



Vettester

The official newsletter of the Corvette Club of Northern Delaware. April 2007

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Matt Guthan's 1963

This month's issue:

1964 Corvette specs

Rebuilding your 1971-1986 alternator

Member of the Month - Matt Guthan & his 1963 C2

Upcoming CCND activities

Latest News

Don't forget the CCND Spring Kick-Off Brunch at the Netherland Inn April 1st. Our annual brunch as always just a new location.

On the Road

By Andy Rumford



April...and the season has "Started"!! A few events this month that you may find of interest; These events are listed on our website. They include:

April 1st - Netherlands Inn Brunch and Cruise, **April 14th** - Booths Corner Farmers Market show put on by the Historical Car Club of Pennsylvania, **April 18th - 22nd** - Spring Carlisle, **April 22nd** - Millersville University Show and **April 29th** which is the York County Corvette Clubs all Vette show. This was a nice event that many of us attended last year and is worth the trip.

Vetteclub.org has recently included a "For Sale" page. If you have an item that you would like to have listed on our website, please email that information to Barry. There are already several items listed!!

A quick reminder about the club calendar; If you have a picture of your Corvette that you would like to have included on the calendar, please forward it to Barry Kimmelman. His email address is on the Officer's page of the website.

I had an opportunity to attend the Atlantic City Car Show held at the

Convention Center at the end of February. Never having been to the show, I didn't know what to expect. Well, the show was a mixture of hundreds of vendors, an auction, a car corral and just Thousands of people. I had heard they had 45,000 people attend the 3 day event and there were 1,300+ cars for sale and or on display inside the Convention Center. If I were looking to purchase a car, I would definitely be back to this event.

Spring Carlisle is just around the corner. Here is a bit of an email I received from Lance Miller a few days ago on the event. "The Spring event is an 82-acre paradise of cars, accessories and memorabilia. A show with a huge following, some 100,000 event guests will see more than 3,000 vendors in 8,100 vendor and Car Corral spaces, offering a huge assortment of automotive merchandise, parts and hard-to-find items. If you want it, you'll find it at Carlisle. And if what you're looking for is a car, more than 1,800 vehicles of all makes, models, condition and price will be on sale in the Car Corral. Accompanying Spring Carlisle, just one block away at the Carlisle Expo Center is the second annual Spring Carlisle Auction,

showcasing antique, collector and special-interest vehicles. More than 250 vehicles are set to go on the block April 20-21, and will include classic cars, collector cars, muscle cars, daily drivers, the unique and the legendary, spanning the decades. Bid on Nicolas Cage's 1970 Lamborghini Espada, or a 1968 Jaguar, a 1963 Split-Window Corvette, a 1994 Viper and hundreds of other vehicles. To sign up as a bidder or to put your vehicle up for auction, visit www.carlisleauctions.com."

Looks like I might be making a day trip to Carlisle to take a peek at what's available!!

The Netherlands Inn and Spa brunch and cruise is all set to go. If you have not yet paid for this event, please see me at Lantana Square, which will be our meeting place. More information is on our website. The cost will be \$19.00 cash. We still have plenty of room. A total of 53 members from both Keystone State Corvette Club and CCND have signed up for this function.

Ice and Snow have covered the roads...But, the season is right around the corner and all of us will be back "On the Road" very soon!!!

Meeting Agenda

Upcoming Agenda for the next meeting on 4/3/07

Call to Order:

Welcome:

New Members:

Officers Reports:

Vice President: Steve Blanchies, Membership
Treasurer: Harvey Smith
Member @ Large: Mike Metcalf
CCND Governor: Dave Morales
Newsletter Editor: Barry Kimmelman
Social Chairperson: Linda Kimmelman
Show Chairman: Fred Krumm

Old Business:

Membership Drive (Fred) Letter ‘drafted’ to members who have not rejoined
Netherlands Inn.....Comments?
Club Jackets
Blue Rocks...Date set....June 16th (Online Sign-up)
Club Calendar

New Business:

Cruise Night.....Lone Star
Website...”New”...For Sale page..

50 / 50:

Adjournment:

Next Meeting date is May 1, 2007

Club News

The latest CCND news and updates plus editor ramblings... ..

ROBERT WHORL

Robert G. Whorl, Age 71, of Wilmington, DE, died on Tuesday, February 27, 2007.

Mr. Whorl retired as an engineer from General Motors. He was a member of the Corvette Club of Northern Delaware and a member of the General Motors Retiree's Organization.

He is survived by his daughters, Robin F. Onizuk, of Wilmington, DE, Wendy B. Heit, of Landenberg, PA and Caryn A. Morrow, of Philadelphia, PA; his brother, William Whorl, of Newark, DE; his sister, Sharon Jenkins, of Wilmington, DE; his grandchildren, Alexandra L. Stoddard and Hillary E. Stoddard.

The funeral service and burial will be private.

In lieu of flowers, contributions may be made to the Kenya Mission Fund, c/o Limestone Presbyterian Church, 3201 Limestone Rd., Wilmington, DE 19808.

Arrangements by

DOHERTY FUNERAL HOMES

To send condolences, visit

<http://www.dohertyfh.com>

(302) 999-8277



CCND gained two new members at our March meeting. Welcome new members Jimbo Basile and Jim Teoli. This brings our current paid memberships to 63.

Arrangements have been made with Iron Hill Brewery where CCND will receive 20% of food sales during our annual show. This will help increase our show proceeds and therefore more money that can go to our charity.
Good job Fred!

When you read this issue of the newsletter it will be almost April and the nice weather will be right around the corner. Our first cruising event will be to the Netherlands Inn for brunch. This means that for many of us who have had our cars hibernating for the winter this may be the first time our cars have seen the light of day since Oct or so.

If you fall into this category don't forget to change that old oil, check your tires air pressure, and go over all operational aspects of your Corvette. Take good care of your car in the Spring and it will take care of you for the rest of the "season".

The CCND club calendar has been recently updated this month with upcoming CCND events plus other local shows and related activities. We will do our best to keep the calendar updated as shows and events are announced. If you hear of a local event and wish to have it added to the calendar please contact Barry Kimmelman, Linda Kimmelman, or Andy Rumford and we will do our best to get it added to the calendar as quickly as possible. If you are not already aware of the club calendar it can be found by clicking the calendar icon on the front page of the club website here:

<http://www.vetteclub.org>

The CCND website has been updated and includes new pages. Under the "Shows" section there is a new page that will list non-CCND shows along with a flyer on that show if available. In addition, there is a new "For Sale" section so if you have any Corvette or other cars and/parts for sale you are welcome to have them listed. Contact Barry if you wish to have an item listed in the "For Sale" section

Member of the Month

Matt Guthan and his 1963 convertible



As many of you know or may not know, I decided to sell my good friend for 5 years, the 1992 triple white. It was a very hard decision to do, since that was my first corvette! I decided that I wanted to have something a little different. So on my search for the next vehicle. I could not decide if I wanted a C-3 big block car, or go all out and get a C-2, all I know was that it had to be a convertible!

I decided to go with a C-2! Unsure of exactly what year I wanted, I just started looking at different cars, colors, and options. And with lots of help with some members of this club, and some online forums, I was finding out all of the "hidden" secrets of the C-2. I had no idea what the hell a birdcage was, but Barry

sent me some pictures and where to look for damage. As I found out, if the birdcage is badly rusted, it is very expensive to fix.

The corvette I found and finally bought, is a 1963 Daytona blue convertible, blue interior with a white top and power windows. It was built April 19, 1963 which I am told is an early 63. It has a Borg Warner T-10 4 speed, which came with early '63 cars. Another sign of an early Vette was the voltage regulator is mounted on the radiator support, instead of on the fender-well. This is the information as I am finding it out, I am no expert in C-2's, and I just have been trying to find out as much info as I can. This, from what I am told by the previous

owner, is also a fuel injected car. It does have all the signs of a fuel injected car, the high-line tachometer, the hole in the radiator support, and the holes in the fender. The radiator support looks like it was never replaced.

The story of the corvette that the last owner told me seems to be checking out. He bought the Vette from a race car driver in Canada. He owned the car from 1970 to 2001. When he got the Vette, he had trouble with the fuel injection unit, so he pulled the motor and trans, and installed an automatic tranny and a professional built 1969 LT-1 350. I checked the motor numbers and the cylinder heads, what I came up was that the block is a 1969 only 350 LT-1 4 bolt main that came out of an

Acadian (Canadian Nova) with 2.02/1.60 double hump angle plug heads. The previous owner that I bought the corvette from had the original T-10 rebuilt and reinstalled. I also checked the rear differential and that also is the original 4.11 posi unit.

As for the future of what I am going to do? There is just a lot of little stuff that it needs, that it seems like the last owner didn't want to bother fixing. The first thing I did was buy an HEI distributor with a tach drive. It had a HEI distributor in it, but no tach drive. The next thing I plan on doing is replacing the engine wiring harness. All the years of people doing things, it doesn't look the best. I also plan to do the dash harness also. And just drive it to shows, enjoy the Vette, and learn more about it!



Humorous Diversions

Add a smile to your day.....



Sam died. His Will provided \$30,000 for an elaborate funeral.
As the last guests departed the affair, his wife, Helen, turned to her oldest friend.
"Well, I'm sure Sam would be pleased," she said.
"I'm sure you're right," replied Jody, who lowered her voice and leaned in close.
"How much did this really cost?"
"All of it," said Helen. "Thirty thousand."
"No!" Jody exclaimed. "I mean, it was very nice, but \$30,000?"
Helen answered, "The funeral was \$6,500. I donated \$500 to the church.
The wake, food and drinks were another \$500. The rest went for the memorial stone."
Jody computed quickly. "\$22,500 for a memorial stone? My God, how big is it?!"
"Two and a half carats."

At one time in my life, I thought I had a handle on the meaning of the word "SERVICE." It's the act of doing things for other people.

Then I heard these terms which reference the word SERVICE:

Internal Revenue Service
Postal Service
Telephone Service
Civil Service
City & County Public Service
Customer Service
Service Stations

Then I became confused about the word "service". This is not what I thought "service" meant.

So today, I overheard two farmers talking, and one of them said he had hired a bull to "service " a few of his cows. BAM! It all came into perspective.

Now I understand what all those "service" agencies are doing to us.

There are two statues in a park;
One of a nude man and one of a nude woman.
They had been facing each other across a pathway for a hundred years.. when one day an angel comes down from the sky and...
with a single gesture.. brings the two to life.
The angel tells them... "As a reward for being so patient through a hundred blazing summers and dismal winters, you have been given life for thirty minutes to do what you've wished to do the most."
He looks at her... she looks at him.. and they go running behind the shrubbery.
The angel waits patiently as the bushes rustle and giggling ensues.
After fifteen minutes, the two return.. out of breath and laughing.
The angel tells them... "Um, you have fifteen minutes left.....
"Would you care to do it again?" He asks her... Shall we?"
She eagerly replies.... yes, let's! But let's change positions...
This time...I hold the pigeon down..and you crap on its head."

Wendell was in trouble. He forgot Valentine's Day. His wife was really angry. She told him,
"Tomorrow morning, I expect to find a gift in the driveway that goes from 0 to 200 in less than 6 seconds AND IT BETTER BE THERE!!!"

The next morning Wendell got up early and left for work. When his wife woke up, she looked out the window and sure enough there was a gift out in the middle of the driveway.

Confused, the wife put on her robe, ran out to the driveway and brought in the box, which she hoped contained a car key.

She opened it and found a new bathroom scale.

Wendell has been missing since Friday!

How to Repair & Rebuild your Alternator



TunedByLars.com
PERFORMANCE ENGINES & TUNING

by Lars Grimsrud
Colorado Corvette Crazy's (CCC)
The Ultimate Corvette Tuning & Beer Drinking Fraternity
Lafayette, CO

Rev. A 11-19-01

This tech paper will discuss the disassembly, diagnostics, and repair of GM Delco alternators used after 1971, and specifically discuss the alternators used from 1971 to 1986. Alternators used after 1986 are similar (called the "CS" alternators), and the same troubleshooting techniques/principles apply. However, disassembly techniques are significantly different for the CS units due to the Stator wires being crimped & soldered to their mating components. Pre-'71 alternators are also similar, but do not have an internal voltage regulator, and use individual diodes in place of a diode trio and bridge rectifier.

Alternators fail frequently, and good rebuilt units are pricey (typically in the \$150+ range). But virtually any alternator can be easily repaired for less than \$50. You can do it yourself in your garage or driveway using ordinary hand tools and a little knowledge.

History & Principles

Electricity is produced by moving coils of wire through a magnetic field, thus producing a current flow in the coils of wire. Two different devices have been used on cars to produce electricity: Generators and Alternators.

Early GM cars, up through 1962, used a Generator to produce electricity. Generators, for those of you too young to have seen one, are about the size, weight and shape of a GM starter. They use permanent magnets to produce Direct Current (DC). The magnets are located stationary around the case, and the current-producing coils are spun on a shaft in the center of the generator. Generators are neat in that they do not need any external source of power (a battery) to begin producing electricity: all you have to do is to spin them, and they produce a DC output. But they are heavy, and they do not produce much output at low rpm: you'll typically see the headlights on older cars with generators go noticeably dim at idle.

In 1963, GM introduced Alternators on its cars. Alternators do not have permanent magnets, but rather send a small current through a series of coils to produce an electrically-induced magnetic field. In an alternator, the magnetic field is created by spinning the electrically-induced magnetic field in the center of the alternator, producing current in the stationary, case-mounted coil. This makes an alternator much smaller and lighter, and its output at low rpm can be maintained by increasing the strength of the magnetic field. An alternator, however, does not produce DC output: Due to its design, an alternator, as the name implies, produces Alternating Current (AC). This AC must be changed to DC before it can be utilized in an automotive electrical system.

Alternating current, if visualized, is like a wave moving up and down: it cycles from positive to negative. At the mid point between positive and negative, there is no current flow at all. Obviously, then, if we only had a single coil producing AC power at low rpm, this cycling and "dead spot" would make our lights and electrical system blink on and off very quickly. Not good for our application. An alternator, then, typically has three separate coils, each producing its own "wave." These waves are set as far opposite each other as possible, so by the time they "overlap," they are producing a steady stream of AC power. But now we must convert it to DC.

Each of the three current producing coils is attached to two diodes. A diode is an electrical component that allows current to flow one way, but not the other. It's like a one-way door. One of the "one-way doors" is set to "open" in one direction, while the other one "opens" in the opposite direction. Thus, when the alternating current is flowing in the "positive" direction, the positive output is shuttled out of the one diode. When the current shifts to the "negative" direction, it is allowed to go only out of the other diode. Thus we have separated out the two elements of the alternating current into a positive and negative DC power output. With all three of the coils doing this at staggered times, a steady stream of DC power is realized.

Pretty simply, huh?

Component Parts & Systems

The alternator consists of 4 basic systems:

Housing
Current Producing Parts
Rectifying Parts
Regulating Parts

Each of these can fail, and each can be repaired at a very nominal cost.

Housing

The housing serves to contain all the parts in one place, provides a bearing surface for the Rotor to spin within the Stator, and acts as a heat sink to dissipate the heat generated by the internal parts and components.

Failure modes (listed in order of frequency):

1. Bearing failures. Most common failure is the housing front bearing. The front bearing takes most of the load imposed by the fan belt. In spite of this, the bearings are surprisingly durable, and will easily give 150,000 miles of service provided the belt is tensioned correctly. Front bearing failures were much more common in the days of the V-belt drive: “real” men would use a crow bar on the side of the alternator and tighten the V-belt up so tight that it could be played like a violin string. Alternator bearing failure then occurred within a few miles of operation. Now, the serpentine belts have automatic belt tensioners that provide correct belt tension at all times. Bearing failure is evidenced by a growling or howling from the alternator.
2. Dirt, Oil & Grease. Since the housing serves to dissipate the heat generated by the internal components, dirt and grease on the housing will impede this process and lead to early component failures. Keep the alternator reasonably clean at all times to help increase its life.

Current Producing Parts

The parts which actually produce the current are the Rotor, Stator, and Brush Assembly.

The Rotor spins in the center of the alternator. It is charged with a variable current to produce a variable magnetic field, thus producing variable output of the alternator.

The Stator is the three-field coil mounted stationary circumferentially in the case. It produces the actual power output.

The Brush Assembly provides electrical contact to the spinning rotor. The brushes “feed” the current to the Rotor to produce, and alter, its electro-magnetic field.

Failure modes (listed in order of frequency):

1. Brush failure. The brushes, since they contact the rotating Rotor, are subject to wear. Typically, brushes will last over 100,000 miles. Once worn out, they will no longer provide a good electrical connection to the Rotor, and alternator output will fail.
2. Open or Ground (“short”) failures in the Rotor or Stator. These failures are extremely rare. They would occur if one or more of the wires in these parts burned, broke, and shorted to ground due to an insulation failure. In all my years of fixing cars, I’ve never seen a Rotor or Stator failure.

Rectifying Parts

To change the AC to DC, the early alternators used 6 separate diodes that were pressed into the alternator case and into a diode “bridge.” The next generation alternators (starting in ’71) used a finned Rectifier Bridge and a transistorized Diode Trio. The Rectifier Bridge is attached to, and grounded to, the alternator case. It allows the “negative” element of the AC power to go to ground through its three terminals hooked up to the three current-producing stator fields. The Diode Trio, also attached to the same three stator fields, allows the “positive” AC element to go to the “+” side of our DC system and to the regulator.

Failure modes (listed in order of frequency):

1. Any of the three “one-way doors” on either the Rectifier Bridge or the Diode Trio can fail. Failures occur when the “one-way doors” either allow current to flow both ways (“leak”), or allow no current through at all. This will either produce a lower-than-normal output of the alternator, or produce no output at all. It can also allow current to slowly “leak” through the alternator while the car is sitting, producing a slow drain on the battery (typical “dead battery in the morning” symptom). The Diode Trio is one of the most common failed parts in these alternators.

Regulating Parts

To control the output of the alternator, a regulator varies the flow of power to the Rotor, thus changing the strength of its magnetic field. From 1963 through 1970, this was done by an externally-mounted, mechanical voltage regulator, normally mounted on the firewall. Starting in '71, GM used a small transistorized, internal regulator in the alternator.

Failure modes (listed in order of frequency):

1. The most common of all alternator failures is the failure of this regulator. It is simple to diagnose and replace.

Tools Required

Ohm Meter (For this process, I prefer one of the really cheap analog meters (the kind with a needle and scale. This type of meter will provide instant, easily understandable information about circuit continuity. For this purpose, I find these quicker and easier to use than the more expensive digital meters. You can get a cheap analog ohm meter at Radio Shack or your hardware store for about \$12.)

15/16" ½"-drive socket

½" drive impact gun

¼"-drive socket set with ratchet, extension, and nut driver. For pre-"CS" alternators, socket sizes 5/16", 11/32" and ¼" are required.

Philips Screwdriver

Plastic or rubber mallet

Toothpick (obtain a toothpick by mixing a good, dry Martini with two Jalepeno-stuffed Olives on a toothpick before starting this alternator procedure. By the time you need to use the toothpick, you'll have just finished the Martini)

Procedure

Now that you have an understanding of the operation of the alternator, and know the component parts and their typical failures, you're ready to start your alternator repair. I like to lay out a clean towel on my workbench. As I disassemble the alternator, I carefully lay all the parts out on my towel in the right sequence and order: there are several insulating washers inside your alternator, and it is imperative that they all end up back in all the right places. So lay your parts out in a nice, orderly way.

1. Disconnect battery negative terminal.
2. Remove the serpentine belt (simply release tension on the idler tensioner on the passenger side of the block and remove the belt).
3. Disconnect the wires from the alternator and unbolt it from its brackets.
4. With a felt marker, draw a straight line across the alternator case where the front and rear case halves bolt together. The alternator case can be reassembled and "clocked" in any way to customize the alternator to various bracket end engine configurations, so you want to be sure you "clock" the cases correctly when you reassemble your alternator. If you intend to paint your case, use a scribe to make a line instead of a marker.
5. Spin the alternator by hand to check the bearings. It should spin smoothly and freely with no jerkiness or noise. A slight "swishing" sound from the brushes riding on the Rotor is normal. Any roughness indicates bad bearings.
6. You will need to use a 15/16" socket on an impact gun to get the pulley and fan retaining nut off. Before I owned my own compressor and impact gun, I used to just take the alternator down to any local shop and have someone with a gun zip the nut off at no charge. To do this, wear a glove to hold the pulley & fan, or wrap a rag around the pulley and fan, hold on tight, and zap the nut with the impact gun. It'll take about 2 seconds. If you don't wear a glove, or use a rag, the fan will rip your hand up when you hit the nut with the impact.
7. Pull the parts off and lay them out carefully in sequence on your towel: first the nut itself, then a lockwasher, pulley, fan, and finally a little shaft spacer.

8. Using a 5/16" socket on an extension with a 1/4" drive ratchet, break loose the four case through-bolts. I prefer a 6-point socket for this, as a 12-point will sometimes round off the bolts. These case bolts can sometimes be in pretty tight. Once you've broken them loose, switch over to your nut driver and pull all the bolts out of the case.
9. Split the case. The front half of the case should now come off of the alternator. Make sure the centrally-mounted Stator (sandwiched between the front and rear case halves) stays with the rear case and does not want to come off with the front case. The Rotor, if the shaft is dirty, may come out with the front case. Use your plastic hammer or rubber mallet to tap things if they don't want to come apart. Use the mallet on the Rotor to tap it out of the case front bearing if it doesn't want to slide out. When the case comes apart, and the Rotor comes out, you'll hear two little "snaps," and you'll see loose springs and parts in the bottom of your alternator. Don't worry: it's normal. Pick the two springs out of the alternator and lay them on your towel with the other parts.
10. Remove the three nuts that attach the three Stator wires to the Rectifier Bridge. These are 11/32" and have lockwashers under them. Lay the nuts and lockwashers side-by-side on your towel. Now, lift the Stator out of the rear case.
11. The Diode Trio is the small component attached to the three studs on the Rectifier Bridge (that you just pulled the nuts off of). It has a single strap connecting it to a Philips screw on the Regulator. Note that the screw has an insulating washer on it. Remove this screw and remove the Diode Trio.
12. Remove the other two Philips screws holding the Regulator in the case. Make sure you note where the insulating washers go. Remove the regulator.

Troubleshooting

You do not need to do further disassembly in order to troubleshoot the alternator and its components. Do the following tests:

1. Test the Rotor. Using your Cheap-O ohm meter, set it to the 1000 ohm scale (or any other fairly high scale). Touch the leads together to make sure the needle pegs out on the scale, and make sure it returns to the left when you disconnect the leads. Put one lead on the one copper-colored slip ring on the Rotor, and the other lead on the other copper ring. The needle should peg to the right (continuity). Now leave one lead on the copper ring and touch the other lead to the central shaft of the Rotor. The needle should show no continuity. If you get any other reading, the Rotor is bad.
2. Test the Stator. There are three wires (terminals) coming off the Stator. Place the ohm meter lead on any one of the three wires and verify continuity to the other two. There should be continuity between all three of the wires (ohm meter should "peg out"). Now leave the lead connected to any one of the three wires and touch the other lead to the metal frame of the Stator (the part that gets sandwiched between the case halves). There should be no continuity. If you get any other reading, the Stator is bad.
3. Test the Diode Trio. Place one of the ohm meter leads on the single connector on the Trio (the strap that was connected to the Regulator). Touch the other lead to each of the other three connectors, one at a time. The meter needle should either show continuity or no continuity, but should be the same for each of the three connectors. Now reverse the ohm meter leads and do the test again. The meter reading should now be reverse of the reading achieved on the first test (if the needle "pegged" on the first test, it should do nothing with the leads reversed). All three connectors should be the same. This test verifies that current can only flow in one direction, and the same direction, through all three of the diode connectors. If any of these readings is not correct, the Diode Trio is bad.
4. Test the Bridge Rectifier. This will be tested in the same way as the Diode Trio: place one of the ohmmeter leads against the cast, finned body of the Rectifier. Touch the other lead to each of the three terminals, one at a time. The meter should be either pegged or have no reading, but all three readings should be the same. Reverse the ohm meter leads and do it again. The reading should be opposite, and all three should be the same. If not, the Bridge is bad. The Rectifier for a "CS" alternator (the most expensive part you can buy to repair an alternator) is \$47.
5. Visually examine the brushes. If the brushes are shorter than 1/4", they're worn out and should be replaced. The brushes are available complete as a brush and brush holder assembly.
6. If everything so far checks out good, you have a bad regulator. You can take the regulator down to your local NAPA store, or other properly equipped parts store, and they can test it for you on a dedicated machine. If it tests bad, buy a new one. The regulators for the pre-"CS" alternators cost about \$30. "CS" regulators cost about \$45.

You have now identified your problem and procured a replacement part. There is no part in an alternator that normally fails that costs more than \$50.

Other Work

Bearings

Besides replacing bad electronic components, you may need to replace your bearings. If your bearings felt rough, or made noise, when you spun the alternator by hand earlier, they need to be replaced. If not, leave them alone: they really do last for a long time.

The front bearing is held into the front case by a retainer plate. Remove the three screws holding the retainer plate into the case. Find a socket that's bigger than the diameter of the bearing and use this socket to back up the case on the inside. Use a socket that's slightly smaller than the bearing on the outside (front side) of the case. Now, use a hammer to lightly tap the bearing out of the case. I've seen guys do this without using the backup socket on the back side, and I've also seen some of these guys crack their alternator case when they've beat the bearing out. The new bearing simply taps in from the back side. Then install the retaining plate.

The rear bearing very seldom fails. It is pressed into the case. I remove these by placing the alternator rear case in a vice, with a large socket providing backing on the inside of the case, and a smaller socket pushing the bearing in from the outside. Tighten the vice, and the bearing is pushed out. Press the new one in the same way.

Paint

To do a nice job, I always paint my alternators. If you glass bead blast the cases, you have to remove the bearings to prevent contamination. If you clean up the case and paint it, you can leave the bearings in place. The Eastwood Company makes a really good "Cast Aluminum" paint in a spray can. If you don't want to mail order, VHT, carried by most independent parts stores, also makes a great "Cast Aluminum" paint. If you clean up your alternator case and give it a light coating of this specialty paint, it will look better than new. VHT and Eastwood also offer a "Cast Iron" color. This color is almost identical to the dark, phosphate coating used on the pulleys.

Assembly

Now that you've procured your new parts and cleaned everything up, the assembly process is very straight forward.

If you have procured a new brush and holder assembly, it comes pre-assembled with a retainer stick in the holder. If you're re-using your old brushes, and did not pull the brush holder out of the case, you need to install the springs and brushes into the holder as follows:

Drop one of the springs into the brush holder in the rear slot (closest to the rear case). Slip the brush into the holder on top of the spring and depress it with your finger. Now, eat the last olive from your Martini to liberate the toothpick, and slip the toothpick in through the little hole in the back of the alternator case, across the top of the brush, and into the center "toothpick hole" in the brush holder. The toothpick will hold the brush in the holder against the spring pressure. Drop the second spring into the forward brush holder slot, and push the brush into the holder. Depress it with your finger, and push the toothpick over the top of the second brush. This will hold the brushes in place until you get the alternator assembled.

Assemble the rest of the components in the same sequence as you disassembled them. Once you have the regulator and rectifier/diode parts installed, with all of the correct insulating washers in all the right places, drop the Stator into the case and install the nuts securing the Stator terminals to the Rectifier. Carefully drop the Rotor straight down into the case until it drops into the rear bearing. Place the front case onto the assembly, assuring that your marks align for the case "clocking." Slip the 4 case bolts in, and tighten it up. Pull your toothpick out of the back side of the case to release the brushes, and re-install the fan spacer, fan, pulley, lockwasher, and fan nut. Give it a one-second zap of the impact gun, and it's ready to install.

Rebuild Service

If you're still not up for doing a rebuild yourself, but want to keep your numbers-matching stock alternator on your 'Vette, you can send me your non-CS alternator for rebuild. I will tear it down, replace any bad components, clean it up, make it look nice, test it, and send it back to you. I charge \$30 for my time, plus my cost on the parts and shipping. If you're interested, drop me an e-mail at:

V8FastCars@msn.com

CCND Events

Your Cruise Director, Linda Kimmelman
302.234.4476 lkimmelman@mac.com



CLUB EVENTS FOR MARCH 2007

April 1, 2007
Sunday

BRUNCH @ THE NETHERLAND INN – 11:00 A.M.

The restaurant, located in Lancaster County, has a bistro offers a variety of dishes, an adjacent lounge to relax and a billiard room with pool tables, dartboards, a card table and two 27" TVs. The restaurant is closed Sundays to regular patrons, so parking is not an issue. We'd like to take a group photo that day. One Historic Drive, Strasburg, PA 17579 800.872.0201 netherlandsinn.com/dining.htm

April 3, 2007
Tuesday

CCND MEETING @ THE LONE STAR STEAKHOUSE & SALOON – 7:00 P.M.

Meeting will be held at the Lone Star Steakhouse on 113 S. Dupont Highway in New Castle, De.

April 10, 2007
Tuesday

HOOTERS IN NEW CASTLE – 7:30 P.M.

Come join us for a "delightfully tacky yet unrefined" evening at Hooters on 194 S. Dupont Hwy in New Castle (326-2526).

April 29, 2007
Sunday

TOURS OF QVC AND THE AMERICAN HELICOPTER MUSEUM – 11:00 A.M.

Admission into QVC is 7.50 per adult and it is \$6.00 into the Helicopter Museum. Identification is required for adults. We'll meet at the Concord Mall in front of Boscov's at 10 a.m. and caravan up to West Chester. We'll head up to QVC for a tour of the studio and then head over to the Helicopter Museum.

June 30, 2007
Saturday

CANAL DAY IN CHESAPEAKE CITY, MD – 8 A.M.

Canal Day, held on the last Saturday in June, "has become a weekend of partying, shopping, eating and more partying..." Spark Magazine. Breakfast at the Bohemia Café and Bakery on the corner of 2nd and George Streets. We'll probably do lunch at the Chesapeake Inn out on the deck. The rest of the day will be at your discretion and pleasure www2.delawareonline.com/spark/2005/06/22bcanaldayb.html
Leaving from the Park n Ride at 8 a.m. Festivities start at 9 a.m.

LOCAL EVENTS

April 14, 2007
Saturday

HCCP Spring Booth's Corner Car Show

Enjoy the Farmer's Market, great food, Prizes and great cars! Show starts 10:00am
Booth's Corner Farmers Market. Naaman's Creek Rd & Foulk Rd, Boothwyn, PA

May 6, 2007
Sunday

Thomas Chevrolet 18th Annual Corvette Show (Gary Gressel Memorial Car Show)

Thomas Chevrolet, Baltimore Pike (Rt1), Lima, PA. Car
registration 8:00am. Show runs 10:00am to 3:00pm

June 16, 2007
Sunday

Mason Dixon NCRS Corvette Day @ The Cecil County Dragway

Vintage Thunder XVI - 8:00 am - 4:00 pm Come out and enjoy a day running your car down the dragstrip against other Corvettes. All generations of Corvettes welcome, Stock or Modified, Just come out for a day of fun. More info: <http://www.ncrs.org/masondixon>. Cecil County Dragway, Rising Sun

April Birthdays



Chris Carlantonio	April 3	Carol Shacknai	April 18
Christine Carlantonio	April 8	Gwen Shannon	April 20
JoAnne Metcalf	April 11	Norman Powell	April 24
Steve Raign	April 15	Jennifer Brantner	April 25
Jack Layton	April 15	Bill Skinner	April 27
Dorothy Ciabattoni	April 16		



1964 CORVETTE

Corvette specs by the year



- Styling was cleaned up a bit for 1964.
- The previous year's distinctive rear window divider was replaced by a solid piece of glass.
- The fake hood vents were eliminated and the roof vents were restyled.
- A three-speed fan was available in the coupe to aid in ventilation.
- Seven exterior colors were available

Tuxedo Black	Sebring Silver	Saddle Tan	Riverside Red
Ermine White	Daytona Blue	Silver Blue	

- All were available with a Black, White, or Beige soft top.

LD. NUMBERS

- The serial number (Vehicle Identification Number -- VIN) was located on a stainless steel plate welded to the right side hinge pillar cross-brace under the glove box
- Convertible Serial numbers ranged from 40867S100001 to 40867S122229
- Coupe Serial numbers ranged from 40837S100001 to 40837S122229
- Corvette engines have the last six digits of the VIN stamped on the block next to the engine number
- The body number plate was located on the engine side of the cowl.
- The Fisher Body Style Number 64-0867 identifies a Corvette Sting Ray convertible
- The Fisher Body Style Number 64-0837 identifies a Corvette Sting Ray coupe
- The body number is the production serial number of the body.
- The trim number indicates the interior trim color and material.
- The vinyl or leather upholstery was available in Red, Black, Saddle, Blue, silver & black, silver & dark blue, white & black, white & dark blue, white & red, white & saddle

ENGINE & Transmission

- The standard motor was a 327ci V8 motor, overhead valve with a 4.00" bore and 3.25" stroke. Compression of 10.50:1 with 5 main bearings, hydraulic lifters, and a Carter four-barrel WCFB carb. Output was 250hp@4400rpm.
- Three optional motors were available: The basic specs were the same as the standard motor but one included a Carter AFB carb and produced 300hp, another came with a Holley 4150 carb, solid lifters, had higher compression of 11:1, and produced 365hp, and the top motor option had a Rochester fuel injection with 11:1 compression, solid lifters, and produced 75hp.
- A manual 3-speed close ratio, a manual 4-speed close ratio, or an automatic 2-speed tranny was available

CHASSIS

Wheelbase:	98 inches	Overall length:	175.2 inches
Front tread:	56.3 inches	Rear tread:	57 inches
Wheels:	steel disk	Tires:	6.70x15
Brakes:	Drum on all four wheels	Axle ratio:	3.70:1 (optional 3.08, 3.36, 3.55, 4.11, 4.56)

Front suspension: upper and lower A-arms; unequal-length wishbones; coil springs; anti-roll bar; tubular shocks
Rear suspension: fixed differential; nine leaf springs; lateral struts and universally-jointed axle shafts; radius arms and direct-acting shock absorbers

OPTIONS

RPO 898 Genuine leather seat trim (\$80)	RPO L75 327-cid 300-hp V-8 (\$53.80)
RPO A01 Soft-Ray tinted glass, all windows (\$16.15)	RPO L76 327-cid 365-hp V-8 (\$107.60)
RPO A02 Soft-Ray tinted glass windshield (\$10)	RPO L84 327-cid 375-hp fuel-injected V-8 (\$430.40)
RPO 431 Electric power windows (\$59.20)	RPO M20 Four-Speed manual transmission (\$188.30)
RPO C07 Auxiliary hardtop for convertible (\$236.75)	RPO M35 Powerglide automatic transmission (\$199.10)
RPO C48 Heater and defroster deletion (\$100 credit)	RPO N03 36-gallon fuel tank for coupe only (\$202.30)
RPO C60 Air conditioning (\$421.80)	RPO N11 Off--road exhaust system (\$37.70)
RPO F40 Special front and rear suspension (\$37.70)	RPO N40 Power steering (\$75.35)
RPO G81 Positraction rear axle, all ratios (\$43.05)	RPO P48 Special cast -aluminum knock-off wheels (\$322.80)
RPO G91 Special 3.08:1 "highway" ratio rear axle (\$2.20)	RPO P91 Nylon tires, 6.70 x 15 black sidewall (\$15.70)
RPO J50 Power brakes (\$43.05)	RPO P92 Rayon tires, 6.70 x 15 white sidewall (\$31.55)
RPO J56 Sintered metallic brakes (\$37.70)	RPO T86 Back-up lamps (\$10.80)
RPO K66 Transistor ignition system (\$65.35)	RPO U69 AM-FM radio (\$174.35)
RPO N34 Woodgrained plastic steering wheel (\$16.15)	RPO 941 Sebring Silver exterior paint (\$80.00)

HISTORICAL NOTES

- Only 3.2 per-cent of 1964 Corvettes were sold with the standard three-speed manual transmission.
- Most, 85.7 percent, were equipped with a four-speed manual trans-mission.
- An L84-powered 1964 Corvette could go from 0-to-60 mph in 6.3 seconds and from 0-to-100 mph in 14.7 seconds.
- It had a top speed of 138 mph.



CCND FEBRUARY MEETING MINUTES

Minutes from the last CCND meeting



CCND MARCH MEETING MINUTES

Meeting was called to order at 7:05 p.m. by **Andy Rumford** on March 6, 2007. Andy opened the meeting with a moment of silence on the death of Bob Whorl. On a lighter note, he also had a sheet cake available for all members with March birthdays.

New Member: **Jim (Jimbo) Basile - 2002 & 1995**

Vice President: **Steve Blanchies** reported 61 paid memberships.

Treasurer: **Harvey Smith** presented the financial report.

Member at Large: **Mike Metcalf** reported no orders at the present time.

CCND Governor: **Dave Morales** not able to be present.

Media Chairman: **Barry Kimmelman** reported that he needs "Member of the Month" articles. (Barry's e-mail is BKimmelman@comcast.net.) Andy noted that the new website is looking good!

Social Chairperson: **Linda Kimmelman** reported on upcoming activities:

Tuesday	03/20	Cheesburger in Paradise
Sunday	03/25	Matinee @ Regal Brandywine Towncenter XVI (TBD)
Sunday	04/01	Brunch at the Netherland Inn

Show Chairman: **Fred Krumm** reported that the venue for this year's show will be Iron Hill. Meeting with Diver Chevrolet regarding corporate sponsorship. Show date is set for October 7, 2007.

Old Business: **Meeting location** – Friendly's Restaurant was brought up as a possible meeting location – ample parking – larger meeting room – no liquor license.

New Business: **Club Picnic** – members would like to do a repeat of last year. Mike Crank needs volunteers for setup and cleanup.

Carlisle – Put on calendar. Jack Layton reported no more rooms available

Charity Presentations – members approved \$200 for each charity that gave a presentation and not selected

Club Calendar – Mike Metcalf proposed a 15 month calendar from October to the following December. Mike is willing to do legwork as long as he can get car photos. Need commitment for 40-50 calendars – send pics to Barry at BKimmelman@comcast.net.

Club Jackets – Mike Metcalf opened discussion on different options for club jackets. He will have a questionnaire at next meeting to access the majority of the club's preference as to the color, location(s) of embroidery, etc.

Delaware Auto Show – October 5th, 6th, 7th – anybody interested in participating contact Andy Rumford.

Blue Rocks – Saturday, June 16th – fireworks night – 1st base side - 8-9 cars to drive the track - \$24/person

Jack Layton won this month's 50/50

Meeting was adjourned at 8:30 p.m.

Respectfully Submitted, Christine Carlantonio, Secretary

NEXT MEETING DATE IS TUESDAY, APRIL 3, 2007

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