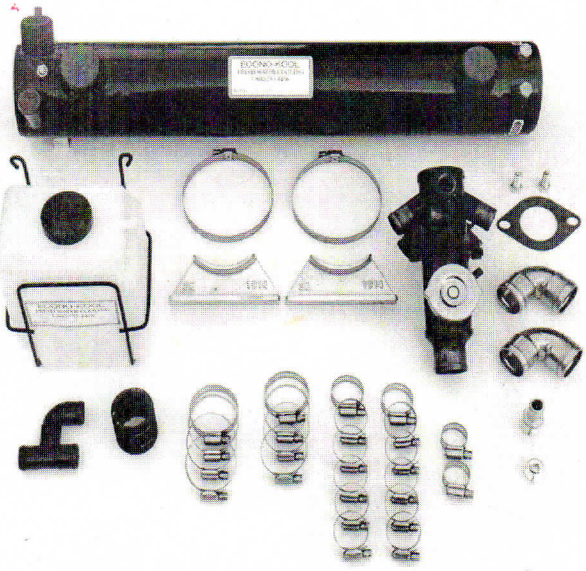
Econo-Kool

FRESHWATER COOLING KITS

FOR BLOCK & MANIFOLD COOLING

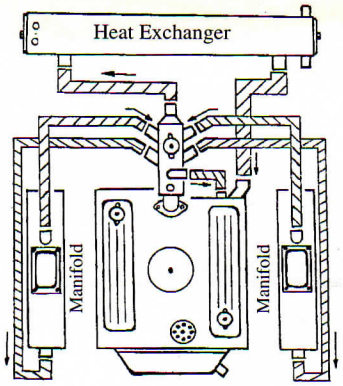
1. Econo-Kool is the most economical Heat Exchanger Kit on the market today.
2. Econo-Kool kits are specially designed for the "do it yourself" installer.
3. Order Part No. SK 4068F for small block engines to 350 C.I.D.
   Order Part No. SK 4008F for big block engines to 500 C.I.D.



Block & Manifold cooling for Chev engines; inboard, V-Drive, and stern drive. Especially designed to take advantage of low capacity raw water pumps used on stern drive engines. Small block engines use a heat exchanger that has a 4-inch diameter and is 25 inches long, four pass. Big block engines use a heat exchanger that has a 5-inch diameter and is 25 inches long, four pass. Installer must supply hose and blank gaskets. In some installations manifold fittings (pipe thread to hose) may be required.

If you question the ability of your exhaust manifold to adapt to fresh water cooling, call our manufacturing facility for recommendations.

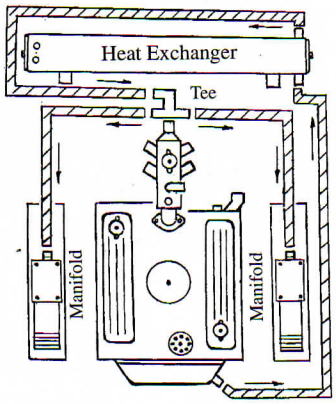
The Heat Exchanger is designed to mount off the engine on an engine stringer across the front of the engine, or alongside of the engine.



FRESH WATER
SCHEMATIC

Extend the life of your engine while protecting it from corrosion with theis 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. *Dual zinc anodes help control electrolysis*
5. *Kit includes detailed installation instructions*
6. *Benefit of inhibiting rust antifreeze protection*
7. *Workmanship and materials are fully guaranteed*



SEAWATER
SCHEMATIC

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

Econo-Kool

ECONO-KOOL

FULL SYSTEM FRESH WATER COOLING
for ENGINE AND MANIFOLD

V-6 & V-8 CHEV ENGINES

V-6 & V-8 CHEV MERCRUISER - OMC - VOLVO
262 C.I.D. THRU 454 C.I.D.

PART NOS. SK4068F & SK4008F

Note: All engines must have automobile-type circulating pump to circulate fresh water. Exhaust manifolds must be of correct design to allow cooling water to enter at a low point and exit at a higher point thereby allowing air to escape, and not creating air pockets.

1. Remove any temperature sending units from thermostat housing.

2. Remove original thermostat housing and discard.

3. Install water divider-collector, using two 3/8" x 7/8" bolts, and new gasket to intake manifold. (See "Suggestions and Requirements" sheet).

4. Mount overflow recovery tank and connect its bottom spud to small spud on filler cap assembly.

5. Mount heat exchanger using mounting brackets (included). Best location is on stringers across front of engine with 1" N.P.T. thread on heat exchanger to starboard side and hose connections pointing up. Second best location is along starboard side with heat exchangers 1" N.P.T. thread to the aft.

6. Using hose to thread adapter (not supplied), connect raw water supply (water coming in from stern drive or raw water pump on engine) to 1" N.P.T. thread on heat exchanger.

7. Connect 1" spuds on water divider-collector to manifolds according to "Suggestions and Requirements" sheet and Fresh Water Schematic Diagram.

8. Connect 1-1/2" spud on water divider-collector (using 1-1/2" 90-degree elbow, if needed) to 1-1/2" spud on heat exchanger. Connect engine's circulating pump to 1-3/4" spud on heat exchanger.

   Connect 1" spud on heat exchanger to elbow side of tee (included). Connect 3/4" spuds on the tee to each exhaust riser.

   Note: In some installations, the original hoses can be re-used.

9. The 5/8" elbow on water divider-collector must be connected to ½" N.P.T. thread port just above large hose on the circulating pump, using hose to thread adapter, ½" N.P.T. x 5/8" hose. *Do Not put a shut-off valve in 5/8" by-pass connection.*

   Note: If cabin heater is to be used, water to heater comes off 5/8" elbow on water divider-collector; water from heater returns to threaded adapter on engine's circulating pump. Hoses that connect cabin heaters, must be routed as low and straight as possible. **To avoid air locks, hose and heater must never be above water filler cap.**

10. Install temperature sender in ½" threaded port on water divider-collector.

PARTS SUPPLIED:

1 ea Heat Exchangers with zinc anodes capable of cooling engine block & manifold.

1 ea Water divider-collector

2 ea Heat Exchanger mounting brackets

1 ea Overflow recovery tank

1 ea Hose-to-thread adapter ½" N.P.T. to 5/8" hose

1 ea Raw water divider tee

1 ea Hose connecting 90-degree elbow

2 ea #28 clamps

4 ea #24 clamps

10 ea #16 clamps

6 ea #10 clamps

Customer must supply hose, connection fittings to match engine's raw water supply hose, fittings for fresh water in and out of manifold, preferably 1" hose spuds.

IMPORTANT

1. Raw water must be drained from your heat exchanger in freezing weather, using the drain plug closest to the heat exchanger's end cover. If drain plug is not accessible, loosen both end caps on the heat exchanger to allow water to drain.

2. Anti-freeze solution of no more than 50/50 is recommended for coolant. If a proper anti-freeze solution is used, draining engine block and manifold is not necessary.

3. Zinc anodes should be inspected every 25 hours of operation. Replace if eroded.

SUGGESTIONS & REQUIREMENTS
FOR
ECONO-KOOL WATER DIVIDER-COLLECTOR
FOR FULL SYSTEM COOLING

P/N SK3055 Small Block Chevrolet
P/N SK3066 Big Block Chevrolet

1. Remove any sending units from sea water thermostat housing.

2. Remove sea water thermostat housing by removing the two 9/16" headed bolts and discard.

3. Bolt SeaKamp water divider-collector to intake manifold using new gasket. ***IMPORTANT DO NOT USE OR INSTALL A THERMOSTAT BETWEEN WATER DIVIDER-COLLECTOR AND INTAKE MANIFOLD.*** Thermostat is located "in" the water-divider collector.

NOTE 4. The lower 1" spuds connect to manifold's port and starboard. Connections to manifold must be made at the bottom of manifold or lower rear port, usually a 3/4" NPT thread.

NOTE 5. The upper 1" spuds connect to manifold's port and starboard. Connections to manifold must be made to upper port, usually 3/4" NPT thread. It is VERYIMPORTANT that connections are in this manner. Always the coolant enters the bottom of the manifold and exits the top. This is to prevent air traps, thereby causing manifold failure.

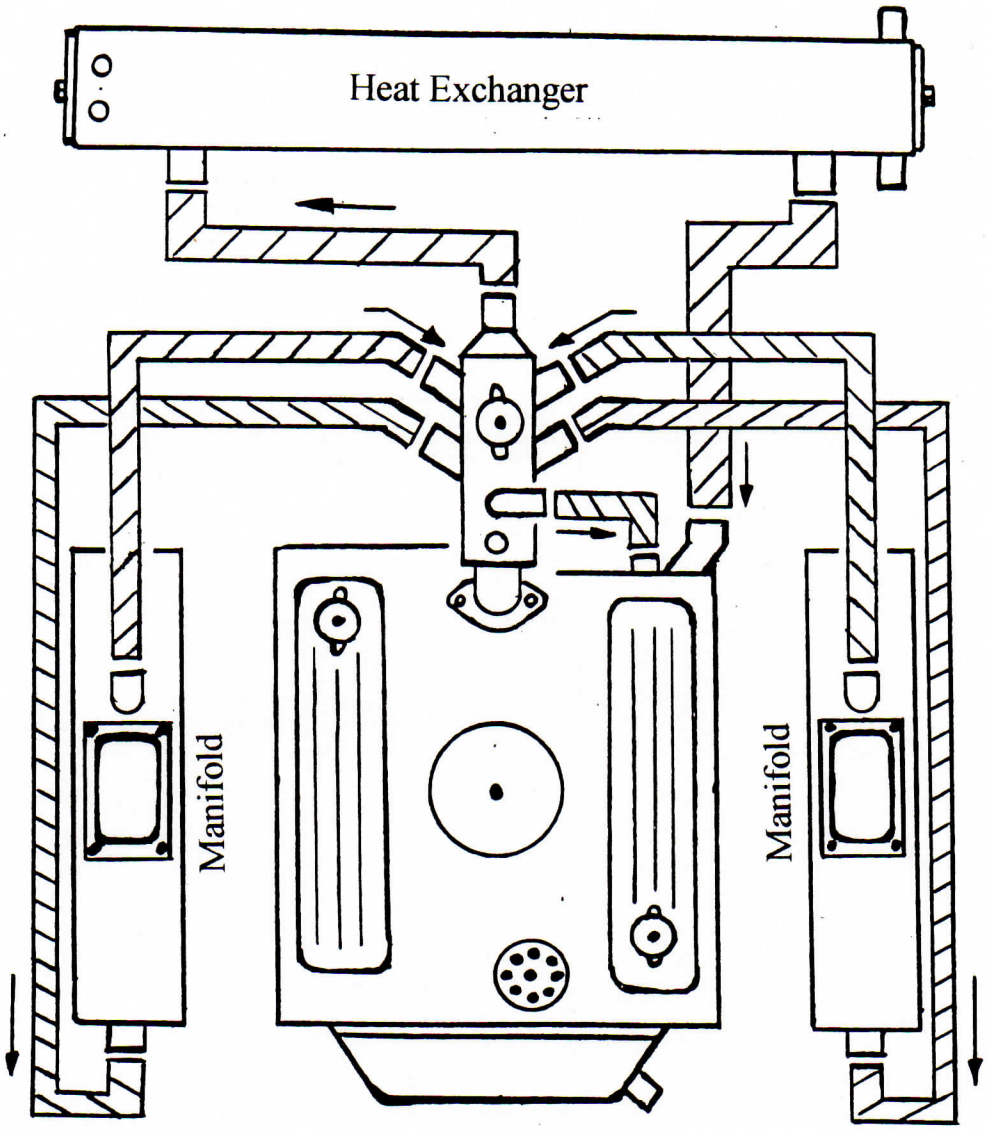
6. Install temperature sender or alarm sender in ½" NPT. Bush, if necessary. If temperature sender is used there, you will have a reading of 180 degrees. If the temperature sender is used in the intake manifold, your reading will be between 160-170 degrees.

7. The 5/8" elbow spud must be connected to the ½" threaded hole located just above the large hose spud on the engine's water pump. This is the by-pass hose. If hot water cabin heater is used, 5/8" spud supplies water to the heater. Heater water returns to threaded hole on engine water pump. Heater and hoses must be lower than coolant filler cap on water divider-collector.

8. Connect 1-1/2" spud to a heat exchanger that is of ample capacity to cool engine and manifolds. Size is usually twice that of the "block only" cooling. Consult SeaKamp for proper size heat exchanger.

9. A "blank gasket" must be installed between manifold and riser. They are available through your local marine dealer.

If assistance is required, call Customer Service at 360-734-2788, Reference SK3055.



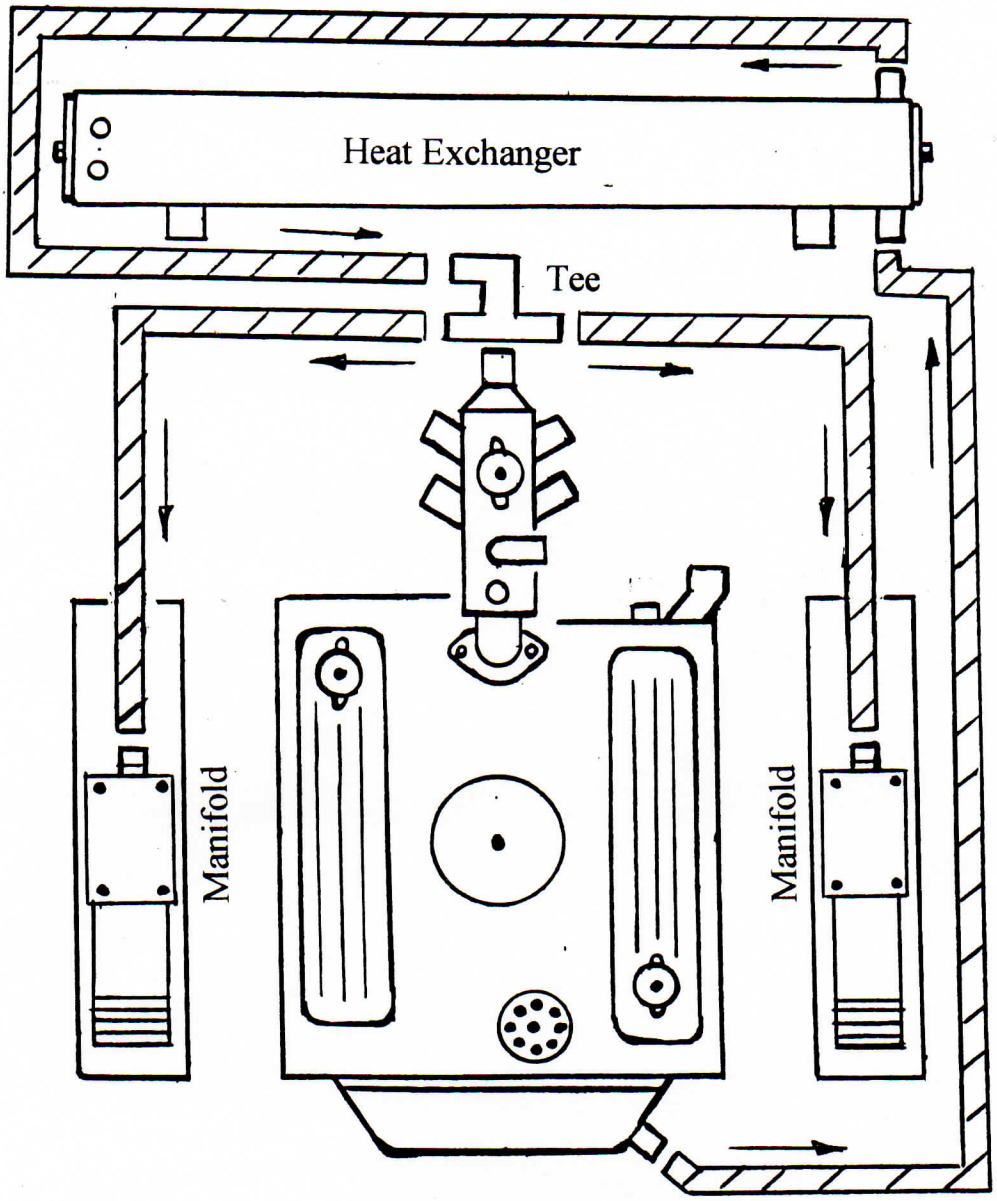
ECONO-KOOL

FRESH WATER SCHEMATIC for

CHEV V-6 & V-8 CHEV ENGINES
262 C.I.D. THRU 454 C.I.D.

For technical assistance, call 1-360-734-2788.

SK4068F-1



ECONO-KOOL

SEAWATER SCHEMATIC for

CHEV V-6 & V-8 CHEV ENGINES
262 C.I.D. THRU 454 C.I.D.

For technical assistance, call 1-360-734-2788.

SK4068F-2

REQUIREMENTS FOR FRESH WATER COOLING MANIFOLDS

A = Coolant water in either end. Inlet to manifold should be opposite of manifold exit water. All fresh water inlets and outlets must be a minimum of 3/4" NPT connected to 1" I.D.hose.

B = Coolant water must always exit the upper-most part of the exhaust manifold. All water jackets in the manifold must be in common with each other and the exit port at blank surface. Otherwise, the manifold will crack and cause engine failure due to air traps.

C = A minimum of a 1/2" NPT is required for raw water discharge into riser. All water jackets must be in common with raw water inlet to avoid gasket (blank) failure.

D = A blank must be installed between manifold and riser. There are original equipment blank gaskets available for most applications. Otherwise, a copper or stainless steel plate should be made , using original gaskets on each side of plate. Plate should be no thicker than 1/16" to allow dissipation of heat. The plate should have only the exhaust port and mounting bolt holes in it.

The most important aspect of cooling exhaust manifolds on fresh water is not to allow any air to trap in them. ***Remember <u>all</u> engines create air during operation.***