

# Wärtsilä Sandguard seal

**Designed for vessels operating  
in abrasive waters**

## PRODUCT DATASHEET



The Wärtsilä Sandguard seal is an oil lubricated lip type seal which has been engineered to enable vessels to operate in abrasive and silty waters. Uniquely designed and expertly crafted, vessels can now operate without worry.

### IDEAL FOR ABRASIVE AND SILTY WATERS

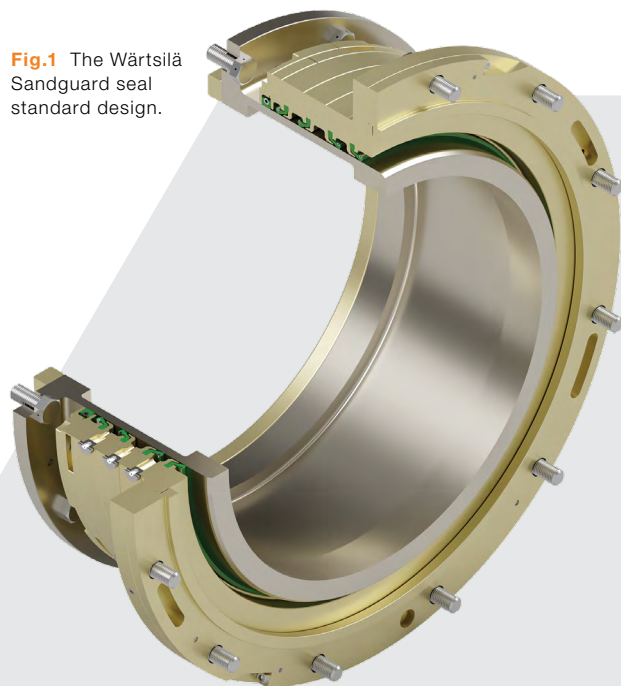
Sailing a vessel should be a smooth experience. However, when operating inland, across coastal waters or dredging applications, there is a high level of abrasives in the water. The performance of stern tube lip seals in these types of applications is generally poor. This is due to increased wear rates and subsequent oil leakage. The effect of this is an increase in docking frequencies and operating costs.

But the Wärtsilä Sandguard seal has been designed to address this. It offers all the benefits of a simple, robust lip seal solution with the addition of increased wear resistance for aggressive conditions and rope/line protection.

### ENGINEERED FOR ENDURANCE

The Wärtsilä Sandguard seal stern tube seal system is designed to prevent abrasive particles from entering the seal. This has been achieved by adding a specially designed face seal and protection ring (FSP) and fresh water injection device on the seal. On the standard model, fresh water is supplied into the aftermost seal chamber and the device prevents the ingress of muddy or sandy water into the seal system by purging fresh water through the FSP. Our optimum solution combines air with fresh water.

**Fig.1** The Wärtsilä Sandguard seal standard design.



## Taking your feedback on board

Our customers are the most important thing to us. So when we get your feedback, we act upon it. That's why we've made sure the Wärtsilä Sandguard seal can:

- save time, money and ensure a smoother sailing experience.
- stop abrasives from entering your vessel with our specially designed FSP injection device.
- give you greater reliability and safety with automatic air control.

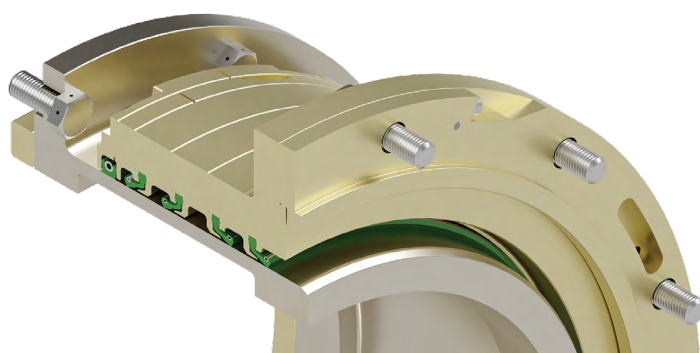
**Cut costs and improve lifecycle**

FEATURES	ADVANTAGES	BENEFITS
Triple protection system with the FSP.	Fresh water sealing and automatic air control.	Greater improvement in reliability and safety compared to conventional seals on dredgers.
Pressure balance automatically follows any changes in the ship's draft.	System that works automatically.	Reduces labour costs.
UNNET fishing line and net protector included as standard.	Protects efficiently against small fishing lines, nets and sediments.	Significantly reduces the risk of seal damages, especially when vessels are operating near the shore or in rivers. This provides increased operational safety and reduced costs.
Air injection.	Seal does not require adjustment after installation.	Low maintenance and low air consumption.
	Prevents oil leakage into the sea.	Environmentally friendly.

## Design overview

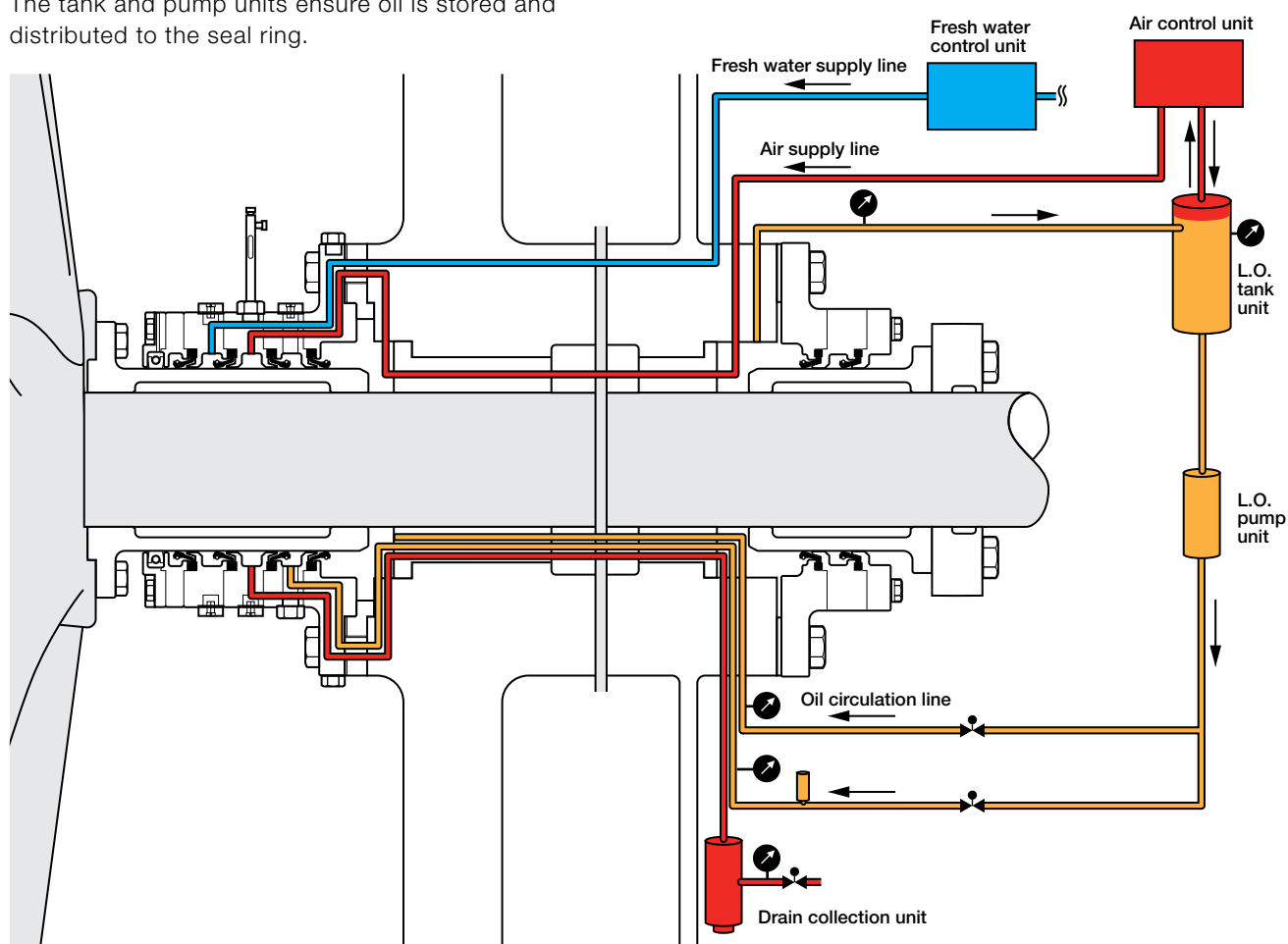
### ABRASIVE PROTECTION IN SILTY WATERS

In the case of a conventional type seal, when used in muddy or silty waters, the seal ring will encounter silty water. Muddy or silty water accelerates wear on the seal ring and seal liner surface. This excessive wearing will cause problems with the sealing device.



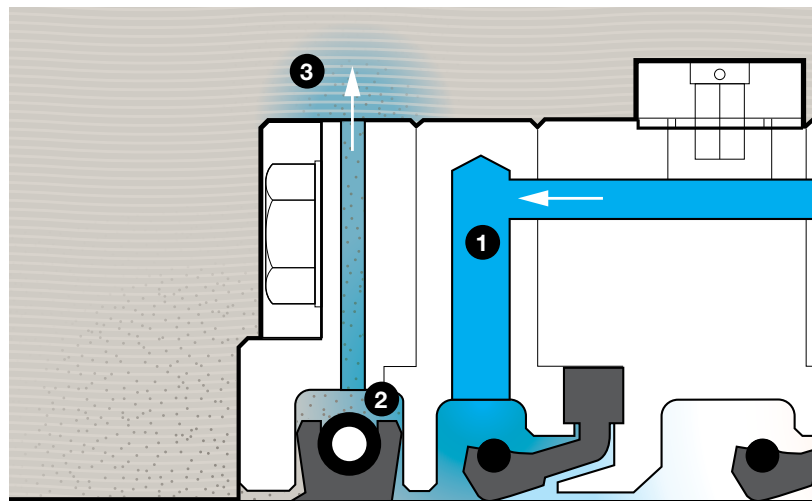
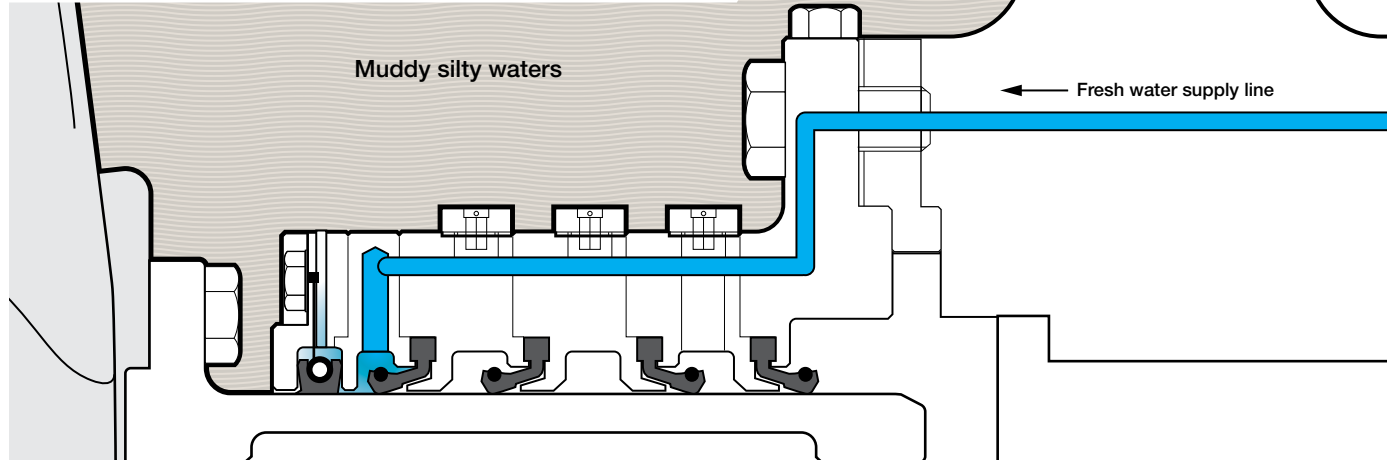
### PIPING AND AUXILIARY PARTS

This includes units to control air, water and pressure. The tank and pump units ensure oil is stored and distributed to the seal ring.



## FRESH WATER SUPPLY

In order to avoid issues caused by muddy or silty water, the optimum solution is to supply fresh water to the front side part of the aftermost seal ring. This prevents excessive wearing on the seal liner or seal ring.

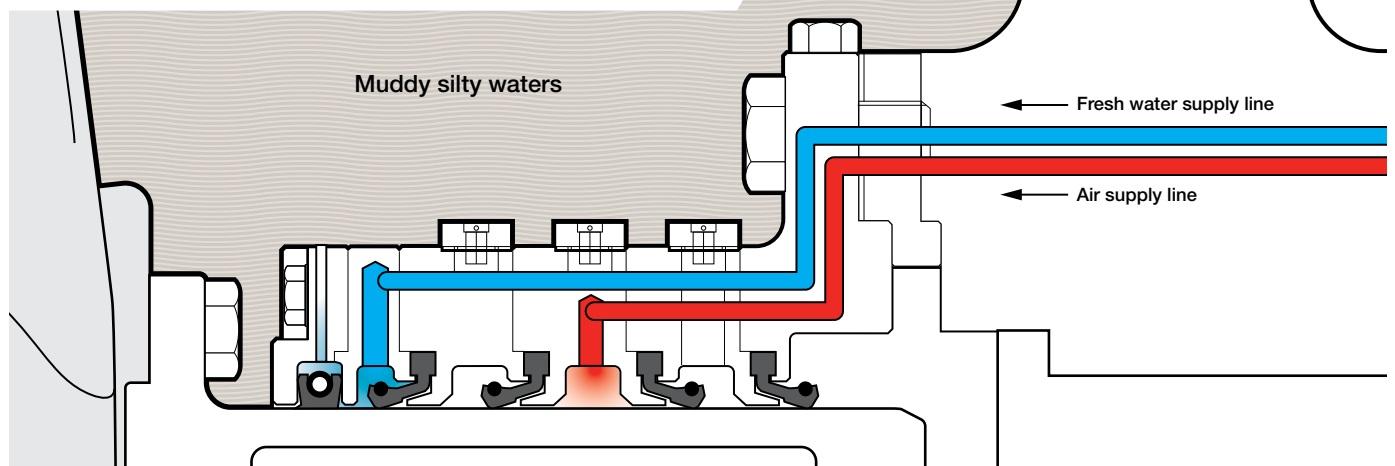


## ABRASIVE PROTECTION

1. Fresh water is supplied into the aftermost chamber.
2. Supplied water passes through face seal part of the FSP.
3. Drained out from the drill hole on P-ring cover.

## FRESH WATER AND AIR SUPPLY

For the most optimum solution, the air system is combined with fresh water supply. This helps flush sand or silt out with fresh water and reduces pollution through fresh air supply into the air chamber.



# Wärtsilä Sandguard seal

TECHNICAL SPECIFICATION		METRIC	IMPERIAL
	Shaft sizes	286 – 1172mm	
	Sealed medium	Oil, seawater or fresh water	
	Serviceability	Lip seals serviceable with shaft in situ	
	Abrasion resistance	High	
	Lip seal material	Viton®	
	Liner material	Ni-Cr steel	
COMPONENTS AND SCOPE OF SUPPLY	Fresh water control unit	Wärtsilä standard	
	Air control unit	Wärtsilä standard	
	L.O. tank unit (180 litres)	Optional	
	FWD seal tank capacity - Seal size ≤ 1000mm (shaft 942mm or less)	CCM system with 15L tank can be applied	
	FWD seal tank capacity - Seal size ≥ 750mm (shaft 710mm and over)	Forced circulation with lube oil cooler is recommended	
	FWD seal tank capacity - Seal size > 1000mm (shaft bigger than 943mm)	Forced circulation with lube oil cooler should be applied	
	L.O. pump capacity (for stern tube)	1000L/H, total pump head 0.3MPa	
	Drain collection unit	Wärtsilä standard	
MATERIALS OF CONSTRUCTION	AFT seal casing	Manganese bronze	
	FWD seal casing	Cast iron	
	AFT liner	Ni-Cr steel	
	FWD liner	Special cast iron	
	Seal ring	Viton® (FR)	
	FSP	Viton® (FR)	
FLOW RATE AND SUPPLY PRESSURE	Fresh water - flow rate	0.2 – 0.4L/min Max 0.6MPa fresh water (to fresh water supply unit)	
	Air flow rate	0.4 – 0.7MPa control air (to Air control unit)	
	Air flow rate - 330-480 (shaft 286 – 457mm)	10NL/min	
	Air flow rate - 500-710 (shaft 458 – 672mm)	15NL/min	
	Air flow rate - 750-1250 (shaft 673 – 1172mm)	20NL/min	

An industry leader in shaft line components Wärtsilä Shaft Line Solutions delivers a portfolio of end-to-end services and integrated solutions for the marine markets that builds on our core values: lifecycle efficiency, risk reduction, environmental leadership and design excellence. As an original equipment manufacturer operating in 75 countries, we have the capabilities to support customers on a global scale, and remain committed to providing in-country and round-the-clock expertise.

[wartsila.com/shaft-line-solutions](https://wartsila.com/shaft-line-solutions)

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