

# The Bonding Strip



## **ASHES to DUNTOY**

**By Gary Hiltunen**

**Story on Page 6**



## **SOUTHERN CALIFORNIA CHAPTER**



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## SCC/NCRS DUES NOTICE!!!!

*NO!! We are not increasing our dues! The SCC Board of Directors has voted to add a free year of membership to all current membership. The BOD recognizes that this year we have had limited activities due to the COVID19 pandemic and should be supportive of our members during these times.*

This edition of the Bonding Strip has been designed for Internet optimization. There are links to Pages in the "TOC" (Table of Contents), email addresses and webpages. For Microsoft OS, CTRL click or just click on the link. For the Mac OS simultaneously click with left & right Mouse buttons on the link.

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## Welcome New Members



*Jan Zander & Richard Bach*

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# SCC/NCRS Calendar 2020/2021

TBA	CCC Garage Tour
February 2021	
	SCC Road Tour Central California TBA
March 2021	
5 - 6	<a href="#">SCC Meet at Corvette Mikes in Anaheim</a>
12 - 13	<a href="#">Southern Arizona Chapter Meet Tucson, AZ</a>
26 - 27	<a href="#">CCC Meet at Vivas Garage Nipomo, CA</a>
April	
23 - 24	<a href="#">NCC Meet : Suisun City, CA</a>
May	
13 - 15	<a href="#">Scottsdale, AZ Regional</a>
June 2021	
10 - 12	<a href="#">Heartland Regional, Cedar Rapids, IA</a>
July 2021	
18 - 23	<a href="#">NCRS 2021 NATIONAL CONVENTION in Palm Springs</a>
August 2021	
27-29	NCRS Gallery @ Carlisle 27-29 Carlisle, Pennsylvania
October 2021	
21-23	Texas Regional Frisco, Texas

## Corvette Links: (SKIP ADDS!!!)

Joese Garage: <https://youtu.be/3mrSwx8eSkE>

[Will Anyone Restore Today's GM Cars 30 Years From Now?](#)

[2021 Corvette C8 - FULL Features Overview - AMAZING! - YouTube](#)

[Chevrolet Corvette Doc Reveals C8 Design Development: Video | GM Authority](#)

[Randy Pobst Puts In Hot Laps With 2020 Corvette Z51: Video | GM Authority](#)

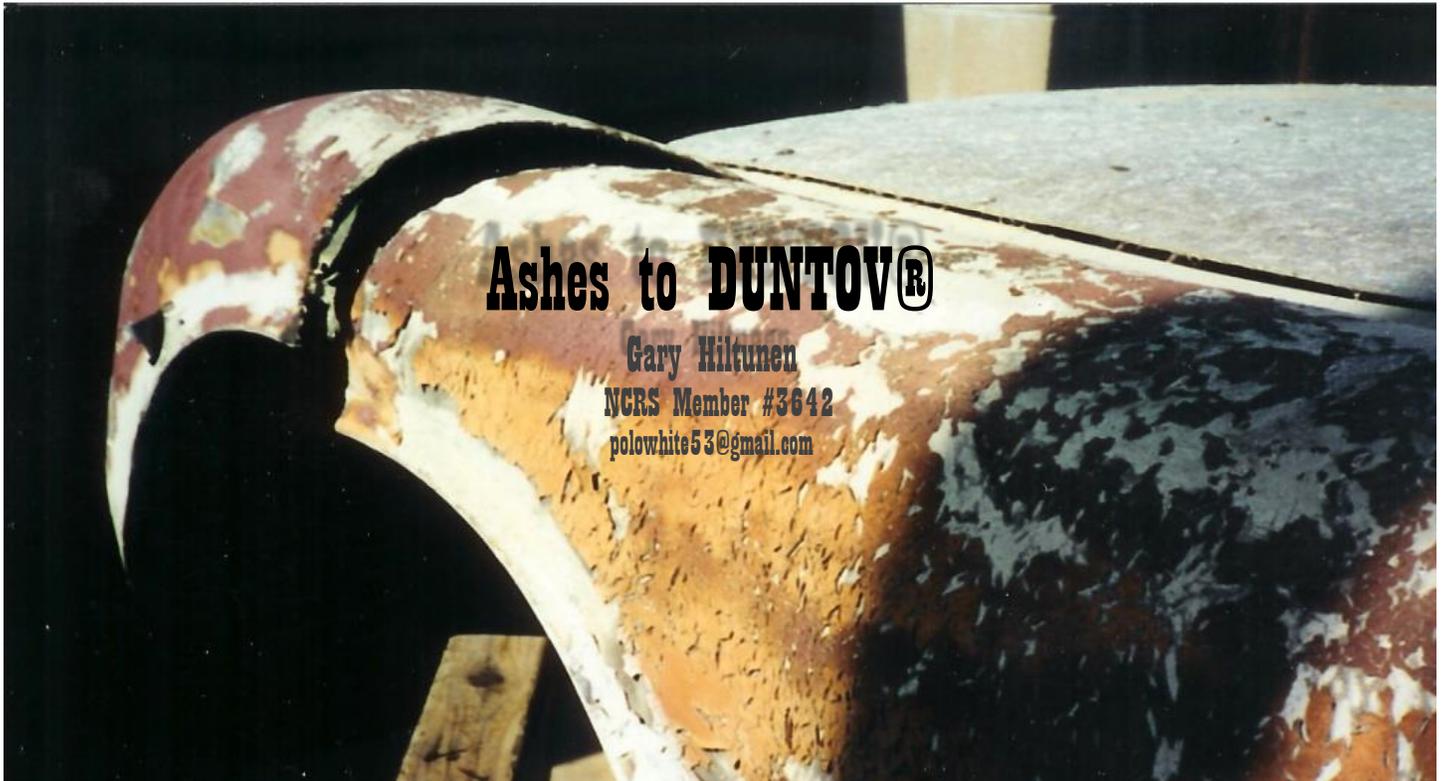
[2020 Corvette C8 review: see how quick it is 0-60mph + 1/4mile... And the shocking UK price! - YouTube](#)

[C8 Corvette Documentary Reveals Engineering Secrets: Video | GM Authority](#)

[General Motors Unveils New Vehicle Safety Brand - Safety - Automotive Fleet \(automotive-fleet.com\)](#)

[The American Icon Is Now An American Supercar | 2021 Chevy Corvette - YouTube](#)





My wife Linda and I started this journey in 1971, making the commitment to restore #298. When we first laid eyes on this 1953 it was in rough shape with the bumpers, grill oval and teeth, both mirrors, side moldings, windshield and frame, side curtains, radio, horn ring, lighter, hood pulls, choke cable, valve cover, washer controls and all knobs along with the most important convertible top and frame missing. What gave some light at the end of the tunnel was what was still present; the original drive train, engine, transmission and rear end along with some interior parts, as well as the seats, the kick panels and dash brow and the vin tag still on the door post.

What we learned and made matters worse was while the car was in the shop having some work done, the shop caught on fire. Fortunately, the '53 was pushed outside, although that did not save it from experiencing significant damage. Besides the missing parts and fire damage, there were also the "modifications;" a missing turn signal boss and all the body seams that needed to be reconstructed. Despite all these known problems, our vision was to treat this as the

resurrection of the Phoenix.

Making the personal commitment to save the 1953 was one thing, but that goal was more challenging than we ever could have imagined. Our faith was constantly being tested. As we look back, we feel that much of the frustration was due to the lack of accurate information that was available on these early cars. It was our perception at that time that they weren't being restored but rather they were being destroyed.

The National Corvette Restorers Society was just getting started. Note that as late as 1981, the NCRS's 1953-1955 Corvette Technical Information Manual and Judging Guide only consisted of 14 pages of the judging guidelines, with no photos, and a possible 400 raw points.

It was about this time that I came to the realization that it would be necessary for me to become my own expert on the 1953 Corvette! It was difficult to get accurate information because this was long before the digital cameras with their incredible detail as well as decades before the internet with its limitless information capabilities. During that time we relied on film cameras, snail mail with club newsletters and publications such

as Hemmings with which to build an information base. Thus, our commitment to restore the 1953 stretched to the actual 43 years it took to get it back to the car it is today.

It's now early 2001, and after spending years doing research and looking for parts, we felt it was now time to get serious. The biggest challenge was going to be the body. It had been treated very poorly and after sitting outside for years the condition hadn't gotten any better. The first step was to stabilize the body by making a fully adjustable body dolly using 1-1/2" and 1-3/4" square tubing. Next came the cleaning; after being outside in the elements for years, there was considerable amounts of dirt, leaves and debris, e.g., at least a 5-gallon bucket worth.

With the body now stabilized on the dolly, the real work could begin on resurrecting the tortured body. Both Linda and I started by stripping off as much of the remaining paint and primers as possible. We sanded the surface down to bare glass using 36 and 80 grit sandpaper. This helped expose the problem areas that eventually



would need to be repaired. If you are familiar with early hand laid Corvette bodies, it should not surprise you to hear that in some areas we found little or no fiberglass and just thick cracked resin that underscored the need to re-skin the entire body. The re-skinning was done after the many repairs were completed.

It was becoming very apparent that, despite our good intentions to do much of the restoration ourselves, we were going to need some skilled help. Thankfully we located an outstanding restorer with a history of doing exceptional Cor-

vette work. Finding a reputable restorer turned out to be the critical point in the resurrection of the 1953. Little did we realize at the time what a true craftsman he was. From the fiberglass work to final paint, and assembly, his eye for detail and uncompromising drive for perfection made the 1953 not just special but exceptional.

Some of the first areas the restorer addressed, based on their extensive damage and time consuming repairs needed, were the fire damaged trunk lid, right rear quarter panel, and left front fender. Starting with the trunk, although the fire damage appeared superficial, the damage went much deeper than first anticipated. That being said, on the outside surface nearly 1/3 of the trunk lid had become delaminated from the heat whereas the inside of the lid experienced much of the same delamination along with the wire mesh radio antenna being so severely damaged that it needed replacing. The repair process began by grinding the burnt fiberglass down to a clean surface then applying layers of fiberglass mat to achieve the desired shape then finishing it with a light cloth (fiberglass cloth is weaved whereas mat is the fuzzy stuff). The rusted and heavily damaged antenna, having been removed earlier, was replaced with a new mesh antenna cut using the original as a pattern and soldered to the antenna cable receiver. The antenna was then fiber glassed to the lid by using a lightweight mat that wasn't over-rosined in order to keep the factory appearance.

Next, he turned his attention to the fire damaged right rear quarter panel. Fortunately, this panel had enough material remaining to use as a form allowing him to repair it to the correct original shape. The glass was repaired using the same procedure as with the trunk lid, grinding the area to a clean surface, laminating with new mat, and finishing with light factory cloth. While he was in this area, there was a key decision to do all the necessary repairs to the trunk and the spare tire tub. The only issue found was the "resin rich" edges where the trunk board sits, meaning that over time big chunks had broken off. To make sure the original factory appearance was retained

only the largest of these flaws were laminated being careful not to over-restore the edges.

The left front fender had sustained a large break above the wheel well opening that extended to the inner fender area. This repair was made easier by having the body firmly mounted on a strong dolly. The preliminary repair method used was to grind a wide groove on both the top and underside of the damaged area. Following the grinding, mat was laminated on both sides to make a solid seamless fix, finally finishing with a light factory cloth. It should be noted that significant repairs such as these, if done correctly, with all the work and curing time can take months, not days like on TV.

With the major repairs completed it was time to move on to some smaller but nonetheless important fixes, starting with the lower front area and the missing left turn signal boss. We were fortunate to have a 1954 available that we used to make a mold of the missing left turn signal boss. Then it was just a matter of correctly aligning the new boss and gluing it in place. The other surface in this area that needed attention was the lower valance. It's not unusual for the lower valance on these cars to be in rough shape, aka curbs.

What is typical for these early cars is that over time the doors become misaligned and no longer fit correctly. Before the doors could be aligned there were two preliminary fixes that needed to be made: first was to grind out and re-glass all the cracks in the door pillars; and second was to fabricate new thicker backing plates to replace the weak thin original ones. This would provide the solid anchor points that were needed to hinge the doors. What is not commonly understood is that this door alignment problem is not with the outer skin but with the inner structure. To solve this problem our restorer had to cut and adjust the door shell, the inner door structure that contains the glove box, then twist the door so it would line up with the outside body securing the repair by clamping and fiber glassing the glove box area with fiberglass cloth as was done originally.

Next came a very important and often overlooked fix that, if not addressed, will cause serious problems later. This had to do with the sagging dash, again a typical problem with these early cars because they have no metal dash bracing.

When the restorer checked the location of the end of the dash brow to the upper door trim there was a 3/4-inch mismatch. If not repaired the problems later will



include the already mentioned the door alignment, the fit of the lower windshield frame along with the side curtains and the convertible top alignment. Instead of going through the repair here, I will instead defer to an article by Bob Conner in The Restorer, Fall 1983, Volume 10/2, pages 34-35, where Bob explains this repair in detail. I consider this to be a valuable article for any of you restoring an early car. The body area between the windshield and the cowl vent suffered from the same problem as the dash because this too dips. The process used involved several steps to fix this problem: first was to cut the cowl vent seal lip on the windshield side to relieve the stress, secondly was to jack the dash from underside to lift the body back to the contour of the lower windshield frame and thirdly to apply some thin glass mat to lock in the repair. Simultaneous to these repairs, the restorer removed the lower dash to facilitate its repairs that included reinforcing the thin broken glass around the steering column, glassing in the extra holes, and laminating the chipped and cracked speaker area. After the upper dash and cowl vent area repairs were completed, he re-installed the lower dash and did some final adjustments to the door fit. We were now ready to re-skin the body.

The only preparation work left at this point was to sand the body, making sure to remove all of the surface contamination. What followed was the critical job of laying four layers of thin mat to bring the form and strength back to the body.

After leaving it to cure in the Southern California sun for the summer it was ready for block sanding. During this step two large and important pieces were pre-fitted, the lower windshield frame and the grill oval.

With the sculpting of the body completed, one more major reconstruction restoration task needed addressed before gel-coating, which was to



recreate the missing body seams. All the body seams had been shaved off and these seams needed to be in place for a very important reason. Being hidden behind the bumpers and the side



stainless trim it would have been much easier not to replace them at all but in fact the seams are the support for the bumper and trim pieces. To accomplish this repair, we had to make all new seams and relocate them on the body. Cardboard templates were made to the body contours where the original bonding could be seen. This area was grooved to accept the new seams that were cut

from a 5/16" thick fiberglass sheet. The seams were first glued to the small groove and then fiber-glassed to the body for strength making sure they could not break off. Although it was time consuming we also added solid rivets to factory specs. Now was a great time to fit all the bumpers and stainless trim, drilling mounting holes at the correct locations, trimming, grinding, and adjusting so the trim would have good gaps, line up and would be easy to install after painting the car.

It was finally time to gel coat the body and again let it bake and cure in the Southern California sun for a couple of months. After curing we had to do more block sanding before the '53 got a well-deserved coat of primer. At last, after years of work the '53 body was whole again. During this process, it was often suggested that it would have been much easier and faster to use the '54 we had parts for, such as the trunk lid and right rear quarter panel that took so much time and effort to repair, except the easy way is not always the best way. Our commitment from the beginning was to restore the car and keep it as original as possible. Because we stayed true to our goal we now have a body that still retains nearly all of its original 1953 fiberglass, being purely the heart and soul of #298.

With the bodywork completed we then moved on to the most important phase of this Phoenix project, the body paint. This seems easy enough since everyone knows that all 1953's are white, specifically Polo White. We soon realized that nothing is easy; especially when it came to reproducing the correct shade of Polo White! After doing considerable research and looking at as many 1953-54 Polo White cars as we could we concluded that if nothing else the perception of Polo



White was very subjective! The common thought was that it was certainly not appliance white but more of an antique white. With those guidelines in mind my restorer and I set out to formulate our own custom mix that would satisfy the requirements for Polo White. After taking numerous spray outs, we developed what we felt was an accurate Polo White finish. Looking back, and putting it in perspective, this was the most critical decision we had to make when restoring the car. If we got the color wrong the rest of the car's credibility would be in question! We're proud of what we accomplished and thankfully the color has been accepted as the correct representation of Polo White.

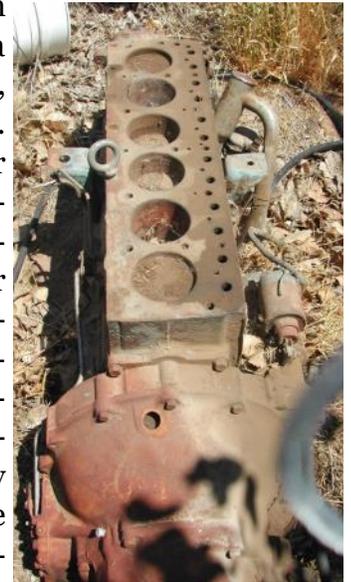
Concurrent to the body and paint being addressed, we were progressing well on restoring the chassis and the drivetrain. It was very apparent the 1953 had always been a California car (meaning no rust) so this made working on and restoring the chassis and its many components along with the engine and transmission a real plus.

We began the disassembly process as listed in order: the removal of the engine and transmission, the front and rear suspension, the rear axle with their associated small parts, the brake and fuel lines, the parking brake cables and finally down to the bare X-frame. Depending on the part that was being restored, the process varied from plating, painting or to the natural finish. For example, the frame, the suspension parts, the rear-end assembly were sandblasted, primed, and painted to replicate the original GM semi-gloss finish. During the restoration, every part was torn down, repaired, refinished and reassembled to the GM standards. Having said that, there were exceptions when safety was an issue and this was especially important when the restoration involved anything electrical. New Old Stock (NOS) or newer parts were used wherever possible because, after all, this is a 60 plus year old car.

The restoration of the engine and the transmission took a more serious effort. The transmission, being a standard Chevrolet item, with the exception of the tail shaft housing, was not difficult to restore. We began by disassembling and

cleaning the transmission housing with all the separate pieces and then used a kit to rebuild it. After the transmission was reassembled it was painted and set aside until it was time to mate it with the engine.

The engine, even though it was basically a standard Chevrolet 235, differed in many ways. Externally the water pump, the intake and exhaust manifolds, the carburetors, the radiator surge tank, the valve cover, the oil pan, the ignition shields, and the tachometer drive distributor were all Corvette only items. This is where we found some of the mounted parts that did not survive.



Internally the Corvette version of the 235 engine has solid lifters and a special 261 camshaft that helps boost the horsepower to 150. Fortunately, the car still had the original LAY stamped 481 block and the 066 cylinder head, that for some unknown reason was found in the trunk. The biggest challenge to any engine restoration is finding the missing parts. We were fortunate to locate the upper and lower ignition shields, 3 Carter YH carburetors and both manifolds. We weren't able to track down the 1953 valve cover. This was an item referred to as "unobtainable". How we resolved this issue was to make our own. During my many years of gathering parts and information I came across an original set of GM prints for the actual Corvette valve cover. (Everyone has their secret stories of their finds so consider this my secret story). That being said, it was my restorer, an extremely skilled craftsman, who studied the original prints and replicated the 1953 Corvette valve cover. There were several important parts I felt that would make or break this restoration and this was one.

The next step after rebuilding the engine and finding or fabricating the missing parts was to paint them GM Chevrolet Blue. This was the Polo

White scenario all over again. There are numerous over the counter suppliers of Chevrolet Blue. If you were to do a spray out as we did you would find that that no two are the same. So, what is correct? It was back to formulating our custom mix. The upside to the research is that our Chevrolet Blue was accepted as a correct hue within NCRS. The final step for the engine was to have it dyno' d and the engine performed flawlessly.

After installing the freshly rebuilt and restored



engine and transmission on the equally prepared chassis we had arrived at the exciting point in our restoration, mating the body to the rolling chassis. Joining the body to the chassis in itself is not a complicated process however, if it is not done correctly, the body could easily suffer some damage. We found that using a two-post lift with carefully placed 2x4's along the body rockers was the safest way to position the body on the lift



arms. The chassis was then moved under the raised body by using wheel dollies to align the chassis under the body as opposed to trying to move the body to fit on the chassis. With one person at the nose of the car supporting the front-end weight we carefully lowered the body onto the chassis. The final step was to adjust the body fit by shimming, mainly at the core support, and then finished bolting the body in place.

Before starting on the upholstery restoration, we decided now was a great time to complete some of the under-the-dash assembly since we had the extra room to work. We started with the windshield assembly, followed by all new wire looms, interior mirror, heater with defroster ducts, the upper cowl vent mechanism and steering column. Upon completion, we were then ready to finish installing the remaining dash items starting with the two gauge clusters (gas/temp & battery/oil), tachometer, radio & power pack, speedometer, hood pulls, choke pull, cigarette lighter, parking brake flasher and switches (ignition, light, wiper/washer, and heater/defroster). The one item that wasn't on the early assembly list as the clock. The disclaimer here is that for those of you that are not familiar with this little temperamental beauty just accept that when it's ready to be judged this is when you have it restored. Even then it's still a roll of the dice as to whether it will work, this is one of those notorious items where the owner will respond with, "it worked this morning", when it fails ops.

We were now ready to move on to restoring the interior. We were fortunate to have a complete set of original seats, panels, and dash brow. We chose not to go with the established source for the upholstery and carpet but instead we hired a local custom shop to replicate the original pieces. The results were breathtaking and we couldn't have been any happier. We decided that even though the convertible top was ready to be installed we would wait to complete the top assembly closer to the end of the restoration. Speaking of the 1953's black canvas top, we had purchased one years earlier that was made by the then master NCRS convertible top expert, John Kennedy. Needless to say this is a very special item!

With the interior nearing completion, the final detail items were put into place, the knobs, the steering wheel with the horn ring, the upper door moldings, the deck lid and the divider trim. When the interior trim was installed, the critical work we had done earlier on raising the dash was apparent. It was absolutely beautiful how the dash brow to the upper door molding fit on to the



deck lid and divider moldings.

Along with working on the interior restoration, there were many items in the engine bay were being taken care of as well. The many bolt on and support items, such as the radiator, starter, generator, etc., were all rebuilt and ready for final assembly. We paid careful attention to all of the important, small details e.g., the bolt-head mark-

ings, the special nuts, whether it be acorn or wing, and the hoses with the correct inked identification, and clamps.

It is now time to start and drive the car. This is a very noteworthy day because for the decades that we owned the 1953 it had never run.

Now with the car running and drivable the remaining exterior trim items were assembled for the final time. Before we took the car back to the upholstery shop to have the convertible top installed, the top frame needed to be restored. The first step was to free up all the pivot points on the



seized and rusty top frame. After everything was moving correctly we sandblasted the pieces in preparation for primer and paint, not powder coat. We also installed new tack strips with original hard laminated cardboard. It was now time to fit the top frame in the car, making sure that it worked with the "flipper moldings" and latched correctly, especially the rear latches, so they would not come loose while driving. The car was now ready for the Kennedy top to be installed, making sure that with the side curtains in place the doors would open and close freely; an important operation for a successful PV test.

With the 1953 complete our NCRS journey towards achieving the NCRS Duntov Mark of Excellence Award was to begin at this point. What could possibly go wrong?

We began our NCRS odyssey by registering the 1953 at the Northern California Chapter Regional in October 2011. Although the car was prepped for judging things have a way of happening. Fortunately, the issues were insignificant and we were able to receive a 97+% score. This Top Flight Award allowed us to move forward to what we considered the second step, the Performance Verification (PV).

The next judging was to pass the Performance Verification (PV) test. It's well understood how difficult it is to restore any Corvette to NCRS Top Flight standards, but to have everything work as designed can be the real challenge. This step in our journey was as difficult and frustrating as anything else we had done up to this point. In order to get a 1953 to perform at this level, a standard that a new 1953 would undoubtedly have had trouble achieving, took much longer than we expected. A valuable lesson we learned while preparing for the PV was that it's okay to set time goals for the judging process. The truth of the matter is that in the end the car will tell you when it's ready to be tested. The numerous problems we encountered explain the two-year gap from the first Flight Judging in 2011 to the 2013 Texas Regional where we achieved the PV Award!

We were now ready for the final challenge in our epic journey; being flight judged at the 2014 NCRS National Convention at Overland Park. This is where after years of painstaking work and dedication we received the ultimate honor, the NCRS DUNTOV Mark of Excellence Award. It is with pride that #298 is the 22<sup>nd</sup> 1953 to achieve this distinction!

With the '53 now fully restored and the years of commitment to its resurrection coming to a close, it was time for some reflection on what we had accomplished. Looking back to when we found the car in 1971 and the condition it was in, the comparison to how the 1953 looks today is unmistakably remarkable. The most consistent observation is that if the car had not crossed our path, come into our lives when it did chances are that #298 would be nothing more than as-

terisk in the history of Corvettes. For Linda and I, we are very humble being the guardians of this icon of American Automotive History.

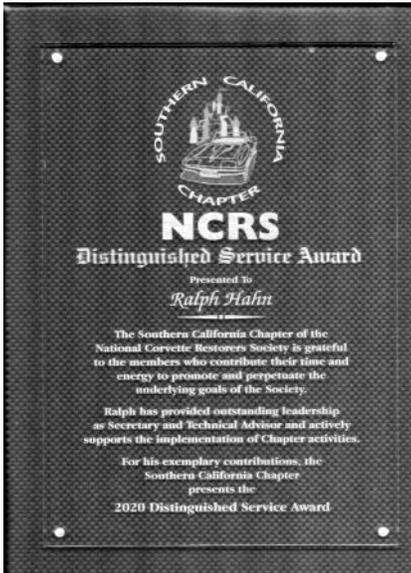
Now that the resurrection is complete, what's next for #298? I will summarize it with a story. In 2013, as we were preparing for the PV judging, we entered the 1953 in the Grand National Roadster Show in Pomona, California. On Saturday afternoon Linda was standing near the car when a gentleman approached the car with his friend. She overheard him say to his friend, "Could it be? Is it what I think it is? It is! It's a 1953 Corvette! I never thought I would live long enough to see one." We felt that was the moment that defined the future of the 1953. We feel the mission of the 1953 is to show it to as many enthusiasts as possible not only at NCRS events but selected charity car shows, and Concourse. E53FO01298 has been resurrected!

I have suggested to the NCRS that they consider creating a new award, to be called the NCRS Phoenix Award, to recognize cars like ours that have literally been brought back to life from the ashes. I am sure there are other similar examples within the NCRS ranks. I would be very interested in hearing from any of you who feel you have gone through a similar experience in the restoration of your own Corvette.

Gary Hiltunen, [polowhite53@gmail.com](mailto:polowhite53@gmail.com)



## Ralph Haun is awarded the Distinguished Service Award



The Southern California Chapter of the National Corvette Restorers Society is grateful to the members who contribute their time and energy to promote and perpetuate the underlying goals of the society.

Ralph has provided outstanding leadership as Secretary and Technical Advisor and actively supports the implementation of Chapter activities.



### Trivia Questions Feb. 2021

1. As Chevrolet's halo vehicle, the Corvette is widely noted for its performance and distinctive what?
2. The Corvette has since become widely known as what?
3. What was it originally designed as a show car for?
4. How many Corvettes were built in 1953?
5. A new body was introduced for the 1956 model featuring what?.
6. Other options in 1956 included what?
7. For an extra 12% over list price, the fuel-injected version produced how much horsepower?
8. Another rare '63 and '64 option with stiffer suspension, bigger, multi-segment lined brakes with finned drums was?
9. In 1971 the power rating for the 350 cu in (5.7 L) L48 base engine decreased from 300 and the optional special high performance to what
10. The Corvette was the first and last car with What?

Trivia Answers page 19

## 1953 to 1960 CORVETTE TRUNK LID SAG

BY RALPH HAUN

**M**ost owners of early Corvettes find that after more than half a century of use that their trunk lids no longer stay fully open. In the case of my '57, I would open the trunk all the way, and when released it would sag down about three inches. Not only can this cause you to hit your head, it is also cause for failure in the NCRS Performance Verification Test. I found a simple solution.

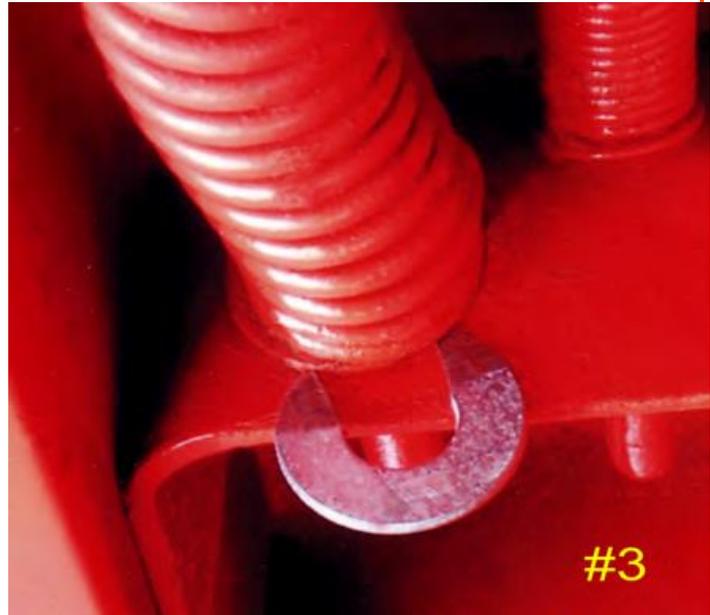
Photo #1 shows two springs found on each side of the car, visible when the division panel is removed. We are interested here in the larger spring which works with the trunk lid (the smaller spring works with the convertible top deck lid).



Take a washer, preferably a medium to thick washer, although the thickness will vary depending on how much your trunk lid has sagged. I used a Dremel tool to cut out the washer's center hole, making a shim out of it as shown in photo #2. Then I partially ground down the bottom side of the washer (this step is optional), making it tapered about one third the way across, as also shown in photo #2. This makes it a little easier to slip under the washer already existing at the lower end of the spring. It will look best if the washer is

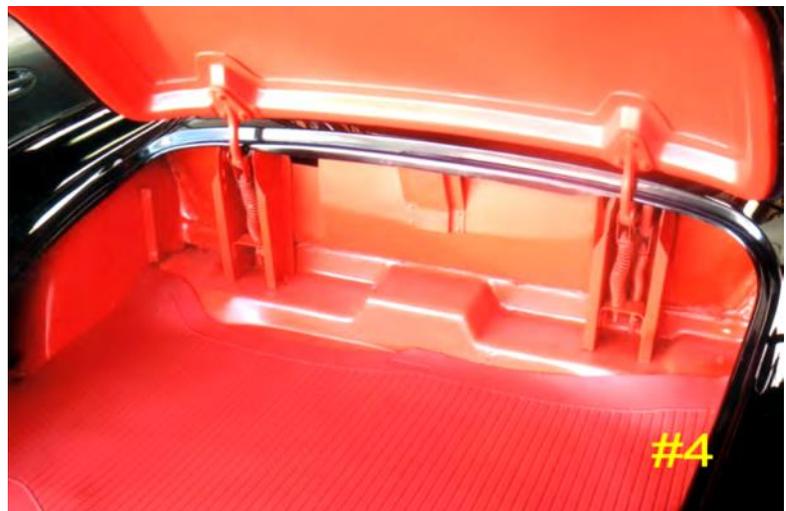


the same diameter as the existing washer. Pry up the existing washer as shown in photo #3, and tap the new one underneath with a hammer and punch. To make it virtually undetectable, you can touch up the



paint.

A washer about 3/32 inch thick on one side of the car increased spring tension sufficiently to reduce my sag from the previous three inches to between one half and three



quarter inch. A thinner washer then added on the other side of the car reduced the total sag to approximately one quarter inch. Good as new Photo #4.

## Cylinder Head Installation Guide Pins

By Joe LeMay from Joe's Garage

I have installed cylinder heads many times with the motor in different configurations. Sometimes it is on the engine stand. Other times with the front sheet metal removed as with my 55 Chevy. That was easy since the front and sides of the motor are fully exposed. The most recent installation was over the fenders from the sides.

There are two short alignment pins on the lower corners of the block deck. These match with alignment holes on the cylinder heads to locate the heads. It is difficult to accurately orient the cylinder head and lower it onto the block in the precise location of the alignment pins. There is no way to see the pins and the only visual help is the lower bolt holes in the cylinder head and threaded holes in the block. It is difficult to see them clearly.

I am using 0.016" thick steel shim gaskets with two coats of Permatex Copper Spray-A-Gasket Hi-Temp Sealant. The gaskets remain tacky and it is important to get the cylinder head installed efficiently. It is critical that the cylinder heads are located correctly during the initial attempt. Misalignment could cause the sealant to be smudged or wiped away from the head gasket during an assembly attempt.

During installation of the first head, I was close to getting the block alignment pins to locate into the cylinder head alignment

holes. It was off by  $\sim\frac{1}{4}$ " and the head had to be moved around to drop onto the holes.

For the other side, I decided a better method was needed. I had changed the long head bolts under the valve covers and decided to modify old head bolts that I had. I cut off two of the bolts and screwed them into the threaded holes in the lower part of the block deck. It worked very well as the longer bolts extend several inches above the deck and are easy to use as guide pins. Just a small movement of the cylinder head while sliding the head down the guide pins and the head located into place.

Recently, it was suggested to grind a taper on the ends of the cut off bolts and make the initial location of the cylinder



head onto the guide pins easier.

**Editor's Note:** You can see Joe do his magic on YouTube at, <https://youtu.be/y3rjrajD-NQ> You may have to copy and paste the link.



*The 2020 Southern California  
Chapter of NCRS  
annual Holiday Lunch has been*



*Rescheduled as a  
General Board Meeting  
Video Conference on ZOOM  
Sunday, January 17th, 2021 at 11 AM*

If you wish to participate in the meeting please notify

Jerry Louer

At:

[pnjlouer@sbcglobal.net](mailto:pnjlouer@sbcglobal.net);

By:

4 PM Saturday, January 16th, 2021

And:

You must have downloaded and installed the  
Free Zoom app.

From the following link:

[Video Conferencing, Web Conferencing, Webinars, Screen Sharing - Zoom](#)



# EARLY SPRING Flight Judged Meet Registration Form



FRIDAY & SATURDAY MARCH 5<sup>TH</sup> & 6<sup>TH</sup>, 2021  
at CORVETTE MIKE  
1133 N. TUSTIN AVENUE, ANAHEIM, CA 92807

**Event & Judging Questions Beverly & John LeGate Co-Judging Chairs 408-981-1200**  
**Host Hotel: Make Your Best Deal – No Block Reserved- See Our Flyer**

**THIS IS A FIVE-POINT TWO-DAY JUDGED EVENT! REGISTRATION OPENS JANUARY 15, 2021.**

Cars must be in place by **8:00 AM Saturday**, with a Judge's Meeting at 8:15 AM followed by an Owner's Meeting. We do request that you register ON-LINE or mail in the registration form on or before MARCH 1ST, 2021.

**OPERATIONS CHECK & EXTERIOR JUDGING FRIDAY, March 5th, 1PM BY APPOINTMENT. FLIGHT OWNERS WILL BE CONTACTED. This will allow proper social distancing. MASK REQUIRED TO BE WORN AT ALL TIMES.**

Fees: Meet Registration Members \$20.00(spouse & children under 23 yrs.) \$25.00 Postmarked after MARCH 1ST	\$ _____
Meet registration Guests 1/2 of members' registration: \$10.00, Postmarked after MARCH 1ST, \$12.50	\$ _____
Flight Judging \$ 95.00	\$ _____
Sportsman Award \$13.00 or (No Ribbon \$3)	\$ _____
Concours Judging \$ 50 { } Stock { } Modified	\$ _____
Join SCC/NCRS (Must be a NCRS National member) \$28.00 Link: <a href="http://www.ncrs.org/scc/app.html">http://www.ncrs.org/scc/app.html</a>	\$ _____

Or make checks payable to SCC/NCRS and Mail registration form and fees to: Beverly LeGate  
PO Box 2739 Ramona, CA 92065 408.981.1200 [beverlylegate@yahoo.com](mailto:beverlylegate@yahoo.com)

Total \$ \_\_\_\_\_

The following information will be used on your judging summary sheet if you are having a car judged.

Please enter the following car for [ ] Flight Judging 53-2004, [ ] Sportsman Award, [ ]Concours { } Previous Award display/Special interest Display (no fee). Please print legibly.

Year \_\_\_\_\_ Complete VIN # \_\_\_\_\_

**PRIORITY GIVEN TO 2020 CANCELLED SPRING & FALL JUDGED MEETS OWNERS!!**

**Notice: First come first serve. WE HAVE OUR FLIGHT CARS IN PLACE. IF YOU REGISTER A FLIGHT OR CONCOURSE CAR, YOU WILL BE PLACED ON THE WAIT LIST FOR OUR FALL, 2021 MEET. TBA. QUESTIONS: Beverly LeGate 408-981-1200.**

Horsepower \_\_\_\_\_ Exterior Color \_\_\_\_\_ Interior Color & Fabric \_\_\_\_\_

*Horsepower, Exterior Color, Trim Color and Fabric entries are mandatory for all vehicles. In addition, 1963 through 2002 vehicles must include all numbers and characters from the Trim Tag or Service Parts Identification Label with respect to Build Date, Paint Code, and Trim Code plus Body Number for 1963 through 1967 vehicles.*

Build Date \_\_\_\_\_ Paint Code \_\_\_\_\_ Trim Code \_\_\_\_\_ Body No. \_\_\_\_\_

[ ] Convertible, [ ] Coupe, [ ] Corvette Driven, [ ] Corvette Trailered, [ ] Need trailer parking Miles Driven \_\_\_\_\_

I would like to help with:

[ ] Flight Judge, [ ] Observer Judge, [ ] Tabulate **JUDGING CERTIFICATE YES OR NO!** [ ] Flight Judge, [ ] Observer Judge, [ ] Tabulate

Name \_\_\_\_\_ Name \_\_\_\_\_

Judging 1<sup>st</sup> Choice \_\_\_\_\_ 2<sup>nd</sup> Choice \_\_\_\_\_ Judging 1<sup>st</sup> Choice \_\_\_\_\_ 2<sup>nd</sup> Choice \_\_\_\_\_

Ops Interior Exterior Mech or Chassis (circle two) Ops Interior Exterior Mech or Chassis (circle two)

Member, \_\_\_\_\_ Spouse \_\_\_\_\_

Guest \_\_\_\_\_ Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

E-mail: \_\_\_\_\_ Chapter Affiliation (if any): \_\_\_\_\_

Phone (Home): \_\_\_\_\_ Work: \_\_\_\_\_ Cell: \_\_\_\_\_

NCRS National Membership Number (see mailing label on your Driveline or Restorer): \_\_\_\_\_

**REGISTRATION OPENS FRIDAY AT NOON. ALL ACTIVITIES WILL BE HELD AT CORVETTE MIKES.**

**JUDGING SCHOOL TBA FRIDAY 5-6PM # ATTENDING**

**FRIDAY NO HOST DINNER TBA 6:30PM # ATTENDING**

**NOTE: ONLINE REGISTRATION FOR THIS EVENT IS ON THE NATIONAL NCRS WEBPAGE!**

Company \_\_\_\_\_ Policy # \_\_\_\_\_ Expiration Date \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

## NCRS Hold Harmless Language 2020

I AGREE to insure my vehicle and property against loss, damage and liability and to provide proof of such insurance to NCRS at time of registration. I AGREE to assume the risk of any and all damages or injury and to indemnify and hold harmless NCRS, it's officers, directors, agents, employees, Chapters and event workers for any acts or omissions that may result in the theft, damage or destruction of my property or injury to me or others occurring during, or as a consequence of this event, wherever located.

I AGREE to abide by the NCRS Policy on Drugs and Alcohol. The use of illegal drugs is prohibited by anyone attending an NCRS event. The use of alcohol is prohibited by anyone participating in an NCRS event (includes while on the judging field, participating in driving tests and/or road tours), except during social events. I REPRESENT that I have not been diagnosed with, or presented symptoms (such as fever, head- and/or stomachaches, coughing, difficulty breathing, etc.) consistent with COVID-19 within the immediately preceding 14 days of my signing this waiver and release.

I ACKNOWLEDGE AND AGREE that I understand and will comply with CDC guidelines related to COVID-19 while attending this event, including social distancing, washing hands and wearing masks. I further acknowledge and assume the risk of potential exposure and contraction of COVID-19, and that NCRS has no way of testing participants for COVID-19, and, therefore, no way of guaranteeing that I will not be exposed to or contract COVID-19 or some other illness at this event. In consideration of being allowed to attend this event,

I AGREE that, in the event of any illness to me that may relate to, arise out of, or in any way concern my attendance and/or participation at this event, NCRS and its employees and agents are RELEASED from any and all liability whatsoever that may arise from any illness occurring and from any responsibility and/or liability for my acts or conduct. Further, I WILL HOLD HARMLESS AND WILL UNCONDITIONALLY INDEMNIFY NCRS AND ITS AGENTS AND EMPLOYEES AGAINST ALL CLAIMS, CAUSES OF ACTION, AND DAMAGES FOR WHICH NCRS MAY BECOME LIABLE BY REASON OF SUCH ILLNESS, WHETHER BROUGHT BY ME OR AGAINST ME OR BY ANY PERSON HAVING A LEGAL INTEREST IN THE PROPERTY OR PERSON OF ME. I understand that this release of claims and indemnity APPLIES TO ILLNESSES CAUSED EITHER IN WHOLE OR IN PART BY ANY NEGLIGENT ACT OR OMISSION OF NCRS, ITS OFFICERS, EMPLOYEES, REPRESENTATIVES, OR AGENTS. MY RELEASE ALSO APPLIES TO ANY ILLNESS SUSTAINED BY ME DUE TO THE COVID-19 PANDEMIC.

### **Trivia Quiz Feb 1, 2021 Answers**

1. A: Plastic, (either fiberglass or composite), bodywork.
2. A: "America's Sports Car."
3. A: The 1953 Motorama display at the [New York](#) Auto Show. A: "America's Sports Car. "How many hand-built polo white Corvette convertibles were produced for the 1953 model year?"
4. A: Three hundred.
5. A: A new "face" and side coves; the tail lamp fins were also gone.
6. A: Power windows and a hydraulically operated [power](#) convertible top.
7. A: 360 bhp (270 kW),<sup>[19]</sup> making it the fastest of the C1 generation.
8. A: Z06 competition package.
9. A: L48 base to 270 horsepower and LT1 engine decreased from 370 to 330 horsepower.
- 10..A: true "wrap-around" windshield.

## **SCC/NCRS BOARD MEETING**

October 12, 2020

The Zoom Meeting was opened at 4:01 pm. by Chairman Darold Shirwo.

### **BOARD IN ATTENDANCE:**

Darold Shirwo, Don Troyer, Ralph Haun, Gary Hiltunen, Verity Hobbs, Harry Inman, Bev LeGate, John LeGate, Jerry Louer, Pat Louer, Barbara Vignone, Ed Vignone

GUESTS: Joe LeMay, Mike McCloskey

Secretary's Report: Moved by Bev, second by Harry to approve. Report approved.

Treasurer's Report: Verity reported we are solvent. Ralph moved to accept the report and Harry provided the second. The report was accepted. Second Harvest was accepted as a qualifying charity for National Matching Funds. Verity wrote a check to the organization.

### **OFFICERS' REPORTS:**

Judging – Bev and Joe discussed the video conference: How To Get Points Inexpensively. It is scheduled for Oct. 31 from 9 -10 am. To date, 56 have signed up.

Bev moved to change the Spring Meet to Corvette Mike's facility. The motion received a second from Ed and was passed. Bev will contact Mike.

### **OLD BUSINESS:**

Bonding Strip – Ed is working on the next Bonding Strip and it should go out next week.

Future Events – On Oct. 31 there will be Halloween at Bunnin Chevrolet. The Filmore dealership will host a car show and lunch.

Holiday Brunch – Since there hasn't been change in the Covid19 situation, Verity moved to cancel the Holiday Brunch. Seconded by Pat and approved. After discussion, it was moved by Bev and seconded by Ed that we hold a Gen-

eral Meeting and lunch outdoors at the park in Verity's complex on January 17th. Ed will prepare a flyer. Verity will contact John Tidwell for a Release of Liability form.

Miscellaneous: Several car groups are starting to hold activities. Mike reported on touring Ventura. Darold will get information on Santa Clarita for the next meeting. There was discussion on a Road Tour to central California February 20th.

### **NEW BUSINESS:**

Nominations for 2021: After receiving additional recommendations for Board positions, Barbara suggested the following:

Chairman: Donald Shirwo, Vice Chairman: Mike McCloskey, Secretary: Verity Hobbs, Treasurer: Ted Wilm, Judging Co-Chairmen: Bev LeGate and John LeGate, Membership Chairman: Jerry Louer, Newsletter Editor: Ed Vignone.

Since there were no objections, the list of candidates will be on the SCC Ballot.

Appointed positions: Historian: Gary Hiltunen, Technical Advisors: Ralph Haun and Joe LeMay, Web Master: Ed Vignone. Additional appointments will be made in December or at the first Board Meeting in January.

Board of Directors: Harry Inman resigned from the Board effective immediately as they are moving.

Jerry moved to close the meeting and Ed seconded the motion.

The Zoom Meeting was adjourned at 4:45.

The next meeting will be on November 9th, 4p.m. Zoom Time.

Respectfully submitted,

Barbara Vignone, Secretary

## **SCC/NCRS BOARD MEETING**

November 9, 2020

The Zoom Meeting was opened at 4:01 pm. by Chairman Darold Shirwo.

**BOARD IN ATTENDANCE:** Darold Shirwo, Don Troyer, Ralph Haun, Gary Hiltunen, Verity Hobbs, Jerry Louer, Pat Louer, Barbara Vignone, Ed Vignone

**GUESTS:** Mike McCloskey, Harry Inman

**Secretary's Report:** Moved by Jerry, second by Ed to approve. Report approved.

**Treasurer's Report:** Verity reported we are solvent. Ed moved to accept the report and Ralph provided the second. The report was accepted.

### **OFFICERS' REPORTS:**

**Membership:** Jerry reported we have 137 family memberships. Since the pandemic, there have been no activities, so Jerry moved that we add one FREE additional year to all current memberships. Ed seconded the motion, and it was approved.

### **OLD BUSINESS:**

**Bonding Strip** – The next Bonding Strip is scheduled for January.

**Future Events** – On Oct. 31 the Bunnin Filmore dealership hosted a car show and lunch. Darold reported it was successful.

**Holiday Brunch** – Ed will send out a flier regarding the General Meeting and lunch outdoors at the park in Verity's complex on January 17<sup>th</sup>. We will need RSVPs and lunch preferences to plan for the number attending. The information should include the NCRS guidelines for group meetings. We will be giving out a special gift to those attending. Jerry will complete purchasing arrangements. Barbara and Ed will arrange for masks to be available if someone does not have one.

**Spring Meet:** Beverly sent information that we have all our cars for judging for the March 5,6

Meet at Corvette Mike's.

**Video Session:** The Zoom session was excellent and was well attended. Jerry moved that the Chairman and Judging Chairman have access to host Zoom meetings depending on need. Ralph provided a second and the motion was approved.

### **MISCELLANEOUS:**

**Regionals:** If there is sufficient interest, a special two day meet will be added to Regionals in Scottsdale, AZ and Cedar Rapids, IA next year to accommodate PV and Top Flight Judging for members wishing to have their cars considered for a Mark of Excellence award at the National in Palm Springs. National NCRS has provided guidelines which can be found on the cover of the November – December Issue of the Driveline.

### **NEW BUSINESS:**

**Nominations for 2021:** The ballot for SCC Officers for 2021 will be emailed next week. Votes are to be sent to the Secretary by December 1.

**Appointed positions:** Historian: Gary Hiltunen, Technical Advisors: Ralph Haun and Joe LeMay, Webmaster: Ed Vignone. Additional appointments will be made in December or at the first Board Meeting in January.

**Road Tour:** Darold suggested we try a road tour or overnight in the Filmore area for February 20<sup>th</sup>. Mike will gather information and report back at the next meeting.

Jerry moved to close the meeting and Verity seconded the motion.

The Zoom Meeting was adjourned at 4:32.

The next SCC Board meeting will be on December 14, 4p.m. Zoom Time.

Respectfully submitted,

Barbara Vignone, Secretary



# Stay Grounded

BY GARY HILTUNEN NCRS #3642  
POLOWHITE53@GMAIL.COM

A common problem that many early Corvette owners, those with 6-volt cars, have dealt with for years could best be defined as unreliable starting. To be clear I'm not referring to timing, fuel, or spark issues, but what would be better described as weak cranking power. Those familiar with a 6-volt system know that unlike a 12-volt car, you have a limited amount of battery power to get your car started. If the motor hasn't fired after a few revolutions (5-6) you are getting very close to having a drained battery. Considering that Chevrolet made millions of 6-volt autos without having a problem, why would this be happening now?

The answer might be something we as Corvette owners find very familiar, grounding!

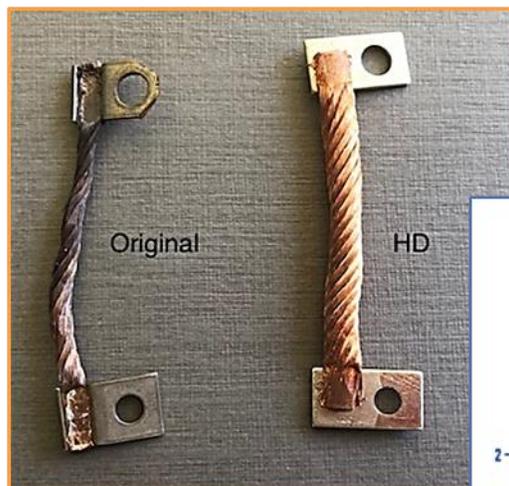
The trail that led to this theory started simply enough. My restorer was doing some work on a '54 for a client. One of the problems he was trying to sort out was the starting issue. After replacing the spark plugs & inspecting the fuel system, the next logical step was to examine the well-used battery and check-wires, setting the timing, in-tem and still not seeing any moment in starting the next logical the starter. This is when the

After taking the starter apart and inspecting everything the only obvious area of concern were the brush leads.

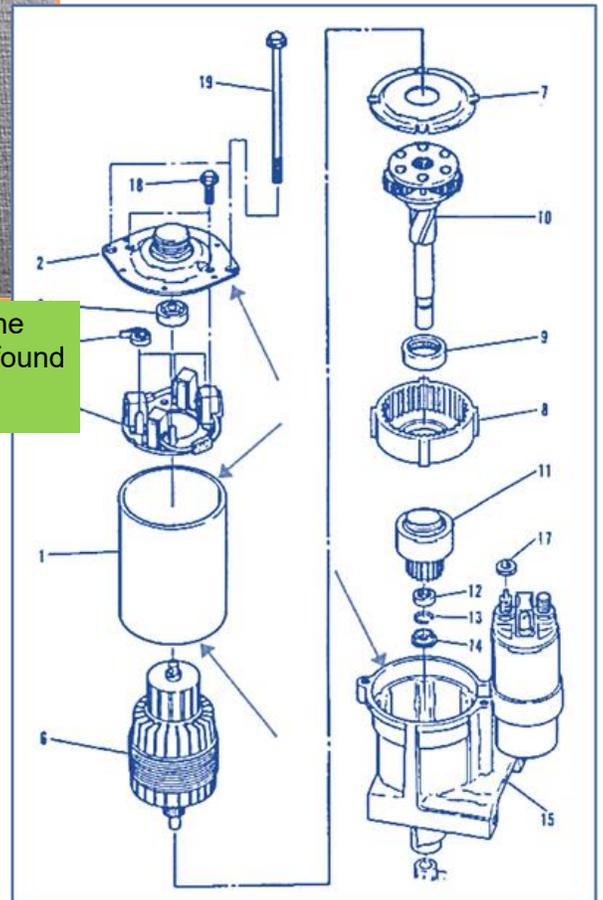
These are a smaller version of the braided

copper ground straps found on C1's. The brush leads were showing the effects of excessive electrical resistance, burned, discolored, and stiff, in technical terms they were fried. After consulting with a starter/generator rebuilder and asking him why this was happening he made this statement, "You understand that the starter case is the ground?". So how was this related to the unreliable starting? FYI, the lead is bolted directly to the inside of the starter case.

Because we were having the same starting issue with our '53, I decided we would go through it and any grounding issues we might find.

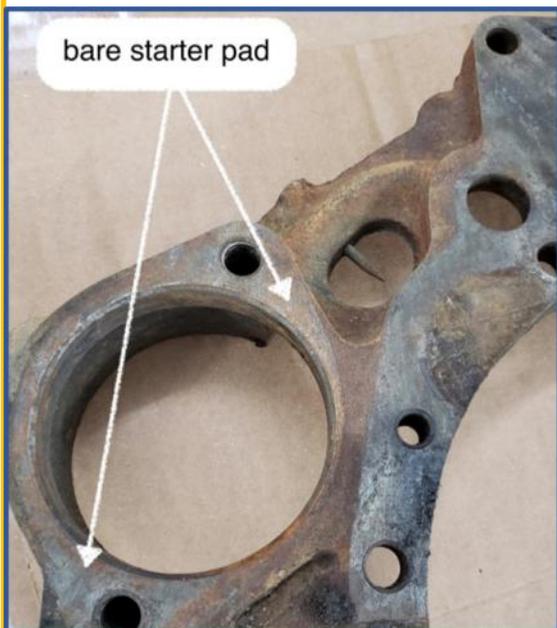
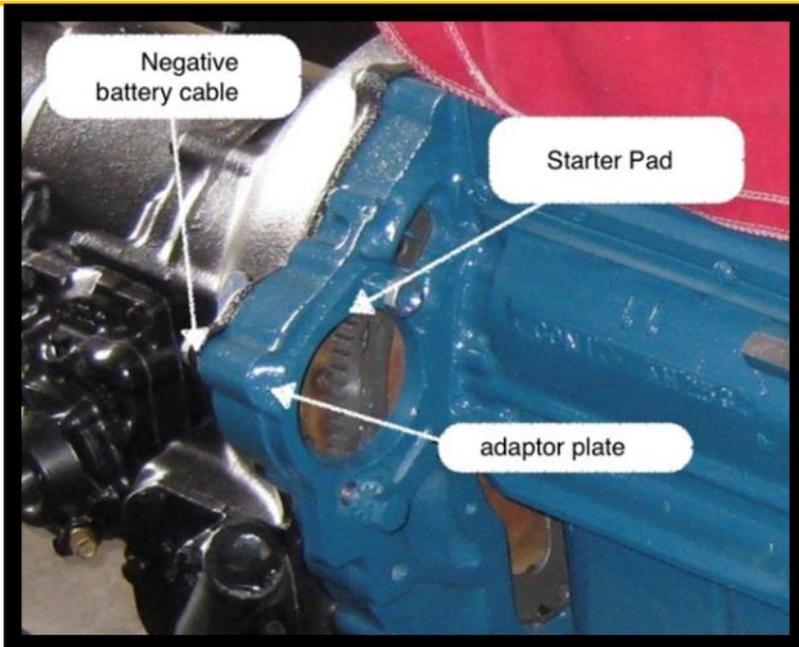


Left, the original lead is burning. Right, the heavy-duty replacement. The leads are found here #4 in the starter diagram.



We began by removing the starter and checking it out. Sure enough, even though the starter had very light use since restoration, the leads also showed signs of resistance stress. Further investigation of the starter case showed that when it was restored the mating surfaces had been painted along with the outside. The rear mounting area of the starter was clean bare metal as you would expect.

The starter is attached to an adap-



tor that mates the motor to the transmission. During our part of the restoration the entire adaptor was painted, including the starter mounting pad. The final grounding point is where the negative battery cable attaches to the transmission. This area was also completely painted when we restored the trans. Needless to say, there were numerous areas from the negative battery cable to transmission, the adaptor starter pad and starter case to the brush leads, that obstructed a good ground.

After finding all this, the fix was relatively simple. We first replaced the original brush leads with new HD ones and removed the paint from all mating surfaces on the starter case before reassembly. Moving

on to the adaptor, the starter pad was cleaned down to bare metal removing all that beautiful Chevrolet Blue paint (photo 4) and the starter was bolted back in place. Lastly, the NEG. cable attaching point on the transmission was also cleaned to bare metal before reattaching the cable. After all this the question is, did it help?

In our case it did! Our '53 no longer has a starting issue, and neither does the '54 that started this quest.

## 40th Anniversary Logo

On September 13, 1981 the Southern California Chapter of NCRS was founded. There were 6 Chapter Founding Members and 119 Charter Members who joined the SCC/NCRS on or before January 30, 1982.

The founding members were Jim Gessner, Bob Connors, Dan Holstein, Bill Norris, Gary Sunda, and Jim Watkins. Jim Gessner was our Chairman and Bill Norris was our Vice Chairman. Our Newsletter "the Bonding Strip" was named by Bill Norris and Volume 1, Issue 1 was published on November 1, 1981.



## Transmission Speedometer Gears

Joe LeMay in Joe's Garage

How many of you have a speedometer that does not read correctly? You may have purchased the car that way. You may have changed transmissions? Does a 50 mph reading feel like you are going 70? You want it to work correctly but do not understand how to adjust the speedometer reading. It is really simple to do.

The items you need to know are your current rear end ratio and the amount of difference between the indicated speed and actual speed. I used Google maps on a predetermined drive, and recorded the indicated odometer reading. I came up with a difference of mileage being 18% lower than actual. The fix was really easy.

There are only a couple of parts to the speedometer at the transmission. That



Drive Gear



Driven Gear



Bullet

is the area of concern and the items to be adjusted. The speedometer parts are the transmission **drive** gear, the transmission **driven** gear, and the **bullet** (driven gear retainer) that connects to the speedometer cable.

OEM AC Delco gears were used in Muncie, GM T10, GM Super T10, Saginaw 3 & 4 speed, GM T5, Powerglide, and 200 & 350 transmissions. We are going to concern ourselves with the Muncie, T-10, Saginaw 3 speed, and Powerglide here. There are various gear sizes and number of teeth that will produce different speedometer readings. First we are going to discuss what might be used in the transmission.

Drive gears are the speedometer gears inside the transmission that are assembled onto the end of the output shaft. To change drive gears, the transmission must be out of the car, and the tail housing removed.

For manual transmissions with 57-70 27-spline output shaft (3sp, T-10, Muncie), there are three (3) sizes of drive gears; the outside diameters are 1.76", 1.84", and 1.92." Most often, the OEM installed drive gear is 8-tooth, but the 7-tooth and 9-tooth size is also available. However, sizes other than 8-tooth are rarely



used.

There are two (2) diameter sizes of driven gears: 0.870" and 0.810" OD. These are the plastic gears that are assembled on the bullet and inserted into the transmission. They come in 17-25 tooth versions. The driven gears must be used with the correct corresponding size drive gear. The 17-22 tooth driven gears are smaller in diameter (0.810") and must be used with the large diameter (1.84") drive gear. The 22-25 tooth driven gears are larger in diameter (0.870") and must be used with the small diameter (1.76") drive gear.

There is also a 6 tooth, 1.92" OD drive gear that is only used with the 20-tooth steel driven gear. This will result in the correct setup for a 4.56 rear end ratio and stock size tires. Only use these gears as a pair and do not use them with any other combination.

You must use the large/ small diameter drive gears with small/ large diameter driven gears. They must be compatible, Do not mix these. If you install a large driven gear (22-25 teeth) with a large drive gear, the plastic driven gear will be destroyed in a short time. If you install a small driven gear (17-22) with a small drive gear, it probably will not engage, or at best, it will minimally engage for a very short period of time before the outer edges of the plastic wear down until it will not engage at all. The gears will not mesh, and the speedometer cable will not turn.

From the factory, transmissions installed in cars with a 3.55-down rear-ends will usually have the larger 1.84" diameter drive gear and will use the smaller diameter (0.810") driven gears. Transmissions installed in cars with a 4.11 rear-end will have the smaller 1.76" diameter drive gear and use the larger diameter (0.870") driven gear. Early C1s most likely use the 1.76" drive gear as they were 3.70 or 4.11.

**Note** there are large and a small diameter 22 teeth driven gears. The large 22-tooth gear is green and the small 22-tooth gear is gray (some call it silver). You will need to measure the driven gear to determine which drive gear is installed.

A factory installed transmission in a car that originally had a 4.11 rear, will most likely have the small 1.76" drive gear and none of the small driven gears will work with it. To change to a numerical lower rear ratio, the transmission will have to be removed and disassembled to swap out the 1.76" drive gear to the larger 1.84" drive gear. The tail housing cannot be removed with the transmission in the car.

If you have a transmission with a 1.76" drive gear and want to install a rear gear that is numerically lower than 3.70, there are two options. The first is to remove the transmission and install a larger 1.84" drive gear. The easiest alternative is to obtain a speedo adapter. Adaptors are available to either reduce or increase in speed of the output side of the adapter. They screw onto the existing speedo bullet fitting on the transmission. The adaptor option is certainly the easiest to get the correct ratio, but it may be a hassle as well as interfere with the shifter

linkage.

Here is another issue that you may want to attend to when rebuilding your Muncie. A 68-70 Muncie used a plastic drive gear that was retained on the tail shaft with a metal spring clip. When you rebuild your later Muncie, if it has the plastic drive gear, you may want to replace it with a pressed on steel gear. It is very common for the teeth on the plastic drive gear to wear excessively. To replace it requires removing the tail housing.

Now armed with enough knowledge of how the speedometer gearing works, it is time to calculate the new gears that you will need. Using the Speedometer Gear Chart below, calculate the size of the driven gear that is needed. Hopefully, you will not be faced with changing drive gears or using an adaptor.

Changing a driven gear is very easy. It is also an opportunity to fix an oil leak. The bullet has an O-ring around its OD where it fits into the transmission. There is also a seal where the driven gear fits into the bullet. O-rings and seals are readily available.

For my own issue, I had a red 21 tooth driven gear installed and got the correct result by dropping to a 20 tooth gear. On my drive to Lake Tahoe, the odometer read 1.8% higher than the 450 mile Google maps calculation; a very acceptable figure.

Here are the combinations that will give you the correct driven and drive gears for standard height 6.70-15 tires.

#### Speedometer Gear Chart

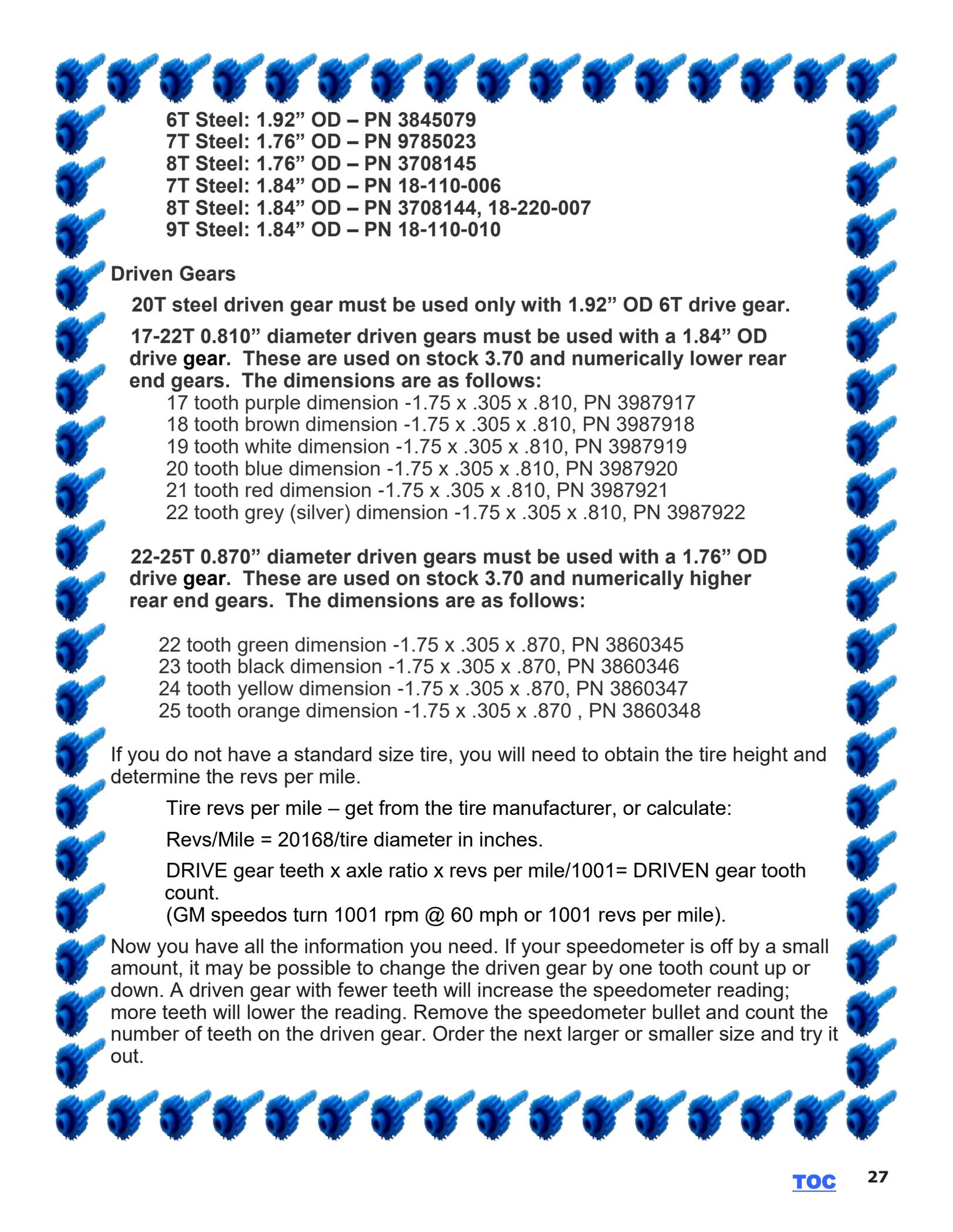
Axle ratio	Driven gear	Drive gear	Calculated ratio
4.56	20	6	4.46
4.11	25	8	4.18
-	24	8	4.01
-	23	8	3.85
3.70	22	8	3.68
3.55	21	8	3.55
3.36	20	8	3.35
-	19	8	3.18
3.08	18	8	3.01
2.87	17	8	2.85

Calculated driven gears are based on normal 6.70-15 bias ply tires giving 747 revs/ mile and the formula listed below:

Driven Gear Teeth = Drive gear teeth x axle ratio x tire revs/mile ÷ speedometer factor (usually 1007 for early GM)

Gear specifications and part numbers. These are available from many vendors.

Drive Gears- 27 spline shaft (there are other PN for 32 spline shaft)



6T Steel: 1.92" OD – PN 3845079  
7T Steel: 1.76" OD – PN 9785023  
8T Steel: 1.76" OD – PN 3708145  
7T Steel: 1.84" OD – PN 18-110-006  
8T Steel: 1.84" OD – PN 3708144, 18-220-007  
9T Steel: 1.84" OD – PN 18-110-010

### Driven Gears

**20T steel driven gear must be used only with 1.92" OD 6T drive gear.**

**17-22T 0.810" diameter driven gears must be used with a 1.84" OD drive gear. These are used on stock 3.70 and numerically lower rear end gears. The dimensions are as follows:**

17 tooth purple dimension -1.75 x .305 x .810, PN 3987917  
18 tooth brown dimension -1.75 x .305 x .810, PN 3987918  
19 tooth white dimension -1.75 x .305 x .810, PN 3987919  
20 tooth blue dimension -1.75 x .305 x .810, PN 3987920  
21 tooth red dimension -1.75 x .305 x .810, PN 3987921  
22 tooth grey (silver) dimension -1.75 x .305 x .810, PN 3987922

**22-25T 0.870" diameter driven gears must be used with a 1.76" OD drive gear. These are used on stock 3.70 and numerically higher rear end gears. The dimensions are as follows:**

22 tooth green dimension -1.75 x .305 x .870, PN 3860345  
23 tooth black dimension -1.75 x .305 x .870, PN 3860346  
24 tooth yellow dimension -1.75 x .305 x .870, PN 3860347  
25 tooth orange dimension -1.75 x .305 x .870, PN 3860348

If you do not have a standard size tire, you will need to obtain the tire height and determine the revs per mile.

Tire revs per mile – get from the tire manufacturer, or calculate:

Revs/Mile = 20168/tire diameter in inches.

DRIVE gear teeth x axle ratio x revs per mile/1001= DRIVEN gear tooth count.

(GM speedos turn 1001 rpm @ 60 mph or 1001 revs per mile).

Now you have all the information you need. If your speedometer is off by a small amount, it may be possible to change the driven gear by one tooth count up or down. A driven gear with fewer teeth will increase the speedometer reading; more teeth will lower the reading. Remove the speedometer bullet and count the number of teeth on the driven gear. Order the next larger or smaller size and try it out.



## 2021 Corvette Recognized as Consumer Guide Best Buy

BY JONATHAN LOPEZ — DEC 4, 2020 [GM Authority](https://www.gm.com/authority)



With an all-new mid-engine layout and world-beating performance numbers, the latest eighth-generation Chevrolet Corvette C8 is dressed to impress. Now, Chevy's new midship missile has been recognized by Consumer Guide Automotive, with the 2021 Corvette grabbing the organization's top Best Buy award.

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They all have correct appearing insulators with a die formed steel reinforcement and brass adjusting tabs. **I reproduce these myself here in the US.** Gary Hiltunen Member #3642. For photos and any questions email : Gary at [polowhite53@gmail.com](mailto:polowhite53@gmail.com).

**Tires for Sale:** Set of 4 Goodyear 7.75-15 power cushion goldstripe two ply tires in great shape. 1800 miles since new. Used for NCRS flight judging \$600. Photos and any questions: Hector Guzman [guzto9@cox.net](mailto:guzto9@cox.net)

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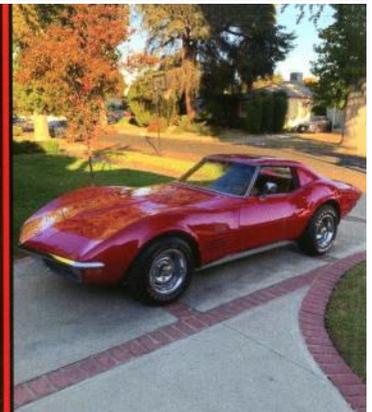
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The Official Publication of the Southern California Chapter of the National Corvette Restorer’s Society Effective January 1, 2020  
Yearly rates are based on a calendar year. All funds payable to SCC/NCRS. Payment terms are net 30 from date of billing. Rates do not include additional artwork services, as required. Photographs should be high resolution at least 300 ppi. Advertising copy should be submitted to the Editor no later than 15 days before the first month of the issue advertising is required to run in. Submit all advertising and payment in full to the editor. Make checks out to: SCC/NCRS.

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**The Bonding Strip Editorial/Advertising Deadlines**

Following is a list of Deadlines for submitting material to be printed in future issues of The Bonding Strip

- Volume 1. February - April issue: January 10,**
- Volume 2. May - August issue: April 10,**
- Volume 3. September - October issue: August 10**
- Volume 4. November - January issue: October 10**

Send editorial contributions and advertising to the Editor at [yignone@ieee.org](mailto:yignone@ieee.org). Preferred media for submissions is by e-mail and attachment, or by mail on computer disk or Flash Drive in MS Word® or its equivalent.