

CLBCOM 61
OCTOBER, 1995

Squire SS-100 Registry

LEADED GASOLINE

like so many other automotive dinosaurs, will be completely phased out in the United States under Federal law by December 31, 1995. Since the engines in our Squires were designed to use leaded fuel I've done a little research on the subject and offer the following: For many years lead was introduced into gasoline as a lubricant and protective coating between the valve and the valve-seat and to prevent "valve recession", a condition in which the valve beats the valve-seat into the head. The "experts" now tell us not to worry because the valves in our cars have absorbed so much lead over the years that it will act as a lubricant for the remainder of the cars life, an opinion I would doubt if our Squires were daily drivers but may be valid since they are essentially "Sunday afternoon'ers". From time-to-time I have been unable to purchase leaded gas locally and have been forced to buy "regular unleaded" rated as 87 octane that resulted in poor performance and a very noticeable valve ping which is the clarion call of the before mentioned valve recession. Valve ping can be corrected by advancing or retarding the spark but that usually results in poorer acceleration, a solution that I instantly rejected. I have solved it by purchasing the highest possible octane gas, 92 if I can find it, and adding an aftermarket lead substitute available in most automotive parts stores and some gas stations. Should it ever become necessary to give your Squire SS-100 a "valve-job" you can then install hardened valves and valve-seats that are designed to operate with unleaded gasoline.

THE BRAKE AND CLUTCH PEDAL PADS

that our Squires were shipped with continue to wear out and can get a little dangerous when completely gone and your foot slips off the polished steel pad platform. During my recent trip to Boston member Wes Carlson reminded me that I had covered this subject many issues ago and had recommended that you can replace them with the rubber pads from the 1953 Chevrolet pickup, which he has done. It may be possible to order or pick these up from a Chevy dealer but I suspect that it will be easier to get them at any automotive swap meet where you will find independent dealers that specialize in stocking hard-to-locate rubber products. Take what's left of your old one along for reference and please inform me if I have the year and/or brand incorrect. As I recall, I took my 4" angle grinder and altered the metal pad platform slightly so that I didn't have to "force" the new rubber pad into place.

STEERING GEOMETRY

is a subject that I, like most drivers, know little about or even care to learn. When I jump in my new Chevy I expect it to steer properly and not wear out the tires. (Continued)

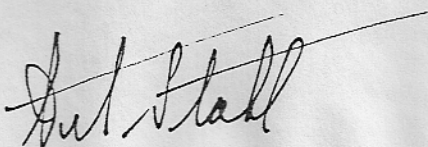
When one of those two requirements change I take it to my favorite front-end alignment shop and get it adjusted. The subject of the way the Squire SS-100 steers also comes up with some frequency and takes two forms, (A) it steers too hard. That's easy to explain with no power steering, big tires and a very heavy cast-iron engine resting on the front wheels. This is correctable with the addition of power steering. (See CLBCOM 54-Page 2). (B) when you make a 90° turn the steering wheel does not return to neutral by itself, you have to steer it back to 0°, not quite so easy to explain and not correctable the way our cars are presently set up. When a builder manufactures a car he sets the front end up one of two ways, (A-1) for daily street use where the driver wants the best steering performance with the least effort on his part, or (B-1) for racing where the driver does not want the steering wheel "doing it's own thing" and returning to neutral by it's self, he wants to steer it back. That, in a nutshell is the way our cars were shipped from the factory. They are set up for racing and this is achieved by the caster angle on the front wheels. To further explain let me quote from an article by Bob Egginton of Automotive Systems Development at Leeds, England. where he discusses conventional steering versus racing steering. " When cornering, you probably have noticed that the steering wheel becomes progressively harder to turn from its neutral, straight ahead position. Once having turned the corner, the wheel then tries to straighten itself out. In fact if you let go, the wheel will spin back to its straight position. This self-centering is a direct result of the caster angle. Dragsters are a prime example of this situation where straight-line stability is all-important to them and very large amounts of caster are evident in their design. At the other extreme, Formula racing cars use comparatively little caster angle and must be constantly "steered" by their drivers even on straight roads".

So, what I'm telling you here folks is that our cars are set up as B-1 and unless you are willing to seek professional assistance with some serious new-parts expense, cutting, rewelding and loss of vehicle for a considerable period of time, my advice is to keep your hands on the steering wheel at all times. When your old bones can't take it anymore you can then do what member Bill Lieske has done and install rack-and-pinion steering backed up with a power pump. I've asked Bill to detail this and it is included here.

THE FATHER OF THE SQUIRE SS-100

Ed Felbin, has responded to member Mike Sher, thanking him for a Squire SS-100 T-shirt and dash plaque that were given to attenders of Squire Sunday-2 and I include a copy here as a matter of general interest.

For those of you that telephone me from time-to-time, Arizona has reverted to Mountain Standard Time. More next month.



SQUIRE SS-100 STEERING AND ROAD HANDLING

BY: BILL LIESKE

The first Squire that I drove was Art Stahl's. I drove the car perhaps four miles one evening and don't remember having real bad vibes about the steering and handling other than difficulty in maneuvering in and out of parking spaces. The second Squire that I drove was John Fulton's. Art Stahl and I had stopped to see John in Dallas on the way back from Fulton, Mississippi to bring my recently acquired Squire home for restoration. I drove John's Squire six or seven miles, as I recall, and remember one specific glitch in the handling. We crossed a rough area in a curved roadway and I noted that the front wheels seemed to lose road contact and jump several inches sideways when we hit a ridge in the roadway.

Many months later I got my Squire rebuilt and running. I noticed a similar poor handling tendency as well as the need for inordinate amounts of arm muscle power to steer at slow speeds, particularly when parking. I took it to a wheel alignment guy, who had a number of negative things to say about the "bastardized front end latch-up." After some discussion, this dude said to leave the car and he would "see what he could do." When I picked it up it seemed to drive fairly well and a few days later, Art and I embarked on a 200+ mile run to Laughlin, Nevada to attend an annual meeting of the Arizona and Southern California kit car clubs. That turned out to be a "white knuckle" experience to say the least! I have written before that Art Stahl tends to have a somewhat heavy right foot. His most typical *trip cruising speed* varies between 65 and 85 MPH (unless a patrol car is in sight!) Old me almost had spasms in both arms and shoulders, driving like an Indy 500 racer, trying to keep up with Art and experiencing the car taking unexpected darts to the left or to the right, each time a bump, patch or pothole of any kind was traversed! I managed to keep out of the ditch for that trip only through sheer determination.

I got under the left front of the car and noticed that the tread on my brand new front *Touring Supreme* radial tires was severely scuffed, worn and feathered toward the inside, indicating a severe case of too much toe-in. "Aha," I mused: "That dip-stick alignment dude ripped me off and mis-adjusted the toe-in!" So, with wrenches from my little tool kit, I cranked the left tie rod a few turns and the car handled much better on the return trip. I drove it that way for a couple of thousand miles without serious added tire wear, but never could relax while driving the car at ordinary highway speeds, *not quite the fun thing that I had expected!* The following April, Art, another car owner and I decided to go on the Annual Route 66 Run through Northern Arizona. I took the car to an apparently competent young alignment guy, to get it in shape for that 400-450 mile trip. He aligned it and pronounced it "A-OK." Although it steered and handled much better, it again wore the front tires rather severely in the first 200 miles. This resulted in once more resetting the toe-in by guess work, which again surfaced the tendency to dart left or right on bumpy or ridged road surfaces and again, however, tire wear decreased as before. What a dilemma!

I decided to try adding a *steering damper*, and found a suitable one to buy from J. C. Whitney. This seemed to straighten the thing out insofar as the pesky left and right darting was concerned, but made turning while parking even harder to do. Sometime later, I decided to have the car repainted, and while the body and painter man and I were making our deal, I mentioned my steering problems. Now, this man is a true genius fiberglass worker and auto painter. He has made the bodies for and has completely built many kit and sport cars, including frames and suspensions for Cobras, Sebrings, etc. he suggested that a Mustang II front end could be put under my Squire. He assured me that he and his mechanic/welder helper could do the job "standing on their ear!" I mulled this around as I stripped all of the trim and stuff off the car prior to taking it to his shop for repainting. We again got into the Mustang II proposition and I opted for it, based on the premise that "....Trust me, the thing will steer, ride and handle like a wet dream!" To further assure this, I went for power steering rack and pinion to enhance easy handling while parking.

Some *seven months* later, I paid the man and brought the car home. When I got to working on the front end I began to find out some most disquieting things. First nothing was tight. The guy used Class 5 standard carriage bolts, nuts and washers. *Class 8 is mandatory* as suspension hardware. The entire geometry, toe-in, caster and camber, was obviously screwed up. I got it in into barely driving condition and slowly drove it to a long established alignment shop. The owner, with 30 years of alignment experience, showed me that my "buddy" had put in worn, used ball joints and rubber bushing mounts and arranged the "A Frames" and stabilizer bars such that it was impossible to align the car

properly. In addition, the positioning of the steering rack and pinion relative to the lower "A frames" was such that poor and possibly dangerous handling and excessive tire wear would most certainly result. After driving the car back home and parking it, I put a considerable dent in a bottle of scotch while asking myself how a 72 year old guy could be taken in so thoroughly..... To make matters worse, the guilty party turns out to be in deep financial problems due to poor business judgements, too many ex-wives and girl friends, etc.. He truly fits the description of your typical turnip that you can't get blood out of. After getting over my initial ego shock I began to collect information about front end geometries. I learned enough to study the situation out and determine what had to be done, then straightened the mess out with the able assistance of a friend, Greg Whitney, who is a kit car builder, all around expert mechanic and master welder.

By the way, Peterson's KIT CAR Magazine has a neat article on Pages 80 thru 83 the November 1995 issue that very well covers this subject. This info applies to most, if not all, of the Squires now in operation with the possible exception of mine and Ben Cunningham's, which also has a Mustang II front end conversion. Sid Weaver has installed power steering, using the cylinder, pump and other parts from a 1979 (?) Mercury Monarch and reports very satisfactory improvements in handling and parking operations. Permit me to cover some of the nuances of front end geometry.

Camber. This is the angle, in degrees, at which the wheel leans in or out with respect to vertical, when viewed from the front of the vehicle. Depending on the nature and type of springing and suspension, camber can be either negative or positive. *Positive camber* is provided when the top of the wheel leans away from the car's centerline, *negative* being the opposite. A wheel having zero camber is 90 degrees to a flat and level road surface. Modern vehicles now mostly have from 0.5 degrees positive to 2 degrees of negative camber. This was determined by the findings that relatively soft sprung vehicle bodies have a tendency to roll during a turn and this amount of camber tends to stand the tire upright where a larger tire tread contact is made with the road surface. Specifications for the '72-'73 Ford Maverick, the original Squire front suspension, is shown as + 0.5 to -1.625 degrees and the same for the Mustang II front end.

Caster. This is the angle of the "king pin" or a line drawn between centers of the suspension ball joints, in degrees, that the top of the king pin or upper ball joint lags the bottom king pin or lower ball joint as viewed from the side of the vehicle. With proper caster, the rolling wheel will align itself in the direction of forward movement, much as the caster on a bed frame or a grocery cart. Caster angles are usually between 1 and 4 degrees on modern passenger vehicles and light trucks, and most often this is designed into the vehicle's suspension geometry. The greater the amount of caster provided, the greater is the tendency of the steering to "self center" after having turned a corner while in motion. Passenger cars and light trucks usually have larger caster angles than racing vehicles, formula cars, dragsters and heavier trucks. Directional stability in light passenger and utility vehicles makes driving more stable, requiring less effort and less need for full "hands-on" steering, as deemed desirable in high performance and racing vehicles. It would appear that a proper caster angle for the Squire is between 0.875 and 1.25 degrees, as this is the range specified for both Maverick and Mustang II alignment.

Toe-in. Toe-in is the difference, in inches (in U. S. vehicles), between the centerline of the tread of the standard tire size as measured in the front of the tires and the rear of the tires. Toe-in is almost always a negative number such as 0.125 inches as specified for the Mustang II or -0.125 to 0.225 for the Maverick, depending on tire size and width. As implied, the front *toes in* with reference to the rear of the wheel in a static measurement. The accumulated slack in steering ball joints, suspension, rubber stabilizer bushings and other elements when submitted to the thrust of the wheels with the car in motion, bearing, brake shoe (or pad) drag, etc. tends to bring the wheels into ZERO toe in when the vehicle is in motion. With correct toe-in handling is at best and tire wear is kept to minimum.

Conclusions Being hand built, no two Squires are exactly alike, each one handling and steering differently. If you are experiencing any of the kinds of problems that I have described, *drive slowly* to a competent and understanding full service auto frame and front end shop. If you are willing and able to pay the price, a custom Mustang II conversion with power assist, properly installed, will run you from \$1,500 to \$4,500 depending on your part of the USA and how much of the work you can do yourself. Despite all of the messing around, I feel that mine was worth the trouble and expense. The car now handles just great. The alternative is to come up with a conversion like member Sid Weaver developed (cost under \$200.00, do-it-yourself), otherwise consider that parking your Squire is part of your continuing body building regimen, particularly, your upper torso.....Call me at (602) 978-2207 if I can add anything to this.

Bill Lieske

(10/21/95)

EDWARD FELBIN
296 ST. JAMES PLACE
PHILADELPHIA, PENNA. 19106

October 4, 1995

Dear Michael:

Many, many thanks for the dash plaque and the SQUIRE T shirt. Both were a big surprise and much appreciated.

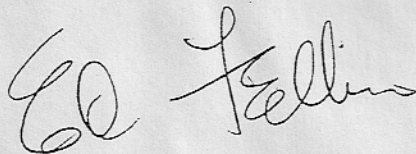
I hope that someday I can attend an owner's get together. My work schedule is pretty full - I run my own advertising agency during the week and do a talk show on Saturdays and Sundays on Philadelphia's top talk station, WWDB (96.5 FM).

Before getting involved in the manufacture of the SQUIRE I was co-founder and co-owner of the Music Fairs, one of which is the Westbury Music Fair in Westbury, L.I. as well others in Valley Forge, PA, Cherry Hill, N.J. Suburban Baltimore and Suburban Washington. In addition, we produced several shows on Broadway and a number of National Tours of Broadway shows.

Last week I celebrated my 79th Birthday and have no intention of slowing down. My wife is Lynne Abraham, the well known District Attorney of Philadelphia and all our activities keep us busy.

Please extend my sincere thanks to the members of the club for keeping me informed about your activities. It's most flattering!

With all good wishes,

A handwritten signature in cursive script, appearing to read "Ed Felbin".

We're leaving for two weeks in Europe this coming Sunday