TurboKOOL

Model 2B-0001

Installation Manual

2022

TurboKOOL is NOT responsible if Installation Manual is not read completely before installing / using yourTurbokool.

Turbokool
1843 Stovall St.
Bullhead City, AZ 86442
Phone # (714) 795-2424
Email: PacificRV@gmail.com

CAUTION: TurboKOOL is not FAIL SAFE!!!
Do not use where the lives of children, pets or livestock depend on the TurboKOOL and NEVER leave them alone in a hot vehicle. When carrying children, pets or livestock, it is always wise to have a backup and an alarm system.
Neither Pacific RV Parts, LLC nor TurboKOOL will be held responsible for death or injury caused by improper use of the TurboKOOL

*****DO NOT seal around the base of the TurboKOOL unit after installation. Any water that gets under the TurboKOOL base must be able to evaporate or drain out through the 1/4" gap in the foam tape.**

TurboKOOL Model 2B

Installation Manual

TurboKOOL units do not come with a solar panel or 12v battery.

Read this entire Instruction Manual before proceeding.

Very Important Information

A 14” x 14” Vent Frame is NECESSARY

The vent frame is a very important and integral part of your TurboKOOL installation, and must be installed and sealed on the roof before attempting to continue with the TurboKOOL installation.

The vent frame works as a dam around the opening in the roof to keep any water that gets under the base of the TurboKOOL unit from getting inside the vehicle.
If installing over an existing ceiling vent, remove the vent dome, screen and the crank mechanism, and **LEAVE the vent frame that is sealed to the roof in place.**

If replacing an air conditioning unit with a TurboKool unit, there won't be a vent frame sealed to the roof.

If there is no vent frame, one must be installed & sealed (Use your vehicle manufacturer's recommended sealer) on the roof before continuing with the TurboKOOL installation.

If there is no 14” x 14” opening where you want to install the TurboKOOL, you should consult with your local dealer or vehicle Manufacturer to identify where to cut a hole. Vent frames are available from www.TurboKOOL.net or your local dealer.

If your installation is on a thin roof that might give a little under the weight of the TurboKOOL (about 18 lbs), you may wish to install a reinforcement frame to the inside ceiling using the vent frame screws to secure it in place.

1. Verify you have a vent frame installed & sealed around the 14" opening in your roof where the TurboKool unit is to be installed.

2. Place the foam tape (furnished with your TurboKOOL unit) around the under side of the TurboKOOL base flange (outer lip) see Fig. #1-G. Leave a 1/4”gap at two opposite diagonal corners of the TurboKOOL unit. These gaps assure drainage of any water that may get between the unit and the roof from condensation or possible spillage.

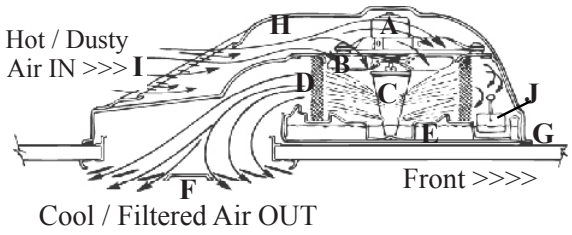


Figure #1

A. 12-Volt DC Reversible Turbo-Motor
B. Air Impeller
C. “Spin-Spray” Pump
D. 360 Degree Industrial Filter Element
E. Waterpan
F. Exhaust Grill
G. Mounting Flange (note roof seal)
H. Weatherproof Hood
I. Intake Grill
J. Automatic Water Float Valve

*****DO NOT seal around the base of the TurboKOOL unit after installation. Any water that gets under the TurboKOOL base must be able to evaporate or drain out through the 1/4" gap in the foam tape.**

3. Position the TurboKOOL with intake grill to the rear. See Figure #1-A below. With hood removed, place TurboKOOL unit over the roof vent frame so it its flush to the roof and level with the ground. If mounting to a sloped or curved roof, you will need a plenum, which can be fabricated from sheet metal, marine plywood or polyethyene

Placement & Clearance Guide for TurboKOOL Coolers

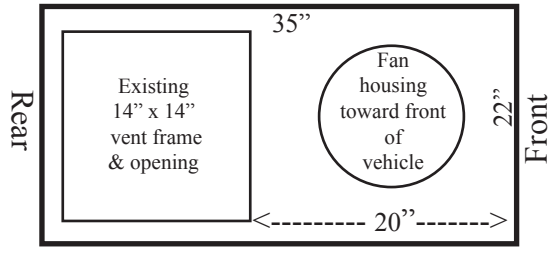


Figure #1-A

4. As shown in **Fig. #2 below**, fasten the two square ceiling bracket plates (E) to the under side of the vent hole or on the rim of the inside frame. Use the (6) #8 x 1" screws - three in each of the 3 smaller holes in each plate. These plates mount in the front two corners and are placed so the attached bolts in each plate are approximately 13" center-to-center, use the two holes in the TurboKOOL body as a guide.

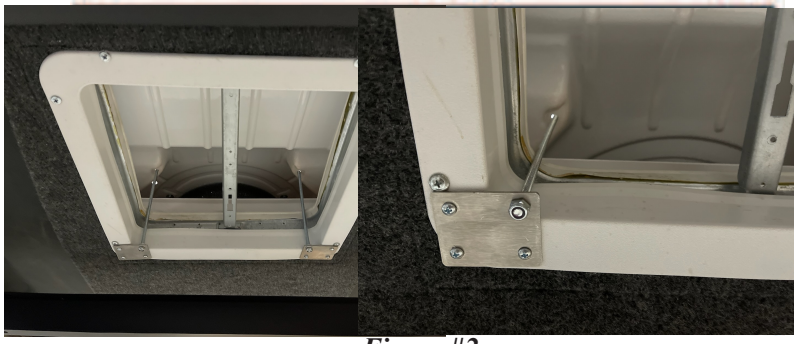


Figure #2

5. The two long bolts, 1/4-20 x 10" **(Fig. #2-E)** should go up through the two holes in the TurboKOOL body. Place the supplied 1/4" flat washer and 1 of the 1/4" hex nuts on each bolt and **HAND TIGHTEN to secure the unit to the roof (apply downward pressure to the base to hand tighten nuts securely). DO NOT OVER TIGHTEN or USE A WRENCH.** Now apply the other 1/4" hex nut from the kit, holding the bottom nut with a wrench. Tighten the top nut, locking the 2 nuts together.

Longer mounting bolts: If longer mounting bolts are necessary for your particular application, you should be able to improvise by using a 1/4" piece of all-thread rod.

6. Refer to **Fig. #3**. Front facing flange bracket. This bracket is used to secure the front lip of the TurboKOOL unit to the roof while driving

1. Install the bracket across the front facing lip of the TurboKOOL unit.
2. Locate the bracket so it will secure and hold down the front edge of the TurboKOOL unit while driving.
3. Secure the bracket with the 3-#8 x 1-1/2" screws supplied.
4. There is butyl tape seal attached to the underside of the bracket to aid in sealing the bracket to the roof.
5. It is the customers responsibility to make sure the roof is sealed properly per the vehicle manufacturers recomendation.

Figure #3 Front Hold Down Bracket

7. The Plumbing & Hardware Pack will contain the most common "T" fitting, 1/2" Pex to 1/4" quick disconnect and an inline 1/4" shut off valve.
The placement of your fitting and valve should be in a convenient, easy to reach location.

Install the 1/2" Pex "T" in a pressurized cold water line of your fresh water system and locate the inline shut off valve so you have easy access to turning it on or off.
(**See Fig. #5 below**).

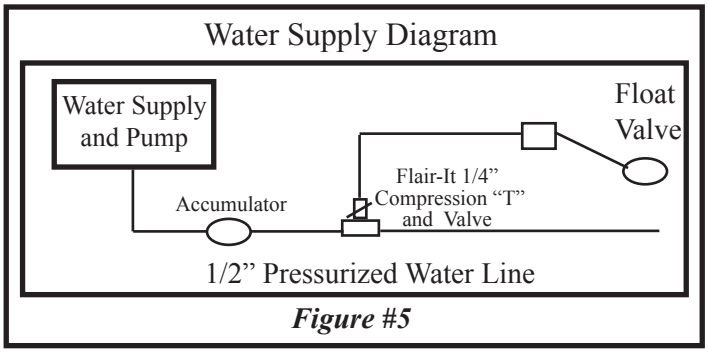


Figure #5

Different water pumps vary in the frequency with which they cycle on & off. If your water pump cycles too frequently, you can remedy this issue by installing a small in-line accumulator tank, available at www.TurboKOOL.net

Choosing a route for your water supply line.

There are two great locations to run the water supply line from the source to the cooler. If your water source is close to either your refrigerator or one of the vent pipes leading from your grey or black water holding tanks, you're in luck.

If your water source is closest to the refrigerator, then open/remove the outside access door and run your quarter inch water supply line and your 12-volt power line if necessary, up through the corner of the back of the refrigerator cabinet, and right out the little vent holes on the roof vent cap.

If your water source is near a black or gray holding tank vent pipe, that may be easier. Anywhere from 2 to 3 feet from the bottom of the vent pipe, drill a 1/4" hole at a steep (almost vertical) diagonal up through the side of the vent pipe. All the vent pipe does is vent a little gas. No liquids will come out. Push the 1/4" water line up through the diagonal hole right to the vent cap on top of the pipe. The vent cap should be removable to make it easy to run the 1/4" line right out the vent cap holes, or drill a new hole.

The float valve is then plumbed in place by running the 1/4" tubing to the float valve (Figure #6 -B on next page) located outside on the front of the right side of the TurboKOOL unit.

To install the water supply tubing from the inside opening of the vehicle, (for example: if you're using a stand alone water tank), a 1/4" hole can be drilled into the air exhaust section of the Turbo-KOOL body.
See **Figure #6 (C) for the best location to run the water line from inside the roof opening to the float valve.**

BE CAREFUL NOT TO DRILL INTO the WATER PAN
Run tubing from inside, through the 1/4" hole to the float valve on outside of the TurboKOOL body. **Figure #6 (B).**

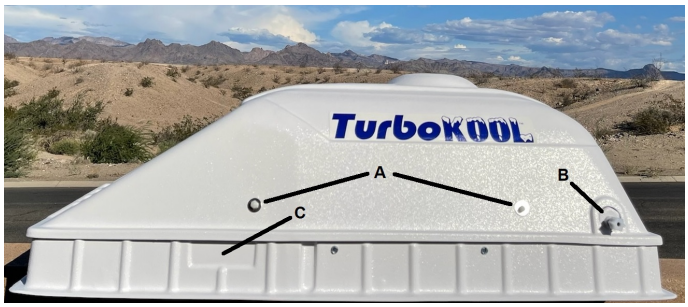
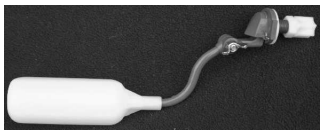


Figure #6

See **Fig. #4 (K). TheTurboKOOL is fitted with a float valve** which controls the water level in the water pan. It is preset/adjusted at the factory and should NOTt need any additional adjustments.



Float Valve

Important: When tightening the compression nut that secures the 1/4" tubing to the Float Valve, be very careful not to allow the Float Valve to turn. Once it's tight, look inside (Figure #4) & make sure the Float Valve is aligned so that it operates straight up & down.

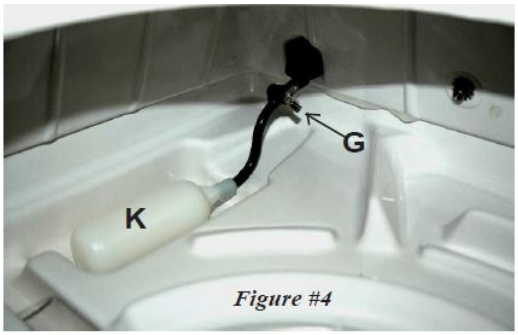
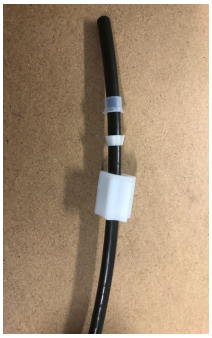


Figure #4



Water can be supplied in numerous ways, such as:

A. Your existing pressurized water system in your RV or vehicle .

B. The 2B-1005R 3-gallon Water Supply Tank.
A manually pressurized stand alone water tank.

C. The 2B-1800R 15-gallon Water Supply Tank w/ 12-volt water pump and accumulator tank included.

B & C are available directly from www.TurboKOOL.com

It is recommended that you use an in-line water filter to maintain good quality water for optimum evaporative efficiency.
Our TurboKool In-Line Water Filter 2B-1007R work very well and are available from www.TurboKOOL.com

While the hood is removed, It is very important that you check to be sure that the bottom of conical Spin-Spray Pump is approximately 1/2" above the bottom of the waterpan.
Never allow the bottom of the Spin-Spray Pump to touch the bottom of the waterpan as it will drill a hole right through the bottom.

Also at this time, check to make sure the fan can turn freely within the venturi opening.

Now replace the hood back over the body and secure with the 4 washers & plastic acorn nuts.

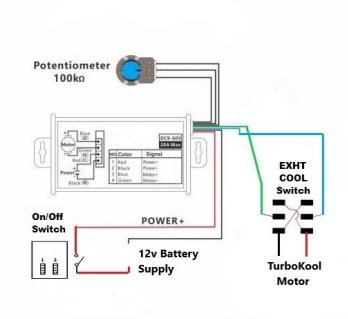
*****DO NOT seal around the base of the TurboKOOL unit after installation. Any water that gets under the TurboKOOL base must be able to evaporate or drain out through the 1/4" gap in the foam tape.**

8. From inside the vehicle, extend the 2 wire harness from the motor through the ceiling vent opening and attach them to the the open spade terminals on theEXHT/COOL switch. Attach black to black & red to red at the switch.

9. Using the orange wire nuts furnished, connect your 12-volt power source to the two leads on the cooler. It is **EXTREMELY IMPORTANT** that at least #16 stranded wire (#14 preferred) be used to bring electrical current to your TurboKOOL. A 10-amp fused in-line pigtail is included to protect your TurboKOOL and your electrical system.

Figure #8

Wiring Diagram with Variable Fan Speed Switch starting 2019



10. The exhaust grill **Fig. #8**, can be mounted for permanent installation. Using the 4 outer dimples in the underside of the exhaust grill flange as location guides, drill four 3/16" holes. Center the exhaust grill over the vent opening and attach it to the ceiling with the four #8 x 1" exhaust mount phillips head screws provided.

Note: Driving with your TurboKOOL unit on may cause water spillage inside your vehicle. However, if you take it upon yourself to do so, do not drive over extremely bumpy roads (such as off-road) as this may cause spillage.
If you are going to drive on extremely bumpy roads, you can shut off your water supply by switching off the power to the RV water pump or closing the inline shut-off valve (installed earlier) to the TurboKOOL float valve. The reason for this is to prevent possible spillage into your unit. You may wish to run the cooler on "HI" speed for a few minutes after you shut the water off to lower the water level in the water pan before driving.

We have a staff of experienced technicians who can answer your technical questions or give you more information on our products. Just call our Tech Support and Customer Service number:

714-795-2424 **PacificRV@gmail.com**

Notes to Keep in Mind

The waterpan is NOTwaterproof, but is splash resistant. PRV Parts, LLC does not recommend driving with your TurboKOOL on. However, if you take it upon yourself to do so, do not drive over extremely bumpy roads (such as off-road) as this may cause spillage.

If you are going to drive on extremely bumpy roads, you can shut off your water supply by switching off the power to the pump or closing the shut-off valve to the water supply. The reason for this is to prevent possible spillage into your unit. You may wish to run the cooler on "HI" speed for a few minutes after you shut off the water to lower the water level in the waterpan before driving. Occasionally, as use and environment dictate, you should remove the hood, the motor mount assembly and the baffle ring from the waterpan to clean out all the dust and pollen that has been removed from the air by the ilter element. *See Draining & Cleaning your TurboKOOL unit below.*

This unit is recommended for use in areas where the average relative humidity does not exceed 75%, see our Efficiency Chart and US Humidity Map on our website, www.TurboKOOL.com

When Switching From "EXHT" To "COOL" or from "COOL" TO "EXHT", First Turn Power Switch To "OFF" and Wait Until the Fan Has Stopped Rotating Before Switching Directions, otherwise You May Blow the Fuse.

Draining and Cleaning

If you are draining the cooler in preparation for freezing weather, you will want to make sure the circular tray and the float valve tray are both empty and the water line from the main water supply leading to the cooler is drained and possibly blown clear.

To drain the 1/4" supply line in preparation for cold weather, first close the shut off valve from your pressurized supply line. Then release the 1/4" line at the shut off valve and allow it to drain into a paper cup. Next remove the 4 nuts securing the hood and remove the hood. Remove the 3 nuts that hold the motor mount assembly to the body. **(Be very careful not to misplace the 6 rubber motor mount bushings, 3 plastic spacers and 3 flat washers. Note the sequence of the motor mounts pieces for re-assembly).**

Gently turn the motor assembly over and lay to the side. You can now reach inside and to remove the baffle ring. At this point you may also wish to remove and replace or clean the filter. With the filter and the baffle ring out, you can now clean out all the dust and pollen that has been removed from the air by the filter element. A sponge works well to remove the water and clean the pan.

How TurboKOOL Technology Works

The cooling is caused by evaporation. **(see Fig #1 on pg 2)**. Warm, dirty, dry outside air, with its low relative humidity, is pulled into the cooling unit by the fan, while water is being sprayed by the Spin-Spray Pump onto a cylindrical, porous non-organic filter. As the dry dirty air is forced through the wet filter by the fan, the pollen & dirt are removed and the water is evaporated, which cools the air coming out of the cooler. This cool air must be allowed to flow freely through the unit being cooled, and out through a small opening in a window, door or vent. If the air flow is restricted, the cooling will be much less. The efficiency of evaporative cooling is dependent upon many factors, size of the unit being cooled, how well it's insulated, the exterior temperature & humidity, are just some of the variable factors that can affect the cooling efficiency. Our efficiency chart & US Humidity Map on our website, www.TURBOKOOL.com will give you a rough idea of the performance you can expect.

Troubleshooting

UNIT DOES NOT OPERATE:

1. Try switches at all speeds in both directions.
2. Check wire connections at the switches, the motor and at power supply.
3. Check fuse and charge level of battery.
4. If installed on a trailer and operated on vehicle battery, check if inner connection is correct.
5. With speed switch in OFF position, remove hood. Rotate fan by hand to check for interference with venturi opening. Check the filter, make sure the pump isn't rubbing on bottom of the waterpan, or that the motor is frozen.
6. Check for mineral/salt deposits in and around mechanical parts such as fan blade, spin-spray pump and water pan.

INADEQUATE COOLING:

1. If no air flow, check above items 1 thru 5.
2. Check water level, water supply lines and valve.
3. Check filter and pump. If dirty, clean as directed under "Recommended Routine Maintenance".
4. Check to see spin-spray pump cone tip is submerged in water and check for approximately 1/2" clearance between end of spin-spray pump cone and bottom of water pan.
5. The water level in the water pan should be approximately 1" high (or to the bottom of the round baffle ring), depress float and observe if water is flowing thru the valve. Refer to Removal, Replacement and Adjustment Procedure for the Float Valve, Motor and Filter on page #8
6. Check filter for mineral/salt deposits that can cause the filter to perform very poorly.

EXCESS VIBRATION:

1. Check fan blades and pump cone, rotating by hand. Note whether fan blades are broken or if cone set screw is loose. Are fan blades hitting filter or edge of venturi opening?
2. Check for loose screws, loose or deteriorated rubber motor mounting bushings. Replace if needed.
3. Excessive mineral/salt deposits can cause imbalance in the fan blades and the spin-spray pump - in turn, creating a vibration.

WATER LEAKAGE:

1. Check to make sure your unit is mounted on a portion of the roof level with the ground.
2. Check water level in unit. Refer to Item #5 "Adjustment Procedures" for the float valve adjustment.
3. Also See "Notes to Keep in Mind".

EXCESS WATER CONSUMPTION:

1. Check items listed under Water Leakage above.
2. If rate of water consumption is not due to a leak, but instead only during operation, remember, your TurboKOOL is providing cooling effect in proportion to the water consumed. Under conditions of high temperatures and low humidity, more water is used.
3. Driving conditions, such as rough roads, stop and go or sharp turns cause excessive action of the float valve and may allow the unit to overfill.
(See "How TurboKOOL Works").

DO NOT try to run a TurboKOOL 12-volt DC motor with a 110-volt power source without a transformer. TurboKOOL units can run from standard 110-volt house current ONLY if you use a 12-volt DC transformer. This will reduce the 110-volt down to 12-volt DC. If you're unsure, please seek professional advice.

Operating your TurboKOOL

TO USE FOR COOLING:

* Turn on the water pump in your vehicle to fill the unit.
* Open a window or vent in your vehicle 1-2 inches **in the area to be cooled or past the area to be cooled.**
* Press “COOL” switch.
* Adjust "Variable" speed switch desired Fan speed.
* Press “ON” switch. After initial cooling, we recommend you run unit on a lower speed to conserve water and power.

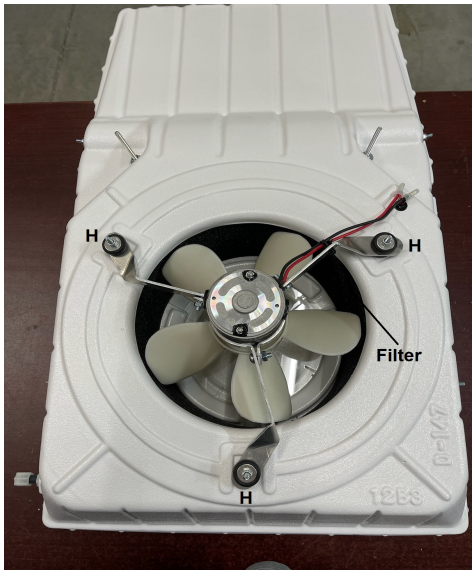


Figure #4-A

TO USE FOR EXHAUST

Shut off the water supply to the TurboKOOL unit (Unit will throw any water in the water pan out the hood).
Open a window or vent to draw air into vehicle.
Press “EXHT” switch. Select speed and press “ON”switch.
IMPORTANT: When using the TurboKOOL as an exhaust fan, TURN OFF the WATER supply to the TurboKOOL unit, if NOT the water would continuously be sprayed up & out the hood & would run down on the roof of the vehicle and could also cause fan motor damage.

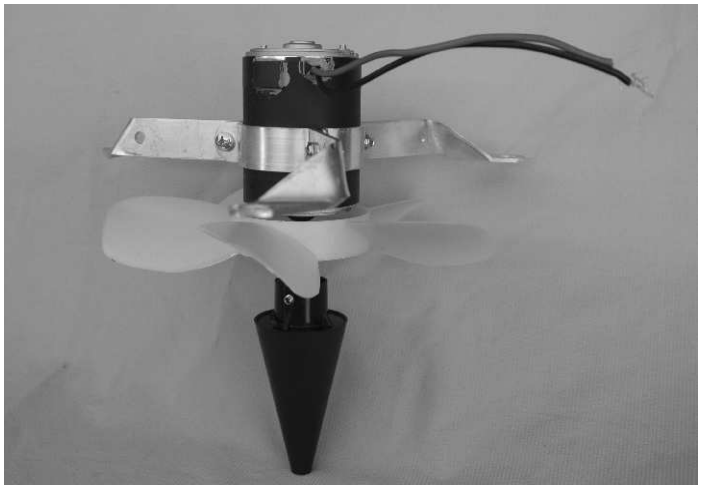


Figure #9

Removal, Replacement and Adjustment Procedure for the Float Valve, Motor and Filter

1. Disconnect electrical power to the unit.
2. Refer to Fig. #6 (A) on page 4. Remove the 4 nuts (2 on each side) and remove hood.
3. Refer to Fig. #4-A (H) on page 4. Remove the 3 motor mount nuts at (H). Remove (as an assembly, refer to Figure #9 shown above) - the motor, 10” fan blade and the spin-spray pump. Gently turn over and lay to one side.
4. Remove cylindrical filter through the venturi opening & replace if needed. The float valve is now accessible for adjusting if necessary.
5. **To adjust or install a new float valve:**

This is easier if you have 2 people! Remove the hood, remove the motor/fan/spin-spray pump assembly and lay it to one side, remove the large black industrial filter. Reach inside the cooler and just loosen the butterfly nut Fig. #4 (G), allowing the float valve to float freely. Let in a very small amount of water. When the water level in the water pan reaches approximately 1” deep, have your helper quickly close the shut off valve. Then you can take your time setting the float and tightening the butterfly nut. To be sure you’ve got the right water depth, do this procedure several times until the float valve automatically shuts off every time without your intervention.
If the valve stays open too long, the water will continue to flow into the water pan until it overflows. If the valve closes too soon, then not enough water will flow into the water pan. Ideally the valve should shut off just as the water reaches the bottom of the plastic baffle ring.

6. If replacing motor, fan blade, or spin-spray pump, refer to Figure #9 shown above.
To install a new fan blade, remove the spin-spray cone. The fan blade is a friction fit (metal retainer spring) on the motor shaft. With the fan blade metal retainer spring facing away from the motor, align flat on impeller with flat on motor shaft. Now push air impeller all the way up to the motor.
To install new spin-spray pump, loosen the set screw on pump and slide the pump off the motor shaft. This is the time to pull the air impeller off the motor shaft if it is to be replaced. Now slide the new spin-spray pump back on the motor shaft, line up the set screw with the flat side of the motor shaft and tighten set screw. The bottom of the spin-spray pump cone should clear the bottom of the water pan by 1/2”. Do not allow cone bottom to touch bottom of water pan.

Refer to Fig.#4-A on pg.4. To re-assemble, reverse your steps. When you have re-mounted the motor assembly onto the base, spin the fan blade to be sure it turns freely. If it rubs on the edge of the venturi opening, loosen the 3 screws (H) and adjust the assembly to obtain uniform spacing around the opening.

See www.TurboKOOL.net for more complete details.

Recommended Routine Maintenance

1. Every 6 months or as needed, remove the filter and clean by hosing down with water from outer surface inward, or soak in a bucket of soap & water or apple cider vinegar to loosen dirt, alkaline etc. If your TurboKOOL is used in certain areas where the water has high alkali content, it may be desirable to clean more often. In these areas it may be to your advantage to have an extra filter on hand.

2. Check the spin-spray pump cone for caking of alkali and clean off with fine steel wool. Make sure the holes at top of cone are not clogged. Since the inside of the cone pump can also become caked with alkali, you may wish to replace it periodically if performance drops.

3. The motor is equipped with factory oiled and sealed bearings. Under normal use, the bearings need no additional oil. If used in high alkali areas for long periods of time, a drop of oil in the lower bearing (3-in-1 or sewing machine oil) will help.

We recommend that you turn on your TurboKOOL, either wet or dry, at least once a month and run for 5 minutes or more, even during the off season.

4. Before the start of the warm season, check the condition of the filter, motor mount grommets and wiring. Replace if they are cracked, brittle or deteriorating.

5. To clean the circular waterpan, remove the hood, and the 3 screws holding the motor mount assembly. Remove (as an assembly) - the motor, 10" fan and the spin-spray pump. Gently turn over and lay to one side. Remove the filter. Remove the baffle ring over the water pan. You may now wipe out the circular water pan.

6. Contact your local dealer or PRV Parts, LLC for any parts required, or for assistance in case you encounter problems.

Technical Support

We have a staff of experienced technicians who can answer your technical questions or give you more information on our products. Just call our Tech Support and Customer Service number: (714) 795-2424 or Email: PacificRV@gmail.com

TurboKOOL®Limited Warranty

TurboKOOL evaporative coolers are warranted to be free from defect in materials or workmanship for a period of one (1) year from the date of their original retail purchase. If any part of the TurboKOOL unit fails to conform to this warranty, we will replace or repair it using new or refurbished parts. To obtain warranty service in the United States, you must return the defective part within the warranty period together with the original or a machine reproduction of a dated Proof-of-Purchase document identify-ing the TurboKOOL unit along with the unit's serial number and a Return Authorization to PRV Parts, LLC, 1843 Stovall St., Bullhead City, AZ 86442. To obtain a Return Authorization, Call (714) 795-2424. This warranty does not cover defects, malfunctions, or failures resulting from shipping or transit accidents, abuse, misuse, operation contrary to furnished instructions, operation on incorrect power supplies, operation with faulty associated equipment, modification, alteration, improper servicing, tampering or normal wear and tear or TurboKOOL units.

Replacement Parts Warranty:

Unless otherwise specified, replacement parts are warranted for 90 days from the date of purchase (parts only). If the part is replaced with-in the original one year warranty period, then this replacement warranty is superseded by the new equipment warranty and such parts replaced during this time, will be warranted for the remainder of that new equipment warranty. TurboKOOL evaporative coolers are not warranted to operate without failure. Accordingly, in any use of the cooler in life support systems or other applications where failure could cause injury or loss of life to humans or animals or where spoilage or damage to property may occur, the cooler should only be installed with appropriate redundancy, fault tolerance and or integrated back-up features. Per PRV Parts, LLC, terms and conditions of sale, the user of TurboKOOL products in life support or property preservation applications assumes all risk of such use and indemnities

PRV Parts, LLC. / TurboKOOL® against all damages. PRV Parts, LLC shall not be liable for technical or editorial errors or omissions contained herein; nor for incidental or consequential damages resulting from the furnishing, performance or use of this product. Information in this manual is subject to change without notice.

ANY IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE SHALL BE LIMITED IN DURATION TO THE PERIOD OF TIME SET FORTH ABOVE. OUR LIABILITY FOR ANY AND ALL LOSSES AND DAMAGES RESULTING FROM ANY CAUSE WHATSOEVER INCLUDING OUR NEGLIGENCE, ALLEGED DAMAGE OR DEFECTIVE GOODS, WHETHER SUCH DEFECTS ARE DISCOVERABLE OR LATENT, SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE TURBO-KOOL UNIT. WE SHALL NOT BE RESPONSIBLE FOR LOSS OF USE, COMMERCIAL LOSS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. This is the only warranty applicable: no one is authorized to extend or modify it or to grant any other warranty.