ZIM.603.ALT KIT

List of parts

Qty Description

1, Installation instructions

1, Aluminum alternator stand

1, Stamped steel sheet metal plate

4, 6mm fan shroud screws for fan plate

2, 6mm Reg nuts for fan plate

2, 6mm flat washer for fan plate

1, Special steel fan hub15x45x22mm

1, Special steel spacer 25x45x12mm

1, Gen stand base gasket

1, Oil filler to can gasket

1, Alternator strap, T-bolt clamp

2, Woodruff keys for Alt shaft

1, ZIMS special screwdriver / holder tool.

1, 10x825 fan belt

1, Alternator wiring harness

1, Terminal block and bracket w/nuts, lock washers (for 356 not 912)

2, 5mm x10 slot head screws for terminal block (for 356 not 912)

2, 5mm split lock washers for terminal block (for 356 not 912)

2, 6mm x 16 slot head screws for terminal block (for 356 not 912)

2, 6mm Nyloc nuts (for 356 not 912)

1, Blue butt connector (356)

1, 1ft piece of blue 18g wire (356)

1, large male push on X eyelet terminal (356)

1, small male push on X eyelet terminal (356)

ZIM.603.ALT.KIT

Installation instructions for the 356/912 alternator conversion.

Please note this mounting kit is designed to be used in conjunction with the air cooled VW Bosch alternator. Its designation is AL82N for a new unit or AL82X for a rebuilt unit. This Bosch 55amp is a high quality unit and has a built in regulator. There are also available, some non Bosch 75 and 90amp versions of this alternator. You must be aware of what you choose to use. Beware as there are inferior versions of this alternator! We suggest you use the alternator we supply, as we have verified that it will work properly. We make a modification to this unit to insure it works as the kit was designed. You may also supply your own unit, but YOU must make the modification for the kit to work properly. If WE supply you the alternator at the same time as the kit, it is covered all under our warranty. If YOU supply the alternator YOU will have to deal with the warranty if some issue arises.

Note: If your engine has the round flip top oil filler can, (where you put the oil in) like is pictured in our illustrations, you will also need our ZIM.107.ALT.ADP adapter to adapt this type of filler to the new alternator stand. For later engines with the twist top cap oil filler can, you do not need the adapter as the can will bolt directly to the new alternator stand but it is not shown in our instruction pictures.

Also please note: If you are attempting to use this kit on an engine equipped with the "European Heater" option, it may require some slight modification of the right side air outlet that bolts to the fan shroud and the large 60m hose attaches to. The oil canister can come into contact with this unit. You must make modifications so that it clears properly.

Please read through these step by step, easy to follow instructions BEFORE attempting to do this job. Getting familiar with what you are going to be doing makes the job much easier. If you are currently servicing your car, you are probably capable of installing this kit successfully.

Tool list: Recommended hand tools to complete this job.

Enclosed (at no charge) Special Zim's screwdriver / pulley holder tool.

Basic set of metric combination open/box end wrenches.

Basic set of 3/8" ratchet, extension, and sockets.

2, Large flat slotted head screwdrivers.

T40c generator wrench available from Zim's or 36mm wrench or socket with breaker bar. Socket also available from Zim's.

Penetrating oil.

Bench vise.

Masking tape & felt tip marker for labeling wires.

Disconnect battery and prepare the car for work. If you are lifting it up make sure to safely support the car. Never work off of just a floor jack without stands.

Keep in mind, you are working on a roughly 50 year old car and it may have been a long time since some of the hardware has been removed. Judicious use of penetrating oil prior to removing the hardware should always be used. Some- times it even requires some heat to break loose really stubborn parts. This includes the hubs you must remove from the old generator shaft. Use the penetrating oil on them and let it soak. Tap on these items to help the oil work into the crevices. Often it will require a puller or a press to remove the hubs without damaging things. Good common sense is in order here. Do not injure yourself or destroy your vintage parts.

Start in the engine compartment and first, before you remove anything, using the felt tip pen and the masking tape mark the wires on both the regulator and the generator as to what terminal numbers they are attached to. B+, DF, D+, D-, 61, etc. Make yourself a little diagram as to what came off of what. After all wires are marked, remove them with an end wrench and screwdriver. Remove the old voltage regulator from the firewall. See more details on wiring at the end of these instructions.

Disconnect the oil filter hoses to the oil filter can. If they are loose and twist in the fittings replace them with new ones. We can supply them to you. Loosen the clamp around the oil filter can. Remove the oil filter can and set aside but in an upright position so it won't spill. Loosen the bolt or screw on the far left side of the coil. Remove the bolt directly behind the oil filter. It is the one closest to the generator. Be careful not to lose the large flat washer against the fan shroud. Loosen the bolt (two turns and you will need a wrench on the other side of the shroud) on the right side of the coil. Now swing the oil filter bracket up and out of the way.

Remove the large 36mm (1&7/16") nut on generator holding the pulleys and shims together. It is important to use the proper tools to do this and not damage the hardware. Use the supplied special ZIMS square shafted screwdriver / pulley
holder tool to hold the pulley in the notched area against the generator housing to lock the shaft and loosen the nut.

Remove the nut, belt, all of the pulleys, and shims. For now leave the pulley hub and the woodruff key mounted on the generator as you might need it to loosen the fan nut later. You **will** be re-using these parts unless they are damaged. If so, call us and we can supply you new pulleys, hubs or nuts. Make sure you have enough shims to put it all back together. It is wise to keep spares to put in your emergency tool kit.

Remove the two M6 (10mm wrench size) bolts, washers, and nuts from the round flip top oil filler canister, or if you have the twist top oil filler can remove the two M6 nuts and washers that hold the can to the pedestal. Remove can from pedestal. Use a rag and cover the open hole so nothing drops into the engine.

Remove generator clamp strap M8 (13mm wrench size) bolt & hardware and remove the clamp.

Remove the four M8 bolts and washers that hold the generator stand to the engine case.

Remove the four cheese head slotted screws and washers that hold the generator fan plate to the fan shroud.

Pull the entire generator & fan assembly to the rear of the car. It should all come out as one unit and then take it to the work bench. Remove the cardboard or paper fan plate spacer if it stayed with your fan shroud if your engine has one. It is not used with our kit. Cover the hole where the generator stand was so nothing drops in the engine.

Important note: Using a flashlight and looking into the left side of the hole now in the fan shroud. Make sure the oil cooler is clean. If it is covered in crud the engine will overheat. Clean off any debris that has lodged itself in the cooler fins. Take some brake cleaner and compressed air to clean it.

Once the assembly is out and on the bench you must remove the large nut that retains the fan to the back of the generator. There are two ways this can be done. If you have

an impact wrench, obtain a 36mm (1&7/16") socket and loosen the nut on the fan. You should be able to carefully (do not damage fan) hold the fan and let the impact do the work. If you do not have an impact you can put the assembly in a large vise and clamp on the flats of the pulley hub you left on the
pulley end of the generator.

Loosen the 36mm large nut with a socket and breaker bar. Once the nut is off the fan, remove the spacer washer and fan and shims if any are there. You will be reusing the thick washer and the nut back if undamaged. We can supply you new parts if any of these are damaged. If your fan has a small disc or plate covering the center holes on the fan, discard it. It cools better if these holes are open.

Take a close look at the fan. Make sure it is not damaged. You will want to look closely in and around the hub area where the two flats are that drive the fan. If there are cracks in the fan or if the flats are worn from the fan being loose, the fan needs replacing. Check the blades and make sure none are loose or bent. We can supply you with a

new fan. Remember this fan is what cools your engine and if it fails, your engine is destroyed. It is very important all of this mounting hardware and fan is in good working condition.

NOTE: Before you mount anything onto the new alternator **you must check & possibly modify** something on it. The 6mm studs that stick though the back of the alternator that mount the fan plate as the alternator is supplied are just slightly too long and can come in contact with the fan in some cases. **YOU NEED TO CHECK THIS!** If **we** have supplied the alternator **we** should have already modified the studs to clear properly and we include two washers and two M6 nuts to use to mount the plate to the back of the alternator. If **you** are supplying the alternator, **YOU** are responsible for checking this and modifying these studs. Due to differences in some fans it is important for YOU to check this for clearance. It is not hard to do, but very important. Otherwise the fan will hit them and ruin the fan and lock up the alternator from turning after you tighten the fan retaining nut. These studs need to be no longer than 9mm in length from the back of the alternator housing to the end of the threads. If they are longer than 9mm YOU need to shorten them. We suggest that you take one of the nuts and screw it onto the threads and snug it down. Then take a grinder, Dremel tool, file, hacksaw, or whatever method you choose to shorten these two studs to the 9mm length. Then unscrew the nut so it will help straighten up the ends of the threads. Take a hand file and take the rough edge off the studs and make sure the nut screws on easily without cross threading.

Install the plate on the back of the alternator over the studs. The cupped side of the plate points towards the pulley end of the alternator. Take the two washers and put over the studs. Apply a small drop of blue Loctiite on the threads and install the nuts and tighten to 7 ft #'s.

Install your fan onto the new alternator assembly. First install a woodruff key into the shaft slot of the new alternator. Next install the new steel rear fan hub supplied with the

kit. Lubricate the shaft before you install the hub. Now install the fan over this hub. Next install the thick steel spacer. Install the old thick washer and then lastly the nut. Before you tighten all of this together spin the fan and look back between the fan, studs and nuts that retain the fan plate to the alternator. Make sure you have some clearance between the ends of the studs and the fan. This is why we removed the material above in these instructions. Use a drop of blue Loctite on the nut or shaft and tighten the large nut to 72 ft #'s. You can install the woodruff key and the fan pulley hub onto the pulley end of the alternator shaft and clamp this hub in the jaws of the vise to hold the assembly while you torque the nut. Never clamp a vise on the bare shaft of the alternator. It will damage it.


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Once it is all tightened up, again spin the fan and make sure it all turns freely with no clearance issues. Remedy any clearance issues if they exist.

Scrape off the old gasket from the engine case if it is still stuck there. Put a rag in the hole so debris does not go into your engine. Install the new supplied gasket and use some grease to help hold it to the engine case while you install the alternator stand.

Start the right rear M8 bolt for the alternator stand with the washer in the hole but only a thread or two. You can not get it started once the stand is installed as there is not enough clearance. Hold up the washer under the head of the bolt (use super glue or grease if you wish). Slide the alternator stand and the alternator as one loose unit into place being careful not to disturb the gasket below. The fan must be guided also at the same time into the fan housing. Remember you do not need the cardboard/paper spacer gasket between the plate and the shroud. Once the assembly has been set approximately into place, start the four slot head fan shroud screws w/washers into the

shroud. Do not tighten all the way yet. Install the other three M8 bolts and washers that attach the alternator stand making sure the gasket stays in place. Do not tighten all the way yet.

Pre-form (bend) the new supplied T-bolt style alternator strap around the bottom of the alternator stand and up and around the alternator in a position that fits nicely and arrange the end where the bolt goes through so it can be accessed easily to tighten it. This is putting the clamp on where the nut on the bolt faces towards the left of the alternator and the t-bolt running horizontal on the bottom under the alternator. Do not tighten yet.

Tighten the slotted fan shroud screws. Tighten the alternator strap clamp making sure it lined up in the groove on the alternator and in a straight line. Tighten the four m8 alternator stand to case bolts.

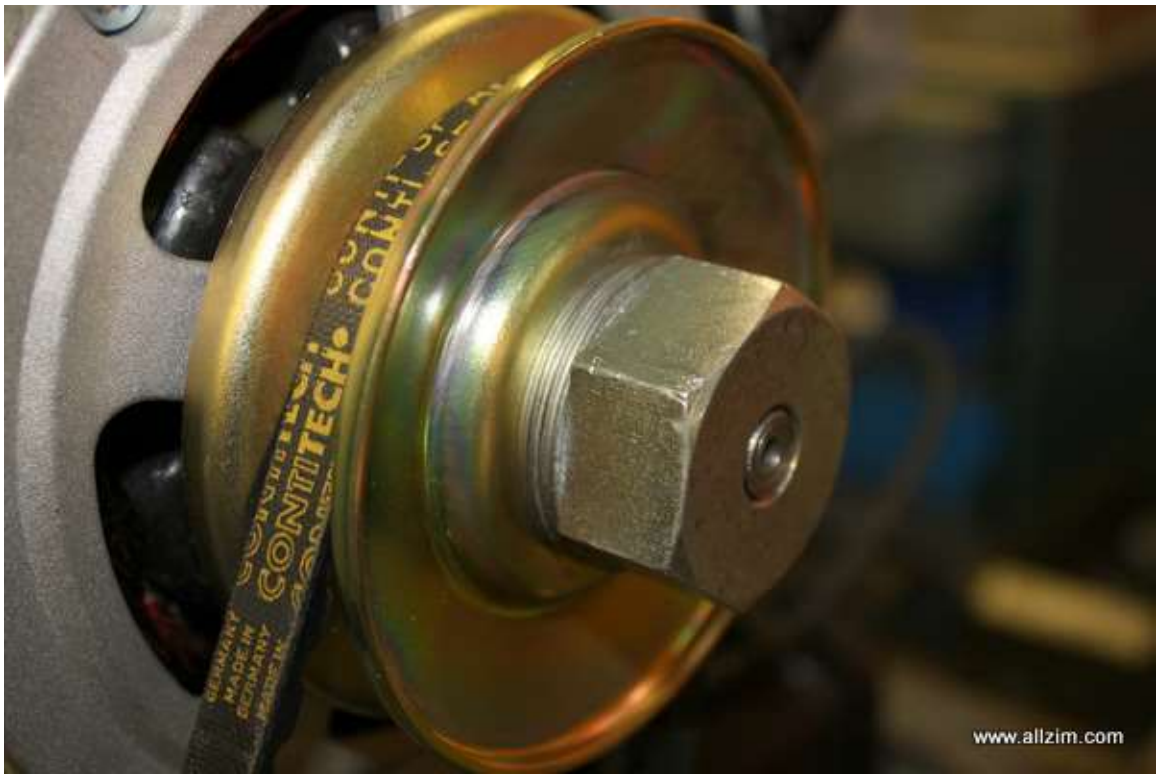
Spin the alternator shaft and look behind the fan shroud and make sure the fan is not dragging on the fan shroud anywhere.

Install the woodruff key onto the alternator shaft. Install fan pulley hub and back pulley half onto the alternator shaft with a little oil. Now install fan belt and arrange your combination of shims and outer pulley half and nut to properly tension the fan belt. Remember too tight not only wears out alternator bearings but it puts tremendous pressure on the nose bearing of the crankshaft. Tension it properly. Use the supplied ZIMS square shaft screwdriver / holder tool and the T40C wrench or 36mm socket and breaker bar to tighten the nut. Catch the square shaft of the tool against the squared off small slots in the back side of the pulley while letting the lower part of the tool catch the little tab at the very top center of the alternator back behind the back pulley. This way you do not ruin your pulley or break the alternator casing. If you need more shims we can supply them. Do not put the unused shims that are not in between

the pulleys back in your tool box. These spare shims need to be put back under the nut to insure proper clamping of the pulleys and shims.

The rule of thumb is to use enough total shims so the threads of the alternator shaft only protrudes though the end of the nut about a thread or so or flush. This insures you have the pulleys clamped properly. If you do not do this the nut can bottom out on the shoulder of the alternator shaft and appear to be tight, but it has not pulled all the slack out of the pulleys and shims and the pulleys will bang back and forth and destroy the hub and pulleys.

Re-install all of the oil filter can and hardware that was removed previously. Reinstall the inlet and outlet oil lines onto there proper fittings and tighten.



Now look from the side of the engine just to make sure the alternator pulley and the crank pulley are in line and the belt is running true. If the pulleys seem to drag on something look at the little tab on the top section of the alternator which is used to

catch the screwdriver for holding the pulley to tighten them. It is a close fit. If it is hitting the back pulley your pulleys make be slightly bent. You may need new pulleys and we can supply them. If it still touches take a file and remove a small amount off of the tab after removing the pulleys for access.

Wiring:

On a 356 after removing the wiring from the old voltage regulator down to the old generator on the engine, remove your old voltage regulator from the bracket on the firewall. Mount the newly supplied connection terminal block where the voltage regulator was removed. We supply it with an adapter plate and some hardware to attach the terminal block to mount it to the old voltage regulator support in the car on the firewall. Use the supplied hardware to secure it to the mount.

You will need to only now be concerned with two wires since the alternator has a built in regulator. It may be necessary to cut open the tubing covering the wiring going to the old voltage regulator behind the engine to expose the wires. You will need to find the (Black) B+ wire (this wire attaches at the starter solenoid and is a direct connection to the battery hot side) You will hook the ring terminal on the end of it that formerly went to the B+ terminal on the regulator to first terminal on the new terminal block. It should be long enough to reach the terminal block but if not extend it. The only other wire you will need to use is the 61 wire which is blue in color that went to the old regulator. You will need to cut it loose and attach it the next terminal on the newly supplied terminal block. You will probably have to crimp a ring terminal onto the end of it. It might have to be extended also. You can remove any other old wiring besides these two wires as they are no longer needed.

Now take the newly supplied engine alternator wiring harness (red and blue wires with two ring terminals) and attach the Red (B+) wire also to the first terminal where you have connected the B+ wire down to the starter. Then take the blue wire in the new harness and attach it to the second terminal where you attached the 61 wire as well.

You do not need a ground wire to the alternator case as it is grounded through the mounting hardware to the engine and chassis. Take the ends of the new harness and plug the blue wire with the female flat plug onto the male flat plug in on the top of the alternator. The terminal is marked D+. Then take the red wire with the large ring terminal and attach it to the large stud on the top of the alternator. This is marked B+. Male sure all connections are tight.

For the 912:
We have a separate harness which is a little longer but does not need the terminal block like the 356.This harness attaches to the wires over on the left side of the engine compartment where the voltage regulator is mounted on a 912. As with the 356 instructions above, you will only use two of the wires. The B+ (Battery) supply which will attach to the large red B+ wire in the new harness and 61 (Idiot) wire which will attach to the blue 61 wire in the new harness. The harness should be long enough to run down the left side of the engine compartment and around the back of the fan shroud and then come up and over the top to terminate at the new alternator. The large red wire is to be attached to the B+ (stud) Battery terminal on the top of the alternator and the blue smaller wire attaches to the male spade terminal on the alternator marked D+. Use some zip ties to secure all wiring to make sure it stays where you want it. This additional harness for the 912 has a nominal charge for us supplying it. See part number

Reconnect the battery and prepare to start the engine. Make sure no tools rags or spare parts are left inside the engine compartment and all hardware has been checked for tightness. Start the engine, go to the dash and after raising the rpm over at least 2000rpm for the first time see that the charging warning light goes out.

Enjoy your newly found RELIABLE power in your 356/912. Check the belt tension after a few miles to insure it is correct.
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