



Overheard Cams



Alfa Romeo Association
NORTHERN CALIFORNIA

February 2024
Volume 64, Number 2

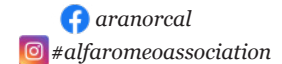
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The Alfa Romeo Association (ARA) is dedicated to the ownership, maintenance, preservation, operation, and enjoyment of the wonderful vehicles produced by Alfa Romeo. The ARA is based in the greater San Francisco Bay Area of California, but welcomes members from everywhere.

Alfa Romeo Association

PO Box 1458
Alameda, CA 94501

www.alfaromeoassociation.org



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On the Front Cover

33 Stradale

Photo courtesy of Alfa Romeo

On the Back Cover

GTV lifting a wheel at the Ridge Motorsports Park

Photo by Jason Tang

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The Steering Column

Scott Pinsky, President

Since, by now, I figure readers of this column are getting pretty tired of hearing about my personal phobias and manias, I hesitate to pass along one more ... but in the interest of medical advancement, I feel duty-bound to share my newest diagnosis. I note in advance that I have little medical understanding, having never been much of a science guy; in school, I concentrated mainly on the humanities, where—unlike chemistry class—you had a least a colorable chance of success even if you really understood very little of the subject matter. The closest I got to studying anything medical was a single junior college Introduction to Psychology class (where the professor was very generous in giving me a B).

So, I really had very little background to wrap my head around the new syndrome that my doctor identified as now applying to me: O.C.G.D. Which stands for Obsessive-Compulsive Garage Disorder. Relatively new to medical science, this recently codified psychological syndrome is creating an enormous stir in the health care field as well as the collector car world.

OK, not really. I just made it up. But you believed it for a second, right? And if you've gotten this far and are still reading, you perhaps suffer from the same affliction: an intense compulsion to set right whatever goes on in the automotive annex to your dwelling.



Whether it's manically re-organizing tools and supplies, alphabetizing technical manuals, taking minute inventory of your fastener supply, fanatically cleaning everything, or just hanging new photos on the wall, there is no end to the pull of these seemingly essential tasks for those of with OCGD.

So is there a treatment? It depends who you ask. Your pharmacist will no doubt

recommend massive doses of drugs you've likely never heard of, like maybe Garaszymantisorbitorbitol™. (OK, I just made that up too, but I bet I had you again for a second.) Me? Personally, I'll pass on the drugs. I find much better therapies can be found in seeking to moderate symptoms of the affliction through limiting and re-directing my activities. There are many such techniques

formulated by doctors that have been promoted with success; among these are:

- **Detail your engine.** Got a lot of Q-tips? You'll need them! Get out the disposable nitrile gloves and some rags and just go at it! You know it's been bugging you for ages, so don't make any more excuses. Whether you prefer Griot's, Jay Leno's Garage, Gunk or Meguiar's, get the detailer that works best for you and just do it. Your engine bay will thank you. And you'll probably find at least one hose or wire connector that needs attention, so please take care of that while you're at it, will you please?
- **Fine-tune your garage audio system.** Whether your taste runs to the Beatles White Album, Rachmaninoff's Études-Tableaux, or the latest from Taylor Swift, you need good audio in your garage! Stop putting it off and get the place appropriately wired-for-sound. Then, you can begin to explore all those long-overlooked CDs you've

been ignoring for the last several decades. Or maybe you're partial to your old 8-tracks! Or are you one of the mod squad with the newest Sonos streaming technology? Whatever your preference, get wired and bring on the music! You can be assured this will create a much-needed therapeutic environment (and probably attract some neighbors).

- **Get another Alfa!** OK, granted this is a costly therapy, but it may be necessary in severe cases of OCGD according to medical experts. From my research, neither Blue Cross nor Medicare are covering this remedy yet, but you could try to submit it anyway. Clearly, this may seem like an extreme form of cure, but it is reported to be a failproof one and often provides permanent relief from symptoms. Don't let cost get in the way of an effective treatment; you simply can't put a price on good emotional health!

- **Join a recovery group.** Oh wait! You're already in one! Undoubtedly, many of your fellow ARAers share your affliction, so support is only a click away. Just reach out to another Alfisti and you're sure to receive the empathy and comfort you need at that moment.

Admittedly, it is never good news to receive a new diagnosis like OCGD. But now you can take comfort in the fact that you have good alternatives for addressing this serious condition. And never hesitate to reach out to others in your sphere for help in working through your circumstances. ARA is here to help!

Andiamo!

THE MULLIN IS CLOSING

The [Mullin Automotive Museum](#) displayed magnificent French Art Deco cars, furniture, and art. If you never visited you have now lost the opportunity to do so.

[Autoweek](#) recently reported that the Mullin is closing February 10th. There's no point in going to Oxnard for a visit now, as Mullin's website reports that it's sold out for the last day that it will be open.

I am happy to have visited this extraordinary museum twice. I also saw some of its cars over the years at the Rolex Monterey Motorsports Reunion.

During the pandemic the museum maintained an online presence by live-streaming presentations about cars in its collection. (Check Instagram and YouTube.)

I am saddened that the Mullin is closing. During my first visit I participated in a tour led by a docent who turned out to be the brother of Peter Mullin. I asked him whether the museum had an endowment, so that it could live on after the death of its founder. His answer was "yes," so something clearly changed.

SPEED GOVERNORS ON NEW CARS?

State Sen. Scott Wiener (D-San Francisco) has introduced a package of bills called the "[Speeding and Fatality Emergency Reduction \(SAFER\) on California Streets](#)" to

reduce traffic deaths. This package includes Senate Bill 961 which would require vehicles sold in the state starting in 2027 to be equipped with speed governors.

It has been reported that SB 961 does not specify the type of speed governor, yet his office's statement says "smart devices that automatically limit the vehicle's speed to 10 miles above the legal limit."

Two types of speed governors are available. Active speed ones that automatically reduce the speed of cars that exceed a specified limit, while passive ones that alert drivers when they need to slow down.

Such laws are not new. The EU already passed such legislation in 2019. In the EU speed governing technology is called a Intelligent Speed Assistance (ISA) system. ISA systems can actively prevent drivers from exceeding the speed limit using road-sign recognition cameras and GPS-linked speed-limit databases.

Starting in July 2022, all vehicle models in new production lines were required to be equipped with ISA. As of July 2024, vehicle



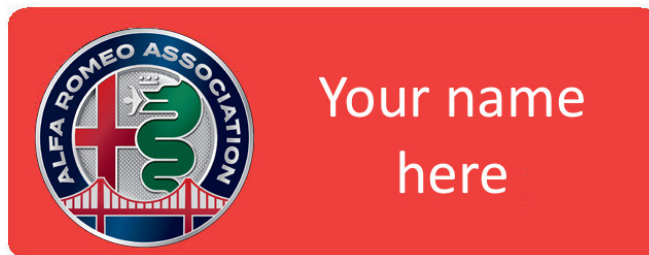
models in running production lines will also need to be equipped with ISA. An important detail is that the variant of ISA mandatory in the European Union as of 2022 can be switched off and is over-ridable.

If Senator Wiener's SB 961 passes, the devil will be in the details. I've heard that he's amenable to changing things in the bill.

State Senator Wiener thinks that speed governing is a good thing. Do you? Is activation at ten miles over the limit reasonable? Active or passive speed governing, which? Should you be able to turn off or override speed governing? Let your state senator know your opinions.

Club Merchandise Available in the ARA Store

Click any photo below to be taken to the merchandise page in the club's online store.
The new club keychain, *top right*, is now available.





ARA Monthly Meetings

The club typically meets at 8 PM on the first Tuesday of each month with some exceptions.

North Bay meetings (Feb, May, Aug, Nov) held at

Aurora Ristorante Italiano Novato

8 Commercial Blvd, Suite A Novato, CA 94949

(415) 382-8488

auroranovato.com

East Bay meetings (Mar, Jun, Sep) held at

North Beach Pizza

1598 University Ave Berkeley, CA 94703

(510) 726-8504

www.northbeachpizzaberkeley.com

South Bay meetings (Jan, Apr, Jul, Oct) held at

Giovanni's New York Pizzeria

1127 Lawrence Expwy Sunnyvale, CA 94089

(408) 734-4221

www.giovannisnypizza.com

ARA Membership

Welcome new members

*Barry T Apter, James R Chaskin
Oscar V Mulder, Alexander Rudeen
William J Smith, Simon Timms*

Thank you to renewing members

*Fred R Aron, David Buchanan
Shawn S Bullard, Mike Cain
Dave Celniker, Richard R D'Elia
Vijaya Gajjala, Paolo J Giordano
Joe Hensler, Steven Hughes
Joe Hurwich, Peter Kunedt
Vic Lagana, Arthur D Levy
Brooks R Mayes, Susan Mueller
Ed C Rossi, Doug Simmons
David Van Lue, Jack Weldon*

ARA Tech Support Lines

Jim Allen • Nipomo, CA

750, 101, 102 and 106 series cars

(805) 929-6113; evening answering machine

Wes Ingram • Burlington, WA

Spica fuel injection

(360) 707-5701; wing@nwlinc.com

Tom Sahines • Milpitas, CA

Giuletta and Giulia cars

Mon to Fri: 12 noon–9pm

(408) 262-6279; tsahines@gmail.com

Remember that our tech team
members are volunteers.

Please respect their time and thank
them for all they do for the ARA!



2024 Event Calendar



Click on this page to go the club's online calendar. See the following pages for direct links to specific events.

<i>January</i>	<i>February</i>	<i>March</i>
13 Annual Meeting & Members Lunch [Sunnyvale] 13 DSARC Annual Meeting & Holiday Pot-Luck Dinner [Sacramento] 21 Q1 ARA Board of Directors Mtg	6 ARA NorthBay Members Mtg 18 Green Hills of Earth Tour/Lunch	5 ARA EastBay Members Mtg 9 West Bay Through the Woods to the Ocean Drive
<i>April</i>	<i>May</i>	<i>June</i>
2 ARA SouthBay Members Mtg 6 DSARC One Day Driving Tour 20 Spring Fling South Bay Drive	7 ARA NorthBay Members Mtg 11 ARA-SFIAC Tour and Lunch [SF] 12 Q2 ARA Board of Directors Mtg 18 One Lap of Marin 28-Jun2 AROC National Convention/ Tours [Petoskey, Michigan]	4 ARA EastBay Members Mtg 5-15 AROC Goes to Italy #7 22 Blackhawk Cars and Coffee 27-30 Northwest Classic Rally [Oregon]
<i>July</i>	<i>August</i>	<i>September</i>
2 ARA SouthBay Members Mtg 20 One Lap of South Bay Drive tbd Summer Party [Roaring Camp Railroad - Santa Cruz Mtns - tbd] 27 Mozart Collection Tour [tentative]	6 ARA NorthBay Members Mtg 11 Q3 ARA Board of Directors Mtg 11-18 Monterey Car Week +++ 17 Concorso Italiano [pending] 17 Post-Concorso Dinner [pending]	3 ARA EastBay Members Mtg 7 East Bay Drive [tbd] 21-22 DSARC Overnight Driving Tour [tbd] 29 All Italian Day Car/Motorcycle Show [SONC benefit event!]
<i>October</i>	<i>November</i>	<i>December</i>
1 ARA SouthBay Members Mtg 18-20 AROC Goes to USGP COTA [Texas] 20 Members Lunch Social [tentative]	5 ARA NorthBay Members Mtg 16 Patrick Ottis Shop Tour [tbd] 17 Q4 ARA Board of Directors Mtg 21-23 USGP LasVegas [Nevada]	8 ARA 2024 Holiday Luncheon [tbd]

2024 Monthly ARA Member Meetings

- Location, registration, and speaker information vary by meeting.
- Updates will be posted in both future issues of *Cams* and on the club's website, but please check the website for the latest info about an upcoming meeting.
- Some months may have two meetings running concurrently in different regions.

January/April/July/October

South Bay Membership Meetings [ARA]

Tuesday evenings*: January 13th [* lunch], April 2nd, July 2nd, October 1st

Location: [Giovanni's New York Pizzeria](#), 1127 Lawrence Expwy, Sunnyvale

Registration is not required.

Questions? Please contact Kurt Delimon at kurt@alfaromeoassociation.org.

February/May/August/November

North Bay Membership Meetings [ARA]

Tuesday evenings: February 6th, May 7th, August 6th, November 5th

Location: [Aurora Ristorante Italiano](#), 8 Commercial Blvd A, Novato

Registration is strongly encouraged but not strictly required.

Questions? Please contact J. Hutson Hart at memberships@alfaromeoassociation.org.

March/June/September

East Bay Membership Meetings [ARA]

Tuesday evenings: March 7th, June 6th, September 5th

Location: [North Beach Pizza](#), 1598 University Ave, Berkeley

Registration is not required.

Questions? Please contact Ed Adams at edonadams@gmail.com.



Event Details

February

Green Hills of Earth Driving Tour and Lunch [ARA]

18th (Sunday) convene at 8:00 am; drive off at 9:00 am [Note Early Start]

Start Point – Starbucks Novato Vintage Oaks Shopping Center, Novato

Drive with us on the interesting and challenging roads in and among the verdant green hills of Sonoma and Napa Counties. Return route will be optional and interesting back through the Sonoma County hills and through Petaluma back to Novato.

Printed maps and turn-by-turn directions will be provided — remember to bring your smart phone and charger. This is a **rain-or-shine** drive, so plan accordingly, [check your tires, brakes, and wipers].

- You **must** come to the starting/staging point for an up-to-the-minute route update, driver's meeting, and to confirm your lunch registration. This year we are arranging a pre-planned group lunch option for AFTER the tour.
- As always you may make your own arrangements for lunch instead of the organized group lunch.

We are planning to gather post-event in Novato back at the start point with folks who would like to at Hop Monk Tavern, on their outdoor patio, [advance sign-up IS required – separate activity in the registration sequence].

Please click [here](#) to register.

Questions? Please contact Hutson Hart at hutsonhart@comcast.net



Event Details

March

West Bay “Through The Woods To The Ocean” Drive

9th (Saturday) 9:00 AM – 1:00 PM

START Location: Los Gatos Shopping Center, Starbucks/Aldo’s Cafe, 440/442 N. Santa Cruz Ave., Los Gatos, CA 95030

We will meet in the parking lot outside the Starbucks/Aldo’s Cafe at 8:30 am.

At 9:00 am we will leave the parking lot and start the drive, heading towards Los Gatos-Saratoga Road and then turning right onto Los Gatos-Saratoga Rd. and drive for 3.6 miles. We will turn left to CA-9/Big Basin Way and drive for 7.3 miles. Next, we will turn slightly to CA-35S/Skyline Blvd. and drive 13.6 miles to Portola Valley to CA-84W/La Honda Rd. We will make a left turn by Alice’s Restaurant and continue to go through La Honda and San Gregorio towards HWY 1. At the end of CA-84W, we will turn left on HWY 1 and head south for about 15 miles to Davenport.

At the Davenport intersection, we will turn into the parking lot by the Roadhouse Restaurant, where we will have lunch. This is our final destination point, and you are welcome to return home on whichever route you choose.

- Advance registration for this event is required. Please register [here](#).

Questions? Please contact Andre Adamski at andre_adamski@yahoo.com



Event Details

April

DSARC One-Day Driving Tour – SAVE THE DATE

6th (Saturday) 9:00 AM – 2:00 PM

Start Location: TBD Sacramento

This will be a lovely Spring drive through the Eldorado Hills starting in Scaramento. Details to come in the Cams and via the ARA website.

All attendees must RSVP via email to Mary Ann Dickinson at maryann@dickinsonassociates.com



Annual Spring Fling Drive [ARA] – SAVE THE DATE

20th (Saturday) 8:30 AM – 1:00 PM

START Location: Los Gatos Shopping Center, Starbucks/Aldo's Cafe, 440/442 N. Santa Cruz Ave., Los Gatos, CA 95030

We will meet in the parking lot outside the Starbucks/Aldo's Cafe at 8:00 am and head out for the traditional Spring Fling Tour at 8:30 am..

This driving tour will start from the Los Gatos Shopping Center parking lot to Gilroy on winding South Bay roads.

The first stop will be Sierra Azul at Jaques Ridge - Mt. Umunhum parking lot.

The second stop will be at the Uvas Reservoir. From there, we will drive to Gilroy. the final destination Mamma Mia's Restaurant parking lot at 1360 1st Street, Gilroy.

Advance registration is required. See March *Cams* for more details and a link to register.





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Annual Meeting of Members Slides



Alfa Romeo Association

2024 Annual Member Meeting

State of the Club
January 13, 2024

Agenda

- 2024 ARA Board Introductions - Scott Pinsky
- Membership Report - Hutson Hart
- Club Financials - Peter Loomis
- Overheard Cams - Bob Goldberg
- Merchandise - Laurie Delimon
- 2023 Event Recap
- 2024 Planned Events

2024 ARA Board Elected Roles

President: Scott Pinsky



ARA member since: 2014
Alfas owned: '69 Spider 1750

Vice President: Bill DeGolia



ARA member since: 2012
Alfas owned: '71 1750 GTV, '65
1600 Spider Veloce, 2020 Stelvio

2024 ARA Board Elected Roles

Treasurer: Peter Loomis



ARA member since: 1983
Alfas owned: '66 Giulia Spider

Secretary: Andre Adamski



ARA member since: 2016
Alfas owned: '85 Spider, 1969 GTV

2024 ARA Board Elected Roles

Membership: J. Hutson Hart



ARA member since: 1998
Alfas owned: '72 2000 GTV Euro

2024 ARA Board Appointed Positions

Admin: Sean O'Donoghue



ARA member since: 2004
Alfas owned: '69 1750 GTV
'18 Alfa Giulia Ti Q4

Ex Officio: Kurt Delimon



ARA member since: 2015
Alfas owned: '69 1750 GTV

2024 ARA Board Elected Roles

Member-at-Large:
Olivia Herriford



ARA member since: 1986
Alfas owned: 2018 Stelvio Ti,
'86 Spider Quad, '91 164S

Member-at-Large:
Andy Epstein



ARA member since: 2021
Alfas owned: 1964 Giulia spider normale


**2024 ARA
Membership**
J. Hutson Hart



2024 ARA Board Appointed Positions

Cams Editor: Bob Goldberg



ARA member since: 2014
Alfas owned: '74 Spider

Social: Laurie Delimon



ARA member since: 2015
Alfas owned: '69 1750 GTV

Membership Highlights

Current: 484 Active Members

Essentially flat this year after steady growth in previous years:

Month/Year	Total Membership
January 2022	438 (+18%)
January 2023	491 (+12%)
January 2024	484 (-1.4%)

We lost just 7 members in 2023 after a solid post-Covid surge in the previous two years.

Most folks are from NorCal but also 22 members from OUTSIDE of CA: e.g. Reno NV, Phoenix AZ, Sandia Park NM, Red Hill PA

Still lots of old and *new* Alfas coming into the family.



Quarterly Meetings



We continue to host fun and interesting quarterly member meetings in 3 venues: San Jose, Berkeley and Novato. Join us!



Meeting Locations

North Bay

Aurora Ristorante Italiano - Novato

2nd month of Quarter



South Bay

Giovanni's New York Pizzeria - Sunnyvale

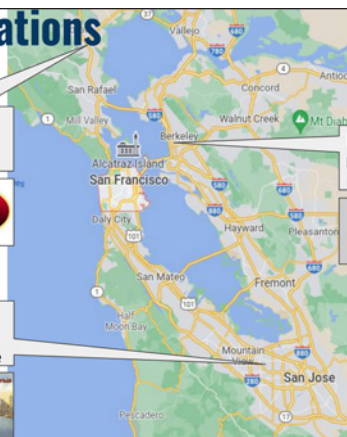
1st month of Quarter



East Bay

North Beach Pizza - Berkeley

3rd month of Quarter



2023 Recap

The club financials continue to be excellent. This year, we began to spend down our surplus that has been building up during the pandemic years.

Account balances decreased by 6%, from \$52,979 to \$49,788.

In 2023 the ARA continued to support Special Olympics of Northern California (SONC), with all net proceeds from All Italian Day going to SONC, resulting in a donation over \$7700!

By the Numbers

2023 Revenue Breakdown

Dues	\$16,790
Event Fees	\$18,670
Other income	\$ 6,554

Revenue Total: \$42,014

2023 Expenses Breakdown

Fixed Costs	(\$ 6,598)
Events	(\$32,301)
Overheard Cams	(\$ 1,266)
Merchandise, Durables, &c	(\$ 4,831)

Expenses Total (\$44,996)

Average event subsidy ~ 40%

Financials

Peter Loomis



2023 Spending Notes

Subsidized club events this year:

- general meetings & pizza socials
- tech sessions
- Green Hills
- SF Italian Athletic Club luncheon
- Summer Picnic at Sturgeon's Mill
- Post-Concorso dinner
- All Italian Day
- December holiday luncheon

"Fixed" expenses include:

- website hosting and maintenance
- insurance
- administration costs
- payment processing fees

2024 Planning Overview

Work for our Financial Committee:

- Formulate plan for further decreasing account balances
 - What is the proper account balance, how fast to bring it down?
 - How can we create more value for our members?
 - Increase event subsidies or number of events?
 - Increase Overheard Cams budget?
 - ???
- Critically review expenditures and processes

Tours

Green Hills of Earth
One Lap of Marin
Through The Woods to the Ocean
Spring Fling



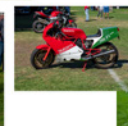
2023 Event Recap

Scott Pinsky



Car Shows

- ✓ Concorso Italiano
- ✓ All-Italian-Day benefiting Special Olympics of Northern California (SONC)



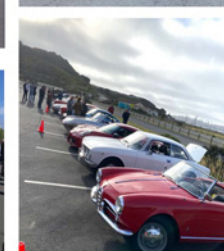
2023 HIGHLIGHTS:

- ✓ Green Hills of Earth (Feb)
- ✓ Drive: "Through The Woods to the Ocean" (March)
- ✓ Fantasy Junction tour (April)
- ✓ Mozart Collection tour (April)
- ✓ Spring Fling drive (April)
- ✓ Glen Oliveria tech session (April)
- ✓ One Lap of Marin (May)
- ✓ ARA-SFIAC tour/show/lunch (May)
- ✓ Cars & Coffee @ Blackhawk Museum (June)
- ✓ Sturgeon's Mill Summer Party/tour (July)
- ✓ Concorso Italiano show & dinner (August)
- ✓ All-Italian Day (September)
- ✓ Lunch social @ Militello's (October)
- ✓ Patrick Ottis shop tour (November)
- ✓ John Bertolotti car collection tour (November)
- ✓ Annual Holiday Party (December)



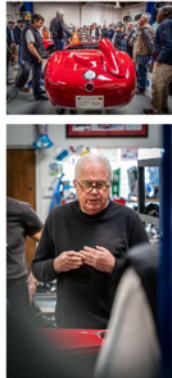
Car Shows Continued

- ✓ ARA-SFIAC Joint Tour/Show/Lunch
- ✓ Cars & Coffee @ Blackhawk Museum



Tech Sessions/Shop Tours

- ✓ Fantasy Junction
- ✓ Glen Oliveria tech session
- ✓ Patrick Ottis Shop Tour



Club Merchandise

ARA Logo Hat



ARA Logo Keychain



Social

- ✓ Sturgeon's Mill Summer Party/tour
- ✓ Lunch social @ Militello's
- ✓ Post-Concorso Italiano Dinner
- ✓ Annual Holiday party



Club Merchandise

ARA Window Decal



ARA Name Badge



Merchandise

Laurie Delimon



Club Merchandise

ARA Logo Pin



2022 All Italian Day T-Shirt



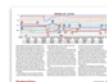


Overheard Cams

Bob Goldberg



Cams Depends on Contributors



Monthly Contributors: *Elisabetta Cozzi* (Alfa Romeo posters/photos), -Ed. (editor), J Hutson Hart (calendar), Jon Gavin (F1 racing), *Mark Thornton* (technical content), Scott Pinsky (Steering Column)



Contributors: Andre Adamski, *Andrew Watry*, Andy Epstein, Bill DeGolia, Ed Adams, Geoffrey H H Roth, J Hutson Hart, James Treadwell, Joe Hurwich, Kurt Delimon, Laurie Delimon, Maciej Nejmantowicz, Mary Ann Dickinson, Michael Williams, Peter Loomis, Randy Hieter, Scott Pinsky, Sean O'Donoghue, *Tod Bice*



Reprints: Jeff Kline (*Giulietta Letta*), Jeremy Clarkson (*Sunday Times*), Pierre Hedary (*SCM*), *SCM*

* Non-member contributor names are *italicized*

Cams Had Another Good Year!

90 articles published in 2023 (excludes columns)

- 7.5 articles per month
- Articles appearing in every issue
 - From the Museo Fratelli Cozzi Archives
 - Technical article by Mark Thornton

Columns appearing in every issue

- Steering Column
- Alfabetizzazione
- World of Alfa

Ad page count steady at 10

- Tell our advertisers that you saw their ad in *Overheard Cams*
- Thank Bill DeGolia for advertising sales



Cams Looking Ahead



Please, please, please contribute

- An event recap
- Photos from a convention, tour, museum, ...
- A road trip saga
- Alfa joys (or woes)
- A "wrenching" experience
- Something about life with Alfas



Cams Statistics

Average number of pages per issue by year

2017	34
2018	41
2019	43
2020	53
2021	56
2022	63
2023	67

With Alfa dropping out of F1, future issues will have fewer pages on average, about 50.



Article Variety

Topic	Count
Alfa Romeo history	16
Amateur racing	4
Car collections/museums	3
Car Week	6
Club event recaps	25
Etceterini	5
F1 racing	11
Non-club event recaps	5
Profiles	2
Technical/restoration	13



2024 Activities

ARA Board

Summary of thinking and plans for 2024

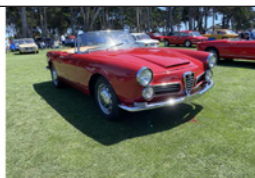
JANUARY & FEBRUARY

Feb. 6th - North Bay Membership Meeting

- Quarterly meeting at Aurora Ristorante in Novato, Marin County

Feb. 18th - Green Hills of Earth Tour

- Annual ARA tour of interesting and challenging roads in and among the verdant green hills of Sonoma and Napa Counties; a lunch venue will be secured and registration will be required in advance



JULY & AUGUST

July 2 - South Bay Membership Meeting

July 20 - One Lap of South Bay Tour

July 21^{or}28 - Summer Social - tentative

August 6 - North Bay Membership Meeting

August 17 - Concorso Italiano/ARA Dinner



MARCH & APRIL

March 5 - East Bay Membership Meeting

Mar 16 - Tour: "Through The Woods to the Ocean" (Los Gatos to Davenport)

April 2 - South Bay Membership Meeting at Giovanni's New York Style Pizzeria

April 6 - ARA-DSARC Tour (El Dorado, Amador)

April 20 - Spring Fling Drive, South Bay (Los Gatos - Watsonville - Gilroy)



SEPTEMBER & OCTOBER

September 3 - East Bay Membership Meeting

September 7 - East Bay Drive, Details TBD

September 21-22 - ARA/DSARC Overnight

Motherlode Tour - Details TBD

September 29 - All-Italian Day, Alameda

October 1 - South Bay Membership Meeting

October 20 - Members' Lunch social

- Details TBA



MAY & JUNE

May 7 - North Bay Membership Meeting

May 11 - ARA/SFIAC Drive/Show/Lunch: SF

May 18 - One Lap of Marin: Annual Tour

June 4 - East Bay Membership Meeting

June (tbd) - Mozart Collection Tour



NOVEMBER & DECEMBER

November 5 - North Bay Membership Meeting

November 16 - Patrick Ottis Shop Tour

December 8 - Holiday Luncheon

- Details TBA



ARA MEMBER INPUT

> Meeting Topics / Desired Speakers

> Pop-up Drives and Regular Tours

> Tech Sessions

> Social Events



2023 Wrap-Up

Scott Pinsky

Membership remains strong

Club finances in great shape and enable lots of subsidized events

Overheard CAMS continues to set the standard for automobile club publications nationally

Cool merchandise is available

A solid slate of activities for ARA members in the New Year



Coastal and Redwood Drive

Ken Smith

On January 20th we had four cars show up for a pop-up drive in the rain. Along the Pacific coast the weather was mostly dry, though the roads were wet. The ocean views were outstanding! Traffic was moving slowly; we were behind a minivan.

After turning off the main highway to head toward the mountains, we stopped at a local coffee shop for a quick break. Then the real fun started. As we climbed up the mountain on an already wet road, it started to rain.

While pushing my Spider hard through corners, I broke rear wheel traction a few times. I adjusted by pushing my Spider to almost its limit, just before the rear end would slide out. (Tire pressure was 32 PSI both front and back).

For about three miles we were on a one-lane, twisty part of the road with lots of switchbacks. As I came around one of the switchbacks, a FedEx box truck was coming toward me. We were able to squeeze by—so no harm, no foul. Got my heart pumping though!

After reaching the mountain top, we ran along the ridge and then headed down the other side to town. We had a great lunch at a small restaurant while having fun recapping our adventure. *CAMS*



LIVE ON BRING A TRAILER, ENDS THIS FRIDAY!



Rebuilt drivetrain by the AlfaMan!



1973 Giulia Super Euro 1.6L

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Alfa Romeo has long had a bit of a spluttering bang-and-bust existence. In the motoring world it is the big romantic name that occasionally disappears, only to return full of passion to knock us sideways all over again. Its new 33 Stradale will undoubtedly rekindle the love affair. Mamma mia, this is a beautiful thing!

When a company raids its back catalogue it is usually to take subtle cues from successful cars in the bloodline—a curve here, a lighting arrangement there. Not so with the 33 Stradale. This is a full modern reworking of the 33 Stradale of 1967—one of the most beautiful cars anyone anywhere has created.

The original was a street-legal version of the Tipo 33, which was transformed by the designer Franco Scaglione and the coachbuilder Carrozzeria Marazzi from a savage racing machine into a stunning road car (*stradale* means “road-going”). It was an instant masterpiece. Only 18 were built and if you wanted to add one to your collection today it would cost you more than £10 million.

The new Stradale, of which there will be only 33, is being built in Alfa Romeo’s newly launched Bottega (its special oper-





ations division) in the Sala del Consiglio at the marque's museum in Arese, near Milan—the same place the design of the original was approved.

The Bottega will offer a high level of personalisation. The interior, for instance, with its minimalist cockpit and mechanical switches, can come in a choice of two trims which echo that of the car's 1967 forerunner.

Although the new model will include such modern touches as carbon fibre and LEDs, it retains the essence of the original—the short overhangs, the butterfly doors. A crucial difference, however, is

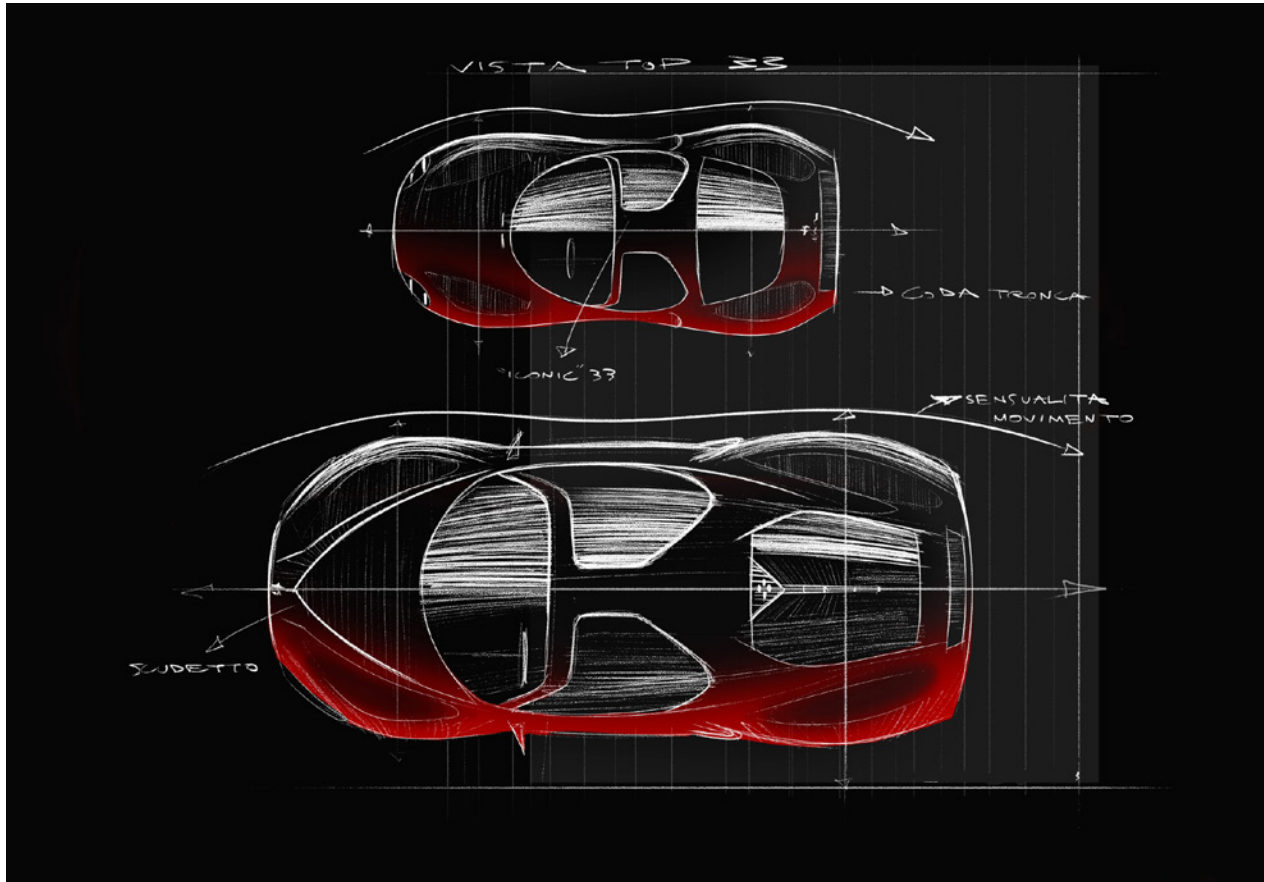
that it can be powered by petrol or electricity. The latter will offer more performance—750bhp over the 620bhp of the fuel burner.

My bet is that most buyers will go for a petrol version, this being, after all, a throw-back and an internal combustion engine has far more character and emotion than the cold delivery of electric power—but the biggest thrill will be arriving at your destination so you can step out and look at it.

Jean-Philippe Imparato, the chief executive, sees this car as laying down a marker for Alfa Romeo. "This is the brand's first

fuoriserie (custom-built) car since 1969 and I promise it won't be the last," he says. "We wanted to create something that lived up to our past ... and to make the Alfisti fandom proud."

It is the ticket to Alfa Romeo's readmittance to the supercar club, of which it was a founding member. Retro cynics may have preferred something more forward-thinking. However, for the masses this car will excite—and for the lucky few owners it will undoubtedly delight. *CAMS*





A Duetto Restoration

A Duetto Restoration

Bob Goldberg



Most of us have never seen a Spider without its skin. These photos show an early serial number 1966 Duetto undergoing a full restoration at [Vintage Customs](#), an Alfa specialist in Tacoma, WA. (NWARC's January 1st anti-football drive ended at the shop.) This job was not originally planned to be a full restoration, but after dipping, the body was found to be in need of major metalwork. The skin from the windshield forward had already been repaired, but in these photos you can see the rear structure without its skin. CAMS



Bertone and Bertoni Collections at Volandia

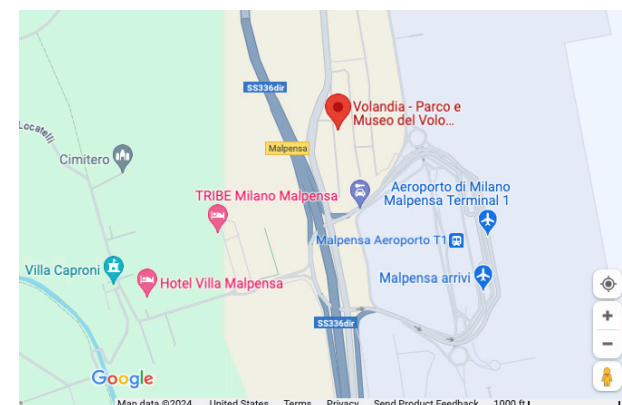
Bob Goldberg

Among the discoveries during my trip to Italy last year were the collections of Bertone and Bertoni designed cars. Both are located in the Volandia Museum of Flight right next to Milan's Malpensa airport. Information about Volandia appears to the right: (top) a description and map of the museum, (bottom left) a zoomed-in section of the map showing the location of the car exhibits, and (bottom right) a map showing the location of the museum relative to Malpensa.

BERTONE

Bertone, properly Gruppo Bertone, is a name familiar to *alfisti* by having designed many Alfa production and concept cars, including three BAT cars, the Sprint Speciale, the Sprint GT and GTV, and the Montreal. Giovanni Bertone founded his eponymous car design and fabrication company in 1912. After World War II his son Giuseppe "Nuccio," also a designer, took over the company and greatly expanded its operations until his death in 1979. It appears that Nuccio's widow Lilli ran the company after his death; she was running the company when it went bankrupt in 2014 after 102 years of operation.

In 2016 rights to the Bertone name were acquired by an architect who estab-





lished a new Bertone Design group that employed a few of the original Bertone employees. Rights to the Bertone name subsequently changed hands a few more times, ultimately ending up with a pair of brothers in 2022. The brothers, Mauro and Jean-Franck Ricci, founded a new Gruppo Bertone and in 2022 announced the limited edition GB 110 car.

The list of notable designers who worked at Bertone include Franco Scaglione, Giovanni Michelotti, Giorgetto Giugiaro, and Marcello Gandini. Included among

Bertone's non-Alfa designs are the Fiat 850 Spider and Dino coupe, ISO Grifo, Lamborghini Miura and Countach, Lancia Stratos, Maserati 3500 GT, and Volvo 262C and 780.

BERTONI

Italian born Flaminio Bertoni stumbled into car design after his father's death when the teenaged Flaminio had to get a job at a local *carrozzeria* to support his family. While working there he studied sculpture, ultimately opening his own studio where he did designs for *carrozzerie* while indulging his passion for sculpture.

In 1931 Bertoni fell in a love with Giovanna Barcella, whom his mother forbade him from marrying. He responded by closing his studio and moving with Giovanna to Paris where they married. Two days after the birth of their son in 1932, Citroën offered Bertoni a job.

At Citroën Bertoni designed iconic pre-war and post-war cars: the Traction Avant, 2CV, H van, DS, and Ami 6.

If You Go

Joe Hurwich and I visited Volandia the day after we finished the 1000 Miglia, just



before I dropped Joe off at Malpensa for his return home. Although signage in the airport terminal indicates that Volandia might be accessible by foot, I cannot confirm that it's possible. Since we were in a rental Fiat 500 Hybrid filled with luggage, we drove to the museum's free parking lot.

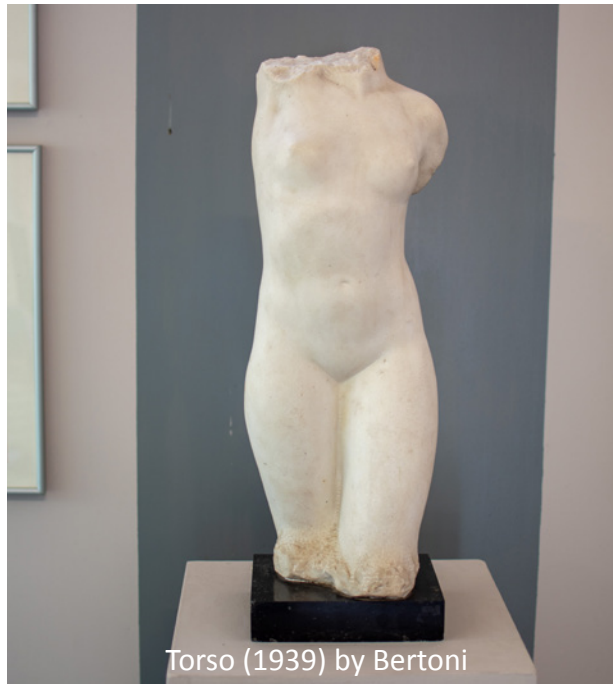
The day of our visit was very hot, so were uncomfortable while viewing the cars and artifacts without air conditioning in the museum building. After leaving the building, we encountered a bird on the sidewalk that didn't fly away as we approached, likely from torpor due to the heat. The heat dissuaded us from viewing the aircraft exhibits. *CAMS*



Lancia Stratos



Lamborghini Miura



Torso (1939) by Berto



Citroën 2CV



Citroën H van





Citroën DS19



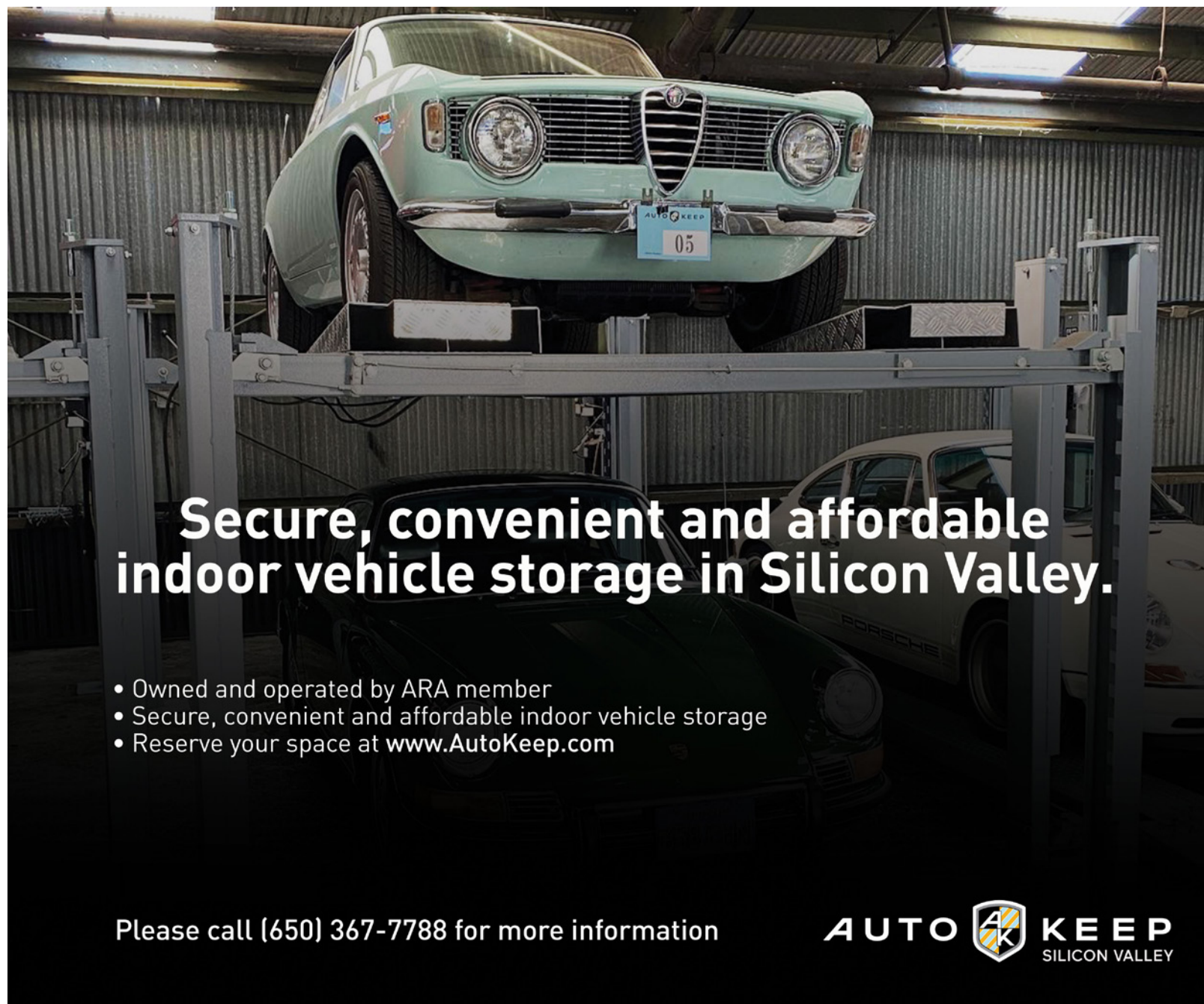
Citroën Traction Avant



I-Slim (Bertone)



Fiat (Bertone)



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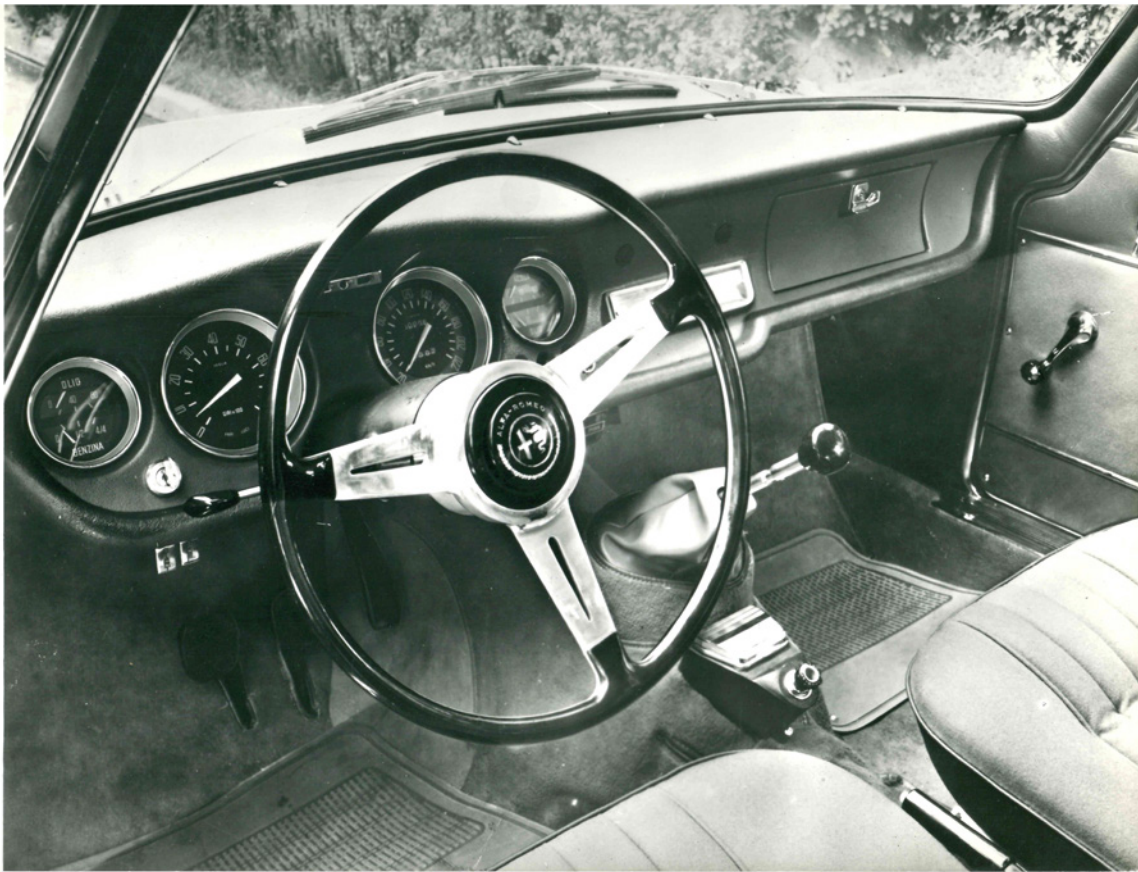
GIULIA SPRINT GT

Alfa Romeo



GIULIA SPRINT GT

Alfa Romeo



GIULIA SPRINT GT

Alfa Romeo



GIULIA SPRINT GT

Alfa Romeo



Type 115 Steering

Mark Thornton

In this article we go forward from previous articles “*Type 115 Burman Steering Box*” and “*Type 115 Front Suspension*” to discuss type 115 steering. We will look in detail at a remarkable design feature, non-Ackermann steering geometry. The frame of reference is excellent type 115 transitional handling.

Driving these stout sports cars can be so easy and intuitive that we may never give the steering a thought. Alfas can be like that. You can forget about how they are built and simply immerse yourself in the sensations of driving.

In parallel with the rugged front suspension and low-friction Burman steering box, Alfa designers made an inspired choice in selecting non-Ackermann steering geometry for these cars. I think this subject, although steeped in a certain complexity, is worth our attention. One of the benefits of this design is that you can more easily feel what the tires are doing through the steering wheel. That’s a necessary focus for high performance driving.

My view? Non-Ackermann steering geometry is among the features that make the type 115 cars so much fun to drive. I think that design choice makes for an interesting story. To tell the story we will ask a question and answer it two times.

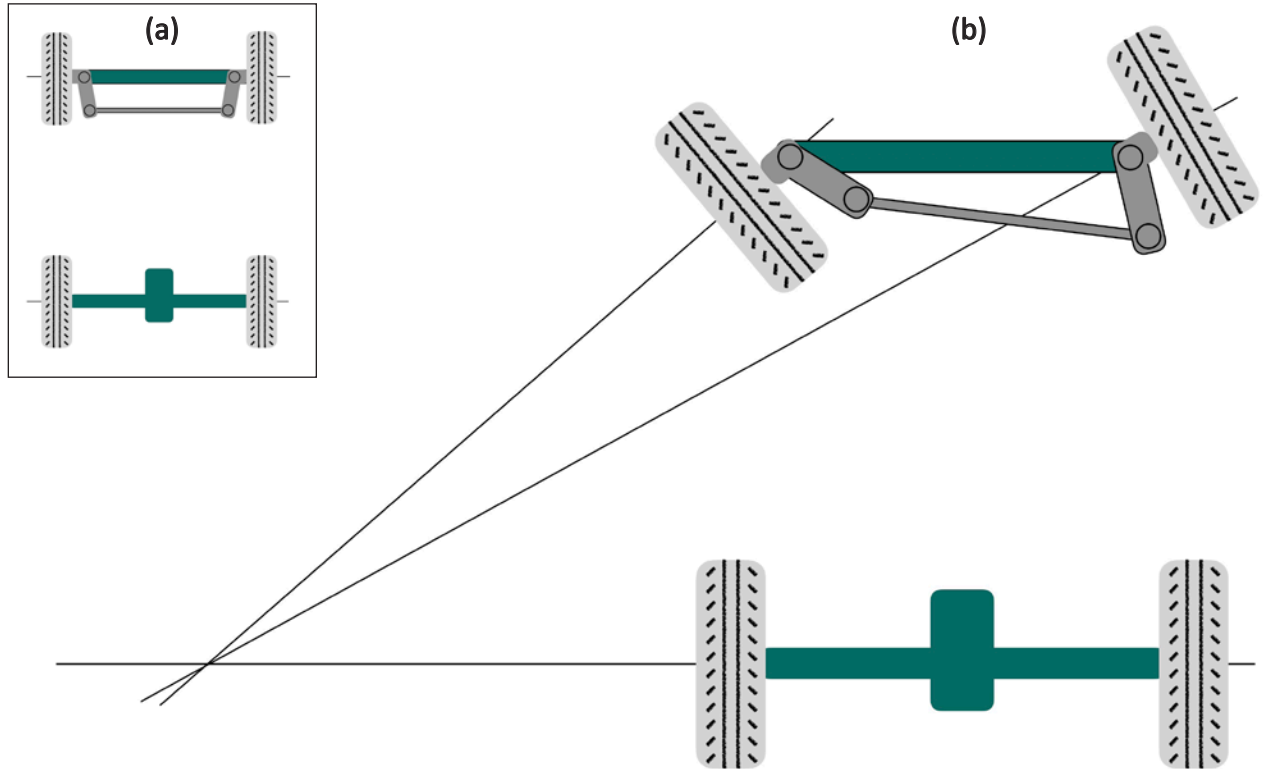


Fig. 1. Ackermann steering: (a) wheels straight and (b) wheels turning left

The first time through must necessarily be less than specific, as there’s a lot of information to consider, particularly how tires work at speed, a subject engineers call tire dynamics. After sketching tire dynamics, we will answer the question a second time, using more specific language.

The question: Why non-Ackermann?

To generate the best turn-in and cornering we drive the car with the steering turned just enough to bring out the best from the front tires, getting close to the maximum grip for the tires, without going past the maximum. To the driver this feels like an edge. For best turn-in, we work the tires up to the edge by gradually applying

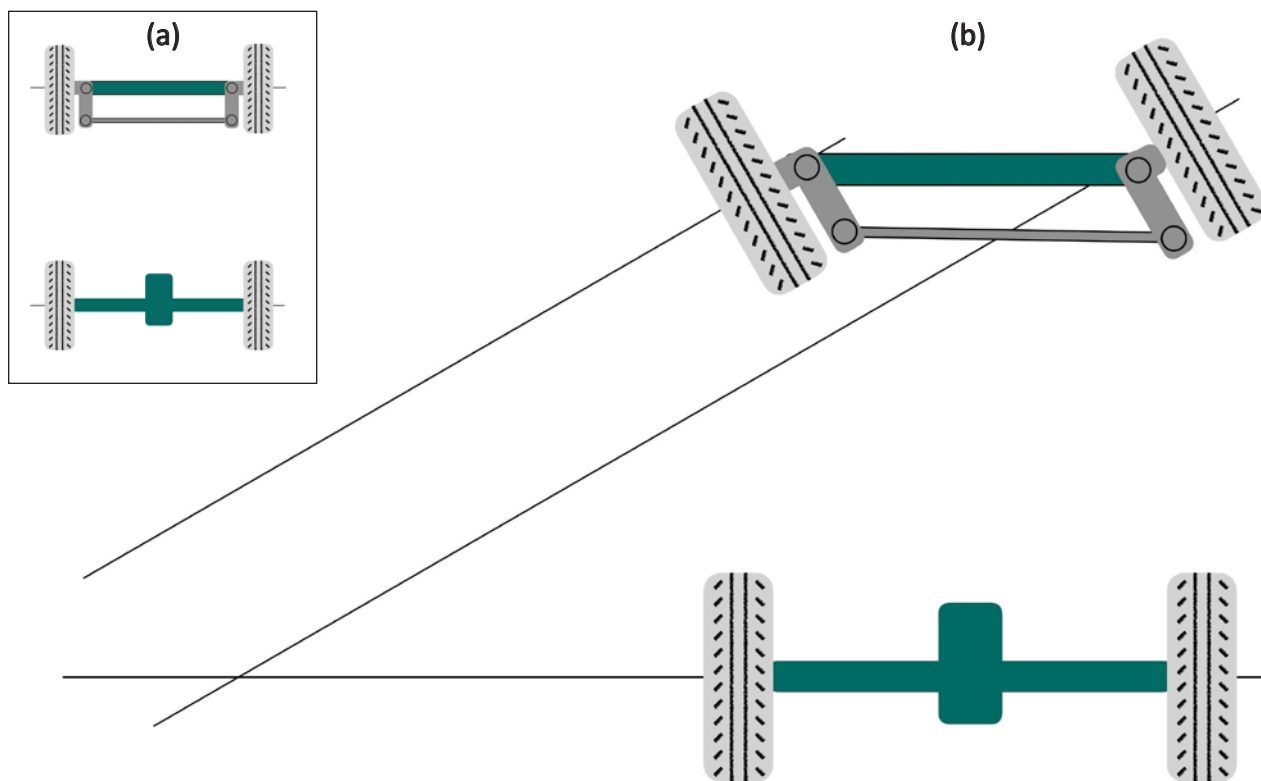


Fig. 2. Non-Ackermann steering: (a) wheels straight and (b) wheels turning left

steering. If we go too far, go past the edge, the tires will turn the car less effectively.

Past the edge, the driver needs to correct by dialing out a little steering. If the driver does so, the tires can recover, and once again turn the car effectively.

Alfa's non-Ackermann design keeps the front tires parallel. Each tire generates tire dynamic force perceived at the steering wheel. Because the tires point the same direction, they tend to generate dynamic

force at the same time. This gives the driver more tire dynamic force to work with, making it easier to feel what the tires are doing, making the needed correction effectively.

That's why non-Ackermann.

NON-ACKERMANN STEERING GEOMETRY

Shortly after I bought an Alfa, an experienced tuner explained to me that Alfa selected what is called non-Ackermann steering geometry for these cars.

That was a new term to me, so I asked about the concept. We shared quite a discussion.

Inspection, looking at how the pitman arm and steering idler arm line up on my own Alfa, inclines me to agree that it's true. Let's take a moment to understand Ackermann steering geometry and what makes non-Ackermann steering geometry different.

Consider the pitman arm on the steering box, and the similar arm on the steering idler. On our left-hand-drive USA model Alfas the steering box is on the left and the steering idler on the right. What you look for is whether the link bars that attach to the steering knuckles are parallel, viewed from the top (non-Ackermann) or pointing in (Ackermann).

The basic difference with the steering on type 115 Alfas is that the front wheels remain close to parallel as we turn the steering left or right. That's not the norm. Design engineers select Ackermann steering geometry almost universally for other cars and trucks.

To understand this, it will help for us to picture what happens when we turn the steering wheel on a car with Ackermann steering geometry. Heading straight down the road, the front tires run close to parallel. In practice, most cars are set up with slight toe-in. This term means that the tires point slightly inboard rather than purely parallel. Figure 1a depicts what the Ackermann ge-

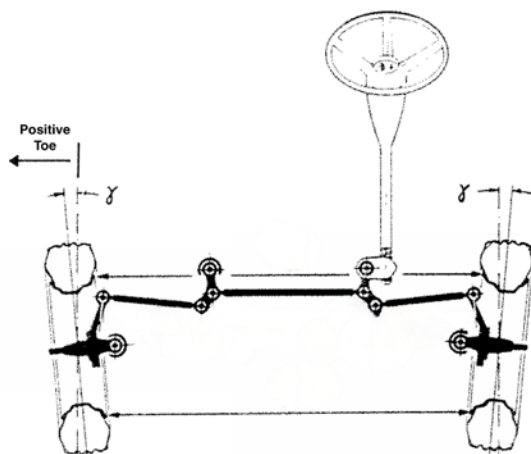


Fig. 3. Toe angle

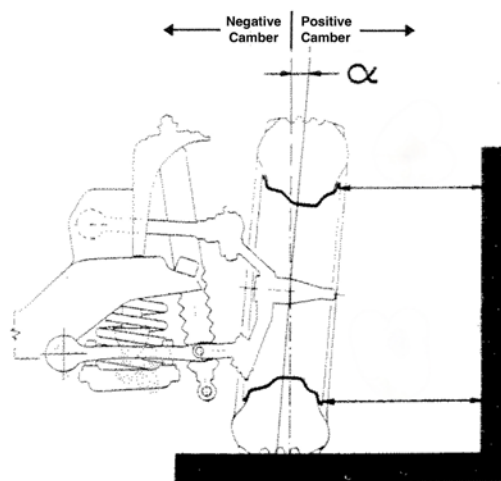


Fig. 4. Camber angle

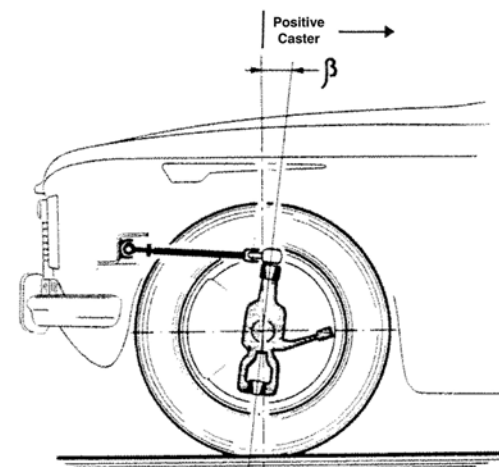


Fig. 5. Caster angle

ometry steering looks like, with the car running straight ahead. To simplify the diagram, this view does not show the slight toe-in.

Straight ahead, wheels parallel, that's simple enough. Note the link bars pointing inward in figure 1a. In Ackermann steering geometry this design feature causes the front wheels to depart from parallel to advance the inside front wheel slightly, turning that wheel more sharply than the outside front wheel, illustrated in figure 1b.

We can state the principle this way. Visualize lines passing through the centerline of the front and rear wheels, at right angles to the plane of each wheel, extending to the center of the turn. In this situation, with the front wheels turned to the left, the car will move left around a point where the lines through the front wheels intersect

and meet the line through the rear wheels. Ackermann steering geometry advances the inside front wheel through a sharper angle than the outside front wheel, such that the two lines meet at the center of the turn. This keeps the wheels running smoothly in sharp turns at low speed, helpfully reducing the turning circle and easing the effort required on the steering wheel.

We can say that Ackermann steering geometry is optimized for driving slowly in the grocery store parking lot.

In the non-Ackermann geometry, the wheels remain parallel, meaning that the lines through the two front wheels no longer meet at the center of the turn. For reference, we will first look at what non-Ackermann looks like going straight ahead, illustrated in figure 2a.

Straight ahead, wheels parallel, once again that's simple enough. However, note the difference, in the non-Ackermann geometry the link bars do not point inward, or at least not much. In non-Ackermann steering geometry this design feature causes the front wheels to remain close to parallel, turning the wheels by nearly the same angle, illustrated in figure 2b.

In this situation one or the other front tire will tend scrub a bit, not rolling smoothly in sharp turns at low speed. This feels awkward to the driver, tends to generate noise, and increases the effort required on the steering wheel. This is the reason the steering stops on the Alfa limit the car to a relatively large turning circle. Even if you could turn the steering wheel farther the tires would only scrub more, making more

noise while not improving the turning circle very much.

We can say that non-Ackermann steering geometry is not optimized for driving slowly in the grocery store parking lot.

AUTOMOTIVE STEERING SYSTEM TERMINOLOGY

Engineers use a specialized lexicon of terms and phrases to discuss automotive steering systems. Let's begin there, with principal suspension measurements, steering system components, and design concepts. We will minimally sketch the steering system parts and how they fit together. Later in the article we will relate this information to the handling characteristics of the car. Please see figures 3, 4, and 5 for illustration.

A friend, reviewing the article, asked why include these illustrations. The main reason is continuity, referring back to a previous article Type 115 Front Suspension. These terms sometimes get mixed up.

Steering knuckle. Sometimes called a spindle. This rugged forged steel part supports the front end of the car via the wheel bearings, wheels, and tires. The steering system rotates the steering knuckle left and right, thus allowing the front tires to steer the car. To carry the load, the steering knuckle attaches to the suspension via ball joints, upper and lower, on each side, left and right. The relationship of the upper and lower control arms, each locating one ball joint, sets camber, as illustrated in figure 4.



Fig. 6. Drifting—a 1964 Spider takes the apex

Link bar. This part attaches to the steering knuckles, left and right, to allow the steering system to apply force to turn the steering knuckles and wheels. Much the same as the steering knuckles, these parts are fabricated in steel.

Link rods. Link rods run from the link bar to the steering box, on the left-hand side, and from the link bar to the steering idler, on the right-hand side. The two link rods, left and right, are fit with tie rod ends at each end, for a total of four tie rod ends.

Tie rod. The tie rod connects the pitman arm on the steering box to the steering idler. The tie rod is fit with tie rod ends, left and right, bringing the total of tie rod ends

on the car to six, two on the left hand side link rod, two on the tie rod, and two on the right hand side link rod. Adjusting the tie rod ends on the tie rod sets toe-in, as illustrated in figure 3.

Tie rod ends. These are ball joint fittings that allow the link rods and tie rod to adjust in angle as the steering system moves these parts left and right. Steering forces from the steering box and likewise tire reaction forces from the tires pass through the tie rod ends.

Steering box. This assembly responds to steering inputs on the steering wheel, in turn rotating the output shaft.



Fig. 7. Negative camber, lifting a wheel

Pitman arm. The Pitman arm attaches to the steering box output shaft and secures the tie rod ends from both the left-hand side link rod and the tie rod.

Steering idler. The steering idler, located on the right-hand side of the car, in many ways is equal and opposite to the steering box, notably in geometry. The difference is that the steering idler simply

transmits steering forces and tire dynamic forces, rather than generating steering forces. That's the job of the steering box. Both the steering idler and the steering box need to transmit tire dynamic forces so the driver can feel what the tires are doing.

TIRE DYNAMICS

To understand steering geometry design choices, we need to discuss how tires run

at speed, and how steering inputs cause the tires to generate lateral force to turn the car.

Figure 6 shows Patrick Iaboni drifting his 1964 Alfa race car in a right-hand turn in turn 8 at The Ridge Motorsports Park. For this discussion there are three observations to take away from this photo of a fast car pulling Gs at speed. First, the black track*, laid down by fast moving cars, shows the approximate direction of travel. Second, the attitude of the car shows that the fore and aft axis is pointed well inside of the direction of travel--none of the four tires is running parallel to the direction of travel. Instead, because the car is turning strongly, each tire is operating at what engineers and driving instructors call a running angle. Third, the front wheels are pointed inside the car's fore and aft axis.

Figure 7 shows George Schweikle pulling Gs in his 1976 Alfa race car, once again at The Ridge Motorsports Park, turning sharply left in turn 13 at the end of the ridge straight, toward the steep downhill section that follows, known as The Ridge Complex. The camera has captured the inside front tire just off the pavement as George begins to launch out of the turn and down the

* Black track is a term driving instructors use to indicate areas on the paved surface that appear black on account of rubber scrubbed from tires, notably from heavier, faster cars. Black track often shows the line where most of the fast cars are running.

hill. We also see the right front tire, heavily weighted, aimed well inside of the direction of travel, providing strong lateral force to pivot the car. Farther along we will introduce a construct that engineers use to look at this aspect of tire dynamics.

In much of what follows we will look at the tires as if viewing them from directly overhead. This section gives only a brief introduction. For more detail, please see Further Reading at the end of the article.

Running angle. Engineers use the term running angle to describe the angular difference between the plane of rotation of the tire and the direction of travel of the car, as if looking down, vertically, from above. Please see figure 8 for an illustration, in this case depicting a left-hand turn, similar to what we see in figure 7.

Slip angle. Tuners sometimes refer to the running angle as a slip angle, recognizing that the direction of motion of the car typically lags behind the angle of the fore and aft axis. This means that all four tires point inside the turn that the car is actually carving.

Drift. Drift is a technical term that has evolved considerably since I started driving Alfas. Nowadays drift means drastic departure from simply rolling free through a corner. Vast clouds of tire smoke usually accompany this later sort of drifting. I think my friends, decades ago, would have called this a power slide or doing donuts.

For this article, we'll refer to drift as the tendency of the car to follow a path that falls short of the angle of the fore and aft axis, the longitudinal axis. The car can't quite go where we point it. Almost, for best cornering, but not quite. To generate lateral force the tires must run at a slip angle. Slip angle for the tires looks like drift for the car. Please refer to figure 6 for an image of a driver drifting a car through a corner.

This is a good time to recognize that one of the reasons the car drifts is that the rear tires need to operate at a running angle to generate their share of lateral force. Generating lateral force requires slip. When the car drifts the rear tires slip.

LATERAL FORCE CHARACTERISTICS

Lateral force the tire generates depends upon running angle. Most high-performance tires exhibit a maximum in lateral force for a running angle something like six degrees. Tuners and instructors look at this dependence upon angle by using a graph. Please see figure 9, showing lateral force as a function of applied running angle.

This graph, adapted from Carrol Smith's Drive to Win, illustrates the concept in a pictorial manner that we will call notional, not strictly applicable to any one tire or car, not in any precise way. That's why the caption reads notional tire lateral force as a function of running angle. For the tires on the Alfa, the horizontal axis might span from 0 to 12 degrees. Lateral forces on the

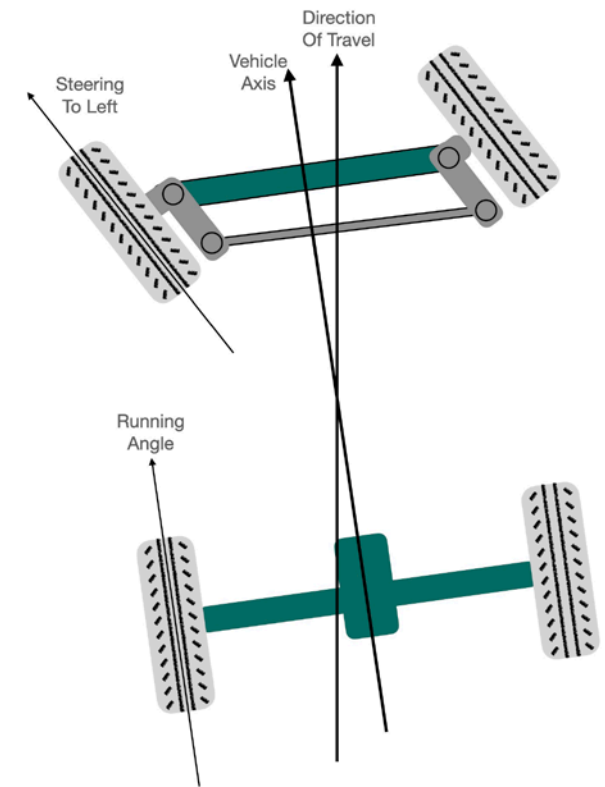


Fig. 8. Notional tire running angles

Alfa can run pretty high, for example 500 lb force as an estimate for a single tire.

A friend, discussing the estimated 500 lb lateral force, immediately suggested that the lateral force could run much higher. Their point of reference was extensive experience in competitive motorsports. I agree and think that my friend's comment is well supported by the evidence. However, 500 lb force is probably representative of some Alfas, such as my own type 115. For

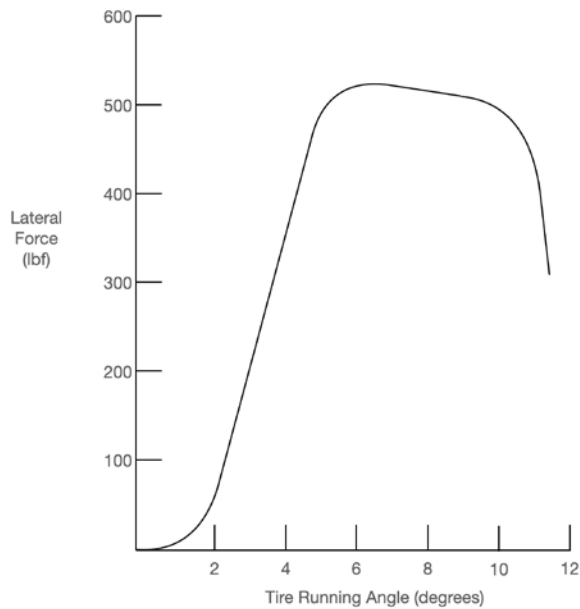


Fig. 9. Notional tire lateral force

discussion purposes 500 lb force is close enough, so long as we remember that other Alfas may vary.

Perceived force at the steering wheel. The force required to hold the tire at a given running angle varies from close to zero straight ahead to a maximum that corresponds to the maximum in lateral force generated. This is the principal way that the driver can feel what the tire is doing through the steering mechanism.

Over the edge. Drivers learn to assess the degree to which a tire is edgy, meaning by that term that the tire exhibits a pronounced loss of lateral force as we go past the maximum. Please refer to figure 9

to see what going over the edge looks like in semi-quantitative terms. Engineers see going over the edge as moving to the right, down the curve from the maximum. Turning the wheel past this point generates less lateral force, not more.

Recovery. There's a comparable assessment of how easy it is to bring the tire back toward the maximum, recovering lateral force, by dialing out steering. Tires of different designs differ greatly in this property. On figure 9 engineers see recovery in terms of moving to the left, back up the curve toward the lateral force maximum.

There's a nuance to how we understand recovery. Although we might dial steering out relatively quickly, the tire exhibits some latency in recovering higher lateral force. In part this latency results from the time it takes for the tire to make a few revolutions, adapting in shape to the decreased running angle.

THE FRICTION CIRCLE MODEL

This simplified model provides engineers a way to diagram tire performance, once again viewing the tire as if directly overhead, looking down. The friction circle model describes how the tire generates forces of acceleration, deceleration, right turning, and left turning. Please see the illustration in figure 10.

Driving instructors use the friction circle model to illustrate why the tire cannot generate maximum deceleration force and maximum lateral force at the same time.

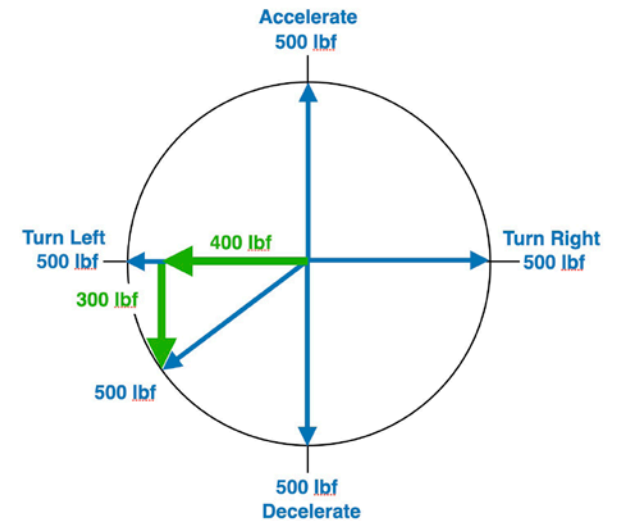


Fig. 10. The friction circle model of a tire

This is one of the reasons that instructors teach us to brake early, to brake straight, and then to use the forward weight transfer to help the car turn in strongly. We dial in steering as we dial out braking.

Suppose for example a 3000 lb car has ideal weight distribution, each corner weight 750 lb. That means 750 lb on each tire. Suppose further that a tire with 750 lb of corner weight on it can generate 500 lb lateral force on that corner the car. To oversimplify, we can state it this way; 500 lb force to accelerate; 500 lb force to decelerate; 500 lb force to the right for turning; 500 lb force to the left. The circle in figure 10 depicts this situation.

This illustration is only notional; I have not made these measurements. But the illustration is good enough to tell our story.

The tire cannot generate 500 lb force to decelerate and 500 lb force to turn right, not at the same time, for example trying to turn in while braking heavily. The tire needs us to brake early, to brake straight, and then to dial in steering as we dial out brakes, as close to 500 lb force as we can get, in total. Accomplishing this is a matter of balance. For most cars there's a magic moment where you can dial in steering without exceeding the maximum that the tire can do.

What's the practical meaning to take away? It comes in two categories: what the car can do and what the car cannot do. The green arrows in figure 10 show that the car can do 300 lbf of deceleration and 400 lb force of left turn. That's enough to work with.

Figure 10 also shows us the reality of what the car cannot do. Try to turn in under full braking? The car just says no. Dab the brakes while cornering heavily? Another no. Lift throttle while cornering heavily? No. Add throttle while cornering heavily? Maybe, but not much. Dial in steering at full throttle? Maybe, but not much.

WHY NON-ACKERMANN?

Now we can return to the question we asked at the beginning of the article. Why non-Ackermann? Re-stating information in

the previous sections from the driver's perspective will help us understand. This time through, we can use more specific terminology to tell the story.

With the Ackermann steering geometry, at speed the sharper angular displacement of the inside wheel works against achieving the best cornering performance. To generate the best turn-in and cornering we drive the car with the steering turned just enough to bring the lateral force close to the maximum for the tire, without going past the maximum. To the driver this feels like an edge. For best turn-in, we work the tire up to the edge by gradually applying steering. If we go too far, go past the edge, the tire will slip more, generate less lateral force, turning the car less effectively. Please refer to figure 9.

The driver needs to correct by dialing out a little steering. If the driver does so, the tire can recover to a lower slip condition, and again generate the best lateral force.

Alfa's non-Ackermann design keeps the front tires close to parallel. Each tire generates tire dynamic force perceived at the steering wheel. Because the tires point the same direction, they tend to generate lateral force and perceived steering wheel force at the same time. This gives the driver more to work with, making it easier to feel what the tires are doing, making the needed correction effectively.

That's why non-Ackermann.

DRIVING DYNAMICS

A long-experienced champion and driving instructor reiterated all this during ground school classes, part of a two-day driving course. This individual, an expert engineer, was well familiar with the Alfa's non-Ackermann setup, explained the advantages at length, and stated that this was just part of what he called flawless handling that he experienced driving Alfas with students.

The driving lesson went like this. For turn-in, transfer weight by lifting or braking, and at the same time work the tire up to the edge, greatest lateral force, by gradually applying steering. If you go too far, go past the edge, the tire will slip more, generate less lateral force, turning the car less effectively.

The driver needs to correct by dialing out a little steering. If the driver does so, the tire can recover to a lower slip condition, and again generate the best lateral force.

To accomplish this correction, the driver must be able to feel the over the edge sensation from the tire in the steering wheel. What the driver feels in the steering wheel is the force required to hold the tire at an appropriate slip angle. When the tire goes over the edge, with too much slip angle, the driver can feel that this takes less not more force on the steering wheel. That's why it feels over-the-edge.

I think that Alfa selected non-Ackermann steering geometry to optimize that feel, during turn-in, giving the driver direct

feedback on how the car is beginning to take a corner.

A core center teaching of performance driving ground schools is to maintain awareness of the tire contact patches on the surface, and to understand how control inputs affect tires, considering lateral force characteristics and the friction circle.

With Ackermann steering geometry the inside wheel is going to reach a running angle that may take that tire past the maximum. Weight transfer away from the inside wheels tends to worsen this undesirable performance characteristic. These two effects combine to make it hard for the driver to feel the over-the-edge sensation, because the two tires, inside and outside, do not reach the edge at the same time while carving a turn.

I've developed the subjective impression that the Alfa allows me to do a better job working with the characteristics of the tires. I think this works both because the tires can perform better, and also because it's easier to feel the maximum in tire lateral force through the steering wheel. That's an example of effective communication from car to driver, just one of the things that contribute to making type 115 Alfas so much fun to drive.

CONCLUSION

I suggest that we recognize the trade-off that Alfa designers made, to favor transitional handling at speed over good manners in the parking lot. Go driving! Enjoy the confidence type 115 Alfas inspire. *CAMS*

FURTHER READING

For those interested in further reading, I can recommend the Wikipedia article Ackermann Steering Geometry: en.wikipedia.org/wiki/Ackermann_steering_geometry

For an in-depth discussion of tire running angle and cornering forces you may wish to check Carroll Smith's informative book *"Tune to Win: The Art and Science Of Race Car Development and Tuning,"* ISBN 978-0879380717.,

Smith adds detail in *"Drive to Win: Essential Guide to Race Driving,"* ISBN 978-0615592572. I can recommend Smith's books for learning more about driving, based on understanding the performance characteristics of tires, including the friction circle model.

FIGURE CREDITS

Figures 5, 6, and 7 are adapted from illustrations in a factory shop manual. The author thanks Jason Tang for permission to use his photos in figures 6 and 7.

World of Alfa



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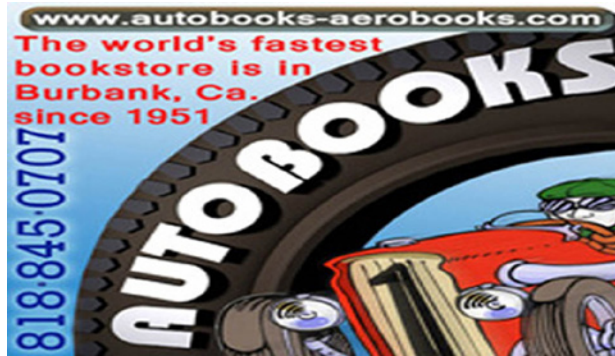


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