeWitt Adams.



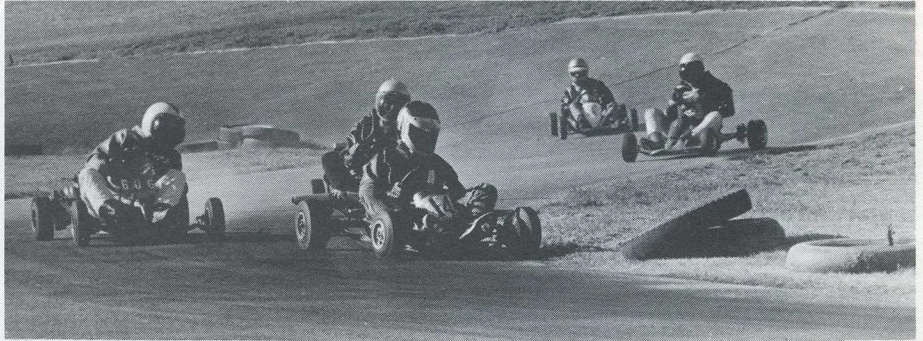
C Open action with Bob Underwood attempting to hold off Gene Pearman.



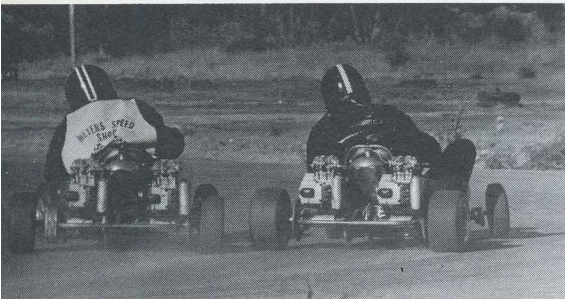
Bob Meli took first place honors in the very rapid C Open class competition.



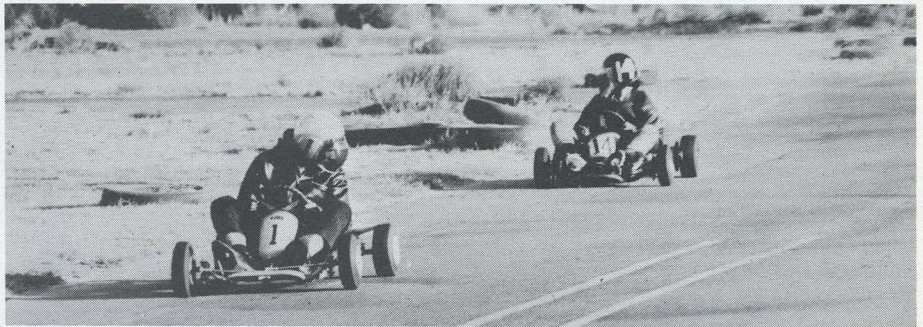
Second place B Open winner, Harold Stebbens.



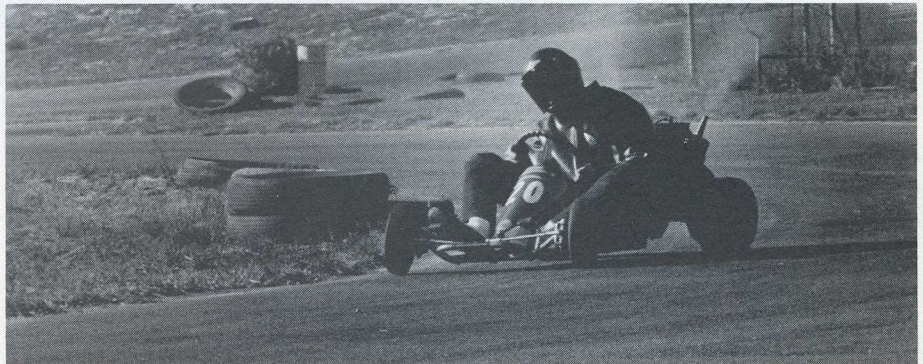
B Limited action has winner Ken Yagi leading Chet Vettors, Walt Meyers, Robert Bower and Bill Shaffer.



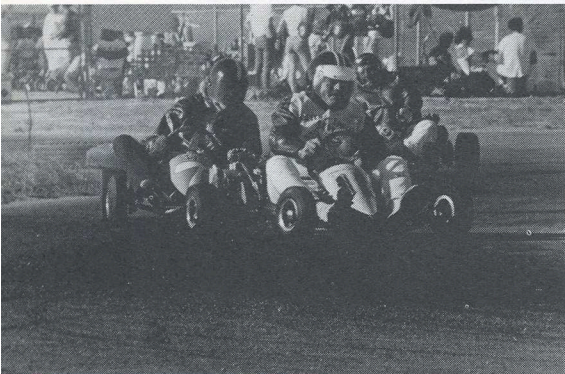
B Open field includes Manuel Lopez, Jack Nelson and Harold Stebbens. Lopez went on to win the title.



B Limited winner Ken Yagi closes in on Walt Meyers.



Don Reese took 1st place in B Stock class.



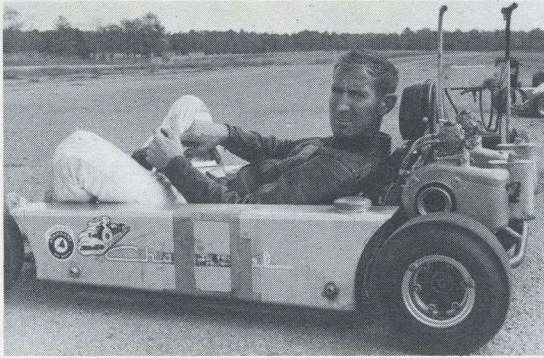
Close B Open action has Manuel Lopez about to pass Jack Nelson in the turn.



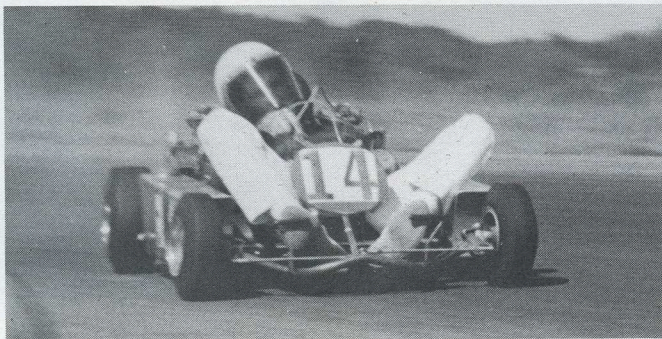
Roler Jerrano scored a runner-up victory in B Stock.



# personality profile



*A lean, wiry 125-pounder, Junior has a fierce competitive spirit*



*Junior Neal hangs it out perfectly in a tight turn while he pours it on to stretch his lead in C Open at V.I.R.*

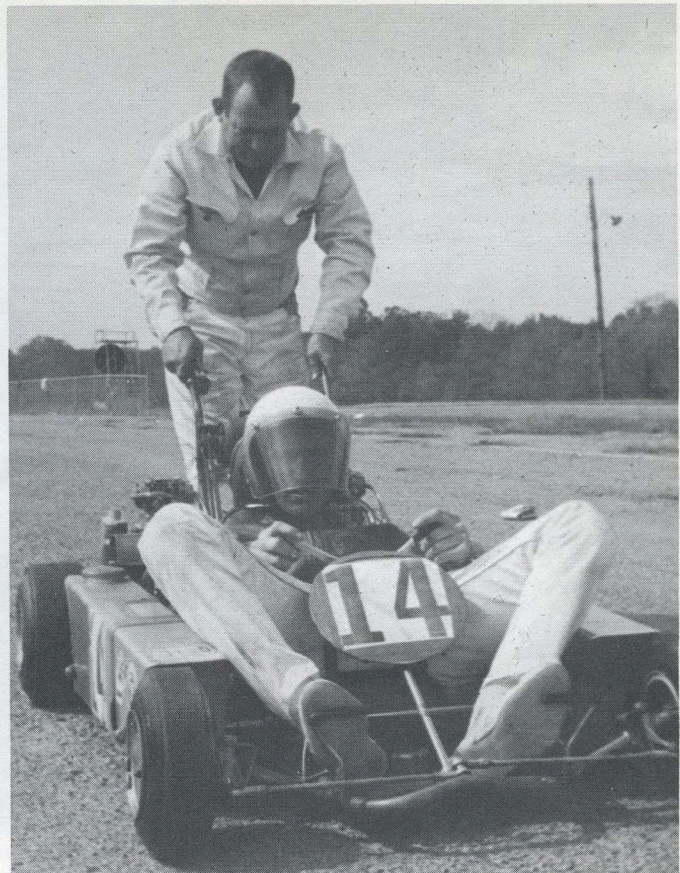
## JUNIOR NEAL

You've heard it said that outstanding athletes often have "the look of a Falcon". Junior Neal has that look and he's a fearsome competitor...confident and cocky but not unbecomingly so...strong as horse-radish on the track but not wild or unsportmanlike...friendly and likable but not gregarious...an intensely serious driver with bundles of ability who will never race for second place.

"Junior" is 33 years old...a lean, wiry, 125 pound brick mason by trade, unmarried by choice but with plenty of interest in the fairer sex. He's indeed a "pistol" with an insatiable urge which motivates him to go after the big ones in the quickest class around...C-Open. He lives in Greenville, South Carolina, between weekend race dates.

His karting activity began in 1961...sprint racing on the then new (and excellent) "dinosaur shaped" road course in Hickory, North Carolina. He's been going strong ever since, also competing in some two-wheel scrambles, a limited amount of mini-stock action, and winning the 1967 point championship in 3/4 Midgets! His basic view of things is "if it ain't racin', forget it". Several times he's run his class at Virginia International Raceway on Sunday morning and made it all the way to South Carolina by mid-afternoon for T/Q competition. Junior Neal is quite a guy and one heckuva karter!

Its quite a feat these days to even finish an enduro event. Experiences drivers with top equipment must also rely on maximum mechanical preparation and some luck. During the last two competition seasons, Junior has entered eleven IKF Championship Enduros and finished in eight of them, and that's how many he won...eight first place trophies in C-Open!

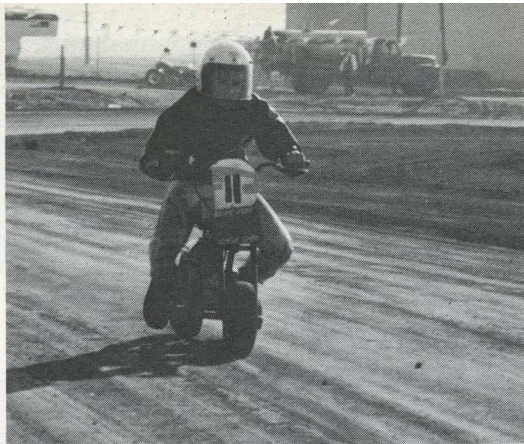


*Superb engine builder Tom Neal is always on hand in the pits in support of his brother's driving prowess.*

The DNKs which are a nemesis to all enduro karters have come at tough times for Junior Neal. At the 1967 Grand Nationals in Seattle his engines balked on the grid and he came off the line a full lap late. His qualifying time was 4 fat seconds better than one of the most publicized "guns" in the world and Junior caught him, running fourth and closing on the leaders when an engine malfunction took him out of the contest.

At the 1968 Winter Nationals he drew 22nd position and moved to third in the first lap! Thirty minutes later he was leading by half a lap when a clutch went blooie and that was it. Junior had a personal reason for entering B-Open at the 69 Grand Nationals in Texas. While his qualifying time was second best in the show, the class change left him without a privileged grid slot so he started back in 23rd position and moved to third before he dropped it...another mechanical bust, a long way from home.

Naturally a gung-ho chargeclike Junior Neal still races sprint kart events too, and he's State Champ in Georgia and North Carolina for 1967. He's tough and talented on any track and exciting to watch too, but his older brother, Tom, deserves much of the credit. Tom is a meticulous craftsman who builds Junior's engines, patiently hand-filing until the pair of "820 Benders" are up into a phenomenal range of power output. Tom doesn't drive anymore but he's always on hand in the pits in support of his brother and his young son, Jeff. The combination of his superb engine work and Junior's fierce competitive spirit makes for highly impressive performances at major events. Modern Karting salutes such dedication, ability, and accomplishment. Keep your eyes open for Junior Neal at future championship meets. He goes like gangbusters!



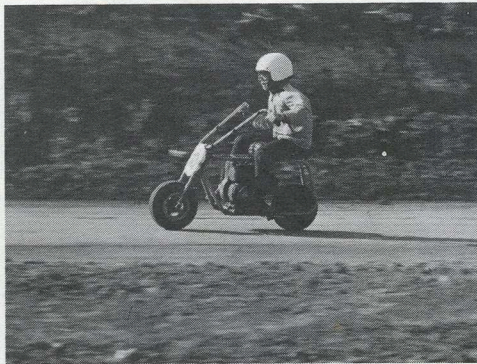
*Lee Harper (11) also wore the colors of Ron's Mini-Cycle City.*



*Well known karter Stan Gilbert seems happy about the whole affair as he cruises down the main straight.*



*Ronald Herman (44) and Jon Pierson (83) in a close duel coming out of the corner. Jon is the son of Tom and Faye Pierson of K & P Mfg..... makers of the Flea line of mini-bikes.*



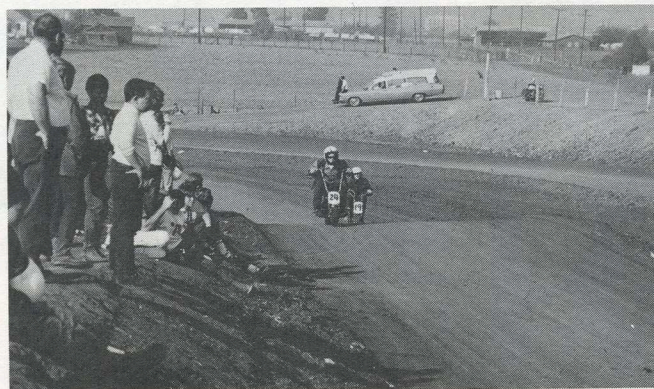
*Robert Rankin out for a Sunday ride cruising along the main straight with ease.*



*Rudy Herman (23) gets the checkered flag.*



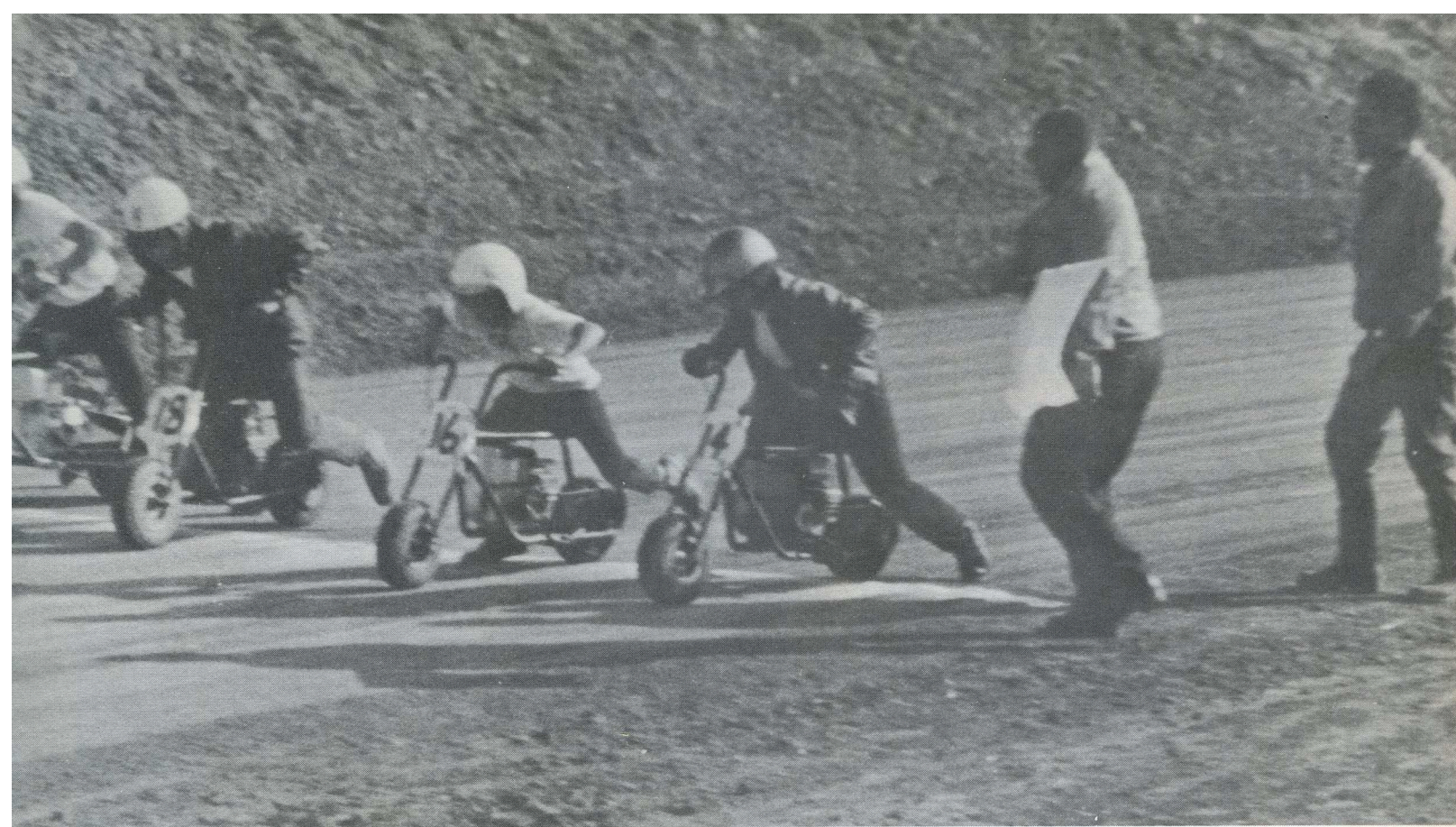
*Class A mini-bikers roar off the starting grid. Identifiable are Stan Gilbert (25), Gilbert Brown (27), Chris Lundberg (32) and Randy Davis (37).*



*Here's where some of the more active enthusiasts became airborne. Just topping the hill is John Lloyd (24) followed by Naina Kuykendall.*



*Gene Woods (16) of Ron's Mini Cycle City does a wheelie as he tops the hill. Young Gene's brother is Rick Woods, national JAP motorcycle champion.*



*Off the grid. . . . (left to right) . . . J.C. Kuvkendall, Robert Bickinson, Mike Rios, Tony Lightsey and Gene Woods.*

# MINI-BIKE SCRAMBLES

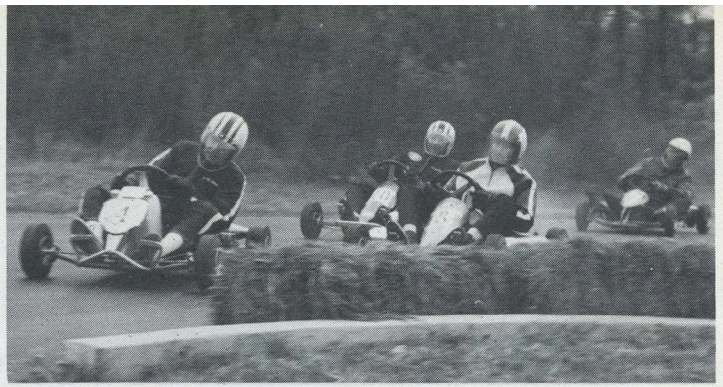


One of America's fastest growing sports is really on the move in sunny (sometimes smoggy) Southern California. Mini Bike racing is the name of the game and kids from six to sixty are taking to the Southland's dirt tracks with their diminutive machines in action that equals the thrills and spills of the bigger full bore racing motorcycles. This event, staged Sunday, November 17th at Huntington Beach Cycle Park (in beautiful Orange County) featured A, B and C Class racing. Three heats were run per class and since it was the first time out for mini bikers at the 5/8-mile dirt course the contest was considered a prototype of future events at Donald England's Huntington Beach racing plant. A club is being formed now--the Huntington Beach Cycle Park Minicycle and Kart Association-- and monthly events are scheduled which will include kart racing for dirt track enthusiasts. The big gun behind the program is Ron Stewart, owner of Ron's Mini Cycle City located just a few blocks from the Park on Beach Blvd. Ron has long been active in mini-bike promotions and is a long-time karter as well. A point system is being created and the A, B, C class system will be changed to novice, amateur and expert classes ala motorcycle racing for all future club events. Competition numbers will be issued by the association. Modern Karting's companion publication, MINI-BIKE GUIDE, will feature the upcoming January 12th competition in its next issue. Don't miss it. . . and if you have a mini-bike of any make and want to join in on the fun be on hand at Huntington Beach Cycle Park at 9am January 12th---it's a whole new kick in racing. See ya there!

*Tony Lightsey (14) does his thing for the camera.*



*Jerry Solt and Norval Welch charging away from their grid slots.*



*Traffic in the northeast turn.*



*Mrs. Butch McAtee seems delighted with her husband's trophy.*



*(L. to R.) Butch McAtee, Joe Capito, Jerry Solt, Norval Welch, Joe Wedding, Chief scorer Dave Ellis, standing.*

# KENTUCKY SPRINDURO



*Cute cheerleaders took turns handing out the 35 handsome trophies.*



*Prominent karting people, Retha & Diz Dismore.*



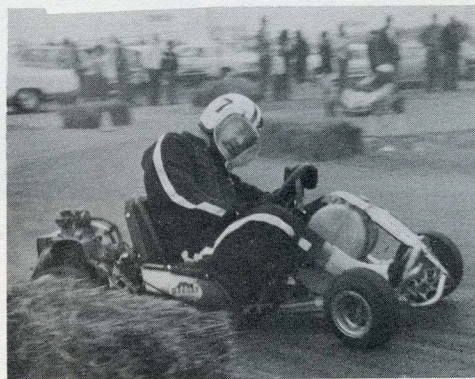
*Enduro-type grid layout. Entrants await signal to start engines.*



*The race is on and flagman, Fred Progner, scampers to safer ground beyond curb.*



*"And away we go," !*



*A fine handling Margay Kart nearly kisses the hay.*



*Jerry Solt (8) and Norval Welch (10) press eventual winner, Butch McAtee (23) during the B-limited race. Jerry was a DNF after strong early laps. Norval took the runner-up hardware.*



*This lone Enduro Kart had a pinch too much wheelbase.*

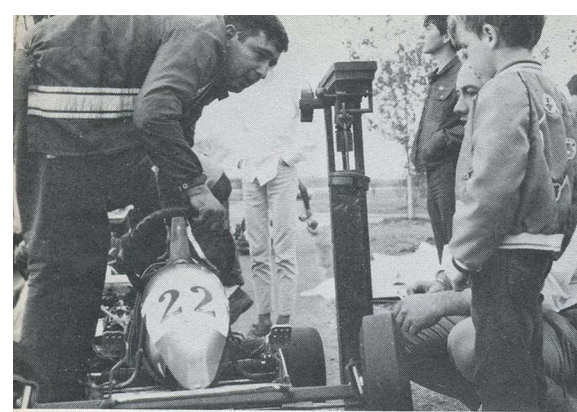
Our National Anthem was played at straight up 12-noon. The Mexico City Olympics? Nope . . . a Kentucky kart race, live music the compliments of Middletown's High School Band, in full parade uniform. A conflicting engagement precluded the appearance of Miss Kentucky (alas), but the school's cute little cheerleaders were on hand to pretty up the blue-grass scenery, and they worked too . . . in the scoring bus with Dave Ellis and at trophy presentation time.

Date: November 3rd. Place: few miles east of Louisville. Sponsoring Organization: Middletown Optimist Club, spearheaded by Joe Wedding. Other cities and karting groups would do well to pay heed because this was something different, something special, and a clear-cut success in the eyes of all concerned. It wasn't a sprint race, but neither was it a typical enduro event. It combined the most desirable ingredients of both, so why not call it a "SPRINDURO"?

An impressively modern Celanese Building on several acres of suburban ground is surrounded by a network of smooth asphalt roads, pretty as a park and perfect for kart competition. Through perceptive planning, these near-new, moderately narrow driveways were selected and marked to form a full half-mile race course, complete with sweeper, switchback, and separate staging area. Configuration wasn't tight like sprint tracks but not as open as permanent enduro circuits. Each class raced for 20 minutes following an enduro-type start . . . longer than a normal heat and sufficiently lengthy to provide the flavor of races with greater duration . . . a commendable wedding of the two primary kinds of karting, engineering by a guy whose name is Wedding!

This example of enterprising ingenuity had just one vulnerable feature . . . it positively could *not* have been run in the wet. On Saturday night, weathermen in airport towers were saying "rain tomorrow" and radar screens were still indicating rain the next morning, but not a drop fell to dampen the festivities, although the turnout would doubtless have been larger with fair-weather reports.

85 entries from five states began registering at 8:30 a.m and 77 of them survived the 10:30-11:45 practice session to run under the flags for a shot at the gold. Racing for the seven scheduled classes (no juniors included) got underway shortly past noon and terminated about 4:30 p.m. One lone enduro kart was at a slight disadvantage (wheelbase was a pinch much) but a lot of sprint enthusiasts got rather "spoiled." They liked the "semi-enduro" situation



*Butch McAtee (Ohio) weighs in okay after winning B-limited.*



*Intense concern just seconds after impact. Bruised driver is okay.*



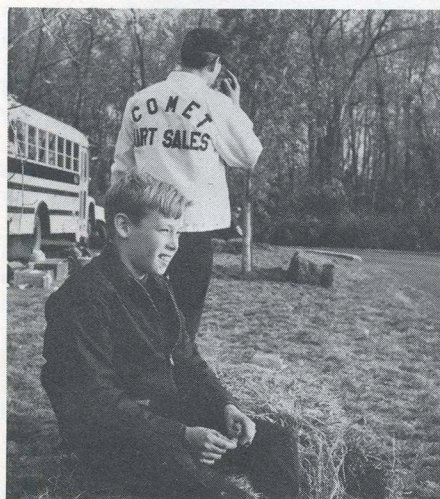
*Husky Jim Burger pours it on to win A-open-lite.*



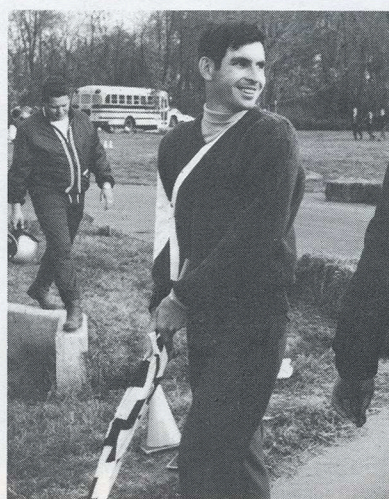
*No pit stop required! Ron Terry gets goggles to Mike Miley while the race is in progress!!*



*B-limited machines in the staging area.*



*Alas, there was no class for national champ, Mark Dismore.*



*Flashman Fred Proqner did an excellent job!*

so well that some said it diminished their verve for standard sprint competition. Sounds like the future may hold more SPRINDUROS for sprint karts!

The field included some well known area karters, like "Diz" Dismore, Jerry Solt, Ron Terry, Dick Burton, and others. John Dies, a Tennessee entry, won A-Stock-Lite . . . the first race of the day. John Pierson and Merrill Musgrave weren't far behind. Fred Wiles, Greenfield Indiana, took the American-Reed candy, followed across the line by two more Tennessee drivers, Wally Palmer and Bill Byram.

The C-Open machines hung it out pretty good and put on a dramatic show, because at one point, Joe Wedding had

built up a two lap lead with several laps remaining. Then one engine loosened on its moorings and he backed off in an effort to hang on to his lead and complete the race. He managed the latter, but Bob VanArsdale and Phil Rea both got in front of him before 20 minutes elapsed and the many spectators were fascinated by the exciting finish.

A-Stock-Heavy came next and Stan McArthur, Bill Sloan, and Bill West scored one-two-three. Jim Burger is a massive, beefy guy, but he drove to victory in A-Open-Lite. Jim runs strong, but when drivers of this size can win a lightweight class it just might behoove IKF to re-examine their weight minimums. The slimmer drivers were stacking on chunks of steel and even bar-bell weights to get legal and dead weight hurts performance a bunch! Jerry Solt drove a beautiful race on a beautiful kart to earn his second place trophy and John Pierson drew blood again, following Jerry under the checkered.

Butch McAtee is from Toledo, Ohio... a likable fellow with a vivacious young wife who seems to have an infectious enthusiasm for karting, in support of her husband's hobby. Butch won B-Limited, with 2nd and 3rd going to Norval Welch and Mike Simmons. "Diz" Dismore was a strong contender until he got on his head *royal* in the N.E. corner, and Mike Miley looked like a sure trophy

winner too, before he ran out of fuel on the last lap! Then, in the final race, "Diz" drove his No. 7 kart to an eased up victory in A-Open-Heavy while Jim Burger looked more at home in this class, finishing second to his home-town adversary, Wayne Terry was third.

Scoring was accurate, thanks to Ex-Governor Ellis and his energetic crew of cheerleader spotters... and no race can be a true success without correct scoring. Grid formations were orderly, packs charged off the line on schedule, and Fred Proegner turned out to be an excellent flagman. Normally, Fred would have been a participant, but he dislocated one shoulder in a recent motorcycle race. "Better he shoulda stuck ta karting." There was one spectacular accident late in the day which transformed a kart into a mangled mess, but no bones were broken or dislocated!

THE KENTUCKY SPRINDURO was sans protests, soreheads, scoring foul-ups, and *rain!* Seems a shame it was also sans junior drivers but, all in all, it was of keen interest to participants and spectators alike and we're glad we didn't miss covering this one. Its a pleasure to present such a unique event in print, for the enjoyment and benefit of Modern Karting readers, coast to coast. Two more SPRINDUROS are scheduled in Kentucky for 1969. Maybe YOU can be there in person next time!

## FORMULA FIVE TEST

*Continued from Page 20*

Also, I think I'm more conscious of wind resistance than most karters. Inside the tiny F/5 body, I was constantly aware of the greatly reduced wind resistance.

**MODERN KARTING: Do you believe lessened wind resistance helps performance more than a little?**

**BOBBY NELSON:** You bet—I sure do. In the higher speed range of enduro racing its just like having extra engine power. Several times I pulled up alongside good karts with engines every bit as strong as mine, and I could move on past them without any trouble. I definitely could *not* have done this without the F/5 body. Some drivers don't realize how much wind resistance holds them back at the end of a long straight. I do... now more than ever before!

**MODERN KARTING: Single engine karts usually turn quicker laps than FKE entries. Is your car superior due to less weight, its suspended chassis, or just what?**

**BOBBY NELSON:** That's a pretty big question to answer. In the first place, FKE performance varies an awful lot. Some are extra heavy and clumsy—

**HORSTMAN  
OIL CLUTCHES**

**SAETTA  
ENGINES**

**XR-1 MUFFLER**

**SUPER STOCK  
MC-91A**

**\$24.95 Labor plus parts**

**NEW KENDICK HI-TENSION  
THINNED CLUTCH BAND**

Prevents drum expansion and overheating—  
for "REV-GRIP" Clutches, only.

\$10.95 heliarced on new Rev-Grip drum.  
Specify No. of teeth.

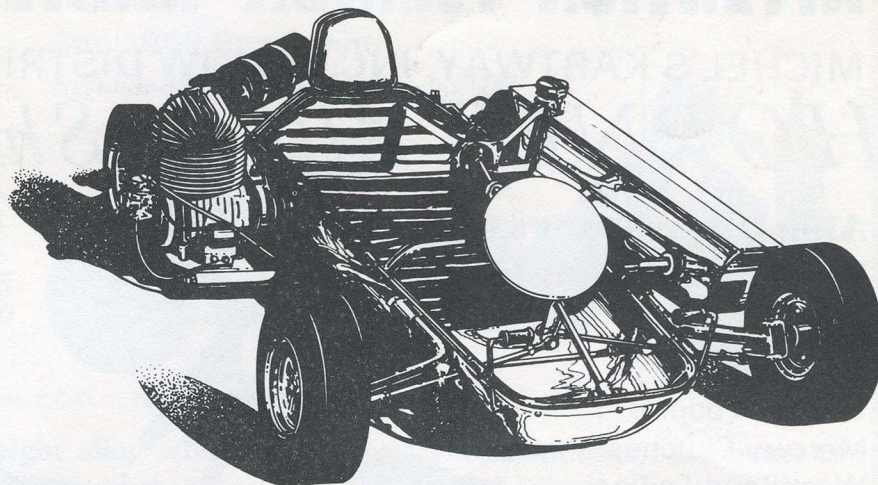
Part #CR-1 \$3.95

**NEW KENDICK  
1969 CATALOG**

*Chock full of good stuff!*  
order yours Now!

**\$1.00**

# *the avenger*



A Revolutionary New Sidewinder Enduro Kart---fully suspended independent suspension, deep-dish belly pan. Avenger's unique, exclusive equalizing bar transfers the weight to where it is needed most, and Avenger's exclusive 6-inch deep belly pan lets the driver sit low in the kart increasing its streamline effect for faster speeds without increasing horsepower. Handcrafted by experts---a limited production run competition machine.

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## FORMULA FIVE TEST

Continued from Page 37

poorly designed—but others go pretty good, too. Let me just say that I've never seen an FKE handle as well as this F/5 car. I wasn't all that light, either, because I was carrying 44 extra pounds of ballast to get above the 350 pound minimum for FKE-11. That made me 90 pounds heavier than some of the karts I passed. I'll promise you this: Strap the same engine I drove on any enduro kart frame, and I couldn't hope to turn laps as strong as the ones I made in the Formula Five Car.

**MODERN KARTING: What about your engine? Was it pretty potent?**

**BOBBY NELSON:** Dan Klutz is a good friend of mine. He furnished the test engine—a 60 over 91—and its a pretty fair piece of equipment. Remember though, its displacement is less than 6.3 cubic inches, so there were some 820s and B-Bombs on the track with a whole lot more horsepower than I had. This experimental car was put together in an awful rush. Next time, we'll have a bigger engine, too!

**MODERN KARTING: What about your lap times? How good were they,**

**and what potential do you project for the F/5 car?**

**BOBBY NELSON:** I can't answer that in just a couple of words. As a matter of fact, I wasn't even trying for good lap times. The car was very different from what I'm used to driving and I just wanted to get acquainted with it. I didn't push it or shoot for a low time on the stopwatch. In other words, I wasn't in any hurry. Al caught me at 2.57 when the track was wet and covered with puddles. There are oodles of single engine karts that can't get around V.I.R. in under 3 minutes—in the dry! There's no doubt in my mind that, on a dry track, we'll get down to about 2:35 in the near future. With the advantages of a good suspended chassis and the low wind resistance I've told you about, I expect to be almost as quick as I am in my B-Open kart. Any driver who can get down close to 2:30 in any twin engine kart class at V.I.R. is outstanding. I think I can go as fast with half that much displacement . . . or very close to it . . . especially if we can dump that 44 pounds of extra weight!

**MODERN KARTING: Was there anything you didn't like about the Formula Five Car?**

**BOBBY NELSON:** Yes, there was one thing. Al didn't have time to get

a windscreen mounted, so I was getting the full force of the wind in my face. It was so strong that my head was buffeted from side to side. We'll have a windscreen next time, so all that air will be going over the top of my helmet. Al says I'll go faster that way, and no doubt he's right. We have rear view mirrors for the car, too . . . just didn't have time to get them on before I drove it, I don't see how it could have performed much better. I was more than satisfied and very pleased with it. Until the muffler began to loosen, it went just *great!*

**MODERN KARTING: Sounds like you're really sold on Formula Five, Bobby. What does this do to your interest in kart racing? Do you prefer one over the other?**

**BOBBY NELSON:** Give the builder and the designer credit for the little car's outstanding performance. Formula Five was all new to me, and I had no idea what to expect before I drove the car. It sure looked good . . . I knew that much. Yes, I'm 100% sold on Formula Five now—that's for sure—but I don't have to choose between karting and F/5 racing. I can compete in both, and that's exactly what I intend to do. I'm just glad I can drive in B-Open and race the F/5 car too.

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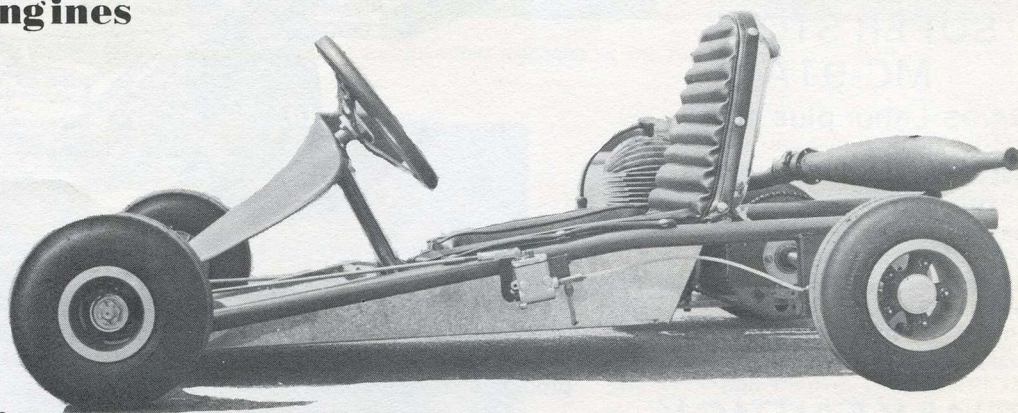
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## FORMULA FIVE "BROADSWORD"

### SPECIFICATIONS

DRIVER: Bobby Nelson  
 BUILDER: Al Noah  
 DESIGNER: Bill Cowling  
 RACING CLASS: F/5 Americana  
 BODY STYLE: F/5 Broadsword, permanent mold shell  
 OVERALL LENGTH: 89 inches  
 MAXIMUM BODY WIDTH: 23 inches  
 BODY CONSTRUCTION: hand-layed fiberglass  
 BODY WEIGHT: 15 pounds  
 GROUND CLEARANCE: 1-3/4 inches  
 CAR HEIGHT AT ROLLBAR: 14-1/4 inches  
 TOTAL HEIGHT WITH ROLLBAR: 20 inches  
 ALL UP WEIGHT, DRY: 148 pounds  
 DRIVER & FUEL WEIGHT: 161 pounds  
 DEAD WEIGHT ADDED FOR FKE-II: 44 pounds!  
 TOTAL TEST WEIGHT: 353 pounds!  
 WHEELBASE: 75-1/2 inches  
 OVERALL WIDTH: 42-1/2 inches  
 WHEEL RIM DIAMETER: 6 inches, front & rear  
 RIM WIDTH: 4-1/4" front, 5-1/4" rear  
 OUTER TIRE DIAMETER: 12-1/4" front, 13-3/8" rear  
 TOTAL WEIGHT OF TIRES & WHEELS (4): 24 pounds  
 FRONT SUSPENSION: coil/post, 3/4 inch travel  
 REAR SUSPENSION: trailing arm, 1-1/4 inch travel

CASTER: 13-1/2 degrees  
 CAMBER: one degree, negative  
 KING PIN INCLINATION: eight degrees

ENGINE: Mac-91 bored .060  
 DRIVE TRAIN: Margay gearbox  
 BRAKE: Airheart hydraulic disc

CHASSIS\* Heliarc-welded space frame  
 CHASSIS MEMBERS: 7/8 inch diameter .049 wall  
 FRONT AXLE: 1-1/2 inch diameter .102 wall  
 WEIGHT PRIMARY CHASSIS STRUCTURE: 14-1/4 pounds  
 REAR AXLE: 1 inch steel, ground & polished  
 STEERING SHAFT: 5/8 inch steel, ground & polished  
 KING PINS: 1/2 inch steel, ground & polished  
 BAFFLED FUEL TANK: 16 gauge steel integral with chassis  
 FUEL CAPACITY: 4-1/4 gallons

V.I.R. LAP LENGTH: 3.2 miles  
 TEST TIME, IN THE WET: 2:57 with ease  
 PROJECTED TIME, DRY TRACK: 2:35  
 C-OPEN LAP RECORD: 2:28  
 FORMULA/A (5 LITER) RECORD: 2:08

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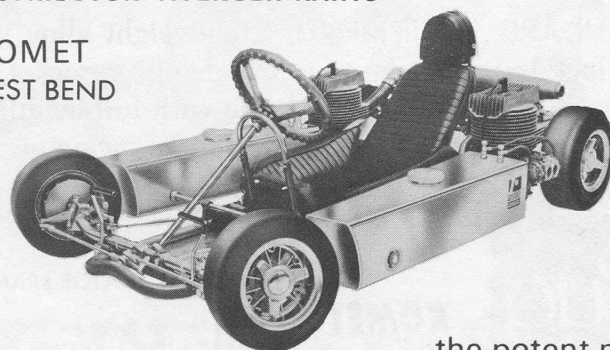
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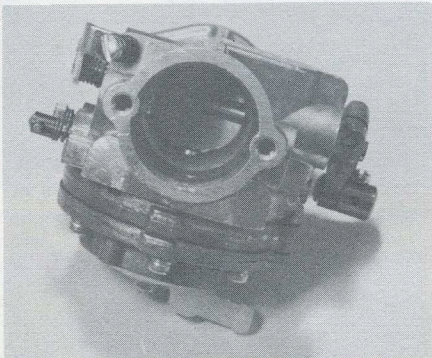
EMERSON 'DIZ' DISMORE

# HARTMAN'S HL250 CARBURETOR

By JIM PETITTI

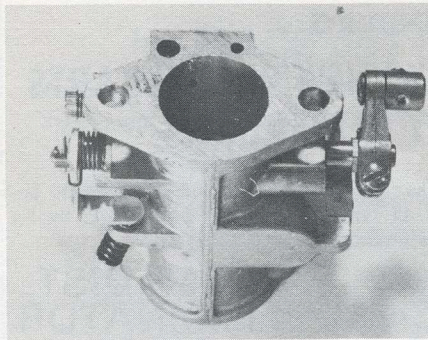
Not long ago, your technical staff happened to overhear a heated dispute between a few of the local hot shoes. Seems the shredded subject matter was a comparison of merit between Tillotson's look alike models—the HL227 and HL 250. While the argument proved entertaining, it appeared to be based more on emotion than fact. Out of curiosity, we began an impromptu survey to see how many karters really knew the specific differences. The results indicated very few did and thus provided the incentive for this article.

To begin with, the HL250 Tillotson is a built-to-order item. Hartman Engineering of Montrose, California supplies the specification. Tillotson builds to it and sells Hartman the finished product. Thus Hartman becomes sole distributor for the model. By contrast, the HL227 is



Note absence of atmospheric relief tube in carburetor's air horn.

built to a standard specification and sold to a more general market. Both are IKF approved "legal" carburetors for Italian 'stock class' engines. In effect, they are brethren. However, since the 227 appeared first, more is known about its performance and construction. This being the case we'll update things by dealing with the 250, making occasional reference to the 227 for comparison.



Adjustable position throttle arm is standard equipment on the HL250. Note machined brass spacer on throttle shaft = a plus feature.

OK, let's open up a 250 and have a look. Removing first the nylon fuel strainer cover we notice a very fine mesh screen nestled into the fuel pump body casting. Its identical to the screen in the 227. (An all too common practice is to remove this "silver" screen and replace it with a larger mesh "brass" screen, the logic being to "improve" fuel flow. Deciding once and for all to test this logic, we rigged a flow test, using Tillotson's In-line fuel filter to contain each of the screens in turn. Using methanol alcohol with 20% Bakers AAA castor oil mixed-in, we could find no measurable flow rate difference between the two screens! Not only that, but the silver screen did a much better job of filtering out crumbs.)

Next, we checked out the atmospheric relief for the dry side of the fuel metering diaphragm. On the HL227 there's no problem finding it (especially if you've had the misfortune of spiggoting your finger trying for a quick choke). Looking over our sample 250 it was apparent no brass venturi tube was employed. Mildly perplexed, we removed the six fuel pump body screws and separated pump body, diaphragm cover and diaphragms from atop the body casting. Turning the die

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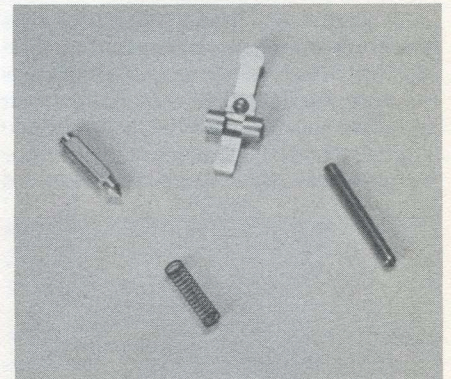
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## HARTMAN HL-250 CARBURETOR

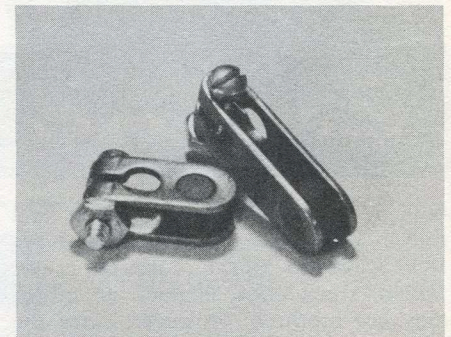
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cast diaphragm cover "dry" side up, we noted an atmospheric relief let into the rim of the casting—like earlier model Tillotsons, it vents through the cover.

Looking over the body casting, the first major departure from the 227 model is the use of an "old" style inlet needle and seat. (The No. 014053 needle, seat and gasket assembly used on the 227 employs a fork ended fulcrum arm to positively lever the needle valve open and shut. On the 250, the fulcrum arm merely seats against the light alloy inlet

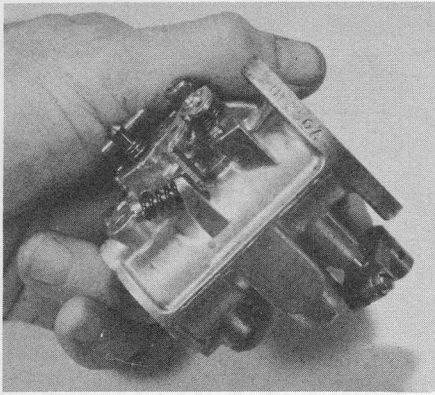


"Old" style inlet needle and fulcrum arm as used on HL250.

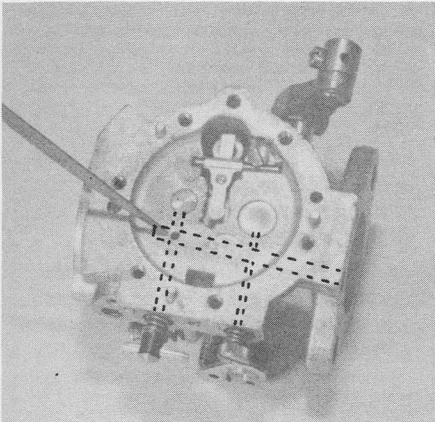


Hartman's accessory throttle arms lock cables in position with minimiscule allen screw. An excellent item—MK heartily recommends them.

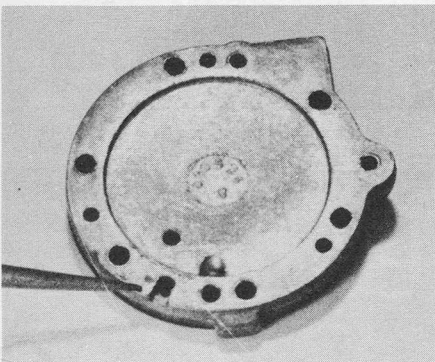
needle). Queried about this, engineer John Hartman explained: "It's been our experience that the forked fulcrum arm-cum-needle assembly exhibits a greater tendency to "hang up" if the carburetor is gummed a bit from storage. While it's still possible to hang even the old style needle we feel it's sufficiently more reliable to warrant its use." What else can we add? Checking further, we observed only one inlet tract orifice for both high and low speed needles. Now it's almost schoolboy knowledge that the HL227 uses two inlet orifices—one for the high speed and one for the low speed needles—and they interconnect via a drillway between the needles. This prompted a rush speculation as to whether the rest of the 250's drilling pattern would also differ from the 227.



The HL250-Hartman Tillotson.



Pointer indicates HL250 single inlet tract orifice. Dotted lines detail inlet tract. Note interconnecting drillway.



Pointer indicates atmospheric vent on "dry" side of diaphragm cover.

Curiously, we pulled welch plug, needles and discharge nozzle for measurements. To our surprise, not one orifice diameter measured different between the 227 and the 250. In other words, the only drilling pattern difference is the 250 model has one less hole. Going again to the horse's mouth we asked John what gives. He replied: "By doing away with the lower inlet tract orifice the chance for an air lock in the high speed circuit is eliminated, especially in vertical applications. Similarly if the inlet passage is blocked the engine simply won't run. You can't, say, leave the pits running on the low speed circuit and risk engine seizure or die down as the revs come up. Flow

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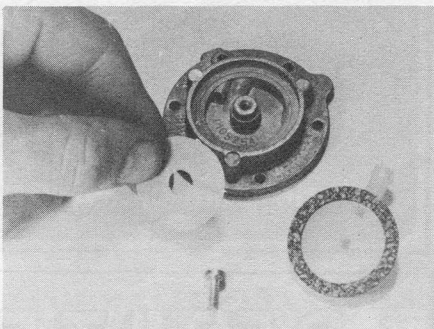
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## HARTMAN HL-250 CARBURETOR

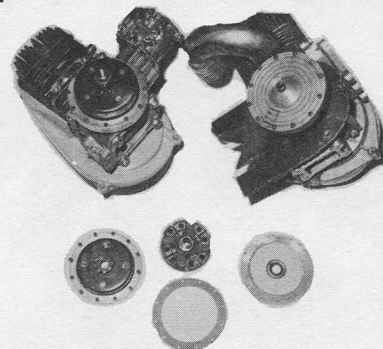
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testing indicated an inlet orifice diameter of .086" (No. 44 drill) is sufficient to feed both high and low speed circuits so it was a simple matter of closing off the lower inlet orifice. With a single entry inlet tract you have what amounts to automatic purging of the system." Remembering the times when we've left the pits on an engine apparently carbureting properly only to strike trouble downfield, I'm inclined to agree with brother Hartman.

There's one more old cud that needs chewin'—that of specific power output of a given engine using either one or the other model carb. Truth is—there ain't none! If you doubt this, ask IKF. They required Hartman to submit his carb for comparison dyno tests before certifying it legal equipment for stock class engines. To be certified, the 250 *could not* produce any greater specific output at any given speed than its kindred cousin—the 227. O.K.—so why buy?—Hartman claims smooth throttle response, automatic purging of the inlet tract (esp. in vertical applications), no air horn and/or venturi restrictions, and an adjustable position throttle arm. Now for our final remarks: Does it work as claimed? Yes. Would we recommend it? Yes. And we've told it as it is.



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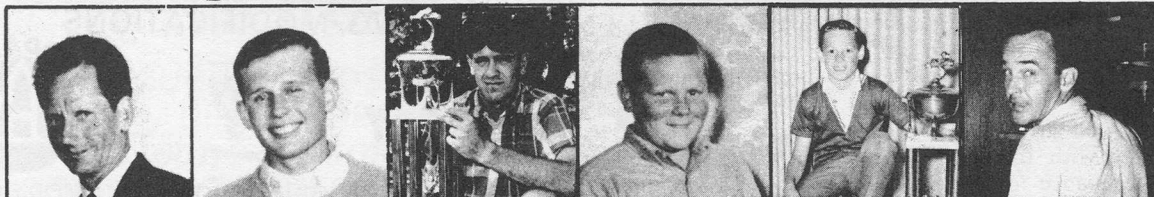
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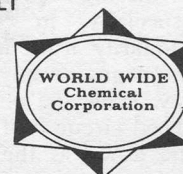
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**FORMULA FIVE NEWS**

*Continued from Page 12*

manently. Ask him. He had a *ball!* For additional specifics and performance details (including a complete driver interview), see the F/5 test article in this issue.

**DO YOU UNDERSTAND** It's clear to most enthusiasts (we hope all F/5 car builders and drivers read Modern Karting) but the Formula Five Organization wants to be certain that everyone knows: (1) Head fins on rotary-valve engines mounted in F/5 Americana Class Cars may protrude a maximum of one and one half (1½) inches above surrounding body shell surfaces, but *not* more than 19¼ inches measured vertically from the track surface. (This doesn't apply to cars with American-Reed engines.) (2) The maximum fuel capacity limit is not in force as yet, but exterior side tanks are prohibited. Fuel must be carried inside the body enclosure. (3) As printed in the rules and regulations, "F/5 bodies shall fully enclose the driver, except for open cockpit area." This is interpreted to mean, among other things, that elbows stay inside the cockpit!

**F/5 DRIVER POSITION:** Speaking of elbows etc., several M.K. readers have commented on Tom Johnson's

driving position (see pages 24-25, November issue). In the pit photos his elbows aren't inside, but in the action shot on the track, they *are*. Even so, this driver position is not typical. For one thing, Tom is an ex half midget competitor, accustomed to driving more nearly upright. For another, he plans to move his fuel tank enough to get down lower in the cockpit. Tom will be reworking his car this winter, and expects it to go better in 1969. Ed Hillman's driving position (see photo below) is more normal. You're right, Ed's car is considerably deeper than Tom's, but then he's a lot bigger guy, too, so relative proportion remains quite similar. That's why several F/5 body sizes are available. Its advisable to get "down to your eyes" in the cockpit of a Formula Five Car!

**APOLOGIES:** All has been "violently busy" at Formula Five's full time Headquarters . . . knee-deep in mail, answering builder's questions, generally increased activity. F/5 momentum is growing! At press time, numerous individuals who furnished a self-addressed stamped envelope had not yet received information pertaining to the Formula Five Racing Association. Rest assured, they *will* though.

*Formula Five rules are only a dollar for one class, two for three--write FORMULA FIVE 4430 Tremont Rd., Evansville, Ind. 47710; phone (812) 423-1508, late nite calls OK!*

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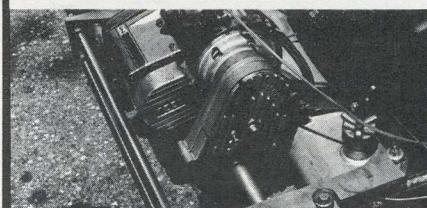
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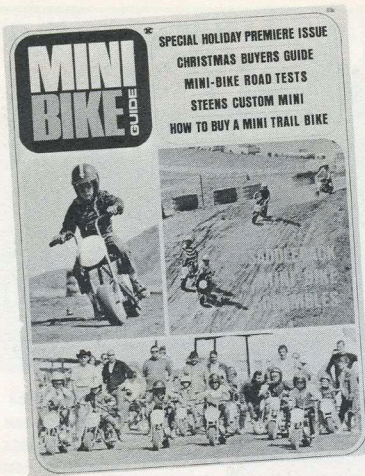
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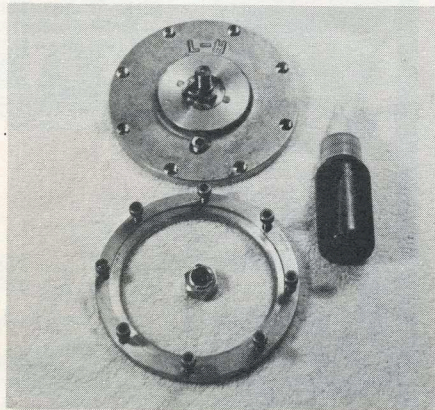
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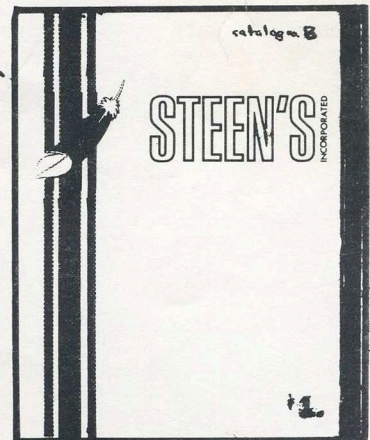
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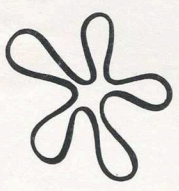
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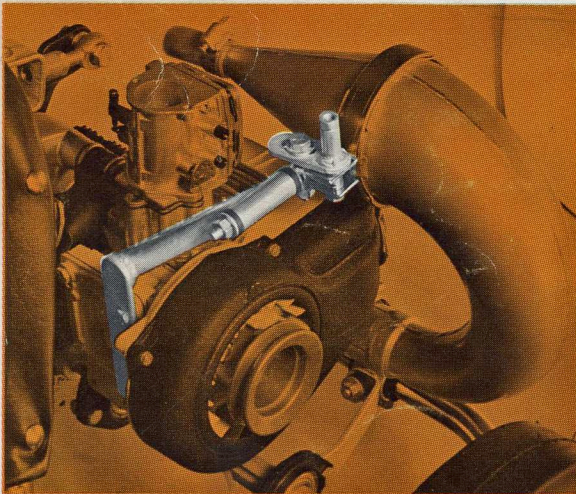
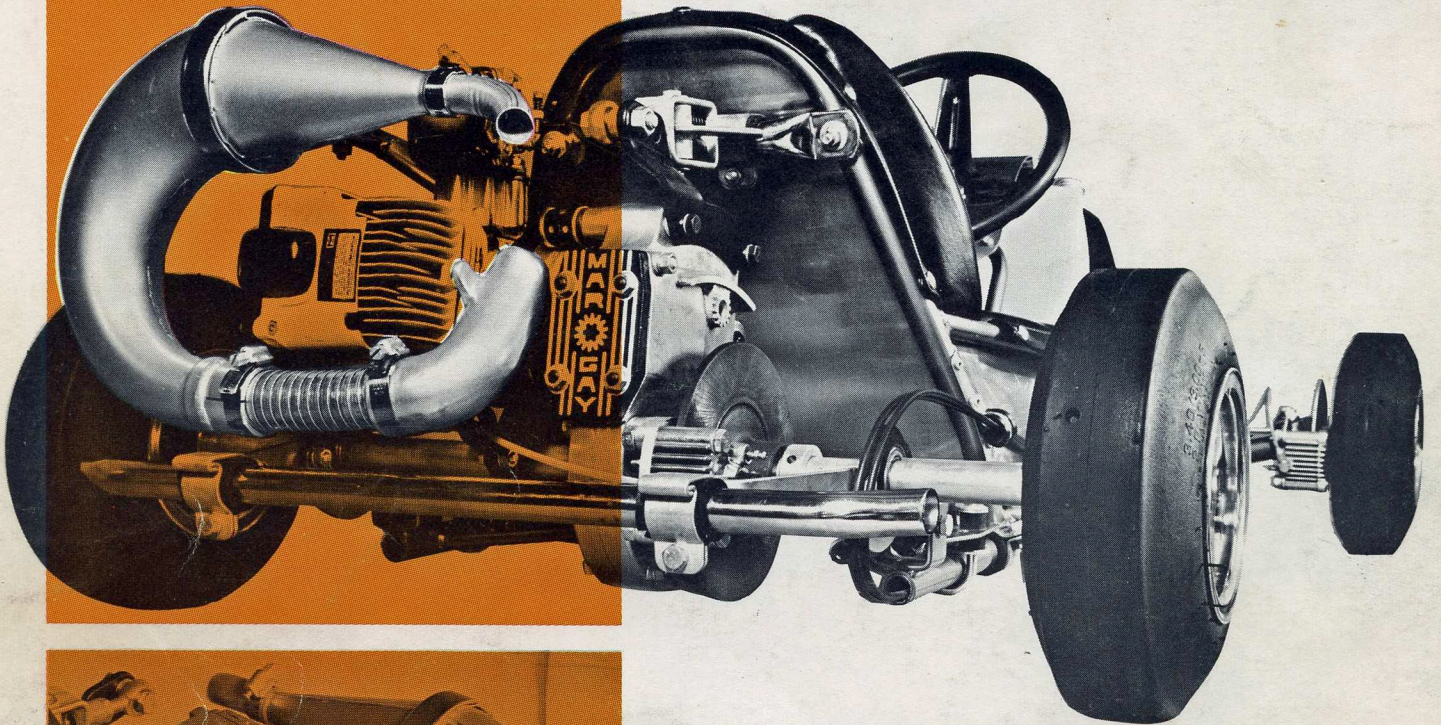
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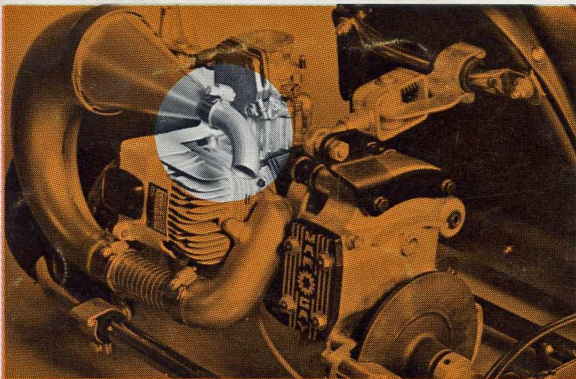
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