

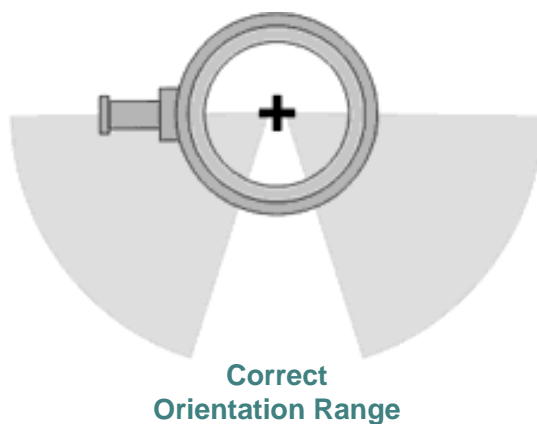
Water Pick-up Kits Installation



Installation Overview

The following is a brief overview of the typical installation procedure. BE SURE TO FOLLOW THE INSTRUCTIONS INCLUDED WITH EACH KIT. Failure to follow the instructions could result in damage to the SureSeal™ or your engine.

1. Locate the point in the engine's cooling system where water will be taken. (SEE BELOW)
2. If using a Tee-type pick-up, cut the engine hose cleanly and squarely and add two loose hose clamps to each end.
3. Next, insert the Tee so that the branch fitting is oriented properly-not aiming straight down (to prevent sediment from accumulating at the opening) or straight up (possibly out of the water stream) SEE BELOW.



3A. If using a threaded fitting-type pick-up, remove the appropriate plug or drain. Using a small screwdriver or awl, poke/scrape the inside of the opening to dislodge and or remove any engine scale, sediment, debris, etc. which could clog the line. Coat the threads of the fitting with sealant and install.

4. Add two small hose clamps to one end of the Water Pick-Up hose and attach it to either the tee or threaded fitting. Tighten the hose clamps.
5. Route the hose to the water injection fitting on the SureSeal™ so that it will not be subject to kinking or pinching which could restrict the flow of water. Cut to length if needed.

6. Take the black plastic cap off the fitting on the SureSeal™ (leave tethered to fitting). Attach the hose and secure with the remaining two small hose clamps.

6A. For twin-engine applications, we recommend the use of a crossover line between port and starboard SureSeals™ to insure proper lubrication to both seals in the event that only one engine is running. Before installing a crossover line, you must inspect the vessel's raw water exhaust system. **DO NOT USE A CROSSOVER LINE** if the highest point in the exhaust system is above the turn of the exhaust riser. "Back flow" could occur while running on only one engine causing serious damage to the other engine/turbo. For all Crossover set-ups, a second fitting is required on each SureSeal™.

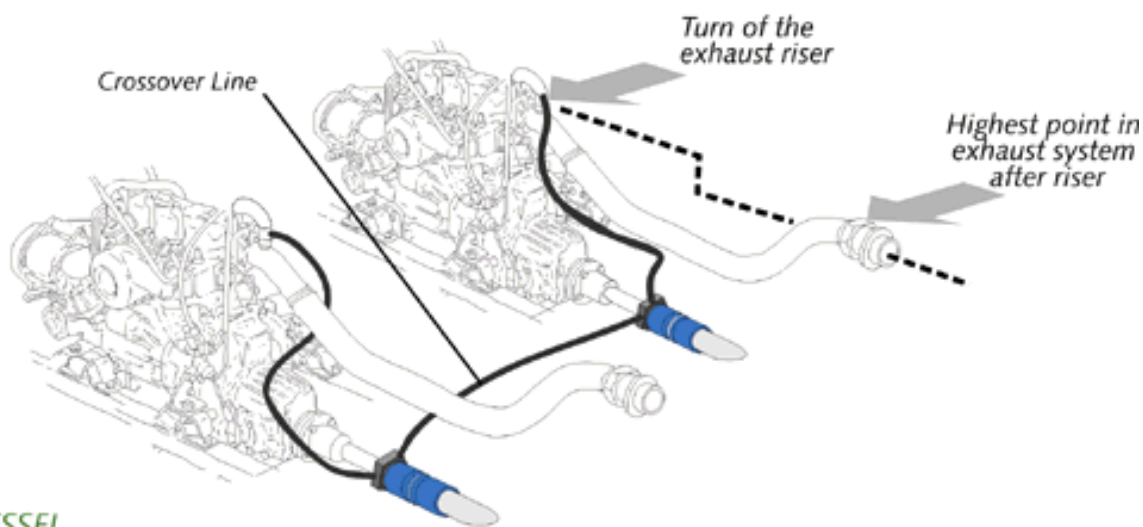
7. Route the crossover hose between the two seals keeping it low, below engine fitting. Remove caps and connect the two ends to the SureSeals™ with the clamps as before.

8. When the boat is back in the water, remove the water pick-up hose from the fitting on the SureSeal™ and place the end into an empty container. Temporarily cap the injection fitting (to prevent water from back-flowing through the SureSeal™). Start the engine and run in neutral. Raise the container one foot above the water pick-up point and confirm that there is water flowing from the hose (approximately 2 PSI at engine idle). Increase engine speed and confirm that there is a constant flow of water throughout the full RPM range. Reconnect the hose and tighten clamps. Dress the hose and secure with cable ties (loosely).

8A. To test a "Double Injection" set-up, remove the crossover hose from one SureSeal™. Cap the injection fitting as above. Start the other engine and run in neutral. Hold the end of the crossover hose above the level at which the cooling system water enters the manifold. A steady flow of water indicates there is sufficient pressure for proper function. Reconnect the hose and repeat process for the other engine. Dress the crossover hose and secure with cable ties (loosely).

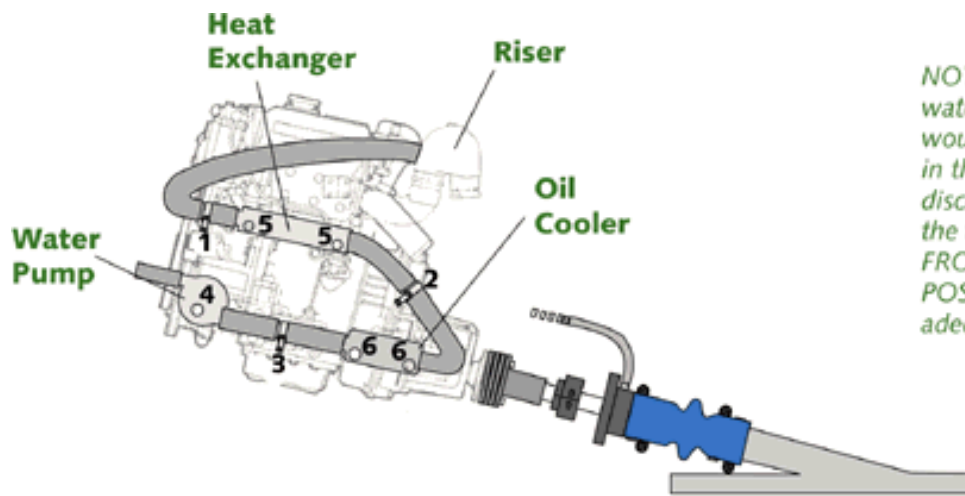


THE TURN OF THE EXHAUST RISER MUST BE ABOVE THE REST OF THE EXHAUST SYSTEM. (SEE NO. 6A ABOVE)



BEFORE OPERATING THE VESSEL YOU MUST TEST THE WATER SUPPLY.

TYPICAL TWIN ENGINE SCHEMATIC



NOTE: The preferred water pick-up point would be via a hose tee in the raw water discharge hose. Locate the tee AS FAR AWAY FROM THE RISER AS POSSIBLE to insure adequate head pressure.

WATER PICK-UP POINTS:
In Order of Preference

1. Tee- In line between heat exchanger and riser (as close to heat exchanger as possible).
2. Tee- In line between oil cooler and heat exchanger.
3. Tee- In line between water pump and oil cooler.
4. Drain plug- Back of water pump. Be sure the drain is on the pressure side of the pump.
5. Drain plugs- In heat exchanger.
6. Drain plugs- In oil cooler (if cooler is on pressure side of pump and bore is at least .200").

Water Pick-Up Fittings

Tides Marine recommends the use of Tee Fittings installed in the engine's raw water system to provide cooling/lubricating water to its shaft seals. When positioned as described earlier, the engine's raw water flows past the branch fitting in a manner which reduces the collection of sediment and other particulate matter which could cause blockage. In situations where Tee Fittings cannot be used, certain fixed points on the engine may be used with a **straight** Water Injection Fitting. **DO NOT USE FITTINGS SMALLER THAN 1/4" NPT.** When selecting a pick-up point on the engine, gear cooler, heat exchanger, etc. it is important to note that these points will require additional maintenance over the life of the shaft seal. For instance:

- *Manifold pick-up points will have to be inspected regularly to eliminate rust and scale from around fitting.*
- *Pick-up points at the bottom of elbows may fill with sand / debris if the vessel operates in shallow water / runs aground. These should be inspected regularly by the owner.*
- *Some pick-up points may be "dry" locations. It is important to check for adequate water flow before operating the vessel.*
- *Some pick-up points may require 90-degree fittings rather than straight ones. Each such turn (in the fitting or hose) may restrict the water flow as sediment / sand / debris may build up over time. Regular inspection is necessary to ensure proper water flow.*

Water Pick-Up Hose

Hoses should be routed from the water pick-up point to the shaft seal in a manner which eliminates/minimizes the possibility of chafing, burning or kinking. Turns made by the hose should be minimized to improve water flow. Support clips used to "dress the hose" should not be so tight as to crush the hose / restrict water flow. Tides suggests that a bit of slack be left in the hose at the shaft seal end to allow for some movement / eliminate "loading" of the shaft seal on the shaft.

If you should have any questions about the water pick-up system as it relates to your vessel, please contact one of the technicians at Tides Marine.

Tides Marine

3251A S.W. 13th Drive
Deerfield Beach, FL 33442
(800) 420-0949

Tel: (954) 420-0949

Fax: (954) 420-5234