





Rheem Gen 5 Hybrid Water Heater Noise Characterization and Reduction









After a lot of research, measurements and modifications, I'd like to share my experience with this heater.

Hybrid water heaters make noise. It is unavoidable. Motors turn, compressors convert refrigerant gas into liquid using mechanical devices, fan motors hum, fan blades move air and the air "whooshes" through the inlet and outlet. It appears to be common for us buyers of these units to have "noise problems." They are rated at a 49dbA sound level, but after completing installation, I measured **64dbA**. *Every 10dB increase is an approximate "doubling" of the perceived noise level, so this is significantly louder than advertised!*



Here's some of the options you may want to try to help the situation. You can combine several of them to increase the chances of success. Of course, your installation location, your DIY skills, your budget and time commitment will affect what you may want to try:

Method	Notes	
<p style="text-align: center;">Add sound deadening mat to the top shroud</p>  <p style="text-align: center;">Not Effective Very Effective</p>	 <p style="text-align: center;">https://smile.amazon.com/dp/B0751G6TMV?psc=1&ref=ppx_yo2_dt_b_product_details</p>	<p style="text-align: center;">Helps reduce vibrations from compressor/fan being transmitted to the surrounding area.</p>
<p style="text-align: center;">Add sound insulation to the walls and ceiling surrounding the heater</p>  <p style="text-align: center;">Not Effective Very Effective</p>	 <p style="text-align: center;">Lowe's/Home Depot</p>	<p style="text-align: center;">May not be practical for certain installations.</p>

<p>Add more sound dampening material to the compressor</p> 	 <p>Sound mat</p>	<p>Requires minor disassembly of the heater – taking the top off.</p>
<p>Change out the fan</p> 	 <p>Rheem replacement</p>	<p>Requires moderate disassembly of the heater - Taking the top and top shroud off. May or may not help.</p>
<p>Make a “hat” to redirect sound coming through the inlet</p> 	 <p>Plywood, sound mat, carpet</p>	<p>Redirects a substantial amount of sound from going “straight up” to “out the sides.” Make sure to keep it far enough above the inlet to allow airflow.</p>
<p>Hang dense blankets in strategic place near the heater – walls and doors</p> 	 <p>https://smile.amazon.com/dp/B00JWU3QKK?psc=1&ref=ppx_yo2_dt_b_product_details</p>	<p>May or may not be practical depending on where the heater is installed.</p>

Build and place sound absorbing panels near the heater



<https://www.fullenglish.co/blog/2016/8/13/sound-absorber>

Isolate the tank from the floor if the heater is not on a concrete slab



<https://www.gpconservation.com/product/rheem-vibration-isolation-kit/>

Expensive - and if the heater is already installed, more difficult to install. May not be compatible with leak detection.

Duct the inlet and/or outlet



<https://www.youtube.com/watch?v=S2DulssPGZU>

May or may not be practical depending on where the unit is installed. Would probably work even better if insulated ducting is used.

Background:

I bought a Rheem 80 gallon Proterra Hybrid water heater in Dec 2021. I was noisier than I expected.

The main source of noise in these heaters are the compressor and the fan/air noise.

It is unknown if Rheem used noise level as a selection criteria for their compressor and fan vendors. They must have gone through a design process to ensure the refrigerant type and compression ratios combined with the heat exchanger characteristics and air volume were appropriate to provide enough heat transfer to be an effective water heater in a range of conditions. I'm sure they also did a cost/benefit trade in component selection.

It would be logical to assume Rheem's vendors provide components that are revised and redesigned over time – their compressor supplier may revise the unit to address issues, decrease cost, etc. This may work against the goal of having a quieter compressor. Same goes with the fans.

Where the heater is installed also makes a difference. Hard walls (drywall, paneling and the like) will reflect sound. Wood and ductwork around the heater will carry sound to different areas. The distance from the heater to the living areas makes a big difference.

The most effective noise reduction methods eliminate or reduce the noise at the source(s). Rheem took some steps to do this, but it obviously isn't enough for many of us:

1. The compressor is mounted on vibration isolation mounts
2. The compressor has a (thin) wrap around it

I first called Rheem to try to resolve the noise issue, and they seem to have a “stock response” of “it is the fan,” and they may mail you a new fan to install. I did this as the first step, and the noise improved a bit, but not a lot.

I measured the “fan only” and “compressor only” sound levels. I measured the “both compressor and fan” sound. I looked at the different frequencies and levels that each combination produced. I looked at the construction of the heater. I then looked at steps I could reasonably take to reduce the sound.

Knowing the main noise sources are the compressor and the fan/air, I took a few steps to try to reduce these:

1. I installed “safe and sound” insulation in the wall cavities nearest the heater.
2. I made a “hat” that fits over the top of the inlet to redirect sound “down” instead of “up”
3. I made a more effective “blanket” to put over the compressor
4. I added “sound deadening” mats to the inside of the top shroud to help reduce vibrations
5. I added a “sound panel” above the inlet to absorb sound
6. I added “sound deadening” mats to parts of the duct work in the room where the heater is installed.
7. I added some moving blankets to the walls/door to absorb sound

These steps made a difference, but again, your time, budget, skill level and patience will determine what you may want to do.