DWX Heat Exchangers

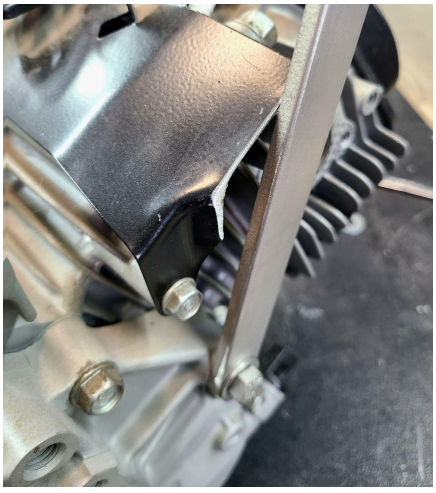
Assembly and Installation:

(1) Remove the exhaust studs from your engine. For a GX160/GX200 you can skip this step.

(2) Bolt the heat exchanger to your engine using the supplied bolts (nuts) and gasket. Use blue Loctite on the exhaust studs/bolts. Torque exhaust flange bolts to factory specs for your engine. The exhaust manifold has already been aligned and tightened to the correct orientation.

(3) Turn the support arm clamp to move the support arm into position.

(4) Bolt lower end of the support arm to the engine block with the supplied bolt/washer. Use blue loctite on this bolt. For GX240-GX390 engines you may need to trim ¼” off the edge of the cylinder heat shield (using a snips or die grinder) to provide clearance for the support arm. (see photos)



(5) Straighten the clamp to align with the support arm, then tighten the clamp bolt. On a GX160/GX200 the support bar bolts to the outside of the clamp. On a GX240-GX390 the support bar bolts to the inside of the clamp. (see photos)

(6) At this point the heat exchanger should be firmly mounted to your engine.

(7) Screw the strainer assembly on the lower 1” nipple of the heat exchanger and turn to the proper orientation. Do not overtighten the strainer onto the heat exchanger. Doing so will crack the female 1”npt threads in the strainer. You can use sealant instead of teflon tape to keep the strainer in position.

(8) Insert the black nylon 90 barbed fitting into your pump side port and align toward the heat exchanger.

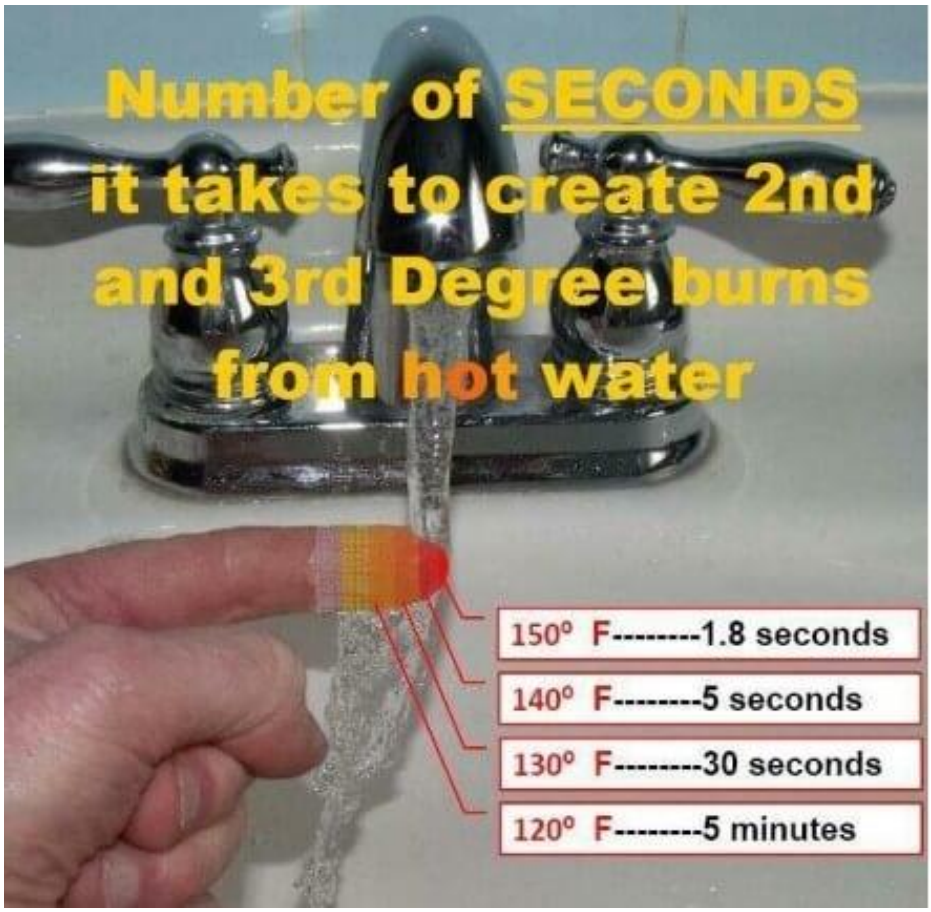
(9) Rotate the black nylon 90 barbed fitting in the strainer input to align with the pump fitting.

(10) Cut the supplied clear water hose to length and install between the pump and heat exchanger. To help mold the hose to the proper bend, heat it **lightly** with a heat gun and massage it into shape. The hose will retain this shape when it cools.

(11) After the hose has cooled and you are satisfied with its shape, secure the crimp clamps on the hose/fitting using a crimp clamp pliers or side cutters. You can use the supplied worm gear hose clamps if you prefer.

CAUTION! Carbon monoxide gas can cause injury or death. A high carbon monoxide gas concentration can occur in the area around your engine and can cause suffocation.

Danger! Water temperature over 125°F can cause severe burns!



DWX heat exchangers are designed to heat water using internal combustion engine exhaust. Both hot water and engine exhaust are inherently dangerous; hot water and/or hot exhaust can burn you and carbon monoxide from engine exhaust can kill you. The buyer/user of any DWX heat exchanger assumes all liability for its use. The buyer/user of any DWX heat exchanger shall fully defend, indemnify, and hold harmless DWX and it's owner(s) from any and all claims, lawsuits, demands, causes of action, liability, loss, damage and/or injury, of any kind whatsoever (including without limitation all claims for monetary loss, property damage, equitable relief, personal injury and/or wrongful death), whether brought by an individual or other entity, or imposed by a court of law or by administrative action of any federal, state, or local governmental body or agency. This indemnification applies to and includes, without limitation, the payment of all penalties, fines, judgments, awards, decrees, attorneys' fees, insurance claims and related costs or expenses. USE AT YOUR OWN RISK!

OPERATING INSTRUCTIONS

MAINTAIN WATER FLOW TO THE HEAT EXCHANGER & KEEP THE STRAINER CLEAN! The water line & strainer cup are clear to show water flow, turbidity and when the strainer needs to be cleaned. Clean the strainer each day before running your dredge. In addition, whenever you stop to refuel, eat lunch or take a break, clean the strainer. Be careful not to lose the O ring from inside the cup when cleaning the strainer. When reinstalling the cup, do not over tighten it.

Prime your water pump as you would normally do, then start your engine(s). Make sure you have water flow to the heat exchanger by observing the clear water line and strainer cup. Let your engine(s) warm up for a few minutes. The water temperature is controlled by opening and closing the valve to increase or decrease the flow of water through the heat exchanger. If the water temperature is too hot, increase the flow, too cold, decrease the flow. When you're sure the water temp is not too hot or too cold THEN test the temp by running it on your hand and make the necessary adjustments. When the water temperature is to your liking, insert the hose into your wetsuit. **It is strongly recommended that you wear a "hot skin" or other base layer under your wetsuit and put the hot water hose between your wetsuit and your base layer, not directly on your skin.** If during your dive, your pump foot valve and/or heat exchanger strainer become clogged (rare but it does happen) your water temperature may rise unexpectedly. If you notice any increase in water temperature, **STOP AND IMMEDIATELY REMOVE THE WATER HOSE FROM YOUR WETSUIT,** then investigate the reason for the temperature increase.

Do not remove the strainer from the heat exchanger system! Operating without a strainer WILL clog the water passages and thermal relief valve with debris causing damage to the heat exchanger and excessively hot water/steam.

Do not run your engine without water flow to the heat exchanger! Running your engine without a constant water flow to the heat exchanger will damage it.

When adjusting the water flow valve, it is recommended you first test the water temperature on your wetsuit sleeve or gloved hand. Although the heat exchanger is equipped with a 145° temperature relief valve to reduce the risk of getting burned by hot water or steam, it is still possible to get burned by 120°F - 145°F water.

ALWAYS make sure you are able to QUICKLY remove the water hose from your wetsuit if needed. Although steam is not likely to happen, 145° degree water is still HOT!

Periodically check that the temperature relief valve is functioning. While the engine is running, close the water flow valve and watch for the temperature relief valve to open. If the temperature valve does not open, replace the valve with General Pump ½" NPT Thermal Protector #100558.

In the hot summer months when the river/stream temperature rises to a point that you no longer need hot water to your wetsuit, you can remove the heat exchanger and run your standard exhaust. However, it is not necessary to remove the heat exchanger from your engine but you will have to maintain clean water flow to the heat exchanger and open the water flow valve and let the hot water discharge back into the river. **If your engine is running, you always need water flowing through the heat exchanger, whether you are utilizing the hot water or not. You also need to keep the strainer free and clear of debris at all times.**

Frequently Asked Question:

NO! Your heat exchanger is not leaking.

I pressure test every heat exchanger before it leaves my shop! The combustion of hydrocarbon fuel (gasoline, diesel, propane, natural gas etc.) produces water vapor through the oxidation of hydrogen. Exhaust from an internal combustion engine contains up to 15% water vapor. This is why you see water dripping from the tailpipe of your car when you first start it up and why the heat exchanger on your home furnace has a water drain tube. In your car, water vapor in the exhaust condenses (turns to water) on contact with the cold exhaust pipes. As the exhaust system heats up (+212°F), the water vapor in the exhaust stops condensing and leaves the tail pipe as a vapor. Due to its safety and efficiency, a DWX heat exchanger will not reach 212°F so a small amount of water vapor in the exhaust will condense. You will notice that the exhaust will exit the top of the heat exchanger cold with a small amount of condensation. **THIS IS NORMAL**. Condensation only forms at the very top of the heat exchanger where exhaust is the coldest. Exhaust pressure pushes this condensation out of the top of the heat exchanger. You can turn the 90° elbow at the top of the exchanger to direct this condensation away from your engine. Any condensation left inside the heat exchanger at shutdown evaporates and/or vaporizes on the hot exhaust manifold.

If you have any questions or concerns, don't hesitate to call me @ 414-852-2779