

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.

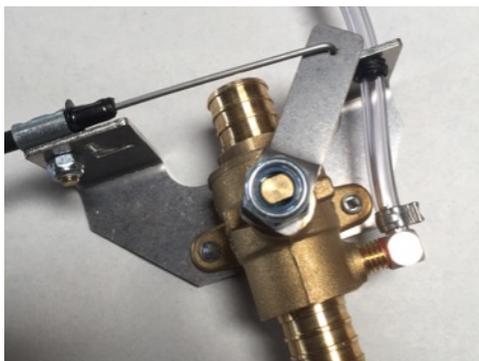
In hardware packet:

M8 hollow banjo bolt
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, inboard is toward the centerline.

Caution: The small stainless steel elbow fitting can be dislocated by rough handling, which could disturb its seals, so handle only the frame and the brass body of the valve and avoid exerting any pressure on 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. Here the lever is seen in the fully closed position.



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.

You must use the included control cable because the new valve's movement is initially stiffer, but will loosen up quickly. The original Vanagon cable is 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 radiator grille, instrument cluster, and plastic lower center dash panel. The spare tire and "clamshell" tire carrier will need to be removed to access the heater valve from under the front of the van with a radiator installed. Without a radiator, access is easy thru the front.

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. These instructions describe the recommended installation in the return hose.

("What if I just install the valve in the heater feed side?" : This can be done, but then it will only purge air from the radiator when the heater valve is fully open and rpms are over about 3000. It won't provide the convenience of fast-purging the radiator at a mere high idle, so it would be best to purge the radiator initially by one of the conventional processes, but the valve will afterward work to purge the radiator during normal driving.)

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 directly from a nipple on the front end of the right cylinder head. That hose connects first to the tee where the rear underseat heater feed departs upward, and another hose continues from the tee to feed 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, This 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 feed 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, though, reversing flow direction will put it on the cooler return side, which will be beneficial to the life of that control valve.

On some vans, though, access to the rear heater tees can be quite cramped. For the alternative method you'll need a 5/8" (3/4" in PEX) hose barb coupling (brass, stainless, aluminum or nylon) and two more hose clamps (1" / 25mm 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 leave the old cable attached to the old heater valve and pull the cable down and out with the 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 (see picture page 1). 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 (if your cable housing has a spring-like wire winding around the last several inches, treat the end of the winding as the end of the cable housing). 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 chafing.

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

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



Remove the old radiator bleeder bolt. Install the hollow banjo bolt, banjo end fitting and copper washers as shown at left. It takes only light torque to seal this type of fitting, and the copper washers will seal again and again if tightened moderately, so it's OK to loosen the banjo bolt repeatedly to aid coolant filling as you normally would.



To finish the bleeder tube, first be sure to slide the small Oetiker crimp clamp onto the tube end as shown. Then warm the tube very gently with a warm air blower for just 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 a relaxed bend without strain.

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 (an earlier version of valve assembly is shown at left, procedure is the same).

Cable adjustment:

After 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.

IMPORTANT: Temporary valve stiffness:

This type of ball valve has a stiff action when new if left fully open or closed for some time, but it will loosen up nicely with use, so you should take care at first when closing it (moving dash lever to left) to avoid buckling the control cable wire at the dash control lever. Once a push-cable wire buckles it is ruined and must be replaced. Opening the valve, the dash lever pulls on the cable, which poses no risk, but there is risk of buckling the cable wire when closing, until the valve breaks in. Movement is much easier when the coolant is hot, so initially avoid closing the valve before the engine warms up. With use the valve's action will become much easier and the risk of buckling the cable wire will diminish. I find after a few dozen operations the valves are as smooth and easy to move as the stock ones, even when cold. So you only need to observe this warning for a short time, but do take care to only close when engine is warm, and move the dash lever gently.

Radiator bleeding function:

When this valve is installed on the heater return side, it will purge the radiator continuously, somewhat more actively when the valve is closed. For several running sessions you will see air bubbles in the clear tube going both directions, this is normal but may seem paradoxical. You can relax and let it do its job, after several drives the tube will show only liquid.

After a complete coolant drain you can refill by any method, but it's no longer necessary to raise the liquid level in the radiator to expel all air before starting the engine. You can still do that if you prefer, but if you instead fill on level ground with the bleeder banjo bolt loosened, then close it and start the engine, there will be about a liter of air remaining in the top of the radiator, which will be purged in a short time by the heater valve bleed function (if you installed it in the heater return hose). Afterwards you merely have to be sure to top up the pressure tank to replace the displaced volume, and from then on maintain the reserve coolant level. No additional bleeding of the radiator should be required, until the next coolant change.

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