GVW-253-700AGM
Auxiliary Battery Kit for 1983-1991 Vanagon Westfalia Full Camper

The purpose of this kit is to add an Interstate SLA1161 as an auxiliary battery under the driver’s seat of 1983 to 1991 Vanagon Westfalia full campers. This kit will also re-wire the sink, 12V outlet on dashboard, radio, interior lights, and clock to this new battery. After installation, any of those items can be used until the auxiliary battery is exhausted without discharging the primary (starting) battery located under the passenger’s seat. Both batteries will charge with the engine running, but the two will be isolated when the engine is not running. The refrigerator will retain its stock function, powered on 12V only when the engine is running. Any additional accessories wired to the second battery must be connected only to the second battery and must be fused appropriately.

This kit has been designed for easy installation. However, it does involve cutting and splicing into factory wiring. Installation of this kit is not within everyone's ability. Read through these instructions carefully and decide if installing it is for you. If not, please take your Westy to an automotive electrician. Wiring errors can be troublesome and hazardous. This battery is capable of producing 1200 amps of current. 1200 amps is enough to turn a 12ga wire red hot in a few seconds. Throughout installation, be VERY careful not to short the battery. Cross out any sections that do not apply to the year of your Westy, and check off each step as you complete it.

The charging circuit of the second battery is limited to 50 amps. With the engine running, do not draw more than 50 amps from the second battery or the circuit breaker will trip. Very large loads should be connected directly to the primary (starting) battery, which can receive the full output of the alternator (85 amps). Care should be taken to avoid discharge of the primary battery. The engine should be running if the primary battery is heavily loaded. This kit will not allow starting of the engine if the primary battery is discharged. If this happens you can use jumper cables (follow jumper cable manufacturer instructions).

### Tools Required
- Phillips screwdriver
- Wire stripper/cutter/crimper
- 10mm & 13mm combination wrenches
- Drill with 2" or longer #2 Phillips bit
- Pliers
- Electrical tape
**BEFORE YOU START: DISCONNECT THE NEGATIVE TERMINAL OF THE PRIMARY BATTERY.**

<p>| <strong>STEP 1</strong> | Slide driver’s seat all the way forward, lift release, and continue sliding seat off the track and set it aside. This is best done with two people. Watch out for sharp edges and pinch points. |
| <strong>STEP 2</strong> | If present, rotate seat swivel platform 180 degrees and open the lid of the compartment behind and under the swivel. Tape the lid in the open position. |
| <strong>STEP 3</strong> | Locate and unscrew relay from compartment wall. Leave wires connected. |
| <strong>STEP 4</strong> | Place the isolator and circuit breaker of the kit into the compartment and screw them to the floor with the self-drilling screws in the position shown, using a drill with Phillips bit. The isolator receives its ground path through these screws so ensure that a connection to bare metal is made. |
| <strong>STEP 5</strong> | Unplug the red wire from the #87 center pin of the relay (sink pump wire). Cut the end off, strip the wire, and crimp the included 6mm ring terminal on the end. |</p>
<table>
<thead>
<tr>
<th>STEP 6</th>
<th>Plug the red wire from the isolator onto the #87 center pin of the relay.</th>
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<tbody>
<tr>
<td>STEP 7</td>
<td>Unplug the red wire from pin #30 (fridge wire) and attach it to the open male connector on the end of the blue wire that originates from the small center post on the isolator. Now plug the blue wire (with the red wire piggybacked to it) back onto the same #30 pin of the relay.</td>
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<tr>
<td>STEP 8</td>
<td>Reattach the relay to its original location.</td>
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<tr>
<td>STEP 9</td>
<td>Route the included long red wire under the seat swivel and out of the hole on the front upper outboard corner of the under-seat area. Continue routing it forward under the carpet to behind the fuse panel area. Use the included grommet in the hole, and make sure the end of the wire with the terminal and fuse holder is in the second battery compartment and has enough slack to reach the battery area.</td>
</tr>
<tr>
<td>STOP!</td>
<td>If you have a 1983 to 1985, skip to STEP 15.</td>
</tr>
<tr>
<td>STEP 10</td>
<td>Remove the fuse box cover and detach the fuse box mount from the body.</td>
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</table>

1986-1991 ONLY
**STEP 11**
Find connector “B” on the back of the fuse box using this diagram as a guide. Unplug it from the back of the fuse panel by squeezing the tabs on the top and bottom of the connector and pulling it away from the fuse panel.

**1986-1991 ONLY**

**STEP 12**
Cut all wires from locations B11 and B12 about 1” away from the fuse panel (all will be red) and tape the ends coming from the fuse panel to prevent shorts. 1986 and 1987 Westfalias will have two red wires coming from location B12, and one from location B11. 1988-1991 Westfalias will have one wire from each.

**1986-1991 ONLY**

**STEP 13**
Connect long red wire routed in STEP 11 to the wires you just cut using the 6-port splice connector supplied in the kit. Do this by stripping 1/2” of insulation from the end of each wire. Straighten the end and press it into a port using pliers to get a good grip on the wires. Only one wire per port. Inspect the connector from the clear side to make sure all the wires have been captured. This step connects the radio, interior lights, and 12v dash outlet to the second battery.

**1986-1991 ONLY**

**STEP 14**
Reconnect connector B and reinstall the fuse box and cover, making sure no wires are pinched.

**1986-1991 ONLY**

**STOP!**
If you have a 1986 to 1991, skip to STEP 21.
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<th><strong>STEP 15</strong></th>
<th>Remove the fuse box cover and detach the fuse box mount from the body.</th>
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<td>1983-1985 ONLY</td>
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<tr>
<td><strong>STEP 16</strong></td>
<td>Find the connection at back of fuse 8. The top end of the fuse will have 2 or 3 red wires in two connectors, and one red wire has a yellow stripe. Do <strong>nothing</strong> to the wires at the bottom end of the fuse. The top of the fuse is the end that is closest to the steering wheel when the fuse panel is installed. The top will be closest to you when the panel is pivoted down for access to the rear.</td>
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<td>1983-1985 ONLY</td>
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<tr>
<td><strong>STEP 17</strong></td>
<td>Cut all of the <strong>plain red</strong> wires from the top of fuse S8 (but <strong>DO NOT</strong> cut the red and yellow striped wire) about 1&quot; away from the fuse panel. Unplug and discard the connector that has had all its wires cut, and tape the end of the remaining wire(s) that are coming from the fuse panel.</td>
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<tr>
<td><strong>STEP 18</strong></td>
<td>Locate the <strong>red and white</strong> striped wire at the top of fuse 9 (fuse 9 is next to fuse 8, on the inboard side). Cut the red and white wire and plug into connector. Do <strong>not</strong> cut the plain red wire on fuse 9.</td>
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</table>
STEP 19  On the back of the headlight switch there are two PIN 30’s. Depending on the year there will be either one large red or a large red/yellow wire at one PIN 30 and one or two smaller red wires at the other PIN 30, cut only the small red wire(s). Tape the end(s) coming from the switch and route the other end(s) down to the fuse panel. NOTE: We have encountered some vehicles that do not have the small red wire(s). If this happens, simply move on. The red wire would be power to the clock so ensure it is switched over to the auxiliary battery after completion. If it is not, you will need to trace the wire back from the clock to find its source.  

1983-1985 ONLY

STEP 20  Connect long red wire from relay to the wires you just cut using the 6-port splice connector supplied in the kit. Do this by stripping 1/2” of insulation from the end of each wire. Straighten the end and press it into a port using pliers to get a good grip on the wires. Only one wire per port. Inspect the connector from the clear side to make sure all the wires have been captured.  

1983-1985 ONLY

STEP 21  Reinstall the fuse box and cover, making sure no wires are pinched.  

1983-1985 ONLY

STEP 22  Set the battery in the compartment on its “back” so the top of the battery faces the front of the car with the terminals at the top. Make sure no wires get trapped under the battery.

STEP 23  Install the positive wires onto the positive battery terminal using the 6mm bolt and washer provided with the battery (red wire from circuit breaker, fuse holder connected to long red wire, and the loose red wire that was removed from the stock relay and modified with a ring terminal in STEP 5). Orient the wires so they are neat and cannot contact the compartment cover and tighten the bolt.
| STEP 24 | Install end of the black negative wire with larger ring terminal onto the negative battery terminal using the 6mm bolt and washer provided with the battery. (We’ll cover the ground wire in STEP 25.)

Notice: Once the black wire is attached to the negative terminal of the battery, the other end may spark if it touches the chassis. This is normal.

| STEP 25 | Install the battery hold-down bracket using the provided 8mm bolt, lock washer and flat washer. If the seat swivel is present, the bracket will attach to the threaded hole in the upper lip. If there is no seat swivel you will use the hole in the shelf just in front of the battery, which is often covered by a painted over sticker.

See photos at left for examples of each bracket.

| STEP 26 | Using the remaining self-tapping screw, affix the other end of the ground wire to the same stretch of metal that the battery hold-down attaches to (scrape off some paint in the area you screw it to so a solid electrical connection is made).

Notice: The end of the wire may generate a spark when first connected to the chassis. This is normal.

| STEP 27 | Close the second battery compartment cover, turn the swivel platform back to forward, replace the seat, and reconnect the negative terminal on the primary battery. Your sink, interior lights, radio, and 12v dash outlet are now powered by your second battery. The refrigerator retains its stock function of running on DC only when the engine is running. |
Tips for a Happy Battery

All lead acid batteries operate on the same basic principles of battery chemistry. Energy is stored in the form of a chemical reaction, which creates an electric current. This electrical current a battery produces is what powers whatever device is connected to it. The process can be reversed by feeding current into the battery, either with a vehicle charging system, a plug-in charger, or solar panels. This cycle can only be repeated so many times before the materials that make up the battery break down, reducing capacity and eventually leading to failure.

There are a few things to keep in mind to make sure your battery stays happy and healthy:

1) The less a lead-acid battery is discharged between charges, the longer it will last. Charge as often as is practical. The battery in your vehicle is nothing like a cordless drill or phone battery, which are typically nickel-cadmium “ni-cad” batteries. Completely discharging a lead acid battery does no good and is actually harmful, the exact opposite of a ni-cad battery.

2) Whenever the voltage level of a lead-acid battery drops below 10.5 volts, irreversible damage is being done. A good rule of thumb is this: if light bulbs start getting noticeably dim, stop using that battery until it can be charged-up. Most inverters will automatically shut off around 10.5 volts to prevent battery damage.

3) A lead-acid battery should always be stored fully charged. The lifespan of the battery will be reduced if stored uncharged—the lower the charge, the greater the damage that will result. A lead-acid battery should never be stored if its voltage is below about 11.5 volts. Batteries also self-discharge, so any battery that is stored should be charged every 6 months or so to prevent it from falling below 11.5 volts. Charging it more often will extend battery life, but do not leave it charging continuously unless the charger is fully automatic. Even “trickle chargers” can overcharge a battery if they aren’t automatic. The charger GoWesty sells is fully automatic, and will never over-charge your battery, which is
why they cost a little more than your typical garden variety Sears Roebuck trickle charger.

4) The faster that energy is pulled out of a battery, the less the energy available will be. This means that if a 5 amp load lasts for 10 hours, a 10 amp load will not last 5 hours, but in fact less. Taken further, a 50 amp load will not last for 1 hour, but actually much less. Keep this in mind when using high load accessories. Watts divided by 12 (volts) = Amps. This means a device that is rated at 500 watts draws about 42 amps at 12 volts.

5) Inverters are not 100% efficient. The actual number is more like 85%. This means that if a device rated at 500 watts is plugged into an inverter, the inverter will actually draw about 590 watts, or about 50 amps at 12 volts. Do not try to charge a battery by plugging a battery charger into an inverter that is connected to the same battery you are trying to charge. It will not work, as the inverter will draw more from the battery than the charger replaces. If this did work, we could all retire as billionaires, and tell the oil companies to get stuffed.

Battery capacity naturally decreases over time and use. If the capacity has dropped significantly (goes dead much quicker than it used to) it may be close to total failure. If this is the case, have the battery tested and replace it if necessary. Usually a battery is still considered “good” if it has at least 80% of the capacity it had when new.