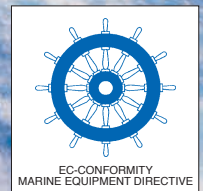
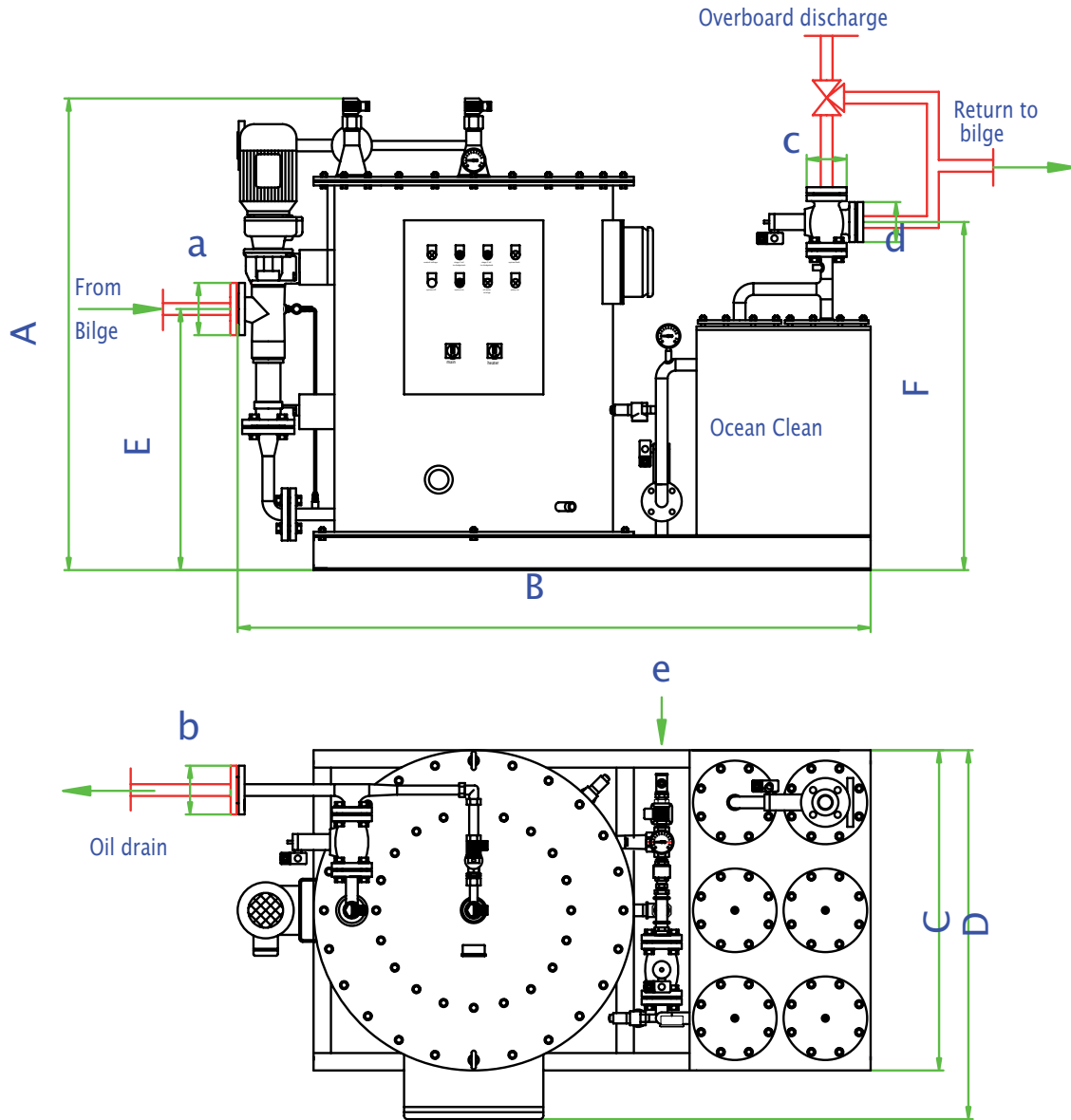
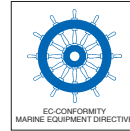


# Ocean<sup>®</sup> Clean<sub>GmbH</sub> Water Treatment

## Oily water separator

*type tested acc. to IMO-Res. MEPC 107 (49)  
max. 4,5 ppm under test conditions*





Type	A	B	C	D	E	F	a	b	c	d	e	Weight		Capacity m <sup>3</sup> /h
												dry	wet	
EB 0,25	1350	1200	600	800	700	900	DN 25	DN 20	R 3/4"	R 3/4"	R 3/4"	500	620	0,25
EB 0,50	1350	1200	600	800	750	900	DN 25	DN 20	R 3/4"	R 3/4"	R 3/4"	550	670	0,50
EB 1,0	1350	1500	600	800	750	900	DN 25	DN 20	R 3/4"	R 3/4"	R 3/4"	600	720	1,0
EB 2,5	1350	1900	920	1100	750	1000	DN 40	DN 25	DN 25	DN 25	R 3/4"	800	1300	2,5
EB 5,0	1600	1950	1250	1250	800	1000	DN 50	DN 32	DN 35	DN 32	R 3/4"	1000	2000	5,0

## Short Description

### Make Oceans clean with "Ocean Clean<sup>®</sup>"

Bilge Water separator approved to IMO-Res. MEPC 107 (49 ).

The "Ocean Clean EB" series from 0,25 to 5,0 m<sup>3</sup>/h capacity is designed on the background of 30 years of experience of oil-water separation of its designer Dieter van Züren. The "Ocean Clean" system fulfills the test specification of a.m. IMO-Resolution more than required. The maximum oil content in the effluent water is less than 5 ppm. The "Ocean Clean EB" is a 3-stage oil-water-emulsion separating system.

**The first stage** is a gravity coarse separation stage, able to separate the input of up to 100% oil, without stops for flushing intervals. The oil water separation is forced by a special inlet, producing a hydrocyclone effect.

**The second stage** is a coalescence stage, separating finest oil droplets from the water. The coalescer is made of oil-and acid resistant Polyether-foam, self cleaned by automatic backflushing. Its life time is 3-5 years.

The separated oil is detected by conductive measuring method and drained by automatic operated drain valves.

There are no moving parts inside the 1 and 2 . stage<sup>nd</sup>

**The third stage** is an emulsion breaking stage by means of special infused filter membranes with hydrophobic surface, a.e. water can flow through it, but every oil particles of an emulsion are retained.

The de-oiled and emulsion-free water is, after passing a 15 ppm alarm (to be adjusted to 5 ppm) discharged to overboard. The life time of the filter membranes is approx. 2 years.

Because of the systems pump is pressing the bilge water through it, there are no restrictions regarding the suction head. For a suction head of above 6 mtr., the pump may be installed apart from the separator on a lower position.

The "Ocean Clean EB" bilge water separator in standard is delivered ready to plug on, with all internal piping and wiring.

## System description

The "Ocean Clean" oily water separator system is a 3-stage, combined gravity, cross fluked membrane-filter system, manual or automatic operated. Maintenance and changing parts are reduced to a minimum.

The oily water from bilge or bilge water collecting tank is led via the transfer pump into the 1<sup>st</sup> stage, the coarse separation stage. The inlet pipe is prepared like a hydro cyclone which brings the inlet mixture into rotation. The lighter medium oil is moving to the centre of the tank, where it is easily detected by the conductive sensing electrode. The sensing electrode

N 1.1 is measuring the electric resistance of oil and water between its sensors A and B. Water is a good electric leader whilst the electric resistance of oil is  $\infty$ . That means, if the sensors A and B (C is only mass) are surrounded by oil, no electric flow can be between them. This signal is taken by the sensing relais N1, operating the necessary steps in the switch box to operate the necessary valves and pump operations.

The outlet of the oil drain valves V1 and V2 is specially designed as a self-sensor-cleaning-device. If the oil drain valves are open, the oil and at the end some water passes the sensor with high velocity, cleaning the sensor automatically from clogged oil residues.

During valve V1 is open for oil drain, valve V3 is closed.

If there is no oil at the sensor N1.1 of the 1<sup>st</sup> stage, valve V1 is closed. The mixture is entering from below and streams through the coalescence insert from below to the top, forming big oil bubbles from a summary of small droplets.

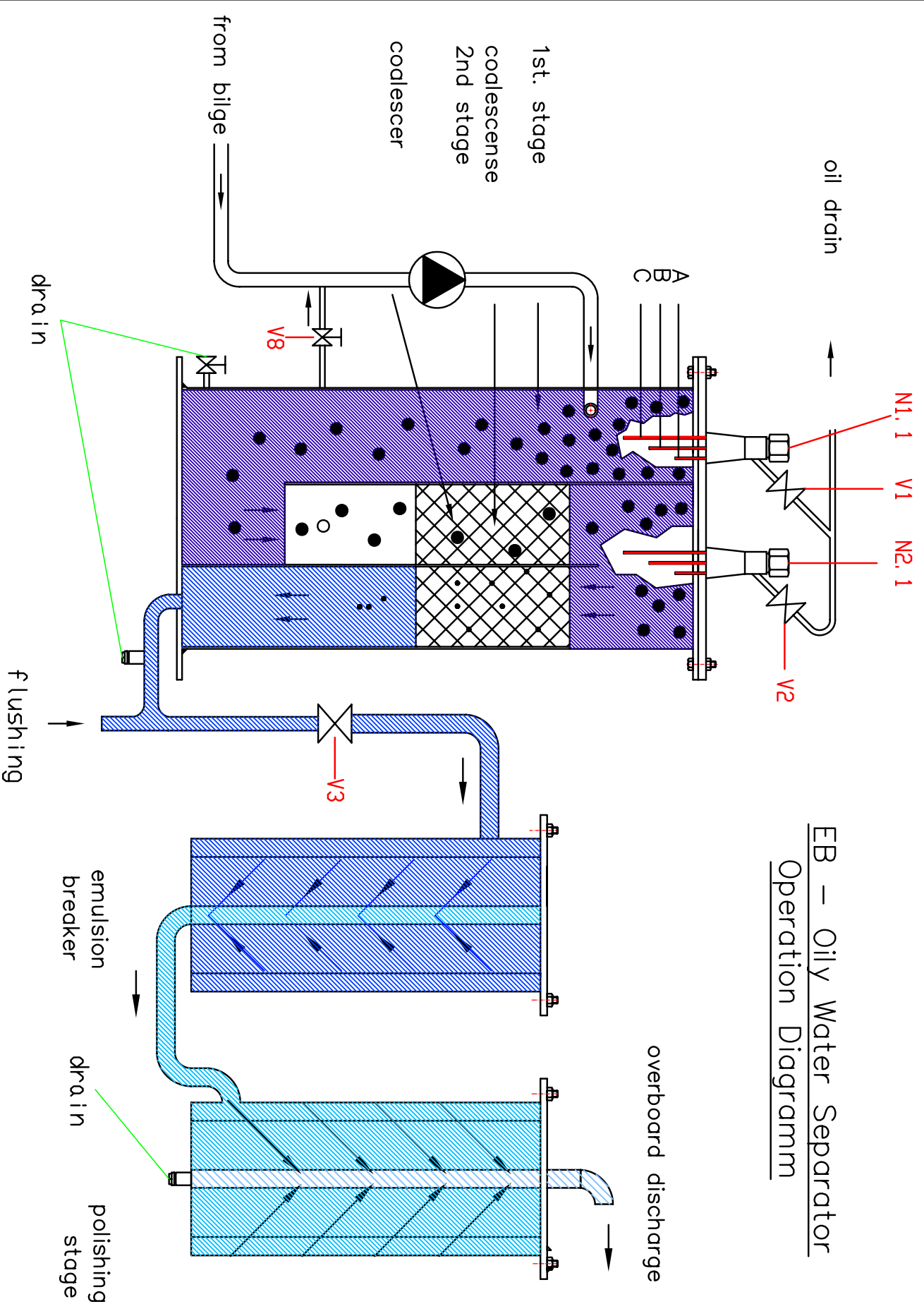
Separated oil is detected by sensor N2.1 and drained by valve V2.

Whilst oil draining phase of 2<sup>nd</sup> stage, valve V 3 is closed. The pump stops automatically. Valve V 4 opens for back flushing with sea- or freshwater from hydrofor-system. The pressure of the back flushing water is regulated by the pressure regulating valve V 5 to be adjusted to 2 bar. After the oil is drained and the sensor is surrounded by water again, the unit switches over to normal operation condition.

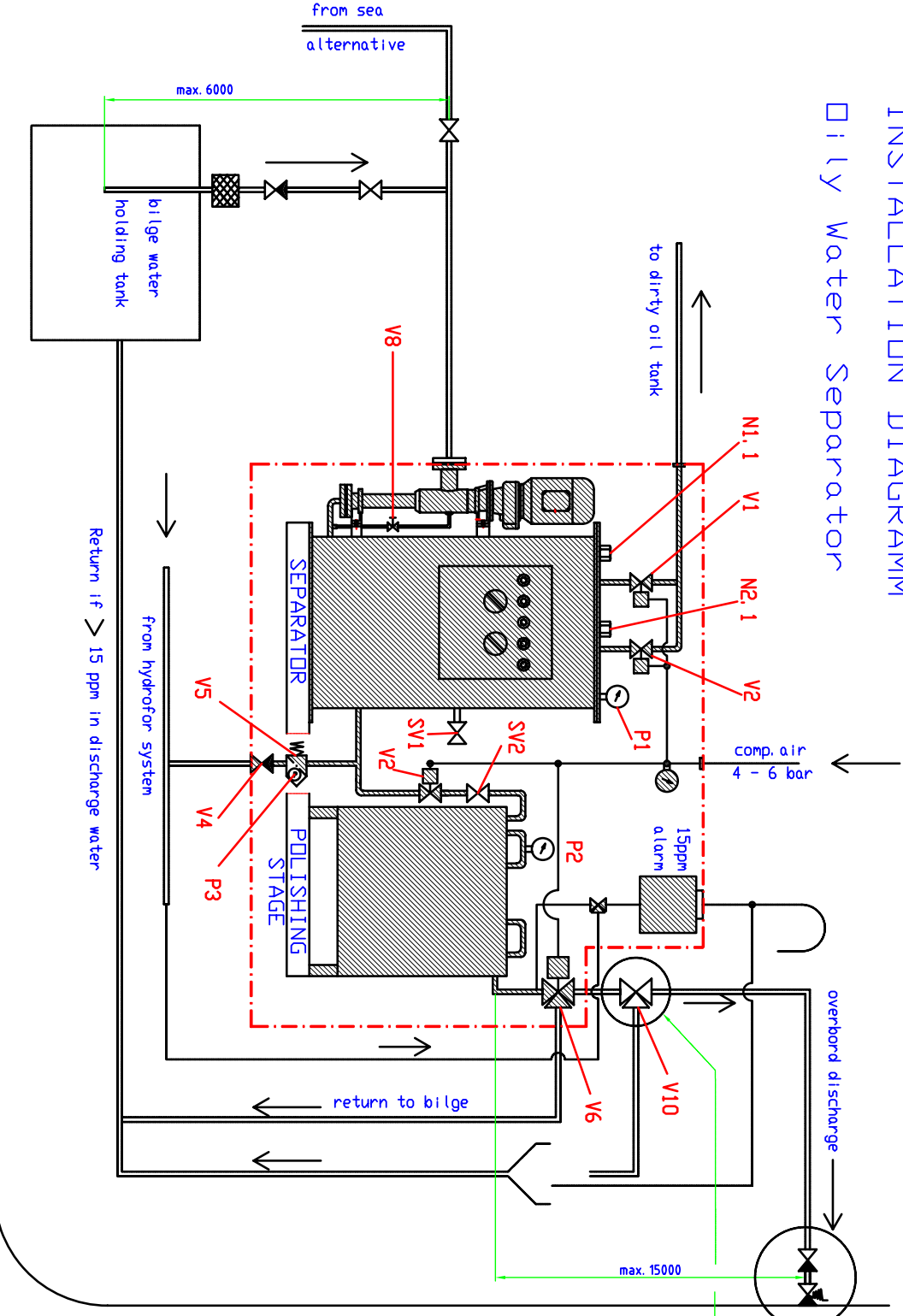
After passing the 1<sup>st</sup> and 2<sup>nd</sup> stage, the remaining deoiled water passes the EM-columns and after this the polishing columns, which are switched in series. The clean water - free of oil and emulsions - passes valve V 6 - to the overboard discharge.

Between the last polishing column and valve V 6 there is a by-pass pipe to the 15 ppm-alarm and back to bilge/bilge tank. The 15 ppm-alarm is continuously detecting the oil content. As soon as this is increasing to more than 15 ppm the valve V 6 switches over, overboard discharge is stopped and the water flows back to bilge/bilge tank.

# EB – Oily Water Separator Operation Diagramm



# INSTALLATION DIAGRAM Dirty Water Separator



acc. to classification requirement

sampling point acc. MEPC.107(49) chapter 6.1.1

oceanic clean delivery

Yard supply