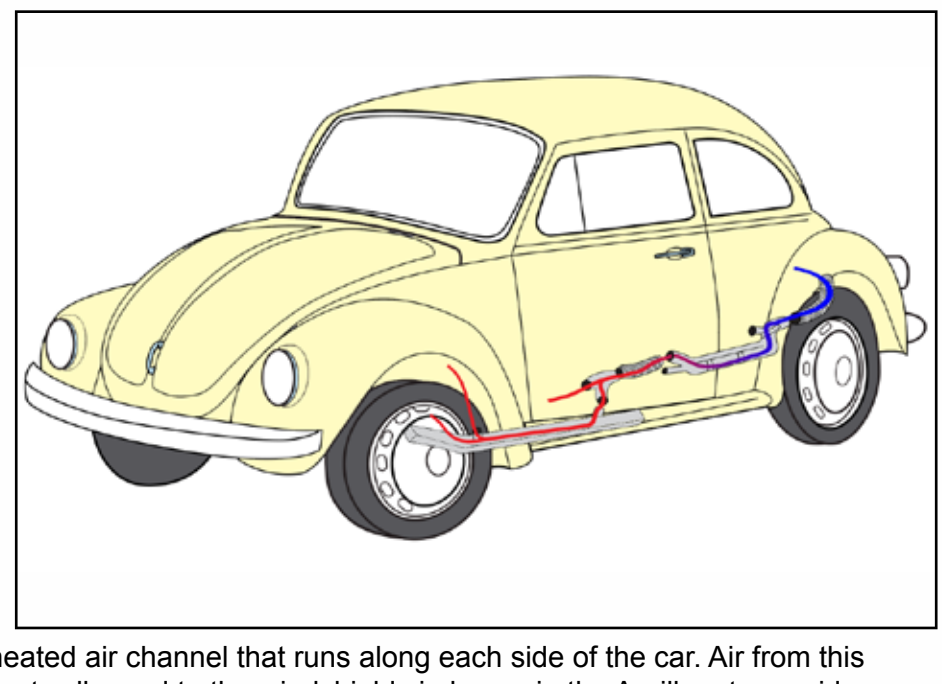
Air ~~Cooled~~ warmed VW...

There are two schools of thought regarding the aircooled VW heating system: 1) it isn't worth a damn, and 2) it is adequate and can be made to work well. Prior to doing anything with the heating system in your Beetle, Ghia or Bus you must understand the dynamics of the stock system.

Aircooled VW Heating



Most of the air output from the fan housing is directed down between the engine cylinders, heads, etc. to keep the engine cool. Post 1961 models (40hp) some of the air is ducted out of the fan housing through two 2-inch (50mm) "fresh air" tubes on either side of the fan housing. These tubes proceed down through the engine tin and direct the air into the heater boxes on either side of the engine. The volume of hot air that is blown into the car depends on the speed of the fan in the fan shroud, which in turn depends on the speed of the engine. (See Fresh Air Hoses)

The heater boxes are simply housings around the exhaust pipe that connects to the exhaust ports from the front-most cylinders on either side of the engine. These exhaust pipes continue through the heater boxes and connect to the muffler. Inside the heater boxes the exhaust pipes have large fins to provide heat transfer from the exhaust pipe to the fresh air from the fan housing.

The heater boxes are equipped with internal flappers that direct the heated air either out underneath the car or forward to the passenger compartment. These flappers are controlled by a cable attached to right-hand control lever located between the front seats. The control cable divides in two and attaches to the two lever arm assemblies, one on each of the two heater boxes. When the lever in the cabin is raised, the cable is pulled and the flappers in each of the heater boxes are opened. This directs the warm air through a corrugated tube on the front of each of the heater boxes and into a heated air channel that runs along each side of the car. Air from this channel branches off to heater vents under the rear seats, to footwell vents in the front footwells, and to the windshield via hoses in the A-pillars to provide defrosting. The destination of the warm air flow is controlled by the left control lever between the front seats.

It is important to realize that the heater boxes are an integral part of the cooling system for the engine. Even if you never want heat in your car, it is important to keep the system intact to prevent the engine from running hot and possibly warping the heads.

- Adapted from John S. Henry, "Heating Your Beetle"

Problems with Heating a classic aircooled VW

Following is a general discussion of the most common VW heating problem areas. Each of these (and more) will be discussed in more detail below.

1. **Thermostat.** If the thermostat is disconnected or not properly adjusted the engine will not heat up properly and you will not have cabin heat as soon as you should.
2. **Seals.** The engine compartment seals are a key component of the overall air flow mechanism in the Beetle (always keep in mind that the engine is air cooled). Missing seals or tinware means you risk sucking "dirty" air into the fan, and from there into the cabin heaters. An airtight hood-to-body seal is also essential to keep cold air from leaking into the cabin from underneath the hood.
3. **Fan.** The fan is the source of air to the heating system. It must be clean and the housing fitted snugly to the engine tinware.
4. **Fresh Air Hoses.** These direct fresh air from the fan housing through the heater boxes and on into the passenger compartment.
5. **Heater Boxes (Heat Exchangers).** These are the heart of the aircooled VW heating system and must be intact and functioning properly.
6. **Lever Arm Assemblies and Cables.** Common problems are broken, missing or disconnected cables, plugged cable channels, and missing or disabled lever arm assemblies.
7. **Exhaust Connections.** To assure no exhaust leaks into the system, all connections (hoses/boxes/muffler) must be good. Pay special attention to the two "doughnut" seals on the lower muffler inlets. Leaks here have been known to direct high pressure exhaust air straight at the cabin heater boxes, resulting in exhaust gases inside the passenger compartment.
8. **Flexible Heater Hoses.** These connect the heater boxes to the heat channels on either side of the car body. They should be solid, not cracked or warped, and well clamped.
9. **Footwell Vents.** These may contain cable-controlled flappers, depending on the year.
10. **Defroster Tubes/Vents.** The defroster tubes in the front door frames must be in place and intact, otherwise warm air intended for the windshield will end up in the luggage compartment.

Fresh Air Hoses

The fresh air hoses are the cardboard/foil hoses that connect the outlets on either side of the fan housing to the heater boxes. These hoses carry fresh air from the engine fan down through the engine tinware where they mate with the heater boxes, providing air to be heated for use throughout the vehicle. These hoses must solid, sealed, and secured with hose clamps on both ends. Rubber grommets around the hoses where they pass through the tinware will help to prevent chafing and premature failure, and also helps to seal the upper part of the engine from the lower part, keeping your cooling air clean.

Be sure to check the condition of the hoses under the engine tinware. Sometimes the configuration of the exhaust headers leading to the muffler will necessitate some very tight bends in the fresh air hoses. Crimping of these all important hoses in this very cramped space is a common problem.

Corrugated Heat Hoses

While you're checking the heater boxes, inspect the corrugated heater ducts that run forward from the heater boxes to a connection close to the rear of the floor pans. If these corrugated ducts are defective in any way, they should be replaced to prevent loss of heated air out of the system. (There is also a grey colored heat resistant rubber seal on these tubes that goes missing causing warm air to escape)

Lever Arm Assemblies and Cables

(These apply only to Bug, Ghia, 1974 Thing and pre 1968 Bus as Bay Window Buses do not utilize Lever Arms)

The lever arm assemblies on the side of your heat exchangers may have fallen off entirely or seized up.

Without these your cables will not open the flaps to let heated air flow from the heat exchangers to the cabin. (If you are in a rush or are on a tight budget you can wire the heat exchanger flaps open for constant heat throughout the winter months. However, you will not be able to turn the heat off, so come springtime you will be very warm until you release the wires).

Heater cables are an easy DIY project provided you can raise the vehicle enough to get to the heat exchanger levers.

It is common to misplace the end of cable barrel nut:

Defroster Tubes/Vents

One of the most common complaints with aircooled VWs is that the defroster doesn't work to remove condensation from the inside of the windshield. If the remainder of the system is in good condition the defroster can be adequate on a Bug or Ghia. On Buses the cabin space is so large that defrosting and heating are never going to be as effective as a modern vehicle.

a) Don't forget to close the outlets under the rear seat by depressing the left heater lever between the seats so that the maximum amount of warm air available comes to the front of the Bug.

b) Close the footwell flaps (this can usually be done using your foot or on later models via the dashboard knobs) so that the air is directed up to the windshield.

c) At the start of winter check the condition of the air hoses that run under the hood and the junction boxes. Unfortunately the 32mm hoses that run behind the hood hinges down to the front of the heater channels are difficult to access without cutting a hole in your door pillar. However, these can be replaced with patience and some stiff wire to direct replacement hoses onto the metal tube that is out of sight at the front of the heater channel. (Behind the lower door hinge).

1 5/16" X 25"

1'x 39"

Share the Knowledge

If you've found this article helpful, and would like to take advantage of more knowledge and practical advice from a community of restorers, journalists and enthusiasts, please visit our "Share the Knowledge" section on the Mid America Motorworks VW website.