HUMCO MARINE PRODUCTS, INC.
1074 Kenran Industrial Dr.
St. Louis, MO 63137
Phone: 1-800-381-9968

Environmental Marine Sanitation Device

The Treatment Principle

THE MSD consists of three treatment stages; aeration, clarification, and disinfection.

1. AERATION

Sewage is aerated as soon as it enters the treatment system. Plastic non-clog diffusers inject air near the bottom of the aeration chamber so that the sewage remains in a state of aerobic decomposition. The movement created by injected air helps mix the sewage with the bacterial sludge and prevents sludge and sewage solids from settling to the bottom.

2. CLARIFICATION

The liquid displaced from the aeration chamber flows into the clarification chamber for further treatment. Some oft he suspended material will settle out into the chamber below, where it will be returned via Pneumatic Lifting Tubes to the aeration chamber. The remaining sludge and waste material is removed as the liquid flows upwards through the biological filter media.

Bacteria grow on the surface of the media and produce a sticky, slimy film that traps small particles of waste. The tapped waste is then consumed by the bacteria on the surface of the filter media. By the time the liquid reaches the top of the biological filter, it has passed by several layers of bacteria,ensuring that the sludge and waste removal process is completed. Clear water accumulates here until it is displaced into the disinfection chamber.

3. DISINFECTION

The water flowing out of the discharge line of the clarification chamber is collected in the disinfection chamber(chlorine contact chamber), where disinfecting chlorine tablets are located. In this chamber, the water mixes with the disinfectant for a residence time sufficient to complete the disinfection stage of the treatment process.

U.S. Coast Guard Certified Type II

Marine Sanitation Device

MEETS IMO STANDARDS

THE MSD

High Density Polyethylene
Biological Aerobic
Sewage Treatment System

Low Cost, Easy Maintenance and Long Lasting Reliability Makes THE MSD "The Educated Choice"

MODEL DETAILS

MSD	400	1200	1600
persons	4	12	16
length	41"	56"	76"
width	15"	22"	22"
height	17"	17"	17"
dry weight	42 lb.	76 lb.	90 lb.
wet weight	295 lb.	575 lb.	850 lb.

Automatic discharge pump (optional for below-waterline installations)

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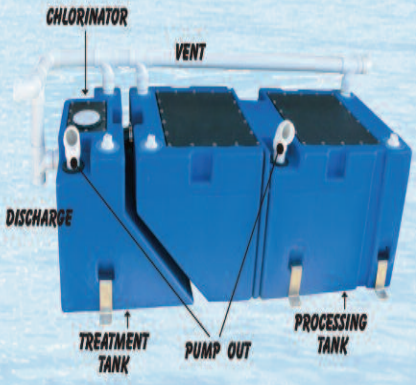
Automatic discharge pump
(optional for below-waterline installations)

No Moving Parts
No Internal Pump Necessary



U.S. Coast Guard Certified Type II Marine Sanitation Device

Meets IMO Standards

- Constructed of High Density Polyethylene
- Lightweight
- Corrosion Resistant
- Simple Installation
- Operates as a Biological Aerobic Sewage Treatment System Eliminating Foul Odors
- Low Cost, Easy Maintenance and Long Lasting Reliability makes *THE MSD* "The Educated Choice"

How The MSD Works: Biological Digestion

THE MSD Type II Marine Sanitation Device is a Biological Aerobic (bacteria and air) Sewage Treatment System. Liquid and solid wastes are removed from the water by the bacteria naturally contained in sewage.

THE MSD consists of three major components: the *Processing Tank*, *Treatment Tank* and the *External Compressor Blower*. The Processing Tank consists of the aeration chamber and the clarification chamber.

In the aeration chamber the bacteria grow and multiply using the sewage as their food supply. This action reduces the quantity and size of the solid matter. In the clarification chamber, the bacterial floc is separated from the treated solid matter.

The processed water is clear and free from solids, however, the liquid must be disinfected prior to discharge overboard in order to kill any disease-causing bacteria. Disinfecting is accomplished in the Treatment Tank (Chlorine Contact Chamber.) The introduction of sewage into the Processing Tank begins the biological process.

The flow through the Processing and Treatment Tanks is caused by direct displacement. When new sewage flows into the Processing Tank, an equal volume flows into the Treatment Tank. From the Treatment Tank, the treated liquid is discharged overboard or to the Optional StorageTank.

No internal sewage pumps are necessary.

"KEEPING OUR WATERS CLEAN"