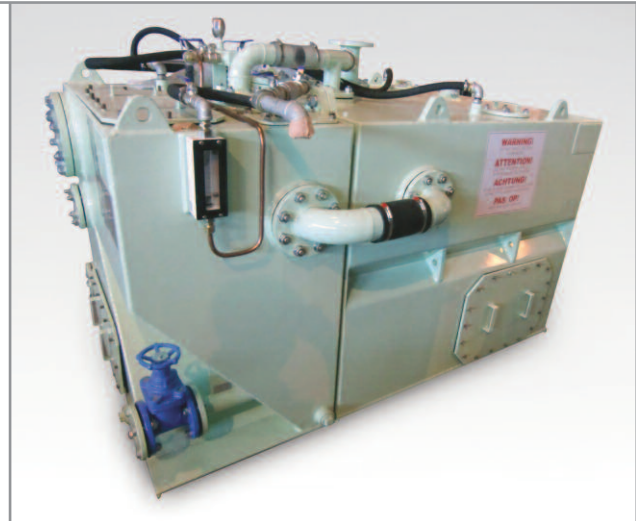


Retrofit STA-C and ST-C Series

Super Trident Sewage Treatment Plant



Hamworthy is the world's leading manufacturer of marine sewage treatment plants. For over three decades our Super Trident sewage treatment plants have been widely regarded as standard specification on all vessels.

Hamworthy's STA-C/ST-C Super Trident sewage treatment plants were the first plants in the market to be granted type approval in meeting the new IMO MEPC.159(55) standard, which employs more stringent black water effluent quality treatment guidelines. All sewage treatment plants installed on existing ships on or after 1 January 2010, and on new ships whose keels are laid on or after this date, must meet the new MEPC.159(55) guidelines.

The retrofit range has been specifically designed to reduce the cost of installing sewage treatment equipment into existing vessels. Each size in the retrofit range is built up from three separate water tight tanks connected by external piping, aiding installation. The dimensions of each component has been arranged to permit its transportation through standard vessel access ways.

Standard features

- ▶ IMO & MED certified and authorised by Lloyds Register EMEA
- ▶ Modular construction
- ▶ Single power supply input point
- ▶ Minimal maintenance requirement
- ▶ Solids handling Hamworthy centrifugal discharge pump

Optional features

- ▶ Standby compressor
- ▶ Standby discharge pump

Operating Principle

Aeration compartments

Raw sewage enters the plant via the sewage inlet and passes through a coarse screen before entering the aeration compartments. Aerators located at the bottom of the tanks are fed by a rotary compressor with air, producing fine bubbles which thoroughly mix and aerate the sewage. Feeding off the oxygen in the bubbles, the aerobic bacteria and micro organisms present in raw sewage break down organic waste material into carbon dioxide, air and water vapour. Feeding off both the air and organic waste, organisms multiply and new bacteria cells are produced. Plant aerators are easily removable through the side or end of the tank for maintenance. Following the aeration process only effluent plus inorganic material remains which is then displaced by raw sewage into the settling compartment.

Settling compartment

The settling compartment has been designed to flocculate all inorganic material to the bottom of the hopper as activated sludge, which is then returned by air lift to the aeration compartments where it is mixed with the incoming raw sewage for further treatment. The clear supernatant liquid at the top of the settling compartment is then displaced into the contact compartment. An outlet weir is situated at the centre of the settling compartment controlling the flow of supernatant into the contact compartment.

Contact compartment

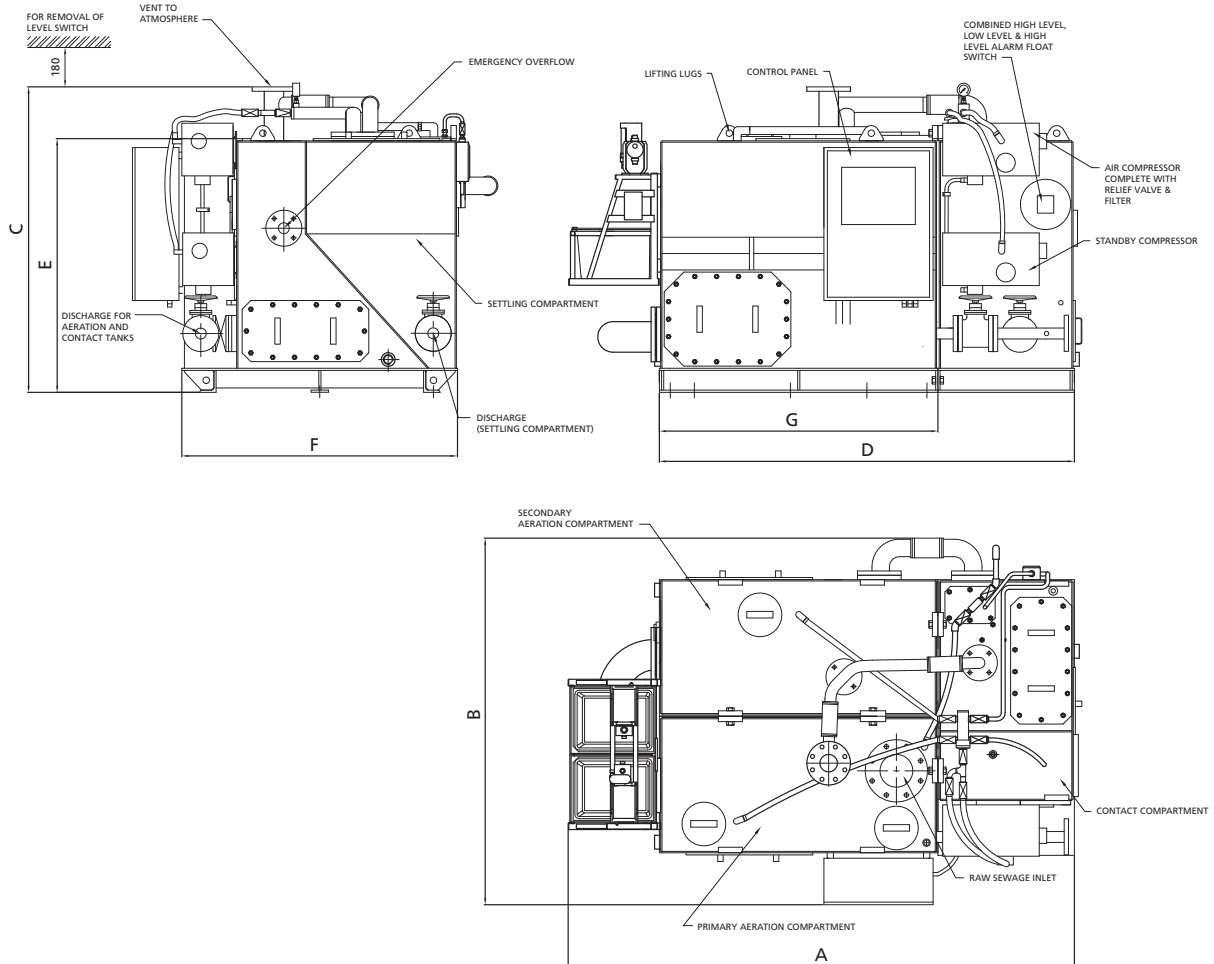
All remaining effluent minus organic/inorganic material displaced into the contact compartment is dosed with sodium hypochlorite for disinfection. Once the contact compartment reaches capacity, float switches connected to the discharge pump activate discharge. During discharge, sodium bisulphite is added via a dosing pipe in order to neutralise any residual chlorine, producing clean, safe, effluent, suitable for discharging at sea. All dosing is fully automated.

Standard	Coliform	Suspended solids	BOD (5)	COD	pH	Residual Chlorine
MEPC.159(55) 01/01/2010 (new)	100 Geom mean MPN/100ml	35 Geom mean	25 Geom mean mg/l	125 Geom mean mg/l	6-8.5	Best Tech Practice <0.5 ppm

Retrofit STA-C and ST-C Series Water Systems

Model No.	IMO Cert. Litres/Day	No. of people (under normal gravity collection conditions)	Dimensions (mm)						
			A	B	C	D	E	F	G
ST2A-C (R)	3260	21	2318	1678	1398	1900	1174	1265	1290
ST4A-C (R)	5960	41	2518	1835	1847	2100	1624	1415	1415
ST6A-C (R)	9200	65	3024	2035	1937	2550	1724	1615	1765
ST8A-C (R)	12200	86	3324	2135	2037	2850	1824	1715	2015

Model No.	Size of aperture through which unit will pass when separated into three parts with panel, transfer tubes, chlorine tablet magazine and vent tubes attached.	Size of aperture through which unit will pass when separated into three parts with panel, transfer tubes and studs, chlorine tablet magazine and vent tubes and covers removed.
ST2A-C (R)	867 x 1371	655 x 1220
ST4A-C (R)	942 x 1821	730 x 1670
ST6A-C (R)	1042 x 1921	830 x 1770
ST8A-C (R)	1092 x 2021	880 x 1870



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The manufacturers reserve the right to alter the specification and data to incorporate improvements in design. Certified drawings will be issued on request.

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