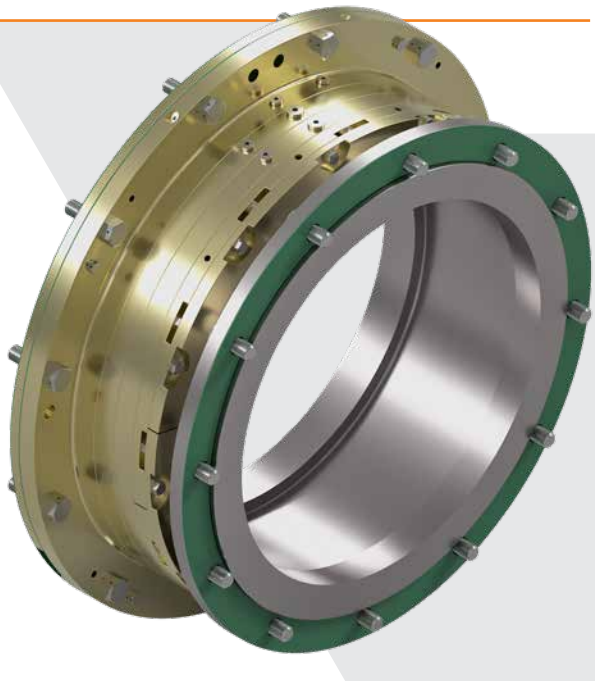
WÄRTSILÄ

Wärtsilä Airguard seal

An anti-pollution and environmentally compliant solution

PRODUCT DATASHEET

Anti-pollution and environmental regulations are key concerns in today's world. That's why at Wärtsilä, we designed the Wärtsilä Airguard seal, a special anti-pollution lip type seal that adheres to environmental regulations and addresses the concern of oil leakage.

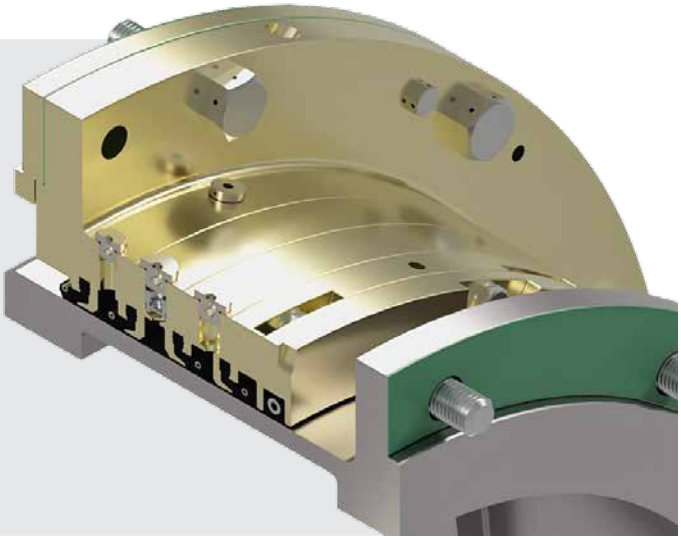


A HISTORY OF GOOD PRACTICE

Originally, the Wärtsilä Airguard seal was developed for new build vessels in 1988. To date, there has been no reported oil leakage from any vessel with a correctly installed and fully maintained Wärtsilä Airguard seal. Since it's launch we have equipped 1,600 vessels with the Wärtsilä Airguard seal, 1,000 of these installations have been performed in the last five years. We can upgrade your existing seal to this VGP compliant system, as well as retrofitting your existing stern tubes.

ANTI-POLLUTION SEALING AT ITS BEST

To fully achieve genuine anti-pollution stern tube sealing the seawater and the stern tube oil needs to be separated by an air barrier. This can be accomplished with the Wärtsilä Airguard seal with a void space in its design that is constantly managed.



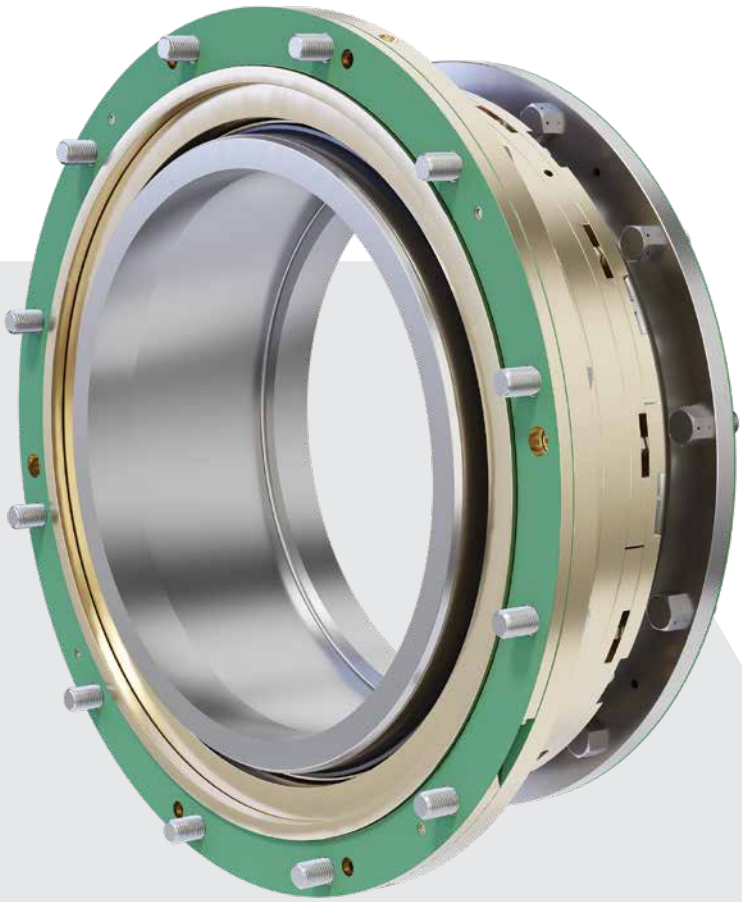
ENVIRONMENTALLY FRIENDLY SOLUTION

The Wärtsilä Airguard works with compressed air, which is applied to the void space between the seal rings. This constant flow of compressed air into the void space is automatically set higher than the seawater pressure, resulting in a small amount of air forced out into the seawater. Compared to other sealing systems, the Wärtsilä Airguard seal does not require any draft sensors. The void space is connected to an inboard drain collection system. Any seawater or oil that infiltrates the void space is automatically drained inboard, preventing oil leaking outboard or seawater entering the stern tube. As the Wärtsilä Airguard seal successfully takes away the oil-to-sea interface, it can be operated with mineral oil in accordance with the 2013 Vessel General Permit.

Successful elimination of oil leakage

FEATURES	ADVANTAGES	BENEFITS
Continuously pressure balanced.	Reduces load on seal rings.	Extends seal and liner lifetime, reducing operational costs.
Four lip seal arrangement running on chromium steel liner.	Allows extended 5–7.5* year dry docking cycles.	Extended dry docking cycles can reduce operational costs.
Continuous air flow.	Continuous collection of potential oil or water leakages.	Gives an additional level of reliability and operational safety.
Air barrier between oil and seawater.	The vessel can be operated with mineral oil according to the VGP 2013.	Avoids use of costly EALs and oil treatment systems saving operational costs.
Additional standby sealing ring.	This seal ring can be easily activated in the event of oil leakage from the engine room.	Gives an additional level of reliability and operational safety.
UNNET fishing line and net protector included as standard.	Protects efficiently against 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.
Balanced, closed oil lubrication and air supply system.	Reduces seal sensitivity for axial and radial shaft movements and hull vibrations.	Reduces oil and water leakages, providing operational cost savings and enhanced safety.
Double spacer option.	Enables additional shift of the sealing position on the liner without shaft or propeller removal.	Reduces operational cost through extended liner life and simplified seal service.

*7.5 years dry-docking cycle is subject to terms and conditions.



IMPROVED SEALING DESIGN

Through years of research and development, the Wärtsilä Airguard seal has been engineered to meet customer needs and ensure a smooth installation process. The latest upgrade includes enhancements to the flexibility of the seal installation and reliability of assembly.

Wärtsilä Airguard seal

CONTINUOUSLY PRESSURE BALANCED

The aft stern tube seal is a multi-barrier lip type seal which contains four seal rings running on a seal liner, to prevent grooving of the shaft. The two seal rings face the stern tube towards the oil, providing an active double security against oil spills. The other two seal rings face towards the seawater to effectively seal against seawater and sediments. The pressurised air in the central void space is dynamically controlled and monitored, based on the variations of the seawater pressure, which keeps the Wärtsilä Airguard system continuously pressure balanced. This results in less pressure and load on the four seal rings, and minimal wear on the liner. As an additional safety feature, a specially designed P-ring protects the seal ring from being damaged by fishing nets and lines.

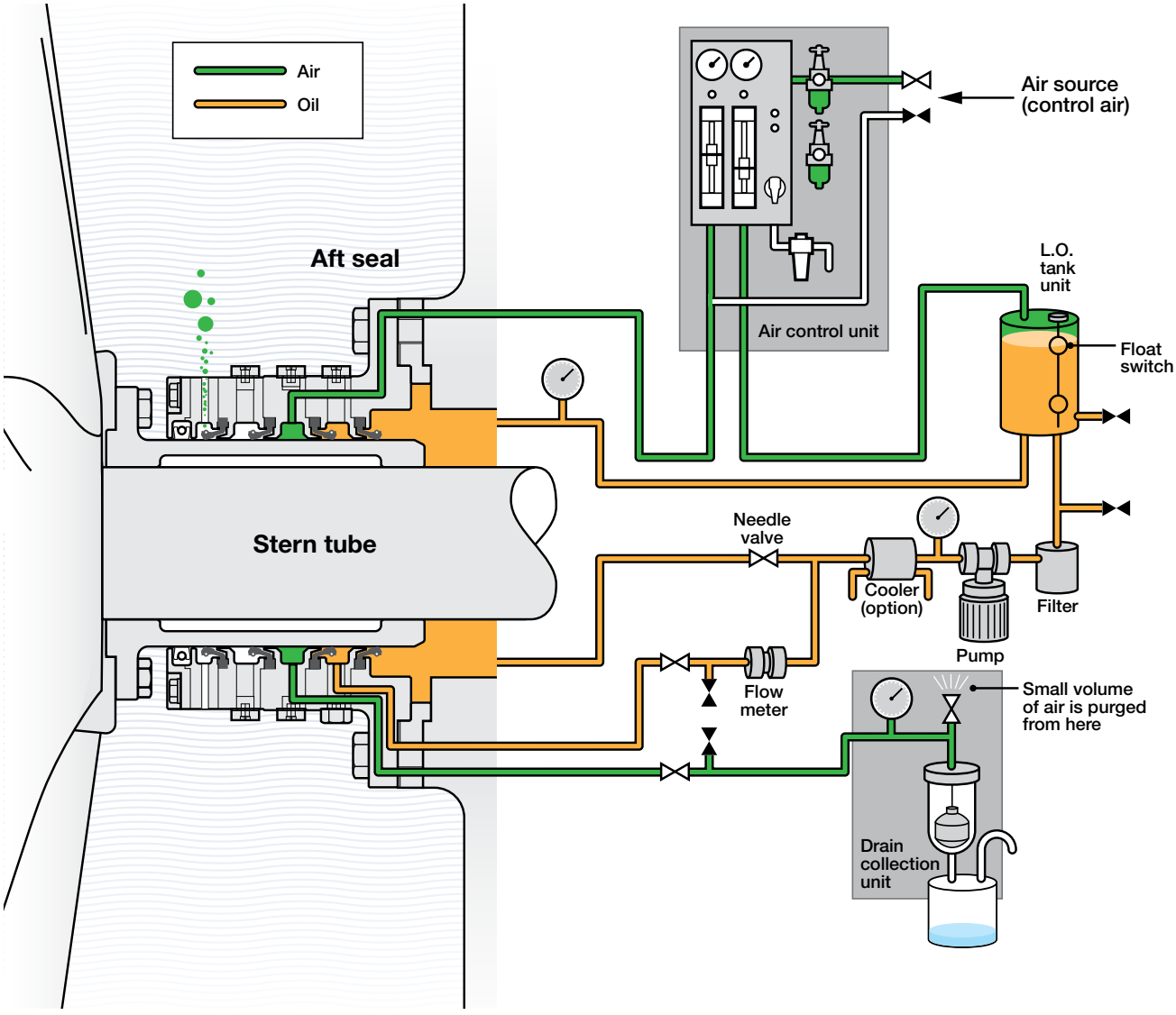
ESSENTIAL SEAL RINGS

Our Wärtsilä Airguard seal operates with standard Viton® manufactured seal rings, which provides excellent chemical and thermal stability, and wear resistance. The seal liner is made of a special type of high nickel chromium steel, offering an optimum combination of wear and corrosion resistance.

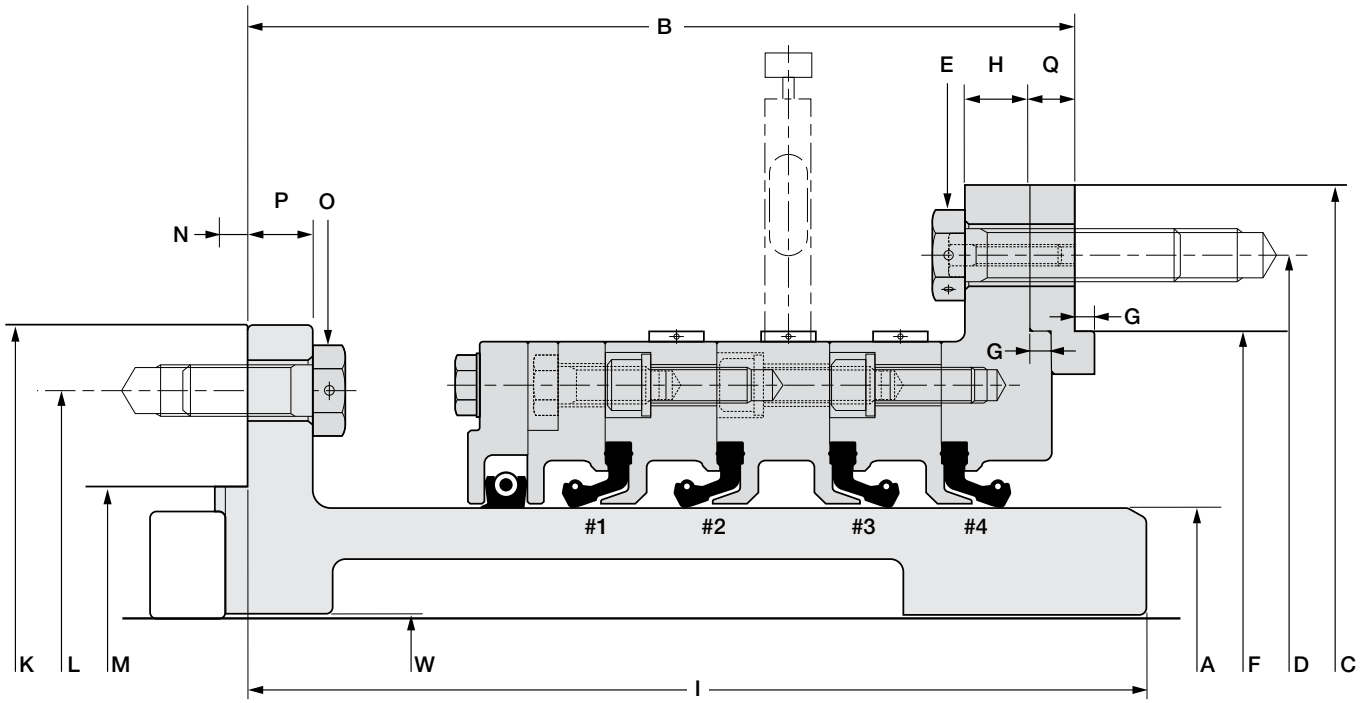
REDUCING OPERATIONAL COSTS

Designed to enable an additional shift of the sealing position on the liner without shaft or propeller removal, the Wärtsilä Airguard seal can be provided with a double spacer ring option. This provides reduced operational cost achieved through extended liner life and simplified seal servicing.

TYPICAL PIPING DIAGRAM OF AFT SEAL OF THE WÄRTSILÄ AIRGUARD SYSTEM



Wärtsilä Airguard seal



Dimensions

Shaft sizes		450	480	500	530	560	600	630	670	710	750	800	850	900	950	1000	1030	1060	1120	1180	1250
Liner diameter	A	450	480	500	530	560	600	630	670	710	750	800	850	900	950	1000	1030	1060	1120	1180	1250
Max. shaft diameter	W	428	457	476	504	532	570	598	635	672	710	756	803	850	896	942	968	998	1053	1108	1172
Aft overall length	B	270	270	270	270	285	285	290	290	330	330	365	365	385	385	385	405	405	410	410	425
Flange diameter	C	675	705	725	755	820	860	890	930	990	1030	1090	1140	1200	1250	1300	1370	1400	1460	1520	1590
Pitch circle diameter	D	630	660	680	710	765	805	835	875	930	970	1030	1080	1135	1185	1235	1295	1325	1385	1445	1520
No. of screws	E	12	12	12	12	12	12	12	12	16	16	20	20	20	20	20	24	24	24	24	24
Screw size		M20	M20	M20	M20	M24	M24	M24	M24	M24	M24	M24	M24	M24	M24	M24	M30	M30	M30	M30	M30
Aft spigot diameter	F	575	605	625	655	700	740	770	810	865	905	960	1010	1065	1115	1165	1215	1245	1305	1365	1440
Aft spigot height	G	7	7	7	7	7	7	7	7	10	10	10	10	10	10	10	10	10	10	10	10
Flange thickness	H	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	35	35	35	35	35
Linear length	I	286	286	286	286	298	298	303	303	351	351	393	393	417	417	417	436	436	441	441	461
Linear flange diameter	K	550	590	600	630	675	700	760	820	840	885	945	1000	1070	1130	1170	1200	1230	1300	1360	1430
Linear pitch circle diameter	L	510	550	560	590	630	660	710	750	790	836	890	950	1010	1070	1110	1140	1170	1230	1290	1360
Linear spigot diameter	M	476	510	526	550	588	620	670	710	740	780	825	870	920	970	1040	1070	1100	1160	1220	1290
Linear spigot height	N	8	8	8	8	9	9	9	10	10	10	10	10	11	11	11	11	11	12	12	12
No. of screws	O	12	12	12	12	12	12	12	12	12	16	16	16	16	16	20	20	20	20	24	24
Screw size		M16	M20	M20	M20	M20	M20	M24	M24	M24	M24	M24	M24	M24	M24	M24	M24	M24	M30	M30	M30
Aft liner flange thickness	P	20	20	20	20	20	20	25	25	25	25	30	30	30	30	30	30	30	35	35	35
Spacer thickness	Q	16	16	16	16	16	16	16	16	20	20	20	20	20	20	20	20	20	20	20	20

Dimensions in mm unless otherwise stated. All specified technical data is subject to change without notice and should be verified at the time of the order.

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

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