

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.

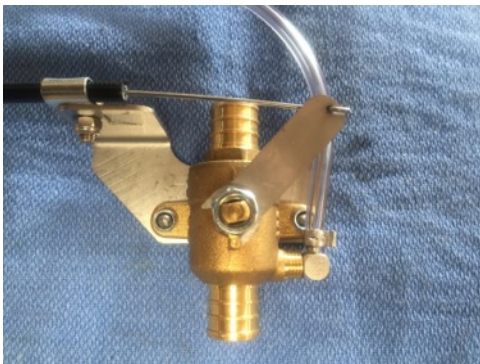
In hardware packet:

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., even when you're facing the front of the van. 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.

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 "clamshell" tire carrier if they are present under the front of the van.

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.

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 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, aluminum 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 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. 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 at the top of the radiator fan cowl 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 check valve 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 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 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:

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:

This type of ball valve has a fairly stiff action at first, but will loosen up with use. If left fully open or closed for some time, the valve can be particularly stiff to move initially. To avoid buckling the control cable wire at the dash control lever, avoid leaving the valve in the fully open position (control lever slid right) because closing it requires pushing the wire, which is when it may buckle. Once a push-cable wire buckles it is ruined. It's best to leave the valve closed when you shut off the engine, because opening it again involves pulling the cable wire, with no risk of damage. If you did leave it opened after your last drive and wish to close it on your next, the valve will become easier to operate when it has hot coolant flowing thru it, so wait 'til the engine warms up to close it. With use the valve's action will become easier and the risk of buckling the cable wire will lessen.

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, here's one of the simpler ones: van level, both heater valves fully open, radiator banjo fitting loosened 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 to run at about 2000rpm. Keep adding coolant to keep the pressure tank close to full. At about a minute, close the rear heater valve, and after a 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 un-prop the throttle. Let the engine idle until the radiator fan cycles a few times, and shut down. Close the engine bleeder port. Make sure the overflow tube is put back on the pressure cap, and fill the coolant reserve tank to between the Min. and Max. marks. Let it cool down at least a half-hour. Confirm the pressure tank is topped off. 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.

What if I just put the valve on the heater feed side?: 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 as it will in the return side, so the radiator will have to have air bled out by one of the conventional processes, but it will continually purge the radiator during normal driving.

Chris Corkins
Vanistan / Intrepid Overland
Abiquiu, NM, USA
www.intrepidoverland.com
info@intrepidoverland.com