

Performance *Corvair* Group

Newsletter

Fourth Quarter 2007

Volume 1 Issue 2

Corvair Racing 2008

The winter months are for preparing for racing and driving in the warmer months, at least for most of the country. There are several special Corvair racing opportunities in 2008 that should enable everyone with an opportunity.

NECC, Northeast Corvair Council, has several big events across the country. The dates are still being finalized. The Sunday before the CORSA convention, June 22, will be Willow Springs in Rosemond, CA (www.willowspringsraceway.com). We'll be running the "Streets of Willow Springs" course.

The next event will be a weekend long, multi venue event around Indianapolis, IN. Thursday July 31 will be a time trial at Putnam Park (www.putnampark.com). It is a challenging 1.8 mile course. Friday Aug 1 will be the drag race at Muncie Dragway (www.munciedragway.com). The last day will be a car show and autocross at Grissom Air Force Base on Saturday Aug 2. They are still nailing down the detail, like a host hotel. The plan is to stay near Indy and "commute to the venues. The longest haul should be around 60 miles. Our group, PCG, has been recruited to help provide

workers for the drag race, so we'll be looking for volunteers.

As if that's not enough, they are also looking at another event in the early fall. They are working with BerveRun and Summit Point tracks. We'll publish the details, as they become available.

If you can't wait till spring then head to Dayton for the Performance Workshop. This event has grown greatly over the years. It is going to be Friday and Saturday, Feb22-23. The Host hotel is once again the Red Roof Inn in Miamisburg, OH at 222 Byers Rd. Phone number is (937) 866-0705. Friday is a meet and greet session and a supper get together. Saturday is the big program, all day long talking about Corvair and how to get them going faster. There will be some very interesting presentations. For more details, contact Jim Dallas.

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CARB ROTATORS

By Rick Norris

Having just finished a Rotated Carb Kit install I thought I would write a piece on the experience.

I decided to do this because my track car has the usual cut out in high G turns. This is usually caused by the gas sloshing up the side of the float bowl and uncovering the main jet. I have the extended vents so this was the next logical step. I had two choices here.

I could have the carb main jets relocated or go cheaper and try Clark's carb rotator kit. I chose the latter.

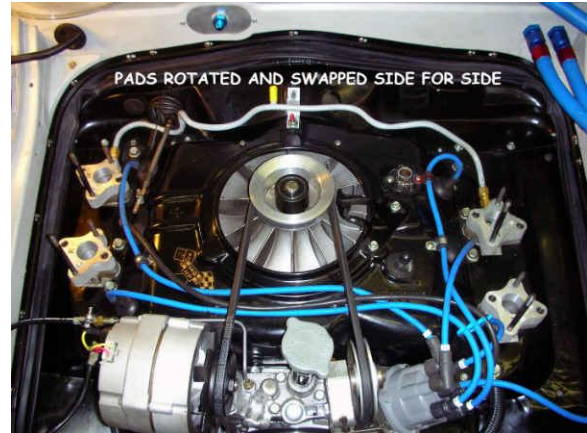
I read the information posted on Bryan Blackwell's excellent site which was a "stock" install meaning the way the kit said to do it which orients the main jets to the front. This according to those who know is wrong, although I gather it works okay in that configuration.

The race car guys say the jets should be oriented to the rear which makes sense to me. This way the jets will be covered in all but the braking phase which does not matter.

As anyone who has installed any "bolt on" kits knows, they ain't! It's no different here even in the stock configuration and when you change that it gets even more interesting.

The first thing I did after removing all the carbs, linkage, carb studs and fuel lines was to mock assemble the kit according to the instructions which are not concise by any means. This will get you familiar with the various parts and pieces and how they are supposed to work. My kit came with everything needed to do the job.

Once I became comfortable with which part went where I reversed the aluminum pad adapters left for right and right for left. They are stamped with an L or R. All the long carb studs go to the rear of the engine and short ones to the front.

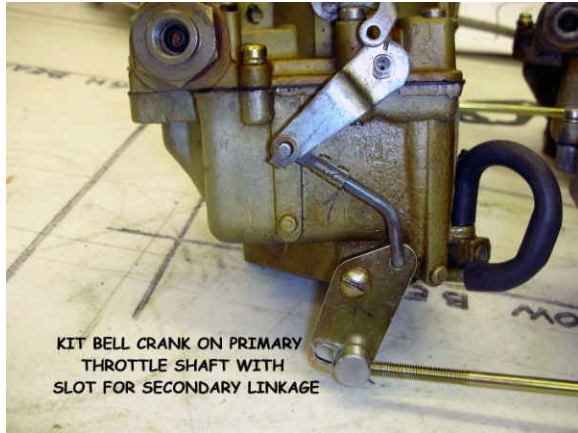


Next I put the carbs on in their respective positions for a check fit being sure all the main jets faced to the rear.



Linkage is swapped left to right and right to left also. This means the U shaped arms go on the left carbs and the flat arms go on the right. The arms in the kit replace the short arms that work the accelerator pump linkage on the side of the carbs. The arms with the slotted holes are for the primary

carbs which provides the progressive motion and the arms with round holes go on the secondary carbs. The kit linkage also makes the secondary carbs come in much sooner than the factory linkage does. It might be a bit too soon for a street driven car but works fine for racing.



The U shaped arms mount the linkage up higher on the left side carbs which is needed for clearance over the plug wires for No. 4 and No.6. This was still not enough so I changed the plug boots to the Clark's 90 degree style. The trick here was to stuff the large 8MM wire through it. The secret is to remove the distributor end connection and push it through with the help of some silicone grease. Ru-glide rubber lube would probably have worked too. I re-crimped the connector on using a plug wire tool made for it.

The right side linkage with the flat arms is positioned outboard of the carbs but it has other clearance issues.



The corner of both the aluminum rotator pads interferes with the ends of the linkage. This was cured by grinding about 3/16" off the ears.



The linkage in the kit uses the stock type standard clips to secure it to the arms. These clips are a bit too tight and had some burrs. A little reworking with a file and some bending fixed it.

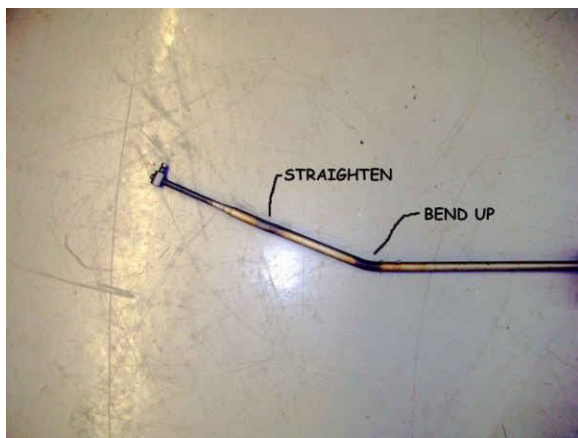
The new linkage is a very snug and requires a lot of "futzin'" to get it working smoothly. In one instance I had to drill the piece for a small cotter pin and washer to get it working right.



boot can be used. I use a cotter pin to attach the clevis adjuster to the cross shaft arm and I use double return springs. All the pivot points on the accelerator linkage of my track car have been drilled for cotter pin attachment. This insures nothing falls off in the heat of battle so to speak. The trick to drilling a small cotter pin hole in a small round rod is to file a flat spot on it and center punch it if you can. A drill press works well here but is not necessary.

Another piece of the linkage that requires re-working is the accelerator rod. The instructions do mention you might have to play with it to get it to fit in the standard rotated carb configuration.

When you reverse everything from the kit way the cross shaft moves closer to the firewall and the arm where the accelerator rod connects has to point up instead of down like on the stock cross shaft. This actually worked to my advantage.



The fuel lines provided in the kit will work and in my case a little re-shaping put it all in order. Of course I use an electric fuel pump so the stock mechanical pump may require a little more "redesign".

I have not tested this arrangement as yet but the racing season is just around the corner.

After removing the rod I heated it with a Mapp gas torch and straightened the threaded end. Then after reinstalling for another fit up, I bent it up slightly close to the boot retainer nubs which provided a perfect alignment. The large hole in the engine sheet metal clears the up and down movement of the rod and the stock rubber



PROS AND CONS

1. Yes, it would help if the rotator pads were a bit higher to help with the plug wire interference. Using the taller linkage on the left side and the addition of right angle plug boots cured the problem.
2. Chokes were not a concern on the track car but the kit method of hooking them up needs improvement.
3. Secondary return spring problem was cured with stronger accelerator pump springs as both my secondary carbs have active pumps.
4. Crankcase venting on the track car goes to a vented catch tank. Other types will have to manufacture something.
5. The instructions provide no tuning hints. With the many different setups I think this would be impossible. Cut and try is the method here although I would think if your car was running fine before you rotated the carbs it should be okay.
6. I found the kit to have all the parts needed except the plug boots. There were some extra bolts which were for the two carb to a four carb conversion. The instructions also had a section for this feature.
7. The instructions could have some more and better photos to go with the text. This would be especially helpful to the less experienced owner.
8. The linkage does take a good amount of fiddling to get it working smoothly but it is a great improvement over any stock linkage four carb arrangement in my opinion.

Adapting a Porsche 915 Transaxle to Corvair Engine

By Chuck Sadek

I am attempting to adapt a Porsche 915 transaxle (five speed) with flipped ring gear to a Corvair engine. This installation is on a GT 3 car with revised rear suspension with upper and lower lateral control arms. The engine rotates in the normal direction (CCW). If I were to adapt this to a V8 in a mid-engine configuration, much of the following applies. If anyone has any advice or experience in such a mounting, please send me an email at chsadek@Comcast.net

The transaxle (TA) is longer and taller than the factory transmission and differential. This requires modification to the behind-the-seat kick-up. The TA gear selector shaft is also on the bottom facing forward but is solid and about 4" long sticking out. Since there is a hole that doesn't go thru, in the selector shaft, it requires a clamping device to adapt it to a shift rod. Also, there is no reverse lock-out in the 915 TA. Lockout is accomplished in the shifter (in the pass. compartment). The distance from the TA "bell housing face" to the protruding nose of the input shaft is ~0.27". The input shaft diameter is ~0.572" This requires a custom pilot bushing. The input shaft splines are numerous and smaller in diameter, requiring either a Porsche clutch disk, pressure plate and flywheel or custom flywheel with Tilton pressure plate and clutch disks. The Porsche pressure plate requires a throwout bearing that is a "pull" rather than push type. The simplest way to handle the clutch, etc. is to use the Porsche set-up including throwout bearing and appropriate linkage or hydraulic set up to accomplish pulling the throwout bearing out. (I am not absolutely sure that ALL of these pressure plates use

the pull type of throwout bearing). Using a cable, and lever attached to clutch fork shaft, should allow pulling if there is room-offset from TA.

The bellhousing/TA adapter to engine will be custom fabricated.

Mounting the TA will require some ingenuity. There are only four bolts to the magnesium case (no welding) to the adapter to engine (use aluminum case if you can). The forward end has a flat with four studs which can sit in a cradle which will be bolted to roughly the same place a factory set up bolts to.

Suspension is the REAL issue. The car has upper and lower lateral links. First of all, the starter location on Passenger side interferes with the upper link inner mounting, if one were to mount close to the TA. However, there are no bolts/holes on the pass side to mount anything to. Nor on top of the TA. The driver side has a circular plate/side cover to bolt to, but these are small studs with nuts. There is a boss on the bottom of the TA which can be used, but it is rather narrow for any bolt of any strength. One can cross-drill it and use that for location. The TA apparently will have to float, only attached by four bolts to the engine adapter plate and the forward cradle. This means a suspension cradle will have to be fabricated and mounted to the body chassis/"frame". Essentially the fabrication will approximate a lower bracket like a Crown bracket which can be bolted in after the TA is installed or the lower lateral links can attach to the cradle without a cross link. Upper lateral arms will attach to the cradle as well.

Finally, the distance between the axle and the engine is different from stock which will relocate engine forward (a good thing). I

have not measured the difference between the height of the input shaft centerline of the TA and its axles vs. those of a stock Corvair TA.

This installation will be a challenge

That's the Brakes

By Seth Emerson

Whether you are building a high performance street Corvair, or beginning the build-up of the killer track car, you will need some brakes. Anything beyond "normal" – that is to say "slow" - driving will require some type of brake improvement. The stock, original brakes on the late Corvair were fine for street use. Those lining materials are long gone from the supply chain, due to environmental concerns (cough!) and limited applications (factory metallics). There are several alternate materials now being supplied, like carbon fiber and Kevlar, which seem to do a fine job with the original drums. Since the drums are pretty much required under any recognized "Vintage" car, those folks will be doing the materials testing for us all. The required 7x13" wheels severely limit the size of any replacement disc brake installation as well, although there are a few kits that will work inside some 13" wheels.

When the Corvairs and Stingers were granted disc brakes, they were also allowed larger diameter wheels -14" at first, then 15". Both in GT class and EP class, the Corvair/Stinger is allowed 15" diameter wheels. This note is not about Discs vs. Drums for your car. If you have decided to remain with drum brakes, you need not read further. If you are determined to switch to Discs on the front, or both front and rear (Anybody ever change only the rears to discs?) that is what I will try to survey. This is not an installation diagram for discs, it is a guide to different ways that it can be done, with some pointers on sources for parts and labor. There are several kits available from

the Corvair vendors, both large and small, to change over the front brakes for street use, leaving the drums on the rear. If you decide to do this, be sure to read up about things like disc/drum master cylinders, proportioning valves, residual pressure valves, combination valves, etc. There are several good sources for literature about this. Almost all of this info is about Street applications!

Master Power Brakes -

<http://www.mpbrakes.com/technical-support/configurations.cfm>

Stop Tech Brakes -

http://www.stoptech.com/tech_info/tech_whte_papers.shtml

Stainless Steel Brakes:

<http://www.stainlesssteelbrakes.com/tech/>

Like most of the literature above, I see no requirement for rear disc brakes on a street driven Corvair. But once you make the leap to racing applications, other worlds open up. There are several folks on Fastvairs – or Corvair racers in general – who have adapted different racing brake set-ups for the Corvair. A benefit of the high performance street crowd has been the success and proliferation of performance brake kits for different cars, GM models in particular. The early S10 pickup and S10 Blazer of that era used a front disc set-up, much of which can be adapted to the Corvair. Even the spindle can be modified to fit the Corvair ball joints. Michael Leveque offers a kit to do this. Replacement spindles are available to drop the car a couple of inches, too. The S10 spindle is pretty heavy though, and I hate to add much more unsprung weight. The kits from Clark's, Underground, and Stinger Motorsports use production GM steel calipers, S10 rotors, with a slight mod to the hub, and custom brackets to mount everything onto the Corvair spindle.

There is a bracket kit from Scarebird, in Washington State, which uses the S10 rotor, but mounts the Standard GM "Metric"

caliper (1978-up mid-size cars and lots of others). The best thing about this caliper is that almost all circle track race cars use some variation or copy of this caliper. Several companies make aluminum versions of it, or similar aluminum calipers that bolt onto the same brackets. Several different piston sizes are available as well, so a good front to rear balance can be reached. All of the calipers discussed so far are "floating" calipers, with a single or dual piston on one side of the rotor causing the caliper to float to the rotor then clamp from both sides. Most racing cars use multiple pistons (usually four or more) distributed between both sides of the rotor. The caliper is fixed in place and the pistons extend from both sides to clamp the rotor in between. Installing a set of these onto the Corvair requires a bit of fabricating, Bruce Carlton has installed a set all around on his Track car. The larger diameter, thick rotor, and the 4-piston Wilwood Calipers really work. The effectiveness of this set-up is part of why the SCCA E/P rules for the Corvair specify a 1" thick, 10.5" diameter rotor, and no 4-piston calipers. (darn!) The S10 4WD rotor, used in most kits, meets the spec in both diameter and thickness, the caliper must meet the piston quantity spec, too. The S10 rotor will fit the rear of the Corvair as well. Like the front, the rear hub must be slightly ground down to allow the "hat" section of the caliper to slide over. The Cadillac Eldorado/Olds Toronado rear disc caliper has a built in parking brake, and could be used on a street 4 wheel disc system. However, that particular caliper is a pain to get adjusted and bled correctly. The Standard GM Metric caliper fits onto the mounting bracket just fine, and for a race car, the parking brake is not really needed. The center mounting holes for the brackets must be re-drilled to mate with the holes on the trailing-arm bearing carrier. The caliper brackets are designed for use with the exact same rotor diameter 10.5" and width.

Cost vs. weight vs. effectiveness vs. longevity. Yes, they often fight among

themselves. With some experience earned in the last couple of years, I will suggest that the most cost-effective balance of the above factors for a racing application would be to do the following. First - SCCA E/P legal:

4 S10 4WD rotors 10.5" diameter, 1" thick.

1 Front mount kit from Scarebird for front calipers

Longer mounting studs for the wheels – Several sources

4 Aluminum aftermarket replacement Calipers (GM Metric style) Same size all around.

Rear Brackets – Slightly modified 85-90 Cadillac Seville rear caliper mounting brackets.

Steel braided lines.

In-line dual master cylinder (non-power), properly sized for the Corvair

No valves in the system - Subject to re-evaluation.

Once that system is chosen, the options are just based on cash available. These are listed in no particular order:

Drilled or slotted and plated rotors.

Tandem Dual masters with an adjustable bias setting – balance beam.

An additional caliper for "parking-brake" use.

Unrestricted? Choose caliper based on rotor size, choose rotor based on wheel diameter Choose both based on funding, and fabricate your brackets to match. Or have Bruce Carlton or David Clemons do it for you.

Other racing Brake sources

Wilwood Brakes:

<http://www.wilwood.com/INDEX.ASP>

Scarebird: <http://www.scarebird.com/>

SO – What has worked for you?

Corvair Questions

How important is having a rear anti-sway bar to a Corvair autocross car? I am prepping a chassis right now and just would like some food for thought. If it is pretty darn important, what are the options and sources?-Steve Gibson

Tough Question, Steve. I guess the answer is - It depends. No car is perfect when you drive it home from the alignment rack. Your selection of tires/wheels/alignment/sway bar/etc. might be close, but only after you drive the car - in competition - can you appreciate the way the car handles - or doesn't. It also has to do with your driving style. Some folks like to fling the car around, hanging out the tail a bit. The Corvair (and it's drivers) are partial to this activity. In my experience, I have tried to bring the car in with a stiff front sway bar installed and a similar size - but adjustable linked - rear bar. That way, if the car won't turn in - Common, believe it or not, on late Corvairs, you can shorten the arm length on the rear bar, making it more effective, reducing understeer. This makes the car turn better. It also allows the rear to hang out some, so you need to be gentle. If the car turns so well it is turning faster than the driver (think about it) you can dial out the rear bar, lengthening the effective arm length, and lessening the effect of the rear bar. The only problem with the Corvair vs. many other cars, is that you have a bunch of adjustments both front and rear. Call it an "embarrassment or riches". Sources come and go, unfortunately. I believe Addco still makes a rear bar for the Corvair. I don't know if it is an adjustable one. (I don't think so). You can always go looking for Crown suspension pieces, they turn up once in a while. - Seth Emerson

Tool Box

By Seth Emerson

A note for those of us who have to change tires again and again. At the Convention autocross in Detroit, I noticed that several folk were using cordless impact guns to remove and install tires. The one I have used at home is a 14.4 Volt Nikota brand unit which is useful for tearing down assemblies – it works great on front end parts – but will not bust loose a lug nut for anything. After watching Dave Edsinger remove a torqued-on Minilite and reinstall it, I check out the wrench he was using. The owner had lent it to him adding that it had already swapped out several sets of wheels and tires that day. The wrench was branded as a “Goodyear Racing” model, but is really imported from China by a company in Southern California, Allied International. The Goodyear trademark is being used under license. The unit, model 33609, is a 24 Volt, ½ inch drive unit and comes complete with a charger, 4 deep Heavy Duty sockets, an extension and a blow-molded case for storage of it all. I noticed that Pep Boys stores has the unit on sale for \$89 with a \$20 rebate dropping the cost to \$69. So I dropped by and bought one. After charging it up, a couple of tests indicate that it will bust lug nuts much better than the 14.4V Nikota. As I often do with cordless tools, I contacted the company and purchased a second battery, in order to retain tool capabilities even when I forget to recharge them due to brain fade. A second battery was \$32 including shipping. Anyway, the unit seems solidly built, quite capable and would be a good addition to your toolbox or garage. I still recommend using a torque wrench every time you install the wheels on your car. I have a ½” ratcheting click-stop unit with a short extension with a deep socket pre-installed on it sitting in my garage solely for that task.

Having a Corvair Event? Send info to aeroned@aol.com

Editor's Notes

Special thanks to Chuck, Rick and Seth for their contributions to this quarter's newsletter.

THANKS GUYS!

We need newsletter contributions from our members. Articles about member's cars, modifications, restorations and what you do with your car would be great. I'd really like to have a featured car in each issue. I know you guys aren't shy, so just type it up and include pictures.
