

## Water Pump Renovation

It was early on in our bus conversion ownership that I recognized we had a water pump issue. You see the bus came with two water pumps. One was a high volume electric pump that had enough pressure to provide a great shower or provide enough volume where two people could use water simultaneously without being affected by the other and most importantly, it could flush the thirsty Headhunter brand toilet. The standard RV style DC water pump was merely an emergency backup that didn't have any of those features due to its low volume and pressure. I was surprised it even had a second pump but relieved when the big electric pump started acting up. The problem with being on the little DC pump was it couldn't flush the toilet so we couldn't really use the bus. There a few items one must have to be able to live, the refrigerator and the toilet are a couple of must haves.

When the electric pump would start up when nobody was using water or wouldn't come on when called upon, I started looking for a leak in the plumbing. After an initial inspection of the fresh water plumbing I saw there wasn't a leak so something in the pump was awry. As I read more about the Headhunter brand water pump, I learned the JetPaq Headhunter water pump was really a European Grundfos pump relabeled Headhunter. It was impressive with its heavy duty motor and built in electronic sensing of water pressure and even a built in expansion tank. I played with the pressure on the tank when I saw it had a schrader valve like a tire has and the owner's manual told me the steps to set the pressure. No matter what air pressure I made it, the pump would not stop running sporadically when the pressure was up in the system. That's when I decided to isolate it from the plumbing to ensure it was the pump and not an unfound leak somewhere. That told me it was the pump internally not the plumbing so I was going to have to go inside the pump to fix this. Surely a pump as grandiose as this one could be fixed. Well, a call to Headhunter left me with two bad tastes in my mouth. One, the pump used to be fixable when parts were available and two, a replacement pump was going to be very expensive. Since the bus was of no value on the little DC pump because the headhunter toilet wouldn't flush, I decided to bite the bullet and invest in another headhunter electric pump. Reviews of the Mach 5 Headhunter pump were good around the bus conversion forums so I called Headhunter tech support and asked what it took to purchase a new pump. Headhunter was very sympathetic to my cause and offer to send me a new Mach 5 and all the adjoining hardware for half price. I had them send it at a tune of about \$1200. I also was faced with illuminating or replacing the little DC pump if it truly was going to be a backup water pump. Headhunter had suggested that I install a separate expansion tank since the Mach 5 didn't have one incorporated like the Jetpaq did. When it all arrived I was shock a bit by the new pumps size. It was a bit larger than what I thought was already a hefty size pump for an RV. The outlet and inlet were in different places so it was obvious the little space the Jetpaq was located in was going to have to be reorganized. I also had to install a larger expansion tank someplace so I was in for a real puzzle of how to get all of this to fit into that little water pump cabinet. The first step was obvious though, I had to remove both the Jetpaq and the little DC pump along with the inlet water strainers and the flexible hoses connecting to see what space truly I had to work with. That was quite a job since the Jetpaq was using 1" inlet and outlet reinforced hoses, valves and fittings that appeared to have never been apart since the bus was built. The fun really started when I started to the installation of the new pump, expansion tank, strainers and all the necessary plumbing. How was it all going to fit?



Before attempting to shoehorn the pumps and all of the hardware back in I thought I better read up on what the inlet strainers did and more importantly how they should be positioned for optimum performance of the pump. I had read about air pockets causing vapor locking problems with these big water pumps during my trouble shooting of the Jetpaq pump. With my new found knowledge I laid out a plan to install the Mach 5 as I thought it should be. I had some goals in mind as I did this. I wanted to be able to open the strainers without making a watery mess or moving something

to gain access. I also wanted isolation valve on both sides of the pump so if it had a problem I could remove it without draining all the pipes or the expansion tank. I considered eliminating the little DC water pump but had appreciated having it when the Jetpaq was going bad. I was also faced with the little DC pumps inability to flush the toilet so I searched the market for a 12 volt DC backup pump. The specifications on the toilet called for 55 PSI at 10 gallons per minute. No DC pump on the market would do that! But then I started to learn that the expansion tank Headhunter had suggested would make up for the DC pumps shortcomings as long as it could pressurize the tank with at least 50 PSI. I began shopping for a DC pump and learned the strongest on the market was a Shurflo extreme series that was rated for 65 PSI and 5.7 gallons per minute. I spoke with a shurflo rep and he explained this pump would work just fine but if I was going to run it with the Mach 5 pump the current limiter feature would have to be removed on the Shurflo. That was simple enough so now I had a larger DC pump to showhorn into that little water cabinet as well.

I started the installation with the expansion tank. I decided it was to go in the overhead of the cabinet where it will be out of the way and both pumps would have access to the tank plumbing. With that item in and plumbed, I turned my attention to installing the DC pump. The old DC pump I removed had been located behind the Jetpaq on the floor and hard to access. I decided to install the new Shurflo DC pump on the back wall of the cabinet so it could be seen, the DC fuse could be easily accessed and the water strainer could be serviced. I also was mindful of noise isolation so the pump was mounted with all rubber isolation blocks to make it run as quite as possible. New isolation valves and reinforced rubber hoses were used to make the installation tight and new.



Next would be the big Mach 5 pump installation. The water inlet strainer would have to be installed low to the floor because Headhunter doesn't want it to be above the inlet to the pump to prevent vapor locking so it went in first. That also meant I had to install it with the strainer pointing up in the air which was against one of my goals of making it easy to remove for maintenance. I could easily open the strainer but in turn dump a pint of water on the rubberized floor in the process. I decided to make the pump perform dependably and to open the strainer easily this was acceptable. The actual installation of the Mach 5 pump was quite easy once I got it onto the cabinet. Another half inch and I wouldn't have gotten it to fit though. With it in and new stainless hardware bolting it down I was ready to plumb it. That is where another snafu came about.



The outlet hose was going to be short and I couldn't find a 1 inch isolation valve to fit in the short length of hose I had to work with. I decided since it was right in front and on top of the pump I would continue to look for one and install it later. After all the plumbing was installed which was no easy task due to the 1" diameter reinforced hoses being quit stiff, I was ready to leak test everything. I had used special pipe dope on all of the barbed fittings to make them even more water tight and Teflon tape and pipe dope on all of the screw type plumbing but I was still nervous turning the water on for the first time. The DC pump didn't need to be primed I leak tested it first. It ran fine and to my amazement only one fitting needed to be tightened to be leak free. Whew! Next I had to prime the Mach 5 pump with almost 2 gallons of water but fortunately it goes into the top right next to the outlet so it was easy to do with a funnel. I turned it on and it ran beautifully and amazingly quite. The pressure was up at 62 PSI using either pump and nothing was leaking so all was good. Now both pumps have the ability to flush the toilet and the water pressure is great with either pump. In hindsight I could have saved a thousand dollars and just went with a Shurflo extreme series 12 Volt DC pump and even have even added a second 12 volt pump as a backup for an additional \$200. At the time, I felt the Mach 5 Headhunter pump was necessary so I justified it's expense and it does make it Prevost style.