

# **Installation Manual for**

***FREEZÜRNÜGEN™***

## **Air Conditioning Systems For Air-Cooled Volkswagens**

**Beetle Edition**

**Autoware**

**07 55377766**

**email: [info@autoware.com.au](mailto:info@autoware.com.au)**

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## COMPRESSOR BRACKET INSTALLATION:

### Step 1:

Remove ignition coil and set aside. If you are using the original heater boxes the left side fresh air vent on the engine shroud needs to be removed by drilling the spotwelds on the top and right side of the vent then wiggle it up and down to get it out of the shroud. Install the cover plate provided. You may have to grind down bump on left side manifold. If manifold has vacuum port in this bump, then it must be changed to non-vacuum port style. Depending on the manifold the bump may not need grinding.

### Step 2:

You will need to drill a 2" hole in the side of the fan shroud in order to install the fresh air tube adapter.

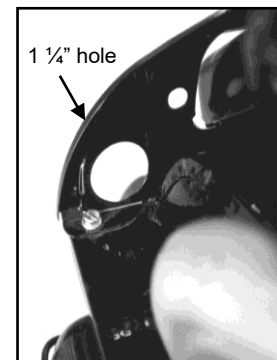
**NOTE:** *This step is necessary only if you are using heater boxes. It is a good idea to wait until compressor and hoses are mounted before drilling this hole.*

### Step 3:

Remove the rear lower engine tin. Set aside; it will need to be trimmed to clear the A/C bracket.

### Step 4:

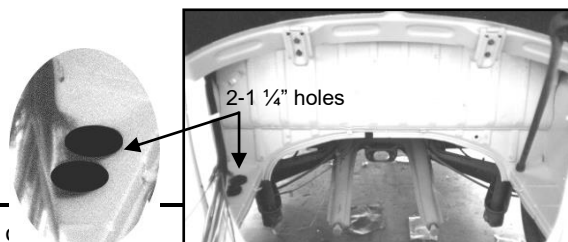
If you are using a center mount carb or dual Kadron type carbs drill a 1 ¼" hole in the front engine cover plate tin between the head tin screw and the head tin by the #3 cylinder. This is for the rear compressor brace, which will mount to the #3 cylinder upper exhaust flange stud with the special nut provided. If you are using dual IDF style weber carbs with cross bar linkage skip this step.



**Step 4**

### Step 5:

Drill two 1 ¼" holes as shown. Both are drilled in the triangular area on the left side of the engine compartment. These are for the A/C hoses. If holes are drilled from the underside, you can



Enlarged view

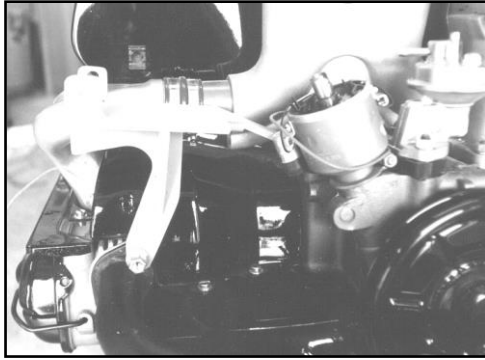
see how they fit in the wedge-shaped area. Be sure to install rubber grommets at this time. Trim the inner portion of the grommet that will be used for the # 10



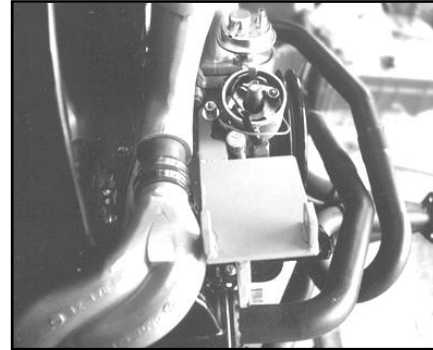
hose

**Step 6:**

Mount the A/C compressor bracket as shown. The leg of the bracket is mounted to the top exhaust manifold stud of the #4 cylinder using the special (red) nut and flat washer provided. The other leg of the compressor is mounted to the stud that holds the distributor clamp to the case with the special nut provided.



Step 6

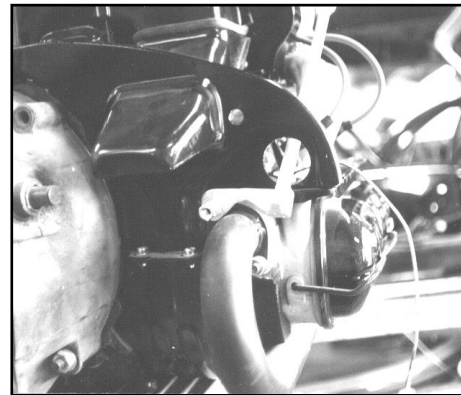


Step 6

**Step 7:**

Install the rear 2-piece compressor brace. It attaches to the #3 cylinder upper exhaust flange bolt with the special nut and washer provided if you have a center mount carb or dual Kadron style carbs.

*If you are using dual Weber style carbs such as IDF, ICT, IDA, Then skip this step and go to step 7A:*



Step 7

**Step 7A:**

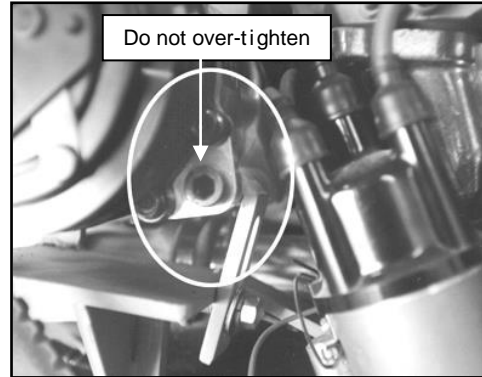
***For the dual carb setup the brace attaches to the generator/ alternator stand and the upper right mounting ear on the compressor.***



**Step 8:**

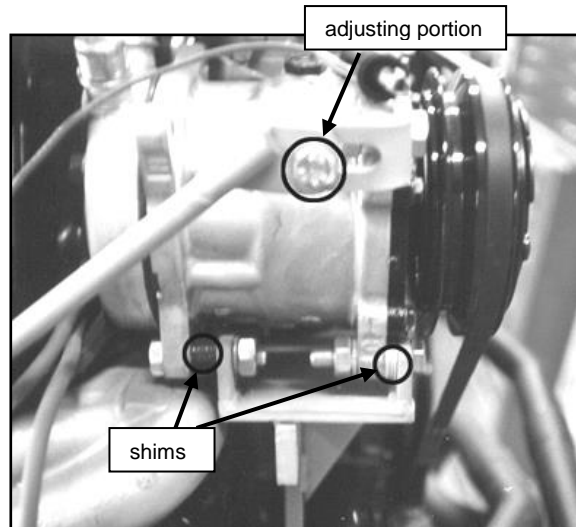
When installing the adjusting bracket on the compressor, be careful not to over-tighten the bolt that goes through the ears on the compressor. Tighten until lock washer is just flattened. This adjuster floats on the bolt.

**NOTE:** Be sure **NOT** to over-tighten the bolt that holds the adjuster to the compressor ears. If this bolt is over-tightened there is a possibility of breaking the compressor ears which **WILL VOID** the warranty on the compressor.

**Step 8**

**Step 9: This step is for single belt systems.**

Mount the A/C compressor to the bracket as shown in the pictures . It will be necessary to shim the compressor in order to match the offset of your generator/alternator pulley and crankshaft pulley. Start with the 3/8" aluminum shims provided. You can use the outer pulley groove on the A/C compressor. There will be enough compressor-to-deck-lid clearance in this position. Use the A/C belt as a guide to make sure your pulleys are aligned. When the pulleys are aligned, attach the 2-piece rear bracket to the front upper ear of the compressor and tighten only the adjusting bolt (slotted part of the bracket). On 67 and earlier cars you must use the outer pulley, and the belt adjustment is done by adding or removing generator shims. The compressor must be located at the lowest point on the adjusting bar.

**Steps 9 & 9A**

**NOTE:** *With some of the chrome after-market pulleys, alignment between the compressor, generator/alternator, and crankshaft pulley is not possible. If this situation arises, it is usually necessary to use a stock generator/alternator pulley.*

**Step 9A:**

After the compressor is properly aligned and the rear compressor brace is tightened (adjusting portion), adjust the belt and tighten the remaining compressor mounting bolts.

**Step 9B: This step is for dual Weber type carbs with separate ac belt (2<sup>nd</sup> pulley) Before mounting compressor release the pressure by loosening one of the caps on the compressor hose connections.**

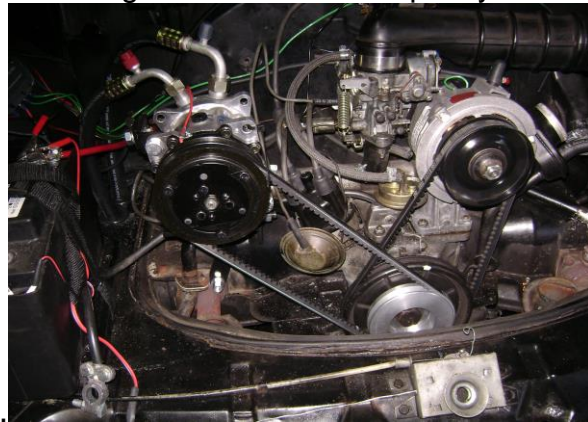
The compressor mounts as follows: The compressor is rotated 90 degrees clockwise so that the fittings are facing the center of the engine. The ears on the compressor bracket go between the ears on the compressor for correct alignment. (no shims) And the

brace goes from the alternator/ generator stand to the upper right ear on the



compressor.

The second pulley is mounted to the crankshaft with the original German crank pulley bolt



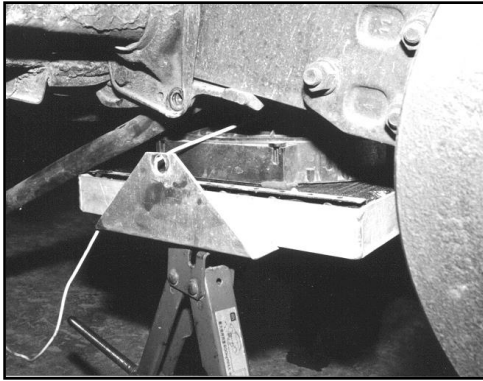
less the washer. Tighten to VW specs.



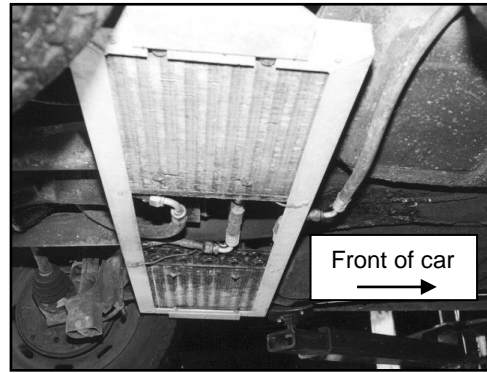
## CONDENSER INSTALLATION:

### Step 10:

Install the condenser tray/assembly by first removing the lower rear bolts from the spring plates and set aside. The condenser assembly with fitting protruding through the middle of the condenser assembly faces the front of the car. On cars with single or dual spring plates, mount the condenser tray assembly between the spring plate covers and the torsion tube housing insert the original bolts and tighten.



Step 10

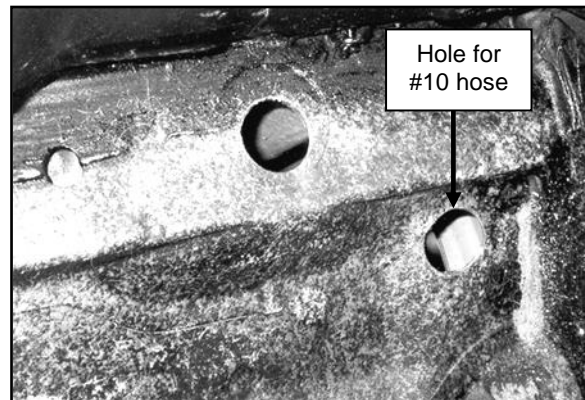


Step 10

## EVAPORATOR INSTALLATION:

### Step 11:

Drill one 1 ¼" hole through the raised bump for the right-hand steering column. Drill a second hole to the right and down, approximately 4" – just enough to clear the bottom of the gas tank. Install rubber grommets at this time. It will be necessary to trim rubber lip to fit the #10 hose through the



Step 11

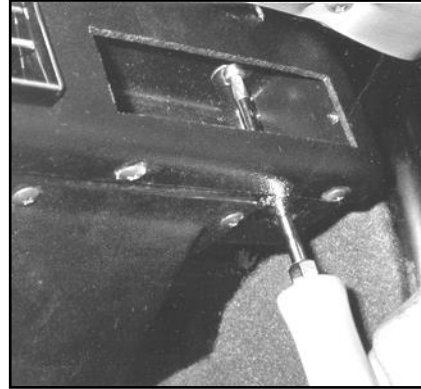


grommet.



**Step 12:**

**Attach the 90degree mounting brackets to the evaporator and position the A/C evaporator under the dash and mark the holes to drill and mount the evaporator. Install the evaporator at this time. Attach the evaporator with the 90 degree brackets to the underside of the dash by drilling three 1/8"holes into dash through existing holes in the mounting brackets.**



**Leave the 1/4-20 bolts loose so you can properly position the evaporator under the dash. Drill an 1/8" hole, using the ductwork as a guide, at each end of the duct work. Install the 2 mounting screws ,#10 x 3/4" Phillips and large flat washer, at the outside ends of the duct work, and tighten all screws and bolts . When satisfied with the position of the evaporator install the vents.**

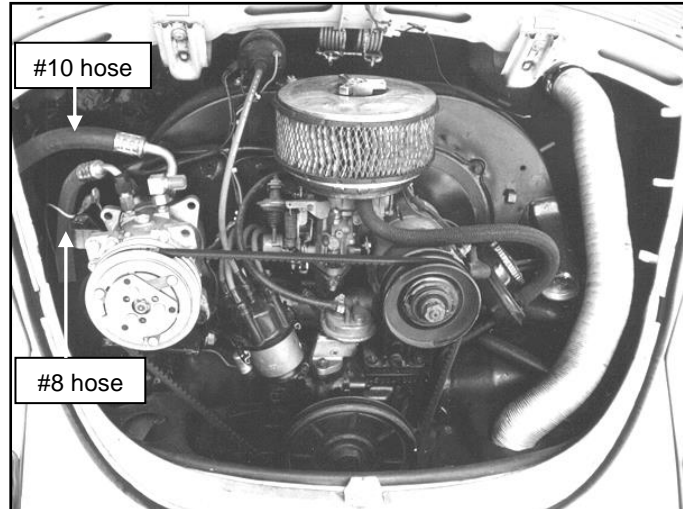


**Step 12 completed**

## A/C HOSE INSTALLATION:

### Step 13:

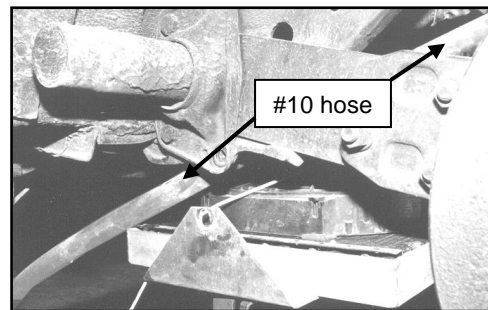
Install the # 8 hose that goes from the compressor to the condenser assembly. Be sure to install the “O” rings on the fittings before installation. This hose is routed through the rear hole of the triangular area and over the top of the transmission. Attach at both the compressor and condenser and tighten.



**Step 13**

### Step 14:

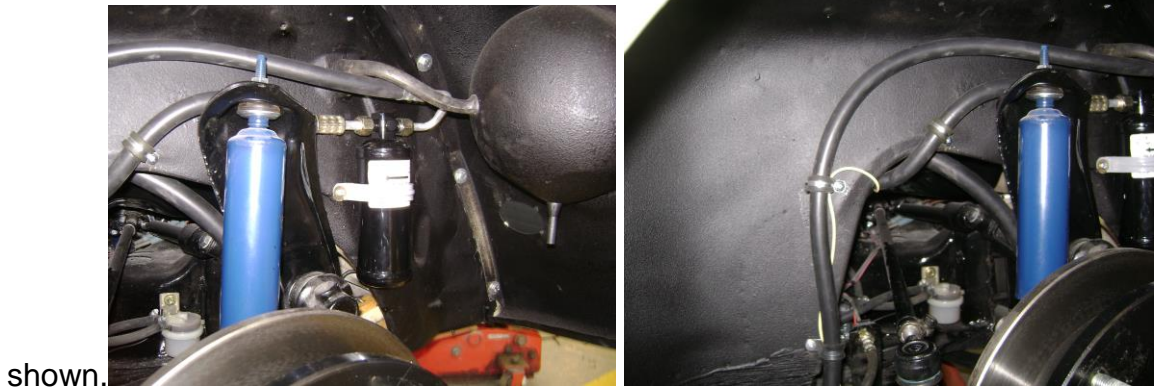
Install the #10 hose from the compressor to the evaporator. This hose goes through the front hole in the triangular area and is routed along the left side of the car and between the right side of the beam and through the left hole in the front firewall into the passenger compartment.



**Step 14**

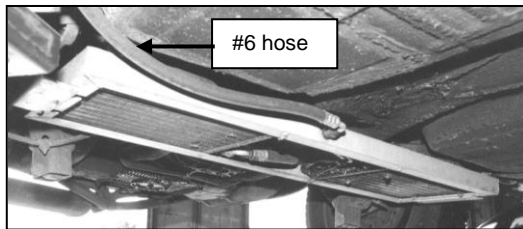
**Step 15:**

Install the dryer under the right front fender near the shock tower as



**Step 16:**

Install the #6 hose from the condenser rack to the dryer. This hose is routed along the right side of the body. Make sure "O" rings are installed and tighten.



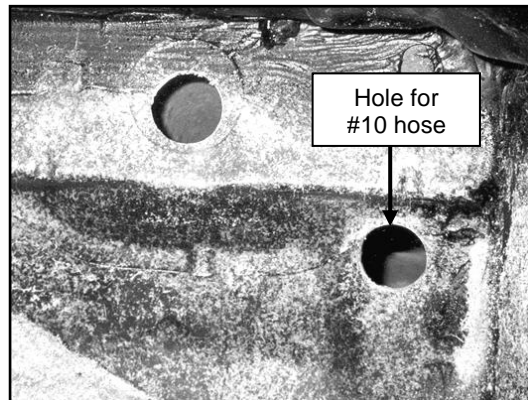
**Step 16**



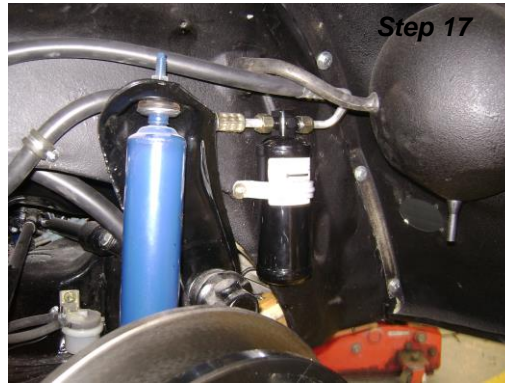
**Step 16**

**Step 17:**

Push the #10 hose through the lower right hole and connect to evaporator. Be sure "O" ring is installed.



**Step 18:**



Install the short #6 hose from the evaporator to the dryer; be sure to install “O” ring and tighten. ( hose is the one closest to the shock tower.)

**Step 19:**

Make sure all hoses are properly routed and secured so that they do not rub against any sharp edges. Also make sure all hose connections are tight.

**Step 20:**

Install the drain hose on the evaporator and drill ½" hole in the firewall for the drain hose to exit.

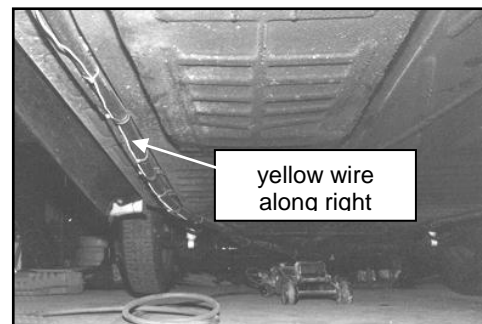
**Step 21:**

Wrap the fittings and the expansion valve on the evaporator with the A/C tape provided.



**Step 22:**

Run the long yellow wire from the condenser along the right side of the car as shown and connect to the yellow wire on the evaporator relay.



Step 22

**Step 23:**

Run the short red wire from the condenser to

the A/C compressor clutch wire. Remove the bullet connector from the compressor clutch wire and connect this wire on the compressor with the two female spade connectors and the double ended male connector provided. Be sure to secure wire to the A/C hose as shown with wire ties provided.

**Step 24:**

Connect the pink wire to a switched power source on the fuse box. It will be necessary to drill a hole to the left of the evaporator on the underside of the dash in order to route this wire to the fuse box. Connect the ground wires, one black and one brown with eyelet connectors, to the metal bracket that supports the evaporator. Connect large red wire to constant 12V source or fuse box, but do not connect through fuse. Red wire from the battery is the one to use. Connect the yellow wire from the condenser to the yellow wire on the relay.

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**Step 25:**

The system is now ready for charging. Take it to a certified A/C shop and have it charged with approximately 21-24 oz. of R134A Freon. The high side pressure should not exceed 175 psi at idle when the system is properly charged. (Pressure reading is 175 psi high side at a temperature of 90° F.)