

Installation of the Vanistan Heater Valve with Auto-bleed

Please read this entire document before beginning.

Parts list:

Heater control valve assembly bundle including clear air purge tube and control cable attached, and plastic protective sleeve.

In hardware packet:

M8 hollow bolt with built-in check valve
Banjo end fitting with tubing barb
(2) M8 copper sealing washers
Oetiker crimp clamp

Notes: All directions are from the driver's point of view; front is always toward the front of the vehicle, left is always toward the driver's left, etc. Outboard is away from the longitudinal centerline of the vehicle.

The polypropylene elbow fitting and PVC tubing have rated working temperatures much higher than the coolant will ever reach. The elbow is quite tough by itself but it can be damaged by rough handling, and must not be unscrewed so as not to disturb the thread sealant, so handle only the metal parts of the assembly to avoid pushing or twisting the elbow or the tubing,.

The picture below shows the new heater valve as it will be installed, the end at top of picture will point upward, the side in view will be rearward.



Installation general:

The heater control valve installs as a direct replacement for the stock valve, which is a routine job the main aspects of which will not be detailed here.

Where this job differs is in identifying which side of the heater coolant circuit the valve is positioned, and the bleeder tube and control cable installations, so each of those aspects are detailed below.

It is necessary to use the included control cable because the new valve's movement is stiffer and the original Vanagon cable uses a thinner wire which will buckle when pushing this valve closed. You will have to remove the instrument cluster to access the control cable connection at the ventilation control levers.

To prepare for this job, first remove the upper grille, instrument cluster, plastic lower center dash panel, and the spare tire and tire carrier.

Feed or return side of heater circuit?

Vanagons generally came with the heater valve in the feed, or hot side, ignoring the convention of placing valves on the colder side of heating circuits for longer life. The radiator auto-bleeding feature of this heater valve will purge the radiator quickly and continuously if it is installed in the return hose, whether the heater valve is open or not. It will also work on the feed side, in fact, but there it will only purge air from the radiator when the valve is fully open and rpms are over about 3000. These instructions describe the recommended installation in the return hose.

First, identify the feed and return hoses:

The easiest way is with the engine warm and idling, open the heater control valve and run the heater fan on high speed. Under the van, feel the surface temp of the two hoses just below the heater valve, the hotter one is feed, cooler hose is return.

Or you can trace the feed hose from the back of the van. On a wbx with the earlier 1.9 cooling system, the feed hose comes from a fitting right on the front of the right cylinder head. That hose connects first to the tee where the rear underseat heater feed departs, then another hose continues to the front heater.

On a wbx with the late 2.1 cooling system, the feed hose comes from the coolant manifold just forward of the right cylinder head, the manifold is mounted on the forward side of the forward engine compartment bulkhead. Just like the 1.9 system, that hose goes first to the rear heater tee, then another hose goes on to the front heater.

Return hose installation:

If you find your old heater valve is in the return hose, then you simply install this valve in its place, while also observing the cable and bleeder tube details.

But if your van has its old valve in the feed hose, as most do, there are two simple ways to alter the plumbing so the new valve is in the return hose instead.

One is to install the valve in the feed side just as the original valve was installed, and then just swap the feed and return hoses back at the two tees that connect the rear bench seat heater, and the new valve will now be on the return side of the front core. If you swap the hoses on the rear, engine side of the tees, flow direction will be reversed in both heater cores; if you swap on the front side of the tees, flow direction will be reversed in only the front core. This reversal has no effect on heater function, heater cores work the same regardless of flow direction. If you find that your rear heater control valve is on the feed side of the rear heater core, reversing flow direction will put it on the return side, which will be beneficial to that control valve.

On some vans, though, access to the rear heater tees can be pretty cramped. For the alternative method you'll need a 5/8" (3/4" in PEX) hose barb coupling (brass, stainless or nylon) and two more hose clamps (1" size range). You will remove the old valve and replace it with the coupling instead, then cut the opposite hose at about the same elevation and install the new heater valve in it.

**Control cable routing:**

Before removing the old heater valve, note where the old cable comes thru the large oval rubber grommet that the heater hoses come thru, and note how the old cable is routed under the dash up to the control lever assembly. The new cable should follow about the same routing.

At the left end of the vent control levers assembly, loosen the heater control cable housing clamp and unhook cable wire from control lever (2nd lever from top). You can pull the old cable down and out attached to the old heater valve as you remove it.

As you prepare to bring the new valve up into installation position, first be sure it is fully closed with the valve's lever against the stop. Then feed the free cable end up thru the oval grommet from below. From above, pull the cable on thru while guiding the free end along the same route as the old cable until the free end reaches the control lever assembly. Swing the dash heater control lever all the way left. Hook the bent end of the cable into the lever and lightly clamp the cable housing in the holding clamp. The cable housing should project past the clamp so it almost reaches the lever attachment point, as shown above left. You will make the final cable adjustment once the valve is installed.

**Bleeder tube routing:**

From the upper grille opening, insert the plastic protective sleeve in the gap behind the radiator on the right side near the top, as shown at left center. The sleeve will act as a guide for the bleeder tube and will stay in place to protect the tube from then on.

When inserted, it should emerge and be visible from below at the top of the radiator fan cowl recess.

Insert the free end of the bleeder tubing into the guide sleeve from below, and slide it in. The tube will emerge from the guide sleeve at the top and have about 6-8" free at the top end.



Remove the old radiator bleeder bolt. Install the check valve bolt, banjo end fitting and copper washers as shown at left. Tighten moderately, it doesn't take much torque to seal this type of fitting, and there is a danger of stripping the threaded insert in the radiator by overtightening. Also, the copper washers will seal again and again, there is rarely any need to replace them unless the fitting has been overtightened.

To finish the bleeder tube, first be sure to slide the small crimp clamp onto the tube end as shown. Then warm the tube very gently with a warm air blower for a few seconds, just enough to soften it slightly, and push it onto the barbed end of the banjo



fitting. If the tube becomes sticky to the touch, it's too hot and will be too soft to insert the barb, so let it cool and try again. After the tube is slid all the way onto the barb, let it cool, then move the crimp clamp over the barb and compress it gently with pliers or end nippers.

Slide the tube in or out of the guide sleeve so it makes an easy bend without any chance of kinking.

Push the hoses onto the valve and take care to position your hose clamps so they can't interfere with the cable and valve actuation lever (earlier version of valve assembly is shown at left, procedure is the same).

Cable adjustment:

Making sure the actuating lever on the new valve is completely closed against the stop, make the final adjustment of the cable at the control lever. You want to be certain the valve will always close completely, so with the cable housing clamp loosened, move the control lever all the way left, then nudge it about 1/4" right, and in that position, tighten the housing clamp. That way the cable will always close the valve before you run out of lever movement.

Temporary valve stiffness:

These kind of ball valves have a fairly stiff action at first, but will loosen up a bit with use. Especially when left fully open or closed for some time, the valve can be particularly stiff to move initially. In order to lessen the chance of the control cable wire buckling at the control lever, avoid leaving the valve in the fully open position (control lever slid right) because closing it again requires pushing the wire, with the risk of the wire buckling. Once a push-cable wire buckles it is ruined. It's best to leave the valve in the fully or nearly closed position when you shut off the engine, because opening it again involves pulling the cable wire, which poses no risk of damage. Over time and with use the valve's action will become looser so the need to consider the position it's left in and the risk of buckling the cable wire will lessen.

Radiator bleeding function:

When this valve is installed on the return side, it will purge the radiator continuously whether the valve is open or closed, somewhat more actively when the valve is closed. For a number of running sessions you will see air bubbles in the clear tube at various times, this is normal and of no concern. Don't try to analyse it's function by what you see, some of the behaviors will seem paradoxical, you can relax and let it do its job. With the bleed feature and the system filled with coolant there is no longer any circumstance where air can be trapped in the top of the radiator that could cause the coolant circulation to be interrupted. Eventually the tube will show only liquid coolant with no more air bubbles to be seen.

After a complete coolant drain, you can refill by any method you prefer, but I find this way the easiest: van level, both heater valves fully open, radiator banjo fitting opened a half-turn. Open the bleeder port at the engine: on a 1.9, this is the port at the 4-way hose connection on the forward bulkhead; on a 2.1, this is on the thermostat cover.

Slowly pour premixed coolant into the pressure tank, letting it settle for a few minutes at a time, until it will accept no more. Close the radiator banjo fitting. Start the engine and prop the throttle open so it runs at 2000-2500rpm. Keep adding coolant to keep the pressure tank close to full. After one minute, close the rear heater valve, and after one minute more, close the front heater valve. If it hasn't already, you will soon see liquid coolant flow out the radiator bleeder tube. When it runs as only liquid with few or no air bubbles, top up coolant at the pressure tank, close the pressure cap, and allow the rpms to go back to idle speed. Let the engine idle until the radiator fan cycles a few times, and shut down. Close the engine bleeder port. Make sure the coolant reserve tank is filled to between the Min. and Max. marks. Leave the van to cool down completely, usually at least a half-hour, and when the pressure tank is cool to the touch, confirm the tank is full to the top (remove the pressure cap to check, if you have an opaque tank). Top off if needed, close the pressure cap. From then on, maintain the reserve tank level between the marks. No additional bleeding of the radiator should be required, until the next coolant change.

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