



the fifth wheel

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LVCC Teleconference - January 27

We'll be having our next teleconference on Wednesday, January 27, 2021. You can join us by phone or, if your computer has a camera & microphone, you can use do video and screen sharing instead, just like Zoom. Complete instructions provided on Page 10!



The Fifth Wheel is published monthly by Lehigh Valley Corvair Club Inc. (LVCC), a chartered chapter for the Corvair Society of America. 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. For details, email our newsletter editor, Allan Lacki, redbat01@verizon.net.

Water-Cooled Corvair Engine Offers a Technical Delight by the late Bob Helt

Editor's Note: This article appeared in the November 1981 issue of the CORSA Communique magazine. CORSA members can read the original article, which includes several additional photos, by logging into the CORSA website at www.corvair.org and clicking on "Publications" in the navigation menu.

The 1966 Corvair Monza appeared to be in almost factory stock condition as it sat in Lloyd's garage. Only the twin exhaust pipes exiting through the rear grill gave a hint of the unusual engine I was about to see. The owner told me of his water-cooled Corvair engine design as we walked toward the car. Despite the fact that I had previously heard of his work, I was totally unprepared. Not just a water-cooled Corvair engine, but a technical marvel of engineering and innovation.

The designer and builder is Lloyd M. Taylor. Lloyd pioneered an engine fabrication technique for the 1947 Crosley automobile. Instead of a cast iron block and cylinder head, the Crosley 4-cylinder engine was made from sheet steel which was cut, formed, and welded together. This same fabrication technique was used to make the six water-cooled cylinder/cylinder head assemblies for use on his Corvair engine. These assemblies, designed and built by Lloyd, can be seen in the accompanying photos. They are made from sheet steel pieces which have been cut, stamped and formed to fit.

When all the pieces of metal are thus shaped, they are held in a fixture and furnace brazed (welded) together using a special process that Lloyd has developed. Basically, all the parts are held in place and passed through a 2100 degree F furnace on a conveyor belt to complete the brazing operation. Welding the outer water jacket in place finishes the individual cylinder assemblies.

Lloyd's Corvair engine is a 1963 he got from a junk yard to rebuild without disabling his car. The engine is a mixture of stock and specially made parts. The entire lower end of the engine is essentially stock, except for a mild aftermarket camshaft and .060" oversize pistons giving a displacement of about 151 cubic inches. Lloyd eliminated the Corvair fan, top shroud, cylinders, intake system, and exhaust system. He removed the valve rocker box portion of each cylinder head which houses the valve rockers, and discarded the rest of the Corvair heads.

A new water-heated intake plenum was designed and built for a single centrally-mounted two-barrel carburetor. This intake plenum also serves as a new top cover for the engine. Six individual intake pipes, one for each cylinder, were made. The alternator was relocated to allow it, and the new water pump to be driven by a V-belt traveling in a single plane. The water pump and housing are mounted just below the alternator.

Twin water distribution plenums distribute the water to the six cylinders. A new set of exhaust headers was built to handle the relocated exhaust ports which are now located at the top of the cylinders, just adjacent to the intake ports. Normal Corvair exhaust exits at the bottom of the cylinder head. A separate muffler is used for each cylinder bank.

The combustion chamber is not specifically Corvair, but is Lloyd's own design based upon VW combustion chambers. Extra large GM valves are used to accomplish a free-flowing entry and exit. The cylinder and combustion chamber are an integral design (being brazed together) which eliminates the standard head gasket. This integral design is common aircraft engine design practice and was also used on the experimental Corvair engine

described by Ron Nordquist in CORSA Quarterly, Vol. 7, No. 1.

After the three fabricated cylinder/head assemblies are bolted in place on each bank (with bolts replacing the head studs), the modified valve rocker box (removed from the Corvair head) is bolted in place. The valve stems protrude into the valve rocker box.

The radiator is mounted up against the air intake at the front of the engine compartment as shown in Photos 1 and 3. An electronically-operated cooling fan is thermostatically controlled by the coolant temperature. Coolant is circulated by a belt driven pump to right and left side distribution plenums which direct the water to the six cylinders. Coolant exiting the cylinders is gathered in the intake plenum to heat it for better mixture distribution and then is sent to the top of the radiator for cooling.

Lloyd has put about 7,000 miles on his water-cooled Corvair engine and reports exceptional performance. He regularly gets 23 MPG in the city and 33 MPG highway. The engine has an 11:1 compression ratio, and performs satisfactorily on unleaded regular without detonation. He attributes this ability to run detonation-free to his unique fabricated steel design which has uniform metal thicknesses that can be uniformly cooled.

By contrast, a cast iron block and head has large variations in metal thicknesses which cause non-uniform cooling and thus hot spots. According to Lloyd, these hot spots are the cause of most detonation problems. Thus in his design, thinner and more uniform metal dimensions promote better cooling which eliminates hot spots. The elimination of hot spots reduces the tendency to detonation and allows the use of higher compression ratios than would be possible in a cast iron design.

High CRs means greater power and engine efficiency.

Lloyd's 151 CID Corvair engine produces a substantially flat torque curve of 150 lb-ft from 3500 RPM. Horsepower starts high and rises to a remarkable 198 HP at 7000 RPM. At 5200 RPM his engine puts out one HP per cubic inch displacement.

Total engine weight including radiator and coolant is only 250 lbs. according to Taylor. The stock Corvair engine weighs approximately 326 lbs. for comparison. Taylor claims that a fabricated steel engine of given size and displacement would weigh about two-thirds that of its cast iron brother. It would also be capable of producing more horsepower due to its ability to run a higher CR without detona-

tion.

Lloyd has also built a 4-cylinder fabricated steel Chevy II engine which is installed in a 1958 MGA and driven daily. It also exhibits the same low weight and high performance characteristics of his Corvair engine.

As mentioned earlier, Lloyd is no stranger to fabricated steel engines, having designed the 4 cylinder fabricated steel engine used in the Crosley automobile from 1947 to 1952. He feels that fabricated steel engines offer benefits of lower weight, lower production costs, greater efficiency through higher usable CRs, and lower exhaust NOX emissions because hot spots have been eliminated. His two running engines provide real-life proof to his claims.



Photo #1 - Lloyd M. Taylor's almost stock-appearing '66 Monza with a water-cooled engine. (Bob Helt photo)

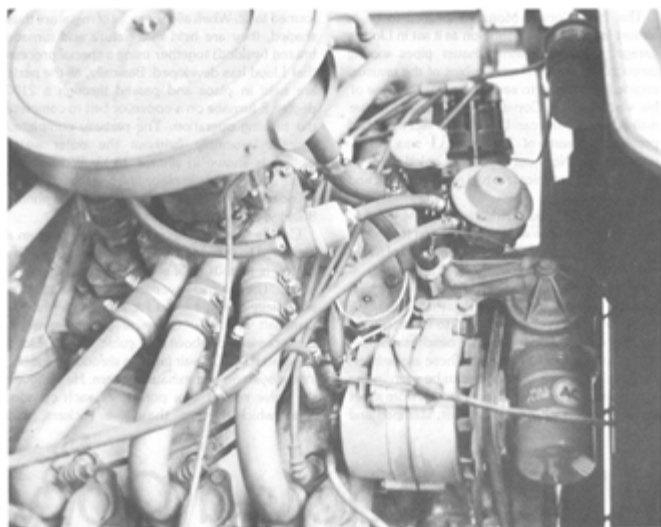


Photo #2 - Showing the water-cooled Corvair engine. Note the specially fabricated six-runner intake manifold with centrally mounted two-barrel carburetor. The alternator has been repositioned. The water return to the radiator from the water-heated intake manifold can be seen just below and to the left of the air cleaner. (Bob Helt photo)

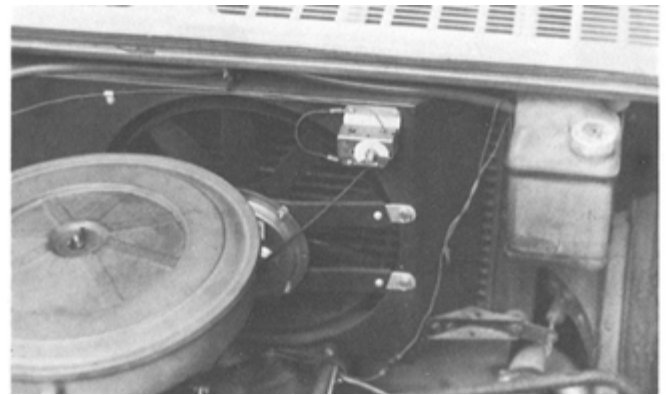


Photo #3 - This photo shows the location of the radiator and cooling fan. The fan is electrically operated and thermostatically controlled. Not the coolant overflow tank.

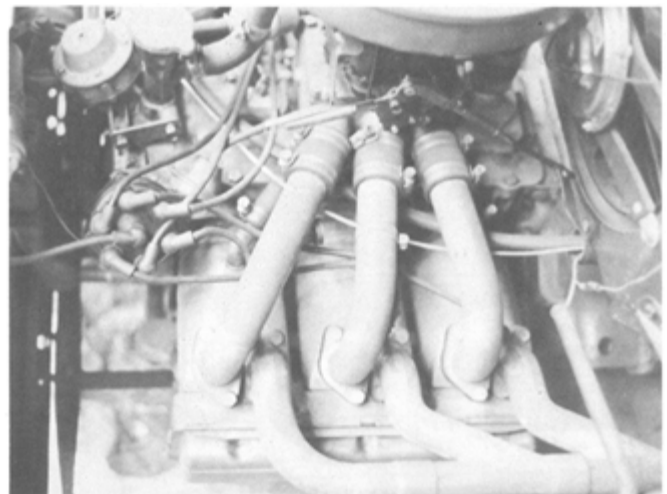


Photo #4 - The three separate watercooled cylinders on the right bank can be seen. Three individual intake manifold tubes - one for each cylinder - run from the carburetor to the top of the cylinders. The exhaust exits the cylinder also at the top and is routed to twin manifolds via a specially-fabricated manifold. Exhaust exits on the bottom of the head on the standard Corvair engine. (Bob Helt photo)

Mechanical Fuel Pump Issues: Never Ending? by Mike Dawson

Editor's Note: This article is from the December 2020 issue of "VairCor", the newsletter of the Heart of America Corvair Owners Association.

Fuel pump manufacturers have struggled with Corvair pumps for decades, with loose valves and leaking gaskets becoming revolving issues. This time there is something new with the regular Airtex pumps, both branded and re-boxed units. In addition, I can report on another brand of pump that is being offered for sale.

Issue One:

Many of the Airtex fuel pump boxes over the past few years have a red card inside telling you to tighten the screws before installation. That would be a good idea if their engineers had designed reasonable fasteners. The screw heads were changed on different production dates (the most recent screw used is a 5/16 hex) and with that change, the length of the screw was shortened causing the potential problems.

As can be seen in the picture below, the pump on the right has an issue with short fasteners.

- The screws on the right pump are shorter.
- The protruding screws on the left pump are missing 1 ½ threads; the same was true for the screws on the right pump when they were removed.
- The aluminum casting has only ¼" of threaded depth.



In the second picture (next page), you can clearly see the number of threads that are not utilized by the screws and with the tapered end missing threads, you have the scenario that failure is probable during tightening. Heat cycles might cause pulled threads also.



Pictured below is a replacement screw you could utilize to correct a problem in damaged holes or as a preventive measure in undamaged holes. The left screw is an Airtex original.



The screws I used are 10-24 by 2" and are slightly larger with deeper threads than the original 10-32 screws so they cut their own threads into the stripped holes. *Editor's Note: The McMaster-Carr catalog lists proper 10-32 by 2" screws.*

Any screws in stripped holes should have a nut and lock washer added to the bottom and I also added a lock washer under the head when I installed them one at a time into undamaged holes. They seated into the original 10-32 threaded holes and held the torque I felt was necessary. The extra length of the screws will clear without cutting them off if you were replacing screws without removing the pump.

If you question whether it would be better to use coarse or fine threads, please refer to the following link and decide for yourself (thanks to Keith Hammett):

<https://resources.tannerbolt.com/articles/coarse-vs-fine-thread-what-thread-type-do-i-need/>

Issue Two:

There is a new mechanical fuel pump being marketed by US Motor Works: USMP09970. The cost is \$53 plus shipping. It is manufactured by our Trans-Pacific Trading Partner and the pump I received needed immediate attention before installation as the tapered mounting hole had not been installed in the casting. Overall the PRC pump weighs 17 oz, while the Airtex design weighs 28 oz.



Subsequent testing on a running engine (thanks to Scott) was almost disastrous. The pump immediately pegged my Snap-On fuel pump tester (15 lbs max) and started leaking profusely around the pushed on hose connection. The original pump we started with produced 7 lbs., and as noted in GM manuals, it should be 4.5 lbs. And as shown in the pictures below, the pressure spring is taller, has no flattened coils (top & bottom) and some kind of epoxy used to seal the center of the diaphragm was already coming apart.



Left: AC Delco spring.
Right: US Motor Works spring.



\$75 Double-Bushed Stock Distributors by Sky "Bob" King.

Editor's Note: Bob King, long-time member and former president of the Philadelphia Corvair Association, has joined LVCC. Among other things, he rebuilds Corvair distributors. Below is an article describing what you get for your money. You can contact Sky "Bob" King by phoning him on 610-442-2873 or emailing him at kcorvair@ptd.net

Ever notice your timing jumps when checking it? Most likely it's the shaft play or point plate although there are a couple other reasons for this.

Replacing a distributor is easy. I can go over that so you have a 100% chance of success.

If car has over 75k, then your stock bushing is worn. And double bushing makes it better than new. Rebuilding your equal-quality core includes polishing surfaces including: cam, shaft plate, weights shafts. The outside housing is bead

blasted and also polished. (see picture!)

The points plate is checked for play and replaced as an option. The gasket is included. The upper bushing is replaced and the lower housing / bearing is machined to fit a 2nd bushing, which is set-screwed in place. All weights, cams and springs and springs are checked. Also, the distributor shaft assembly parts are checked to verify they are correct for the distributor number.

Distributor below is available for a swap if you're looking for the most common 1110319 110 hp unit. I also have a 1110339 66-67 140 PG in stock and a couple distributors for turbos that will soon be completed. (I may have your distributor in stock for a quick exchange).

I'm occasionally down in the Allentown area and meet at times with some Lehigh club members.



Speaking of Tools **by Rick Norris**

Every toolbox needs a turkey baster! What? Why?

I'll tell you why, at least in my case. It is very handy when you change or flush your brake hydraulic system in the race car. (*Or any other car! Ed.*)

You can easily remove the old fluid from the master cylinder, replace it with fresh fluid and bleed until clean fluid

come through at all four corners. Just do not forget to watch the fluid level in the master so it doesn't expose the outlets and admit air into the system.

My original basters were cheap plastic and rubber. The bulbs were deteriorating so it was time to step up to stainless steel and silicone! As you can see, I bought two of them, one for the main shop tool box and one for the race box.

These came with a cleaning brush and a nice hypodermic needle to incase I needed to be more precise. May the squirt be with you...



Curtis Key Clipper **by Craig Nicol**

Source: January 2021 issue of the Rear Engine Review, Inland Northwest Corvair Club

There's a new toy in Craig's workshop: A Curtis Key Clipper

When I worked at the Chevy dealership parts department in the mid '70s, we made keys for customers and dealership use. A second set, sir? No problem. Lost keys & car sold by us (key numbers on file)? No Problem. Repo keys? No problem. Pull the hand-held clipper out of the drawer and make a key. Not a duplicate but a NEW key.

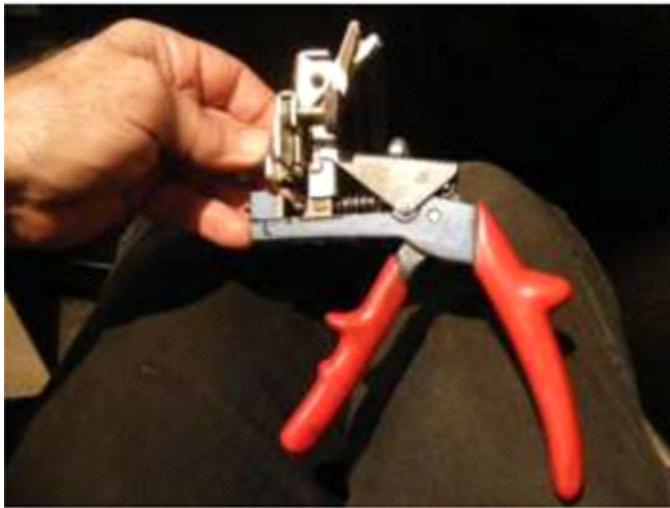
All it takes is the Curtis Key-Clipper, key code numbers, decoder charts, and a key blank.

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Below - It's the Curtis Key Clipper tool.



1) Find the key code on the side of the lock.



2) Look up code on handy-dandy Curtis code chart

KEY BLANK B10, B11			
1935-66		8000-8199	
8000-224424	8050-435533	8100-234234	8150-424223
8001-332343	8051-532245	8101-343544	8151-554423
8002-424535	8052-235545	8102-443242	8152-234533
8003-535424	8053-332423	8103-554534	8153-324423
8004-244323	8054-445344	8104-243324	8154-423234
8005-314342	8055-542342	8105-323544	8155-543534
8006-433532	8056-235443	8106-423423	8156-245334
8007-543433	8057-342333	8107-534443	8157-323243
8008-243232	8058-435422	8108-243534	8158-444233
8009-343443	8059-532323	8109-343235	8159-554323
8010-424324	8060-245532	8110-453233	8160-233443
8011-554232	8061-332243	8111-534234	8161-342443
8012-233534	8062-445423	8112-243323	8162-455323
8013-334534	8063-545333	8113-323235	8163-533554
8014-444533	8064-245342	8114-453535	8164-243545
8015-534423	8065-332455	8115-553433	8165-354434
8016-224444	8066-445543	8116-233234	8166-423433
8017-342424	8067-542323	8117-323542	8167-544323

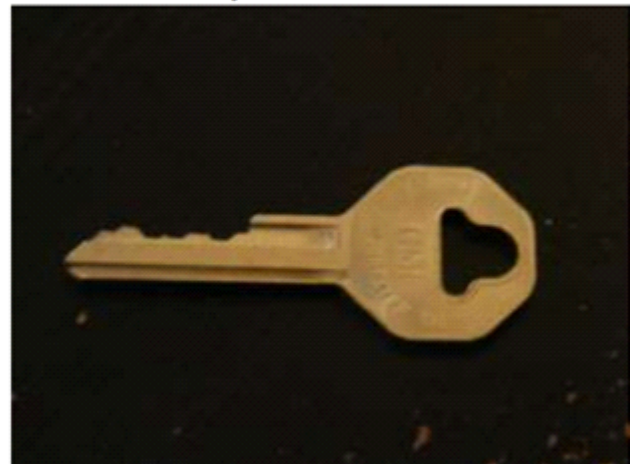
3) Transfer six cut numbers from the code chart to the clipper wheels.



4) Put a blank key into the clipper and six squeezes later...



5) Voila; a new key is born!



WPCC Word Search Puzzle

This little word puzzle is provided by Jim Weppelman of the Western Pennsylvania Corvair Club (WPCC).

Here are the words.
Now go find them!

Aircooled

Boxer

Chevrolet

Cole

Convertible

Corvan

Greenbrier

Lakewood

Rearengine

Spyder

Stinger

LVCC

Yenko

C	X	Y	N	L	K	R	G	C	D	B	Z	M	R	S
D	O	V	H	M	G	O	R	R	O	W	V	Q	U	P
P	R	N	T	G	S	I	E	X	O	R	N	U	C	Y
O	T	J	V	E	C	C	E	H	W	R	V	B	H	D
T	K	W	E	E	L	R	N	P	E	C	K	A	B	E
E	U	N	F	C	R	P	B	A	K	C	M	Z	N	R
L	Q	K	E	E	H	T	R	M	A	A	Z	N	O	M
O	O	Y	R	Y	Q	E	I	V	L	S	C	S	J	Y
C	D	I	O	W	N	G	E	B	E	P	X	I	Q	Q
S	T	I	N	G	E	R	R	R	L	H	O	G	Y	C
P	P	Z	I	M	X	S	S	C	V	E	C	I	C	D
M	E	N	D	E	L	O	O	C	R	I	A	P	B	C
J	E	F	A	B	F	X	N	A	L	G	W	S	E	Z
U	V	S	W	T	K	V	G	Z	Z	U	O	K	U	B
R	L	K	C	F	W	S	S	D	A	Q	S	Z	F	A

Clark's Corvair Parts®

Our catalog lists over 15,000 parts for your Corvair. We carry engine parts, body panels, upholstery and much more! There are 1,000's of reproduced items available, pages of technical information and lots of other helpful hints.



Clark's Corvair Parts® 400 Mohawk Trail, Shelburne Falls, MA 01370
(413)625-9776 www.corvair.com email: clarks@corvair.com

Classified Ads



For Sale: 1963 Corvair Monza Sport Coupe. Excellent appearance and in fine running condition. Garage kept. Palomar Red exterior with black interior. Powerglide transmission. 53,986 odometer miles. Car was recently bequeathed by the owners' widow to the local church. Proceeds of sale will be used for missionary work. Located in Northumberland, PA. Asking \$9,995. Contact Pastor Brian Probst. Email: brian@newlife-min.org Cell: 570-850-7931



For Sale: Need to get rid of Corvair station wagon. It needs restoration. I also have a spare engine/transmission. I'm only asking for what scrap price would be and that's about \$400. If your interested give me a call ASAP. Thank you. Scott Anderson 610-972-8849 sgtusmcpa@aol.com

For Sale: New Parts: Brakes hoses, air filters, oil filters, tune-up parts, brake shoes, shocks, tail light lenses, gaskets, plugs, cables, choke pull offs, electrical switches, gas filters, caps, backup switches, suspension parts, engine bearings, valves, emblems, exhaust, turbo parts, patch panels, early bezels, head studs, 140 exhaust extractors, Y pipes, mufflers, fuzzies, clutch cables, lower bracket, heim joints, models, magazines, CORSA magazines, Hot Wheels, Racing Champions cars and much, much more. Contact Larry for pricing. Used Parts: Too many to list. Larry Asheuer Call 267-994-1569 or email: a-lcorvair@msn.com

For Sale: (a) Stainless steel exhaust valves for non-140 heads, Clark's price \$10.75 each. My price \$30.00 for set of 6. (b) Shake-proof bolts for top shroud. Clark's price \$0.65 each, my price \$0.40 each. (c) Stainless steel cylinder head serrated flange nuts. My price \$10 for a pack of 12. Not available from Clark's. (d) Full set of Viton O-rings. Clark's price \$10.80, my price \$8.00. (e) Corvair model kit, \$20, Many other items available. Bob King text/call to 610-442-2873

January Teleconference Instructions

What: Lehigh Valley Corvair Club January Teleconference
When: Wednesday 1/27/21 7:00 PM - (US/Eastern)
Duration: 1 hour



It's our first meeting of the new year - sort of... We're doing a virtual meeting on Wednesday, January 27. Put this one on your calendar. You can join us by phone or, if your computer has a camera & microphone, you can use do video and screen sharing instead, just like Zoom.

Instructions:

By Phone: At the scheduled date and time, dial in to the conference. When prompted, enter the access code followed by pound or hash (#).

Conference Call Dial-in number: (515) 606-5376
Access code: 838110

By Video: To join the video and screen sharing session, click the online meeting link.

Online meeting link: <https://join.freeconferencecall.com/redbat01>
Online meeting ID: redbat01
All courtesy of FreeConferenceCall.com

Welcome Bob King!

This month, we extend a hearty welcome to our newest member, Bob King!

Bob is well known around these parts. He served as President of the Philadelphia Corvair Association for several years and is a respected Corvair mechanic and Corvair parts vendor.

Here's a snap shot of his pretty 1965 Corvair Corsa coupe.



This Month's Puzzle Solution

