



INTAKE MANIFESTO

Official Publication of the Arizona Chapter, NCRS

Summer 2024 Issue



CHAIRMAN'S MESSAGE GARRY MION

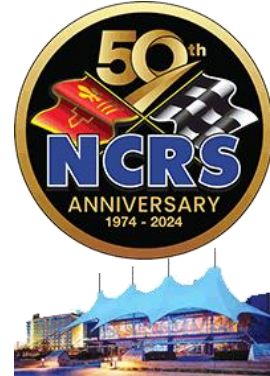
There is no denying that summer has arrived. Hope your summer plans involve getting a chance to escape the heat.

The past three months have been busy from a Regional perspective, with three events taking place over an eight week period. It started in the west with the Las Vegas Regional, then moved east to Cedar Rapids and the Heartland Regional, finishing up in Marlborough, MA with the New England Regional. The Arizona Chapter was very represented in Vegas, several of which obtained the awards they were pursuing. Read more about the Vegas and Heartland Regionals later in this newsletter.

As for local events, in April there was a judging school. The topic was Condition Judging, and there were about twenty five members in attendance. We held it at the home of Paul Morel in his big garage. For most restored cars, condition judging is almost a gimme, but even then nothing is a guarantee. Condition judging can be very subjective, but the goal of the class was to help minimize it. My thanks to Paul for opening up his home and to those who attended.

Recently there was a tech session at the home of Gary Craig. The topic was on Electrical Diagnosis, and was something David Peterson had the idea for and ultimately helped create the class. He even created a display board to illustrate the various electrical circuits one would run across in a car. David did a great job using his presentation to present and explain the various concepts and laws associated with electrical circuits, and then both David and Gary did some show and tell using various tools and real world circuits. About twenty five people were in attendance, including those from as far away as Payson and Tucson. Our thanks to David, Gary, and all those who attended.

As we have done in the past, the Chapter will take a bit of a summer break ahead of, and post the National Convention, which goes from August 4th through August 8th in Hampton Roads, VA.



JUDGING CHAIRMAN REPORT GARY CRAIG

Arizona 2024 Fall Chapter Meet

On November 2nd, the Arizona Chapter will hold our 2024 Fall Chapter Meet at a location in the east valley. There are two possible sites but need to get closer to the event to confirm the facility availability. We moved this Fall event from October to November since many members are still in their northern summer location for the October time frame and could not attend our event in the past. Friday will be a Judging School and Operations & Flight Judging will occur on Saturday. There will be breakfast and coffee and as always, a great lunch at this event. Please mark your calendars! Signups for this event will start in the middle of July!

For those members that are pursuing a Performance Verification test at the October Texas Regional and need to get your car Flight Judged at our Chapter, please contact me (judging@arizonancrs.com) so we can set up a Flight judging for your Corvette prior to the Texas Regional. This Flight Judging could be held in September or October (maybe replace one of the two Judging Schools) at a convenient location. Since Arizona is holding a 2025 Regional in early May plus the NCRS Nationals is located in Las Vegas in September 2025, this is a perfect opportunity for members to get their Corvettes judged and obtain a Duntov, McLellan, Hill or Wallace award.

Remember, that you cannot complete all activities for Duntov type award within the same year so the Texas Regional plus our Arizona Regional in 2025 is a good opportunity.

Have a wonderful Summer and hope to see you at the 50th NCRS Anniversary Nationals in Hampton Roads being held in early August.



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TREASURER REPORT PAUL MOREL

Below are the current balances in the Arizona Chapter accounts.

Checking \$2669.73
 Money Market \$20,106.46



2024 AZ Chapter Board

Chairman
Newsletter Editor
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Gary Craig

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Chris Gazzano

NCRS (National Corvette Restorers Society) is a national organization open to all persons interested in the restoration, preservation, history, and enjoyment of Corvettes produced by the Chevrolet Motor Division of the General Motors Corporation. NCRS is not affiliated with Chevrolet or General Motors.

Membership in the Arizona Chapter of the NCRS is open to all members of the NCRS National Organization. Dues are \$36 per year. For membership information, please visit our website at www.arizonancrs.com.

NCRS registered marks used in the Intake Manifesto are NCRS Founders Award®, NCRS Master Judge Award®, NCRS Performance Verification Award®, NCRS Flight Award®, NCRS American Heritage AwardSM, and NCRS Sportsman Award®. All are registered with the United States Department of Commerce and Trademark Office.

The Arizona Chapter is proudly sponsored by the following businesses. We appreciate all that they do in support of our Chapter. Please Support Them!



2024-2025 SCHEDULE OF EVENTS

Date	Activity & Registration/Contact Information
August 4-8	2024 National Convention Hampton Roads, VA
September 14	Chapter Event TBD (save the date)
September 20-21	Southern California 5-pt Chapter Judging Meet Costa Mesa, CA Registration opens July 1st
October 5	Chapter Event TBD (save the date)
October 10-13	Barrett-Jackson Scottsdale Fall Auction Scottsdale, AZ
October 17-19	Texas Regional Frisco, TX Registration
November 1-2	Chapter 3-pt Judging Meet Mesa/Gilbert (TBD) Save the Date
December 8th	Annual Meeting and Holiday Party Save the Date
January 15-18	Florida Regional Melbourne, Florida
January 18-26	Barrett Jackson Auction Information
January 19	Arizona Concours Scottsdale Civic Center
January TBD	Chapter Event TBD
February 15	Concours In The Hills Information
April 3-5	Carolinas Regional Clemson University, South Carolina
May 1-3 2025	2025 Arizona Regional Glendale, Arizona
July 16-19	Kansas City/St. Louis Regional Springfield, Missouri
September 7-11	NCRS National Convention Las Vegas, Nevada
October 23-25	Texas Regional Frisco, Texas

The above list of events are subject to change. Visit the [Chapter](#) & [National](#) Websites for latest details

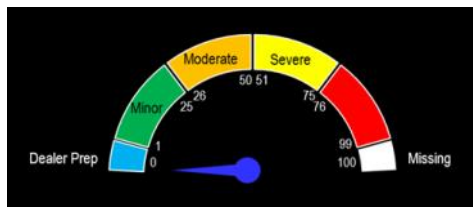
GET INVOLVED!

THROUGHOUT THE YEAR THE CLUB IS LOOKING TO HOLD TECHNICAL AND SOCIAL ACTIVITIES IN ADDITION TO OUR TRADITIONAL JUDGING ACTIVITIES. IF YOU HAVE AN IDEA YOU THINK OTHER MEMBERS OF THE CLUB WOULD BE INTERESTED IN, PLEASE CONTACT [CHRIS GAZZANO](#) TO DISCUSS IT.

CONDITION JUDGING SCHOOL GARRY MION

On April 27th we held a judging school in Scottsdale. Thanks to Paul Morel for opening up his beautiful garage and hosting the event, and to the twenty plus members who attended. The topic of this judging school was Condition Judging, and I utilized a presentation that was prepared for the 2024 Judges Training Retreat in Texas the prior month.

Condition judging, unlike Originality judging, is much more subjective. The judge must evaluate condition based on four definitions that relate to the visual appearance of the item being evaluated: Dealer Prep; Minor; Moderate; and Severe. After concluding which definition applies, the judge would then take an appropriate percentage deduction based on the guidelines shown below left.



Through definition and examples, we discussed each term in a way to help a judge come to their own conclusions on how an item's condition would be evaluated and then quickly assess what deduction would be appropriate.

You can see more pictures of the event by visiting our website [here](#). Thanks to Tom McGowan for putting this photo review together.



TECH SESSION: ELECTRICAL SYSTEM DIAGNOSIS GARY CRAIG

A few weeks ago, we held a Technical Session at my garage. The topic was: Electrical System Troubleshooting on Early Corvettes. David Peterson was the main presenter and he did a great job at describing how a series and parallel electrical circuit affects voltage and current across the various load elements (light bulbs).

Ohm's Law

- $V = I \text{ or } A \times R$
 - V stands for volts
 - I or A stands for amps
 - R stands for ohms
- Volts are a measure of electromotive potential or pressure difference
- Amps are a measure of current flow
- Ohms are a measure of the resistance to current flow
 - Resistance can be intended (load device) or unintended (corrosion)
- Watts = Volts x Amps

David made up a board that had both style electrical circuits and demonstrated the actual readings using a multimeter and a regular car battery. The standard way Chevrolet wired the lights on our Corvettes uses parallel circuits but with added resistance in series due to corrosion or bad wiring, the voltage/current across the light bulbs showed to be dimmer than with clean circuits.



The ignition simulator machine that I have was also operated to show to the members how the electrical voltage changes from all the various spots (switch, solenoid, ballast resistor, coil, and distributor) due to the electrical load. Plus, with the ignition switch showing the function to bypass the ballast resistor during the start process, the bigger spark in the eight spark plugs could be seen by all.

Many lively discussions were had and I have to thank David for presenting this topic to our members. Many donuts were eaten and a bunch of coffee was consumed. I believe that many members got some very good information from this technical session. Please visit the website [here](#) to see more pictures taken by Tom McGowan.



REGIONALS THIS QUARTER GARRY MION

During the last quarter there were three regionals.

Starting us off was the SoCal Las Vegas Regional, April 9-12. Several Arizona Chapter members were in attendance to have cars judged and/or participate in the judging activities. Congratulations go out to several members who earned awards, and I've included pictures from the banquet for most of the people (my apologies for those I missed). You can view event pictures taken by Vinnie Peters by going [here](#).

Pictured below (left to right) are Chris Gazzano – 1971 PV, Leo Michaud – 2003 PV, Kevin DeWitte – 1965 Top Flight, Pat Garland – 1968 Top Flight, Margaret Craig – Sportsman. Not pictured are Craig Boiley – 1963 Top Flight, Don Troyer - Sportsman.



Pictured at left are most of the Chapter members that attended the event. Keith Kolerus received his Master Judge Hat (left side of picture).

Next up was the Heartland Regional in Cedar Rapids, IA, May 2-4. The event was held at Hawkeye Downs Speedway and Expo Center. There were a few Chapter members in attendance. Upon our arrival on Thursday we were greeted with rain through most of the day.

A decision was made to keep the cars in trailers or on the judging field and postpone operations till Friday morning, which turned out to be a very nice sunny day. A special treat on Friday afternoon was a visit to Duffy's Classic Cars (picture at right). Most of the cars there were for sale. Free tickets were provided if you wanted to see the Friday Night Races at the Speedway. You can go [here](#) to see pictures taken by Vinnie Peters.



Finishing up the quarter was the New England Regional in Marlborough, MA, May 30–June 1. You will be able to see lots of pictures taken by Vinnie Peters by going [here](#). The New England Chapter has posted some 1200 pictures on their website [here](#), and some YouTube videos [here](#).

WHAT'S NEW FOR CORVETTE IN 2025 PAUL MOREL

Back in 1979 when Corvettes were still being produced at the St. Louis factory, workers set a record for production by assembling 53,807 Corvettes for the model year. As for official stats for the 2023 model year, we can officially tell that 1979 still owns the Corvette production record, while the 2023 model year is now second all-time with 53,785 cars produced. That's a margin of just 22 cars to tie the all-time record and 23 to beat it.

In 2024 Chevrolet introduced the E-ray. A hybrid with the LT-2 engine power plant and two additional electric motors. 2024 production numbers through May of 2024 are at 31,398. The production year was to end on July 12. However, latest estimates may bring production to a close in early August. The record production number does not look in jeopardy for 2024, Although the numbers do show high interest in America's favorite sports car. A record number of Z06 cars were produced, 22% of total production. The plant is producing approximately 184 cars per day.

As for 2025, what is on the horizon? The biggest news is the introduction of the [ZR1 on 7/25/24](#). As for the engine, a rumored LT7, a twin turbo flat plane crank currently in the Z06 capable of producing 800 HP! Click on the pic at left to view the Chevrolet teaser video. There is also [this](#) video on Youtube that is worth viewing.

Once again, the Chevy Corvette will be available in Stingray, Z06, E-ray and ZR1 variants, in three trim levels across Coupe and Convertible body styles. Seven paint colors will be dropped for 2025 including: Accelerate yellow, Amplify orange, Cacti green, Carbon flash metallic, Ceramic matrix gray metallic, Hypersonic gray metallic, and Silver flare metallic. Meanwhile, three new colors are being introduced. Or to be more specific, one all-new color and two re-turning hues:

- Competition Yellow Tintcoat – previously available on the C4 Corvette
- Hysteria Purple Metallic – new for the 2025 model year
- Sebring Orange Tintcoat – previously available on the 2019 C7 Corvette as well as the 2020 and 2021 C8 Corvette

The 2025 Corvette also gains blue custom leather stitching for the Jet Black interior colorway, a new interior color called Habanero, while the C8 Corvette Z06 gains a new 10 spoke wheel design with four different finishes. The new model year also introduces Velocity Yellow painted brake calipers, likely replacing the current Edge Yellow calipers, which should pair nicely with the new Competition Yellow Tintcoat paint option. Moreover, the C8 Corvette Stingray's Z51 Performance Package will now feature a revised spoiler, adding to the vehicle's aerodynamic capabilities and visual appeal.

Other possible changes not confirmed are: Mid cycle refresh for all variants, HVAC control and wall control switches, wireless charging relocation, screen location, and slight rear and front fascia changes. I guess we will have to wait to know for sure.



C4 AND C5 OWNER ADISORY TOM MCGOWAN

In the Corvette hobby we often experience long-term ownership of vehicles that can pass from one generation to the next or to another owner. In most cases the knowledge transfer doesn't always follow the transfer of the ownership of the vehicle. As we know, a great deal of knowledge is required to maintain and preserve older Corvettes. Critical information, such as the following, is important to share with future owners. And, it's also important for people that own these cars and enjoy them on a regular basis.

Recently, I experienced a need to investigate a problem with a 2007 vehicle (not a Corvette) that was potentially thought to be related to a problem with the PCM. (Powertrain Control Module). Upon further review and investigation I found that a replacement PCM was no longer available for this vehicle, and I was informed by an expert that the rebuilt ones on offer were suspect. As it turned out, I was lucky as the battery was the culprit. The battery would start the car, but it was putting out low voltage and thereby affecting the proper operation of the PCM. It got me thinking about our Classic Corvettes.

I applied the theoretical problem to a C4 ('84 - '96) and C5 ('97 - '04) Corvette thinking, This could be a real problem if GM (or it's suppliers) don't provide the PCM or ECM (Engine Control Module) for purchase anymore. I went to a Chevrolet dealer and met with a very helpful Parts Manager, who naturally had access to what was, and wasn't available anymore from GM.

My findings are as follows:

- All '80's Corvette engines no longer have PCM units available for purchase
- '90 and '91 LT5 engines (375HP) no longer have PCM units available for purchase
- '90's L98 engines (230HP) no longer have PCM units available for purchase
- '92, '93, '94, '95 LT1 engines (300HP) DO HAVE PCM units available for purchase through GM
- '94 and '95 LT5 (375HP) no longer have PCM units available for purchase
- In '97 GM changed from the PCM to the ECM. In '97 the PCM was discontinued
- '97 LS1 (345HP) ECM IS AVAILABLE for purchase from GM

All units from '98 to present time are available

In my opinion, and free advice is worth what you paid for it, if I was an owner of a C4 or C5 Corvette I would be searching hi and low for a PCM or ECM (based on your model year Corvette. Happy driving.....

DRAG RACING CLUES DOUG BROWN

I have owned my 62 corvettes since 1972 when I purchased the car from a gentleman on my paper route. I was only 15 years old living in Council Bluffs, Iowa, and had a bad case of the car bug as I was within a year of getting my driver's license.

When I purchased the vehicle, I did not really know what I was looking at and did not notice the signs of its drag racing past. The car sat on a pair of mismatched worn-out slicks on the back and very tall narrow wheels and tires on the front. It was without an engine, but looking at the remaining exhaust system you could see the added exhaust dump sections coming off the exhaust system under each door rocker. The car came with a four-speed transmission and the owner told me the rearend had 4:11 gears. Of course this was Greek to me, all I knew was the car was mine. I was so excited as I steered the car home as my dad towed me home behind the family Rambler.

My father was in the Air Force and was about to be stationed in Turkey for the next year and the family was staying in Iowa to remain in school. The only way he would allow me to purchase the car was if I agreed to wait until he got back to put an engine in the car.

A year later, (the longest year of my life), I acquired a low mileage 327, with double-hump heads and a racing cam. I fulfilled my agreement and installed it in the car with my dad. When we got it running, I could hardly wait to drive it! My dad told me to drive it around the neighborhood, but DO NOT TAKE IT ON THE HIGHWAY. So, I idled around the neighborhood and showed it off to all my friends. Of course, I quickly got bored with this and decided to take it on the highway to open it up. I slowly pulled onto the two-lane highway and slowly ran up the gears. Feeling bold I gave it a more throttle and the tail of the car immediately squatted down and off we went. It still wore those worn-out slicks and the rear of the car slowly fish tailed back and forth as I accelerated. I just about wet myself! I gently backed off the throttle and decided to retire back to the neighborhood.

Once I got a used set of wide Goodyears tires with Keystone mags on the car, I was off terrorizing the town and leaving burnouts everywhere. I quickly progressed from an old used 4-barrel carb to a new Holley double pumper and then to a 3 duce, which was outstanding. This car just screamed! If I could just hook up the tires, I knew I could pull the front end off the ground. But the rear leaf springs were shot and were only held together with hose clamps and home-made plates and bolts. Every time I really got into it on a surface with grip, the back end would bounce violently.

I quickly learned you did not want to get on it unless this thing was pointed in a straight line, otherwise you were going to be in the ditch or into a phone pole. Which I almost did and about wet myself!

At \$1.40 an hour, working at the local truck stop, money was tight, and I did not have enough to allow me to make many more improvements on the car. In hindsight I was lucky I did not have the money to make this thing faster as I probably would have wrecked it.

As I said, the owner had told me the car had 4:11 gears which I later found out was great for drag racing but was a pain if I wanted to drive very far. I once drove the car 160 miles from Council Bluffs to Ames Iowa to see a high school friend in college at Iowa State. It took forever and the engine was screaming most of the time. If I slowed the rpm's down to a reasonable roar, I could barely meet the then speed limit of 55 miles per hour. I know I was passed by several old ladies going to church and at least one horse and buggy.

I drove the car through high school and college (at ASU), and it was retired to the garage once my wife and I had kids in the early 80's. The only time it was out was to clean the garage, give the old girl a wash, and back under the tarp she went.

I decided if I was ever going to get her back on the road, I needed to get to it, as I am not getting any younger. I started a body off restoration two years ago, which I hope to finish in the coming months and have it judged.

During the restoration I had planned to change the 4:11 gears to something a little more drivable. When I pulled the differential to have it re-gear, upon removing decades of oil I could read in grease pencil **4:56!** No wonder I could not drive this thing at speed for any distance! It also explained why the speedometer always said I was going faster than I was. I was able to source a numbers and date correct rear differential from Ron Burke, whom many of you know. I had it rebuilt at Arizona Differential with 3:55 gears which I expect will greatly improve the driving experience on road trips. And yes, I changed the speedometer gear in the transmission to match the new gearing.

When I started the restoration of the leaf springs, I found that I had 5-leaf configuration that were badly bent, and a couple of leaves had the ends broken off. The NCRS Judging Manual and all the parts sources only called for 4-leaf configuration. In talking with Ron Burke, he indicated 5-leaf springs were very rare, but he had several sets which I might be able to purchase (or purchase replacement leaves). When I met up with Ron, we examined the leaves and were quite perplexed by the configuration. We concluded the original leaf springs had been disassembled and an additional leaf was added to the stack. The additional leaf appeared to be the longest top leaf with the ends torched off to nest properly with the others.

After solving this mystery, I was able to have the leaf sections re-arched to original specs at Valley Spring Service, in Phoenix. And Garry Mion assisted me in re-banding the leaf springs. They look as good as new.

Looking back at all the signs, this car must have had quite the drag racing history in the first 10 years of its life. I can only imagine it being campaigned around southwest Iowa and the young men which made the modifications in their driveways to increase performance. Now 50 plus years later, I only wish I had talked with the previous owner to find out the specifics of the car's racing history. But at 15 to 19 I was more concerned with making my own history with the car, which I certainly did!

2X4 WCFB CARBURETOR ANALYSIS RON BRENNAN

2X4 Carburetor Fuel Information for My Survivor 1957 Corvette Dynamometer Testing of Primary Jets Beginning January 22, 2024

Tags are correct for an April build date. Front tag is 2626S. Rear tag is 2627S. Air horn and body casting numbers agree with the NCRS judging manual.



ENGINE—FUEL SYSTEM 6m-62

(assembled in step 9a) in position on boss. Make sure cam and levers operate freely.

steps 8 thru 14 of "Disassembly of Bowl Cover Upper Components".

Carburetor Body

Bowl Cover Lower Components

Bowl Cover Upper Components

NOTE: Assembly of carburetor body, bowl cover lower and upper components are the same as for WCFB single Carter carburetor body. The bowl cover upper components for front carburetor do not include

INSTALLATION

The steps outlined in single WCFB Carter carburetor installation can be followed for dual carburetor installations except for variations necessary to connect the two carburetors. Caution should be observed to connect and tighten properly all fuel line connections. Adjustments 1 to 4 should be performed as outlined in "Adjustment on the Car" of this procedure.

SPECIFICATIONS

Carburetor Part No.	Carter (Rear) 2627S	Carter (Front) 2626S	Metering Rods		
Throttle Bore			Economy Step	.077"	.077"
Primary	1 1/16"	1 1/16"	Power Step	.068"	.068"
Secondary	1 1/16"	1 1/16"	Float Setting		
Main Venturi			Primary	3/4"	3/4"
Primary	1 1/16"	1 1/16"	Secondary	3/4"	3/4"
Secondary	1 1/16"	1 1/16"	Choke Setting	On Index	None
Small Venturi			Accelerator Pump		
Primary	1 1/16"	1 1/16"	Capacity—		
Secondary	1 1/16"	1 1/16"	10 Strokes	18.5cc to 21.5cc	18.5cc to 21.5cc
Low Speed Jets			Idle Mixture		
Idle Needle			Screw		
Orifice (Primary)	.0595"	.0595"	(turns open)	1/4 to 1 1/4	1/4 to 1 1/4
Primary	.031"	.031"	Idle Speed—		
Main			Standard	600 RPM	600 RPM
Metering Jets			Powerglide	600 RPM	600 RPM
Primary	.0935"	.0935"	(In Drive)	(In Drive)	(In Drive)
Secondary	.052"	.052"	Corvette	600 RPM	600 RPM

The metering rods are cast brass and marked 75-903. I checked the needle travel through the inspection port. They bottom when running under vacuum, and there is no mechanical linkage. The choke body is cast 170-506. The choke cover has an 8 on the bottom section. The index mark that is described in the literature is missing, probably a replacement. I am using the CARTER label in the molding as my reference for adjusting the choke setting. The setting near **A** originally worked well.

Kirk Mitchell, a member of the SACC, suggested that my car is running rich after following me on an outing to Carefree, AZ. I long suspected the engine is running rich because the gas mileage is 5 MPG in town, and 14 MPG on a trip to Holbrook, AZ. Based on the adjacent chart that I bought on-line, I ordered 3 sets of jets from mikescarb.com that are smaller than the listed stock 0.0935" so 0.092, 0.089, and 0.086.

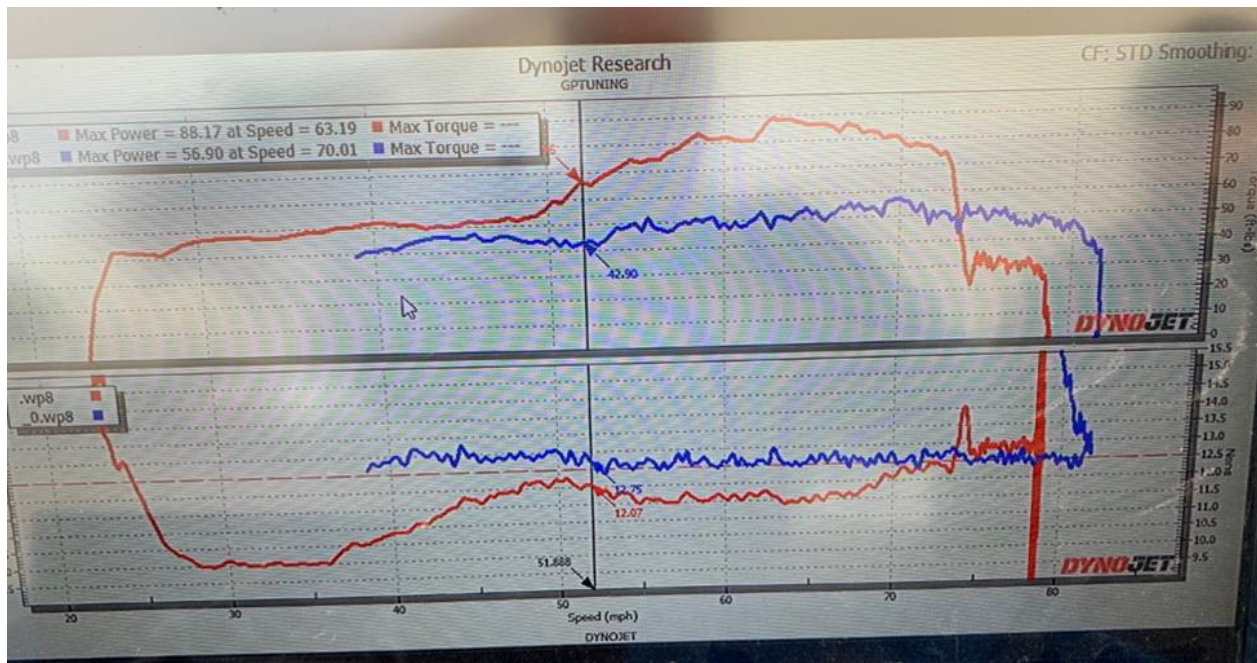
I found a dyno test vendor that rents a dynamometer and crew for a 2 hour minimum test at \$175 per hour and measures HP and Air-Fuel Ratio (AFR). The standard tests were 2000 to 5000 rpm with the AFR sensor in the passenger's tail pipe. I drove while doing the tests.

Dyno Testing Data

The chart at right shows the initial test pulls. All tests were in third gear.

The first was with the original secondary jets stamped 120-217. The chart has the AFR in red and the power in blue. Below 50 MPH, the AFR was much too low. It only approached optimum near 75 MPH. Note the power was below 60 for the entire pull.

After the first pull, I replaced the original secondary jets (Dumb Mistake) with the 0.092 jets. The second pull with the jet change showed substantial improvement. The AFR (blue line) was near optimum through the entire pull. Note the power (red line) increase starting at 45 MPH peaking at 65 MPH near 90. We retested several times. The new jets seemed to take advantage of the hot-rod cam. I drove home with the idle speed up 500-700 RPM.



2X4 WCFB CARBURETOR ANALYSIS (CONTINUED)



I had to start over with the idle settings. After many adjustments, the engine starts on the choke and rises to a smooth idle around 900 RPM when it warms up. A slightly richer choke setting near the R gave me this result. The idle air needles opened to 1 1/2 turns seemed best.

However? 16 February 2024

As I attempted to confirm the accuracy of the information I am presenting, I mentally reviewed the experience of the testing day in January.. After the first test, I changed the jets. I put the old jets in the bag where the new 27-92 jets were packaged. That is when I realized that I installed the 27-92 jets in the secondary position. The original secondary 102-217 jets are about half the diameter. They are not

listed on the chart at right.

I inspected the original jets in the primary position that were stamped 120-386, below left (Form 5460 at right indicates 0.086"), and returned the 120-217 jets to the original secondary position, below middle (same as front carb). The performance seems back to normal, with no noticeable performance change. I do not understand how the graph I photographed would conform to a larger secondary jet installation.

CARTER.

FORM 5460
Revised January, 1972

AFB - AVS STEP-UP RODS & AFB - AVS - WCFB METERING JET SIZES

AFB-AVS STEP-UP RODS SIZE	PART NO.	AFB-AVS STEP-UP RODS SIZE	PART NO.	AFB-AVS STEP-UP RODS SIZE	PART NO.	AFB-AVS-WCFB METERING JETS SIZE	PART NO.
.051 x .048	16-583	.067 x .065 x .051	16-488	.070 x .06475	16-127	1.033	120-353
.054 x .048	16-427	.067 x .053	16-462	.070 x .0625 x .055	16-217	1.055	120-374
.056 x .048	16-442	.067 x .053	16-260	.070 x .067	16-81	1.056	120-356
.060 x .050	16-202	.067 x .055	16-259	.070 x .06475	16-241	1.057	120-359
.060 x .042	16-211	.067 x .056	16-439	.070 x .061	16-457	1.059	120-193
.060 x .044	16-193	.067 x .056	16-523	.070 x .0615	16-129	1.059	120-196
.060 x .048	16-194	.067 x .058	16-85	.070 x .062	16-129	1.059	120-196
.060 x .049	16-116	.067 x .064 x .062	16-172	.070 x .063	16-408	1.062	120-362
.060 x .054	16-82	.067 x .064 x .055	16-126	.070 x .063 x .058	16-408	1.062	120-362
.060 x .058 x .063	16-541	.067 x .065 x .064	16-177	.070 x .063 x .058	16-407	1.063	120-365
.061 x .047	16-120	.067 x .064	16-401	.071 x .050	16-243	1.063	120-365
.061 x .055	16-134	.067 x .055	16-126	.071 x .061	16-136	1.068	120-185
.0615 x .050	16-121	.0675 x .055	16-139	.071 x .063	16-382	1.068	120-368
.0615 x .058 x .055	16-217	.0675 x .056	16-26	.071 x .0635	16-26	1.068	120-228
.062 x .053	16-119	.0675 x .057	16-533	.071 x .066	16-128	1.070	120-222
.062 x .055	16-70	.0675 x .064 x .058	16-534	.071 x .067	16-131	1.071	120-371
.0625 x .058 x .047	16-216	.0675 x .060	16-531	.071 x .049	16-446	1.074	120-375
.0625 x .060 x .053	16-164	.0675 x .063	16-286	.0715 x .064 x .058	16-409	1.074	120-374
.063 x .051	16-122	.0675 x .064	16-40	.0715 x .058	16-544	1.077	120-177
.063 x .055	16-101	.0675 x .05325	16-222	.0715 x .060	16-226	1.078	120-377
.063 x .060 x .051	16-404	.068 x .045	16-152	.0715 x .064	16-190	1.078	120-194
.0635 x .055	16-75	.068 x .050	16-51	.0715 x .066	16-189	1.081	120-360
.0635 x .058	16-45	.068 x .053	16-224	.072 x .065	16-392	1.082	120-233
.0635 x .060 x .055	16-165	.068 x .063 x .055	16-564	.072 x .063	16-392	1.083	120-383
.0635 x .061 x .058	16-161	.068 x .055	16-81	.072 x .065	16-420	1.083	120-386
.064 x .061 x .047	16-157	.068 x .057	16-330	.072 x .065	16-402	1.086	120-257 ZWC 15
.064 x .062 x .058	16-159	.068 x .058	16-418	.072 x .070 x .058	16-406	1.087	120-385
.0645 x .052	16-29	.068 x .058 x .065	16-367	.072 x .070 x .054	16-406	1.087	120-385
.0645 x .058	16-35	.068 x .060	16-103	.0725 x .066 x .046	16-31	1.090	120-203
.0645 x .062 x .055	16-160	.068 x .061	16-822	.0725 x .066	16-21	1.091	120-155
.065 x .050	16-36	.068 x .061	16-461	.0725 x .066	16-296	1.092	120-392
.065 x .050	16-112	.068 x .068 x .051	16-460	.0725 x .070 x .064	16-504	1.093	120-162



I could have saved time and money if I had merely checked the carburetors for the current installed jets before I started the project. The front carburetor had 0.0935" primary jets (120-166), above right. I installed the 0.092" replacements. The metering rods are cast bronze and marked 1350.

I purchased and replaced the 0.086 jets with 0.085 jets in the rear carburetor. Driving performance did not seem to change noticeably.

The vendor suggested I try the jet adjustment and offered me a complementary re-test. The graph below is the result of the pull. The blue line in the lower half is the A/F ratio. The idle shows a good ratio. As soon as I increased the revs, the ratio went too high. The power and torque in the upper half in blue showed an erratic performance on the rear carb, but with some improvement when the front carb came into service. The power and torque still decreased as the RPM increased. I noticed that the water temp rose to 180 oF on the trip home. I pulled a spark plug from each bank and both seemed to be indicating lean.



From this, I conclude that the original carburetor jetting works well with the "street cam" that I had installed. The AFR and other observations lead me to this conclusion. I now know that my 57 corvette is running efficiently and I am comfortable knowing that I proved that I have maximized fuel economy. My emotional response to excessive fuel consumption has been proven wrong. I am looking forward to the next club adventure.

68-76 WIPER MOTOR TROUBLESHOOTING CHRIS GAZZANO

This article applies to non-functional wiper motors. Non-functional means no motor rotation at either wiper speed setting, after motor drive is disconnected from wiper arm(s) transmission rods located under grille in front of wiper door. First things to check:

1. Check that wiper motor stop knob (page 3, 70-72 6th edition Technical Information Manual/Judging Guide, Fig.11.0) is set the clockwise (right) position.
2. Check status of wiper fuse (page 41, Fig I 10.6-10.9).
3. Check that when wiper door opens (engine running) thru operation of wiper speed switch or activation of wiper door override (page 42, Fig. I 10.13), that the wiper door limit switch (page 188, Fig. M 22.8) is activated. This switch tells the wiper motor that the door is open and it is safe to start wiper movement. A clicking sound within the switch indicates that it's working mechanically, which usually indicates it's working electrically. If the switch is suspect, disconnect it at its plug and check operational continuity with an Ohm meter. Also, the switch may not be working electrically because of the absence of 12 volts to the plug and will need tracing back to the source.

If all three first checks are ok, next thing to do is to apply 12 volts directly to the motor.

The round motor body has two wire's, red and black, going directly into it thru a rubber grommet. Pierce the red wire with a pointy object and attach to it a jumper wire connected to the 12 volt lug on the back of the alternator. Make sure the ignition switch is in the on position. The black wire goes to ground, at least it was designed that way. You may have to pierce that too and ground it to confirm if motor works or not. If the motor rotates, it's good. If not, and the red wire gets hot the motor has an internal short to ground. If it doesn't get hot, motor has a break in its internal wire windings. I would say that 90% of the time when wipers don't work, it's a motor failure.

KEEP'M RUNNING GARRY MION

On the Saturday morning of our spring chapter judging meet, I drove my 2008 to Cascio motors with no issues. Shortly after we finished setting up and preparing for members to arrive, I decided to take a quick drive to get some creamer for the coffee. Immediately after starting the car I saw two messages on my dash: Flashing Check Engine light and Service Traction System. Yikes. The engine was running rough, similar to having a coil/wire/plug failure. I decided to continue driving to get the creamer despite the warnings. Actually—I decided to drive the car home after the event.

Once home I took off the beauty covers and started to inspect the components under it to see if there was anything obvious that would lead to the source of the problem. After about five minutes, I ran across the #1 injector and noticed that the connector didn't quite look seated. Sure enough, I was able to push it in. Hmmm. Upon closer inspection, I noticed the retaining clip on the connector was non-existent (picture at right), which meant the connector managed to move enough to break the connection to the injector, thus causing the problem I was having.



Reflecting back on the project to replace the oil sending unit, I remember having to remove some of the injector connectors to remove the fuel rail. Because of the age and mileage of the car these connectors were a bit fragile (brittle), so I probably damaged this particular one when either taking it off or putting it back on.

The only real solution was to replace the connectors. After a few web searches it became clear that others have run into this same problem with the injector connectors, and the common solution was to replace them. A quick search on [Amazon](#) resulted in a purchase of a set of eight EV6/EV14 connector pigtails (picture at right). Rather than attempting to splice the new ones into the existing harness, most people were removing the wires and replacing the old connector housing with the new one. Turns out to be a rather simple process, but the frail nature of the old connectors made the task more time consuming because it was essentially breaking apart as I worked with it (picture at left).



To get to the point of removing the wires, it is first required to carefully remove the red retaining clip and blue rubber seal located in the middle of the connector. I used a small pair of tweezers to slowly pry up on the retainer and grab the seal (picture at right).



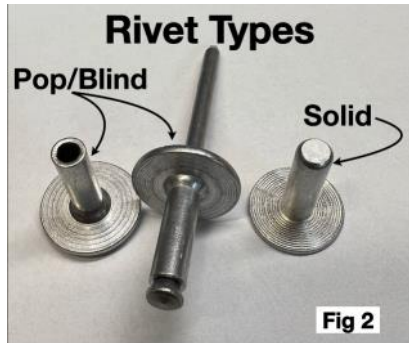
Removing the wires from the connectors requires a very thin screwdriver or pick to push back the retaining clips on one side of the pin connected to the wire (picture at far left) It was easiest to first try this on the new connector pigtail just to get the hang of it. Doesn't take much pressure at all to release it. Once you get the pins released you gently pull on the wires to remove them from the connector (picture at right). Of course, you will want to remember the orientation of which wire color goes into the appropriate connector location. It is the same for all the connectors. Fortunately, you have seven other injector connectors to use for reference.

With the wires removed from the old (and new) connector, then next step was to install the existing wires into the new connector. This was accomplished by simply pushing the pins into the connector. If I recall correctly they only go in easily when properly oriented. I found that always removing and installing the pins with the same orientation as shown in the picture above right helped to make sure everything was going back together in the same way it came apart. Once the pins are installed, the new rubber seal and red retainer are installed. The connector is now complete (picture at right) and ready to be placed back on the injector, this time staying locked in placed.



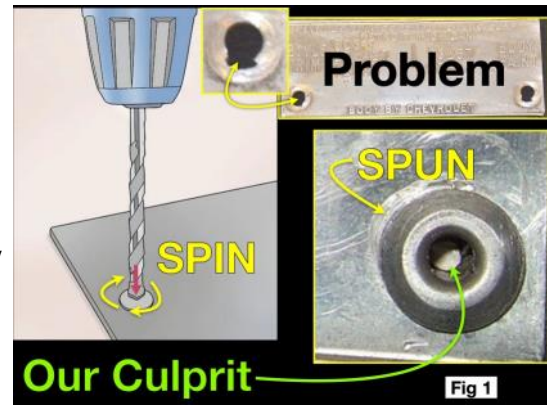
POP RIVET REMOVAL DAVE HOULIHAN

Aluminum "Pop" or Blind Rivets are used many places on our Corvettes and often prove difficult to remove without damage. For example, depending on model year, weather seals are attached to fiberglass. Take Mid-Year Trim Tags as another example - Figure 1. "Spin" marks point out the difficulty someone had taking out an aluminum rivet. How can that be? Aluminum rivet vs steel drill - what's going on here? Problem is - it's steel against steel - our culprit is a small piece of steel.



We see two types of aluminum rivets, solid and blind or "pop". Figure 2. Solids we see on spare tire tubs and body mount hardware. Solids generally installed with an air hammer and bucking bar. Pop rivets are not as strong but are faster and easier to install.

A pop rivet (figure 3) has an ALUMINUM body (aka shell/hat) and a sacrificial STEEL "mandrel" used for installation/setting. A mandrel head is somewhat larger than it's shaft.



Our Culprit

Fig 1

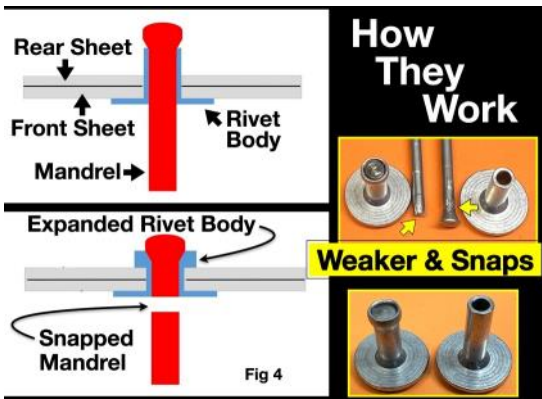
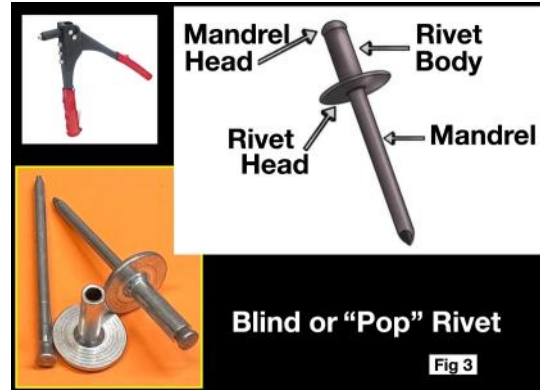


Figure 4 shows our front and rear pieces sandwiched and secured with a pop rivet. Rivets are installed by using a riveting tool to draw the mandrel which causes rivet body to deform / clamp down and form a joint. Near mandrel's "head" is a narrowing/weaker stem part (see yellow arrows) and continued force causes mandrel to "snap" at this location. Our rivet removal problem is caused by remaining steel in our aluminum rivet body. We try to drill it out, goes ok for a bit with our steel drill on aluminum. Deeper we have steel on steel, no aluminum is cut and we get "spin".



Blind or "Pop" Rivet

Fig 3

Easy fix (figure 5). BEFORE you start drilling, use a drift to punch out that remaining steel mandrel section. Now it's steel drill vs only aluminum and your rivet head is easily removed. Once head comes off, use a slightly larger drift to punch out what remains of rivet.



Punch Out Mandrel

Fig 5

Figure 6. Recommend use of a straight drift. A nail set has a taper and you risk expanding rivet body - might crack fiberglass.

Figure 7. So just how long should a rivet be? Thickness of material you are joining plus 1.5 times diameter of rivet body is typical recommendation. When installing my new weather seals into my fiberglass body, I add a washer to distribute riveting force over a wider area. Rivet heads will just pull through softer material and I don't want to risk old fiberglass. Just add washer thickness to your calculation



Fig 6

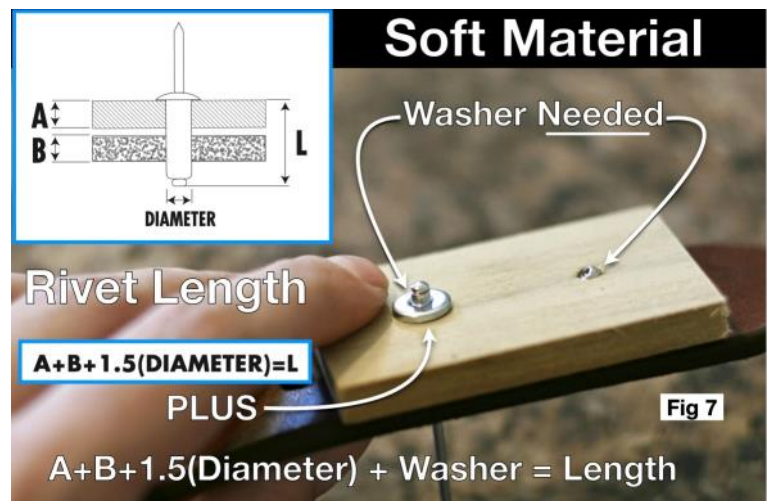


Fig 7

ARIZONA CHAPTER

