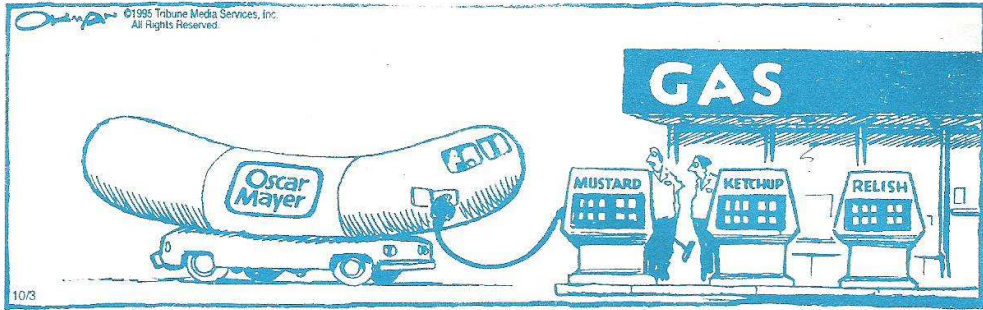


Price \$2.00

Whales on Wheels

Number I & II
Volume XVII

Whales on Wheels



Special Double Issue on Powerglides



Walt Davison photo

View From Inside a Powerglide Transmission

by Art Eller and Harry E. Yarnell

The following is correspondence between Harry Yarnel and Art Eller. Harry's club, Chesapeake Corvair, produced a 90 minute video on "How to Overhaul a Powerglide transmission." The following is the edited correspondence between the two.

Dear Mr. Yarnel,

I just received my copy of your Powerglide overhaul videotape. I have viewed it twice. I would like to give you a critique of the video.

First let me tell you about myself. I retired from teaching Engineering at Los Angeles City College. The last ten years, I was chairman of the department. In addition to the usual engineering subjects, I taught machine shop and auto shop. Starting in 1963 our family of six all drove Corvair vehicles. For along time, we had nine vehicles with six freeway ready at all times.

Out of interest and necessity, I started overhauling the Powerglide transmissions until it became a business. To date, I have delivered 142 rebuilt transmissions to our three Corvair repair shops in Torrance and Redondo Beach. I have also held six rebuilding sessions for our Corsa West Corvair Club and the Ultra Van Motor Home Club. I have three of these Ultra Vans. During these transmission sessions, some fifty transmissions were rebuilt. Most of these were tested on a test engine I have for correct oil-pressures. I normally do not test the transmissions I rebuild.

During the rebuilding of these 190 transmissions, I have encountered any and all situations, mechanical and otherwise. I am still very much impressed with the durability of these transmissions.

Now let me talk about your video. It was very professional both in photography and narration and general presentation. I was very impressed with the beautiful model you had at your introduction! I would have liked seeing more of her!!

Here are my observations: 1. Your video should be made for the shade-tree-mechanic. In many respects it was too incomplete as I'll mention. 2. Taking the case and guts to a professional shop can be rather expensive. Around here a power hot cleaning job costs \$15 or more. You can do a very good job with a couple of cans of carb cleaner after scraping and blowing off the outside muck. 3. 90% of the trans. pans are crooked. How do you straighten. The pan bolt holes need to be flattened flush. How? 4. Your tranny was a low mileage one in excellent shape; not like most I work with. 5. You should have shown the differences between your early one and the last ones. The front pump drive gear bushing, front pump priming valve, down shift priming valve, larger hydraulic modulator (booster) valve are all of interest and problematic for someone with these later transmissions. 6. I always insist on a drive shaft installed over the pump shaft when I pick up a core or deliver a rebuilt trans. You can pick up the unit by the shafts without damage. 7. The front pump shaft must be inspected very carefully at both ends to see if the driving splines aren't damaged or worn out. Often people bump or drive the end of this shaft to get the front plate off. The retaining ring

will shear off the splines. I salvage these shafts by deepening the groove and installing the next size smaller retaining ring. 8. I always flip over the front pump driving hub so that new surfaces are driving the front pump driving gear. Also check to see that the internal teeth in the driving hub are not worn out. 9. I always put all front pump shafts in my lathe to see how straight it is. If it's only slightly bent, I can always straighten it with a rubber hammer. 10. All modulators should be tested by holding the vacuum line in your mouth and sucking with your tongue sealing the opening. The vacuum should be retained for a minute or so. Otherwise replace the modulator. Of course, I first shake the unit to see if oil appears. 11. A slide hammer isn't needed to remove the front pump. I don't use mine. I use a small pry bar against the lower edge of the case and under the 6 o'clock oil pressure plug. You have greater control and all the front inner guts don't come out. After front cover, I remove pump shaft. Two front pump cover bolts screwed into opposite inner front pump bolt holes make good pulling handles. 12. You mention replacing the pump shaft bushing in the front pump but take it to a machine shop. It isn't hard to remove with a metric size socket. The problem is positioning the replacement bushing so the correct hole alignment is maintained. A reversal of this hole position directs the oil to the converter into the main drive clutch assy. I did this once. It results in total lockup. 13. I never remove the two front pump body hub iron seal rings. There is no need. If rotation of the rings shows dirt under the ring, a squirt and a good blow of air will remove it. For the amateur, these rings are so easy to break and then obtain replacement. 14. The critical point of low band wear is at the

open ends. Replace if base metal or bottom of grooves have disappeared. 15. There is no need to take the small steel ball out of the case. The ball is so easy to loose and reinsert the keeper is a problem! 15. In the shot of the hydraulic modulator valve body, the two check valves are shown in reverse position. 16. Over 50% of the units rebuilt by me have the "E" clip missing. Some how, the 3/4 piece of the clip ends in the oil pan. The small end piece of the clip ends up in the oil grooves in front of the low-drive shift valve. Whenever the "E" clip is missing, it is a must that this small end piece of the "E" clip be found or ruled out of the valve body!! 17. It is my theory that bad (leaking) modulators that cause harsh upshifting are a cause of the fracture of these "E" clips. Two purchasers of my rebuilt units have liked this harsh up shift and disconnect the vacuum line. In both cases the "E" clip was fractured and units had to be repaired. 18. After cleaning, I use extensive air pressure to blow out all holes and passages in the valve body. 19. It is a must to see how loose the clutch drum fits on the hub of the front pump. I almost always replace this bushing because of the loose fit and potential for loss of oil pressure. Note the wear on the top of the front pump hub where this clutch drum rides. 20. No torque wrench was shown. The low torque really demands such a tool. 21. I use a small bench drill press with a locking quill to take apart the spring loaded clutch packs. I then use two valve taps and a bar or small plate as jig to remove the springs. 22. The greatest omission was the three important rear pump and reverse piston assy. problems: A. All current rubber & gasket sets have the late model rubber seal for the reverse piston which

is square in cross section. After reassemble of the rear pump and reverse piston assy. the piston seal must be checked by injecting air through the port in the rear of the case. I find that 10 to 20% of my rebuilds have total air leakage past this seal. I keep all such "L" shaped seals from units that I rebuild and are in good condition. These old seals always work. I assume that the case is warped. B. Assembly of the piston to the rear pump should be shown. The installation of the inner seal and getting it over the pump hub isn't easy and should be shown to prevent the damage to this seal. C. The most important omission has to do with the two driving notches in the front pump drive gear. The relative tightness of the driving pins in the planet carrier assy. indicates that your transmission was low mileage and well maintained. In 90% of the ones I have rebuilt, these pins were very loose and fell out. The notches in the front pump drive gear were badly mutilated. I describe what I do to correct in next item. 23. Almost all the holes for the drive pins in the hub of the planet carrier assy. were very loose and could not be tightened by center punch marks around the holes. I solve this by drilling new holes with a #32 drill located 180° from old holes. I have a jig that fits over the hub to guide the drill but it isn't necessary. Scribe two lines 3/8" below the end of hub at the 90° position. To get a more accurate position use a combination square and scribe a mark across the end of the hub. Center punch and drill. It doesn't matter if you drill through and into the drive splines. Clamp carrier in a vise and tap pins in enough to hold, then press pins in between the jaws of the vise. They will never come out! 24. After pressing in the pins now fit the rear pump driven gear over the hub with the notches engaging the pins.

Now take a small center punch and mark one side of notch with a punch mark; marking the matching pin. Keep these two punch marks out of surface areas that mate with other surfaces. Now remove the driven gear and set up in vise and file all four notches so they contact these pins on both sides as the gear is rotated back and forth. Remember, the pins contact one side of notch in forward and other side when coasting. A flashlight shining under the driven gear when mounted on the planet gear hub will help you see when the pin head and notch end are touching. As a last touch, lay the driven gear on 400 or 600 emery paper and gently sand both sides. I also file chamfers on each edge of notch. 25. All fiber clutches and the low band should be soaked in transmission oil before assembly. 26. How to straighten the transmission throttle valve lever should be shown. Most such levers are bent and care must be taken to prevent the shaft from being broken. Use a soft faced vise or chucked in a lathe as I do. 27. I think showing the transmission turned over on the valve body without the pan on was very poor procedure. The poor filter screen couldn't help but take a beating. Bending the two small tabs on the rear edge of the screen was not shown. These tabs hold the screen up into its outlet hole in the valve body when the oil pan is bolted on. But again once the valvebody, screen and throttle valve lever installed the pan must be installed! 28. You show trying to install the clutch drum installed with the low band installed on it. In the 65 Corvair Chassis Shop Manual, pg. 7-51, Fig. 7E-54 it shows the clutch drum being installed first. I think it is much easier to do this and mount the band over it and then connect up to the struts. 29. In the assembly of the front pump, mention should be made

that the primer valve spring washer, spring and valve itself have been installed in the late model transmissions. Leave these out and the transmission is dead. It is an experience beyond belief to install a transmission and then have it not work!!!! 30. You want to make sure the front pump operates freely before installing all the bolts. Install three bolts around the outer bolt ring and three opposite bolts on the inner bolt ring. Tighten all. Now try to rotate the front pump gears by the pump shaft. Often the shaft sticks but can be broken loose. There are times when the gears are locked. Remove the front cover and the two gears. Lightly sand them on 400 or 600 emery paper. Polish off any edges. Now clean well and reinstall and re-test. Pump should work. 31. Before reinstalling the cover bolts, the bolt heads should be sealed with RV or Permatex sealant. This is especially true of the inner ring of bolts which are subject to full oil pressure with no gasket in between.

Continued on page 18

Letters to the Editor

Ray Mitchell January 10, 1996
Convention Invitation...

As convention chairman and Group Ultra Van member I want to extend a special invitation to the members of Group UltraVan to attend this years Corsa Central Regional Convention. This years convention will be held July 31 - August 3, in Columbus, Ohio at the Marriott Inn North. We have reserved a conference room and scheduled a meeting time for 1.5 hours for Group UltraVan. A reserved parking area will be provided for UltraVans. Room rates are \$68 plus tax, for up to 4 persons. Group UltraVan members can call the hotel directly at

(614) 885-1885 or (800) 228-3429, mention CORSA to get the discount. For registration information, call Craig Scott at (614) 881- 5283 or write to 6244 Duffy Rd, Delaware, OH 43015.

Vairingly Yours, Ray Mitchell ,
2802 Palisade Ave. Columbus,
Ohio 43207, CHAIRMAN

Since they were nice enough to invite us, maybe some of us could go. If you plan on attending let me know and I'll send you some information to pass out at the meeting. See Rally schedule for details. Ed.

January 12, 1996

I was lucky to run across a copy of the "Corsa Communiqué", that had an address of the "Whales on Wheels" news letter and Group Ultra Van. I hope this address is still good as the magazine is issue February 1993.

Since I am actively looking for an Ultra Van to purchase and also want to catch up on activities, could my quarterly newsletter start with the last issue? In case the prices have gone up I am enclosing a check for \$5.00. It its more just let me know and I'll send a check right away.

Cordially, Emil J. Zowada, 12075
Gage Rd., Holly, MI 48442

PS. As a stylist for GM, I worked on the exterior styling of the 1962, 63, 64 Corvair. We never saw the Ultra Van till it came out. Sure wish I had a chance to work on it!!

Welcome aboard Emil. Send the treasurer a check for one more buck and we'll help you catch up. Its nice to have some one with your background in Group Ultra Van. Ed.

Whales on Wheels

Subject: Re: Group Ultra Van WEB SITE

To: "Christy Barden" <71063.2265@CompuServe.COM>

Hi Christy,

This is just a short note to let you know we did get your e-mail. We are at this time extremely busy with our cottages, and have not even had a chance to discuss this amongst ourselves (Karen & I). It is possible that we will be able to provide some information/ assistance during the next few weeks, and I will e-mail you again in a few days once we get a little less hectic here. There will likely be some costs server space/time in particular, but between us and other UV friends we should be able to figure things out.

Side note, how often does Whales on Wheels get published? We should be on the receiving end...?

Cheers - Steve Landsberg #252
(torbay@onlink.net)

Yes, Steve, you should be on the receiving end, and will be soon. Thank-you for your offer to help get Group Ultra Van up on the World Wide Web. Ed.

Dear Christy, 27 December 1995

I thought you might like to have something to read during a spare moment away from the Boulder's night life. This article sort of grew from one I started about proper installation of the Stator Shaft. This summer Jim Craig brought me a Differential to set up and drill a drain hole (not in that order). During that project we discovered the Stator Shaft had been installed incorrectly which kinda screws up lubrication for one thing. When we pressed out the shaft it turned out to be an early 1960-62 shaft in this late housing Jim had

brought. This really screwed up gear tooth alignment which this unknown mechanic had tried to solve by installing about an 1/8" of shims between the Pinion Gear and the Bearing. This unknown mechanic was on the right track and if he hadn't put the Stator Shaft in about 90° off, and the tooth pattern was right, we might have let this Differential go into someones Ultra. That would have been a disaster as the early Stator Shaft has only one hole on the Differential side to allow 90 weight oil to lubricate the Pinion Shaft Bearing!!

A quick Tech. Tip on proper installation of the Stator Shaft seemed in be in order. That sounded simple but the Stator Shaft has so many things it does and I'd have to at least touch on them, would make for a confusing article to explain all the jobs. What job's you say. How about seven for starters. 1. Positions the Pinion Bearing Cup. 2. Holds the Stator in position. 3. Aligns the 90wt hole to the Bearing. 4. Aligns the ATF to the drain back hole. 5. Is the bearing surface for the Converter Bushing. 6. Acts as seat for the Cast Iron Split Ring. 7. Holds the Oil Seal to separate the ATF from the 90wt Oil.

At any rate, it seemed like lubrication was the important item of the majority of most of the jobs, as for instance; the Cast Iron Split Ring although located in the differential, is vital in the lubrication of the insides of the P.G.. To explain that in an article about the Stator Shaft would muddy the water somewhat. I figured if I started out with lubrication from the beginning and touched on each part that had something to do with it, would make more sense and tell a story. That story took 17 pages. The Stator Shaft would be part of the story.

When I was at Palm Springs at

Winter-Spring 1996

the GWFBT&SM and was passing out a bunch of copies of articles I had written, I wasn't too organized and I have no idea who got what. I know you got some, but I'm not sure what, and I made a stab at sticking a date on them, but not too accurately.

Here is a list of articles I have written about the P.G. and the dates. 1. The Modulator. (CORSA Nov92) 3 Aug 92. 2. Unhook It! (How to get an ailing PG home) 12 Oct 93. 3. Powerglide Pump Trivia. (Rear Pump Takeover) 25 Jan 94. 4. Filling the Torque Conv. (Ltr to Kirkman) 18 Jul 94. 5. PG caught in HP Race. (Early-Late Parts) 1 Nov 94. 6. Powerglide Lubrication. (ATF Flow) 11 Dec 95.

Of course, the P.G. Lub. thing is in this folder. I don't think I had it done in Palm Springs. I mailed a copy to Larry Claypool on 11 Dec 95 but haven't heard from him. What with the mess of all the Christmas mail, it wouldn't surprise me if it got lost. I don't ever expect it to ever see the light of day due to it's length. #3 and #5 were about the same size and most likely ended up in CORSA's "Mother of all Round Files". I did mention to Larry in the cover letter that "Serialization" was used back in the 19th century to take care of that problem of length. It also made many magazines quite successful for the effort.

I don't know if that dig will have much effect, but it was worth a shot. I'm a great believer in learning the function of parts in machines. If one understands the function he can figure out what's wrong and how to fix it. But, explaining how a part works, takes many, many well chosen and correct words which just seem to go on and on. At least to the knowledgeable it seems redundant, but to the novice he will eat up every word in order

to understand. I would venture over half of CORSA's membership is in the novice category. If, because of length, function is not available to the great unwashed masses (general membership) they will not be aware of the many pitfalls that could have been avoided if they had only known how a part works. I say, let's keep them in the dark, let them get discouraged, then there will be more Corvair stuff for us!! HEAR! HEAR!

How does that old saying go? "He who doesn't learn history, is doomed to repeat it" or "He who doesn't learn function, is doomed to avoidable breakdown after breakdown."

Enough of that. If you want any of my articles that you don't have, just drop me a line and I'll mail them right out.

Happy "P.G.ing," Robert L. Ballew 74884 Serrano Dr. 29 Palms, CA 92277

Dear Christy, 20 January 1996

I was reading a copy of my letter which I sent to you in which I enclosed the P.G. lubrication Epic, and reread my attempt at some humor. It was supposed to be a sarcastic remark of CORSA COMM. which only seems to print what fits a space rather than base it's criteria on the importance of the contents of articles. If it's important for the longevity of our Corvairs (Ultra Vans), it should be priority #1 to get it out to the Members no matter how long it is. It could be cut up in installments if there is a problem of space.

A for instance; There are P.G.'s made for 80 HP's, There are P.G.'s

made for 110 HP's, There are P.G.'s made for 140 HP's! These three different P.G.'s are equipped with different parts to be able cope with these different horsepower's. If you hook up a 140 HP engine to a P.G. designed for an 80 HP engine, I guarantee that P.G. will end up in the scrap heap. And, chances are, He'll hook his 140 up to another 80 HP P.G. and burn it up too. NOWHERE, NOWHERE, is this information printed in any Manual or Tech. Tip that I can find. Clarks Catalog lists two rebuilt P.G.'s, 1960 to 1966 and the other 1967 to 1969. Are they inferring the first can handle any engine between 1960 to the 140's of 65 to 66??? What's so special about the 1967 to 1969???

My attempt at sarcastic humor with my sentence, "I say, let's keep them in the dark, let them get discouraged, then there will be more Corvair stuff for us! HEAR! HEAR!", seems to be CORSA COMM.s attitude when their policy is solely based on length of articles instead of importance of Corvair longevity.

I know I'm not an editor, but it seems to me that stories that consist only of "Human interest", don't help our Corvairs stay together for the long run. And, if our Corvairs don't stay together, neither will the clubs.

Larry sent me a 140 valve body to check out why the 140 rates a special valve body of it's own. I'm stumped, because I can't find the special governor which only the 140 uses. I got one Jim Craig thought was it but upon disassembly proved to be a stock Gov. If I could find one, it would help me explain why the 140 needs a special shift valve in it's special valve body. I suspect it has something to do with LONGEVITY!!!!!!

Robert L. Ballew 74884 Serrano Dr. 29 Palms, CA 92277

From the President



Jim Craig

Seeing the postman's truck pull away from our mail box, I walk out to see what we had received. Hmm? A letter from Christy Barden. Well you can guess the rest. Yep, his letter was confirming that he had received my letter indicating that I would volunteer to be President of Group Ultra Van. A big thank you to Jean McMasters for holding down this job for the past couple of years.

Since I have moved up to this office from Western Director, I am happy to announce that member Bob Galli #504 has volunteered to fill that vacant office. Bob and his wife Diana purchased #504 from Milt & Gene Rayburn several years ago and have been across the country in it since that time. They are both active in their local Corvair Club, Central Coast CORSA, and attend the CORSA Convention each year. He has been our point man at most of the Group Ultra Van meetings scheduled at the conventions recently. With this appointment he now has some clout to make things happen at those meetings. Thanks again ,Bob.

The CORSA International Convention is scheduled for July 19-

22,1996 at Albuquerque, NM, hosted by Corvairs of New Mexico. For information contact Debbie Picau, (505) 345-0351. I encourage all of our members that can possibly make this convention, to do so. It should be a great event. Especially those of us in the west.

The next big event for our members is the Ultra Van annual convention to be held this year at Hutchinson, Kansas, home of the manufacturing plant that built the majority of the Ultra Vans. The meet will commemorate the 30th anniversary of the Ultra Van Motor Coach Club and the return of the Ultra Vans to Hutchinson. The city is really going all out to make this event, one to be remembered for a long time. Members Norm & Marion Helmkey are working with them and a group of other members to make this an Ultra event that will be the best of this century. In other words, "The Mother, Ultra event of all time". Sooo, make your plans now, get the Ultra road worthy or even come in your car or other vehicle. But, whatever you drive, just get yourself there. There is a parade planned for the first day that will include the Ultras driving into town, being led by the Ultra Van 101, the original prototype Ultra Van. (Man, that means we better get with it to finish up the restoration.) So lets all talk this up at our regional rallies, get commitments from our members to go and call or write those near you that may not have got the word about this event.

As you have noticed our editor, Christy Barden has really improved the newsletter this last couple of years, into a quality publication. Now it our turn to improve our regional rallies. It appears that the western rallies are getting smaller attendance. What is the problem? I know that a lot of senior original Ultra

owners are getting older and not wanting to travel alone anymore, because of various reasons. We need to do all we can to encourage all of our Ultra friends to travel with a group of, say two, three or more Ultras to and from the rallies. Also new members should be encouraged to attend and get acquainted with our friendly membership and see what fun we have at those rallies.

I know you all have been wondering what happened to the Winter, Whales newsletter. Our editor and head C.E.O. had other commitments that just did not allow him time to type and print up and post the newsletter. He will no doubt explain the details in the "ED'S" column. So this is a combination of the winter and spring issues. Which will cover a lot of information.

Now, what is so important that you have to read this column rather than the rally reports and technical stuffs. Well you can skip over this or you can pay attention for a couple of seconds. A couple of things we need to address. First, is the printing and mailing cost for this newsletter. We all like to read everything that are editor can cram into these sheets and more if possible. On a normal year when four separate issues are mailed out the bank account has near being depleted. I am recommending that the membership fee be raised to \$10 per year. Now that is \$2.50 per issue. Is that a good deal or what? If we don't hear to much opposition to this, it will be considered soon.

Are you a paid up member of the Corvair Society of America, (CORSA)? It is a requirement that our club, Group Ultra Van, maintain a certain percentage of our membership as CORSA members, in order to remain a chapter of CORSA. In addition,

when we remain a chapter we are eligible for a million dollars worth of insurance, which allows us to be covered and protected when you or I host a rally. Also, as a member you receive a monthly glossy magazine that has very good articles and stories and technical tips that are interesting. In addition it has a good for sale and wanted section. Ads are free up to six lines. Such a deal!

A CORSA application is being mailed to all of our members who are not currently CORSA members. So please join Christy, myself and our other Group Ultra Van members and become a CORSA member.

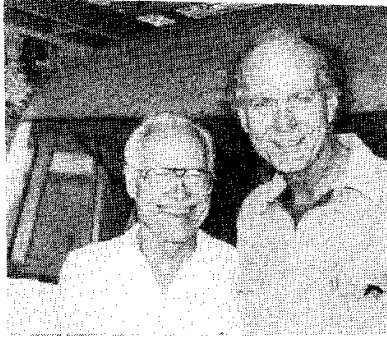
In 1996 I am going to request that our directors furnish a article to the newsletter informing us about themselves, what they think of the club, where we can improve or whatever they wish to write about.

Selling your ULTRA? We are aware that a lot of our original members are getting to a point that they cannot handle the maintenance and repairs required to travel across country anymore. If you are considering selling your rig, I recommend that you clean it inside and out. Make sure everything works. Touchup the paint. Do a tune-up so that it runs great. Price the unit as high as possible. Talk to others that have sold theirs. Get ideas, be prepared with a bill of sale etc. If you need help, call me or others in your area. See ya in Hutchinson

From the Editor

W. Christy Barden

Whales on Wheels



I'm a bit late this time with the newsletter for I haven't been home for a couple of months. I've been in training in Houston training on another type of aircraft. During that time we had record high temperatures for February, 90° F. That starts all the plants thinking its Spring. It's not nice to fool Mother Nature! I also have an aunt in Los Angeles that has required many trips out there to help take care of things during her illness. This just left no time to get the winter newsletter out. Thank-you all for understanding.

I really got excited about doing a double issue. More work but I'd promised to do Powerglide stuff for some time. In our Ultra Vans that little transmission does A LOT more work than it was designed for. So it does need special care. The more we know about them, the better we can do that. Art Eller and Bob Ballow are both Group Ultra Van members and have contributed much to enhancing our knowledge of these units. Art has rebuilt over 190 Powerglides. He must be a man who KNOWS. I can't get it all in this issue, so there will be more later as well.

I wish to thank all of you for renewing your membership for 1996. We work on a very slim budget and appreciate your support. If you notice in our officer section we have a new president. After 5 years Jean McMasters is retiring from

office. Jim Craig, our western director was gracious and has stepped in to service as president. Many of you know Jim and his lovely wife Marline, they have hosted many rallies at their Rendezvous Ranch in Joshua Tree, California.

Walt Davison, a recent grandfather (a triple event Austin James; Noah Lee; Kyle Bailey Davison) visited me in Boulder last year. While he was here the channel 4 News team saw his Ultra Van and was impressed. So along with another member John Hoffman was interviewed. John and Clair had their Corvair Ramp Side pick up truck with a factory camper on it. The entire story was recorded by Steve Goodman (our local Corvair guru). Maybe we'll have to show it at our next National Rally. And speaking of Walt Davison, I received a photo from my mother showing the celebration of Bill Binnies birthday in Yucca Valley and guess who is prominent in the photo, yes good old Walt, he does get around. Bill Binnies wife Betty and my mom worked together at the Bank of America in the late 60's.

Group Ultra Van on the Net? How does that sound! I like it, but don't have the time to get a Web Site up and maintaining it. It would also cost a bit for computer time with a server. Many people are getting on the Net and I think its time we did as well. Steve Landsberg #252 sent me a note (see letters to Editor) indicating he might be able to help with this project. If anyone else has some expertise in the area, please let me know and I can get everyone in touch with each other. My address is Internet:71063.2265@CompuServe.Com. Maybe we could get a list of Ultra Van Members that are on the net. If everyone who is on the net would send me their addresses, I can correlate them and

send them out to everyone who sent me their Net address.

My Greenbriar started making some noises in the engine compartment, so I started to look into it. Steve Goodman diagnosed the problem as a cracked piston. By removing a spark plug wire one at a time and listening for different sounds help in the diagnoses. The van had 200,000 miles on it and was still running well. I use it as a daily driver, and even with the rust decided to keep it. I haven't had time to rebuild the engine, but here in Denver we are fortunate to have Steve Goodman, a Corvair specialist for 30 years in the same location. He is doing the work, I run parts. That took me to Riverside California and Ed Corson to buy the Otto parts cam gear sure lock. Ed also rebuilds engines at his palce and has a load of parts. I also bought a late model FC engine block from him. For 200,000 the cam was flat, and the crank was out of round (sagged in the middle). I remember when it cost \$500 in parts to rebuild an engine, now its more like \$1,500 in parts. That does not include the labor. Our Ultra Van are worth it. These Ultra Vans will be here for years so we will have to spend the time and money to keep them in top shape. It sure gets a lot more attention than those \$500,000 rigs. I even get thumbs up from young people when driving my primered 1965 Corvair four door in New Jersey. I plan to drive Corvair powered vehicles as long as I can. So can you!

Powerglide Caught in the Great Horse Power Race.

by **Bob Ballew**

Back in the late fifties what with Federal Excise Taxes on gasoline going up and the States seeing

dollar signs in gas taxes, and the Shah of Iran with his nationalized oil fields discovering he can effect oil prices by organizing with other oil countries, (later OPEC) the price of oil started to go into orbit for that day and age. (kind of wish we had those prices now)

Of course at that time V8s were king and gas mileage wasn't of any interest to anyone. Suddenly with gas prices going up, the car buyers, politicians and any one with an ax to grind, started screaming for economy cars "NOW"! "Those money hungry car companies should make small cars, not those big gas guzzlers"! The fact that it was they (the buyer) who determined what would sell, and the car companies produced them, or went down the toilet, never occurred to the screamers.

So Detroit went to work on economy cars to meet the demand. Remember these? Comet, Valiant, Falcon, Tempest and of course our little Corvair. Seems to me there were others, but I can't remember their names. It took time to get these cars designed and assembly lines set up and the cars built and on the road, and an other year or two to get all the bugs out. By this time supply and demand had leveled out the gas situation and the "Big Mouths" had gotten used to gas prices, dumped their little cars and were back in their "Belchfire Eights". Which ushered in the giant engines of the "Horsepower Race" of the late sixties.

Get the picture? Detroit is loaded with economy cars nobody wants. Fact is people won't buy any thing that's connected with the word "Economy". Now Detroit is trying to figure out how they're going to get the millions they had to sink into these cars they didn't want to build in the

first place. Most companies decided to jazz up their little gems and pass them off as "Sports Cars". The Corvair was right in there with many costly improvements and many new more powerful engines.

So what has that got to do with the Powerglide automatic transmission? Well let's go back to the original concept. People said they wanted a small, light, simple, gas saving, economy car. Corvair did that with a small gas saving 80 horsepower engine and designed a dandy little P.G. transmission to handle the power of a small engine of that size. Along came 1964 and Corvair added a longer throw crank and 110 HP engine with lots more torque, (140 to follow) and what to do about the P.G.? It was not designed to handle that kind of power and there wasn't any room to make it any bigger; solution, boost the internal pressures way past the original specifications, in some instances over 30%, and cross their fingers and hope.

In the original design of the 1960 P.G. there was a Line Pressure Limiting Valve installed, set at 160 PSI to prevent any damage in the event of any excessive oil pressure. In 1961 it was decided it wasn't needed and was taken out and the hole was plugged up. Now in 1964 with bigger engines and higher pressure, and having tied down the safety valve, so to speak, caused some worry. The gamble paid off, nothing came unraveled. (A few locomotives in the good old days, weren't that lucky)

Listed below are the pressures of the early P.G.s, followed by the new late pressures. See **Illustration # 1, Front Pump Test Port Pressure Numbers**

As you can see all of the pressures went up. Some a little, some a lot. These pressures didn't go

up just by themselves, or because someone says they did, but because there are many actual parts changes inside the P.G.. You can't tell by the housings whether it's an early or a late because the housings are identical. The only way (and it's not fool proof) is the early have I.D. Nos. on the case rim and the lates have theirs on the bottom of the pan. Of course that doesn't mean the insides haven't been changed a few times over the years.

You have noticed that the pressures didn't all go up the same amount. A couple only went up 6 lbs., five went up 23 lbs., and one went up 43 lbs! The reason for this is because some gear ranges need more holding power to keep from slipping than others. This is because of the different mechanical advantages of the different sizes of gears in a planetary system. High pressure could be used for all gears to make it simple, but this extra wear and tear of high pressure would shorten the life of our P.G.s. Different pressures allow our P.G.s to go 100 thousand miles plus and more. You can't knock that. Simple doesn't always mean better.

Now let's get down to parts changes to account for these differences in pressures. Neutral and Drive were 52 PSI in the early, now in the late the new pressure is 58 PSI, an increase of 6 PSI. The only way the pressure can be increased is to somehow change the pressure regulator valve or its spring. The regulator and stock spring remained the same, and a small spring and seat were added to give the stock spring just enough extra help to increase the pressure that 6 PSI. The small spring is installed on the tang of the pressure regulator valve and the spring seat is held in place on the end of the small spring up against the

booster valve. The picture below shows the pressure regulator valve, the small spring, its seat, with the booster valve. Stock Press. Reg. Spring not shown. See Illustration # 2, Pressure Regulator Valve.

Unfortunately since this small spring and seat isn't shown in any Parts Book, or mentioned in any of the Repair Manuals, just about all of them ended up in the bottom of soak tanks, to be thrown out, as no one knew what they were, or what they did, or where they went.

These two early pressures, (N and D), were 52 PSI, and when the modulator hose is disconnected, the pressure jumps to 76 PSI. (Note; See Modulator article, Communiqué, Nov. 92) Disconnecting the modulator hose gets the same reaction as jamming the throttle to the floor. When the vacuum is taken away from the modulator, its valve allows oil pressure to push on the small spool of the booster valve moving it against the tang of the regulator valve, giving it a "boost" which increases the pressure from 52 PSI to 76.5 PSI, an increase of 24 PSI.

Now take a look at the late pressures, (N and D), they go from our new 58 PSI to 99.5 PSI, that's an increase of 41.5 PSI. Almost twice as much as the early increase. How could that be? How come such a big increase? The answer is in the picture below. A new and larger booster valve was installed in the 1964 and later P.G. valve bodies. See Illustration # 3, Larger Booster Valve.

If you take the dimensions of the small spools of the two booster valves shown on the bottom of page 3, and calculate the area of those two small spools in square inches, you will find the late small spools size has been in-

creased by 42%. This accounts for the big increase of pressure to 99.5 PSI with the modulator hose off. (Bigger area, bigger pressure boost)

The large spools on the booster valves are only used in manual reverse (R), and will be covered later in this article. Meanwhile, here's a picture of the early and late Hydraulic Modulator Valve Bodies. Actually they are the same casting, but since booster valve sizes have been changed, they have to be machined differently. Parts are not interchangeable. The assembly is, but performance will be different. More on that aspect later. See Illustration # 4, Booster Valves and Pressure Limiting Valve.

Notice the size of the holes which contain the booster valves. The hole in the late body is noticeably larger. Also notice the spring and pin of the pressure limiting valve in the early body and the absence of the limiting valve in the late body. (Tie down the safety valve!)

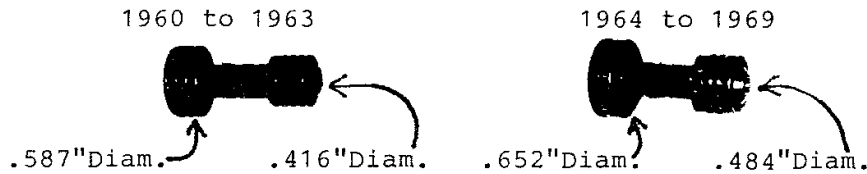
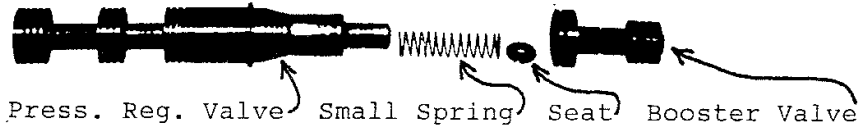
Next, we will check out the pressure changes in manual Low (L), between early and late. Manual Low is used when you are going to do some heavy pulling or pushing or other heavy work and want to be sure the Low band has lots of high oil pressure to prevent any slippage, or you don't want the P.G. to shift to drive during the work. You'll notice the pressures in the Low (L) columns on page 2, are the same whether the modulator hose is hooked up or not. This is because when you shift to Low (L) manually, a port in the manual valve is opened and oil pressure is directed to the small spool of the booster valve getting the same reaction as if you had the throttle to the floor, boosting the pressure to 76.5 PSI in the early, and 99.5 PSI in the

Condition & Range	Early 1960 - 1963 Front Pump Test Port Pressure Numbers (Averaged Out)				
	R	N	D	L	
At Idle	89.5	52	52	76.5	
Modulator Hose Off	148.5	76.5	76.5	76.5	

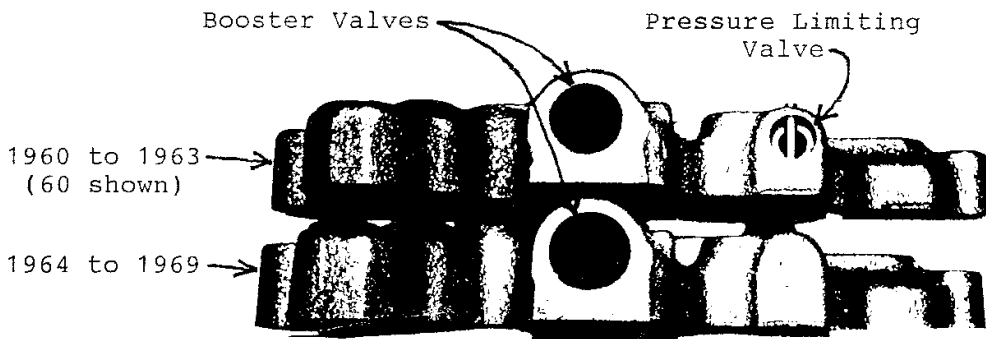
**Illustration #1
Front Pump
Pressure
Numbers**

Condition & Range	Late 1964 - 1969 Front Pump Test Port Pressure Numbers (Averaged Out)				
	R	N	D	L	
At Idle	113	58	58	99.5	
Modulator Hose Off	192	99.5	99.5	99.5	

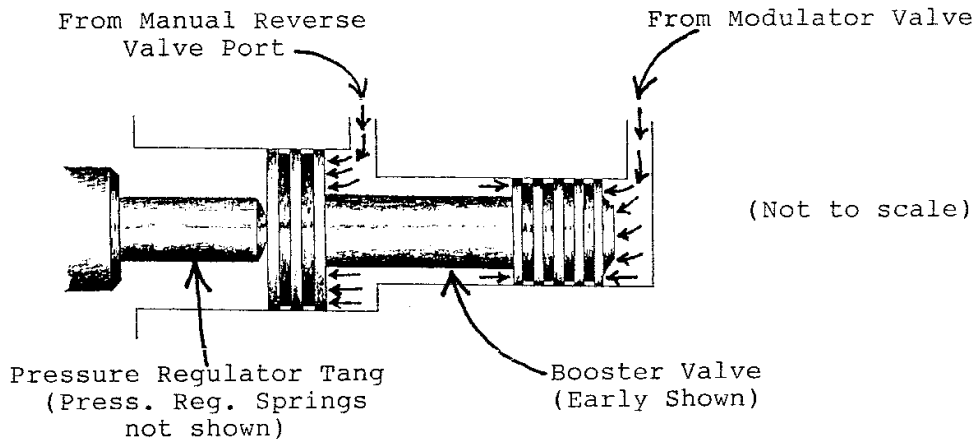
**Illustration #2
Pressure
Regulator
Valve**



**Illustration
#3 Large
Booster Valve**



**Illustration
#4
Booster
Valves
& Pressure
Limiting
Valve**



**Illustration
#5
Booster
Valve
(early
model
shown)**

late. As long as you stay in manual Low (L) these pressures will stay at this level. If you now shift to (N or D) the pressure will drop back to normal.

Now for the weird one! Reverse! When you shift to reverse the P.G.s pressures go into orbit. This extremely high pressure is required for the following reason. In order for the car to back up, the reverse clutch must stop and hold the ring gear of the planetary system. The reverse clutch has the hardest job of all, as the ring gear is just about as large as it is. As a comparison, the low bands job is child's play. The low bands job is to control a small sun gear of the planetary system which is only 1 5/8" in diameter, but has a band and drum 5 7/8" in diameter to do the job with. That amounts to a mechanical advantage of over 3 1/2 to one. The mechanical advantage of the reverse clutch is a tad over 1 to 1. (should be called mechanical disadvantage)

In other words, the reverse clutch needs every bit of help it can get. This is where the large spool of the booster valve comes into play.

When you shift into reverse a port is opened at the manual reverse valve and oil pressure is directed to the large spool of the booster valve as shown below. See Illustration # 5, Booster Valve (early shown).

This oil pressure starts to push the booster against the tang of the pressure regulator assisting its spring which boosts the oil pressure of the front pump to 89.5 PSI in the early, and a whopping 113 PSI in the lates. More than enough for the reverse clutch to do its job with any kind of engine. However, your Corvair is loaded down with a ton of swap meet parts and you're trying to back up a real steep

driveway. At engine idle you're rolling forward, so you give it gas till your gas pedal is all the way to full throttle.

Even at 113 PSI, you're asking the reverse clutch to do the next to impossible. It is at this point (low vacuum) that the modulator valve comes to the rescue and sends oil pressure to the small spool of the booster valve to give the large spool a much needed helping hand. This help results in an increase to 148.5 PSI for the early P.G.s and 192 PSI for the lates.

This double whammy resulting in 192 PSI is more than enough oil pressure for the reverse clutch to successfully hold the ring gear of the planetary system without slipping. Not bad for a little P.G. made for a little 80 H.P. economy car hooked up to the bigger 110, or 140 H.P. engines.

Higher oil pressures lead to slight problem.

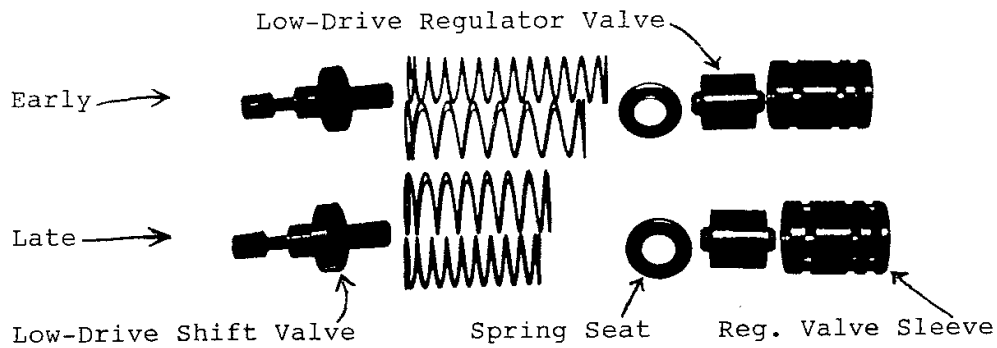
Up until now we have been talking about how this higher oil pressure has improved the holding power of the Low band and the Drive and Reverse clutches. There is another aspect of this higher oil pressures which requires some more parts to solve some new problems which now have cropped up. This is in regards to the "UP and DOWN" Shifting.

This is going to be a little hard to explain as it deals with the following two groups of components. These two groups stage a sort of "Tug of War" to see which gear the P.G. will shift to. One group wants to upshift to Drive and the other group wants to downshift to Low. The "Tug of War" is won by the group which can create a higher oil pressure than the other.

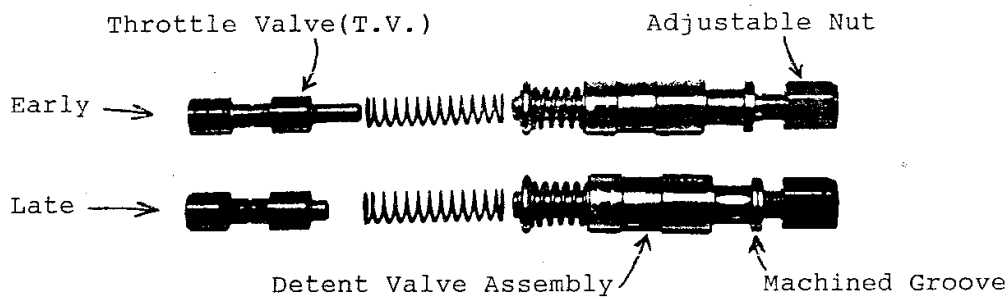
The first group; "The keep it in Low" Gang: The front pump, The throttle valve, The detent valve. The second group; "The shift it to Drive" Gang: The rear pump, The governor, The governor valve. And where does this "Tug of War" take place? At the Shift Valve of course. Well something finally sounds logical.

The shift valve assembly does everything but wash the car. It only has two (2) moving parts but it controls ten (10) oil ports which do all manner of things. I'm not going to even attempt to describe what these oil ports do or how they are opened and closed. That would be a book in itself. In a nutshell, here's a short list of jobs the shift valve assembly does; It has to control all the incoming oil pressures from the two "Groups" and decide which way to shift. When it's time to shift, it has to send oil pressure to, or exhaust oil pressure from, and/or both, in the right order to the low band and the Drive clutch and time it so neither one of them lets loose before the other takes over. And conversely, times it so they won't start to hold before the other lets loose. And at any time during or after the shift, have a port open to do a downshift if you jam your foot to the floor, or shift back if you take your foot off the throttle. At a moderate slow speed, it will downshift if you just apply the throttle part way down. It does all that and more, with only two (2) moving parts in opening and closing these ten (10) oil ports. Amazing!!

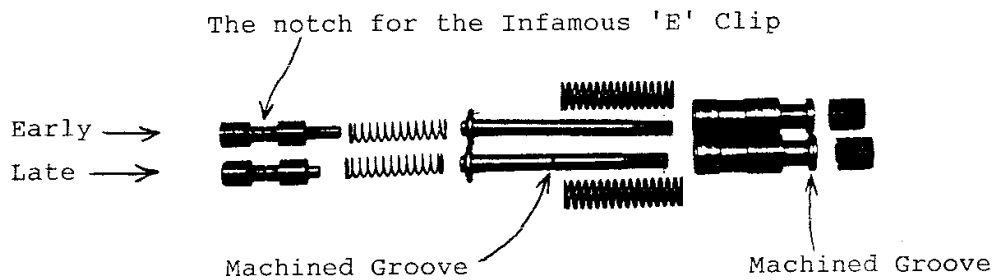
Now here's one of many problems which the new late higher pressures causes. This higher pressure is produced by the Front Pump. In other words, the "Keep it in Low" gang has a built in advantage. The Rear Pump (a member of the "Shift it to Drive" gang) only gets it's pressure from how fast the rear wheels



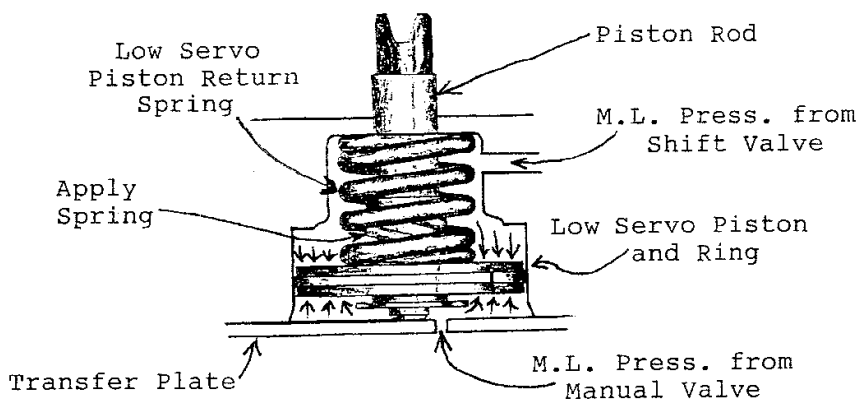
**Illustration
#6
Shift
Valves**



**Illustration
#7
Throttle
Valve and
Detent
Valve**



**Illustration
#8
Detent
Valve**



**Illustration
#9
Low
Servo
Piston**

turn, is stuck with the same old pressure as it did in the early P.G.s. (Remember, the Gang with the highest pressure gets to shift the gears)

As a result of this, we have to go like "sixty" now to get it to shift to Drive. How do we get the P.G. to shift at a normal speed? We can't take away the new Front Pumps pressure (Slipping band and clutches) nor can we increase the Rear Pumps pressure (no room to make it bigger) maybe install eleven inch rims and tires? (no, I think that would cause the engine to turn faster, which would turn the Front Pump faster, which would-oh never mind!)

The only thing left, is to make some kind of change to the Shift Valve, which is exactly what the P.G. folks did. This tended to solve PART of the problem. The picture below shows the change with the new parts required. See **Illustration # 6, Shift Valve.**

The longer pair of springs of the early shift valve are replaced by a shorter pair of springs, which take away PART of the advantage of the "Keep it in Low" gang. This however, is not enough to get the shift speed down within reason. (All the other parts of the Shift Valve remain the same for both early and late.)

The Throttle Valve, another member of the "Keep it in Low" gang, will now have it's wings clipped a little, to try to take away some more of that Gangs advantage in controlling the shift. A word about what the Throttle Valve (T.V.) does. As you know from driving your Corvair, the further down you push your throttle pedal, the longer it stays in Low. This is because the throttle pedal mechanical linkage is part of the P.G. and inside the P.G. the "Transmission Throttle Valve Inner Lever"

pushes against an adjustable nut on the end of the shaft of the "Detent Valve Assembly" which pushes against a spring, which pushes against the "Throttle Valve", which increases the oil pressure to the "Shift Valve", which keeps it in Low longer. (Honest, that's what happens)

What we want to do is decrease this oil pressure going to the Shift Valve. There is an adjustable nut on the end of the Detent Valve Assembly Shaft, which by turning clockwise will lower this T.V. oil pressure. It does this by moving away from the T.V. Inner Lever as it is screwed clockwise. That is what the P.G. folks did on the 1964 and later P.G.s. Each clockwise turn of the adjustable nut, will lower the T.V. oil pressure three (3) P.S.I. The picture below shows the early and late Throttle Valves and Detent valve assemblies in their relative positions to each other. See **Illustration # 7, Throttle Valve and Detent Valve.**

As you can see, the adjustable nut has been moved closer to the detent valve assembly on the late set up. Almost an eighth of an inch (In most cases about .100"). If you look up the T.V. recommended pressures of the early and the late in your shop manuals, you will see the early pressure (averaged out) is 53 P.S.I., in the 1964 and later, it has been lowered to 46P.S.I. This drop of 7 P.S.I. is a result of the new position of the adjustable nut. This pressure drop and the change of springs in the shift valve, is enough to change the shift point to Drive to a more normal speed. Not as low as the early, but it can be lived with. Possibly, they wanted a higher shift speed because the later engines don't develop their torque until higher RPMs. The long tang on some of the early T.V.s served no mechanical purpose other than

a spring guide and were shortened.

In the picture of the Detent Valve Assembly there is noted a machined groove around the detent valve assembly. This usually denotes a change in a part. Upon disassembling the two detent valve assemblies, I discovered there indeed was a change. The detent shaft of the late had been shortened by about .100", and the shaft had a machined groove around it, to denote a new part. Below is a picture of the two disassembled detent valves, showing the changed part of the late valve. See **Illustration # 8, Detent Valves.**

The reason the shaft was shortened was because if the early long shaft was used for the new adjustment, there would be a possibility that the end of the shaft might protrude past the end of the adjustable nut, and the required pressure drop would not be able to be obtained due to this obstruction.

Now that the pressure of the "Keep it in Low" gang has been dropped to give the "Shift it to Drive" gang a fighting chance, lets see how the "Drive" gang manages to get their mission accomplished. As was mentioned earlier, the rear pump gets its motion from the rear wheels. Actually it's the pinion shaft of the differential which extends into the P.G. and turns the hub of the planetary gear carrier. Two pins on this hub turn the rear oil pump. Also mounted on the pinion shaft is a worm gear which turns the governor. As your Corvair starts to move forward, the rear pump starts to pump slowly and the governor starts to turn slowly. As the governor turns, weights inside start to swing out and move the governor valve. The rear pump is less than half as big as the front pump, but it has a secret; its pres-

sure isn't regulated. The front pumps is, and can only get to 99.5 PSI in Low at full throttle. By now we're moving right along, the now open governor valve routes the rear pump oil to the shift valve, and the "Shift it to Drive" gang will overcome.

At this time we have reached the point where we are about to shift to Drive as we merrily roll down the road; and the new late high pressure does it to us again. Another change or two or three is required before we can properly get shifted to Drive. It is the Low Servo that is now causing trouble, it won't release the Low band quick enough. This will cause a great deal of excess wear on both the low band and the drive clutch if this is allowed to continue.

The shift valve is not at fault here. It is sending the oil to the proper places at the proper time. It is the way the low servo is released which caused the problem.

Let's start from the front of the house again. We shift to Drive and we feel the low band grab its drum, so far so good. Main line oil pressure from the manual shift valve is routed through a drilled hole in a large flat piece of steel called the Transfer Plate between the main Valve Body and the P.G. housing. This plate acts as the bottom of the cylinder which contains the low servo piston. The oil (under the new higher pressure, remember) goes up into the cylinder through the hole in the plate, and moves the piston up and the piston rod which protrudes out of the top of the cylinder compresses the low band. The movement of the piston also compresses the low servo return spring and it is this spring, all alone, which when called upon will release the low band. Here's the way it works. Main line oil

pressure is pushing up on the piston, the piston return spring is compressed. When the car is going fast enough the shift valve shifts to drive and routes main line oil pressure into the top of the cylinder and pushes down on the top of the piston. Now we have the same oil pressure on both sides of the piston and they cancel each other out. Now our trusty return spring pushes the piston down, and pushes the oil below the piston out that hole in the Transfer Plate just as fast as it can, but now it's not fast enough. It was when we had the old pressure. How come not now? Well sir, we have a higher oil pressure in the lates and that pressure will apply the drive clutch quicker, the low piston has the same old spring and the same old small hole, and now won't release quick enough. Below is a sketch of the piston and related parts. See **Illustration # 9, Low Servo Piston.**

The sketch shows the piston with Main Line oil pressure on both sides of the piston, and the Piston Return Spring having just pushed the piston to the bottom of its travel which fully releases the low band. The oil that was below the piston had to be pushed out the hole in the transfer plate which was metered for the early lower oil pressure. As you can guess, the answer to the slow release is a stronger spring or larger hole, or both. The P.G. folks came up with both. Next is a picture of the early and new late piston return springs. See **Illustration # 10, Piston Return Springs.**

The picture is not all that clear but at the far end of the springs you can see the start of the coils straight up at the top of the picture. There is a white mark at the near end of the springs showing the end of the coils. The early has just a hair over 4 1/2 coils and the late just a hair over 5

coils.

To give that stronger spring some more help, the hole in the transfer plate was enlarged from .108" on the early to .184" for the late. Below are the pictures of both transfer plates. See **Illustration # 11, Transfer Plates.**

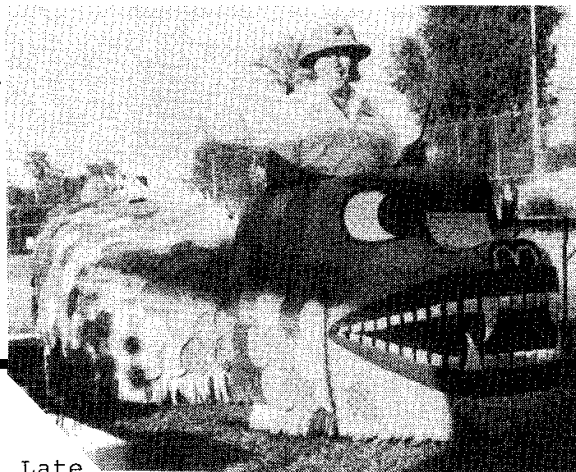
The oil hole for the low servo piston lines up with the arrows. The late is visibly larger. If you figure the AREA of the holes, the early hole has been enlarged 192%. To help you determine if you have a late transfer plate when the P.G. valve body is assembled, a square notch has been machined in the edge. (See top of Late picture) I could find no other hole or passageway that was different. The large hole, to the right and slightly below the Servo Piston holes, goes to a plugged manufacturing test port and is not used for shifting.

The Low Servo Piston assembly has another smaller spring inside the Return Spring called the Apply Spring. On the Late, I could see machined grooves through the coils, and of course you know what I proceeded to do. I disassembled both Piston assemblies and only the Late had the grooves. Upon inspecting the parts, the area on the rod that the piston can move on is about .020" longer on the late rod. My P&A 30 parts book lists this piston rod as 64-69 only. What this extra .020" movement of the late piston on the rod is for, I haven't got a clue. All the other parts for early or late, are the same. Below is a picture of the two rods and related parts. See **Illustration # 12, Apply Spring inside the Return Spring.**

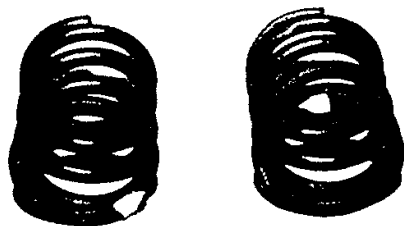
Only the late has the machined grooves. I suppose the new rod has something to do with the shift timing.

The last part that was added in

Bob Ballew lives in the high desert of California, 50 miles east of Palm Springs. He has a shop there adjoining his house. He works on everything mechanical. The photo at left is one of his more unique creations. Its a Corvair powered dragon. The 80 H.P. engine is in the back (of course) with a Powerglide transmission. He rides up front with the custom make controls for steering, starting and stopping the unit. He designed and built the entire thing in his shop. Used in parades and other unique events. He has shown it at the G.W.F.B.T.&S.M. in Palm Springs several times. He has a sharp probing mind and won't let go until he really understands something. The article on the Powerglides is an example of that ability. He gave us information that is not available in a book. Thank-you Bob. W.C.B.



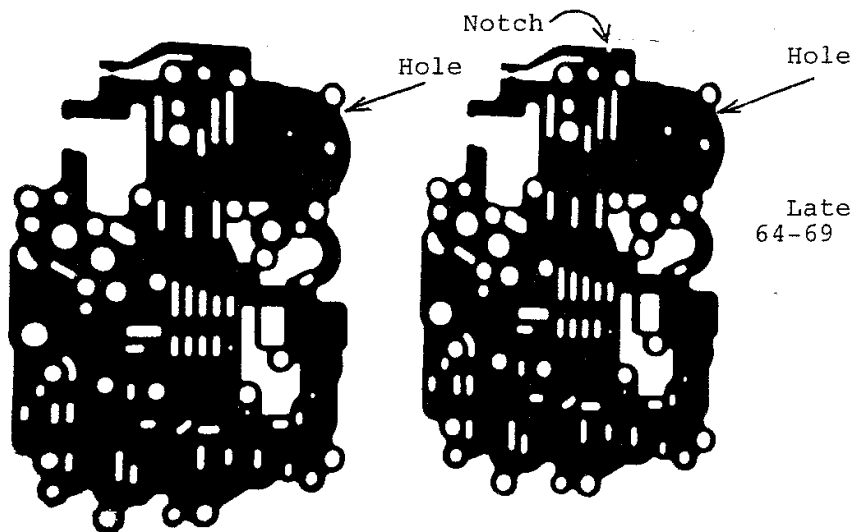
Early
60-63



Late
64-69

Illustration #10
Piston Return Springs

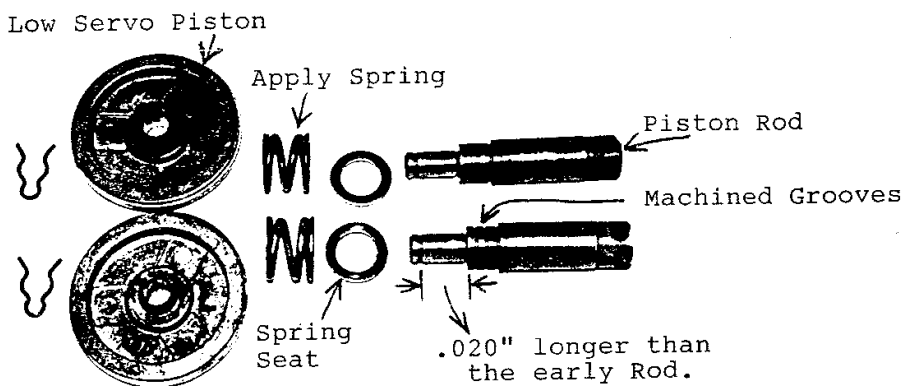
Early
60-63



Late
64-69

Illustration #11
Transfer Plates.

Early
60-63



Late
64-69

Illustration #12
Apply Spring
inside the
Return Spring

response to the higher pressures which I am going to talk about is the Downshift Timing Valve. Remember the larger hole in the transfer plate to allow the return spring to push out the oil quicker? Well, the oil now can apply the low band quicker which gives a harsh down shift at stop signs. To remedy this, a Downshift Timing Valve was installed to slow down the incoming oil. This Valve is located in the P.G. housing next to the Low Servo Piston. It's sort of a limited one way valve. Fast one way, slow the other. The above picture is not too clear. The valve is cylindrical, 11/16" round and about 7/8" long, containing a steel ball and spring in a cage. It was first mentioned on page 6E-3, 1964 Shop Manual.

During the writing of this article I had the good fortune to borrow an early Parts Catalog from Jim Craig which contained most of the following parts numbers. The catalog is titled "PARTS CATALOGUE", No. 691R, Revised Edition, Feb. 1970, General Motors of Canada Limited. (The deposit of your right arm required) (If left handed; the left)

The first late new pressure Part I mentioned in this article was the small spring and seat which I found installed on a Press. Regulator. The only place I could find something which could be this mystery spring was in the 1974 P&A 30 Catalog on page 4-8, Group 4.216, 63-66? #3814086? Spring, Press. Reg.? The year doesn't check out, but if this isn't it there's no other way to explain the 6 PSI increase of the front pumps pressure.

Valve Hydraulic Modulator (Booster Valve) 4.208 #6256322 1960-63 All PG; #3847804 1964-69 All PG. **Body, Transmission Vacuum Modulator (small body)** 4.205 #6257528 1960 Only PG; #6257529

1961-63 All PG; #3847803 1964-69 All PG. **Spring Unit, Transmission Low-Drive Valve** 4.216 #3857756 1960-63 All(Exc 1960-900) PG; #3857754 1964-69 ALL PG. **Detent Valve Assy.w/ Shorter Shaft**—No can find, but there's a darned sure new part here. I've got one of each!!! **Spring, Low Servo Piston Return** 4.228 #6256266 1960-63 All PG 4 1/2 Coils; #3847807 1964-69 All PG. **Plate, Transmission Transfer** 4.215 #6257530 1960-63 All PG. #3847799 1964-69 All PG. **Rod, Low Servo Piston** 4.228 1 #6256262 1960-63 All PG. #3847806 1964-69 All PG. **Valve, Transmission Downshift Timing** 4.216 #3830128 1960-69 All PG ??? (Note, if this was used in the earlier the Part Number would have most likely started with a #625---) In my 1974 P&A 30 Parts Catalog on page 48 it's listed as; 64-69 Corvair w/PG #3830128 Valve, Downshift Timing.

One last Part I'll mention before I close this thing up. In regards to the Main Valve Body (large), there are three different ones. They all bolt in place, but have some different insides, different pressures, different shifting as follows: **Body, Assy., Transmission Main Valve** 4.126 #6257527 1960-63 All PG. #3847798 1964-69 All (exc 140 HP & 68-69 Models). #3870368 1965-66 140 HP & 68-69 Models. (note, if you don't mind "Engine Flare", use any old parts!)

This is it! This is positively the last page! The purpose of this Epic was to say to the members that not all P.G.s were equal when they were manufactured, or are they equal when your club "Expert" repairs them from his "Idle equipment pile".

You can't blame the repairman when there isn't a repair manual for a P.G. later than 1961. (or a complete parts book either) Oh

yes they added a couple of obvious parts in the later Shop Manuals, but every picture in all of the later Shop Manuals are reprints of the 1961 exploded original pictures all the way up to 1969!

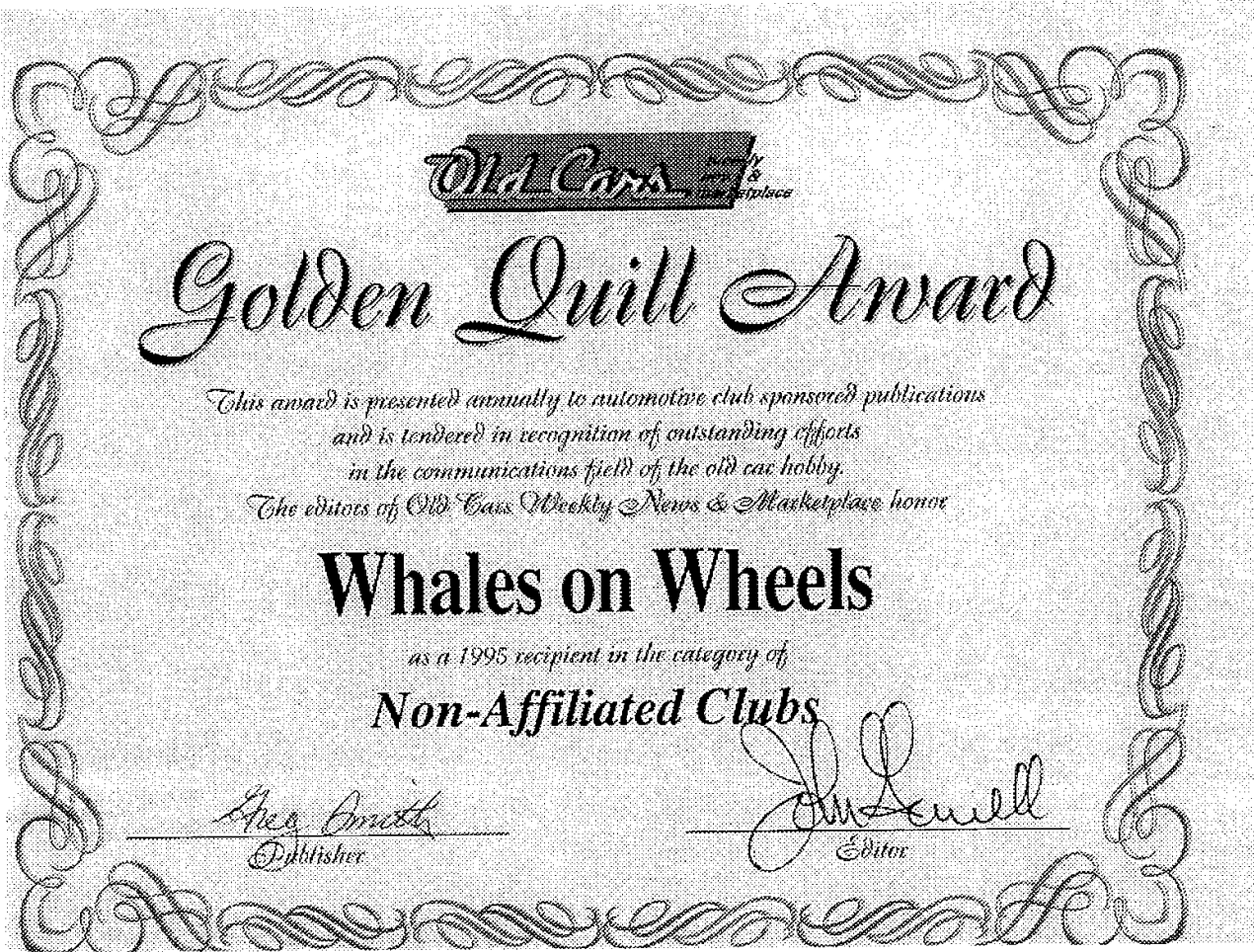
All of a sudden, out of a clear blue sky they came out in the 1964 Manual with a complete new set of higher oil pressures! No explanation, no reasons, no hint of many new parts, no nothing. This got to me, and is the reason I started digging into the P.G.

A little bit of trivia; Did you know that the little car that shared our P.G. transmission out sold our Corvair in 1964? Yep, it was the Pontiac Tempest!!

Now the last thing I get to say before the blindfold is tied on and I'm stood against the wall is as follows; every last number in this Epic is printed in a book somewhere, or it has been measured by my trusty micrometer, or has been calculated by my state of the art genuine Chinese Abacus, but the conclusions I reached as to what the new parts do or why they do it or how they do it, are entirely my own! Please feel free to reach your own conclusions, and please let me know where I've gone wrong.

Whales in the News

Ultra Van's have been in the news lately. The April issue of Motor Home Life had a story about older motorhomes. The Dodge Travco, Ultra Van, GMC, Revcon, and FMC, but not the Clark Cortez. I was called by one of the staff writers last year and gave him some information. He also contacted Bob Reinhardt in Las Vegas about his Ultra Van, took some photos and interviewed him. He didn't want in depth information so for the article is short, but the photo of Reinhardt's Van a good color



print. It might be a good idea to pick up a copy of this issue. Special Interest Auto (SIA #151) also had a story by James Hinckley in their February issue. This was quite a comprehensive coverage, with some nice photos. James made a few errors, so I wrote a letter to the Editor to help keep the record straight. Then Old Cars Weekly in the February 8, 1996 (Vol. 25 No. 6) had a nice mention of Group Ultra Van and our newsletter Whales On Wheels. Gerald Perschbacher in his column "Club Clips" liked our coverage of the Great Western Fan Belt Toss & Swap Meet (G.W.F.B.T.&S.M.) Mentioning that small clubs like ours help

**Whales on Wheels
wins Golden Quill
Award**

keep the market for new ideas and parts for older vehicles. The May issue of the CORSA Communiqué had a report of one of our Ultra #101 Restoration Rallies, along with photos. Jim Craig wrote the article and took the photos. Be sure to get a copy of that one as well.

The best news was the Whales on Wheels was the winner of one of the 1995 Golden Quill awards. This award is given by Old Cars Magazine to encourage

quality of publications in the old car hobby. The CORSA Communiqué also won one in the National Club Publications in color category. The only other CORSA chapter to win an award was the Airhorne published by the Chicagoland Corvair Enthusiasts. So we do feel kind of special. Their criteria was neatness, good use of visuals, journalistic and editorial integrity, balance of contents (including news about club members, events, classified, news, and technical tips), accuracy of reporting, and creativity and originality. So thank-you to Gerald Perschbacher and Old Cars Magazine for singling us out.

Continued from page 3

This concludes my summary of omissions and problems with your video. I feel you could make some corrections and have an excellent set of instructions to show to one and all about our marvelous Powerglide.

I am taking the liberty of sending a copy of this critique to Cal of Clark Corvair since you show an add for him at the end of your video. I would love to hear from you. Let's keep our Vairs going!!

Arthur L. Eller 3873 Shannon Rd. Los Angeles, CA 90027 Feb. 13,1995

Dear Art,

Thank you for your recent letter on "our" club's Powerglide video; I hope to address many of the issues you brought up. I have read many (all) of your articles in the Communiqué over the years, and between you, Bob Ballew, and myself, who know anything about Powerglides, you probably would have been the chosen one if a committee were to select who should do a video on PG's. Perhaps we could do the sequel with you, Bob, & myself arguing over how's the best way to assemble a Powerglide!

First, some boilerplate. My background's in electronics and automotive. I worked for many years for Bendix Automotive Electronics in R&D. I also "operate" Perryman Garage, a restoration shop for vintage GM vehicles and rebuilding of THM 125c, & 440 transaxles to help finance my car habit. As for Corvairs', I've been into them since 1974 and have (actually down to) 5 late pieces. There are approx. 24 cars in the collection, all GM. My transmission experi-

ence goes, again, with GM; from the Chevy Turboglide and cast iron PG's, Corvair PG's, & the previously mentioned 125c & 440 transaxles.

You appear to have some video background, so you have a handle on how much work goes into producing a finished product. So many things didn't go according to plan! I had to script the thing, I had to tear down, clean, reassemble the patient and time out the procedure. I tried to keep it within 90 (the max attention span most Americans are capable of); but it ran over 100 in finished form. It couldn't run over 120 in order to fit on the tape. Forget extended play. This timing and scripting took forever! BTW, the failures shown on the tape were actually found in this transmission; no rigging. The opening scene went to eight takes before we got a usable one, and that was stilted! It's amazing how stiff people get when you stick 'em in front of a camera. Shooting took all day 8 hours, and three hours of actual 3/4" footage. This frustration is evident in my closing comments "This completes the assembly of the Corvair Powerglide transmission" at the end. Tape was then time coded for editing and a window dub made for previewing so an edit list could be made up; all time consuming. The 30 second intro. took 4 hours to assemble & edit mainly because of an idiot editor (who's lucky to be alive at this point!)

Now, a few words on your comments. First of all, as you are aware, there's more than one way to skin a cat, so I'll address only a few items here. What I'd like to do is compile a few items for an addendum to be inserted in future tape sales; things I know I forgot and some of your comments. I'll compile this later and send it to you for your bless-

ing.

These are not in any particular order: 1. As for cleaning, I'm getting old and cleaning that casting a pain. I'd rather pay someone else, it's worth it. 2. Yes, straightening the pan should have been covered. 3. Vacuum modulator simple check should have been included. It got late in the taping when it rears its head and it simply got overlooked. 4. Removal of the front pump cover with a pry is OK, but a lot of east coast tranny's are rusted & oxidized to make removal this way kinda iffy. I've done it, but prefer the slide hammer. 5. You're right, there's no need to remove the front pump iron seal rings or check ball; good point. 6. Front & rear check valves are reversed only in disassembly. They are correct on the reassemble shot. 7. The gasket sets I've been using have the lip type seals for the reverse piston. These are far superior to the square cut ones. I don't believe the case is warped. I think its simply the square seals take a set and/or shrink, failing to seal. An O-ring would be better than a square cut. 8. The late trans. with primer valve was mentioned in the insert.

In summary, I could have (should have) mentioned some of the cause and effects of various PG problems, but that's hindsight, isn't it? I just hope it helps some to not be afraid to do their own transmission work. Now, perhaps you and Bob could do Tempest Powerglides. I understand he has a nice photogenic example to work with. Count me out of that one! :).

Sincerely,

Harry Yarnell, Box 12,
Perryman, MD, 21130
(harry@clc.ab.umd.edu)

Classified

1967 Ultra Van #278, 110 H.P. Corvair (889 Cam) 3,000 miles, powerglide. New Interior, Fridge, Brakes, packed bearings. Rear suspension and shocks modified. Swamp Cooler, 3:89 gears, new tires. Howard E. Baso, 1536 W. Roundup St., Apache Junction, AZ, 85220. Mon - Thur 8 - 5 pm, (602) 288-8166. \$7,000.

1966 Ultra Van #318, 110 H.P. Corvair, powerglide. Roof air, mostly original condition, Bill Burlison, Roanoke, VA, (540) 427-4151. \$3,200.

1968 Ultra Van #380, 110 H.P. Corvair, powerglide. New exterior paint, curtains, carpet and upholstery. Ken Woiak, 4551 W. Abbott Ave., Milwaukee, WI 53220. (414) 421-3972. \$7,000/offer.

1968 Ultra Van #383, 110 H.P. Corvair 110 w/ auto. New tires, great rubber, upholstery & drapes. Cherry wood interior, 2 way refrig., 5 gal hot water heater & Coleman heater. Run v/good. Trans has a slight whine. Paint is solid but oxidized. Good, new solid trailer hitch. \$3995. Video & photos avail. \$5 refundable. Jim Craig, 7011 Sunny Vista Rd., Joshua Tree, CA. (619) 366-9104

1968 Ultra Van #396, 110 H.P. Corvair, powerglide. New paint and interior. Good Mechanical condition. Ready to travel. Asking \$8,500. Warren Romberger, 904 NW 59 St., OKC, OK 73118. (405) 842-2879.

1969 Ultra Van #412, 110 H.P., Corvair, Powerglide. Unique 24 foot model, only one make in this years production. New engine, Transmission, Onan 2.8 Generator, 6cu. foot refrigerator, roof air. New interior, upholstery, tires, awnings all around. Many spares including NEW windshields. Allen Driggers, (803) 245-2154. \$14,000 BO or most interesting trade.

1969 Ultra Van #413, 110 H.P. Corvair, Powerglide, 3:89 gears. 2000 mi. on complete engine overhaul. 2500 MI on new radial tires. NEW carpet, seat rubber & upholstery, drapes, bed cushions, Dometic RM361, 3 way refrig. Cherrywood interior panels. Cat. 1500 Catalytic heater. This van is ready to travel without any repairs etc. Paint is 3 years old w/paint stripes put on last year. Evap. cooler on roof. Comes with new rebuilt auto trans. & dozens of other parts. I have recently driven this unit 600 miles and it is like new. Windshields & all other glass

is tinted & in extel. cond. PRICE: \$8995. Video & photos avail. \$5 refundable. Jim Craig, 7011 Sunny Vista Rd., Joshua Tree, CA. (619) 366-9104

1969 Ultra Van #454, 110 H.P. Corvair, Powerglide. Second owner, originally purchased by Dr. Fearing. 2000 miles on complete overhaul with all new parts, Rebuilt transmission. New roof air. New Michelin tires. Photos, Glann Lee, 137 Brooke Elyse Lane, Max Meadows, VA 24260. (703) 637-6839. \$8,000.

1969 Ultra Van #492, 110 H.P. Corvair, powerglide. Lots of extras. Clean in and out. \$10.00 refundable video. Hal Honer, 11126 Hollywood Ave., Yourntown AZ 85363 (602) 977-1815 or 8347 Zinnia Ct., Aravada CO 80005. (303) 422-4367. (Located at Christy Bardens in Boulder CO). \$8,975.

1970 Ultra Van #513. Chevy 350 V-8, 3 speed auto trans, 4:11 axle. This is the Ryerson's Ultra Van, which they purchased new. Len, who wrote the RYERSON ULTRA VAN MANUAL, accomplished many modifications in the electrical, mechanical, and structural areas including completely redone suspension using air bags; **it handles**. New (3 years old) three tone paint job, tires, carpet, seat upholstery, curtains & walnut interior paneling. Gen. and roof air. Ready to travel. Details, photos, price \$15,000 firm. Len died and his wife is selling the Ultra Van. Edy Ryerson, 18618 Rayen Street, Northridge, CA 91324. (818) 349-5058. Summer and Fall in Canada (604) 885-2875. *(This is one of the best overall units on the market, Ed.)*

1970 Ultra Van #538, New Chevy 350 V-8. New batteries, shocks, water pumps, starter, alternation, completely refurbished interior. Ready to travel, Dori & Joe DeCamillis, (205) 324-3995. \$7,000

1970 Ultra Van # 549. Chevy 307 V-8. 157,000 miles. Roof Air, small body damage, new paint. Jack E. Davis, 100 No. Cheyenne St., Silver City NM 88061. (505) 536-5955. \$5,700.

1970 Ultra Van #550. New Chevy 307 V-8. White ash interior, new suspension, tires, roof air, three way refrigerator, color TV and battery. SASE for color photos. Ready to go. Joseph P. Alvarez, 6628 Puerta de Lomas, Fallbrook, CA 92028. Phone & FAX (619) 945-4451. \$7,990.

1971 Tiara #T2020. All standard equipment plus air and two roof pods. 18 foot awning plus add-a-room with outdoor car-

pet. Best offer. Call Jack Bates, East Lansing, Michigan. Phone: Office (517) 351-2990, Home, (517) 332-6631.

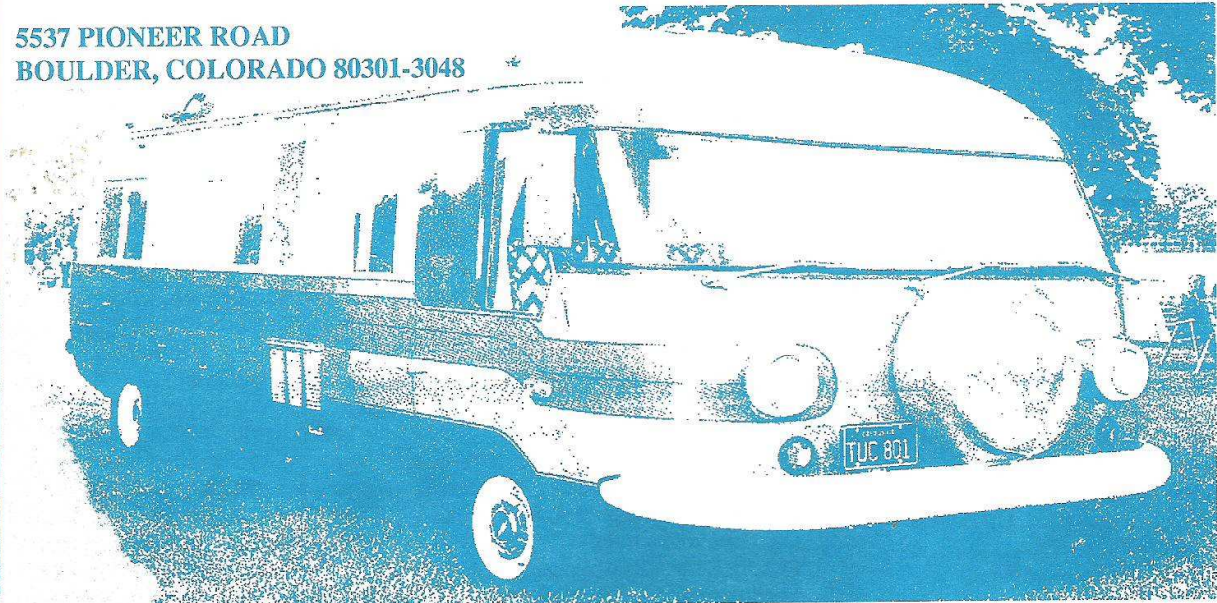
For Sale: New Ultra Van parts; Ultra Van auto shift cables, \$85 ea. (for 22' Ultras); Plastic "Ultra Coach" name plate, 1 pr., \$20; Ball joints, Napa 260 1071, 3 hole, \$40 ea.; Windshields, full size, tinted, \$495 ea., pickup here. delivered to next western rally, \$550 ea., delivered to your door, anywhere, \$685 ea.; Chrome headlight bezels, \$85 pr., exchange, core \$25; Rubber trim for bezels, \$12 pr; Brake shoes, front or rear, 3845292, \$20 set. (2 wheels); Latch, main door and rear hatch, with keys, \$40 ea.; Latch, handle return springs, 1 pr., \$2.; Nameplates, "Ultra Van", Hutchinson, \$20 ea., Without town name \$12 ea.; Clear backup lens, \$5 ea.; Yellow front lens, \$5 ea.; Steering gear box with shaft, (Specially priced, this ad only), \$75 ea. \$25 ea. core charge on shipping box; Shocks, front, Monroe 9027, \$15 ea.; Toilet, "Aqua Magic", by Thetford, "Galaxy 40", Lt. Avacado, \$50.; Wheel cyl., 5462963 & 4562964, \$35 ea.; Fronts. Foam bumpers, \$24.95 ea., \$49.95 pr. Bumper covers, Vinyl, \$12.95 ea. (Spray to match); Automatic oil pan, bolt reinforcement kit, \$12.95; New "Helander", steel bellcrank set, 2 pieces, w/all bearings \$200. Also have new 4 1/2" shoulder bolts. \$6 ea.; Front brake hoses, 34' long, 1/4" dia. stainless steel wire covering. Designed for offroad use only; "A rare find". Front cowl vents, 11 5/8" x 6 15/16", \$35 ea.; New 1961-65 Corvair FC. rear outer bearings, 2 ea., AD11154z17 (7451321), in orig. boxes. \$200 ea. New Ultra Van parts, hundreds of items. Call or write for a updated list. Jim Craig, 7011 Sunny Vista Rd, Joshua Tree, CA. (619) 366-9104.

Bumpers Dick Granger is willing to reproduce his fiberglass bumpers for \$100 a pair plus shipping, payment with order. Dick Granger, 2795 Tropical Trail, Merritt Island, FL 32952. (407) 453-4094.

Commemorative wrist watch of "Home To Hutchinson", made special for the "30 anniversary". They are gold plated w/black band. Has built in timer & alarm. \$10. will go to the Ultra #101 fund. Price; \$29.50 PPD. These have a three colors picture of #101 in the center the words "Home to Hutchinson" & "30 anniversary" on the dial face. It has a quality leather band and comes in a nice case. Lifetime warranty. 8 ea. already sold. Check with Helm Kay & Harvey. Real quality. Jim Craig, 7011 Sunny Vista Rd, Joshua Tree, CA (619) 366-9104

GROUP ULTRA VAN

5537 PIONEER ROAD
BOULDER, COLORADO 80301-3048



FIRST CLASS MAIL

Rallies

June 19 - 22, 1996, CORSA International Convention, Albuquerque, New Mexico. Host hotels: Albuquerque Hilton (\$75/night), (505) 884-2500; Fairfield Inn by Marriott (\$57/night), (505) 889-4000. **Group Ultra Van** meeting on Wednesday evening June 19th at 7:30 PM.

July 31 - August 3, 1996, Corvair Heartbeat Regional Convention in Columbus, Ohio. Meeting room has been set aside for a Group Ultra Van meeting. Columbus Marriott North (800) 228-3429. Contact Craig Scott, 6244 Duffy Rd., Delaware, OH 43015. (614) 881-5283.

August 11, 1996, Seventh Annual Front Range Corvair BBQ and Swap Meet, Boulder Colorado. The biggest and best swap meet in Colorado in your editors back yard. 11am, bring pot luck dish to shair, and parts you want to sell. All Ultra Vans invited to spend several days and see some of the Front Range. Christy Barden 5537, Pioneer Rd, Boulder CO 80301. Contact Bob Attwood at (303) 699-9984 for more information.

September 24 - 29, 1996, UVMCC National Rally, Hutchinson Kansas. Kansas State Fairgrounds in Hutchinson. Chairman is Norm Helmky, Route #1 Carrying Place ON KOK 1LO, Canada. (613) 394-3054, Florida (813) 422-4535. Margie Fitzgerald (registration) 1079 Bay Shore Drive, Englewood, FL 34223. (813) 474-6468.
November 1 - 3, Great Western Fan Belt Toss & Swap Meet, Palm Springs, California. Held at Angels field in Palm Springs. Ramada Resorts Hotel is the host at (800) 245-6904. Host Clubs are Vintage Corsa and South Coast Corsa.

WHALES ON WHEELS IS A QUARTERLY PUBLICATION OF GROUP ULTRA VAN, A CORSA CHAPTER. IT IS DEDICATED TO THE PRESERVATION AND USE OF THE ULTRA VAN. This 22 foot unique motor home was designed by David Peterson and built in Kansas until 1970. About 365 units were built in all. Dues are \$6.00 annually, please remit to the Secretary-Treasurer. Submit all technical information to the Editor.

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