

# HOW TO: Replace a Ranco Heater Valve Seal

## INTRODUCTION:

So as part of the continued restoration of my 1954 Packard Clipper, I discovered that the Ranco H-16 Heater Valve that is on my car is not only very rusty, but has been leaking water down the inside of the firewall. This probably contributed to my "Swiss-cheesed" front floor pans.

These heater valves were used in many different US Passenger vehicles. While the physical valve may look different between cars, the procedure for replacing the diaphragm seal is basically the same.

The seal you need is carried by NAPA and the part number is **BK 6601000**. This part is made by *Balkamp* and costs \$9.99. My local NAPA did not have it in stock, nor did the regional warehouse. So I had to order in from NAPAOnline.com. Shipping costs about another \$9. So you are looking at about \$20 in costs. The cost to have one of these valves rebuilt is around \$100 with shipping. There are various folks/outfit that can do this, please consult your nearest copy of Hemmings for a list. But I decided to take the cheap route and try it myself, and in the process show others how to rebuild their own valve. The replacement seal comes with a Ranco instruction sheet. It's a pretty generic sheet, but with it and this article, you should have most of the basis covered.



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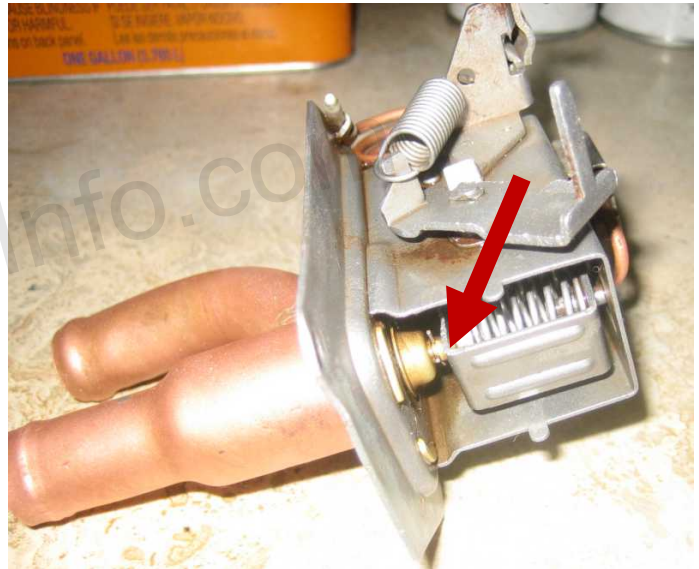
## STEP 1: Clean Up

I have a small media blast cabinet, so I used that with 80 grit glass-bead to strip all the external rust and grime from the valve. Whatever you do to clean the valve, be extremely careful not to damage the thermo-coil. If this is damaged, there is no way to repair it. A lot of the rebuild outfits I spoke to said that if this is already damaged, then they will not even accept it for rebuild or as a good core. So I really suggest that glass-beading the valve be what you use. This is also what most of the rebuilders use to clean their cores.



## STEP 2: Shaft Clip Removal

The first thing to do is to remove the clip that connects the valve shaft to the mechanism. The clip can be rotate about 180 degrees so you can get the best angle on it.



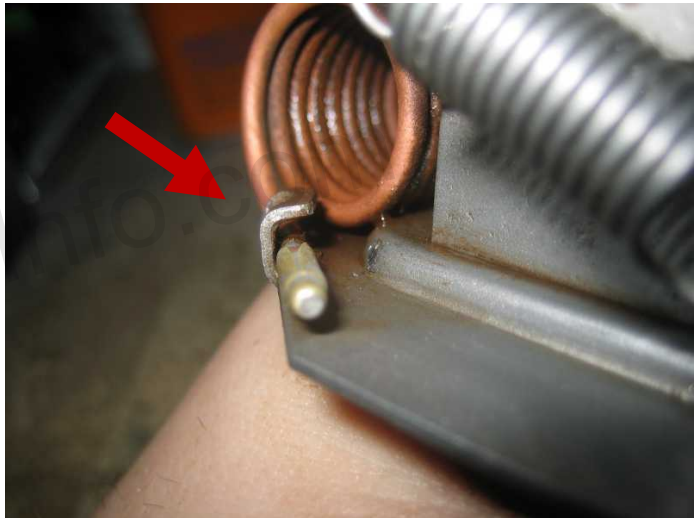
Here in this second picture, the clip has been removed from the shaft, and is just resting on top of it.



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## STEP 3: Thermo-Coil Retainer

This bent over tab must be gently pried open to free the end of the Thermo-Coil from the base plate. I used a small thin screw driver to slowly bend it open enough for me to use a pair of small needle-nose pliers to bend it the rest of the way. I only opened the tab enough to allow the coil tubing to come free. This will also help later when we need to bend it back.



## Step 4: Mechanism Removal

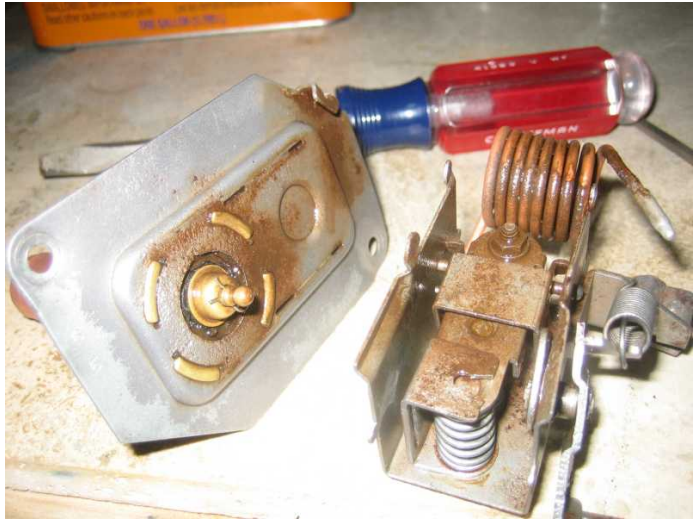
The next step is to remove the Mechanism from the base plate. This is done by carefully straightening the four tabs on the bottom of the base plate. Once again I used a small thin screw driver to get them started, and then a pair of needle-nosed pliers to straighten them the rest of the way. Once this is done, the mechanism should pull free from the base plate. Just be careful that the end of the Thermo-Coil tube is free from its hold-down tab before pulling it too far apart.





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There is no need to disassemble the mechanism unless there is a problem with it. Anything that is damaged in the mechanism is beyond the scope of this "How-To".



## STEP 5: Valve Body Removal

The 4 brass tabs you see in this picture hold the valve body to the base plate. If you just try to pry them up, you are going to destroy them. The tabs are rounded and fold back over their own curvature. So what I did was use a very-very thin putty knife and tapping it gently with a small hammer, worked the edge of the tab up, and then worked the putty knife around the curve in the tab to lift it off the base plate. I repeated this with the 3 other tabs.



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Once the all the tabs were lifted, then I used the blunt edge of a steel ruler, held flat against the base plate, and lightly tapping it with the same small hammer, worked the soft brass tabs vertical. Trying to use pliers at this point would probably just mangle the tabs.



Once all the tabs are vertical, then valve-body should come free from the base plate.



## STEP 6: Valve Body Disassembly

With the valve body free, we can now remove the old seal, and the valve plunger. This is done by removing the small clip on the end of the plunger shaft. Then the seal cup is removed.



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I then removed the plunger from the body, and carefully removed the remains of the old seal.



## STEP 7: Final Cleaning

Now that everything is apart, it all went back into the Blast Cabinet for another round of media blasting.



## STEP 8: Seal Installation

So this is what the new seal looks like. The side with the metal clip goes toward the base plate, the other side towards the valve body





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First the valve plunger is reinserted into the valve-body. The plunger has no rubber seal on the end of it. It just a metal disc, but it does seal very well internally against the valve body.



I wiggled the pump body around until the plunger shaft stuck out the hole in the bottom of the valve body. I then inverted the pump body onto a drift held in a vise. This is simply to keep the plunger from falling out while you reinstall the seal, cup, and clip. One note here, the area of the valve body that the seal contacts must be perfectly clean, flat and smooth or it will not seal correctly.



I sprayed the valve-body seal surface and the seal itself with copper gasket spray just for a little extra insurance.



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The seal is pushed down over the shaft until firmly seated against the valve body. Make sure the center of the seal is also pushed down far enough to allow the cup to install below the clip groove.



Next the retainer clip is reinstalled



I then sprayed the other side of the seal with a little more copper before the base plate goes back on.





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## STEP 9: Base Reinstallation

The base plate needs to be completely flat where the valve body mounts. So I put my base plate on my vise anvil, and worked it flat with a hammer.



Next the valve body tabs are lined back up with their respective holes in the base plate. Make sure you have the correct orientation of the base-plate to valve body before you do this. With the ends of the valve body resting on the vise, I gently tapped each tab it a crossing pattern until they were all lying flush against the base plate.



Check the other side of the base plate to make sure that the brass ring is firmly seated all the way around against the base plate.



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## STEP 10: Mechanism Reassembly

The mechanism body tabs are simple reinserted back into the corresponding holes in the base plate.



The tabs are then carefully bent flat against the base plate.

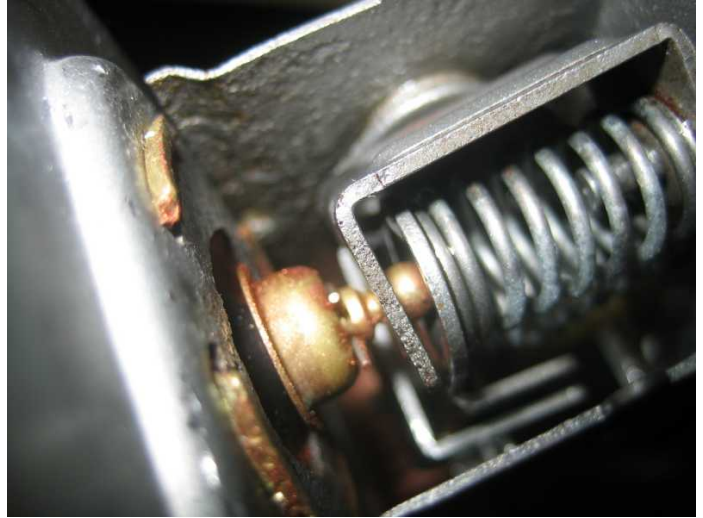


The Thermo-Coil retainer tab is then bent back into place. You want the tab to be tight enough to hold the tube in place firmly, but be careful not to crush the tube.



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The shaft clip is then reinstalled to link the mechanism back to the valve plunger. I then worked the mechanism lever through its range to make sure there was no binding and the plunger moved in and out freely.



## STEP 11: Protection and Lubrication

I spray some Lubriplate into the mechanism and worked it back and forth several times to insure good lubrication for years of future use. I also sprayed the valve body, and engine facing side of the base plate with some high-temp clear to ward off rust.



## Testing:

I attached two lengths of heater hose to valve with hose clamps, and plugged the outlet hose. I then pressured the inlet hose with 25lbs of air-pressure to test the valve seal for leaks. While it was pressurized, I sprayed soapy water around seal on both side of the plates and checked for any bubbles. None were found. So this should prove that it will hold against the 13lbs of coolant system pressure.

## Conclusion:

Start to finish including Media Blasting was about a 2 hour-3 hour process. As long as the mechanism, Thermo-Coil, and the valve body are in good shape, then there is no reason why someone with basic hand tools cannot swap out this seal out at home. Patience is needed to avoid breaking any of the mounting tabs and damaging Thermo-Coil.

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