

RWO-Bilgewater separator

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SKIT/S-HFO ULTRAPUR-OILY WATER SEPARATOR



Oily Water Separator for ships and offshore application

- Filterless type, selfcleaning system with automatic interval backflushing.
- Typetested in accordance with IMO – Resolution MEPC. 60 (33) with all relevant international approvals.
- EC – Conformity in accordance with MED European Marine Equipment Directive.
- The system meets all requirements of MARPOL 73/78.
- The gravity separator with built-in coalescer is constructed in accordance with recent research of hydrodynamics.
- Space saving compact design capacities from 0,1 m³/h up to 10 m³/h.
- Automatic operation for unattended machinery spaces.
- High efficiency! Oil content in the effluent less than 1,0 ppm during all tests.
- Favourable prices!
- Sales and service world-wide.



RWO WATER TECHNOLOGY

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SKIT/S-HFO UltraPur-Oily Water Separator

The RWO-oily water separators are delivered as space saving compact units ready for installation and operation. There are no special requirements concerning the location of the SKIT/S in the engine room. It has only to be considered that the mohno-pump (14) has a maximum suction of 6mWC. Taking into account the pressure drop in the separator, the OWS may not be installed more than 5m above suction level. The recommended diameter for the suction pipe of the separator is mentioned in the technical data sheet.

To protect the separator and valves against dirt, a suitable basket-filter (21), with a perforation of 1-2 mm has to be installed in the suction pipe.

The oily water inlet is fitted with a non-return valve (1), which prevents the system from emptying. On the SKIT/S 0,1-2,5 the non-return valve is installed inside the separator.

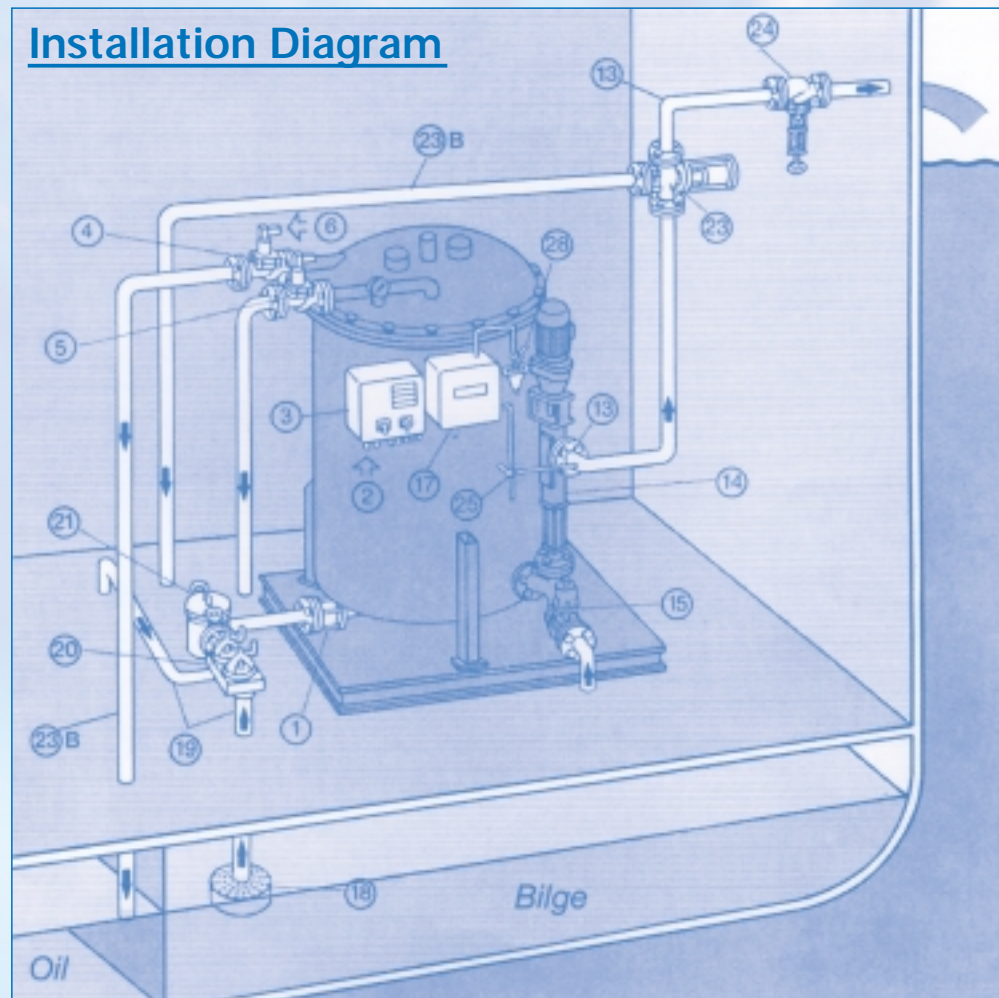
In case of long suction lines or large pipe diameters a non-return valve with strainer (bottom valve) (18), has to be installed, to prevent the suction line from emptying.

If fuel oil of a high viscosity is used and low water temperatures in the bilge have to be expected, it is necessary to install a heating in the bilge-tank.

At the backwashing inlet (15) a waterpressure of 1 bar is required. Clean sea water as well as water from the hydrophor-system are suitable.

The backwashing water outlet (5) is discharging to the bilge. The oil outlet (4) to the oil collecting tank has to be arranged in such a way that the oil will be drained pressureless. The oil collecting tank has to be provided with an air vent.

In accordance with the requirements of the corresponding class the effluent outlet (13) has to be fitted with the required



discharge valves such as springloaded discharge valve or/and SDNR-Valve (material according to the particular rules). For the good function of the oily water separator SKIT/S-aquacilan® no special valves are required in the discharge-pipe.

As an option the oily water separator will be equipped with an oil monitor (17) and a pneumatic three-way valve (23), mounted in the effluent outlet pipe with an additional recirculation-pipe to the bilge. If the limit of 15 ppm oil content in the clear water outlet is exceeded, the alarm is activated and the three-way valve automatically switched over to recirculation to bilge.

The mohno-pump is a positive displacement pump; pumping against a closed valve has to be avoided.

For the supply of the pneumatic piston valves (4/5/15) and the pneumatic three-way valve (23) one compressed air supply only has to be provided (6) (airpressure 6-8 bar/tube 1/4" - 8 x 1 mm dia).

The voltage existing on board has to be specified. The automatic controlbox is provided with a brass cable gland (2) for the main power supply. All electric components such as pump, el.-heating, pilotvalves and 15 ppm alarm monitor are fully wired, ready for operation.

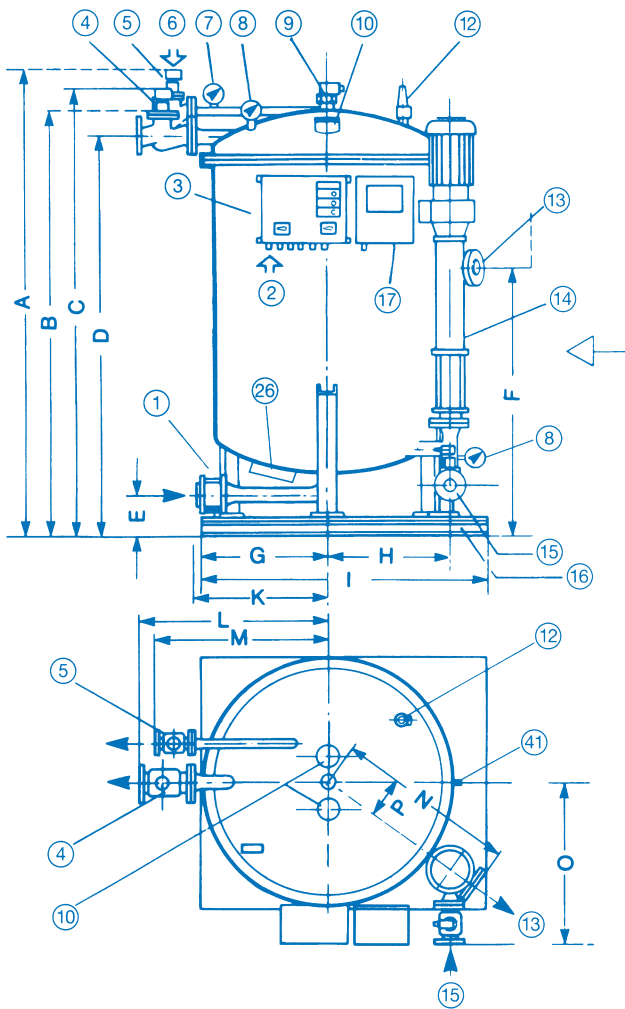
According to the el.-rating of the pumpmotor and the el.-heating the wire gross section has to be dimensioned. The power consumption is listed on the technical data sheet.

After the power supply has been connected the direction of rotation of the pump has to be checked ("clockwise" viewed from the drive end).

During the oilseparation cycle the system is working under vacuum conditions. All flange connections of the separator and suction pipe have to be vacuum tight.

The oily water separator may not be installed in hazardous location and has to be protected against frost.

Dimensioned Sketch



- ① Non-return valve (at Skit 0,1-2,5 the valve is installed inside the vessel)
- ② Connection for power supply
- ③ Automatic oil drain controlbox
- ④ Pneumatic piston valve (oil outlet) with pilotvalve
- ⑤ Pneumatic piston valve (backwashing outlet to the bilge) with pilotvalve
- ⑥ Air inlet, size 1/4" (8 mm dia)
- ⑦ Air-pressure gauge (0-10 bar)
- ⑧ Vacuum-pressure gauge (-1/+5 bar)
- ⑨ Sensorelectrode
- ⑩ Heating*
- ⑫ Safety valve
- ⑬ Clean water overboard discharge
- ⑭ Mohnopump
- ⑮ Pneumatic pistonvalve (backwashing inlet), with pilotvalve
- ⑯ Foundation
- ⑰ Oil monitor (15-ppm-Alarm)
- ⑱ Suction strainer with bottom valve
- ⑲ Suction pipe
- ⑳ Suction valve chest
- ㉑ Suction strainer
- ㉒ Back flow to bilge
- ㉓ Pneumatic three-way valve, with pilotvalve (recirculation to bilge)
- ㉔ Springloaded discharge valve
- ㉕ Three-way ballvalve (Sample water inlet and clean water inlet for flushing)
- ㉖ Hand hole (Skit/S2.5 ÷ 10.0)
- ㉗ Funnel (sample water outlet connection) 1/2 inch
- ㉘ Zinc anode

Standard Voltage:
380 V/50 Hz/3 Ph
220 V/50 Hz/3 Ph
440 V/60 Hz/3 Ph
220 V/60 Hz/3 Ph

other voltage on request

compressed air supply: 6-8 bar
clean water supply 1 bar

Technical data and dimensions are subject to further modification.

Items 17-25 are not included in the standard scope of supply and have to be specified separately.

* not with SKIT S 0,1

Technical Data SKIT/S-aquaclean®

Type S	capacity (m ³ /h)	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	1 (DN)	4 (R ² /DN)	5 (R ² /DN)	13 (DN)	15 (R ² /DN)	Power KW	Weight kg
0.1	0.1	770	650	770	650	60	-	100	390	295	170	280	280	-	-	0	60	195	15	1/2	1/2	25	1/2	0.5	70
0.25	0.25	880	765	880	765	70	425	150	350	400	220	300	300	360	235	0	70	300	15	1/2	1/2	25	1/2	1.5	95
0.5	0.5	1015	905	1015	905	75	560	175	390	600	215	340	340	385	255	0	155	350	25	3/4	1/2	25	1/2	2.5	120
1.0	1.0	1230	1115	1230	1115	80	570	225	440	700	285	415	415	440	255	0	165	450	25	3/4	1/2	25	1/2	2.5	165
1.5	1.5	1450	1320	1450	1320	80	605	250	500	650	310	450	450	460	195	0	165	500	32	3/4	1/2	25	1/2	3.0	230
2.5	2.5	1755	1590	1615	1480	200	770	375	415	750	295	560	560	565	450	30	220	750	32	1	3/4	50	1/2	5.0	265
5.0	5.0	1970	1850	1825	1675	175	875	560	575	1050	560	770	770	760	550	30	240	1050	50	1	3/4	50	3/4	5.5	560
10.0	10.0	2415	2195	2230	1970	225	1090	650	675	1300	560	930	930	880	610	30	335	1300	65	40	32	65	1	6.5	900

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Description of Process

Fig. 1 Oily water separation

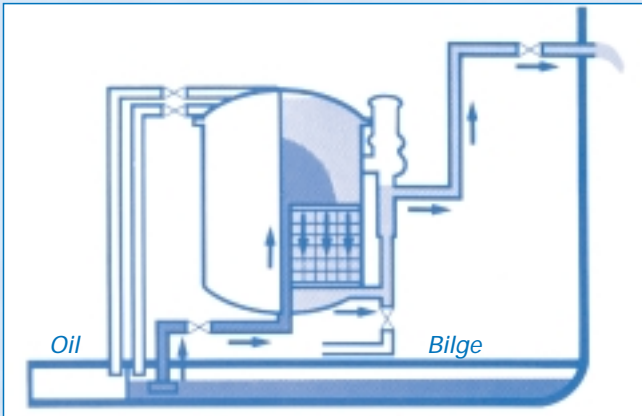


Fig. 2 Oil discharge

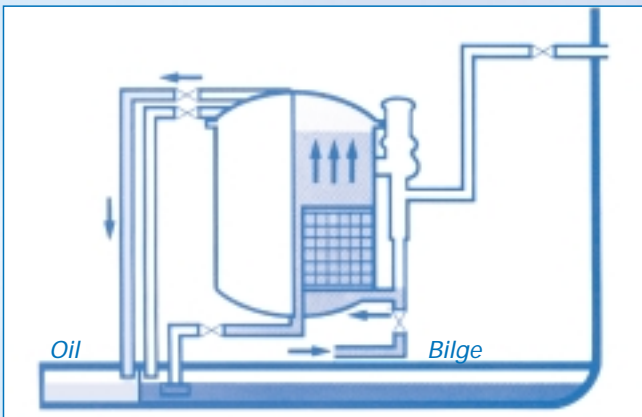
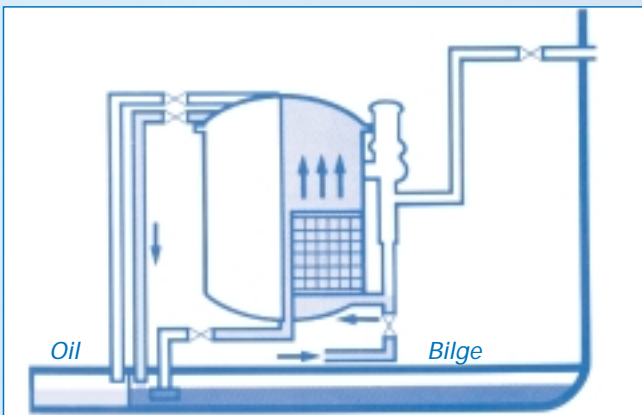


Fig. 3 Backwashing



The RWO-oily water separator SKIT/S is the combination of a gravity separator with a built-in coalescer.

The system works with a completely new principle of hydrodynamics. Latest physical trends concerning oil-in-water dispersion, homogeneous fluid mechanics and coalescence effects are incorporated in the SKIT/S-system.

Fig. 1
Oily Water Separation

The oily water is drawn from the bilge through the separator by an eccentric helical rotor pump, so that an additional mixture of oil and water is avoided.

As a result of the excellent homogeneous fluid mechanics in the SKIT-oily water separator and the difference of density between oil and water the rough separation of oil takes place immediately by gravity

Flowing through the built-in modern coalescer which is a very open-porous type, smallest oil droplets are separated by the extremely oleophilic surface. This system features the outstanding efficiency of the SKIT/S-oily water separator.

Fig. 2
Oil Discharge

The separated oil flows upwards and is collected on the surface. A powerful electric heating supports the separation. The oil-level is detected by the RWO-sensor unit.

Fig. 3
Backwashing

Immediately after discharging the oil the time-controlled backwashing is started. Clean water is used for backwashing. The coalescer is cleaned from oil and dirt by periodical backwashing. The mixture of oil sludge and water is drained off to the bilge.

The fully automatic oil discharge- and backwashing-cycle is a special feature of the SKIT/S-oily water separator. The periodic flowreverse enables continuous operation without clogging of the coalescer which cleans itself while operating.

RWO oil/water-separation – more than 7000 references world-wide.

