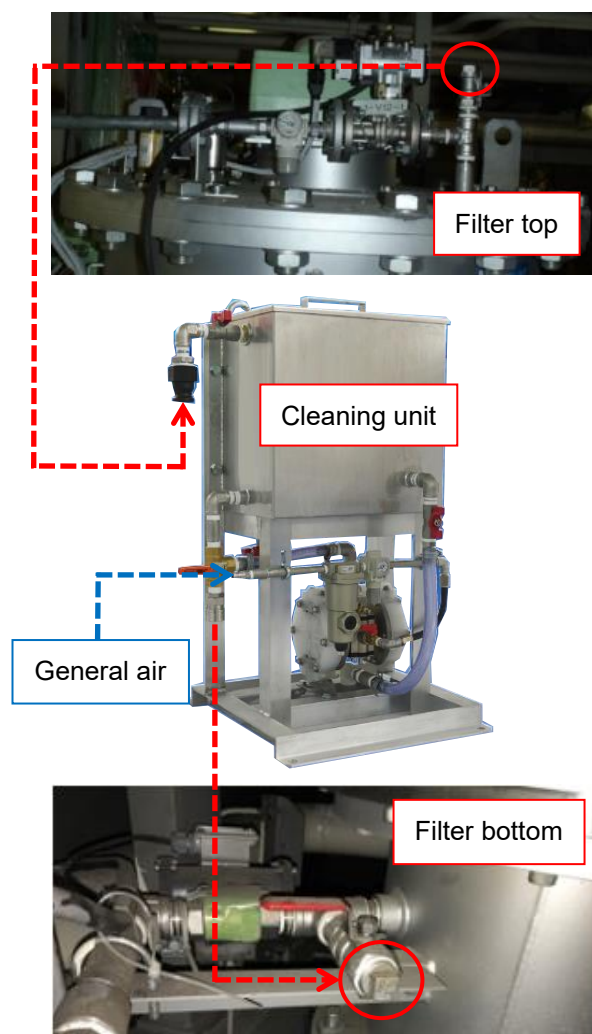
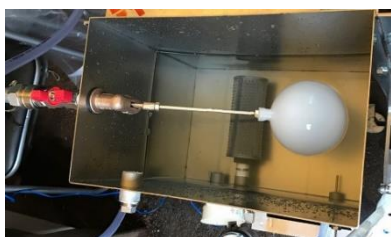


How to Clean Filter Element with Cleaning Unit

- (1) Prepare the cleaning unit.
- (2) Connect the cleaning unit to the filter of ballast water management system with a hose and joint provided with the cleaning unit. Also, supply the vessel's general air to the air drive pump.



- (3) Supply fresh water to the tank of the cleaning unit until the water supply is stopped by the ball tap.



- (4) After filling the tank with fresh water, switch flow path of the cleaning unit to the cleaning unit side and operate the air drive pump to circulate the water until the tank water level stabilizes for about five minutes. *The water level can be adjusted by the air regulator supply pressure.



- (5) Dissolve ScaleDestroyer (IK-01) in the tank during circulating operation. Add IK-01 for the length of piping from the filter inlet/outlet flange to V2/V3 too.
*Add 2 kg of IK-01 at a time.
*Refer to Tables 1 and 2 for the amount of IK-01 to be added.
- (6) Measure pH of the return water coming out of the ball tap, and if the pH is 2 to 3, shut down the cleaning unit and leave it in a static state.
- (7) After the static time has elapsed, switch flow path of the cleaning unit to the tank return side and operate the air drive pump to circulate the water.
- (8) Dissolve Alkaline Agent (IK-20) in the tank during circulating operation.
*Add 2 kg of IK-20 at a time.
*Refer to Tables 1 and 2 for the amount of IK-20 to be added.
*IK-20 is more easily dissolved when water temperature is kept at 25 to 30°C.
- (9) Switch flow path of the cleaning unit to the cleaning unit side and circulate IK-20. Measure pH of the return water coming out of the ball tap, and if the pH is 6 to 7, shut down the cleaning unit.
- (10) Discharge water in the filter unit and in the front and rear piping. Dispose of the water according to the laws of the country where the water is disposed of.
*Discharge water as soon as possible after adding IK-20.
*After drainage is complete, check that the filter differential pressure is below 20 kPa in automatic operation.

Table 1 Amount of IK-01/IK-20 according to filters

Filter model	8 hours of static	24 hours of static
HK-200/300FA	4 kg (two bags)	2 kg (one bag)
HK-300F,450FA	8 kg (four bags)	4 kg (two bags)
HK-450F,600FA	12 kg (six bags)	6 kg (three bags)
HK-600F,900FA	16 kg (eight bags)	8 kg (four bags)
HK-900F	24 kg (twelve bags)	12 kg (six bags)

Table 2 Amount of IK-01/IK-20 according to length of filter inlet/outlet piping

Piping diameter	8 hours of static	24 hours of static
250A	0.4 kg/m	0.2 kg/m
300A	0.6 kg/m	0.3 kg/m
350A	0.8 kg/m	0.4 kg/m
400A	1.0 kg/m	0.5 kg/m
450A	1.2 kg/m	0.6 kg/m

【Caution】

- When using seawater, increase the amount of IK-01 and IK-20 by 1.1 times.
- Wear a protective equipment since water in the tank of the cleaning unit may spurt out due to a chemical reaction when IK-20 is fed.
- A short cleaning time is recommended.
- If cleaning the filter element does not bring the pressure below 20 kPa, please contact our sales office.