

G60 Rebuild Information

Intro

July 1, 2000

This is a series of articles on how to remove, and rebuild your own VW G60 supercharger. Part of the problem is finding the right parts. You can buy these parts from some tuners (with a mark up, with all part numbers filed off, of course) or buy them directly from a bearing manufacturer.

The following lists a set of part numbers that the author (Mike C and Brendan) of the articles believes are correct. Note however, that none of these parts have been tested nor verified. For example, some of the aftermarket replacement belts being sold are from a vacuum cleaner; the OEM seals are NOT Teflon as many claim, but a much tougher substance. This things may work for a while, but we really don't know for how long...how lucky do you feel today?

As usual, use this information at your own risk. In addition, I am not sure how I'd feel about cracking open my own G60 supercharger and drop in a couple of bearings I bought at a local bearing shop, with no guarantee to back up the 2300US\$ supercharger. So, be careful. None the less, this is good information! Also, please don't ask me to interpret why some of the data or reference numbers don't agree. I really don't know.

If you have more information about the G60 rebuild parts and process, please [email me](#).

Jan

G60 Removal

Here are some notes on how to remove the G60. I followed Andy's tips below mostly, but added a few of my own comments (as noted). There are basically two ways to go about it: Either you remove the pulley first and then you can rotate the G60 out (which is what I did), or you leave it on but then you need to remove the rear bracket (which is what Andy did). Removing the pulley first is faster because the rear bracket bolts are usually seized.

Subject:Re: [Corrado-L] [G60] Removing G60 Charger

Date: Thu, 08 Jun 2000 14:56:18 GMT

From: "ANdy" <xtnct@hotmail.com>

>Any tips, write-ups on removing the G60 supercharger?

Yeah... I did it recently, took pics of all the steps but have not written it up yet. I got it down to doing it in about 1/2 hour as I had to do this install/removal several times as there were problems with my HS rebuild.

Basically, here are the steps from memory. I may have missed a few...

REMOVING THE G60 CHARGER IN 20 STEPS

By: Andy Gajewski

1. remove the air box and the hose going to the SC
2. undo the top bolt on tensioner.
[This is where I differ. I FIRST removed the bolt that holds the SC pulley on, and then I used a sliding C-clamp to release the tension on the tensioner and removed the belt. I never removed the tensioner, but instead removed the pulley with a standard hub puller from Sears. I also skipped the next step. Jan]
3. Slide the tensioner off the bolt. Do this by getting a set of heavy work gloves, pressing down on the top of the shock with out hand and pressing down on the actual springs with the other. Then Just wiggle it off as you put your upper body weight on it.
4. You can remove the plastic cover from the alternator, or leave it on and slip the belt off by wedging it off between the cover.
5. undo the bolts to the alternator.
[I found no need to remove the alternator. May be I have smaller hands. I also skipped the next step. Jan]
6. lift the alternator off (may need to wiggle it off) and place it where the air box used to be.
7. Remove the plastic cover that sits over the fan (disconnect the fan, or your battery)
8. remove the piping from SC to IC (the one going over the fan)
9. Undo the bolts on the intake return plastic hose and wiggle the tube off. Kinda place it on top of the charger housing.
10. Use an elbow with a 13mm socket and a long extention. Bend the elbow approx 30-45 deg and insert into the silencer box. Play with it a bit till you get the socket over the bolt in there. Then, undo the bolt. I would not try to split the silencer box as the tabs and groves that hold the seal in will break (I broke mine the first time around). You can use a small flashlight as well, to shine into the silencer box to see where the bolt is. If you do it once, getting it again is quite easy. You do not need to remove the bolt all the way. You actually want to leave it screwed in the bracket and just loosed in enough to take it off the SC.
11. Remove the silencer box.
12. I removed my dip stick so it does not break, may want to also remove the plastic dipstick holder from the dipstick pipe. That extra bit of room will come in really handy. [If this is the original dipstick holder, you are GARANTEED THAT IT WILL SHATTER. Be prepared to fish those little pieces out of the dipstick tube!]
13. Loosen, but do not remove all bolts on the SC on both the air box side and outlet side.
14. Undo the 4 (yes there are 4, not 3) bolts that hold the SC bracket to the front of the engine block. BTW, pick up a new O-ring for this part!!! Little bit of oil may leak out, just put a paper towel under the brakcet by the block. [If you removed the SC pulley, you DO NOT need to remove this bracket. However, if you are having your G60 rebuild, chances are that they will "seal" the stock pulley on to it for warrantee purposes. In that case you will have to remove the bracket. BUT those bolts are garanteed to be seized in the block, and may take quite some time to remove. See note below. So, if you can slide your SC out at this point, you may save yourself some time, after undoing the bolts on the outlet side. Just for a general reference, the pulley bolt is a 17 mm Hex, M10x28 course threaded metric bolt. Some pulley slide right on, others are very tight. The best way to get a tight pulley back on is to use a larger M10x50 or so bolt with a bunch of washers to push the pulley back on. Using a hammer is a bad idea as it

loads up the bearings. If you have problems locating said bolt at 5:45 pm on Saturday, the lower A-arm to rear shock bolt is the same size though a bit long. That's when you need to get creative with a stack of washers]

15. Undo the SC bolts on the outlet side.
16. Take off the brakct. May want to cover up the hole in the block with masking or duckt tape if the engine has lots of loose dirt or it will be sitting there for a while.
17. Undo the oil supply line from the charger. [I found that waiting until the SC is loose (next step) but still suspended by friction from both brackets, I could rotate it a bit, making it a lot easier to access the oil feed and return lines. Beware that the oil lines have two copper washers each].
18. Undo the bolts on the air-box side. You may need to support the charger slightly as you are doing this side.
19. Slide the charger off towards the drivers side of the car. You may need to twist it a bit as well.
20. As you twist it up, undo the return oil line. An extra pair of hands really come handy here.

(Optional steps):

- Clean off the brakcet under the charger, as you want that area clean to spot any leak problems with your new charger.
- Undo the oil return line from the block and blow through it to make sure it is not clogged. May want to clean it up as well....

That Damn Bracket (by Jan)

Actually, I first followed Andy's procedure but could not get those blasted bracket bolts off, and discovered in dispair that I could actually remove the G60 with the bracket in place. The first bracket to engine block bolt came off ok, but the next two I stripped the 6 mm hex head almost instantly. I hate when that happens. And it usually happens late at night. So BEFORE you begin, you want to make sure you have a good 6 mm hex wrench (no rounded corners), and may be start with some heat, and then when cold, add some liquid wrench, and use a sharp snap to get them off.

This is how I got them out, after I rounded the heads.

- Heat. I used a propane torch to heat the bolts up. Remove as much of the surrounding wires first, and the wrap a wet rag around the hoses and stuff you dont want to burn. I also wrapped the rest in aluminum foil around the delicate parts. Go through several hot/cold cycles. My propane torch is not very effective against the engine block that serves as a massive heat sink. But who know, every bit helps.
- Next I drilled the heads out to a 9/32 size.
- Then I pounded a suitably sized "Super Out" into the head. A Super Out, by Lisle, looks like a round hex bit but with splines. It takes a lot of banging to get it in solidly. You also don't have much space to work.
- Add some liquid wrench, though it will never reach the threads because they are too far behind the bracket.
- With a ratchet and an extension, put a bit of torque on the Easy Out and then give it a good jot. I have found that this is also a good technique in general to remove frozen bolts the normal way. I got lucky, they came out.
- When you replace with new bolts, use LOTS of Anti-Seize.

INSTALL OF G60 CHARGER (continued by ANdy)

Install is reverse of removal with the following additions:

1. Triple check that the oil return line is not kinked or pinched after step 18 is done.
2. Use the torques in the Bently to tighten stuff up properly.
3. Replace the O-ring that is on the SC bracket that mates to the front of the block.

ANdy

Subject: Re: [Corrado-L] [G60] Removing G60

Date: Thu, 8 Jun 2000 08:23:09 -0700 (PDT)

From: "Rich J." <richj777@yahoo.com>

Sure, start by removing the silencer, but there is no need to take it apart. There is one bolt deep inside it than you can get with a wobble 13mm socket. After you pull the recirc tube out and push it out of the way, you will be able to fish out the silencer. Remove the oil feed line, and then all allen bolts on both sides of the charger. I'm talking about the 6mm ones, the larger ones. There are three on the outlet side and four on the intake side. To reach the intake ones, you will need to remove the intake hose.

There was some discussion about this next part recently, and so the second time I removed my charger I tried to remove it with the pulley installed. Forget it. To do it you would have to remove all the brackets from the exhaust side. It is easier to pull the pulley off and then the charger will come right out without taking out the brackets. Raise it up a few inches, and remove the bottom oil drain line, it takes a 14 mm wrench.

Tools: 5 and 6 mm allen wrench, socket styke works real well. 13 and 14 mm wrench and/or sockets. 13 mm wobble socket. 17 mm socket for the pulley bolt, and maybe a gear puller. Screwdriver or nut drivers for hose clamps.

Subject: Re: [Corrado-L] [G60] Removing G60

Date: Thu, 8 Jun 2000 11:10:29 -0600

From: T.Kay@epixtech.com

Yep. There are two rear mounts. One is a black bar coming from the base of the engine bloc and bolts up (14 mm bolt, 13(?)) to the charger. The other rear mount is the big sucker to the right of the oil cooler. It is held onto the block with 4 8mm hex head bolts and bolts with 2 long hex head bolts to the charger (UNDERNEATH) the silencer. (These are those "pressure" bolts. There are a couple of sleeves inside the rear mounting bracket, when you re-install you need to hammer them back into the bracket. Then as you tighten down the bolts, they push out against the charger.)

There are 4 10mm bolts that hold on the silencer, the bottom, block side one is a pain to get at (read, grab some extension bars) Once you get those off you pop off the front half of the silence/muffler (be careful, on the block side about middle of the silencer, there is a locking "tab"/hook type deal, that where most people break it. You need it push towards the block and lift off, you'll feel it as you try to get it off, just be gentle at first) Then there is a 13/14 mm bolt that holds the silencer onto the charger. and that's it, it's off) There is an o-ring on the back of the muffler, make sure you have it when you pull the silencer off.

Does that help?
TK

Subject: RE: [Corrado-L] [G60] Removing G60
Date: Wed, 7 Jun 2000 23:24:31 -0700
From: "CJH" <cory@netvalve.com>

Yeah, be careful when you take the silencer apart, the plastic around the bolts may be brittle...I broke mine with little effort.`

Better yet, just replace the stupid thing with BBM's RSR Outlet.

Subject: Re: [Corrado-L] [G60] Removing G60
Date: Thu, 8 Jun 2000 17:28:04 -0400 (EDT)
From: Mark Wendt <p023584b@pb.seflin.org>

you'll need to remove the bolt that's inside the silencer to get at the other bolts that are on the rear bracket between the silencer and the G60 housing. Not picking this up right away in Bentley, I dismantled the silencer to get at this bolt which you can really get at through the outlet of the silencer if you use an extension and a universal joint.

To retension the serpentine belt tensioner, compress it in a vise and wrap a wire around it like new shocks come out of the box. Bolt it in, and remove the wire...

there's about 3 other things that were a PITA when I did that job, but I can't remember them now...

Replacing the belt inside the G60, or just doing A/C work with it out?

Mark Wendt "WHERE'S florida"?
B.S. Surveying & Mapping May '95
University of Florida, "Gator Alumni"
p023584b@pbfreenet.seflin.lib.fl.us

The Parts Story



From: <Mike C>

I purchased a rebuild kit from another fellow G-60 owner for \$200. After I got the kit, I felt ripped off. It seems like everyone is trying to make a buck. This really pissed me off.

I am planning on rebuilding my supercharger during the Christmas (1999) holidays. At that time I will be documenting step by step procedures with digital images of the rebuild. Plus, I will locate bearing and seal numbers for the rebuild. Keep in mind these are standard seals used in the machinery industry. They are not special by any means.

Just to give you an example. I purchased a cog belt for my supercharger from XXXX. They charged me \$20 this was made by continental. The kit that I purchased for \$200 included a Goodyear belt. Later at the bearing shop here in town. I found that It was a standard machinery timing belt which costs \$2.50 thru the company I work for. And that they had one in stock. Talk about being ripped off.

The seal strips are however the expensive part. They are made out of Teflon and run approx. \$5 per foot to mfg (with a minimum of 100 ft per order). The bearings are used in high precesion machinery and are rated for high rpm use.

The Numbers



The part numbers listed are from: [Motion Industries](#) (Local Bearing supplier), Ft. Wayne, IN 46896

The person who wrote this article so happens to be familiar with their product line. This is not meant as an endorsement for any of their products. You can provide this information to your local bearing supplier. They should have the part in stock.

Note: Retail cost is what the bearing house will sell to the average Joe that walks thru the door.

The **timing belt** is a 120XL037 Timing Belt. Motion Part No. 00375 V 22244

Our Company Cost is \$2.06

Retail price: \$2.74

Seals:

11615 Oil Seal

30X45X8

Motion part number: 00165 R 00150

Company cost: \$2.17

Retail: \$3.47

7915 Oil Seal

20X35X7

Motion part number: 00165 R 00150

Company cost: \$1.97

Retail: \$3.15

30 X 42 X 6 ADL **Metric oil seal** Double lip Motion part number: 00403 R 02811

Company cost: \$5.16

Retail: \$8.24

The cog belt is dimensionally correct, compared to [New Dimension's](#) and my \$200 kit. The seals that came with the kit had all of the numbers rubbed off of them. The outer dimensions of the seals can

be measured precisely. However, I will have to measure the internal shaft to make sure the above seals are correct. That is what the bearing house asked me for. They said, "To have a certain match I will need to provide them with the shaft size that these seals are sealing." So, as for now. Only the cog belt is for certain. If, the part numbers were not rubbed off of my kit. I would have provided you with the information. However, you can list the cog belt information on your web page.

The Numbers from Keith's Web Page

These numbers were grabbed from [Keith's G60 page](#) from a tip by "[Dave](#)". All credit and liability go to Keith. Use at your own risk. Note that he has a 92 G60. Not sure whether the numbers differ much between the years. Keith does not disclose the source, or whether he did the job himself, though he does boast a TEC rebuild which leads me to believe that he did not.

Note that the numbers are a bit cluttered. Typical VW OEM numbers consist of 3 groups of 3 numbers, followed by some modifiers that either indicate the version or a specific manufacturer. See also the [General FAQs](#) for the numbering scheme. "FAG" is a German bearing manufacturer.

The G60 supercharger contains many items which wear out, these include the 5 oil seals, the 5 bearings, the belt and the apex seals. All of these items can be replaced with a rebuild.

Displacer seal

030 145 413 GER 827 SSPVW 30-42-5.5/6 PCFP
(2 of these in each charger)

Outlet Case seal

030 145 41? 827 S 20-35-7 P FP X GOE GER
VW-AUDI insignia

Pulley case seal outer

030 145 410 827 SROW 30-45-6 PCFPX ->
GOETZE 3955 GERMANY VW-AUDI insignia

Pulley case seal inner

030 145 414 GERMANY SKW 30-52-7/8 PC FP
GOETZE 4007 VW-AUDI insignia

Displacer bearing

FAG 10-6879A E.E GERMANY

Outlet case bearing

FAG NU202E F.E GERMANY

Pulley case bearing

FAG 6304E.C3 C.E GERMANY

The Numbers from ORZ Motorsport

Here is another set of numbers uncovered by Dave from [ORZ Motorsport](#). I cached the numbers here because of the stability of the address. Unlike all the other numbers I have seen, these look like the OEM VW numbers. As usual, use at your own risk.

Item Description:			
	Part Number:	Reference:	Price, each:
APEX Sealing Strips, short	030 145 490C	1.5X4.0X350mm (x4)	
APEX Sealing Strips, long	030 145 440C	1.5X4.0X525mm (x4)	
Please Note: Apex's are sold only in complete Set?s			\$198.95
Housing, 1, empty	037 145 407B		\$845.00
Housing, 2, empty	037 145 408B		\$845.00
Main Shaft, complete	037 145 422		\$528.00
Bearing, D=32 (Secondary Shaft)		FAG 6002	\$24.50
Bearing, D=42 (Secondary Shaft)		FAG 6003	\$28.50
Bearing, D=52 (Housing 1 / Main Shaft)	037 145 416	FAG 6304	\$51.00
Needle Bearing, (Displacer / Secondary Shaft)	037 145 481	FAG 310-7436AB	\$202.50
Needle Bearing, D=35 (Housing 2 / Main Shaft)	052 145 412	FAG NU202	\$109.00
Needle Bearing, D=42 (Displacer / Main Shaft)	037 145 475	FAG 10-6879A	\$116.50
Secondary Shaft, complete	037 145 421B		\$549.50
Fitting Key, big (Balance Weight / Main Shaft)	N101 261 01	6X4X36	\$6.50
Fitting Key, small (Balance Weight / Main Shaft)	N101 262 01	6X4X14	\$6.00
Displacer, complete	037 145 473B		\$1,549.00
Shaft Sealing Ring, D=42 (Displacer / FAG 10-6879A)	030 145 413	30X42X5.5/6 (x2)	\$63.50
Shaft Sealing Ring, D=45 (Housing 1-outside / FAG 6304)	030 145 410	30X45X6 (x1)	\$81.00
Shaft Sealing Ring, D=52 (Housing 1-inside / FAG 6304)	030 145 414	30X52X7/8 (x1)	\$130.50
Shaft Sealing Ring, D=35 (Main Shaft / NU202)	030 145 415	20X35X7 (x1)	\$105.50
Corrugated Spring (APEX Sealing Strips / Housing 1 & 2)	052 145 439A	1.2X0.2X520 (x4)	\$36.50
Toothed Belt	052 145 437R		\$49.50

Information about Rebuilding Your G-Lader

(this is from the <http://www.corrado-club.com/> garage section. Copyright 1999 CCA).

Submitted By: Silver G60

I had mine re-built for about \$475.00 canadian. This included all the maintenance such as belts and seals etc.. If you are interested, you can call my loyal shop European Speed Sports @ 905-850-7544 in Ontario Canada. He sends the unit to a turbocharger re-buider that he works a lot with. Of course he is not an "authorized" G-charger re-builder, but it's better than MotorTechnik's quote of \$800.00.

Do It Yourself Rebuild (Not for the faint of mechanical skill)

The company which sells the parts is Jung GmbH in Germany. The address is as follows:

Jung GmbH
Breites Tal 21
D-75305
Neuenbuerg
Germany

Tel. 0049/7082/4909-0
Fax 0049/7082/4909-144

Jung is the company which built them for VW! Most G-charger rebuilders (YES including TEC) get their parts from them also!

Take contact with them on the procedure of overseas ordering. We have heard that they will also ship the parts overseas. But I don't know the procedure.

Here's a list of important parts. The complete list of parts which are available from Jung and this list will also be put on the CCN pages.

NOTE: Jung sent the CCA a letter that they rather not have this data made available, and won't sell to the public.

English translation (feel free to correct us!):

REPLACEMENT PART SIZE PART NO. PRICE

CHAMBER HOUSING I:

Circlip D 35 N 021 315 1 3,50
Ball-bearing D 52 037 145 416 49,00
Circlip D 52 N 012 290 2 3,75
Seal D 52 030 145 414 33,40
Oil centrifuge ring 030 145 430 30,90
Seal D 45 030 145 410 29,25
Tooth belt 052 145 437 28,40
Waveform spring (2x per charger) 052 145 439 A 15,20
Sealing strip (2x per charger) 030 145 440 C 31,70

CHAMBER HOUSING II:

Cylinder-roller-bearing D 35 052 145 412 65,65
Circlip D 35 N 021 315 1 3,50
Seal D 35 030 145 415 29,25
Waveform spring (2x per charger) 052 145 439 A 15,20
Sealing strip (2x per charger) 030 145 440 C 31,70

DISPLACER:

Circlip (2x per charger) D 42 N 904 487 01 6,60
Sealing strip (4x per charger) 030 145 490 C 21,65
Seal (2x per charger) 030 145 413 33,50
Zylinder-roller-bearing 037 145 475 50,50
Circlip D 20 N 012 470 1 3,10

Attention: All prices without tax (15 %)!!!

BTW: SIZE means diameter in mm!

I guess, the most important parts are the sealing strips in both chamber housings and in the displacer. They're made of Teflon (sic! they are NOT made out Teflon. Jan), that's why they are expensive. All the other parts are very special, too, e.g. the seals are made of vyton (standard is nbr) and the bearings are made with lower tolerances compared to ordinary ones.

You also need sealing cream LOCTITE 573, Art.-Nr. 57341 (35 DM) for sealing the chamber housing while assembling. Useful is some grease for fixing the sealing strips and some sealing-cream-remover, to get the old sealing cream off the housing.

Directions To Rebuild Your G-Lader

BTW a while back it wasn't how difficult it was to rebuild G-laders it was how difficult to buy the parts. Now that parts are readily available I think we'll see more and more people rebuilding G-laders.

AMEN!!! now that I've taken apart my G-lader, I'm kicking myself for not doing it BEFORE it blew up... there's nothing to it!!!! If only I'd known, I would have rebuilt it myself, especially since I've been in contact with TEC for like a year AND I've had all the part #'s to order rebuild parts... Ugh.

Anywho, the belt is easy to change, just have to remove your pulley and it slips right off. I'd mark each cogs' position against the case with white-out first to make sure the timing remains correct.

To take apart the G-lader, there are 6 or 7 bolts, all needing a 6mm Allen wrench. The case splits open w/o much effort, surprisingly enough there is no gasket between the hemispheres of the case (finely machined).

To remove the impellor and eccentric shaft, you need a pair of circlip pliers to remove the circlips neatly. With the circlip removed, the innards pop right out. The seals are all removable and replaceable by hand, they just fit in the grooves along the "snailshell" airways and impellor.

The bearings can be removed by hand if you don't mind getting lots of oil under your fingernails, otherwise a small bearing puller works well. That's all folks, unless you want to go nuts and start honing various parts of the Glader. All in all, an OEM basic rebuild probably takes an hour first time out, maybe a half hour for an experienced rebuild. (not counting time to clean everything in a solvent tank before rebuilding of course)

Brendan Prout

Well, after witnessing my first and hopefully last G-lader blow up in front of me, here are some very important tips.

1. Change your cog belt often!! Don't let it deteriorate and dry-rot, especially with running a smaller pulley. We grenaded a supercharger this weekend when the cog belt snapped, it looked really cool, shrapnel flying out of the engine bay. We inspected the belt, and it looked good, but evidently it was dry-rotted and ..snap!
2. Never stand in front of the car w/ the hood up while revving the engine, luckily I was watching my friend's MFA when it grenaded.
3. If you snap that weak ass oil line banjo screw either on the Supercharger or on the block, just take any bolt off a cis or cis-e fuel distributor and use it. We drilled the hole out a bit because the diameter is smaller, but in a pinch on Saturday night when you need to drive it home or get it to the dealership Monday to buy a proper replacement bolt..
4. Replacing the seals in your supercharger is PATHETICALLY easy, we busted it apart and there's really nothing complicated to the supercharger at all.

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