

June 03, 2005 - Ventura Cruise Night  
Chuy's 2632 East Main Street, Ventura, California  
<http://www.sv2s.com/>

June 04, 2005 - North West Bug Run  
Woodburn Drag Strip, Oregon  
[collonsr@msn.com](mailto:collonsr@msn.com)

June 05, 2005 - Pomona Swap Meet  
Pomona, California  
: <http://www.pomonaswapmeet.com>

June 09, 2005 - June 12, 2005 - VTO Classic Weekend Campouts and caravan  
Black Star Canyon, California  
For Info Please Visit <http://keepitstock.com>  
or e-mail [Stan@vtobusclub.com](mailto:Stan@vtobusclub.com)  
or [Steve@vtobusclub.com](mailto:Steve@vtobusclub.com)

June 10, 2005 - June 11, 2005 - 5th Annual LIMBO on Long Island Campout  
Riverhead, Long Island, New York  
<http://arasso.tripod.com/> or email Andrea and Brad at: [rassovw@hotmail.com](mailto:rassovw@hotmail.com)

June 11, 2005 - GROOVE's 11th Annual June Bug Jamboree  
Springfield's Chesterfield Village Shopp, Missouri  
<[www.groovenvws.com](http://www.groovenvws.com)> or contact Bruce (1-417-849-9080)

June 11, 2005 - Jim's Buggy Parts show 2005  
Nashville, Michigan  
[www.jimsbuggyparts.com](http://www.jimsbuggyparts.com)

June 11, 2005 - NASA Championship VW Drag Racing Schedule  
Sacramento Raceway, California  
[www.nasavwdragracing.com](http://www.nasavwdragracing.com) or call 916-952-6568

June 12, 2005 - Baddest VW's on Earth Contest @ the Classic  
Irvine, California  
866-786-7369

June 12, 2005 - VW CLASSIC  
1-714-544-1759 or go to BUGIN.com

July 30, 2005 - 5th Annual Mother Lode VW Show & Swap  
Utica Park, Angels Camp, California  
Visit our website <http://vwswap.com>, email us at [info@vwswap.com](mailto:info@vwswap.com) or call 209/736-6731 for more information.

July 31, 2005 - Bugs and Buses By Barnegat Bay 2005  
Lavallete, New Jersey  
BUGS AND BUSES BY BARNEGAT BAY 2005  
Call to register: John Pickens  
phone: (908) 307-6334  
Email: [j.pickens@usa.net](mailto:j.pickens@usa.net)  
Pre-registration not Required (but it helps)  
no dogs or pets allowed

July 23, 2005 - The Inaugural Shawshank Porsche/VW Extravaganza!  
Mansfield, Ohio, Ohio  
[ohiotubfan@cs.com](mailto:ohiotubfan@cs.com) or go to [www.ohiotubfanatics.com](http://www.ohiotubfanatics.com) - calendar of events.

July 17, 2005 - Pomona Swap Meet  
Pomona, California  
Large CA swap meet, find the parts you need for your VW!

More information at: <http://www.pomonaswapmeet.com>

July 16, 2005 - July 17, 2005 - The All Air-Cooled Gathering  
Flanders, New Jersey  
Swim and Sport Club of Flanders  
272 Emmans Rd., Flanders NJ 07836  
Sponsors needed, Please contact: [www.cjvwsii.com](mailto:www.cjvwsii.com) or Arthur Neary [pocketsmc@yahoo.com](mailto:pocketsmc@yahoo.com)

July 09, 2005 - NASA Championship VW Drag Racing Schedule  
Sacramento Raceway, California  
NASA Championship VW Drag Racing Series.  
[www.nasavwdragracing.com](http://www.nasavwdragracing.com) or call 916-952-6568

July 01, 2005 - Ventura Cruise Night  
Chuy's 2632 East Main Street, Ventura, California  
<http://www.sv2s.com/>

August 28, 2005 - Pomona Swap Meet  
Pomona, California  
Large CA swap meet, find the parts you need for your VW!  
<http://www.pomonaswapmeet.com>

August 28, 2005 - 2nd Anniversary Jeff Madden Memorial Cruise/BBQ  
Sacramento to Bay Area, California  
[rhdragtop@yahoo.com](mailto:rhdragtop@yahoo.com) or (916) 962-2523 Thank You Kyle Madden

August 27, 2005 - Familienfest 11  
Vista, California  
Overnight camping available on Friday night ONLY before the show  
Camping is dry no hook ups or fires  
\$10.00 = 1 car and 1 person.  
\$7.00 per each additional person  
Limited space available  
Must pre-register for camping  
Call (619) 741-2484 or e-mail at [davidsv2s@cox.net](mailto:davidsv2s@cox.net)

August 27, 2005 - 2005 Bilco Auto Expo  
Northway Christian Community Church, Pennsylvania  
no contact information

August 21, 2005 - Big Bug Shootout #1  
Near Greensboro, NC, North Carolina  
[www.sevwa.com](http://www.sevwa.com) 229-896-4957 or 919-616-1039  
More information can be found in the schedule section of the website listed above.

August 13, 2005 - WagenFest 05'  
Hopkins, Michigan  
[www.greatlakesvolkswagenassociation.com](http://www.greatlakesvolkswagenassociation.com)

August 13, 2005 - NASA Championship VW Drag Racing Schedule  
Sacramento Raceway, California  
NASA Championship VW Drag Racing Series. DOUBLE POINTS RACE!!  
t [www.nasavwdragracing.com](http://www.nasavwdragracing.com) or call 916-952-6568

August 06, 2005 - Bugmania #4  
Fayetteville Motor Sports Park, North Carolina  
Warren Hill or Ron Hubbert @ [warrenhill@yahoo.com](mailto:warrenhill@yahoo.com) or [landsharkracing2387@yahoo.com](mailto:landsharkracing2387@yahoo.com).

## 2005 Air Cooled VW Area Shows (continued)

(if I've missed any - let me know!)

## 2005 Kit Car Shows

*I know there must be regional specialty shows -  
contact me and I'll list them!*

April 23-24 Knotts Berry Farm, Buena Park, CA  
[www.knotts.com/](http://www.knotts.com/) / contact Harout Markarian [glassbod@aol.com](mailto:glassbod@aol.com)

May 20-22 Import & Replicar Show, Carlisle, PA  
[www.carsatcarlisle.com](http://www.carsatcarlisle.com)

September 10-11 NCKCC Show, San Leandro, CA  
contact Vern Hance at [NCKCC@astound.net](mailto:NCKCC@astound.net)

*Thanks to Shane for the link to the NCKCC info;  
I'll be at the Carlisle show this year - no rain please!*

## Feedback!

Your spot to post comments, questions, whatever! Please help me help you in making this 'rag' better. The overall layout will change with each issue, depending on amount of information provided buy you, the owners, and what I can dredge up. If I've missed anything or there is an error for your information, please email me! Thanks! Submissions for the August issue accepted!! Look for upcoming spotlight articles on other member's cars, build tips and more! There's too many !!! aren't there??

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# NATIONAL STERLING OWNERS ASSOCIATION

Premier Issue: April 2005  
printed quarterly

### Letter from the editor

*It's not very often that a group of enthusiasts can get together on a project, and have it come to fruition. We share the common trait of a little bit of lunacy for getting ourselves and/or our significant others into trouble with our projects. For most of us, our cars are our respite from the daily grind, even though we usually wind up cussing at it for one reason or another. We struggle to get the motor running well, the paint to shine, and the rust to stop. And when we do, and lift the canopy for the first time on a warm sunny day in a crowded parking lot, it makes the angst all the more worthwhile. Welcome to the world of the Sterling, and it's siblings. We are a unique crowd!*



### WELCOME

Welcome to our first newsletter! As a Sterling, Sovran, Sebring, Nova or other variant owner or owner-to-be, you already are aware of how exclusive a club you are a member.

When the first Nova/Sterlings arrived on the scene in the early '70's nothing like them had ever been seen. Its styling is so far ahead of its time that, even today in the 21st century, people call it a car of the future, a space ship on wheels. There are plenty of cars that people have said look like they are going fast just being parked, but few that you can say that about and truly mean it. The Sterling is one of that rare breed.

Our mission is to extend a hand to the American owner and dreamer. To form a community no matter how spread apart we may be. The cyberworld and our shared passion for this one automotive phenomenon binds us together.

It is our hope that, as a community, we can enhance each of our cars through shared experience, ideas and creativity, each benefitting from the experience of the others. We want to create an open forum and exchange of thoughts, plans, ideas and shared triumphs.

The Sterling has been a sleeping giant in the Kit Car world for too long. The prospects of new owners who may have the desire to bring this unique design back from oblivion and our common enthusiasm can be the formula for an explosion of attention. Make no mistake: To set the American market on its head once again, it will take all of us. This is just the beginning. Glad to have you aboard!

*Steve Silverstein*  
Ronkonkoma, NY

# Sterling FEATURE STORY

## A DREAM TO BE DIFFERENT REALIZED

When I was 14, I visited a friend's house and, much to my surprise, found out that he was rebuilding a car. Heck, I was still hotrodding my AFX cars and hoarding the Matchbox collection I'd built throughout my childhood. He was 15 and had owned the car since we were 12. It was a 1955 Chevy Bel Air. Though I was an avid auto enthusiast (what 15 year old boy isn't?), it had never occurred to me that age was no reason to keep me from getting my first car, but money was. I didn't get my first car till I had a driver's license at age 17.

That first car was 1966 Fury 3: manual steering, manual drum brakes and three speed on the column, not the easiest car to drive, especially since I had never driven a standard shift before. I loved it. That car left a mean stretch of rubber thanks to the venerable Dodge 318. The Fury came and went, and I realized that I had a love of anything automotive that was different (little did I know that the word "different" would shape much of my car-buying future). It didn't need to be antique or powerful, just different. So began a long line of "different" cars.

Next was a 1970 Skylark. I customized its interior from odds and ends found in friends' backyards and various junkyards. Then came the '69 Skylark I found in a junkyard that just needed a water pump (and a mean set of slotted rims). Soon after followed a '77 Grand Prix (neat two-tone paint), '66 Thunderbird, '73 Charger SE (with Bumble Bee stripe, of course), a '68 Charger, a 5-speed '88 Thunderbird Turbo Coupe (terrific hood scoops on that one), '77 Corvette (still miss that one), a 1960 Cadillac (incredibly long with huge fins), a 15th Anniversary Hurst Olds (love those Lightning Rod shifters) and then a 1965 Thunderbird (the first engine I ever rebuilt myself -- probably my last). I loved all those cars, but as I've gotten older, I've learned that for the budget I generally have, my mechanical knowledge and skill, collectible and antique cars could never satisfy my need for something different to drive. Week after week I'd take my car of the moment to cruise nights and car shows, and park it in line with five or six others just like it. Sure, they'd be different colors, they'd have different options and be in different states of restoration, but I was just one of many. I wanted to generate a crowd, a group of spectators that had never seen anything like the vehicle I had pulled up in. I'm a showman at heart. I was looking for the kind of car that attracts a crowd, not one that is part of the crowd. Next stop: eBay.

First I thought I'd set my sights on a Mad Max replica (I still want one). I contacted a company that imports the base car from Australia (a mid-'70s Ford Falcon XB GT) and found a few companies that reproduce the bits and pieces to build your own Interceptor. Once again, however, my limited abilities would keep me from building one myself, and the cost to pay others for the work far outstripped my budget. Another dream dashed.

I sat down and decided to take a closer look at what I was looking for. I listed the attributes and looked for a car that fit them instead of trying to find a car and then make it fit as I was looking for.

1. It must be different than the usual classic, antique or muscle cars that are so prevalent in my area of the U.S.
2. I must be able to customize/personalize the vehicle without having people say things like, "Nope, that's not original. Too bad. It's a nice car except for that." I was really sick of being trapped in the "Restoration Box."
3. Mechanical parts must be easily accessible. (Doing the brakes for my '65 Thunderbird required a 7-10 day wait while the pads came in from other parts of the country!)
4. The car must be fuel-efficient.
5. The car must be different. (Yes -- this is so important that it counts twice in this formula.)

All of this led me to the Kit Car world. Not being sure where to start, I went to eBay where I had purchased my Hurst Olds. I had made peace with the fact that I may not be able to actually see or touch the car before I owned it. I expected that what ever I purchased would be much worse than the seller would admit to and figured I'd bid accordingly.

One night while scanning the endless listings of Lambos, Shelby's and Lotus 7s that you always find, I saw it: the sexiest car I'd ever seen in photos or real life. It was called a Sterling and it was turbo charged with a beetle motor. This car featured my favorite, the classic slotted mags and, boy, did they make it look mean! The car was silver and seemed ready to drive. As I watched the auction progress over the week, I waited for my chance to bid -- usually in the final 30 seconds. With my friend the stopwatch by my side, I waited patiently for those final seconds to arrive. In the end the price was about \$1,500 more than I was prepared to spend but I knew I had found my next toy.

Weeks, months went by as I scanned the listings. Finally another one came up. The seller said it ran but not for any length of time; it had been in storage for more than three decades. It probably needed a carburetor and also had a charging problem. I sent a few requests for some specific photos and received them all within 24 hours. The car was in Indiana and I am in New York so I wanted to be sure all my questions were answered before I placed a bid. As the week went by, it became obvious that there were at least three other bidders interested as their names kept alternating as the highest bidder. Then came those final seconds: I typed in my top price and took the auction with just the one bid -- and it didn't take all my money to do it. I later found out that the other guys were shocked that I came out of nowhere to take the car that each of them was sure they'd win.

Next question: how to get it half way across the U.S., back to the Internet. I settled on Interstate to transport the car (they do all the Barrett Jackson auction cars). In the trailer with my Sterling was a million dollar Bugatti. The driver said he'd seen all types but never anything like the Sterling; he was quite impressed. My Sterling arrived two days before Thanksgiving in 2003. It was actually much better than I expected. It even was set-up for heat, important when you live in New York.

By July 1, 2004, I had restored the car to road-worthiness, then the cosmetics and fun stuff could begin. More than a year since its arrival, I still have lots to do (I don't think I'll ever be done), but the Sterling is all that I could've hoped for. It's very different, always attracts a crowd (even while getting gas) and it sure is easy on the budget to run.

If you're on Long Island and stop in at any of the several weekly cruises, look for me. I'll be the one with the crowd around his car and his dream realized.



Steve's ride

# 2005 Air Cooled VW Area Shows

\*as reported from theSamba. Not responsible for typographical errors.

April 29, 2005 - Small Country Campout  
Louisia, Virginia

<http://hometown.aol.com/vwtgs/myhomepage/index.html>

April 24, 2005 - Pomona Swap Meet  
Pomona, California

More information at: <http://www.pomonaswapmeet.com>

April 24, 2005 - 7th Annual Volkswagens at the Beach  
South Beach Regional Plaza, Jacksonville, Florida  
Tom at 904-635-1137 or [sewvjaxchapter@aol.com](mailto:sewvjaxchapter@aol.com).

April 24, 2005 - 14th Annual Vintage VW Spring Festival  
Bob Baker Volkswagen 5500 Paseo Del Norte, California  
Limited to stock Air-cooled VW's (1939-1979)  
(619) 741-2484 or [davidsv2s@cox.net](mailto:davidsv2s@cox.net)  
Pre-register your VW by calling (619) 741-2484

April 24, 2005 - 11th Annual VW Spring Fling  
Madera Fairgrounds-1850 W. Cleveland Ave, California  
Event info: Gary (559) 264-1256... Liz/Kelly (559) 299-3620.  
Flyer at [www.centralcoastvwclub.com/maderialyer.pdf](http://www.centralcoastvwclub.com/maderialyer.pdf)  
Email at [Garyclifford@clearchannel.com](mailto:Garyclifford@clearchannel.com)

April 23, 2005 - April 24, 2004 - TEXAS VW CLASSIC  
Fredericksburg, Texas  
[www.texasvwclassic.com](http://www.texasvwclassic.com)

April 22, 2005 - VW4LIFE/WILD WEEKEND  
Tampa bay area, Florida  
[www.inertia.org/space](http://www.inertia.org/space) to preregister your car: [vwcadets@aol.com](mailto:vwcadets@aol.com)

April 17, 2005 - Kelley Park Spring Meet  
San Jose Historical Museum, California  
<http://www.geevvca.org/>

April 17, 2005 - VWFixx Fest 2005  
Bradenton Motorsports Drag Strip, Florida, Florida  
<http://www.vwfixx.com/fixxfest> - <http://www.vwfixx.com/fixxfest>

April 17, 2005 - VWFixx Fest 2005  
Bradenton Motorsports Drag Strip, Florida, Florida  
no contact information

April 16, 2005 - PHOENIX Bug-O-Rama #31  
Firebird International Raceway Park, Arizona  
[www.bug-o-rama.com](http://www.bug-o-rama.com)

April 16, 2005 - April 17, 2005 - Bug-a-Pal&#252;za  
Chattanooga, Tennessee  
<http://www.volksfolks.org/>

April 16, 2005 - Bring Your Own Bus '05  
Aromas, California  
Taylor at [norcalriviera@gmail.com](mailto:norcalriviera@gmail.com)

April 14, 2005 - April 17, 2005 - EVERYBUS  
Hagen Stone Park, Greensboro, North Carolina  
<http://www.everybus.com>, re!!

April 10, 2005 - BUG-IN 32  
Fontana, California  
For info call 714/544-1759 or go to BUG.IN.com

April 09, 2005 - Oklahoma VW Cruisers Show-N-Shine  
Oklahoma City, Oklahoma  
Cable Volkswagen  
4710 NW 39th Expressway(Route 66)  
Oklahoma City, OK 73122

April 09, 2005 - cruise to the battleship  
mobile, Alabama  
cruise to the battleship

April 03, 2005 - NASA Championship VW Drag Racing Schedule  
Sacramento Raceway, California  
[www.nasavwdragracing.com](http://www.nasavwdragracing.com) or call 916-952-6568

April 03, 2005 - Fast Times at Farmington #3  
Near Winston Salem, NC, North Carolina  
[www.sevwa.com](http://www.sevwa.com) 229-896-4957 or 919-616-1039

April 02, 2005 - Shaddai Shrine Center Car Show  
Panama City, Florida  
For Car show info email [AmericanMuscleCarClub@comcast.net](mailto:AmericanMuscleCarClub@comcast.net) or call (850) 624-0180.  
For Swap meet info email [MCTATOR@knology.net](mailto:MCTATOR@knology.net) or call (850) 785-6660

April 02, 2005 - Buggy Blast 3  
Belton, Texas  
[www.texasmanxclub.com](http://www.texasmanxclub.com) [texasmanxclub@aol.com](mailto:texasmanxclub@aol.com)

April 01, 2005 - Ventura Cruise Night  
Chuy's 2632 East Main Street, Ventura, California  
<http://www.sv2s.com/>

April 01, 2005 - April 03, 2005 - ABC Whetstone Campout  
Whetstone, Arizona  
<http://www.arizonabusclub.com/home/default.aspx>

May 29, 2005 - SEVWA's Southern Challenge #2  
US 19 Dragway in Albany, Georgia, Georgia

[www.sevwa.com](http://www.sevwa.com) Kathy 229-896-4957 Keith 919-616-1039 [sevwa@sevwa.com](mailto:sevwa@sevwa.com)

May 27, 2005 - May 28, 2005 - Bug Blitz/ Bus Blast 2005  
Lawrence, Kansas  
[www.mokanvwclub.org](http://www.mokanvwclub.org) or email at [wjkmrk@sunflower.com](mailto:wjkmrk@sunflower.com).

May 22, 2005 - MVVC 18th Vintage Volkswagen Festival  
Ypsilanti's Depot Town, Michigan  
Contact ED KARMANN at [edk@mvvc.net](mailto:edk@mvvc.net) or call after 6:00pm est 231-548-5691

May 22, 2005 - 2005 Nuclear Show-N-Glow  
West Richland, Washington  
For more information go to <http://www.midcolumbiavwclub.com>  
or call 509-735-1452

May 21, 2005 - NASA Championship VW Drag Racing Schedule  
[www.nasavwdragracing.com](http://www.nasavwdragracing.com) or call 916-952-6568

May 20, 2005 - May 22, 2005 - Buses by the Beach.com Spring Benefit  
Grand Rapids, Michigan  
[www.busesbythebeach.com](http://www.busesbythebeach.com) for all the info.

May 20, 2005 - May 22, 2005 - 3rd Annual Ozark Volkswagen festival  
Mountain View, Arkansas  
[www.ozarkvw.com](http://www.ozarkvw.com) or Call toll-free 1-877-673-1049 and ask for J.W.

May 20, 2005 - May 22, 2005 - 3rd Annual Ozark Volkswagen Festival  
Mountain View, Arkansas, Arkansas  
For information call 1.877.673.1049 or 870.269.9597  
Email: [info@ozarkvw.com](mailto:info@ozarkvw.com) Web: [ozarkvw.com](http://ozarkvw.com)

May 15, 2005 - 7th Annual Greenbelt Volkswagen SPRINGFEST  
7997 Kennedy Road Unionville, Canada  
Natale [natale@greenbeltvw.com](mailto:natale@greenbeltvw.com) or at 905-477-2421.

May 14, 2005 - Dr.Freakinstiens TwistedCircus of Autorama Carshow  
Bantam Chef restaurant, South Carolina

May 07, 2005 - vws on the square  
prescott, Arizona  
702-631-9026 tom

May 07, 2005 - Three Bugs in a Barrel 2005  
Country Fair Entertainment Park, Medford, New York  
<http://www.livc.net/tbiab>

May 07, 2005 - olddominion air coolers all vw show  
contact: [www.olddominionaircoolers.net](http://www.olddominionaircoolers.net) for information

May 06, 2005 - Ventura Cruise Night  
Chuy's 2632 East Main Street, Ventura, California  
<http://www.sv2s.com/>

May 06, 2005 - May 08, 2005 - Central Coast Show 'n Shine Weekend  
Paso Robles/Atascadero, California  
Friday May 6th - 5:30pm to 7:00pm  
Saturday May 7th - 8:00am to 3:00pm  
Sunday May 8th - 9:00am to 1:00pm  
Road Rally  
Atascadero Lake Park, Atascadero, CA  
<http://www.centralcoastvwclub.com/id4.htm>  
or call Brian 805 239 1619

May 01, 2005 - Cruise for the Cure 2005  
Kent start's at Franklin's shop, Washington  
no contact information

continued on back page

## Useful Websites:

VW based info

- [www.CIP1.com](http://www.CIP1.com) (VW performance parts)
- [www.CBPerformance.com](http://www.CBPerformance.com) (VW parts)
- [www.theSamba.com](http://www.theSamba.com) (forums)
- [www.ShopTalkForums.com](http://www.ShopTalkForums.com) (forums)
- [www.kitcar.com](http://www.kitcar.com)
- [www.KitCars.com](http://www.KitCars.com)
- [www.kitcarclub.com](http://www.kitcarclub.com)
- [www.thebugshop.org](http://www.thebugshop.org)
- [www.nova-international.net](http://www.nova-international.net)

# Tech Tips Con't

## SLOPPY STEERING

Now let's check the steering. Start by lowering the vehicle. Your front wheel bearings are still tight (ie, all the play has been taken out; see the previous procedure). Your ride is parked, wheels on the ground, engine off, e-brake set. Reach in through the driver's side window and use ONE FINGER to turn the steering wheel.

How far did it go before you felt resistance?

That's too far :-)

It should only go about ONE INCH. Time to go find your partner, because diagnosis of steering problems takes two people, one to move the steering wheel, the other to figure out where the lost motion is going.

Your steering gets sloppy because of accumulated wear, mostly in the steering gearbox. See that little adjusting screw on the steering box?

LEAVE IT THE HELL ALONE. That governs engagement of the roller with the worm and odds are, it's okay. (The roller adjusting screw wanders around from model to model. It's on the top of the steering gear box in bugs, on the side for buses.)

There are three main places for wear to accumulate inside the steering gearbox. Two of them are on the roller, the other is axial play in the worm, which accumulates wear more rapidly than the others due to the gear ratio between them. But in recent years an entirely new problem has cropped up, one that is due entirely to age and as such, is not covered in any of the manuals.

On early bugs & Ghias the steering gear is connected to the steering wheel through a compliant coupling. Before you start adjusting anything, inspect the coupling.

That takes two people, one to move the steering wheel while you inspect the coupling. What you're looking for is any deterioration of the rubber puck in the universal joint. Also inspect for any motion on one side of the coupling that does NOT get transmitted to the other side.

Make sense? The coupling is a rubber disk. Two bolts hold it to the steering wheel shaft, another two hold it to the steering gearbox. If the coupling is bad you end up with a lot of play in your steering wheel even though there is absolutely nothing wrong with your tie-rod ends or steering gear.

So check it. Look for axial motion in the gear box shaft as the steering wheel is turned. (If the steering joint looks suspicious, pull the fuel tank and examine it more closely.) (Note: Axial means in & out; motion along the axis of the part. Radial motion means movement ACROSS the axis of the part; along the radius of the part.)

Early VW steering uses a worm & roller arrangement and is meant to be periodically adjusted to accommodate wear. The worm gear is on the end of the shaft to the steering wheel; when you turn the steering wheel you rotate the worm gear. The worm gear engages a roller gear that gets pushed from side to side as the worm turns.

The side-to-side push is what's used to move the wheels.

Most of the slop in your steering gear is due to wear on the shim at the upper end of the worm gear and is adjusted by loosening the large lock-ring on the bottom of the steering gear box then turning the deep multi-point socket-type adjusting nut. Odds are, you don't have the wrench for the locking ring nor the socket for the adjuster.

But you can make both of them.

To make a wrench, draw the shape of the nut onto a suitable piece of steel then use the best available means to create the hole. The usual procedure is to drill a series of small holes then hold the blank in a vise and use a chisel to 'connect' the drilled holes. Once you've made the opening you simply file the hole to fit. Since you probably will be using mild steel, make a box-end rather than an open-end wrench.

The internal multi-point socket can be made using any commonly available METAL-FILLED epoxy. To keep the epoxy from sticking to the nut, spray the cavity with silicone lubricant. The keep the epoxy from oozing out before it cures, use tape to secure waxed paper & cardboard over the epoxy. To provide a means of turning the newly molded socket, you may insert a large-diameter coupling nut into the epoxy or fabricate a more elaborate matrix by welding a nut to a steel plate ground to almost fit the socket. In this latter case the metal-filled epoxy must bond to the matrix so provide plenty of keying surfaces and keep the matrix perfectly clean.

The adjustment is straight forward: Take up the slack until you have the spec'd one-inch of play measured at the steering wheel. There is some interaction with the roller gear so you may need to make a SMALL adjustment there as well. But be careful. You can force the roller into such tight engagement with the worm that it will cause the steering to bind. You'll discover this when you go around a corner... and keep right on turning, up over the sidewalk, through the drugstore and back out onto the street, round-and-round you go. It can ruin your whole day.

The Haynes manual (#159) does an especially good job of illustrating the steering gearbox adjustment procedure.

Lost motion in your tie-rod ends usually appears as the rod-end being pushed up or down or leaning to one side instead of smoothly transmitting the push or pull. If you grasp the suspect rod-end in your fist and squeeze tight while your partner moves the steering wheel, the play in the rod-end will be clearly evident.

Replacing tie rod ends are a no-brainer. You unscrew the old ones, screw in the new ones. But there are a couple of Gotchas! The first is how to get those suckers apart and here again, you need the proper tools. One tool you DON'T want to use is the beloved 'pickle-fork'. (You'll end up bending a tie-rod.)

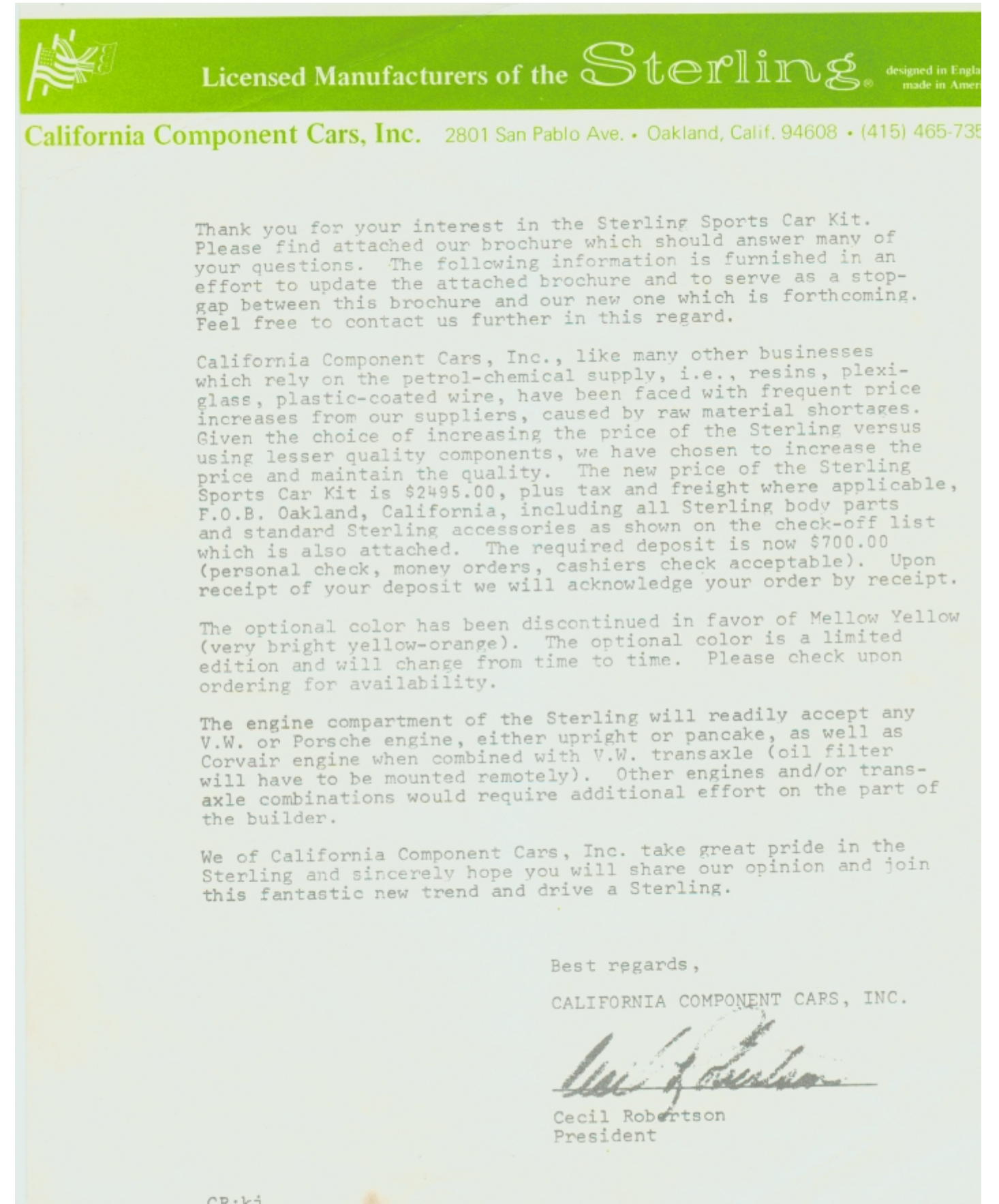
The proper tool for popping loose ball joints and tie-rod ends is a fulcrum-type press. You slide it on the joint, turn the big bolt then give the SIDE of the eye a sharp rap with a SMALL hammer. The shock causes the stressed parts to pop apart like magic. You loosen the nut but leave it on the fitting to protect the thread.

Nowadays its getting hard to find just the tie-rod ends. They want to sell you the whole tie-rod. If that's all you can get, fine. They've also stopped putting Zerks on the tie-rod ends. Instead, they are 'Lifetime' parts, meaning they'll only last about half as long as they used to. Progress, eh? :-)

\* the former was reprinted from a post in a Google group from Veeduber (veeduber@aol.com). If anyone has concerns about using articles from the web without permission, please contact me. Being universally posted, I cannot verify that all information contained therein is accurate, and should be used accordingly. -Rick

However, using this information on my own car, it is valid, and it works, albeit I still had to adjust the top lash nut. Shane had the brilliant idea of using one of those cheap lawn mower spark plug wrenches to loosen the from adjusting nut on the steering box - works great!

-Rick



Original sales letter from Cecil Robertson

# Owner's Rides



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# TECH TIPS



## FRONT END MAINTENANCE & ALIGNMENT

The steering and front suspension on older Volkswagens needs a lot of attention to keep it working properly, reflecting the 1930's origin of the design. In keeping with the design philosophies of that era the steering and suspension systems are overbuilt by modern-day standards. Although it takes more work to keep these antique vehicles running, the tasks are relatively simple. Designed to be overhauled with a minimum of tooling, the robust nature of the components makes it possible to keep these antiques safely on the road virtually forever.

Unfortunately, the above does not apply to the Super beetle. I've found their MacPherson strut front ends to be less robust than ball joints and down right fragile compared to king pins, making the Super unsuitable for the kind of traveling I do. The poor suspension is made even worse by the steering system used on the '70 through '74 models, a overly complex design that Volkswagen abandoned in favor of the later rack & pinion system.

In the automotive world the last person to work on a vehicle is often held liable for what happens next, even if it happens to a component they did NOT work on. Do a tune up and get sued because the kid runs off the road? Sounds crazy but it can happen. This is clearly unfair but so is a great deal of automotive consumer legislation. The question of liability causes me to avoid working on Super Beetles or any Volkswagen with a modified suspension system. My comments in this series of articles are addressed mostly toward earlier model stock Volkswagens.

Whatever your vehicle, before you can maintain its front end you need to understand how it works. You should be able to make a sketch, either schematic or pictorial, depicting all of the components in your front end and know their names. All of the manuals contain this information in one form or another but I think the novice will find the 'Idiot' book to be the most helpful for this task.

Now let's go play. But before we do, note that I use a different sequence of diagnostic checks than does the 'Idiot' book. Try it both ways then decide for yourself.

Jack up the front end, pop off the grease caps on the front wheels, take the slack out of the bearings then jack up the front end and SHAKE THE WHEEL. You're looking for play; for looseness. Try to lift the wheel up & down. Then try to rock it back & forth. Finally, grab it at 6 & 12 and try to rock the wheel in & out. A tiny bit of up & down is okay. Anything else sez repair or adjustment is needed. No play? Then skip on down to the steering check.

When you feel looseness the next step is to figure out WHAT needs to be repaired. As a general rule, any up & down or in & out play indicates wear in the SUSPENSION; in your ball joints or king pins. Any back & forth movement indicates wear in your STEERING (Super beetles are a special case. In & out movement may indicate wear in your control-arm bushings.)

On old bugs & buses if you feel a lot of in & out play you may need only to adjust your link pins. Link pin adjustment is a simple chore, something you're supposed to do every other oil change (No, not 'Every 6000 miles.') Read the fine print. There's a whole list of things that require you to change the oil more often. The list of exceptions – driving in dusty conditions, on unpaved roads and so forth – also applies to your other periodic maintenance requirements. So use the oil change interval as a guide. And every other oil change, WHATEVER THAT INTERVAL MAY BE, lube and adjust your link pins.

King-pin spindles use bushings for the king pin and either bushings or needle bearings for the link pins, depending on the model year & vehicle type. Rebuilding king pins consists of removing the spindle from the trailing arms, taking the spindle apart, pressing out the old bushings, pressing in new ones then reaming them to fit the new king pin. The Haynes manual does an especially good job with king pins.

The new king pin and bushings come as a kit of parts but if you're a machinist you can make your own. The link pins also come as a kit except on later models there's no reaming; they come with needle bearings instead of bushings and the needle bearings are already the proper fit. See the real shop manual for your particular ride. A number of fellows who have rebuilt their front ends have described doing so in messages you'll find in the various archives on the Internet.

Newer buses & bugs don't got link pins. Them got ball joints. That's where you'll find most of your up & down play. See the manuals for the specs but anything more than a tad is bad.

You can keep a link-pin front end running just about forever but once a ball joint goes bad you got a major headache. Oh, you can do them. In fact, they're easier to do than rebuilding a link-pin spindle. But you need a hydraulic press and some fixtures. And you gotta pretty much dismantle the front end to get at them, which can take additional special tools. The reason for the additional dismantling is because the ball-joints are installed on the trailing arms, meaning you've got to remove the trailing arms in order to replace the ball joints. Removing the trailing arms is a no-brainer but the stabilizer bar is clamped to the lower trailing arms and new, replacement clamps are no longer available. If you're careful dismantling the old clamps they can be reused but a better option is to use Sway-A-Way bolted clamps. Cost is about thirty bucks for all four. I don't know if they've got them for buses.

Muir and a lot of others say ball joints should only be replaced by a VW dealer. That may have been valid back when John was alive but today such advice is little more than a bad joke. Nowadays the typical Volkswagen dealer wants nothing to do with you and your antique ride. They don't carry your ball joints, they don't have the tools to replace them and their mechanics are not familiar with your vehicle.

If you take your veedub to the dealer to have the ball joints replaced, odds are they will order rebuilt trailing arms from an after-market supplier who specializes in VW front end components. The trailing arms would arrive with the ball joints already installed, reducing the repair job to nothing more than dismantling and reassembly, a task anyone can do. Indeed, you can do exactly the same, saving yourself some serious bucks along the way. Check the ads in the magazines for outfits offering rebuilt trailing arms.

Buying rebuilt trailing arms is probably the most common method of repairing front ends but there's really no reason you can't do the entire job yourself. Ball joints are inexpensive, which is good because they don't last very long. No grease nipple. 'Lifetime' part. An hydraulic press makes their replacement easier but a twenty-ton bottle jack is strong enough to pop the ball joints out of the arms and to press new ones back in, assuming you have a suitable pressing frame and the necessary fixtures to support the trailing arms while you do the pressing. You can make the required fixtures from sections of steel pipe of the proper diameter. The sections of pipe have to be notched & shaped to accept the trailing arms (you need a left & right fixture for each). The notching is done with an angle grinder and the trailing arms themselves serve as the pattern. I was out of Prussian blue so I begged a tube of lipstick from my wife to use as spotting compound. (You press the parts together then grind off the high spots, as shown by where the lipstick transfers from the trailing arm to the fixture.)

The pressing frame is just a rectangle about two feet high by a foot wide fabricated from sturdy (2 x 4 x 1/4) steel 'C' section, welded or bolted together at the corners with gussets. (I say 'about' because it has to be sized to accommodate the height of the fixtures you make and the particular jack you use.) In use, you position the old ball joint atop a short section of pipe that serves as the 'drop space' to receive the ball joint when you press it out, then put the pipe-section driver on the bottom of the ball joint and seat the hydraulic jack atop that, extending the jack until it contacts top of the frame. Then just pump the jack. The old ball joint will be pressed out of the trailing arm. Installing the new ball joints calls for a bit more care. There is an alignment notch that must be taken into consideration, your fixtures must be a very nice fit and the trailing arm needs to be propped up to keep everything aligned. It sounds sorta hay-wired but it works okay. The first time I did it, it took about four hours to make the fixtures and another hour to replace the four ball joints.