



COMBO-SEP™

Product Installation Guidelines

- Gasoline Engine Version -



WARNING – These are GUIDELINES ONLY and are NO GUARANTEE of a properly designed and installed exhaust system. Centek’s products are used in a variety of systems and applications. Therefore, it is impossible for Centek to provide specific installation instructions for all possible configurations of exhaust systems that may be incorporated on a marine vessel by the vessel manufacturer.

IT IS THE RESPONSIBILITY OF THE BOAT MANUFACTURER TO PROPERLY DESIGN AND INSTALL AN EXHAUST SYSTEM APPROPRIATE FOR THE VESSEL IT MANUFACTURES.

The guidelines for the Combo-Sep™ are as follows::

1. The Combo-Sep™ is a WET marine exhaust muffler
2. The Combo-Sep™ is designed for gas/water to flow in one direction only. Please note labels on muffler carefully.
3. Allow sufficient distance between the water injection point and the Combo-Sep™ to adequately cool the exhaust gases. We recommend a minimum of two feet. Maximum operating temperature should not exceed 350° F. A typical well-designed system should run between 120-188° F.
4. The Combo-Sep™ is designed to be installed at or above the loaded waterline (LWL) only. The base of the Combo-Sep™ must be above the waterline so that the separation chamber drains upon engine shut down. Do not install the Combo-Sep™ below the waterline. See Figure 1. For below water line installations, we recommend the use of a Vernalift in combination with a Gen-Sep™. The water drain line should be as short as possible.
5. The bottom portion of the Combo-Sep™ is a lift muffler. The inlet on the muffler must be installed at least 12” below the engine elbow to prevent the reverse flow of water. When space constraints do not allow for this height difference, it is strongly recommended that a riser (“goose-neck”) be installed in the system.
6. Install the Combo-Sep™ as close to the centerline of the engine as possible. This will minimize the possibility of cooling water return to the engine in severe angles of heel in sailboats.
7. Making connections:
 - A) Use approved marine exhaust hose for all connections. This will help isolate the muffler and other components from vibration. Do not connect other components to the muffler in a rigid fashion by using adhesives and/or FRP reinforcements.
 - B) DO NOT coat hose or muffler with oil or grease – use water for lubrication.
 - C) Use a minimum of two stainless steel hose clamps per end connection. Tighten clamps by hand with a screwdriver or small wrench. Do not use air wrenches.
8. The Combo-Sep™ will separate nearly 98% of engine cooling water. However, due to condensation, it is strongly recommended that the outlet hose should run continuously downhill for self-draining of remaining water and condensate. Under no circumstances should there be a loop in the outlet hose that could collect condensation and impede the exhaust flow. For up-hill or “dry-stack” installations, special provisions are necessary.

WARNING! Should a back-fire occur, an immediate and thorough inspection of the entire exhaust system is recommended.

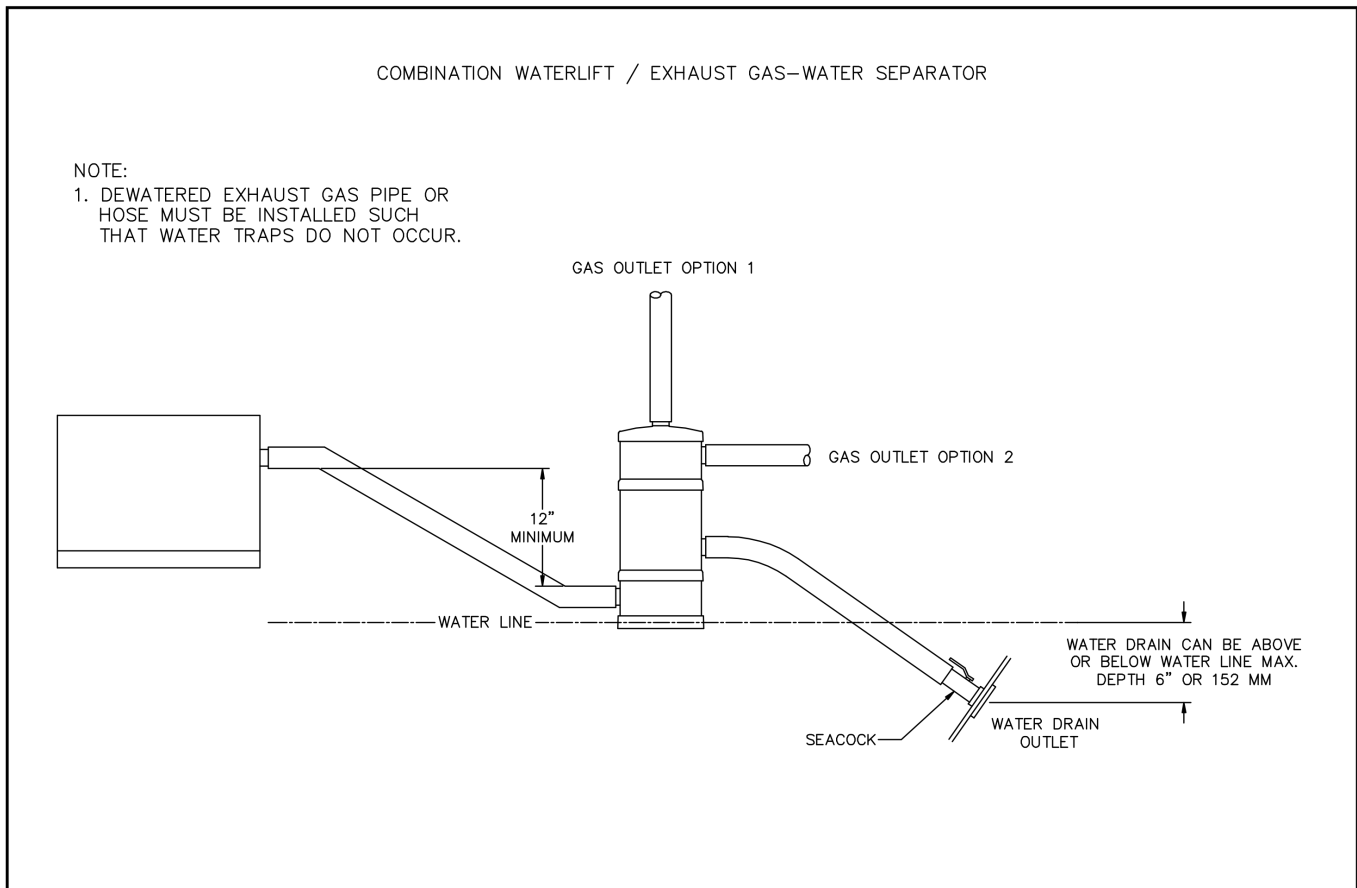
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Warning! Gasoline engines produce dangerous levels of carbon monoxide that will pass through this product as part of a properly designed and installed exhaust system. Per ABYC A-24 Standards, this product must be used in conjunction with working carbon monoxide detectors installed in the boat's living quarters.

FIGURE 1



No-Hassle Warranty

Centek Industries, Inc. warrants its standard Combo-Sep™ products for a period of five years from the date of original sale. **Since Centek cannot exercise control over the installation and application of this product, this limited warranty is in lieu of all other expressed or implied warranties or warranty of merchantability or fitness for a particular use or the results or effects of such use.** Under no circumstances will Centek be liable for any consequential damages, damage by improper handling, damage during installation or damage in shipping.

Centek's liability is limited to the replacement or repair of the product and such liability will not exceed the original purchase price. Centek must authorize the return of any alleged defective Product, and such return must be made within 30 days of the receipt of that authorization. A reasonable proof of purchase date must accompany all returned Products.