

## The following information was provided by Robert Kembel. He graciously shared his experience in rebuilding the blower assy. In his SR-2000

Hi All,

For several months, I have been trying to get the blower to start reliably at power on. Because the finals (8122) require cooling air, even during receive, I was so worried that I would damage the tubes due to lack of cooling resulting in overheating of the tube seals. In receive mode, a resistor is inserted in series with the blower motor to reduce the fan speed and thereby the noise. This resistor is shorted out when in transmit in order to increase the airflow while transmitting.

I took the blower assembly out and cleaned and lubed the motor multiple times, but to no avail. I had no luck finding a replacement blower, or even an original motor. I tried adding a resistor in parallel with the existing dropping resistor to raise the voltage during receive but the problem still persisted. Finally, I decided to try and fix the problem for once and for all.

Disclaimer: I don't know if the blower motor in my SR-2000 is original or not. I am somewhat suspicious because the motor seemed to be awfully close to the 6AQ5 audio output tube and adjacent relay.

On Amazon, I found a fairly universal replacement motor for a bath fan that looked like it would fit, so I ordered one to check it out. The listing specs were:

- Bathroom exhaust fan replacement: 50CFM, 0.65 amp, 3000 rpm, 120 volt, 60 Hz
- Shaft = 1.75" long x 3/16" diameter, wire length = 6" with 2-prong plug
- They have passed UL certified, stable and durable
- Mounting studs 1-7/8" on center
- Kit contains: 1 x motor, 1 x fan = 4.5 (flat/paddle style); Replacement for motors Nutone Broan, Uppco, Vektorola E498-1, Bay Motors, Sears 569, Dayton and many other units.

The size, mounting stud spacing and motor end cap size all looked like a good match. The only obvious problem was that my existing motor had a 1/4" shaft while this replacement has a 3/16" shaft.

The new motor arrived and I observed that the mounting studs projected from the wrong side of the motor (opposite the shaft). I unscrewed the studs and screwed them in from the opposite (back) side. The rear motor housing is threaded to accommodate the mounting studs so I needed to use nuts on the front side to hold the motor together. With the mounting studs now extending out the front (shaft) side of the motor, I could see that the motor would fit and the studs were long enough to mount the motor to the blower housing. I did need to add a washer between each of the mounting studs and blower housing so the motor winding bobbin cleared the blower housing, otherwise, the motor ended up being somewhat cocked. When the motor is mounted, the winding bobbin should face towards the PA cage.

With the motor in place, I was ready to tackle the shaft issue (motor shaft = 3/16" blower squirrel cage hole = 1/4"). I remembered that some Heathkit knobs used an insert to adapt the 1/4" knob hole to a 3/16" shaft and sure enough, that was just what was needed. The squirrel cage was positioned so that it cleared the opening cover plate, the set screws tightened, the AC plug on the end of the motor leads cut off (after confirming that the blower works ok), the blower reinstalled, and voila, everything now works fine. The new motor is not as deep as the one I replaced and there is now a reasonable amount of clearance between the motor and the 6AQ5 tube.



## In a later post Robert added the following information.

Here is a link to the fan (motor) that I ordered from Amazon. This looks to be a universal item:

[https://www.amazon.com/dp/B08LNTPH7N?psc=1&ref=ppx\\_yo2ov\\_dt\\_b\\_product\\_details](https://www.amazon.com/dp/B08LNTPH7N?psc=1&ref=ppx_yo2ov_dt_b_product_details)

The harder part for many might be adapting the 3/16" motor shaft to the 1/4" hole in the squirrel cage. I used a bushing from a Heathkit knob insert which was a perfect fit. One may also be able to use a piece of brass tubing, such as the following:

[https://www.amazon.com/Brass-Round-Tubing-0-19-Length/dp/B000H9JLFY/ref=sr\\_1\\_15?crd=3AS9GVCFP9P74&keywords=brass%2Btubing%2B1%2F4%2Bod%2B3%2F16%2Bid&qid=1682962464&s=industrial&srefix=brass%2Btubing%2B1%2F4%2Bod%2B3%2F16%2Bid%2Cindustrial%2C143&sr=1-15&th=1](https://www.amazon.com/Brass-Round-Tubing-0-19-Length/dp/B000H9JLFY/ref=sr_1_15?crd=3AS9GVCFP9P74&keywords=brass%2Btubing%2B1%2F4%2Bod%2B3%2F16%2Bid&qid=1682962464&s=industrial&srefix=brass%2Btubing%2B1%2F4%2Bod%2B3%2F16%2Bid%2Cindustrial%2C143&sr=1-15&th=1)

This brass tubing has an outer diameter of 1/4" (0.25") with a wall thickness of 0.03" and an inside diameter of 0.19". The inside diameter (0.25" - 2x 0.03" = 0.19") is just slightly larger (0.0025") than the 3/16" (0.1875") diameter shaft on the motor.