

the fifth wheel

MARCH 2013

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Supercharging the 'Vair

There's only one sure-fire way to get big performance out of little engines with restricted breathing: Forced induction! Ram that air through the engine with a pump!

The engineers at Chevrolet realized this when they began to contemplate ways to eek more performance out of the standard Corvair engine, and so they turbocharged it. But hot rodders also knew this trick and applied it to their Corvair-powered creations almost as soon as the Corvair came to market.

Before the turbo-Spyder was introduced in April 1962, supercharger kits were offered for the Corvair by three aftermarket speed equipment manufacturers: Paxton, Judson, and Latham. They are rare as hen's teeth, and you should expect to pay upwards of \$3,000 to procure and install one of these kits on your Corvair today.

Superchargers Explained.

Automotive superchargers fall into a number of catego-

ries. The Paxton, Judson and Latham superchargers fall into three categories: centrifugal, positive displacement, and axial flow respectively. Paxton superchargers are centrifugal superchargers, Judson superchargers are positive displacement superchargers, and Latham superchargers are axial flow superchargers. Although they are all are driven by a belt from the crankshaft, they have different performance characteristics.

Centrifugal superchargers are like the compressor side of a Spyder turbocharger. Because of their high-speed operation, they can move a lot of air relative to their physical size, making



The Fifth Wheel is published monthly by the Lehigh Valley Corvair Club (LVCC), Inc. We accept articles of interest to Corvair owners for publication. Classified advertising of interest to Corvair owners is available free of charge to all persons. Commercial advertising is also available on a fee basis. Please contact our newsletter editor, Allan Lacki for details.

LVCC is one of the many regional chapters of the Corvair Society of America (CORSA), a non-profit organization that was incorporated to satisfy the common needs of individuals interested in the preservation, restoration, and operation of the Chevrolet Corvair. LVCC caters to Corvair people who live in and around the Lehigh Valley Region of eastern Pennsylvania. This is a very special car club! LVCC dues are \$10 a year for CORSA members or \$15 a year for non-CORSA members.

them easier to package in an engine compartment. A small number of moving parts reduces manufacturing costs and enhances durability. However, they don't offer much boost until they are spinning at high RPM. The mass flow rate of a centrifugal supercharger is roughly proportional to the square of the compressor's rotational speed. This means that boost rises nonlinearly with rpm, and power is biased strongly toward the top end.

Positive displacement superchargers fill a chamber of a fixed volume with air at atmospheric pressure, and move that air to the high pressure side. The mass flow rate of the air thus moved depends primarily on the volume of the initial chamber and the speed of operation, i.e., how many times that chamber is filled and its contents squeezed out the other side, and is relatively independent of pressure ratio. Positive displacement compressors generally give a flat torque curve throughout the engine's operating range and good throttle response. The main drawback of positive displacement compressors is that the fill/discharge cycle is "discrete", or more simply, lumpy: air comes in bursts, rather than smoothly and continuously as with a centrifugal compressor.

Axial flow superchargers are similar in design to compres-



Corvair equipped with the Paxton Supercharger Kit.

sors on jet aircraft engines. The term "axial flow" refers to the fact that the intake charge travels along the axis of the rotor, from its intake port to its outlet. In terms of operating characteristics, an axial flow supercharger has several advantages. An axial flow supercharger is generally is more efficient in terms of the engine power required to drive it. Latham claimed their axial flow superchargers could produce as much as 10 PSI of manifold pressure on a large V-8 while consuming as little as 10 horsepower. Also, an axial fan supercharger has only one moving part, the rotor.

The Paxton Supercharger Kit.

The Paxton kit for the Corvair was offered for sale as early as 1960. The compressor was a Paxton model SN-60; the same unit as provided in kits that Paxton offered for V8 engines including the powerful Studebaker Avanti R3. List price for the Paxton supercharger kit was \$365 in 1964.

On June 28, 2008, Bob Matherly wrote about the Paxton kit on the Corvair Center forum message board. "The Paxton kit used a single Stromberg 'WW' 2 bbl carb mounted on an aluminum 'ram' manifold. The carb sat in a pressurized aluminum 'box' that sat directly over the engine's fan. The sealed box's top came off with 4 small bolts and was sealed with a rubber gasket. The Paxton itself sat on a spring-loaded aluminum mount that bolted to the rear of the stock intake manifold, and was driven by a single stock Corvair fan belt, twisted in a 'figure 8' configuration to allow for the blower's 'reverse rotation' from that of the car's engine. A custommachined 2 belt pulley bolted in place of the stock Corvair pulley. A 3" hose connected the blower to the carb box and a custom air cleaner lay in the space previously occupied by the spare tire. A really neat feature about all this was that to 'un-supercharge' the car, all that had to be done was to 'remove the drive belt'-and you had a 'normally aspirated' 2 bbl Corvair."

The February 1961 issue of Canada Track & Traffic magazine reported on a 98 horsepower 4-speed Corvair Monza coupe equipped with the Paxton supercharger kit. They wrote, "With the Paxton fitted, the Corvair truly leaps away from standing starts like a young gazelle and slips nimbly through the gears to its maximum of a true 98 mph @ 5,000 rpm. A maximum rpm of 5,750 in each gear is recommended for the best results." Here are the acceleration figures from their test:

0-30 - 3.5 seconds 0-40 - 5.6 seconds 0-50 - 7.8 seconds 0-60 - 10.6 seconds.

In comparison, Motor Life magazine recorded 0-30, 0-45 and 0-60 acceleration times of 5.0 seconds, 11.0 seconds, and 18.8 seconds respectively for a similar 98 horsepower 4-speed Monza, without the Paxton kit. And so, the Paxton

supercharger provided a noticeable boost in acceleration indeed.

The Judson Supercharger Kit.

Like the Paxton kit, the Judson Model CO supercharger kit for the Corvair was a bolt-on affair. List price for the Judson kit was \$232. According to the Judson brochure, "Everything is furnished, there is nothing else to buy. Installation consists of bolting the supercharger to the engine by following the complete and illustrated installation instructions furnished with each kit. No chassis or body modifications of any kind are required and the job can be completed within four hours using standard tools." (You can find a copy of the installation instructions on the web at http://www.vwjudsonregister.org.uk/)

The brochure also made a point of the advantages of its design over the centrifugal compressor characteristics of its Paxton competition. "The Judson is a positive displacement type supercharger operating at crankshaft speed and output is determined by throttle opening. As a consequence more horsepower is available at any engine speed. The output of the centrifugal type supercharger, which is not a positive displacement type unit, is determined by speed and as a consequence more power is available only at higher speeds. Only with the Judson Supercharger is output determined by engine load or throttle opening."

Although Motor Trend, Road & Track, and Car & Driver tested Corvairs equipped with Judson superchargers, we have not been able to find copies of them as of this writing. However, Judson published performance figures in it brochures which claimed the following effect on the performance of their 1962 Monza 102 HP, 4 speed test vehicle:

Range	Stock	Supercharged
0-30 mph	4 seconds	3.5 seconds
0-40 mph	7 seconds	6 seconds
0-50 mph	11 seconds	8 seconds
0-60 mph	16 seconds	11 seconds
0-70 mph	23 seconds	15 seconds
0-80 mph	36 seconds	21 seconds
Top speed	92 mph	108 mph
MPG	19/26	18/24
HP	102	145

As noted above, the Judson supercharger was a positive-displacement unit. Over the years, engineers have employed different designs to achieve the positive displacement effect. They include Roots blowers, Lysholm blowers, and slidingvane blowers. The Judson supercharger was a sliding-vane positive displacement blower. It makes use of an eccentrically-mounted drum which rotates inside a cast



Judson supercharger rotor showing the sliding vanes. Lubricated with Marvel Mystery Oil!

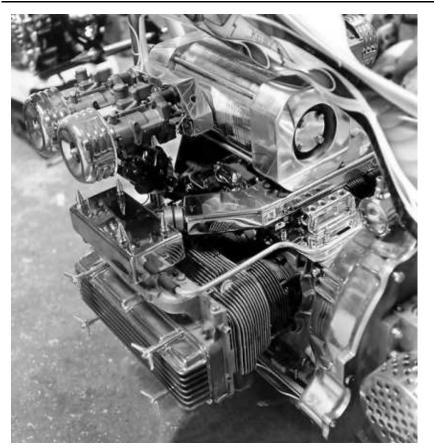
housing. Vanes ride in deep slots which are machined into the surface of the drum. As the drum is rotated by the supercharger drive belt, the vanes slide in and out of the slots to propel the intake charge. Like all moving parts, the vanes need to be lubricated, and so the Judson kit came with an oil canister which sprayed Marvel Mystery Oil into the intake charge. The canister needed to be refilled from time to time to keep the vanes lubricated. A forgetful owner could easily ruin his Judson supercharger if he failed to keep the canister full!

The Latham Supercharger Kit.

Of the three superchargers described in this article, the Latham was the most sophisticated in terms of engineering and the most expensive by far. According to one source, the



Complete Judson Model CO Supercharger Kit for the Chevy Corvair.



Custom motorcycle powered by a Corvair engine with a Latham Supercharger. Four carbs, but they are only 100 CFM apiece.

price of a Latham supercharger kit was \$1,000, nearly half the price of a brand new Corvair 500!

What made the Latham supercharger so expensive? The answer lies in the complexity of its manufacture. According to Wikipedia, "Axial compressors consist of rotating and stationary components. A shaft drives a central drum, retained by bearings, which has a number of annular airfoil rows attached. These rotate between a similar number of stationary airfoil rows attached to a stationary tubular casing. The rows alternate between the rotating airfoils (rotors) and stationary airfoils (stators), with the rotors imparting energy into the fluid, and the stators converting the increased rotational kinetic energy into static pressure through diffusion. Each pair of rotating and stationary airfoils is called a stage. The cross-sectional area between rotor drum and casing is reduced in the flow direction to maintain axial velocity as the fluid is compressed."

So far, we have found no articles, test reports, or brochures concerning Latham supercharger kits for Corvairs. Although Latham supposedly offered a kit for Corvairs, few if any were ever sold. Grand total production of Latham supercharger kits for all cars amounted to only 600 units during the 1950s and 1960s. So, if you ever find one for a Corvair, you should consider adding it to your collection, just because it is so rare.

Availability Today.

Paxton and Judson supercharger kits for Corvairs appear on Craig's List and eBay from time to time. The kits are often incomplete and the pieces are seldom in usable condition.

Judson superchargers remain popular among VW Beetle enthusiasts and consequently, parts and rebuild services are readily available. The nearest Judson specialty shop is owned and operated by George Folchi of New Milford, Connecticut. He provides complete rebuild services for all Judson superchargers, including the Model CO Judson supercharger for Corvairs. His phone number is (860) 355-2807.

You can still buy a complete Paxton supercharger kit from Craig Conley at Paradise Wheels, Inc. Craig's phone number is (760) 744-2400. A person on the Corvair Center Forum claimed that he contacted Craig in December 2012, and Craig asserted that he can still put together a complete Paxton supercharger kit for a Corvair.

A person named Richard Paul bought the

Top view of a Latham axial-flow supercharger. Available with either two carbs or four.



Latham company in 1982. He is currently affiliated with Axialflow Engineering of Simi Valley California. Axialflow Engineering offers rebuild services for Latham blowers, but spare parts are very limited. You can visit their website at www.axialflow.com

Installing a Supercharger.

Just like turbochargers, superchargers impose additional stress on pistons, rods, and crankshafts. A person who intends to install a Paxton, Judson, or Latham supercharger on a Corvair (or any engine for that matter) needs to be aware of the risks and take special care in adjusting ignition timing to ward off detonation.

It should be realized that the Judson superchargers were marketed for small engine cars, such as Volkswagens, Renaults, and MGs. The Model CO Judson was probably the largest of the Judson superchargers, but it was intended for early 145 cubic inch Corvair engines. A Judson supercharger may not have the capacity to provide sufficient boost for the larger 164 engines. Judson superchargers are never seen on Corvair racing engines today.

This is not to suggest that supercharging and Corvairs don't work together. Warren Leveque installed a Paxton supercharger on one of his earlier autocross machines with apparent success. It would be interesting to gather Warren's impressions about his work with the Paxton supercharger.

Sources:

"Supercharge Your Corvair with Judson". A brochure from the Richard C. Weidner collection. Published by Judson Research and Mfg. Co. of Conshohocken, Pennsylvania. No date.

"Supercharge Your Corvair with Judson for Real Performance". A brochure from the Richard C. Weidner collection. Published by Offenhauser Sales Corp. of Los Angeles, California. Circa 1962.

Axial Compressor. An article on Wikipedia at http://en.wikipedia.org/wiki/Axial_compressor

A Complete Guide to Street Supercharging, by Paul Ganahl, Car Tech, Inc. Minnesota, 2009.

"Supercharger Overview. Everything you wanted to know about Superchargers". An eZine article at http://www.modified.com/tech/0107scc_supercharger_overview/#ixzz2NinIaSnB

LVCC MEMBERS GET SPECIAL PRICING AT NATIONAL AUTO STORES!

You can recoup the price of your annual LVCC dues in one day simply by shopping for car parts at National Auto Stores!

LVCC member Jason Hewitt has established a "Lehigh Valley Corvair Club" account that entitles you to garage pricing, (as opposed to the usual consumer pricing).

And it's so simple. Simply go to your friendly local National Auto Store, bring the parts you wish to buy to the sales counter, and tell the cashier you are a member of the Lehigh Valley Corvair Club. (It may be a good idea to bring evidence of your membership, such as a copy of this newsletter). Tell the cashier to look up our account and you will receive the special pricing.

The account is strictly a "payment on delivery" account, so no, you can't bill your parts to the club! You have to pay for them using your own cash, personal check, or credit card.

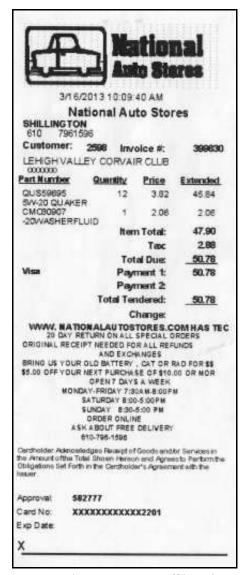
Does it work? Yes! Your newsletter editor has already taken advantage of the discount, and his receipt is posted right here, in the newsletter, to prove it. Jason says, "We don't stock much in special Corvair parts but every little bit helps."

You can find National Auto Stores in these eastern Pennsylvania locations:

Allentown (4th Street) Allentown (Tighlman Street)

Bangor Blakeslee Broadheadsville East Stroudsburg Feasterville Easton Gilbertsville Hellertown Kutztown Lansdale Mount Pocono Northampton Shillington Quakertown Trexlertown Souderton Warminster

Thank you so much Jason Hewitt for arranging this for our club!



National Auto Stores is affiliated with the Automotive Technicians Alliance

LVCC MEETING NOTES

Larry Lewis, Allan Lacki, Scott Oberholzer, Fred Scherzer, Dennis Stamm, and Dick Weidner attended LVCC's February 27th meeting. VP Dennis Stamm called the meeting to order and presided over the meeting. Treasurer / Secretary Dick Weidner read the minutes of the January meeting and presented the club's financial report. Dick reported that the club has \$1,487 in its checking account.

For show and tell, Dick circulated copies of rare Corvair memorabilia from his personal collection. These included "Operation and Care of Folding Top" booklets for Corvairs. Chevy published separate versions of this booklet for manual and power convertible tops. Although the booklets are seldom seen today, every Corvair convertible came with a copy of this booklet, stashed in the glove box along with the standard Corvair owner's manual.

Dick also circulated a special issue of Car Life magazine devoted exclusively to Corvairs. Published in the mid-1960s, it includes a copy of every Car Life article published up to that point in time about Corvairs. These included not only the usual road test articles, but also several articles regarding Corvair speed equipment and GM's Corvair-based show cars.

Dick and Fred Scherzer discussed the availability of Corvair parts at local car parts stores. According to Dick, Advance Auto Parts still offers a long list of Corvair replacement parts, including alternators, master cylinder, wheel cylinders, ignition wires (with proper boots), and much more. Although your friendly local Advance Auto Parts store is not likely to have these parts sitting on their shelf, they can arrange to have them from their regional warehouse within a day or so. Fred pointed out that you can order parts online from Advance and pay with either credit card or PayPal.

While most of our Corvairs are stashed away for the winter, life goes on, and

we still have to get around. Scott Oberholzer recently acquired a 1994 Chevy Lumina for commute to the various construction sites where he works. It was running fine, but just the same, Scott decided to change the oil. What drained out of the crankcase had the consistency of molasses. The prior owner had not changed the oil in a long, long time.

After draining the old sludge, Scott topped off the crankcase with clean, fresh oil. He thought he had done a good thing, but much to his surprise, the oil pressure warning light started to come on whenever the car was sitting at a traffic light.

Everyone at the meeting chimed-in, offering possible explanations of how this could be. Was the sludge helping to maintain oil pressure, before Scott drained it out? Or was the sludge caked over the pressure sender, rendering it inoperable?

Perhaps we'll never know, but it's likely Scott needs to install a new oil pump for his Lumina. And be wary of this situation the next time you resurrect an old Corvair that's been sitting idle for a few years.

MYSTERY OF THE CRUNCHING GEARS

The Problem....

My 1966 Corvair is equipped with a 4-speed transmission. The gear shift linkage has been totally rebuilt with brass bushings and the Ray Sedman billet coupler. The clutch is adjusted so that it engages up-high. In other words, when you push the clutch pedal to the floor, it should be fully disengaged.

The transmission shifts beautifully when the engine and transmission are cool, but when it's up to normal operating temperature, I get an annoying "crunch" that I can feel through the gear shift lever, especially while upshifting

from 3rd to 4th gear. I can avoid the crunch by shifting v-e-r-y slowly.

I attempted to cure the problem by changing the lube in the transaxle. I replaced my Pennzoil gear lube with Swepco 201, which is one of the best gear lubes available. But it did not lessen the problem.

Also, there is a small but persistent oil leak from the bell housing. The oil is engine oil, not transmission oil. It leaks a few drips as soon as the car is parked, and about a half-dozen tablespoons of oil when the car sits for a week or two.

I intend to pull the power train from the car to fix the leak. At the same time, I would like to cure the "crunch" in the gears. Naturally, I would like to fix both problems at the same time, while the power train is out of the car.

Could the leak be the cause of the crunch? In other words, could the leak be wetting the clutch so that the clutch "sticks" in the engaged position for a second or two? If so, please explain how this could be. (I can see how a wet clutch would slip, but not stick). Another possibility is that the synchronizers in the transmission are sub-par. I would like to hear your opinion. Al Lacki

Possible Cures....

- 1. The clutch may be wet enough to cause it to drag when hot.
- If the clutch disk has been replaced, it may be too thick by a few thousandths of an inch, causing it to drag.
- 3. The pilot bushing may not be driven fully into the end of the crankshaft, causing it to bind.
- 4. The pilot bushing and/or clutch bearing may be dragging on the transmission shaft.
- 5. The synchros may be on their way

Any other ideas out there?



LVCC Classified Ads!

FOR SALE: 1964 Corvair Monza Convertible. Automatic transmission. Has new top and boot cover. Wire wheel hub caps. New brakes. AM/FM radio with tape deck. No rust. Asking \$5,000. Contact Edward Ross of the Philadelphia Corvair Club. Telephone (61) 272-7641. Email eross3@comcast.net

FOR SALE: Front windshield for 1965 – 1969 Corvair. No scratches, no dings, and edges are smooth. Clear (not tinted). Asking \$40. Hereford Township, PA. Seller: Gene Szoka. Email: gmszoka@yahoo.com

FOR SALE: Six new pistons with rings & pins for 1961-63 corvairs, do not fit the turbo motors. These are new old stock GM units. Price is \$60.00. Send email if interested. Contact Carl Moore. Email: moo568@dejazzd.com

FOR SALE: Ford parts! Two 302 cubic inch engines; one long block and one short block. \$300 for the pair. One Ford C6 automatic transmission. \$100. One Ford T5 five-speed manual transmission. \$100. Contact Scott Oberholzer. Bethlehem, PA. Call (610) 867-2846.

FOR SALE: 1961-64 Right rear quarter panel. \$150.00. 1961-64 Left and right front fenders \$100.00 each. Contact Dennis Stamm. Call 484-336-3466. Email: dmstamm@comcast.net





FOR SALE: 1965-69 Front clip. \$150.00. Also partial quarter panel. \$50.00. Contact Dennis Stamm. Call 484-336-3466. Email: dmstamm@comcast.net





LVCC Merchandise for Sale!





EHIGH ALLEY ALLEY LUWA Sor 1978

LVCC license plates and hat pins: \$3.00 each. LVCC T-Shirts: \$6.00 each.

Call or email LVCC Secretary/Treasurer Richard Weidner at 610) 502-1414 rcwvair@rcn.com

LVCC Calendar of Events!

Wednesday through Sunday, March 20-24, 2013 :::: Greater Lehigh Valley Auto Show.

Bethlehem PA - 16th Annual Greater Lehigh Valley Auto Show, held at the Stabler Arena, Rauch Fieldhouse & West Pavilion. Event hours: Preview Party 6:00 pm - 9:30 pm Benefits the Good Shepherd Rehabilitation Hospital - Pediatric Unit. Thursday - Saturday 12:00 am - 9:00 pm, Sun 10:00 am - 6:00 pm http://glvautoshow.org



Friday through Sunday, March 22-24, 2013 :::: NorthEast Rod & Custom Car Show.

Oaks, PA - NorthEast Rod & Custom Car Show at the Greater Philadelphia Expo Center 100 Station Avenue Oaks, PA 19456 e-mail: NEcarshow@comcast.net or http://www.northeastcustomcarshow.com/ Phone: 215-896-2923. On Saturday, March 23, the Philadelphia Corvair Club will be caravanning to this show as a group. They will be meeting at Ott's on Rte 29 near College-ville at 9:00 AM – Contact Dave Stein. 610-489-3039 dstein31@msn.com

Wednesday, March 27, 2013 :::: LVCC Membership Meeting.

Regular LVCC Club Meeting. 7:30 PM at the Lehigh and Northampton Transportation Authority (LANTA) office building in Allentown, Pennsylvania. The LANTA building is located at 1060 Lehigh Street Allentown, Pa 18103. Directions: From I-78: Take Exit 57, Lehigh Street. At the end of the exit ramp, go east toward the City of Allentown. Follow Lehigh Street of approximately 2 miles - past the Parkway Shopping Center on the right and Faulkner Volkswagen on the left - until you reach the LANTA entrance on your left. It is at the intersection of Lehigh and South Howard Streets, right across from a Hess service station. Drive around to the auto parking lot and enter through the office entrance. Our meeting room is on the second floor.

Saturday, April 13, 2013 :::: Car Show at Bethlehem Vocational Technical School.

Bethlehem, PA - Car Show at the Bethlehem Area Vocational Technical School 3300 Chester Avenue zip: 18020. This is a fund-raiser to raise money to send 5 SkillsUSA medal winning students to the SkillsUSA state competition in Hershey PA. Pre-Registration \$15.00 by April 10, after and day of event \$20.00. Motorcycle Registration \$10.00. There will be food, a craft show, and yard sale to go along with the car show. Contact Natalie Green by phone at 610-866-8013 Ext. 192. Or email her at greenn@bavts.org Additional details:http://bethlehemavts.org or http://bethlehemavts.org/2013/01/2nd-annual-car-bike-show/

Friday through Sunday, April 19-21, 2013 :::: Englishtown 2013 Swap Meet & Auto Show,

Englishtown - Old Bridge TWP, NJ - 31st Annual Spring Englishtown 2013 Swap Meet & Auto Shows at Old Bridge Twp Raceway Park. If you can't find it here, it probably doesn't exist! The Bi-annual Englishtown Swap Meet & Auto Show is held in April & September, rain or shine. It runs from Friday through Sunday with over 3,000 Vendor spaces on pavement, over 300 Car for Sale spaces on pavement and grass, and unlimited parking for attendees. Sale merchandise consists of a wide array of parts, accessories and miscellaneous items. For prices and details: e-mail: swap@racewaypark.com or www.racewaypark.com or http://www.etownraceway.com/swap_meets.aspx or http://www.etownraceway.com/mydocuments/springswap2013.pdf

Sunday, May 5, 2013 :::: ASHRAE Anthracite Chapter 1st Annual Car Show.

Sponsored by LVCC Member Ron Peles' family. Location: 50 Glenmaura National Boulevard, Moosic, PA 18507 (Just above "The Shoppes at Montage") Registration starts at 8:30. Show Hours - 10:00 to 4:00. Trophy Presentation at 2:00, Door Prizes and Drawing Afterwards. Cost: \$10.00 per vehicle if you pre-register, \$15.00 at the gate. http://ashraecarshow.wix.com/register

Sunday, May 5, 2013 :::: GM on Display at Macungie.

Includes Corvair Class. The Philadelphia Corvair Club will be meeting at this show, so LVCC members won't be alone.

Mail Dues to:

Lehigh Valley Corvair Club c/o Richard Weidner 2304 Main Street Northampton, PA 18067

LVCC Club Officers:

President: William Remaly (570) 386-3578 Vice Pres: Dennis Stamm Phone: (610) 926-4723 Email: dmstamm at comcast dot net Secr-Treasurer: Richard Weidner. Phone: (610) 502-1414 Email: rcwvair at rcn dot com

Newsletter Editor: Allan Lacki. Phone: (610) 927-1583 Email: redbat01 at verizon dot net

Next Membership Meeting: Wednesday March 27, 2013