QualityPool
MANUFACTURING
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Heat Swapper™ OWNERS MANUAL

Version 11/9/06

The **HEAT SWAPPER's** heating performance depends on its **heat source**.

If the heat source is a water heater set at 140° F. the output of the **HEAT SWAPPER™** is about **80,000 BTU**.

If the heat source is a boiler set at 190° F. the output of the **HEAT SWAPPER™** is about **150,000 BTU**.

The **HEAT SWAPPER™** takes heat generated by an existing water heater or boiler and transfers it to another liquid—commonly a pool or spa. The hot water from the heat source is circulated through a stainless steel coil inside the **HEAT SWAPPER™**. As the spa or pool water passes over the coil, the heat is transferred, but does not mix.

The thermostat senses when heat is needed and starts hot water circulating through the coil. When the spa or pool water reaches the selected temperature, it simply turns the Taco circulating pump off. The electronic thermostat is very accurate and maintains the water within 1°F. of the selected temperature.

Because of the all stainless steel construction of the heat exchanger, the **HEAT SWAPPER™** can tolerate a wider variation of pH than a heater with a heat exchanger made of copper. However it is critical that the pH be maintained between 7.0 and 8.0—even for the stainless steel **HEAT SWAPPER™**. We do not recommend the Heat Swapper for heating salt water pools. Salt raises the conductivity of water which can make metals in contact with it more susceptible to electrolysis.

The **HEAT SWAPPER's** best feature is what it does not have—there is no pilot, pilot generator, pressure switch, gas valve, gas line, or flue vent. The **HEAT SWAPPER™** is small, heats fast, and the Taco circulation pump uses only 96 watts to transfer the heat from the heat source.

Balboa 56006 Touchpad
(October 2006 to current)

Diagnostic Messages

OH **"Overheat" (System is deactivated)**
Do not enter the water! The control has shut down. Turn off all power to the control and call your dealer or service company. To reset the control, press the ↑ (Warm) panel button.

Sn **"Sensor" (Spa is deactivated)**
The high-limit sensor or water temperature sensor is not working. Call your dealer or service company.

Start-up

When first powered up, your control system will automatically heat and maintain the water at 100°F (38°C) until you change the set temperature.

Temperature Adjustment (80°F - 104°F)

The current water temperature is constantly displayed on the LED screen. Press either ↑ (Warm) or ↓(Cool) pad once to display the set temperature. Each time either pad is pressed again, the set temperature will increase or decrease depending upon which pad is pressed. After 3 seconds, the LED screen will automatically display the current water temperature.
The ↓(Cool) pad also resets the control in the rare instance of an overheat condition.

Freeze Protection

If the high limit sensor detects 40°F (4°C) at the heater, then the pump will automatically activate to provide freeze protection. The equipment stays on until the sensor detects 45°F (7°C) at the heater. Freeze protection is enabled regardless of control status. In colder climates, an **OPTIONAL** additional freeze sensor may be added to protect against freeze conditions.

Plumbing

1 1/2" Connections (spa/pool)

The spa or pool water should enter the **HEAT SWAPPER™** on the same side as the temperature sensing probe (look for 2 small wires going into the bulb well at the end of the tank).

Use 1 1/2" PVC pipe for the spa or pool water lines connected to the **HEAT SWAPPER™**. Do not use polyethylene pipe. Always use teflon tape on threaded connections.

If the flow rate will be greater than 65 gallons per minute, install a by-pass line around the **HEAT SWAPPER™**. Install a by-pass **check valve** with a 5 lb. spring in the by-pass line. This works very well when a 2-speed pump is used for a spa. It will result in very little friction loss since most of the water will continue to flow through the **HEAT SWAPPER™**.

When installing the **HEAT SWAPPER™** be sure to position it so the water will not drip on the pump motor or tank in case of a fitting leak. Never install the **HEAT SWAPPER™** so the end of the Taco circulating pump motor is pointing to the ceiling.

3/4" Connections (heat source)

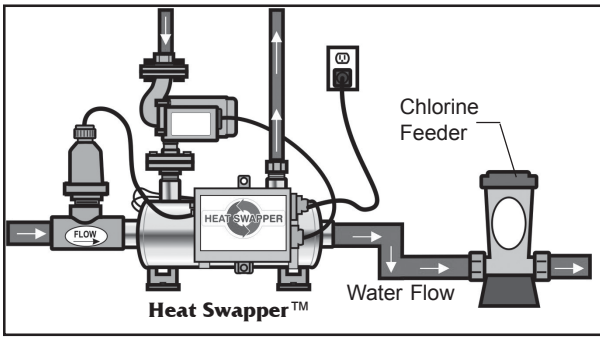
Use 3/4" type M copper pipe to connect the **HEAT SWAPPER™** to the source of hot water (domestic water heater or boiler). The hot water must enter at the pump. Use 3/4" pipe if the **HEAT SWAPPER™** is less than 30 feet from the water heater. Use 1" if the distance is 30 to 100 feet.

CPVC pipe may be used if the heat source is less than 170°F. If CPVC pipe is used, support the pipe every three feet with straps 3/4" wide or wider.

Beginning in 2006, the Taco circulation pump comes equiped with a built-in check valve. Prior to 2006 the **HEAT SWAPPER™** had a separate check valve attached to the Heat Swapper.

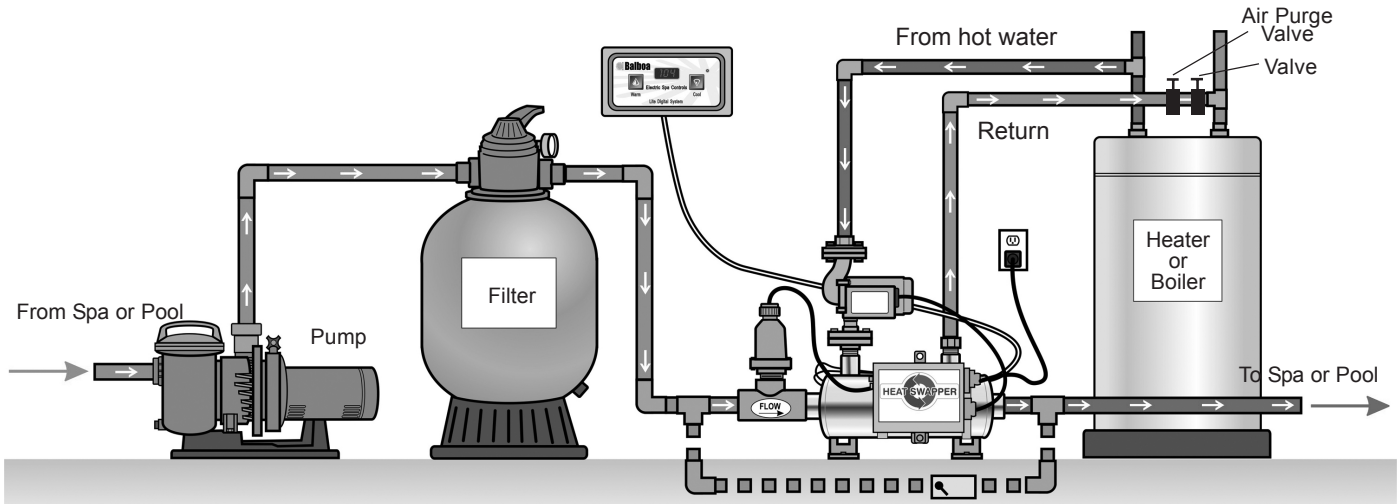
Keep in mind that the **HEAT SWAPPER™** will heat the spa or pool water with essentially the same efficiency as the existing heater, except for the heat loss from the heat source piping. Therefore insulating the pipe between the heat source and the **HEAT SWAPPER™** will maximize efficiency.

The Taco circulation pump will not pump air out of the piping. Always purge the air and any debris from the piping before starting up. To do this, install an air purge valve in a tee in the hot water return line at the farthest point away from the **HEAT SWAPPER™**. Install another valve downsteam of the tee to keep water from backflowing to the air purge valve.



Chlorine feeders must be installed downstream and not close to the **HEAT SWAPPER™** so that concentrated chlorine cannot flow back into the **HEAT SWAPPER™** and lay there when the filter/ pump is not operating.

For further protection, install the chlorinator or brominator slightly lower than the **HEAT SWAPPER™**. Also, storing strong oxidizers (chlorine or bromine) in a poorly ventilated room with the **HEAT SWAPPER™** will corrode the exterior of the stainless steel tank.



Use a by-pass line with 5 lb. check valve only if flow exceed 65 gallons per minute.

Specifications & Charts

General

Model	QHE35
Construction	304 Stainless
BTU Output [1]	150,000
Kilowatt Output [1]	44
Weight (lbs.)	7
Power (watts)	96

[1] With 190°F Heat Source

Tube Flow

Maximum Flow (GPM)	12
Optimal Flow Rate (GPM)	9
Maximum Pressure (psi)	150
Pressure Drop (feet head) [2]	6
Heating Surface (sq. ft)	2
Pipe Connection	3/4" MPT

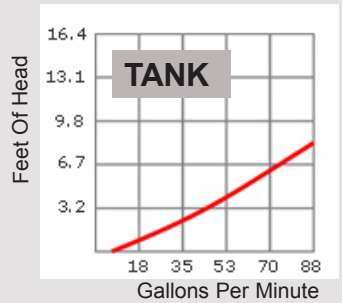
[2] At 9 Gallons Per Minute

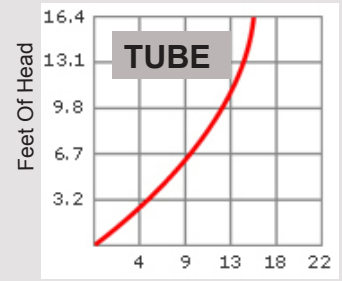
Tank Flow

Maximum Flow (GPM)	65
Optimal Flow Rate (GPM)	44
Maximum Pressure (psi)	45
Pressure Drop (feet head) [3]	2
Pipe Connection	1 1/2" FPT

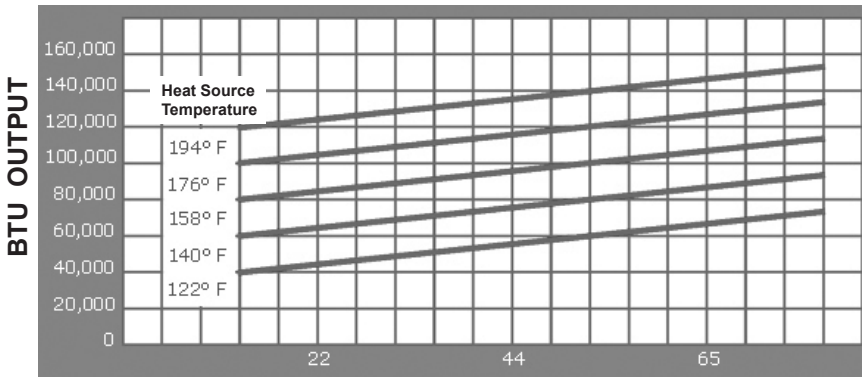
[3] At 44 Gallons Per Minute

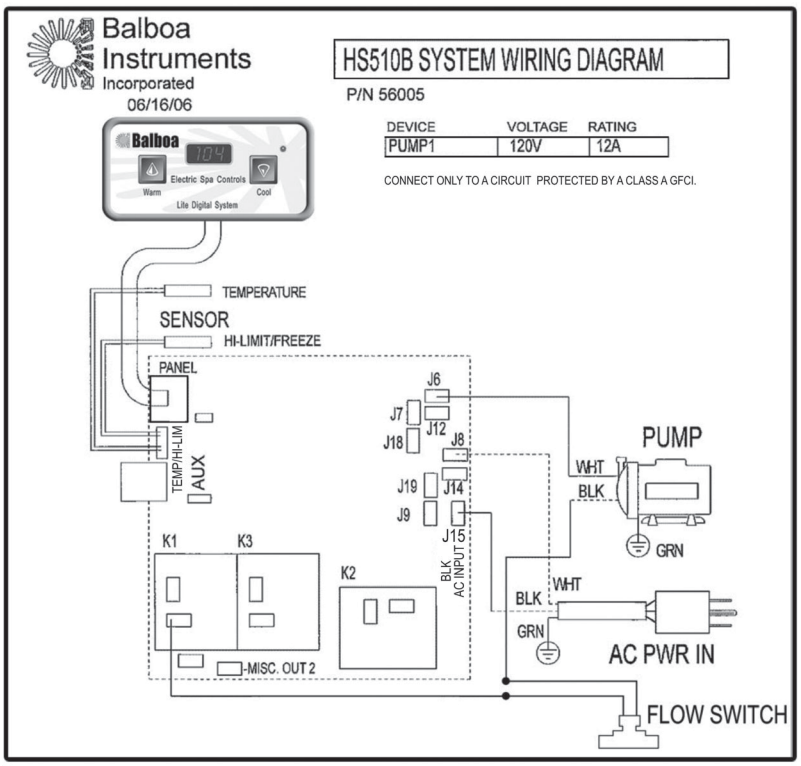
Pressure Drop Charts





How Heat Source Temperature and Tank Flow Affect BTU Output





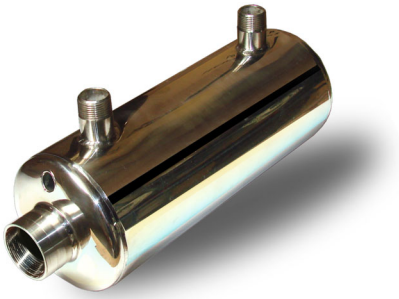
Electrical

The **HEAT SWAPPER™** operates on 120V current and must only be plugged into a grounded 3-prong outlet. Connect the **HEAT SWAPPER™** to a circuit protected by a class A GFCI. The flow switch insures that the **HEAT SWAPPER™** only operates when the spa or pool circulation pump is operating.

Warning! Shock Hazard!
No User Servicable Parts!
Do not attempt to service the control. Contact your dealer or service company. All wiring must be performed by a licensed electrician and all grounding connections must be properly installed.

Limited Warranty

Wilmark™ QHE35 Heat Exchanger



Warranted for materials and workmanship upon initial installation only.

Because the heat exchanger is made of all stainless steel and has no moving parts, virtually any failure after initial installation will be from (1) low pH (2) oxidizer damage (3) electrolysis, or (4) stray electrical currents. These conditions are beyond our control and not a condition for warranty.

Warranty extends to providing a replacement heat exchanger and shall not obligate the company to provide any labor or other cost of replacement. This limited warranty specifically excludes any liability for incidental or consequential damages resulting from the use of the product, or caused by any defect, failure, or malfunction of the product.

Heat Swapper™

The stainless steel heat exchanger is covered under the QHE35 warranty above. All other components are warranted for a period of one year by Quality Pool Manufacturing Co. Warranty extends to providing replacement of the defective component and shall not obligate the company to provide any labor or other cost of replacement. This limited warranty specifically excludes any liability for incidental or consequential damages resulting from the use of the product, or caused by any defect, failure, or malfunction of the product.

Typical Problems - Causes and Cures

1 Low pH

The pH must be maintained between 7.0 and 8.0. This is extremely important. Failure to meet these conditions will result in tank corrosion. Corrosion can also occur if water containing iron drips onto the exterior of the tank or otherwise comes into contact with the heat exchanger.

2 Oxidizer Damage

Chlorine feeders must be installed downstream of the **HEAT SWAPPER™** so that concentrated chemicals cannot flow into the heat exchanger when the filter/pump is not operating. For further protection, install the chlorinator or brominator slightly lower than the **HEAT SWAPPER™**. Storing strong oxidizers (chlorine or bromine) in a poorly ventilated room with the heat exchanger will corrode the exterior of the stainless steel tank.

3 Electrolysis

Use dielectric unions to avoid corrosion damage from electrolysis. Electrolysis can be caused by metals other than stainless steel being attached to the heat exchanger. Use dielectric unions to isolate dissimilar metals from the stainless steel tank. We do not recommend the Heat Swapper for heating salt water pools. Salt raises the conductivity of water which can make metals in contact with it more susceptible to electrolysis.

4 Stray Electrical Currents

Stray electrical currents can come from many sources, a salt chlorine generator would be one example. To protect against stray electrical currents, use dielectric unions (see price sheet) on the 3/4" tube circuit connections. Use PVC pipe or similar non-metal pipe to isolate the 1 1/2" connections from metal to metal contact. *We do not recommend installation of a* **HEAT SWAPPER™** *on a pool or spa with a salt chlorine generator system.*