Product datasheet

WÄRTSILÄ FLOODGUARD RESTRICTORS

Self-activating, low-maintenance protection

Wärtsilä Floodguard restrictors are devices that provide reliable flood prevention where a shaft penetrates a watertight bulkhead, helping to contain any flooding to one side of the bulkhead or the other. They automatically activate in cases of flooding, regardless of whether the shaft is in motion or not.

Precision design

Wärtsilä Floodguard restrictors are a simple but effective solution to prevent flooding. Consisting of a housing assembly and a diaphragm with an o-cord inside it, they don't require complex fitting procedures, and have no maintenance needs beyond periodic inspections and overhauls. As well as non-split versions, Wärtsilä Floodguard restrictors are available fully split, enabling them to be maintained in situ.

Automatic operation

Once fitted, the design of Wärtsilä Floodguard restrictors allows them to automatically activate when needed. In normal operation, the diaphragm rotates with the shaft, but when the compartment is flooded, it moves into place, providing a stationary restriction to flow. If the shaft is in operation, it can continue to rotate while the diaphragm reduces the amount of water going beyond the bulkhead.

A proven track record

Wärtsilä's bulkhead restrictors have been used successfully in commercial and military environments for years. This is due to their excellent performance and long life expectancy, as well as the fact they're approved by major classification societies. Wärtsilä Shaft Line Solutions has more than 100 years' experience of designing, manufacturing and servicing shaft line products.

Efficient, effective performance

As well as allowing for a high degree of axial and radial movement, Wärtsilä Floodguard restrictors don't require any extra lubrication. The restrictors are dry running, lubricated entirely by water when they're activated. There's no need for oil or any other lubricants to be applied, which further reduces the need for maintenance.

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Full | **Sectioned**

Incredible versatility

Available in shaft sizes from ø0260 to ø680mm, Wärtsilä Floodguard restrictors are a highly versatile solution. A variety of materials and configurations are available for both standard and high-speed operations.

Features	Advantages	Benefits
Bi-directional operation.	Fits either side of the bulkhead.	Simplifies installation and operation.
Fully split design available.	Can be installed with the shaft in situ.	Makes seal overhaul easier and faster.
Automatic operation.	Activates when it is needed.	No intervention is required to activate flood protection.
Simple and robust.	Consists of only a few components.	Reduces maintenance costs and has long in-service life.
Diaphragm rotates with the shaft until the restrictor is activated.	The restrictor is free to move axially along the shaft.	Activates whether the shaft is operating or static.

The restrictor components

The housing of a Wärtsilä Floodguard restrictor can be located on either side of a bulkhead, wherever a propeller shaft, intermediate shaft or auxiliary shaft passes through it. The diaphragm fits inside the housing, and the o-cord is, in turn, located in a groove in the bore of the diaphragm.

There are three main designs, using the following combinations of components:

- Diaphragm and housing.
- Diaphragm, housing and one end cap.
- Diaphragm, housing and two end caps.

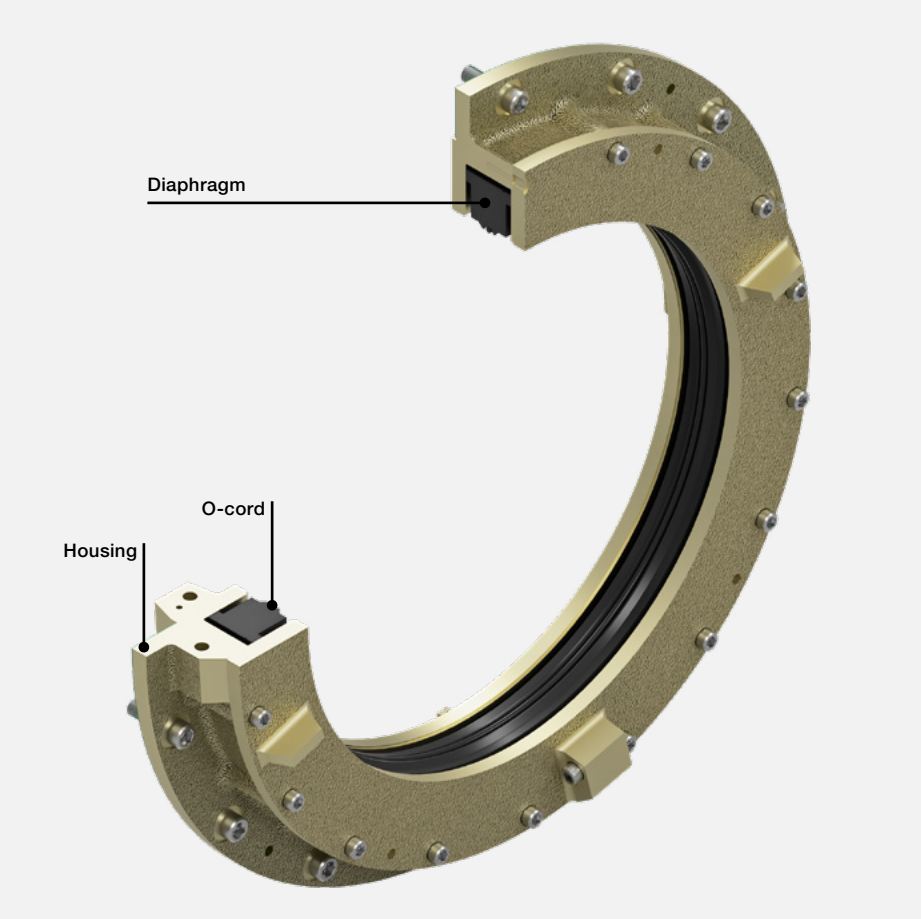

Fig.1 Wärtsilä Floodguard restrictor section view showing component parts.

EXPERTLY DESIGNED AND BUILT TO LAST

The restricting mechanism

In normal operation, the diaphragm is free to rotate with the shaft, and it makes little or no contact with the housing when it moves. At the same time, the o-cord moves together with the shaft and diaphragm.

When there's flooding on either side of the restrictor, the diaphragm moves axially along the shaft, making contact with the housing. At this point, the friction between the housing and the diaphragm is greater than that between the shaft and diaphragm. This causes the diaphragm to stop rotating, while the shaft is free to move unimpeded.

The water pressure also causes the o-cord to move within the groove of the diaphragm, creating a dynamic restriction between the now-static diaphragm and rotating shaft.

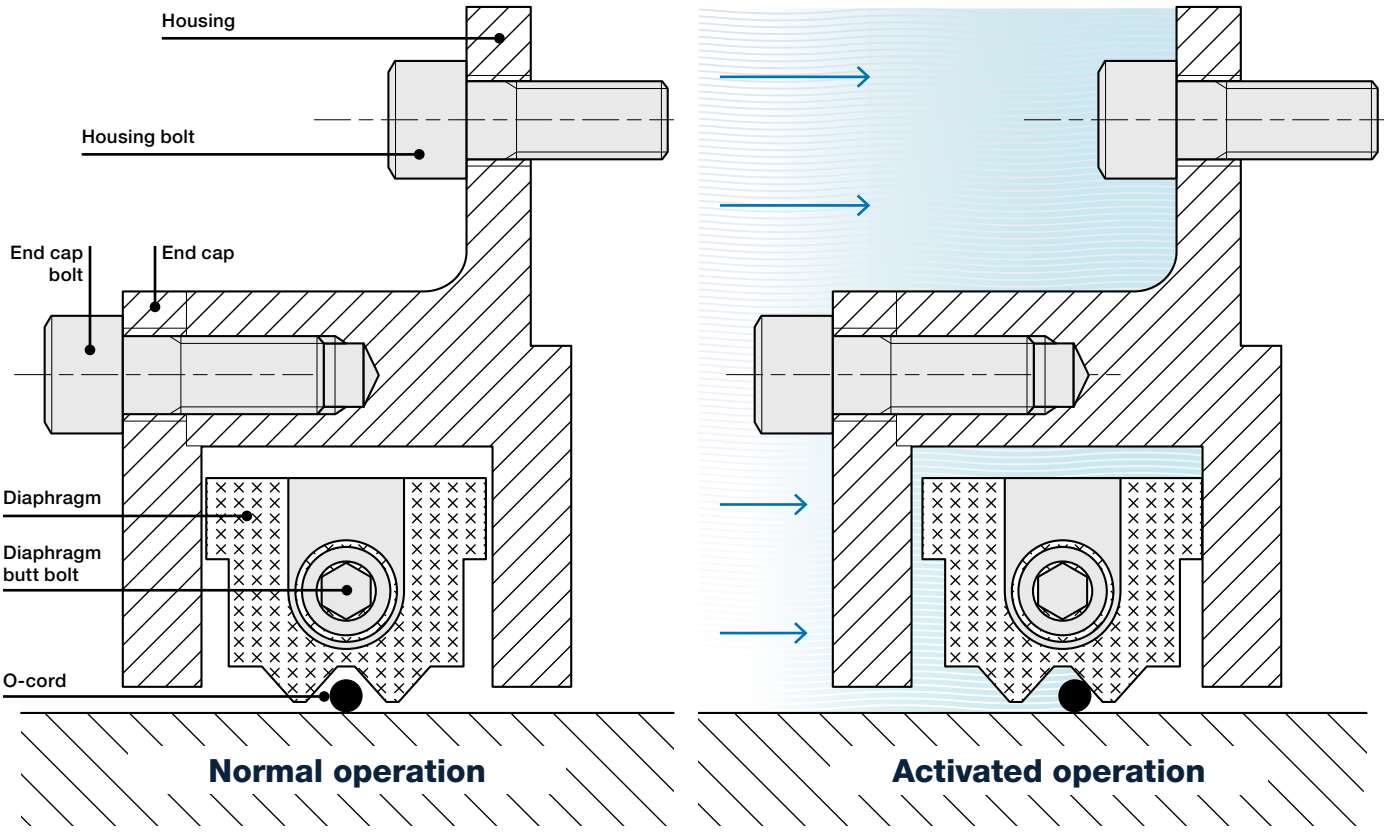

Fig.2 Diagram showing Wärtsilä Floodguard restrictor normal and activated operation views.

Technical

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Metric | Imperial

Materials of construction	**Diaphragm housing**	Spheroidal graphite cast iron/ aluminium bronze/aluminium
	End cap	Spheroidal graphite cast iron/ aluminium bronze/aluminium
	Diaphragm	Composite
	O-cord	Neoprene
Standard operating conditions	**Shaft sizes**	ø260mm to ø680mm*
	Shaft speed: **Standard** **High**	 485rpm (260mm) 215rpm (680mm) 1975rpm (260mm) 881rpm (680mm)
	Sealed medium	Sea water, fresh water
	Axial movement	No limit**
	Radial movement	3.0mm max*
	Max draft pressure	2 bar
	Serviceability	Fully split or non-split. Assembly serviceable and replaceable
	Abrasion resistance	No

*Greater for special applications

**If required, please contact Wärtsilä Shaft Line Solutions for further clarification.

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.