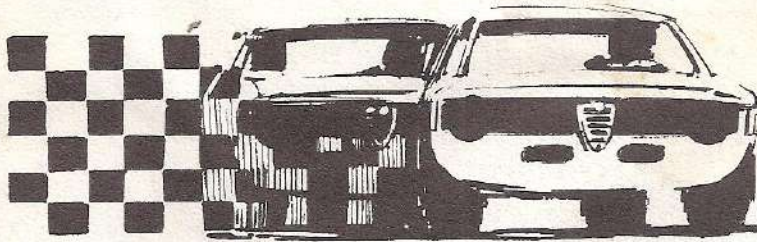


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# ALFACIONADA

ALFA ROMEO OWNERS OF SOUTHERN CALIFORNIA



AUGUST 1970 VOL. 9 NO. 8

P.O. BOX 261 LOS ALAMITOS, CALIFORNIA

## AROSC MEMBERSHIP HITS 200

The official paid membership of AROSC reached the two hundred mark this week. Never before have so many Southern California Alfisti enjoyed the benefits of our organization. The Club's membership had remained relatively steady in our first seven years, fluctuating between a low of 74 and a high of 110. Last year we had 79 members.

At about this time last year our treasury was dipping to an intolerable low and the Board of Directors was faced with two alternatives: raise our dues or significantly increase our membership. With National Club dues up to \$10, we felt that a raise for AROSC would be a definite deterrent to new members (for us as well as the National Club, AROC). A new position of Membership Chairman was therefore created with myself serving until Oscar DuFau was elected to the Board and volunteered for this year.

The rapid growth of our club this year is a credit to Oscar and his wife Claudia's efforts to make AROSC known throughout Southern California. Oscar reports

at this time that no less than 60 requests for membership applications have been received in the past month, indicating a continued expansion. Our members are putting on and participating in more and more events - both technical and social. We're getting more discounts at local businesses than ever (a comprehensive article on that coming soon). And our improving relation with the National Club, AROC, is bringing added benefits, including a comprehensive insurance policy that will allow us to put on more Slaloms, Rallies, and other driving events.

In order for us to continue our growth into next year, each of us must help disseminate information on the club - bring a friend to one of our meetings, and pick up some "you are invited" postcards to plant on likely-looking Alfas in your neighborhood. Let's look forward to 300 fellow members next year with events to suit everyone!

## 125 Attend Late Tech Session

Renowned engine builder John Shankle and driver Ron Dykes entertained 125 members at ARI's El Segundo facility with technical discussions on engine and suspension preparation. Mr. Pietro Stoccoro, ARI's West Coast Director, highlighted the evening with some words on Alfa Romeo's plans for the future. Though the meeting was scheduled to start at 8:00 pm many arrived early and most stayed until 12:30 am when the meeting broke up.

Shankle, who had recently returned from an Acapulco vacation, started his talk with a dessert recipe obtained in Mexico and reputed to be capable of reviving and arousing tired husbands.  
Ingredients: 3 egg yolks, 4 tablespoons sugar, and 6-8 ounces Madeira wine. Heat, stir, and whip with whisk; then let us know if it works next month!

Getting back to more technical things, Shankle discussed some basic concepts for improving the output of an engine. Now an Alfa head breathes pretty well to begin with, but head modifications alone can produce a 15% increase in power for a late (type 105) engine! Increased cam lift and duration help, but practical limits for an Alfa are a bit over 300° duration and 10.5 mm lift. But for most street use, even with a well-prepared engine, John has found that stock Duetto (late 1600/1750) cams are an excellent choice. On carburation, Shankle also finds the factory's stock equipment should not be modified. The fuel injection is excellent and no one should consider changing to Webers. Those with Webers, even with head work, should leave the jets alone!

Similarly, the cold air box should not be removed to install air horns. Especially in sunny Southern California. Ron Dykes noted that while driving Lee Midgley's Duetto in a Texas National last year the duct to the air box broke and he lost 400-500 rpm in top speed on the straight! A few more recommendations by John were: Don't bore your stock liners. Difficulty in getting quality boring means lower ring life and reliability. Overbore "kits" are a better choice. Don't use racing pistons on the street. Oil consumption on a good racing Alfa is about a quart an hour!

Ron Dykes had some general recommendations for members preparing their cars for slaloming, racing, or good high speed handling. First, take out all the free-play in the system, and make sure it doesn't bottom out under the heaviest loads. Then set up all available factory optional parts to factory specs. While testing at the track, make only one change at a time. For an understeering car (which we all have) start by adjusting the front suspension until oversteer occurs (if you can). Then adjust the rear until understeer again prevails, return to the front, etc. until an optimum is attained.

Mr. Stoccoro told us not to expect a Montreal in the U.S. until April or May of next year. The labor/political situation in Italy is delaying the factory's production plans. The Sud factory will begin production by early next year, but the new cars won't appear here until 1972. Mr. Stoccoro presented John Shankle, Ron Dykes, Alan Ward, and Phyllis Gaylard with special lapel pins as "friends of the factory".

## Calendar

- Aug. 21- AROSC Meeting, 8 pm,  
LittleLakePark, Santa Fe  
Springs
- Aug. 22- (Sat) Mini Owners &  
Corvette Club Slalom  
Cal State Parking Lot A
- Aug. 22- Cal Club Drivers School at  
& 23 Riverside
- Aug. 23- SDAA Championship Slalom  
at Carlsbad Raceway
- Aug. 29- Beach Party (with steak  
dinner) see this page.
- Aug. 29 SCCSCC High Speed Drivers  
& 30 School at Riverside\*
- Aug. 30- Morgan +4 Open Slalom
- Sept. 5- USAC 500 at Ontario
- Sept. 12- AROSC Pizza Rally (see  
page 8.
- Sept. 12 Cal Club Drivers School at  
& 13 Riverside Raceway
- Sept. 18, Regional & National races  
19, & 20- at Ontario Raceway
- Sept. 20 - Slalom of the Stars at  
Universal Studios
- Sept. 26 Riverside Time Trials  
& 27

\*High speed event medical insurance  
will now cost \$5 per car plus entry  
fees.

NOTE: If you have any questions  
regarding slalom events call  
Loren Smith (923-0273) AROSC SCCSCC  
representative for more info.

## Nuvolari 12C-36

Next month's Alfacionada will  
feature an original drawing of  
Nuvolari's 12C Grand Prix Alfa  
Romeo by club member John Burgess.  
Mr. Burgess is Manager of the  
Briggs Cunningham Auto Museum  
and made the drawing from sketches  
he took at the 1936 Vanderbilt  
cup race in New York. Nuvolari  
won the race with an average speed  
of 65.99 mph.

## Beach Party

SATURDAY - AUGUST 29th

Sara and Howard Marshall have  
really done it now - they have  
opened their house to the club  
for a typical Alfa party.

It all starts at 3 pm with a steak  
dinner at 7:30. There will be  
plenty of time for sunning (if  
the sun shines down there),  
swimming, and drinking. Bring  
your own towels and booze, AROSC  
will supply the rest.

We will furnish mix, BEER, chips,  
dip, steak dinner, lots of fun  
and good music all for \$2.00 a  
head.

Don't miss this event. Partying  
is what we do best and this should  
be the biggest one yet!

RSVP by Aug. 22nd to make sure  
we have enough steaks and beer  
-CALL Sara Marshall 374-8188  
Claudia DuFau (714) 521-8218  
Joyce Atkins (213) 340-6773  
BE SURE TO JOIN THE FUN at the  
Marshall's, 3419 Manhattan Ave.,  
Hermosa Beach

## Slalom Column

Alfa cars and drivers are doing  
very well on the slalom course  
this year. After six championship  
events Loren Smith is first in  
Class H and second overall in  
all classes. Karen Smith is first  
in both women's class H and first  
overall. There are only two  
championships to go so here's  
hoping they both come out on top!

Congratulations also go to Vince  
Giobbe and Oscar DuFau who won  
their classes at the Pomona Slalom.  
Unfortunately their wives Elka  
and Claudia weren't there to give  
them some competition. Maybe that  
is why they did so well?

## Rare 2.3

We have word from Leonard Potter of England that he has an excellent 2.3 supercharged Zagato roadster, an "ex-works racing car" for sale at 10,500 pounds. The car is in absolutely showroom condition throughout. Those who attended our January meeting have seen a sister car owned by Briggs Cunningham. Anyone who knows of an interested buyer, contact Tom Atkins or Vince Giobbe.

AROSC Meeting - Aug. 21st at 8PM. We will have a color movie this month on Formula Vee racing including preparation, testing and tear down. Don't miss the meeting - it's a good way to keep up on all of our special events.

## Racing Around

### Trans-Am

July 18 - Elkhart Lake, Wisc.  
Road America TransAm  
Horst Kwech brought the Herb Wetson GTA Team its second win in the 7-race old series. Kwech had previously compiled a string of four secondplaces. Peter Schuster finished second in a BMW 2002TI. The under-2-liter points stand at Alfa 57, BMW 39.

Aug. 2 - Mt. Tremblant, Quebec:  
Lee Midgley took advantage of a last-lap bobble by Horst Kwech to win the St. Jovite TransAm. Kwech led for a total of 28 laps of the 30 lap race. Bert Everett broke the track record passing Kwech on lap 26 but had to pit with a punctured tire, leaving Midgley to chase Kwech. Midgley is running the series on a nonexistent budget, but his Shankle-prepared engine and driving skill are keeping him competitive. Other Alfa finishers were: 3-Jon Norman; 5-Harry Theodoracopulos; 6-Ed Wachs. Alfa now has 66 points to BMW's 42 in the series.

### Formula 1

July 5 - French Grand Prix  
Andrea DeAdamich finally qualified his Alfa powered McLaren on the eighth row of the starting grid. DeAdamich had repeated overheating problems with the engine but finished the race last of 15 finishers.

July 18 - British Grand Prix  
Andre DeAdamich qualified his McLaren Alfa 18th on the grid but failed to start due to a split fuel tank!

Aug 2 - German Grand Prix  
DeAdamich was a nonqualifier at the German Grand Prix. We wish him even more luck and hope the factory can squeeze a few more ponies out of the engine.

### SCCA

July 5 - Riverside National  
1st C Sedan Jeff Kline GTA Jr.  
1st B Sedan Vic Provenzano GTA  
1st BSR Scooter Patrick T33

July 5 - MidAmerica Raceway, Mo. Natl  
2nd C Sedan Dick Davenport GTA Jr  
2nd D Prod. Dave Coman 1750Spider

July 12 - Sears Point, Calif. Natl  
1st B Sedan Vic Provenzano GTA  
1st CSR Tom Evans, Gardner/Alfa

July 4 - Lime Rock, Conn. Natl  
1st B Sedan David Oppenheim GTV  
2nd C Sedan Michael Luftman GTA Jr  
3rd C Sedan David Ammen GTA Jr.

July 19 - Olathe, Kansas National  
1st C Sedan Robert Henson GTA Jr  
1st G Prod. R. K. Knox 1300Spider

July 12 - Texas International  
Speedway, National  
1st C Sedan Dick Davenport, GTA Jr  
1st D Prod. Dave Coman 1750Spider  
1st E Prod. Bill Bagby 1600Duetto

July 19 - Talledega, Ala. Natl  
1st C Sedan Resey Freese 116TA Jr  
1st G Prod. Gordon Ira 1300Spider

## Torque, Horsepower, and Acceleration

BY TOM ATKINS

The relationship between torque, horsepower, and acceleration is undoubtedly one of the most confused topics among sports-car enthusiasts. The most (if not the only) thought most people have on the subject is "horsepower is top end, torque is acceleration". I hope that, after reading this, at least some of the confusion will clear up and it will become obvious that the above theory is, at best, only partially correct. To start with, let us define some terms vital to the understanding of the whole subject:

- TORQUE - is a rotational force, or a force applied to a moment arm, expressed in units of foot-pounds.
- WORK - the result of a force acting thru a distance (ft-lb)
- POWER - a measure of the rate of doing work, hp  
(1 hp = 33,000 ft lbs of work per minute).
- ENERGY (kinetic) - the work done in accelerating a body from some initial velocity to a final velocity. (ft-lb)

For convenience, this discussion on acceleration is divided into two general areas: Instantaneous Acceleration, and through-the-gears acceleration. By instantaneous is meant the actual acceleration at any given vehicle speed. Thru-the gears acceleration is more difficult to predict. The example we will use is the standing-start quarter mile.

First of all, let's straighten out the relationship between torque and horsepower. The two are not at all independent. Flywheel torque is obtainable by dividing the horsepower by the rpm with appropriate conversion factors:

$$\text{TORQUE (ft lb)} = \frac{(\text{hp}) \times \left[ \frac{3300 \text{ft}}{\text{hp min}} \right] \text{lb}}{\text{rev}} \frac{\text{min}}{\text{rev}} \left[ \frac{\text{rev.}}{2\pi} \right]$$

$$\text{TORQUE} = \text{hp} \times \left[ \frac{5250}{\text{RPM}} \right]$$

from this we can readily see that horsepower always equals torque at 5250 rpm. Now let's get down to cases.

INSTANTANEOUS ACCELERATION It is certainly true that acceleration of a body is produced directly by applying a force to it, and in fact, the acceleration produced is equal to the force applied divided by the mass of the body. This is Newton's second law of motion. In the case of a wheeled vehicle, it is the force applied to the road, which is the rear wheel torque divided by the wheel's radius, that produces the acceleration. The confusion comes in when this fact is related to what the engine is doing. One might think, at first, that since the rear wheel torque is the direct producer of acceleration, the highest acceleration will be produced at the highest torque (torque peak) of the engine. This is not true, however, if we have the freedom to change gears at will. At a given speed of the vehicle, the engine can always deliver the greatest torque to the rear wheels at its horsepower peak. Let's take an Alfa 1600 Veloce engine in

Duetto trim as an example. Suppose we want maximum acceleration at 47 mph, which happens to be the speed at 3000 rpm in 4th gear, close to the torque peak of the engine. With an overall gear ratio of 4.55 in fourth gear, the rear wheel torque is  $4.55 \times 115 = 524$  ft lb. If we shift down to second, however, we have about 6000 rpm and are sitting right on our power peak. The engine is producing only 109 ft lb of torque compared to 115 at 3000 rpm, but with an overall gear ratio of 9.08, the rear wheel torque is  $109 \times 9.08 = 990$  ft lb which will produce 88% higher acceleration. You may say yes but we'll get higher acceleration at the torque peak (2900 rpm) in second gear. And that is true but we'll only be going 22-1/2 mph, not the 47 mph we want. There is no way to get higher acceleration at that speed. We can summarize the case of instantaneous acceleration by saying that at any given vehicle speed, the highest acceleration can always be attained at the engine's power peak, not the torque peak. Thus in comparing several engines, the one with the higher horsepower will always be capable of greater acceleration at any given speed, regardless of which has higher torque.

#### THRU-THE-GEARS ACCELERATION:

Acceleration over a range of speed and rpm presents a more difficult problem for comparing the accelerating capability of engines. The principles, however, are the same as for instantaneous acceleration. Where the problem lies is in the gearing. Let's suppose we had a perfect variable ratio automatic transmission that would allow the engine to operate at a constant speed, varying the gear ratio to increase the car's speed. At what rpm should we run the engine? The answer is the same as our previous conclusion: operate the engine at its power peak. The reason is the same - the highest rear wheel torque is always attained with the engine at its power peak. At any other rpm, we can always gain torque by adjusting the overall gear ratio until the engine is at its power peak.

So much for ideal transmissions - what about the real world, and a real set of gears? Now, unfortunately, we must operate the engine at off optimum speeds. How does this affect overall acceleration? Well, let's look at a typical application - the standing start quarter mile. When we go through the traps, our speed indicates how much total energy or total work we have put into the car. Since power is the rate at which we can do work, the higher the average power we produce, the sooner we'll reach the traps. The point here is that it's the overall average power that's important. Essentially, the average power produced is the sum of the power produced each second of the run divided by the total elapsed time. Obviously, the gearing is very important since each second that the engine spends off its hp peak is power lost and, therefore, time lost. Here's where a so-called "high-torque" engine comes into its own. Let's compare two engines with the same peak hp at the same rpm, but one having a higher torque peak (this is entirely possible through differences in valve timing, cam lobe shape, and port design). Now, higher torque at the lower rpm simply means higher hp. In other words, the hi-torque engine has a "fatter" hp curve. Of course, while on their power peaks, each engine is capable of the same acceleration. But while accelerating thru the gears, the high-torque engine will be producing more power at the lower rpm than the other, "peakier" engine. It will therefore beat the "peaky" engine to the traps. If the peaky engine is fitted with a better gearbox, however, perhaps with more ratios, it may still be able to beat the hi-torque engine by operating closer to its power peak, and producing a higher average hp.

In summary, higher horsepower in general means better overall acceleration, but the less optimum the gear ratios, the more important is the torque peak of the engine.

Finally, as a matter of interest, let's look at the accelerating ability of several cars and see how it compares with our theory of power. The total work done in accelerating a car thru the quarter mile, as we have said, is a function of its speed, or E.T.. The work, or energy, is:

$$\text{KINETIC ENERGY} = \frac{1}{2} \left( \frac{W \times V^2}{32.2} \right) \quad (\text{ft lb}) \quad \begin{array}{l} \text{where } W = \text{weight (lb)} \\ V = \text{velocity (ft/sec)} \end{array}$$

The average power produced is the rate at which this work is done, or the work divided by the E.T. (with appropriate conversion factors):

$$\text{Avg. Power} = \frac{1}{2} \left( \frac{W \times V^2}{32.2} \right) \left( \frac{1}{\text{E.T.}} \right) \left( \frac{1}{550} \right) \quad (\text{hp})$$

With this formula, we can compute the average rear wheel horsepower produced by any car accelerating thru the 1/4 mile. For the 1750 DUETTO tested by Road & Track in 1969, its average rear wheel power is:

$$\text{hp} = \left( \frac{1}{(2)(32.2)(550)} \right) \times \left( (2690\text{lb}) \times \frac{(117\text{ft/sec})^2}{(17.3\text{sec})} \right)$$

or 51.5 hp, about 40% of its peak SAE power!

Now to try and correlate quarter mile time against horsepower, we must relate the trap speed to power and ET, and this we can do only approximately. Without the mathematics, suffice it to say that if the power is produced uniformly, the trap speed will be inversely proportional to the ET, and our previous equation then says that the power per unit weight is proportional to one over the ET cubed:

$$\frac{\text{hp}}{W} \sim \left( \frac{1}{\text{ET}^3} \right)$$

$$\text{OR} \quad \text{ET} \sim \sqrt[3]{\frac{W}{\text{hp}}} \quad (+)$$

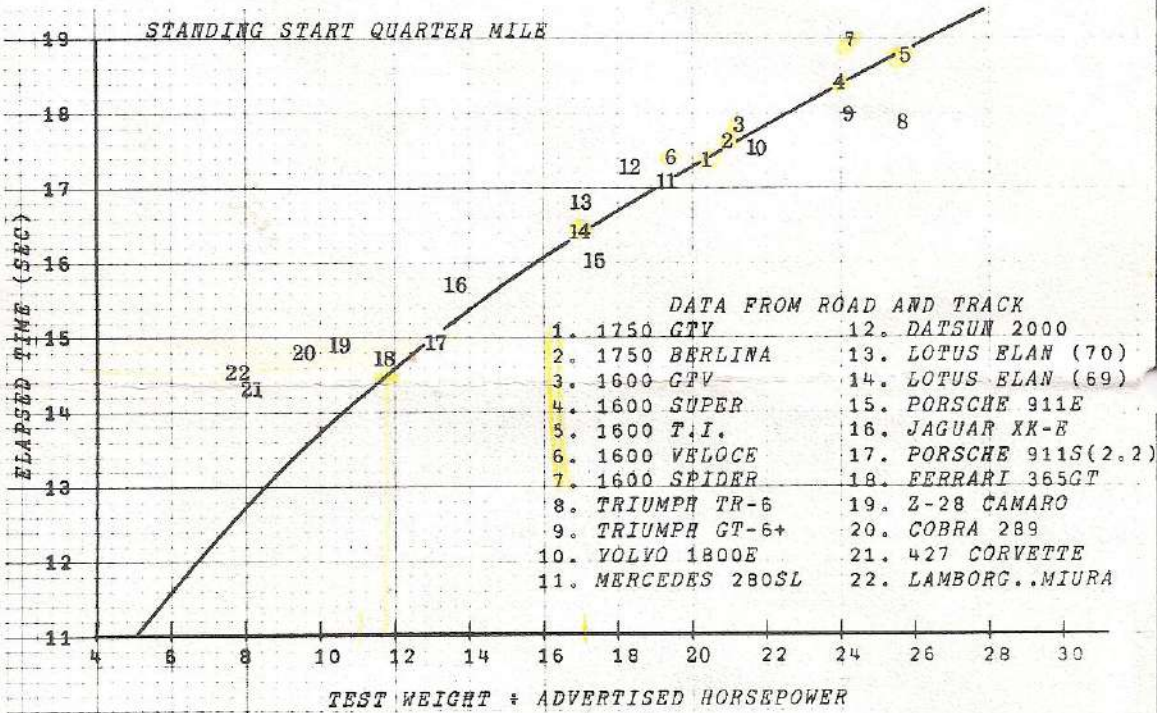
Our hypothesis says that ET is proportional to the cube root of the pounds per horsepower. To test the theory, road test data from Road & Track for 1969-70 is shown in the figure on page 5.

The line drawn is  $\text{ET} = (6.38) \sqrt[3]{(W/\text{hp})}$  using the actual test weight and the advertised max hp.

Obviously the agreement is good and the cube rule seems to be confirmed. Note at the low end of the curve, the scatter increases toward slower times. This is principally due to wheel spin by the hi power machines. Also notice that cars with engines in a similar state of tune with similar gearing (Alfas, Porsches, Lotus) fall very close to the line. Cars may fall below the line (faster) for reasons such as conservative advertised horsepower or exceptionally high ratio of torque to hp (the Triumphs fall in both these categories.) Above the line could be caused by overestimated horsepower, poor gearing, or low ratio of torque to hp. In addition, the faster cars suffer from wheel spin and higher losses due to aerodynamics and rolling friction.

One final note that we can't pass up - Alfa Romeo Inc., in a May news release, lists the Montreal at 230 hp and 2790 lbs curb weight. With no allowances for a driver, or wheel spin, our curve shows that the car should cover the quarter mile in about 14.6SEC. ARI quotes 11.3 sec. Our prediction for a realistic road test (by, say, Road & Track, if they ever get one) is 15.0 sec (Sorry ARI.)

I plan to follow this article with one on top speeds, but if you have any topics you'd like to hear about (or write about) please let us know in a letter to the editor.



### Pizza Rally

Alfa Club Members, remember, Saturday, September 12, Little Lake Park, 8 PM.

This rally is being laid out by an Alfa for Alfas with the idea of making it fun for beginners and interesting for more experienced rallyists. The object

will be to travel from Ye Olde Little Lake Park to Ye Little Olde Pizza Parlor by the most interesting and indirect route as devised by the devious mind of Rallymaster "Hoppy" Hopkins.

Tariff will be \$1.00 per head, rallyist or observer, but the Club is buying the drinks. Prizes will be pizzas.

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#60 #60

7:30- 9.7

CROWELL:  
IMPERIAL:  
TUBINGS:

### For Sale

1958 Alfa Veloce Spider, original throughout, A-1 mechanical and very clean, \$800 - CONTACT Paul Scibetta, 1201 W. Mission Rd, Alhambra, Ca. 91803 289-8236 (213)

'63 Alfa 1600 Roadster, low miles, '66 Veloce engine, new gearbox, AM/FM/Sw, new tonneau. \$1,000 CONTACT Stan Huber, 2041 Swan Dr., Costa Mesa, 92626 (714) 546-3622

\*Wheel spacers made to order - 1/8"@\$2.50; 1/4"@\$3.00; other sizes on request CONTACT Alan Ward (phone numbers below)

\*2 6" steel wheels w/recapped Goodyears, \$30.00

\*4 500 830 14 W tires suitable for recap - \$10.00 each.

\*1965 - 1600 Veloce Race Car - very strong E Prod. contender - latest small port Shankle head, cut down GTA intake valves, 10.6 cams, Forged Tru pistons, all alum. pulleys. Alum fly wheel, light weight close ratio box, limited slip, mag wheels \$2,100...CONTACT Alan Ward Home 645-6945/Work- 536-4752

ALFACIONADA is the monthly publication of the Alfa Romeo Owners of Southern California (AROSC). Subscriptions to this newsletter are included as part of the \$5.00 per year AROSC membership fee. For membership information write AROSC, P.O. Box 261, Los Alamitos, California 90720. Articles, letters, and personal ads are always welcomed for publication and should be received by the editor fifteen days prior to the monthly meeting. Meetings are held the third Friday of each month at Little Lake Park Clubhouse, 10900 S. Pioneer Blvd., Santa Fe Springs, just north and east of the Santa Ana Freeway, at 8 PM. For further information, call Vince Giobbe (President) 831-4904, or Tom Atkins (Editor) 340-6773.

'67-1/2 Duetto, new paint, radio roll bar, comp. seat belts, headlight covers, 6" rims, 27K miles \$2350 CONTACT Gil Jaffe, 12814 Collins St., No. Hollywood 91607 766-3489

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