Seakamp full freshwater cooling system Part No. SK4821 is designed for Mercruiser Chevy based V6 - V8 engines 262-305-350 C.I.D. stern drives from 1986 thru 1995. Especially designed to take advantage of the low capacity raw water stern drive engines. Heat exchanger has high efficiency four pass design.

Extend the life of your engine while protecting it from corrosion with this EASY TO INSTALL, quality built, and uniquely designed heat exchanger cooling system.

1. Get improved fuel efficiency through more uniform engine operating temperatures
2. Adapts to use of cabin heater in cooler climates
3. Simplifies winterizing
4. Zinc anode helps control electrolysis
5. Kit includes detailed installation instructions
6. Benefit of inhibiting rust antifreeze protection
7. Workmanship and materials are fully guaranteed

Modern manufacturing techniques have evolved into a less expensive assembly process, while maintaining quality. These savings are passed on to you.

This is a complete kit, there is nothing extra to buy.
INSTRUCTIONS FOR SK 4821 FULL SYSTEM HEAT EXCHANGER KIT

Note: R & L in these instructions corresponds to the engine’s Right and Left sides when standing at the stern and looking Forward towards the bow. Before beginning be sure to Disconnect the Battery.

1. A. Drain engine block. Right drain cock is located down and behind the R. front engine mount, just forward of the starter motor.

B. L. block drain is located low on the engine block, just forward of the oil filter.

C. Drain both exhaust manifolds. The drain cocks are at the lower rear end of each manifold.

2. Remove all hoses from the original thermostat housing. Discard the hoses that connect to the exhaust risers. Also, discard the curved hose that connects down to the oil cooler located low on the left side of the engine. Be sure to save both hoses that go to the lower exhaust manifold fittings.

3. Remove and discard the thermostat housing. The thermostat housing is located in the front of the engine directly in front of the carburetor. Be sure to unscrew and save the temperature sending unit and the temperature warning unit from the original housing.

4. Take the new thermostat housing, thermostat and the two 3/8” X 7/8” bolts from the kit. Remove gasket and clean gasket surface. Install thermostat in the manifold with Pointed End Up. Place the gasket over thermostat on manifold. Place thermostat housing on top of the gasket with the off center hose barbs closest to the carburetor side pointing toward exhaust manifolds. Tighten bolts evenly and firmly. (Torque bolts approximately 30 ft. lbs.).

5. A. Remove and discard the hollow or square socket pipe plug from the intake manifold located just to the R. of the new thermostat housing.

B. Screw into the hole (in 5A above) the 1/2” X 2” pipe nipple; screw the brass cross “tee” into the nipple; and screw the 90° brass hose adapter into the top of the “tee”. Tighten it so the brass elbow is pointing to the R. and slightly forward so it points just forward of the R. valve cover.

C. Reinstall the temperature-sending unit (3/4” HEX) into the side leg of the “tee”. Tighten. Connect the short white wire to this unit.

D. Locate the square headed pipe plug in the R. side of the engine’s water pump, located just above the large inlet spud on the water pump. Remove the plug and screw the straight brass hose adapter into the hole. Connect the 5/8” X 18” hose between the two brass adapters. Clamp.
Note: If a hot water heater is going to be used, discard this 5/8” X 18” hose and connect the two hoses from the heater, one to each of the brass fittings.

6.A. Remove both right and left exhaust risers. Locate the 3/4” NPT pipe plugs, just in front of the risers, on the top of the manifolds. Remove and discard. Place the 3/4” NPT X 90° X 1” hose in the threaded holes. Screw in the fittings so that they point straight forward.

B. Clean gasket surface of risers and install blank gaskets. Reinstall risers and torque to 33 ft. lbs. Note: Re-torque to 33 ft. lbs. after the engine is up to running temperature.

7. Remove and discard the 3/4” pipe plugs from the front of the risers. Install the 3/4” NPT X 3/4” brass fittings in place of plugs.

8. Installing the bracket for the heat exchanger:

Note: This bracket is secured to the engine by using two bolts and one spacer that are supplied in the kit. The bolts screw into the existing threaded holes, one on R. and one on L. cylinder head.

A. On the R. Cylinder Head use the threaded bolt hole directly above the two water pump bolts. Use the 3/8” X 2” long bolt.

B. On the L. Cylinder Head notice that the power steering pump mounting bracket is secured to the cylinder head with three bolts. Remove the upper of the three bolts. Use the hole for the L. mounting bracket bolt (3/8” X 1-1/4” long).

C. Notice: Mounting bracket is labeled THIS SIDE TO ENGINE & UP. Attach the mounting bracket to the engine using the two bolts and one spacer provided in the kit. It attaches through the bolt holes on the engine indicated in section 8A & 8B. Place the 3/8” X 1-1/4” bolt through the R. lower hole in the mounting bracket. Place the 3/8” X 2” bolt in the L. lower hole of the mounting bracket. The 1-1/4” long spacer goes over the bolt between the mounting bracket and the engine. Tighten bolts. (Approximate torque 25 ft. lbs.). DO NOT OVER TORQUE.

9. Place the heat exchanger onto the cradle with the fill neck up and the hose fittings pointed toward the engine. Connect the hoses as instructed below, adjust the heat exchanger such that none of the hoses will chafe or interfere with belts. Fasten it down with the 4-1/2” T-BOLT clamps provided in the kit.

10. Connecting the hoses:
A. Remove the two 1” X 2” knurled hose spacers and the two 1” X 3” hoses from the kit. Place hoses over the thermostat housing hose spuds and slide the spacers inside of each hose. Take the hoses that are in the bottom of each exhaust manifold and connect them to the hose spacers in the thermostat housing. Clamp.

B. Using the 1” X 21” wire hose, connect it to the 90-degree brass elbow on the right manifold, NOT THE RISER. Connect the other end to the tee on the heat exchanger that points right. Clamp.

C. Using the 1” X 14” wire hose, repeat the same procedure, only have it go to the other side of the tee. Clamp.

D. Connect the straight fitting coming out of the left riser using the 3/4” X 11” hose. Connect the other end of the hose to the elbow that is aiming toward that riser. Clamp.

E. Take the 3/4” X 22” hose and connect it to the fitting in the right riser. Connect the other end of the hose to the fitting that points down the heat exchanger toward right riser. Clamp.

F. Use the original curved hose to connect between the water pump inlet and the large 1-3/4” fitting under the R. end of the heat exchanger. Cut the upper end of the hose off to appropriate length. Use care not to cut the hose too short. (Note: If the original hose is cut too short or is damaged you may obtain a factory replacement hose from a Mercruiser dealer using P/N 806825). (Note: This hose may be substituted with a Dayco hose #82021GL).

G. Take the 1-1/4” I.D. X 14” hose along with the 1-1/4” X 3-1/2” hose and connect them together with the 1-1/4” elbow. Push the 1-1/4” hose up from below, behind the alternator belt onto the 1-1/4” hose spud under the L. end of the front hose spud on the oil cooler. Clamp. Note: The oil cooler may slip back in its clamp mount.

H. Check all hoses to be sure none will chaff or touch moving parts. Retighten all clamps. Make sure 1-1/4” X 14” hose clears V-Belt.

Refer to the checklist attached for start-up information.

Thank you for buying Seakamp products.
INITIAL COOLING SYSTEM CHECK LIST
BEFORE THE BOAT LEAVES THE DOCK

CAUTION! Never start an engine dry. Boat must be in the water or have water supplied
to the sea water intake on either the inboard or stern drive units before the engine is
started.
The water pump’s rubber impellers will be ruined or their efficiency seriously impaired if
they are run dry for any length of time.
1. Install all drain plugs and close all drain cocks firmly.
2. Open the seacock that supplies the seawater to the engine pump (inboards and some
large stern drive engines).
3. Fill the cooling system with permanent coolant (50/50 mixture). Do not put on the
fill cap until the cooling water level has stabilized.
NOTE: The initial coolant filling rarely removes all the air from the system. When
the engine is started the water level will usually drop as the circulating pump forces
air out of the system. Refill immediately.
4. As quickly as possible check to be sure that the seawater is flowing. On inboards this
is usually at the exhaust outlet in the transom. On stern drives where exhaust exits
through the foot or lower unit feel the exhaust hoses. The hoses should not get hot. If
you are unsure loosen the sea water hose where it connects to the heat exchanger and
carefully slip it off just enough to determine that water if flowing through it. In either
case if water is not flowing, STOP THE ENGINE and investigate.
5. Warm up the engine at 1200 to 1500 R.P.M. Make visual checks for water leaks.
Maintain the water level in the fill neck. The system will often require refilling
several times as the air works out.
6. After the engine warms up to normal, stop the engine. Firmly snug up each hose
clamp. You don’t want them too tight or too loose. Frequently clamps are located
out of sight therefore look under manifolds, etc.
7. Install the fill cap if you are satisfied that the water level has stabilized.
8. Check all V belts for proper tension.
NOTE: The engine’s temperature gauge has a needle pointing to red and green
colors. The green is approximately 140 degrees. The red starts at approximately 160
degrees, which is the normal temperature with fresh water cooling. Do not assume
that the engine is overheating because the needle is in the low part of the temperature
gauge’s red sector. This can be confirmed by simply removing the fill cap and
placing a common cooking thermometer into the water of a warm engine idling at the
dock. It is not uncommon to have temperature gauges read incorrectly. Compare the
temperature reading with the gauge’s numbers or color.

ROUTINE MAINTENANCE SUGGESTIONS
A. When the engine is warm be very careful when removing the fill cap. Normal
pressure in the system can spray out hot coolant.
B. When the engine is cold the coolant will usually be down an inch or two below the
fill neck. If you fill it up the water will be forced out through the overflow hose as
the engine warms up due to normal expansion. Seakamp always recommends an
overflow recovery tank #SK3111.
C. Water pumps with rubber impellers should have their impellers removed and checked each season or after 200 hours of use. The blades can take a set and may have to be replaced for top efficiency. Most stern drive units have a rubber impeller pump in the lower unit. This will also require periodic servicing. On inboards with visible wet exhaust do not try to determine a pump’s output by the water flowing out the exhaust, as several gallons per minute variation is not visually apparent.

There is no mystery to a fresh water cooling system. If the correct amounts of fresh and seawater are being moved through the system it has to work. For long and trouble free service from your engine it is always best to make routine checks to avoid problems later.

Remember the operator has a direct responsibility to frequently check all gauges on the instrument panel and take the appropriate action should they vary from normal. Because everyone can become careless at times we strongly recommend a good alarm system to protect your engine from damage due to overheating, low oil pressure, etc.

There is little maintenance to do:
1. Check water level daily.
2. Check V belts tension weekly.
3. Check hose clamps monthly.
4. Check zinc anode every two months.
5. Check or replace rubber impellers in water seasonally or anytime the engine temperature is above normal (some engines may have two rubber impeller pumps).
6. Check hoses for deterioration yearly.

SUGGESTIONS FOR WINTERIZING HEAT EXCHANGERS

A. Some engines have parts that are not protected by anti-freeze. Consult your engine manual to determine which points require draining after use in freezing weather or for winterizing. All cooling systems should have the seawater side of the heat exchanger drained, as well as the manifolds if they are not cooled by anti-freeze. Manifolds have a drain on the bottom side.

B. Loosening the heat exchangers end covers can drain the seawater. Retighten the end covers before operating. The seawater drain plug usually holds a zinc anode. The zinc fitting can be removed if located on the bottom of the heat exchanger and it should be replaced if it has eroded away. Seawater pumps can be drained by loosening their back cover or by removing it’s lower hose. If the sea water pump is mounted on the engine you would remove the lower hose from the pump or loosen the front plate on the pump.
IMPORTANT: Some engines may have come from the factory supplied with plastic fittings on the bottom of the exhaust manifolds. If that is the case, it is necessary to replace them with brass or metal fittings.
STATEMENT OF COMPANY WARRANTY AND WARRANTY PROCEDURE

LIMITED WARRANTY

SeaKamp Engineering, Inc. warrants the materials and workmanship of products manufactured by us to be free of defects except component parts manufactured by others, which we assign, as permitted, the original manufacturer's warranty. SeaKamp product's warranty period shall be twelve (12) months after date of shipment to the original purchaser, during which time defective equipment must be returned to SeaKamp for inspection at the Buyer's expense and risk. The part(s) shall be repaired or replaced at SeaKamp's option. This warranty does not cover labor costs and is void on any product that has been improperly installed, abused, altered in any manner, used other than its intended purpose, has damage caused from electrolysis or any electrolytic action, or damage or loss due to freezing. This limited warranty is in lieu of all other warranties expressed or implied, including design and fitness for a particular purpose. SeaKamp shall not be liable to the purchaser or to any other person for loss of use, revenue, or profit, or for injury, or for any other consequential, incidental, or punitive damages resulting from any defect in or malfunction of our products. In no event will SeaKamp be liable for more than the original cost of the defective part(s). Some states do not allow the exclusion or limitation of incidental or consequential damages, so some of the above limitation or exclusion may not apply to you.

WARRANTY PROCEDURE

- Should a product be defective, or be suspected of malfunctioning, immediately contact our Service Department (360-734-2788) with a detailed description of the complaint.

- DO NOT dis-assemble, alter, repair, or replace any unit, or component, without explicit permission from our Service Department personnel.

- The Service Department will advise what corrections, if any, can be made, or they will give instructions as to the method of returning the faulty unit for inspection, repair and/or replacement.

- Anyone making service calls, replacements, alterations, or repairs without our Service Department's written (or faxed) permission, do so at their own risk and will be solely responsible for any related expenditures.

- Should a problem or question arise, we have experienced personnel who will be happy to assist you.

NOTE: All merchandise damaged in transit is the sole responsibility of the transportation company. File damage claims directly with the carrier.