

The logo features the word "HALC" in a large, bold, white sans-serif font, with a thick white swoosh arching over the letters. Below "HALC", the word "FENDERS" is written in a smaller, white, spaced-out sans-serif font.

HALC

F E N D E R S

Pneumatic Fender solutions with
market leading service and support

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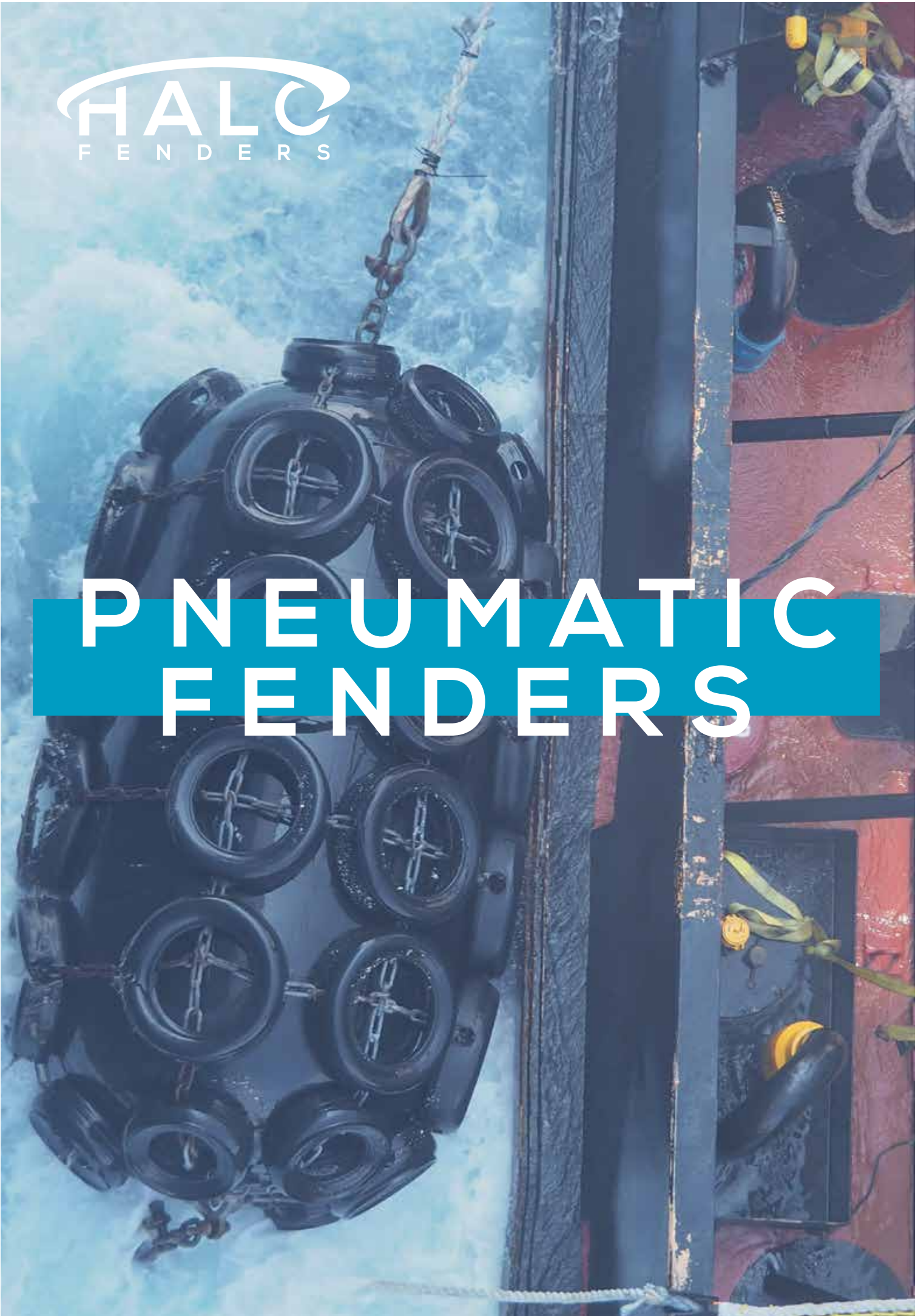
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HALO Fender
technical
specification



PNEUMATIC FENDERS





Strengthening protection through partnership

Combining the strength and experience of two industry leaders, HALO Fenders from Trelleborg's marine systems operation and Teekay Marine Solutions represent a premium offering, designed to meet the demands of the Ship-to-Ship (STS) transfer market and the wider marine industry.

With a proven track record established over many decades, both companies are renowned for their premium solutions, best practice approach and reputation for quality. Both have a rich heritage in and knowledge of the marine environment.

This partnership brings together the strengths of both to create a unique offering for the market.

About Trelleborg's marine systems operation

Trelleborg's marine systems operation manufactures and installs bespoke Fender Systems, Docking and Mooring equipment, Ship-Shore Links, Ship Performance Monitoring, Navigation and Piloting technology for marine environments all over the world.

Connecting decades of experience with a new, smarter approach to port and terminal optimization, Trelleborg's marine systems operation tailors bespoke solutions for customer projects. Trelleborg's multi-disciplined team of engineers offers dedicated support from conception to design, through manufacturing and testing, to installation and aftercare.

About Teekay Marine Solutions

Teekay Marine Solutions (TMS) is wholly owned by Teekay Tankers (TNK), one of the World's largest conventional tanker owners. It is a leading provider of marine services, with over 30 years of transfer experience involving crude oil, refined petroleum products, LPG, LNG and even items for the Department and Ministry of Defense (DOD and MOD).

TMS is a truly global supplier of support services to the STS industry, operating in over 27 locations from the United States West Coast to the Far East. In addition, TMS supplies customers with consultancy services, logistics solutions and LNG Terminal Management. TMS delivers unmatched expertise in the marine transfer of bulk liquids, through cost-effective and safety-focused solutions. TMS's global team of Marine professionals brings real time support and world class operational execution to the HALO Fenders offering.



The Halo Effect

No matter the application, whether ship-to-ship or ship-to-shore, onshore or offshore, operators need to select and mobilize an optimum fender configuration to achieve efficient operations while protecting infrastructure, assets and individuals.

HALO Fenders bring together Trelleborg's manufacturing capability and Teekay's operations expertise to offer a host of operational, technical and service benefits, including:

- Full compliance with ISO 17357-1:2014
- A wide range of fender sizes stocked at strategic locations around the world
- Fast and convenient delivery
- Purchase or rental options available
- Backed by exceptional technical and service support



Commercial Flexibility

Purchase or Rental options

HALO Fenders' unique offering extends to enhanced commercial support.

The HALO Fenders offering includes options to either buy or rent fenders, so that operators can align solutions to their operations and financial situation, selecting whichever option best fits their overall needs.

- Customers can buy or rent from globally available stock.
- Rental can either be on a long or short-term basis.
- HALO Fenders also offers a 'buy-back' option, and in select cases customers can even buy previously used fenders.
- If a bespoke fender size or type is required, the Trelleborg factory will design and manufacture a project-specific solution in a timely and cost-effective way.

This commercial flexibility is intended to help owners and operators maintain efficient logistics and improve supply chain excellence, while ensuring the highest quality standards to operate safely and efficiently.



HA

ALO

Unique servicing and support

Both Trelleborg and Teekay are committed to providing the highest quality standards, to ensure safe and efficient transfer operations, from product supply to supporting services.

The HALO Fender offering provides customers with a single point of contact for consulting and supply, from product specification, to delivery, through to comprehensive field services.

Support services include:

- Fender selection
- Specification advice
- Chain Tire Net fitting
- Mobilization
- Certification & documentation
- Maintenance & repair

Support wherever you need it

Whatever the cargo being transferred, ship-to-ship mooring demands exceptional levels of safety, reliability and responsiveness to guarantee efficient and cost-effective operations across the world.

That means selecting and maintaining an appropriate fender system, and being able to mobilize it quickly. With HALO Fenders, we hold new stock in three strategic locations, ensuring fast global delivery through our comprehensive transport and logistics network. We also have 32 rental and service bases with global access to 400 fenders to ensure we can provide fast, local maintenance and repair.



● **Locations**

◎ **Key Stock Locations**

//China //USA //Middle East





Faster, safer mobilization of premium
pneumatic fender systems via:



3

**strategic stock
locations**

32

**rental and
service bases**

global access to

400

fenders



**HALO Fenders are fully compliant
with ISO 17357-1:2014**





Pneumatic rubber fenders are ideal for permanent and semi-permanent port and ship-to-ship transfers

Features

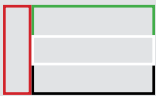
- Easy and fast to deploy
- Very low reaction and hull pressure
- Suitable for small and large tidal ranges
- Maintains large clearances between hull and structure
- ISO 17357-1:2014 compliant

Applications

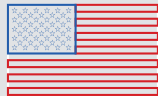
- Oil and gas tankers
- Fast ferries and aluminum vessels
- Temporary and permanent installations
- Rapid response and emergencies



Three strategic stock locations



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Fast and easy to deploy, the ISO 17357-1:2014 compliant HALO Fenders ensure clearance is maintained between the hull and jetty or other vessels. Risk of damage during mooring is minimized, protecting people and cargo.

HALO Fenders require minimal maintenance, so costs are kept down. Constructed of several layers of thick rubber and strong tire cord

reinforcement, they will not deteriorate under cyclic loads and a high level of buoyancy is maintained. Air has consistent elasticity and compressibility, ensuring continual performance.

HALO Fenders are ideal for permanent and semi-permanent port and ship-to-ship transfers. They support berthing at angles up to 15 degrees for advanced vessel types such as

ULCC, FLNG, FSRU, FSU, FSO, FPSO, LNG and bulk carriers. Due to the hollow construction, these fenders are lighter and easier to handle than solid rubber models.

The new design meets even the harshest conditions and toughest challenges. All products are manufactured by Trelleborg in-house, ensuring full control over quality at every stage of production.

Construction

ISO standard

HALO Fenders are manufactured and third party certified in compliance with ISO 17357-1:2014. The stringent requirements of this standard ensure that fenders are of a high quality and can withstand the rigorous environments and applications they are designed to operate in. ISO 17357-1:2014 details three major elements of construction: the outer rubber, tire-cord reinforcing layer and the inner rubber.

The main elements of HALO Fender construction.

The number of tire-cord layers is dependent on the application.

Outer rubber

The tough abrasion resistant outer rubber is designed to protect the inner rubber and tire-cord layers from damaging external forces. The material has mechanical properties to withstand the arduous operational conditions for which it is designed. The diagram below shows the actual properties as specified in ISO 17357-1:2014. Generally, the outer rubber is black, but other colors such as grey and off-white can be supplied upon request.

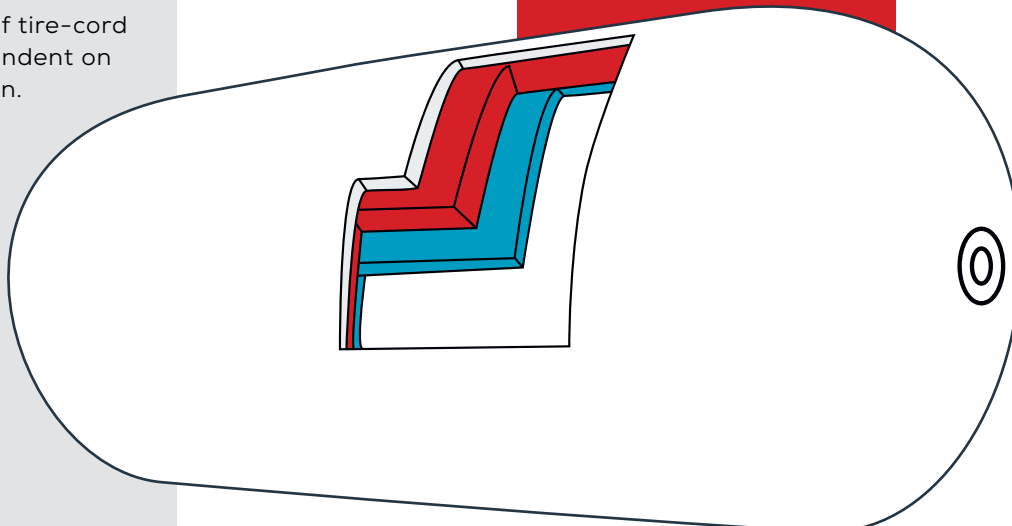
Tire-cord layer

Synthetic tire-cord layers have proven to be the best option for strong, efficient reinforcement for pneumatic rubber fenders. Each layer is coated with a rubber compound on both sides that prevents contact between the layers, reducing friction and wear during bending, compression and stretching.

The same compound isolates each thread within the layer. This greatly improves the ability of the fender to hold pressure, fatigue resistance and endurance life. Other reinforcing layer materials such as canvas have wear points that significantly reduce the life of the fender. A schematic of the construction is shown below.

Inner rubber

The inner rubber seals pressurized air inside the fender. It is usually constructed of a compound similar to that of an inner tube in a truck or car tire to ensure a good level of air tightness.



Outer and inner rubber material properties requirements

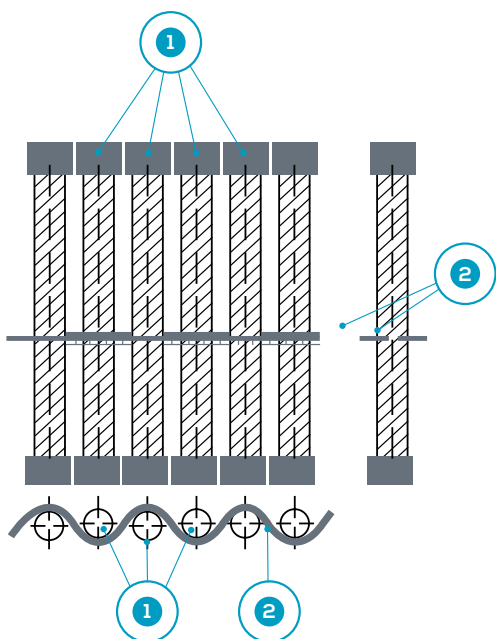
The material tests of the outer and inner rubber shall be conducted in accordance with the specification given in the table below.

TEST ITEM	TEST METHOD	REQUIRED VALUE	
		OUTER RUBBER	INNER RUBBER
Before ageing		Original	Original
Tensile strength	BS ISO 37	18 MPa or more	10 MPa or more
Elongation	BS ISO 37	400% or more	400% or more
Hardness	ISO 7619	60 +/- 10 (durometer hardness test type A)	50 +/- 10 (durometer hardness test type A)
After ageing	ISO 188	Air oven ageing. 70°C +/- 1°C. 96 h	Air oven ageing. 70°C +/- 1°C. 96 h
Tensile strength	BS ISO 37	Not less than 80% of the original property	Not less than 80% of the original property
Elongation	BS ISO 37	Not less than 80% of the original property	Not less than 80% of the original property
Hardness	ISO 7619	Not to exceed the original property by more than 8	Not to exceed the original property by more than 8
Tear	BS ISO 34-1	400 N/cm or more	No requirement
Compression set	ISO 815	30% (70°C +/-1°C for 22h) or less	No requirement
Static ozone resistance	ISO 1431-1	No cracks after elongation by 20% and exposure to 50 pphm ¹ at 40°C for 96 h.	No requirement

NOTE: if the color of the outer rubber is not black, the material requirements will differ from those in this table.

1 pphm: parts of ozone per hundred million of air by volume.

Properties of the inner and outer rubber as adapted from ISO 17357-1:2014 Ships and Marine Technology -High-pressure Floating Pneumatic Rubber Fenders.



- 1 Warp threads that run vertically through the synthetic tire-cord pattern.
- 2 Weft threads that run perpendicular to the warp threads.

Construction of tire-cord layers as adapted from ISO 17357-1:2014.

Standard sizes

Regardless of type or pressure, fenders are measured by diameter and length, generally expressed in millimeters (mm). Type I (chain-tire net) fenders

are not available below 800 x 1200. All fenders with diameter 2500 mm and above are fitted with a pressure relief valve in accordance with ISO 17357-1:2014.

SIZE (OD X L) (mm)	BODY MASS (kg)	CTN MASS (kg)	TOTAL MASS (kg)	CHAIN (mm)
500 x 1000	35	-	35	13
1000 x 1500	140	170	310	16
1000 x 2000 ^	170	200	370	16
1200 x 2000	200	220	420	18
1350 x 2500	270	260	530	20
1500 x 3000*	350	440	790	22
2000 x 3500*	650	920	1570	28
2500 x 4000	1100	1510	2610	32
2500 x 5500*	1350	1620	2970	36
3300 x 4500	1800	2360	4160	38
3300 x 6500 ^	2250	3120	5370	44
3300 x 10600	2800	4050	6850	48
4500 x 9000*	4950	6200	11150	50

^Fast deliveries available ex-stock from China, USA and Middle East

*Fast deliveries available ex-stock from China

3300 x 4500 and 4500 x 7000 and other bespoke sizes are available on request.

Non-standard sizes

SIZE (OD X L) (mm)	SIZE (OD X L) (mm)
300 x 500	1700 x 3000
300 x 600	1700 x 7200
500 x 800	2000 x 3000
800 x 1200	2000 x 6000
800 x 1500	3000 x 5000
1200 x 1800	4500 x 7000
1500 x 2500	

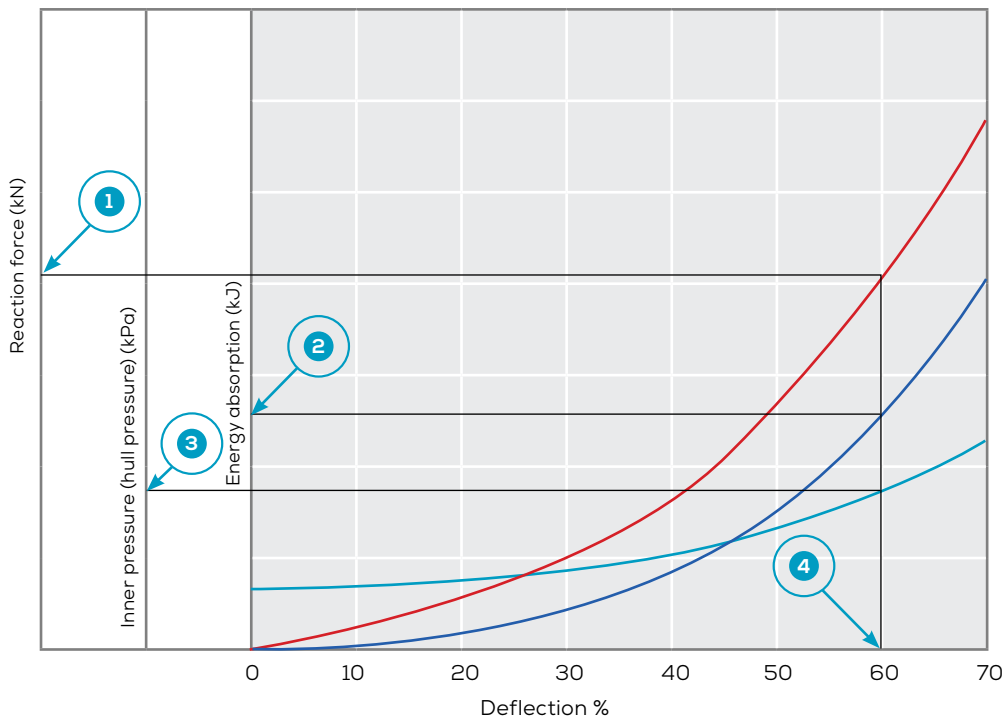
Some applications may require sizes outside of those specified in the standards. Trelleborg's marine systems operation can customize fenders to meet your specifications.

Product characteristics

Performance data

INITIAL INTERNAL PRESSURE	50kPa			80kPa		
NOMINAL SIZE DIAMETER x LENGTH (mm)	GUARANTEED ENERGY ABSORPTION (GEA)	REACTION FORCE AT GEA DEFLECTION (R)	HULL PRESSURE (INTERNAL PRESSURE) AT GEA DEFLECTION (P)	GUARANTEED ENERGY ABSORPTION (GEA)	REACTION FORCE AT GEA DEFLECTION (R)	HULL PRESSURE (INTERNAL PRESSURE) AT GEA DEFLECTION (P)
	MINIMUM VALUE AT DEFLECTION 60 ± 5 % kJ	TOLERANCE ±10 % kN	REFERENCE VALUE kPa	MINIMUM VALUE AT DEFLECTION 60 ± 5 % kJ	TOLERANCE ±10 % kN	REFERENCE VALUE kPa
500 x 1000	6	64	132	8	85	174
1000 x 1500	32	182	122	45	239	160
1000 x 2000	45	257	132	63	338	174
1200 x 2000	63	297	126	88	390	166
1350 x 2500	102	427	130	142	561	170
1500 x 3000	153	579	132	214	761	174
2000 x 3500	308	875	128	430	1150	168
2500 x 4000	663	1381	137	925	1815	180
2500 x 5500	943	2019	148	1317	2653	195
3300 x 4500	1175	1884	130	1640	2476	171
3300 x 6500	1814	3015	146	2532	3961	191
3300 x 10600	3067	5257	158	4281	6907	208
4500 x 9000	4752	5747	146	6633	7551	192

Performance Curve



- Reaction force
- Energy absorption
- Inner pressure

- 1 Reaction force at GEA deflection
- 2 Guarantee energy absorption (GEA)
- 3 Hull pressure at GEA deflection
- 4 GEA deflection

Test and inspection requirements

Acceptance testing and inspection for purchased fenders shall be based on the tests and inspections indicated in the following table:

Test and inspection requirements for commercial fenders as per ISO 17357-1:2014

TEST	STANDARD	DESCRIPTION	REMARKS
Confirmation from material certificate that tire cord is used.	ISO 17357-1:2014/PIANC Guidelines for design of fender systems: 2002	Synthetic-tire-cord layers have been proven to provide strong efficient reinforcement layers in fenders. Each single layer is coated with rubber compound on both sides as well as in between synthetic-tire-cord threads, hence isolating all cords from each other.	If alternative reinforcement methods to tire cord are used, test certificates proving that strength and durability are designed and proven to be equal or superior to the tire cord after exhaustive trials, shall be evaluated and certified by a major classification society as well as a material certificate used for the ordered fenders.
Material testing.		Physical properties of inner and outer rubber.	Tensile / elongation / hardness before ageing to be tested once for each order. The rest of the tests should be conducted once a year.
Dimensional inspection.		Length: +10%, -5% Diameter: +10%, -5%	Dimensional inspection to be carried out at initial internal pressure (working pressure).
Air leakage.		The air leakage test shall be conducted at initial informal pressure for more than 30 minutes.	All fenders to be tested for each and every order.
Hydrostatic test.		Test shall be preformed for 10 minutes at hydrostatic pressure shown in 'Pressure Rating' table. Maximum circumferential and longitudinal temporary elongation: 10%	The frequency of test shall be one in 20 fenders for each size and pressure.
Witness and confirmation of marking.		Each fender shall have markings to indicate the following: <ul style="list-style-type: none"> ● International standard applicable year ● Size ● Initial internal pressure ● Date of manufacture ● Name of manufacturer ● Individual serial number ● Type of reinforcement layer 	The identification system shall be designed to last throughout the fender's life.

Parallel compression test

Measuring the length
(2500mm X 4000mm FENDER)

ONE



Measuring the circumference

TWO



Pressure 80kPa

THREE



Parallel compression test

FOUR



Parallel compression test 60%
(PNEUMATIC FENDER SIZE: 1000mm
DIAMETER X 1500mm LENGTH)

FIVE



Pressure ratings

Trelleborg's marine systems operation manufactures fenders with two initial pressures: 50 kPa (Pneumatic 50) and 80 kPa (Pneumatic 80). Design values are given below.

PNEUMATIC 50 SIZE (OD x L) (mm)	INTERNAL PRESSURE (kPa)		MIN. ENDURABLE PRESSURE (kPa)		SAFETY VALVE PRESSURE SETTING (kPa)	TEST PRESSURE AT 0% DEFLECTION (kPa)
	AT 0% DEFLECTION	AT 60% DEFLECTION	AT 0% DEFLECTION	AT 60% DEFLECTION		
500 x 1000	50	132	300	462	–	200
1000 x 1500	50	122	300	427	–	200
1000 x 2000	50	132	300	462	–	200
1200 x 2000	50	126	300	441	–	200
1350 x 2500	50	130	300	455	–	200
1500 x 3000	50	132	300	462	–	200
2000 x 3500	50	128	300	448	–	200
2500 x 4000	50	137	350	480	175	250
2500 x 5500	50	148	350	518	175	250
3300 x 4500	50	130	350	455	175	250
3300 x 6500	50	146	350	511	175	250
3300 x 10600	50	158	350	553	175	250
4500 x 9000	50	146	350	511	175	250

PNEUMATIC 80 SIZE (OD x L) (mm)	INTERNAL PRESSURE (kPa)		MIN. ENDURABLE PRESSURE (kPa)		SAFETY VALVE PRESSURE SETTING (kPa)	TEST PRESSURE AT 0% DEFLECTION (kPa)
	AT 0% DEFLECTION	AT 60% DEFLECTION	AT 0% DEFLECTION	AT 60% DEFLECTION		
500 x 1000	80	174	480	609	–	250
1000 x 1500	80	160	480	560	–	250
1000 x 2000	80	174	480	609	–	250
1200 x 2000	80	166	480	581	–	250
1350 x 2500	80	170	480	595	–	250
1500 x 3000	80	174	480	609	–	250
2000 x 3500	80	168	480	588	–	250
2500 x 4000	80	180	560	630	230	300
2500 x 5500	80	195	560	683	230	300
3300 x 4500	80	171	560	599	230	300
3300 x 6500	80	191	560	669	230	300
3300 x 10600	80	208	560	728	230	300
4500 x 9000	80	192	560	672	230	300

Types of fenders

There are two basic types of pneumatic fenders that comply with the international standard ISO 17357-1:2014: Type I (net type) and Type II (sling type). The most appropriate type for a given application is dependent on how the fender is used and the facility's requirements.

Type I

Type I fenders are fitted with a chain-tire net (CTN). This is a lattice of used tires connected by a network of horizontal and vertical chains, which adds further protection to the fender body. The chains are galvanized for greater corrosion resistance and covered

by rubber sleeves to prevent abrasive damage to the outer rubber. The horizontal chains are fastened at each end to a tow ring. CTNs are not available for fender sizes below 800 x 1200 mm.

Type I fenders are the most common in use.

Type II

Sling or hook type fenders are effectively a Type I fender without the CTN and the tow ring. A lifting eye is fitted to each end and the fender is slung by chain or wire rope. Type II fenders are available across the whole size range.

Type I fender showing the chain-tire net (CTN)

ONE



Type II fender showing the lifting eyes at both ends

TWO



Type II fender in operation

THREE



CTN chains connected to the tow ring on a Type I fender

FOUR



End fittings

Pneumatic fenders are often suspended using chains, shackles. Recommended dimensions of the standard fittings are given in the table below.

Fender Fixing Accessories (50 kPa Initial Pressure)

TYPE 2 FENDER (SLING)		FIRST SHACKLE DIAMETER mm (inch)	SWIVEL DIAMETER mm (inch)	OTHER SHACKLE DIAMETER mm (inch)	GUY ROPE DIAMETER mm (inch)	GUY CHAIN DIAMETER mm (inch)	ANCHOR DIAMETER mm (inch)
SIZE (OD X L) (mm)	INITIAL PRESSURE (kPa)						
1000 x 1500	50	19 (3/4)	19 (3/4)	19 (3/4)	16 (5/8)	16 (5/8)	25 (1)
1000 x 2000	50	19 (3/4)	19 (3/4)	19 (3/4)	16 (5/8)	16 (5/8)	25 (1)
1200 x 1800	50	19 (3/4)	19 (3/4)	19 (3/4)	16 (5/8)	16 (5/8)	25 (1)
1200 x 2000	50	19 (3/4)	19 (3/4)	19 (3/4)	16 (5/8)	16 (5/8)	25 (1)
1350 x 2500	50	22 (7/8)	22 (7/8)	22 (7/8)	18 (11/16)	16 (5/8)	25 (1)
1500 x 2500	50	22 (7/8)	22 (7/8)	22 (7/8)	20 (13/16)	19 (3/4)	32 (1-1/4)
1500 x 3000	50	22 (7/8)	22 (7/8)	22 (7/8)	20 (13/16)	19 (3/4)	32 (1-1/4)
1700 x 3000	50	25 (1)	25 (1)	25 (1)	24 (15/16)	22 (7/8)	32 (1-1/4)
2000 x 3000	50	25 (1)	25 (1)	25 (1)	24 (15/16)	22 (7/8)	32 (1-1/4)
2000 x 3500	50	25 (1)	25 (1)	25 (1)	24 (15/16)	22 (7/8)	32 (1-1/4)
2000 x 6000	50	32 (1-1/4)	32 (1-1/4)	32 (1-1/4)	30 (1-3/16)	26 (1)	36 (1-7/16)
2500 x 4000	50	32 (1-1/4)	32 (1-1/4)	32 (1-1/4)	30 (1-3/16)	26 (1)	42 (1-5/8)
2500 x 5500	50	32 (1-1/4)	32 (1-1/4)	32 (1-1/4)	34 (1-3/8)	32 (1-1/4)	44 (1-3/4)
3000 x 5000	50	38 (1-1/2)	38 (1-1/2)	38 (1-1/2)	34 (1-3/8)	30 (1-3/16)	44 (1-3/4)
3300 x 4500	50	44 (1-3/4)	38 (1-1/2)	44 (1-3/4)	34 (1-3/8)	30 (1-3/16)	44 (1-3/4)
3300 x 6500	50	44 (1-3/4)	38 (1-1/2)	44 (1-3/4)	42 (1-5/8)	38 (1-1/2)	55 (2-3/16)
4500 x 9000	50	44 (1-3/4) (2 Qty)	44 (1-3/4)	44 (1-3/4)	42 (1-5/8)	38 (1-1/2)	55 (2-3/16)

Fender Fixing Accessories (80 kPa Initial Pressure)

TYPE 2 FENDER (SLING)		FIRST SHACKLE DIAMETER mm (inch)	SWIVEL DIAMETER mm (inch)	OTHER SHACKLE DIAMETER mm (inch)	GUY ROPE DIAMETER mm (inch)	GUY CHAIN DIAMETER mm (inch)	ANCHOR DIAMETER mm (inch)
SIZE (OD X L) (mm)	INITIAL PRESSURE (kPa)						
1000 x 1500	80	19 (3/4)	19 (3/4)	19 (3/4)	16 (5/8)	16 (5/8)	25 (1)
1000 x 2000	80	19 (3/4)	19 (3/4)	19 (3/4)	18 (11/16)	16 (5/8)	25 (1)
1200 x 1800	80	19 (3/4)	19 (3/4)	19 (3/4)	18 (11/16)	16 (5/8)	25 (1)
1200 x 2000	80	19 (3/4)	19 (3/4)	19 (3/4)	18 (11/16)	16 (5/8)	25 (1)
1350 x 2500	80	22 (7/8)	22 (7/8)	22 (7/8)	20 (13/16)	19 (3/4)	25 (1)
1500 x 2500	80	22 (7/8)	22 (7/8)	22 (7/8)	20 (13/16)	19 (3/4)	32 (1-1/4)
1500 x 3000	80	22 (7/8)	22 (7/8)	22 (7/8)	20 (13/16)	19 (3/4)	32 (1-1/4)
1700 x 3000	80	25 (1)	25 (1)	25 (1)	24 (15/16)	22 (7/8)	32 (1-1/4)
2000 x 3000	80	25 (1)	25 (1)	25 (1)	24 (15/16)	22 (7/8)	36 (1-7/16)
2000 x 3500	80	25 (1)	25 (1)	25 (1)	24 (15/16)	22 (7/8)	36 (1-7/16)
2000 x 6000	80	32 (1-1/4)	32 (1-1/4)	32 (1-1/4)	30 (1-3/16)	26 (1)	42 (1-5/8)
2500 x 4000	80	32 (1-1/4)	32 (1-1/4)	32 (1-1/4)	30 (1-3/16)	26 (1)	42 (1-5/8)
2500 x 5500	80	32 (1-1/4)	32 (1-1/4)	32 (1-1/4)	34 (1-3/8)	32 (1-1/4)	44 (1-3/4)
3000 x 5000	80	38 (1-1/2)	38 (1-1/2)	38 (1-1/2)	34 (1-3/8)	30 (1-3/16)	44 (1-3/4)
3300 x 4500	80	44 (1-3/4)	38 (1-1/2)	44 (1-3/4)	38 (1-1/2)	34 (1-3/8)	50 (2)
3300 x 6500	80	44 (1-3/4)	38 (1-1/2)	44 (1-3/4)	46 (1-13/16)	42 (1-5/8)	60 (2-3/8)
4500 x 9000	80	44 (1-3/4) (2 Qty)	44 (1-3/4)	44 (1-3/4)	42 (1-5/8)	38 (1-1/2)	60 (2-3/8)

Recommended sizes of shackles and chains for all sizes of Type II fenders.

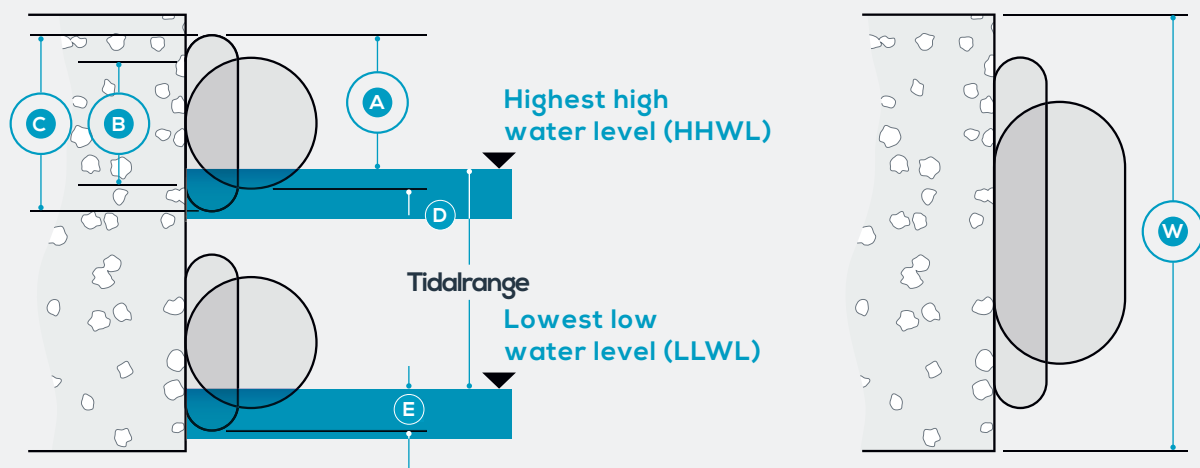
Installation dimensions

Pneumatic fenders must be installed onto a solid structure or reaction panel to ensure that they are properly supported during impacts.

FENDER SIZE		CHAIN TIRE NET (CTN) FENDERS					
DIAMETER	LENGTH	A	B	C	D	E	W
1000	1500	825	940	1340	345	515	1950
1200	2000	1100	1130	1610	305	510	2600
1500	2500	1485	1410	2010	270	525	3250
2000	3500	1965	1880	2680	375	715	4550
2500	4000	2495	2355	3355	430	855	5200
3300	6500	3365	3110	4430	500	1065	8450
4500	9000	4605	4240	6040	665	1435	11700

FENDER SIZE		SLING FENDERS					
DIAMETER	LENGTH	A	B	C	D	E	W
1000	1500	1020	940	1340	150	320	1950
1200	2000	1265	1130	1610	140	345	2600
1500	2500	1575	1410	2010	180	435	3250
2000	3500	2125	1880	2680	215	555	4550
2500	4000	2675	2355	3355	250	675	5200
3300	6500	3605	3110	4430	260	825	8450
4500	9000	4935	4240	6040	335	1105	11700

[Units: mm]





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PNEUMATIC FENDERS FROM TRELLEBORG AND TEEKAY