

Corvairs of New Mexico Meeting - Feb 4, 2009. Technical session report by Dan Palmer: Richard Youmans "Manufacturing Fuel Pumps"

His first job in 1968 was with KEM Manufacturing in New Jersey. They made auto parts including new and rebuilt mechanical fuel pumps. At that time AC Spark Plug was the manufacturer of OEM fuel pumps for the big three, GM, Ford, Chrysler. AC made the first push-rod fuel pumps, an advanced technology for the GM Chevrolet Corvair and other cars.

In 1974 Rich moved to Upland, Indiana to Pearce Manufacturing as they had bought the fuel pump business of Wells Manufacturing of Fondulac, Wisconsin. His next move was to Marion, Indiana to Echlin NAPA as they had acquired Blackstone Pumps of Chicago. There the quality control was miserable with poor castings and machining tolerances, but the supervisor would not listen to the array of problems. One day the CEO told Rich, "I want to see you in my office." Rich phoned home (had just closed on the house, had only been in town a few weeks and his wife was pregnant) to say, "I may have bad news." However, in the CEO's office, he was told that the supervisor was to be fired and Rich would be the lead engineer for pump manufacturing and in charge of quality control. In a short time sales improved with better quality pumps and the plant became profitable.

At this time, GM decided to close its fuel pump manufacturing at AC and that included Corvair pumps. The casting molds for the pumps were brought to Chicago. AC had cast all the GM pumps in aluminum, but now they were cast in zinc, which was softer and heavier, with less wear and tear on the molds. Then in 1999, Echlin decided to make only electric pumps in support of fuel injection systems. Mechanical pumps went back to Pearce Manufacturing who made them for Federal Mogul who had bought out Carter Carburetor -- not now the very best quality. (For better quality, Rich recommended Corvair fuel pumps manufactured by Airtex and sold through AutoZone. Pat Hall says they are reasonable at around \$37 and sometimes you can get them at a 10% discount.)

Later in his career Rich worked for awhile at VDO, a European company that made parts for VW, then with friends bought Mr Gasket which included Mallory and Echlin. After five years he sold his share and retired.

Rich explained a unique characteristic of multi-layer, screw together, fuel pumps such as the Corvair pump. Many were having failures of the diaphragm material in very few miles. The error found was in the assembly method. The screws holding on the outer cap were being installed and tightened with the diaphragm relaxed and flat. Then, once installed on an engine, when the pushrod moved the diaphragm up it was stretched and overloaded and would soon fail. The solution was simple. The pump parts were assembled loosely, then the body of the pump held in

a vise while the pushrod was pressed up against the force of the spring. This forced the flat diaphragm up slightly to a dome shape, and then the screws could be tightened. Then when the pump was mounted on the engine, the diaphragm already had a dome shape and would not be stretched when the rod moved up. In assembly, one could see the outer perimeter of the diaphragm start to shrink toward the center of the pump when the rod had been pushed up just enough, and at that point the screws could be tightened.

If for any reason the owner disassembled a fuel pump, this method could be used to correctly re-assemble the pump on the engine. Loosely assembled, install the pump in its correct position on the engine. Rotate the crankshaft until the cam begins to push the pump rod up to its highest movement, then tighten all the screws fully. As noted above, watch for the perimeter of the gasket to start to shrink, indicating that the diaphragm has been pushed up to the dome shape before tightening the screws.

Some later GM pumps were designed with a molded-to-shape diaphragm. These can be assembled "flat" since the moving center, already in the shape of a dome, can move up and down with no danger of being stretched. Rich did not say whether currently available pumps might have such a diaphragm design.

The standard material for the diaphragm has for years been a nylon fabric core layered with Buna-N, a nitrile rubber resistant to the chemical additives found in gasoline. Some material has a cotton fabric core which also works well. Rich has not seen fuel pump diaphragms made of silicone. It is interesting that, if one examines the diaphragm on old fuel pumps that have been in service many years, the top surface of the rubber, always exposed to air, tends to dry and crack while the bottom surface, always exposed to gasoline, will stay clean and flexible.

How does a Corvair fuel pump actually work? The cam on the crankshaft pushes up on a rod which pushes up on the fuel pump's rod, moving the diaphragm up against the pressure of a spring located in the fuel pump top cover. As the diaphragm moves up, a one-way valve "sucks" fuel from the tank. As it moves down, another one-way valve allows fuel under the pressure of the spring above the diaphragm to "push" fuel toward the carburetors. The strength of the spring determines the pump's maximum pressure, and remember, the carburetors only require a very low pressure to work.

As soon as the engine starts, the pump quickly fills with fuel. As the engine idles the diaphragm tends to "float" at a high level -- it only has to move a short distance to push sufficient fuel to the carburetors -- and the pushrod is only intermittently being bumped up by the crankshaft cam. When more fuel is needed (when accelerating from a traffic light, for example) then the diaphragm moves down a greater distance in order to provide more

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Tucson Corvair Association



Established 1975

The Corvairsation is a monthly publication of the Tucson Corvair Association, which is dedicated to the preservation of the Corvair model of the Chevrolet Motor Division of General Motors. The Tucson Corvair Association is a chartered member of the Corvair Society of America (CORSA) as Chapter 357.

Membership dues are \$15 per year for individuals and \$18 for families. Initial dues are \$19 for individuals and \$22 for families (includes name tags). Make checks payable to the Tucson Corvair Association.

Change of Address: Report any change of address or phone number to the Membership Chairperson. Do not report such changes to the Corvairsation Editor.

CORSA membership dues are \$38 per year (\$76 for 26 months) and include a subscription to the CORSA Comminique, a monthly publication. CORSA memberships is not required for membership in the Tucson Corvair Association, but is highly recommended. See any TCA officer for more information.

Classified ads are free to members and \$3 per 4-line ad for non-members. Deadline for materials submitted for publication is the 10th of the month.

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TCA 2010 Events at a Glance

Wed, Feb 24 Regular Monthly Meeting. Parking Lot Bull Session at 6:30pm. Meeting starts at 7:00pm. Golden Corral, 4380 E 22nd (just east of Columbus)

Sat, Mar 6 Renaissance Festival, Florence Junction, Arizona. Meet in the parking lot at the Metro Grill on Magee and Oracle at 10:00am to caravan to Florence Junction.

Sat, Mar 20 Picnic at the Casa Grande Ruins with the Cactus Corvair Club. Picnic starts at 11:00am. More information on a meeting place go up together to come.

Wed, Feb 24 Regular Monthly Meeting. Parking Lot Bull Session at 6:30pm. Meeting starts at 7:00pm. Golden Corral, 4380 E 22nd (just east of Columbus)

DUES ARE DUE

Annual dues for all members of the Tucson Corvair Association are now due. Dues are \$15 per year for individuals and \$18 per year for families.

Dues are payable to Barry Cunningham, TCA Treasurer, either in person or mailing mailing a check payable to the Tucson Corvair Association to him at 362 Bull Run Drive, Tucson, AZ 85748.

Deadline for dues payment is March 1, 2010, so get those dues paid soon to insure continued receipt of your Corvairsation and all the other club benefits.

January Meeting Minutes

Minutes from the TCA regular monthly meeting held January 27, 2010 at 4380 E 22nd Street, Tucson Arizona.

Members Present: Don Robinson; Barry Cunningham; Van Pershing; Chris Cunningham; Allen Elvick; Ron & Lynn Bloom; Ed Segerstrom; Ken & Heidi Farr; Mike Strong; Lynn Marrs; Bill Maynard; Don, Shannon, Logan & Ireland Murray; Max & Nancy, guests; and Adam Kolaniak, guest and former president of the Cactus Corvair Club.

President Lynn Marrs called the meeting to order at 7:37pm.

There were no minutes to approve as the December membership meeting is foregone in lieu of the annual Christmas Party.

President's Report: Lynn Marrs introduced guests Max, Nancy & Adam and thanked them for their interest in the TCA. Adam, the outgoing president of the Cactus Corvair Club (CCC), took the opportunity to invite the members of the TCA to join the CCC on Saturday, March 20, 2010 for their spring barbecue that will be held at the Casa Grande Ruins in Coolidge. On behalf of the TCA Lynn expressed gratitude to Adam and an informal poll showed that interest in joining the CCC was galvanized and that there are anticipated to be more than a half dozen members in attendance. Lynn then announced that she was scheduled for surgery in early February and could possibly be on the mend for an extended period of time that may last the better part of the month.

Vice President's Report: Bill Maynard made the physical presentation of the Gordon Cauble Award to Lynn Marrs. Though the award was announced at the Christmas party in December, the actual award had not been readied in time for the party. Following the presentation of the second annual Gordon Cauble Award, Bill announced that Ken & Heidi Farr commanded a second place finish in the "1958-1964 Original" category at the Tubac Car Show hosted by the Santa Cruz Valley Car Nuts. Before turning the meeting over to Barry for the Treasurer's Report, Bill gave an update on Dave Lynch's work in Afghanistan training and handling bomb sniffing dogs.

Treasurer's Report: Treasurer Barry Cunningham reported an opening balance of \$2,506.31 and an ending balance of \$2,491.31. Primary income was reported to come from raffle tickets and membership dues. Expenses included the purchase of a new roll of raffle tickets for the monthly membership meetings and for the Corvairsation. Barry also represents the membership chair and reminded the members that it is that time of year again; January means membership dues are payable. Fees are unchanged from prior years: \$15 for an individual membership and \$18 for a family. In what has seemed to become an annual event, Barry let it be known that he aspires to abdicate the membership chair and act only as Secretary of the Treasury.

Raffle: Only two prizes were brought to this month's meeting and were furnished by Ron Bloom and Barry Cunningham. Prizes were won by Shannon Murray and Heidi Farr. A call for volunteers to supply the February membership meeting was made. As always, raffle prizes are appreciated.

Tech Talk: Van Pershing reported on his purchase and

installation of 90 durometer urethane bushings from Corvair Underground and that after a realignment his Corvair rides better than new. Ryan Green called for suggestions for maintenance of convertible tops and for any tips on lubrication or other means of easing the closing of the top after prolonged periods with the top down.

Miscellany: January is the month the nominating committee is responsible for announcing the year's slate of officers. Van, representing the nominating committee announced this year's crop. Nominations included: Ken Farr as President; Lynn Marrs as Vice President; Barry Cunningham as Secretary of the Treasury; Ryan Green as Recording Secretary and Ron Bloom as Board Member at Large. In addition, after much prodding, Allen Elvick was volunteered and accepted the role as Membership Chair - a belated Christmas gift to one Barry Cunningham. The February mid-month activity is scheduled for a caravan to the Renaissance Festival & Artisan Marketplace in Apache Junction. Rendezvous is at 10:00am in the parking lot of the Metropolitan Grill at the corner of Oracle & Magee Roads on the 27th. Chris Cunningham, on behalf of the Franklin Museum, invited the TCA to utilize the museum for a club event or to visit on their own.

Adjournment: Motion to adjourn was made by Bill Maynard at 8:21, seconded by Heidi Bloom and carried unanimously.

Respectfully Submitted,
Ryan Green
Recording Secretary

Dave Lynch in Afghanistan

Dave Lynch is alive and well in Afghanistan. He's working the gates at Kandahar Air Field with his bomb sniffing buddy Cezar. He will be home for a 3-week vacation toward the end of July. Dave is sad to report no Corvair sightings thus far on his tour of duty.



HEATERS

by Mr. Techwrench (corsaone.org)

Yeah I know that 90% of the people reading this know all there is to know about Corvair heaters. There are always a few in the club that are new to Vairs and their heat systems and this is for them. Vair heaters can keep you warm and do not have to smell bad. Getting rid of the smells is actually more important than getting warm (although your body might be telling you differently). Odors primarily come from two sources. They come from exhaust packing, tubes, and head gaskets. Or they come from leaking oil getting fried on the manifold. That stinking oil is bad but it won't kill you like the exhaust will.

Exhaust leaks are not especially more common from one place than the other. They are most easily found after removing the manifold pans on the bottom, by starting a cold engine and feeling around the various fittings. If you think you have found a leak then grasp the throttle rod and blip the engine while continuing to feel. This "pulses" the exhaust and increases its pressure for an instant, making leaks more identifiable. Of course the exhaust plumbing will heat rapidly and this test must be done in stages. The one exhaust leak that can not be identified this way is a head gasket. Luckily, leaking head gaskets almost always give a visible indication. Look for a black gummy deposit hanging from, or in between, the fins where the head meets the cylinder. Any of these leaks must be fixed before you even consider other heater repairs.

The most common "stink" leak is from the "O" rings on the pushrod tubes; however, oil from other sources can be found in the area too. Pushrod tubes are the inboard-to-outboard 3/4" pipes seen under the cylinders. If any oil is noticeable on these tubes at all then a resealing job is in order. Seek advice from other members. After the air passing over the engine is made clean then it is time to look into the rest of the system.

All Vairs use two sources of air for their heat/defrost systems. One is the hot air off of the bottom of the engine which exits there by way of the two 4" hoses. The other is the supposedly cool air taken from the front of the upper shroud and exits by a 3" hose. Different year Vairs mix and control these airs differently, but they all have one thing in common. If there are ANY leaks in any of the system, between the engine and the inlet vents inside the car then your system can not operate correctly. How do you find them? Look for them. Feel for them. How do you fix them? Duct tape. Body sealer. Play dough, or new hoses. Whatever it takes, but, conserve that air, and get it to its assigned destination.

One last potential trouble area is with the Early Model mixing box insulation. This box is located over the engine and vents its air into the two flattened hoses behind the back seat. It was initially insulated with a shredded paper material made into mats and lining the inside of the box. Over the years this material has deteriorated and may have fallen down, blocking flow from the box. This can be checked, by removing the flattened hoses from the bulkhead, and looking inside with a light. If displacement of the insulation has occurred then it can be pulled out through the hose openings. This of course will reduce effectiveness of the heater but not critically. Replacement of the insulation can only be done with the engine removed from the

car and even then, not to be considered lightly. If the above steps are taken then rest assured that the stock Corvair heater system can keep you warm, and clear your windshield, clear down into the single digit temperatures.

This article appeared in the Corsa West of L.A.'s Westwind newsletter, May 2009.



"Manufacturing Fuel Pumps" - continued from page 1

fuel to the carbs. As more fuel is used, the spring pushes the rod back down for more contact with the cam, again pumping to keep up with the fuel demand.

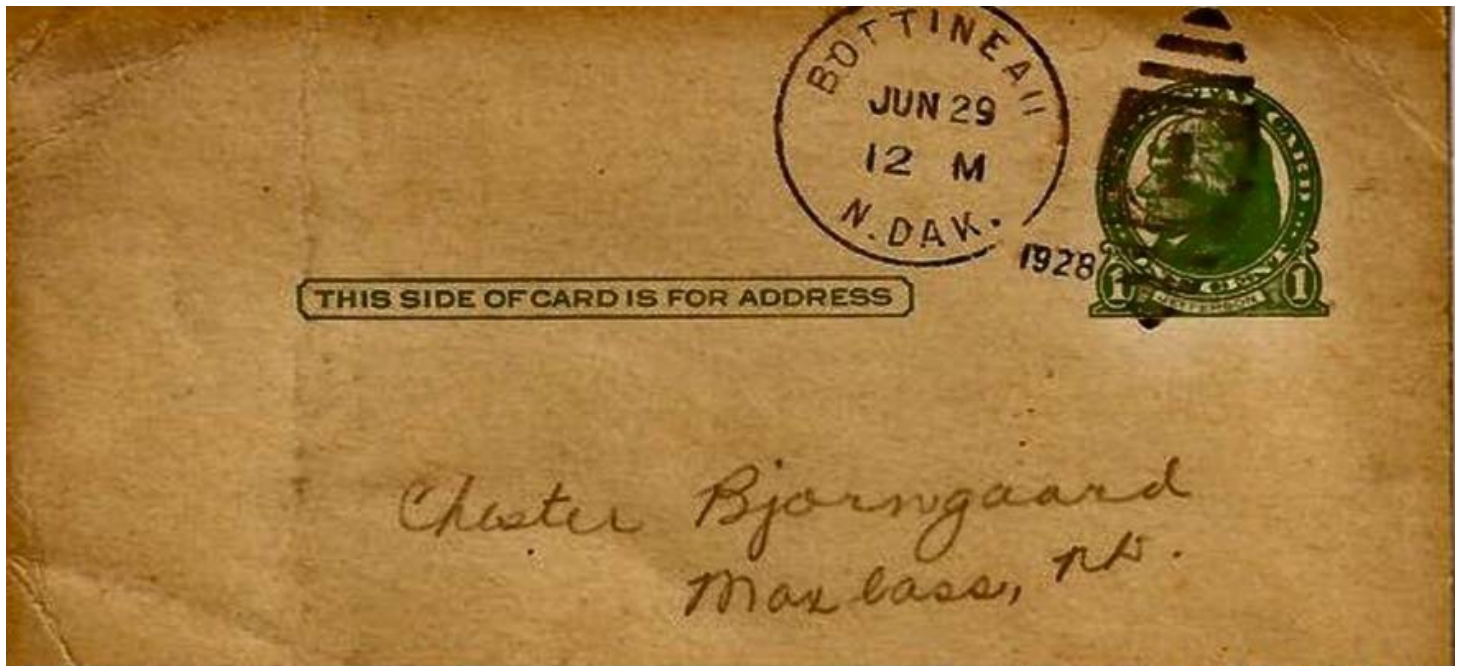
In the seventies when fuel injection systems began to appear on more and more new automobiles there was an epidemic of problems with the injectors which often had to be replaced or cleaned at very few miles. As better fuel additives were developed these injector fouling problems disappeared. However, older cars with their low pressure mechanical pumps began experiencing vapor lock with the new, more volatile fuel. When parked with a hot engine, current fuel additives more easily boil the fuel in the line above the engine, making vapor lock. Hard plastic blocks were installed under carburetors in an effort to reduce heat from the engine reaching the carburetors and boiling the fuel in them. Engines with fuel injection didn't have vapor lock problems because the fuel pumps operated at very high pressures so the fuel did not boil.

With many older cars, installing a foam rubber insulating sleeve on the fuel lines going to the pump can reduce heat transfer to the fuel, reducing the tendency of the fuel to vapor lock. Another method for dealing with Corvair vapor lock is to install a Facet low pressure electric pump in the line near the fuel tank which can be used to prime the line all the way back to the carburetors to overcome the vapor lock. Some of our members have had such pumps installed with an under-dash switch so they could "prime the pump" for a few seconds before starting a hot engine.

The Corvairation thanks Corvairs of New Mexico for this great article. It was taken from the Enchanted Corvairs Newsletter, March 2009.

1928 Auto Repair - Life Was Simpler Then

Here's a post card that was sent out to potential customers way back in 1928. I suppose that when we compare our Corvairs to the cars of today they would fit nicely into this catagoy! *Ed.*



Dear Sir:—

We're writing this letter to you today because we want to help you get your money out of your Model T.

It's still as good a car as it was the day the new Model A Ford was announced and there's no need to sacrifice it.

The Model T Ford is still used by more people than any other automobile. Eight million are in active service right now and many of them can be driven one, two, three and five years and even longer.

Bring your car to us and let us look it over. You'll be surprised to see how little it costs to put it in tip-top shape.

New fenders, for instance, cost from \$3.50 to \$5.00 each, with a labor charge of \$1.00 to \$2.50. Tuning up the motor and replacing commutator case, brush and vibrator points costs only \$1.00, with a small charge for material. Brake shoes can be installed and emergency brakes equalized for a labor charge of only \$1.25. A labor charge of \$4.00 to \$5.00 will cover the overhauling of the front axle, rebushing springs and spring perches, and straightening, aligning and adjusting wheels.

The labor charge for overhauling the average rear axle runs from \$5.75 to \$7.00. Grinding valves and cleaning carbon can be done for \$3.00 to \$4.00.

A set of four new pistons and rings cost only \$7.00. For a labor charge of \$20 to \$25.00 you can have your motor and transmission completely overhauled. Parts are extra.

Bottineau, N. Dak.

Very truly yours,
C. R. GLEASON CO.



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Corvair Society of America Chapter 857



Regular Monthly Meetings are held on the Fourth Wednesday of every month with a bull session starting at 6:30pm with the meeting starting at 7:00pm.

The November meeting is held on the third Wednesday. The December meeting is our annual Christmas party with the time and place to be announced.

NEW MEETING PLACE:

Golden Corral, 4380 E 22nd St (just east of Columbus), Tucson, Arizona.

IMPORTANT CHANGE OF DATES

The FEBRUARY MID-MONTH ACTIVITY has be rescheduled for March 6, 2010.
(See details inside.)



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