



**DECEMBER, 2006**

# **Vettester**

**The Magazine of the Corvette Club  
of Northern Delaware**

**Concord Mall Show  
Set up your points distributor  
Meet your CCND Member  
1960 Corvette specs & facts**

**Matt Guthan's triple white C4  
at the Concord Mall show**



# My Two Cents



by Jack Layton

Well folks, my time as president has finally come to an end. After 6 years, it was time for some new blood to step in. I have enjoyed my time as president, although I must say, the last year was a bit trying.

Due to my busy schedule, I just did not have the time and energy that needed to be devoted to the position. I will be glad help out in any way I can with the incoming president and board, should they seek my advice. It is also at this time, that after thinking it over, I will ask that my name be removed from the ballot of Vice-President. I just need a break at this time.

We had a nice turnout for the Concord Mall show. The weather was nice once again. We raised \$124.00, which will go towards our Adopt-A-Family fund. And speaking of our family this year, I need a few more people to help with the shopping. We have a budget of \$1000.00 to spend for Thanksgiving dinner, as well as Christmas dinner and gifts.

This year's family is a Mother, Father and 3 small boys named Tristin, Seth and Gabriel and their ages are 6, 4, and 2 respectfully. Following is a condensed description of the family...the father has been dealing with serious medical problems which doctors have not been able to diagnose. They have no health insurance and he has been losing time at work. They need help with clothing for the kids and help paying their heating and electric bills.

Jim and Nancy McCarnan have committed to shopping for the 2-year-old boy. The mother and father are requesting Walmart gift cards. I need volunteers to help with the other 2 boys. I will shop for the groceries and make arrangements to drop off the food and presents at the church. Contact me if you can help, and I will give you information regarding the 2 boys.

We had another nice night for the hayride. Perfect weather-chilly and no rain. Approximately 30 of us hitched a ride from our driver Jim Hagerty and off we went. Upon returning, we had some hotdogs and roasted

marshmallows. A thoroughly enjoyable evening I thought.

Don't forget our Holiday party set for January 13, 2007 at Froggs Hollow Country Club in Middletown. Cost is \$30.00 per person. Money needs to be in hand **no later than January 6<sup>th</sup>**.

At the November meeting, I asked the club to make a donation on behalf of Todd Hannah. A motion was made and accepted for the club to make a \$100.00 donation.

So, as the end of my tenure as president nears, so comes the end of this column. For the past six years, I have acted upon a motto that I have longed believed in, and that is "Lead by example". You can't ask someone to do something if you are not willing to do it yourself. That being said, I believe that for this club to move upward and forward, it needs support from **all** the members, not the same few time after time. Committees need to be set up to help with some of the events.

As I mentioned at the on-set, I'll do whatever I can for this club. New leadership coming in, as well as better communicating will go along way in making this club better in the coming years.

So, as I sign off for the last time... until we meet again, I bid you all farewell and as always, thank you for allowing me to put in 'My Two Cents'.

*My Two Cents*

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**20 Questions:**

**Name:** Alan D. Chambers

**What is your age?** 60

**What is your occupation?** CEO

**Where do you live?** Newark,DE

**What is your marital status?** M

**Do you have children?** 2

**Do you have pets?** no but a cat soon again

**What is your Favorite Food?** Everything

**What is your Favorite Music?** 50 & 60's

**What made you want to join CCND?** Interest in corvettes & learning more

**How long have you been a CCND Club member?** 2 yrs

**How long have you been interested in Corvettes?** 4 yrs

**Are you a Driver or Passenger?** Driver

**When did you get your first Corvette?** 4 yrs ago

**What year was your first Corvette?** 68, 454HO ,5spd, modified suspension

**What is your favorite over-all Corvette?** C3's

**What is your current model year Corvette?**68

**Do you prefer coupes or convertibles?** convertibles

**Do you prefer Automatic or Manual Transmissions?** Manual

**Do you do your own service work on your Corvette or do you take it to a mechanic?**  
Do my own- everything except painting

**Besides CCND and Corvette related activities, what non-Corvette interests do you have?** Woodworking, bicycling, reading, various sports, fishing, traveling



## Concord Mall Show

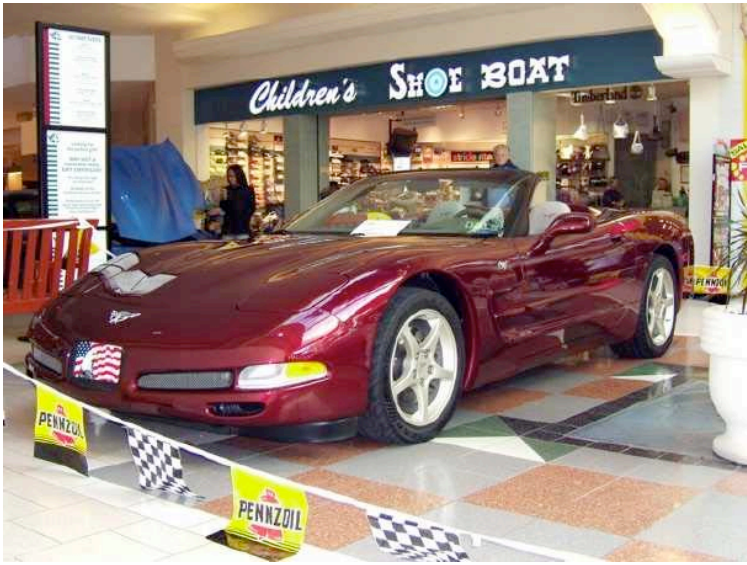
By: Barry Kimmelman / photos by: Linda Kimmelman

Once again at the end of October CCND held their bi-annual Concord Mall exhibition show. We had approx 23 cars for this show, which was a much better turnout than the spring show.

As always, the mall shoppers were awed and amazed by the collection of beautiful Corvettes lining the inside of the mall. I think all of us there had to wipe the drool off our fenders and hoods from the spectators at least a few times during the show!

As they say, a picture is worth a thousand words so here are a few pictures..... Hope to see you there next year.







# 1959 CORVETTE



- The 1960 Corvetted looked very much like the 1959 model.
- A new rear suspension sway bar improved the car's handling
- Aluminum cylinder heads and an aluminum radiator were introduced, but later withdrawn.
- Standard equipment included:
  - tachometer
  - sun visors
  - dual exhaust
  - car-peting
  - seat belts
  - outside rearview mirror
  - elec-tric clock.
- Buyers could choose from eight exterior colors:
 

Tuxedo Black (Black, White or Blue soft top)	Honduras Maroon (Black soft top)
Ermine White (Black, White or Blue soft top)	Roman Red (Black or White soft top)
Tasco Turquoise (Black, White or Blue soft top)	Cascade Green (Black, White or Blue soft top)
Horizon Blue (Black, White or Blue soft top)	Sateen Silver (Black, White or Blue soft top)
- A new aluminum clutch housing cut the Corvette's weight by 18 pounds.
- A larger-diameter front anti-roll bar and new rear bar enhanced ride and handling characteristics of the 1960 model.

## I.D. NUMBERS

- The serial number (Vehicle Identification Number -- VIN) was located on a stainless steel plate welded to the top of the steering column mast under the hood.
- Serial numbers ranged from 00867S100001 to 00867S110261
- 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 60-0867 identifies a Corvette.
- The body number is the production serial number of the body.
- The trim number indicates the interior trim color and material.
- The vinyl upholstery was available in Red, black, blue, or Turquoise.
- The paint number indicates the color combination.
- The body side cove could be painted Silver or White

## ENGINE & Transmission

- The standard motor was a 283ci V8 motor, overhead valve with a 3.87" bore and 3.00" stroke. Compression of 9.50:1 with 5 main bearings, hydraulic lifters, and a Carter four-barrel carb. Output was 230hp@4800rpm.
- Four optional motors were available: The basic specs were the same as the standard motor but included a Dual 4-barrel carb set-up and produced 245hp, one had a Dual 4-barrel carb set-up producing 270hp, one had a Rochester fuel injection producing 275hp and the top motor option had a Rochester fuel injection with higher 10.5:1 compression, solid lifters, and produced 315hp.
- A manual 3-speed close ratio, a manual 4-speed close ratio, or an automatic 2-speed tranny was available

## CHASSIS

<b>Wheelbase:</b>	<b>102 inches</b>	<b>Overall length:</b>	<b>177.2 inches</b>
<b>Front tread:</b>	<b>57 inches</b>	<b>Rear tread:</b>	<b>59 inches</b>
<b>Wheels:</b>	<b>steel disk</b>	<b>Tires:</b>	<b>6.70x15</b>
<b>Brakes:</b>	<b>Drum on all four wheels</b>	<b>Axle ratio:</b>	<b>3.70:1 (optional 3.55, 4.11, 4.56)</b>
<b>Front suspension:</b>	<b>Independent; unequal length A-arms, coil springs, tubular hydraulic shocks</b>		
<b>Rear suspension:</b>	<b>Live axle on semi-elliptic leaf springs, anti-roll bar, tubular hydraulic shock absorbers</b>		

## OPTIONS

RPO 101 Heater (\$102.25)	RPO 469 283-cid 245-hp dual four-barrel carburetor (\$150.65)
RPO 102 Signal-seeking AM radio (\$137.75)	RPO 579 283-cid 275-hp fuel-injection engine (\$484.20)
RPO 107 Parking brake alarm (\$5.40)	RPO 469C 283-cid 270-hp dual four-barrel carburetor (\$182.95)
RPO 108 Courtesy lights (\$6.50)	RPO 579D 283-cid 315-hp fuel-injection engine (\$484.20)
RPO 109 Windshield washer (\$16.15)	RPO 473 Power-operated folding top mechanism (\$139.90)
RPO 276 Five 15 x 5.5-inch wheels (\$N/C)	RPO 675 Positraction axle with optional ratio (\$43.05)
RPO 290 6.70 x 15 White sidewall tires (\$31.55)	RPO 686 Metallic Brakes (\$26.90)
RPO 313 Powerglide auto trans (\$199.10)	RPO 419 Auxiliary hardtop (\$236.75)
RPO 440 Optional cove color (\$16.15)	RPO 687 Heavy Duty Brakes & Suspension (\$333.60)
RPO 426 Electric power windows (\$59.20)	RPO 685 Four-speed manual transmission (\$188.30)
RPO 261 Sunshades (\$10.80)	RPO 1625A 24 gal fuel tank (161.40)
RPO 121 Temp controlled radiator fan (\$21.55)	RPO 1408 five 6.70x15 Nylon tires (\$15.75)

## HISTORICAL NOTES

- The majority of 1960 Corvettes, 50.1 percent, were sold with a detachable hardtop.
- Most, 51.9 percent, also had a four-speed manual transmission.
- A 1960 Corvette with the 283-cid 230-hp V-8 could go from 0-to-60 in 8.4 seconds and did the quarter mile in 16.1 seconds at 89 mph.
- The Route 66 television series, featuring Martin Milner and George Maharis driving their 1980 Corvette across the country on the "Mother Road" debuted this season.

## CCND Hayride

BY: Barry & Linda Kimmelman

Once again we had our annual Hayride around Halloween time. We gathered at Carousel Park by Pike Creek around 4pm. It was light when we first got there but it got dark soon after. Fellow CCND member Jim Hagerty was our host and driver of the tractor pulling our two straw-filled wagons of CCND members, family, and friends.

As always there were a few people insisting on starting straw-throwing fights during the ride but it was all in good fun. While cold and crisp outside after the sun went down it was a beautiful and very clear night, perfect for the hayride and the following bonfire where we huddled around to keep warm and roast hot dogs and marshmallows.

All in all a great evening of fun with some great company of fellow club members.





# CCND Media Update

By: Barry Kimmelman – Newsletter Editor

Well, by the time you read this we are going to be in December already or only a few days away from December. This will also mark one year now since I have taken over the editor's position of the CCND newsletter as the December 2005 issue was my first time with this undertaking.

I wanted to take this opportunity to update you on what has been done over the last year and what the upcoming year is hoping to bring.

As most of you have probably noticed I've tried to add new content to the monthly newsletter. When space allows I try to add a useful technical article to the newsletter and as much as possible to vary the focus of those articles to the different generations so all can benefit. Unfortunately, my collection of technical articles mostly ranges within the C1, C2, and C3 generation cars with a small number of C4 articles. I'd like to include some C5 and C6 tech articles also for the many C5 and growing number of C6 owners in the club. To that goal, if you have any good technical articles for C4, C5, and C6 cars feel free to send to me and I can start including them in the newsletter.

Another addition to the content I try to add each month is to take a year Corvette and dedicate a page to the specific specs, options, and changes for that year. I started with the 1953 model and I'm going chronologically up each month – this month we are up to the 1960 model year. My plans are to continue this monthly addition as long as I'm the newsletter editor or until we finally reach the last current year – whichever comes first.

Another addition I've tried to implement was to tie the newsletter and the club website closer together by being able to get pictures of club events, shows, and activities posted onto the website and then include active links in the newsletter to take you directly to those pictures so that we aren't limited to the few small pictures I can fit into one or two pages of an article. Because of issues on the existing website this became very difficult to do but I still have plans to make this happen and I think it's something you will be able to see occur fairly soon.

A change I'm hoping to eventually make to the newsletter is a complete format change in the way the newsletter looks and is currently laid out. For a variety of reasons that are not important to get into in this update the newsletter is limited to a maximum of 18 pages. During "slow" times of the year like we are in now when there are not various Car/Vette Shows to report about filling those 18 pages can be difficult and many times the newsletter will be smaller with less pages but during the busier months in the Spring/Summer/Fall trying to fit everything into a month's issue can be difficult and room runs out before all content can be added in. I'm looking at ways to reformat the newsletter to allow more efficient use of the space to be able to fit more in within the same number of pages. This is easier said than done but it's a goal I'm hoping to be able to accomplish.

Hopefully most of you have also noticed the newest addition to the newsletter I've started which is a one-page Member Highlight. Each month we will run a short info page on a different member based on a 20-question questionnaire I sent out about 2 months ago. Hopefully the members that haven't returned that questionnaire completed will do so and they can be included in the newsletter. This helps everyone in the club get to know more about our fellow club members.

As always, the newsletter can ALWAYS use Member of the Month stories!! If you are a newer member and have not sent me your story please do so and even if you are a long time member that has never done a Member of the Month story or it's been a number of years since you did one we would all appreciate hearing about you!

Now, for some new and exciting news..... As we all know, the existing CCND website has seen better days. Andy Rumford built the existing site a number of years ago and did a fantastic job on it but as time went by the site got old, outdated, and with a number of various people maintaining it since it's beginning things on the site just got broken and no longer work well. Andy and Matt Guthan decided the best course of action was to scrap the existing site and build a new one from the ground up. Because of pressing home and work obligations this has been put off month after month.

The good news now is that a new website is currently under construction and if all goes well we should be able to see the new site published up on the internet for us to use within the next couple of weeks (lets all keep our fingers crossed). When the new site gets put up it may not be perfect but it's important that we get the new site up and running first and then we can continue to "fine-tune" it once it's up.

While we are currently in the final stages of the site and almost ready to get it up on the 'net we are still looking for any good ideas that other club members would like to see on the website. Whether it be certain content on the site you would like to see, or a certain way you may prefer the website to operate to make use of it easier or more helpful we welcome all suggestions and if it's possible we will try to implement those ideas into the new site.

Remember, this is the club's website and we are all club members so everyone has a voice to make suggestions and recommendations. Some ideas we may be able to add in immediately and others may take a while but all suggestion and comments will be considered.

That's all for now. I wish everyone a very happy and safe Holidays!

# MAPPING YOUR ADVANCE CURVE

John Hinckley

Last month we discussed timing and vacuum advance, why it's necessary, how those systems operate, and how they work independently to keep your classic Corvette operating at maximum efficiency. Now that we have a basic understanding of these systems, we need to know how to keep them operating as they were designed, how to check them out during routine maintenance, and what's involved in modifying their behavior for improved performance.

The objective of this article is to show how to verify the operation of these systems and make necessary corrections at home, using ordinary tools; there's no need for a classic Corvette owner with average mechanical skills and a few basic tune-up tools to pay shop rates to have this work done – you can do it yourself and get to know your car better at the same time.

**Tools:** We're not talking about "engine analyzers" here – all we need is basic hand tools, a dwell meter, vacuum gauge, and a timing light, all of which most Corvette owners have who do their own tune-ups. A "dial-back" timing light simplifies the job, but an ordinary fixed timing light will work fine. The Chevrolet Chassis Service Manual for your year Corvette is also handy, as all of the centrifugal and vacuum advance specifications for your distributor are shown in the back, in the distributor chart in the "Engine Electrical" section. For illustrative purposes, we'll use the "numbers" for a 1967 327/300hp; for your Corvette, just plug in the specs for your particular engine combination as we go along.

**Preparation:** Although we're not going to go through a description of a complete tune-up, this is probably a good time to change your plugs, points, condenser and rotor, and inspect the inside of your distributor cap and your plug wires to make sure they're in good shape before we get started so we're working with "fresh" components in peak condition. Fire it up, let it warm up to operating temperature, and we'll get started.

**Precautions:** We're going to be working from here on out under the hood with a running engine and various wires and cables strung around it from a timing light and dwell meter; make sure those wires and cables are routed away from the fan and belts, and be careful using the timing light – don't get so focused on the timing readings that you stick the light (or your hands) into the path of the fan or the various drive belts. Think safety first – you need two hands and ten fingers to read more good stuff in future issues of "Corvette Enthusiast".

**Setting Dwell:** It's important to set the dwell of your points before we do anything else, as point dwell affects ignition timing; there's no point in mapping your advance curve first and then finding out that dwell is not set correctly and having to do it all over again. Hook up your dwell meter to the coil and ground (instructions are usually on the meter) and use a 1/8" hex Allen wrench to adjust the screw behind the "window" in the distributor cap until you see 30° on the meter with the engine running. You can also get an idea of the condition of your distributor by watching the dial as you gradually increase engine speed up to 4000-5000 rpm; if you note more than 2° variation in dwell at high rpm, that's a clue that the distributor needs attention (which they rarely get, as they sit neglected back there in the dark under the shielding and don't get the maintenance they need). Excessive dwell variation can be caused by worn shaft bushings (usually the upper bushing), too much shaft end play between the top of the drive gear and the bottom of the housing (should be .002"-.007"), or a wobbly breaker plate (the circular plate the points are attached to).

Most dwell meters also have a tachometer feature (just flip the switch from "dwell" to "tach") which we'll use shortly, so leave it connected.

**Checking Timing:** We're going to check all three systems we discussed last month – initial (base) timing, centrifugal advance, and vacuum advance. Part of this involves checking “total timing” (initial plus centrifugal, with the vacuum advance disconnected), which will be in the range of 34-38 degrees BTDC (Before Top Dead Center); the tab on the timing cover is only calibrated up to about 15° (depending on the engine), so we need to be able to measure well beyond that. If you have a “dial-back” timing light, it's duck soup – at any given point, you just turn the dial on the light until the index mark on the balancer aligns with the “0” mark on the timing tab, and read the degrees of advance on the timing light's dial.

If you have a standard fixed (non-dial-back) timing light, we can accomplish the same thing with a piece of masking tape. Measure the circumference of the balancer and divide by 10; this will give you the length of a 36° segment. Cut a piece of masking tape exactly that length, and subdivide and mark it into smaller divisions (center is 18°, center of each resulting half is 9°, center of each of those segments is 4.5°, etc.). Then mark the piece of tape with 0° at the left end, 18° in the center, 9° between 0° and 18°, 36° at the right end and 27° between 18° and 36° (see photo), and apply it to the balancer with the 0° end aligned exactly on the balancer's timing index line and the 36° end down, clockwise on the balancer as viewed from the front.

You now have calibrated balancer from 0° advance to with the “0” on the timing tab. “timing tape” for your diameter balancer from any apply it permanently for future



markings on the 36° when aligned Or, you can buy a particular speed shop and “quick checks”.

**Initial (base) Timing:** This is start from, and we need to accurately, at the lowest with the vacuum advance distributor disconnected and work great). Old, weak advance weights can allow advance system to “start” too

the foundation we measure and set it possible idle rpm, hose to the plugged (golf tees springs on the the centrifugal early and

influence the initial timing reading/setting, so we can eliminate that possibility by putting a rubber band around the advance weights to hold them in their fully-retracted position, only for this check. Remove the distributor cap and rotor, apply a rubber band, re-install the rotor and cap, and we're ready to go. Fire it up, adjust the idle speed screw on the carb to get the lowest possible idle rpm, and check the reading at the timing tab with your light; if it's different than the spec on the distributor chart for your engine, loosen the distributor hold-down clamp bolt and rotate the distributor (the advance can makes a good handle) until your timing light shows the correct advance number on the timing tab. write this number down (6° for our 327/300hp example). Remove the rubber band around the weights and we'll move on.

With the rubber band removed, fire it up again (vacuum still disconnected and plugged), set the idle speed screw on the carb to get your normal idle speed (500 rpm for our example), and check the timing again with your light; if it shows more advance than the reading we took with the rubber band in place, the centrifugal advance system is starting too early. For our example, the centrifugal advance isn't supposed to start until 900 rpm. If your reading hasn't changed, you're OK for this phase of the check.

**Centrifugal Advance and “Total Timing”:** In this phase, we’re going to check “total timing”, then we’ll “map” the centrifugal advance curve and compare it to the original specs. Have a note pad and pencil handy to jot down various rpm levels and advance readings, and you might pre-write three columns, using the specs from the distributor chart in the Shop Manual – one with rpm levels (900, 1200, 1500, and 5100 for our example), and one with advance readings at those rpm levels (0, 9, 15, and 30 degrees for our example). Leave space next to this second column to jot down your observed readings so you can compare them with the design specs. **Note for C-1’s:** The distributor chart in the back of the “ST-12” 1953-1962 Corvette Servicing Guide for centrifugal advance specs shows rpm and advance numbers in **distributor** rpm and degrees, not **engine** rpm and degrees – double the printed numbers to get them in **engine** terms.

**Total Timing:** Connect your timing light, fire up the engine, and pull the trigger on the light while observing the timing marks. Continuing to observe the timing with the light, gradually rev the engine up until the marks stop moving (advancing), and write down both the rpm at which the marks stop moving and the observed maximum advance reading; this reading is “total timing”, the sum of initial and maximum centrifugal advance. For our 327/300hp example, it should be 36 degrees (6° initial plus 30° from the distributor). Subtracting your initial timing reading from the observed maximum reading will tell you how many degrees of advance are being provided by the centrifugal mechanism in the distributor, which should correspond with the maximum spec number in the “Centrifugal Advance” column of the distributor chart.

This check also provides another opportunity to judge distributor condition; if the observed timing “jumps around” or moves rapidly back and forth at steady high rpm, that’s another indication that the distributor needs attention. This is called “spark scatter”, and has the same causes outlined earlier in the “Setting Dwell” section – worn shaft bushings, excessive shaft end play, and wobbly breaker plate.

If the “total timing” number is more than 38 degrees, that’s excessive, and may indicate that the advance limiting bushing has fallen off the pin that protrudes downward through the slot in the autocam under the advance weights. This is not unusual in an old distributor; if that’s the case, it’s advisable to loosen and re-adjust the distributor to reduce initial timing so it won’t have more than 36-38 degrees total advance until the bushing is replaced. Most speed shops have an assortment of advance limiting bushings; the larger the O.D. of the bushing, the more it will limit maximum advance. Total timing over 38 degrees can cause detonation at full throttle, which is highly destructive.

**Mapping Centrifugal Advance:** Gradually rev up the engine to each of the rpm levels in the left column, and write down the observed advance readings at each level next to the “spec” advance numbers from the distributor chart in the right column. Then subtract from each your initial advance reading (6° in our example) to get only the degrees of advance added by the distributor’s centrifugal advance mechanism. This now constitutes a “map” of your centrifugal advance system you can compare to the original design specs in the first and second column.

This is not a NASA-level mechanical system (the weights and springs), and a few degrees of deviation at each point is normal; more than a few degrees at each point, however, indicates possible weak springs, sticky or worn weights, or a missing advance limiting bushing.

**Vacuum Advance:** Now that we’ve dealt with initial timing and centrifugal advance and have a feel for the mechanical condition of the distributor, we can examine the vacuum advance system and see how it’s working. Go back to the distributor specs chart in the Shop Manual, and it will show how the vacuum can was originally calibrated, in “X” degrees of advance at “X” level (in inches of mercury –

Hg.) of vacuum; this is expressed with two specs – starting point, and maximum advance. For our 327/300hp example, it says the can provides 0° at 6” Hg. (which means it starts pulling on the breaker plate at 7” Hg.), and provides its maximum of 15° of advance at 12” Hg. This is where your vacuum gauge comes into play.

Remembering last month’s discussion, you want the vacuum advance can connected to **full manifold vacuum**, normally found at the base of the carburetor; you can check the ports with the engine running by connecting the vacuum gauge to each until you find the one that shows 12”-18” of vacuum at idle (depends on each engine). **“Ported” or “timed”** vacuum ports will show no vacuum at idle at all, then will show vacuum when the throttle plates are opened off-idle.

Your vacuum gauge can be connected to full manifold vacuum at several locations – teed into the existing vacuum advance hose (if it’s connected to full manifold vacuum), connected to the vacuum fitting on top of the intake manifold behind the carburetor (normally used for power brakes and/or the Powerglide vacuum modulator connection), to the large PCV hose nipple on the carburetor base, or teed into the rubber hose from the carburetor base to the choke pull-off diaphragm.

**Verifying Vacuum Advance Operation:** With your vacuum gauge connected (and the vacuum to the distributor still disconnected and plugged), start the engine and let the idle stabilize. Your timing light should show the same initial timing reading you observed during the **“Initial Timing”** step earlier (check your notes); note the vacuum reading on the gauge and write it down. Now remove the plug from the distributor vacuum hose and connect it to the nipple on the advance can (quickly, so the engine doesn’t die); idle rpm will increase. Now check the timing again with your light and write down the advance number, and the reading on the vacuum gauge. The timing should show an advance equal to the maximum advance spec for the can; for our example, it should increase 15° from 6° (vacuum disconnected) to 21° with the vacuum hose connected. If no increase in advance is noted, the diaphragm has failed and the advance unit must be replaced, or the breaker plate is stuck. If less than the specified advance is noted, the diaphragm may be leaking, or the breaker plate may be binding.

Assuming the check shows positive results, the vacuum advance is working properly; leave it connected, and re-set idle speed and the idle mixture screws (work back and forth between the two screws to achieve highest steady vacuum reading) to re-establish your desired idle rpm.

This is a “gross” test, which simply says the vacuum advance is working or it isn’t; in order to check vacuum advance more closely, you can use a MityVac vacuum pump, which has its own gauge, on the vacuum advance can’s nipple with the engine running to see at precisely what vacuum level the advance diaphragm starts to move and how much advance it provides at that vacuum level. The “gross” test is usually sufficient.

**Modified Engines And Vacuum Advance:** Looking at vacuum advance specs again, you’ll note that maximum advance is achieved at “X” level of manifold vacuum (generally 12”-15” Hg. for production engines); these engines normally have 15”-18” Hg. of vacuum at idle, so the advance can is fully deployed at idle. This is important for stable idle speed and good idle cooling. Modified engines with aftermarket cams or production engines with factory high-performance solid-lifter cams frequently only produce 9”-12” Hg. of vacuum at idle, so they need advance cans calibrated to be fully deployed at much lower manifold vacuum levels in order to provide the advantages of full advance at idle. Advance cans for these engines need to be calibrated to provide full advance at vacuum levels at least 2” Hg. less than the engine produces at idle. Corvette advance cans specified for those engines were so calibrated from mid-1964 on; they started pulling at 4” Hg. vacuum and provided the

full 15° of advance (fully deployed) at only 8" Hg. of manifold vacuum. However, those uniquely-calibrated GM advance cans were discontinued from the GM parts system many years ago – what do we do now if we need one? No problem – go to NAPA and get an Echlin #VC-1810 advance unit, stamped "B28" on the bottom (about \$10.00); it has the exact same calibration (4" Hg. start, fully-deployed with 15° of advance at 8" Hg.), and it's a bolt-in replacement. Echlin makes a full line of replacement vacuum advance units for Delco distributors with specs to match the originals; take the spec your engine requires from the Shop Manual with you and the counterman can get you an Echlin unit that will match it.

**C1 Dual-Point Distributors:** Many C1 applications (mostly 2x4 carbs and fuel injection) used dual-point distributors with no vacuum advance; in those days, the feeling was that most of the buyers of those engines were concerned only with maximum performance or would be racing the cars, and didn't need the street advantages of vacuum advance. Those distributors had unique centrifugal advance curves, which can be checked out in the same manner I've described in the "**Centrifugal Advance**" and "**Total Timing**" sections earlier. They're more of a challenge to work on, however, as the distributor has to be disassembled to get at the centrifugal advance mechanism, which is buried underneath the breaker plate.

**Altering The Advance Curve:** A glance at the distributor specs chart will show that nearly all production applications have centrifugal advance curves that don't reach maximum advance until 4000-5100 rpm. This is a form of warranty protection for the manufacturer, as it ensures that the production calibration will prevent destructive detonation under almost any circumstances, and will only expose the engine to maximum advance for short periods at high rpm. Almost any production engine will show tangible seat-of-the-pants performance improvement with a "faster" advance curve that reaches maximum advance by 2800-3000 rpm, which explains the number of aftermarket "advance curve kits" hanging on the walls of speed shops everywhere. These kits generally have lighter weights, several different limit bushings, and three strengths of pairs of springs, so many combinations are possible with experimentation. The challenge is to come up with a combination that doesn't "start" too early and is "all in" by 2800 rpm or so for peak performance, **AND** doesn't result in detonation with your particular engine combination. Trying different combinations, mapping the resulting curves (as we did earlier), and then driving the car with each change to check for detonation takes time, but usually a good compromise can be found eventually, with noticeable improvements. Stick with the GM advance weights – they're much better than the kit pieces.

There's an old-school theory that says "Just set total timing at high rpm and let the initial fall as it may", but that's bad advice; it may work on a race car that's run all the time at high rpm and full load, but it ignores the needs of street operation. A street-driven car needs advance systems that handle the full spectrum of operating conditions, loads, and speeds and are both rpm-sensitive and load-sensitive, and that requires carefully mapped systems that work together to optimize performance without risking detonation. Start with the factory specs and optimize from there.

**Summary:** Last month's issue described and de-mystified the theory and operation of the three ignition advance systems – initial, centrifugal, and vacuum, and dispelled some myths about them. This month we've taken them out of the "rocket science" category and shown you how to check them out, verify their operation, and optimize them, at home, with simple tools. In effect, simply an extension of normal tune-up practices you can do yourself instead of paying someone else seventy-five bucks an hour to do it for you, and at this point you probably know more about advance systems than the guy in the shop does anyway

## CCND Upcoming Events

Your Cruise Director, Linda Kimmelman  
302.234.4476 [lkimmelman@mac.com](mailto:lkimmelman@mac.com)



## CLUB EVENTS

**December 5, 2006**  
Tuesday

**CCND MEETING @ KAHUNAVILLE – 7:00 P.M. In the Red Room**

December 10, 2006  
Sunday

**MID ATLANTIC GRAND PRIX RACING – 11:00am**

Mid-Atlantic Grand Prix is Delaware's first full service European Style Indoor Karting and Entertainment Facility. We had a great time last time we did this and have had lots of requests for a repeat of this fun event so here it is. Send me an email or call if you're interested in attending. More Info here: [http://www.midatlanticgrandprix.com/cms/?WELCOME\\_RACE\\_FANS](http://www.midatlanticgrandprix.com/cms/?WELCOME_RACE_FANS)

December 17, 2006  
Sunday

**CHADDSFORD WINERY – 2:00 P.M.**

Located at 632 Baltimore Pike in Chadds Ford, Pa, five miles south of Route 202. We will be able to take a tour of the winemaking and barrel aging cellars, taste the current vintage, browse the gift shop. This will be a great place to pick up any last minute holiday gifts. Meeting spot will be in front of the TruValue hardware store in Lantana Shopping Center.

**January 2, 2007**  
Tuesday

**CCND MEETING @ KAHUNAVILLE – 7:00 P.M. In the Red Room**

January 13, 2007  
Saturday

**CCND Holiday Party. 7:00 P.M**

Held at Frog Hollow. 1 Wittington Way, Middletown, De 19709  
Catering and all arrangements by our very own Frank and Theresa Ventresca!

## LOCAL CORVETTE HAPPENINGS

It's the slow time of the year now – not much is happening folks – SORRY!

## DECEMBER BIRTHDAYS



Harvey Smith	12/1	Jim Hagerty	12/17
Brian Falla	12/8	Pat Piesieski	12/19
Alane Whitmore	12/9	Michael Rini	12/21
Margaret Spayd	12/12	Rose Marie Steinhauser	12/28
Michael Ciabattoni	12/14	Mary Anna Hagerty	12/31





## CCND NOVEMBER MEETING MINUTES

Meeting was called to order at 7:07 p.m. by **Jack Layton** on November 7, 2006.

**Vice President:** **Steve Blanchies** reported 23 paid members for 2007.

**Treasurer:** **Harvey Smith** presented the Treasurer's Report. Motion was made and seconded to approve the report as presented. Motion Carried.

**Member at Large:** **Mike Metcalf** reported that the last order was delivered. No pending orders.

**CCND Governor:** **Dave Morales** asked members to consider joining NCCC. Membership renewal due 11/7/06 - \$30 for new membership - \$25 for renewal + \$10 for spouse.

**Newsletter Editor:** **Barry Kimmelman** reported that he needs "Member of the Month" articles. He also e-mailed a "20-question questionnaire" that he would like feedback on as soon as possible.

**Social Chairperson:** **Linda Kimmelman** not able to be present. **Barry** reported upcoming events:

- Sun., 11/10 - Border Café
- Sun., 12/10 - Mid Atlantic kart racing

**Show Chairman:** **Bob Gerber** reported that show not what we expected. Possible new show location. Any questions or comments please call. Bob thanked Steve for sponsorships.

**Old Business:** **Jack** reported that trophies have been delivered. Last year, trophies were left over so this year in order to save money the club ordered after show.

Hay ride – 30 – 40 people – good time was had by all.

Adopt-A-Family – Two considerations - a grandmother with 8 grand children in her care who had possible assistance, and a mother and father out of work due to illness and no health insurance, with 3 kids needing assistance with past due heat and electric. Motion was made and seconded to assist mother and father with 3 kids. Club will buy toys and split the difference between heat and electric.

**New Business:** Todd Hannah of FSFC diagnosed with brain tumor – back to work – preparing for 6 weeks of chemo & radiation – Jack asked club to make a \$100 donation to his company who has set up an account to help supplement his health costs. Motion was made and seconded.

Keystone Grand Ball – 12/2 - \$55/person – open bar – need to know attendance by 11/22/06 .

Holiday Party – 1/13 - \$30/person – need to know by 1/6/07 if you're going. Bring money to December meeting.

\$4,000 check to be given to ALS. Motion was made and seconded.

Nominations for 2007:

- President - Andy Rumford
- Vice President - Steve Blanchies, Bob Gerber, and Jack Layton
- Secretary - Christine Carlantonio, and Charlotte Gerber
- Treasurer - Harvey Smith
- Member at Large - Mike Metcalf
- CCND Governor - Dave Morales
- Newsletter Editor - Barry Kimmelman
- Social Chairperson - Linda Kimmelman
- Show Chairman: Fred Krumm

**50/50:** \$30 – Ashley Steele

Meeting was adjourned at 8:00 p.m.

Respectfully Submitted, Christine Carlantonio, Secretary

**NEXT MEETING DATE IS TUESDAY, DECEMBER 5, 2006**

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Check out our web site @ [www.vetteclub.org](http://www.vetteclub.org)

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The National Council of Corvette Clubs*



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