4 Marine Fenders and Equipment, LLC

Fenders Catalog

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About us:

4 Marine Fenders and Equipment, LLC, A marine supplies company located in Ponce, Puerto Rico, USA that has won unanimous praise from customers with her professional and enthusiasm.

Services: Pneumatic Rubber Fender, Ship Launching Airbags, Solid Rubber Fenders, and Steel Buoy marine products, and heavy equipment are exported to countries and regions such as North America, Central America and the Caribbean, South America, Europe, Southeast Asia and Middle East.

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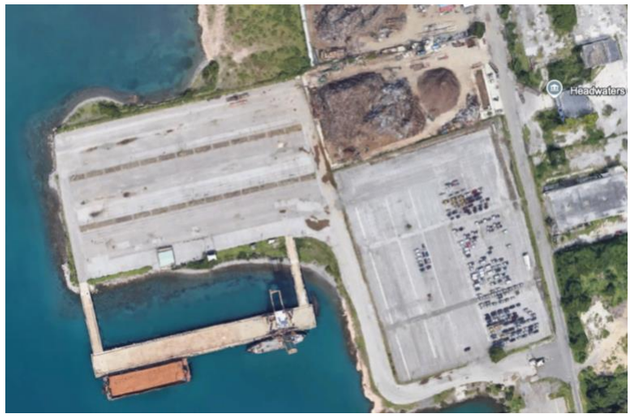
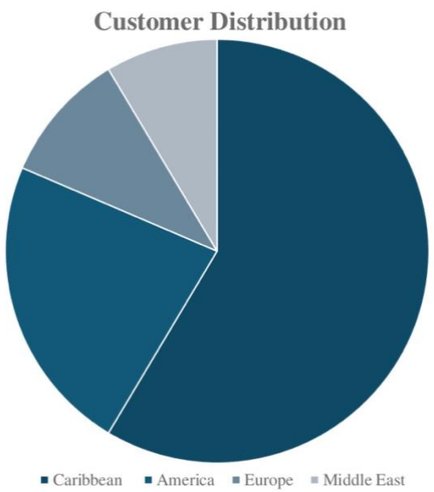
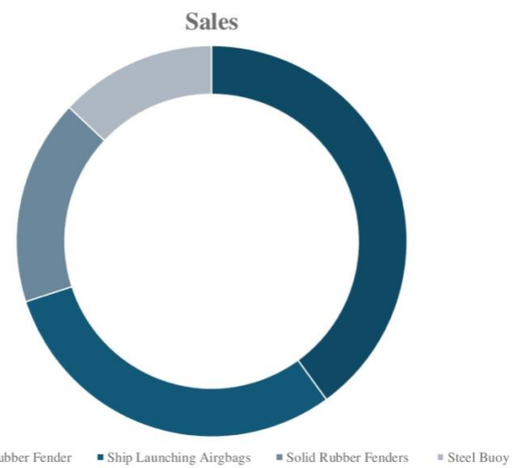
Our Location:

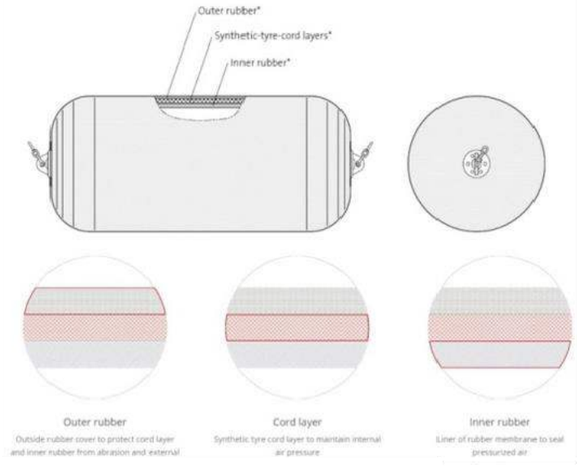


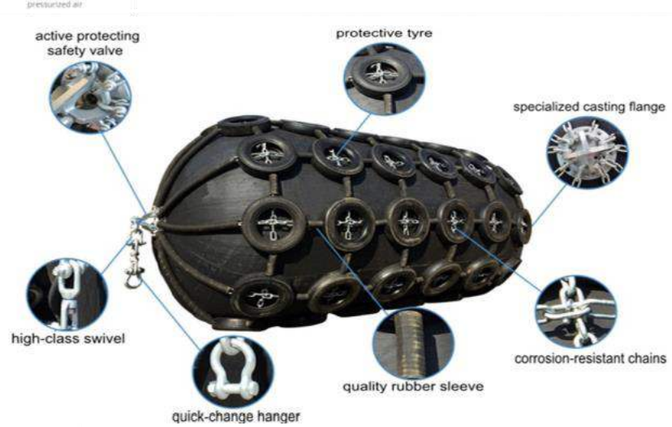




1.Pneumatic Rubber Fender

Pneumatic rubber fenders are made of rubber through high-temperature vulcanization, and their body is divided into three parts: Inner Rubber, Synthetic Tyre Record Layer; Outer Rubber. The flanges at both ends are hot dip galvanized material and equipped with safety valves to make the fender safer.





Feature:

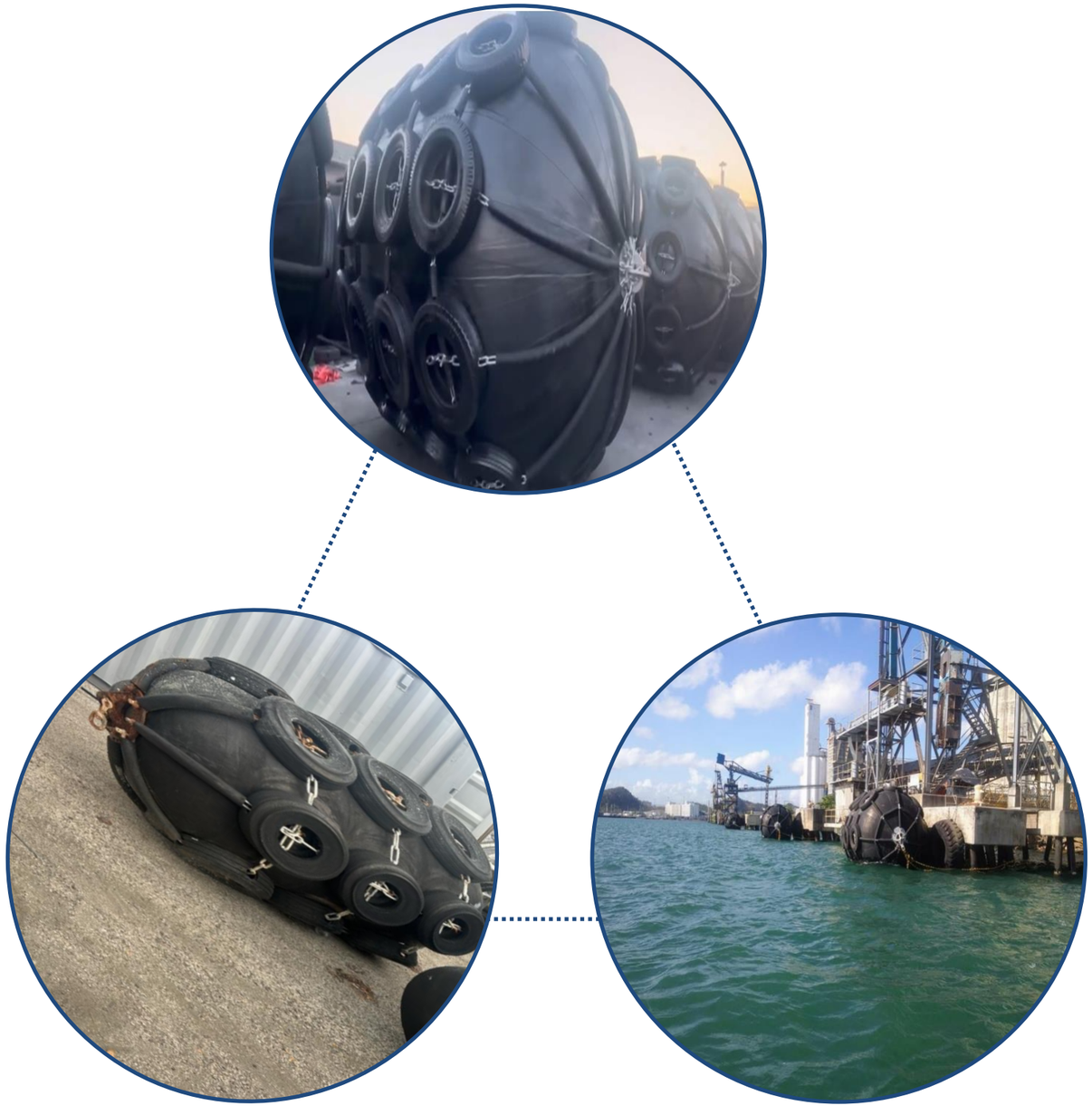
1.Large compression deformation, high energy absorption, and low reaction force.

2.Good floating performance, able to adapt to tidal changes.

3.Using compressed air as the medium, consuming collision energy through compressed air work.

4.Easy installation and long service life.

Inflatable rubber fenders are a type of marine collision prevention device. Mainly using compressed air as a buffer medium to absorb ship impact energy, making the ship more flexible and safer during docking, to achieve the effect of collision prevention. As a result, it is widely used in marine fields such as Ship to Ship (STS), ports, and docks.



Rubber Material Technical Information

Test Item	Test Method	Required Value	Result
		Inner Rubber	
1.BeforeAging	—	—	—
1.1 Tensile Strength	ISO 37:2011	10 MPa or more	qualified
12 Elongation	ISO 37:2011	400%or more	qualified
1.3 Hardness	ISO 7619-1:2010	(Durom 50±10 s Type A)	qualify
2.After Aging	ISO 188:2011	Air oven aging, 70°C±1°C,96h	qualified

Test Item	Test Method	Required Value	Result
		Inner Rubber	
2.1 Tensile Strength	ISO 37:2011	Not less than 80%of The0riginalproperty	qualified
2.2 Elongation	ISO37:2011	Not less than 80%of the original property	qualified
2.3 Hardness	ISO 7619-1:2010	Not exceed the original property by more than 8	qualified
3.Tear	ISO 34-1:2010	No requirement	

Pneumatic 50 KPA fender size and performance requirements

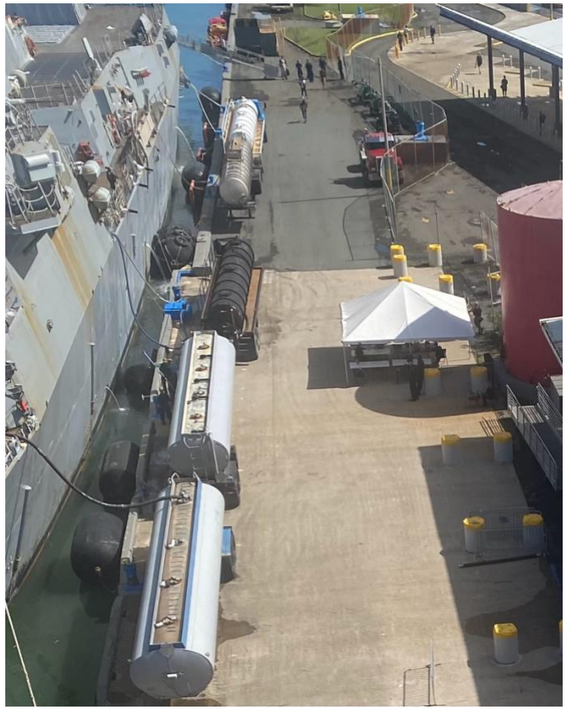
Nominal size diameter x length (mm)	Initial internal pressure Kpa	Guaranteed energy absorption (GEA)	Reaction force at GEA deflection(R)	Hull pressure (Internal pressure) at GEA deflection(p)
		Minimum value at deflection 60+5%KJ	Tolerance+10%KN	Reference value Kpa
1500*3000	50Kpa	153	579	132
1500*3500	50Kpa	179	675	145
1700*2000	50Kpa	128	426	148
1700*3000	50Kpa	191	639	128
2000*22200	50Kpa	193	550	136
2000*2500	50Kpa	220	625	142
2000*3000	50Kpa	265	750	145
2000*3500	50Fpa	308	875	128
2000*4000	50Kpa	352	1000	148
2500*30 00	50Kpa	497	1035	47
2500*4000	50Kpa	663	138	137
2500*4500	50Kpa	771	1651	145
2500*5000	50Kpa	857	1835	152
2500*500	50Kpa	943	2019	148
3000*4500	50kpa	1221	2180	145
3000*5000	50Kpa	1357	2422	142
3000*6	50Kpa	1293	2906	157
3300*4500	50Kpa	1175	1884	158
3300*60000	50Kpa	1675	2783	161
3300*6500	50Kpa	1814	3015	158
3300*10600	50Kpa	3067	5257	158
3500*4500	50Kpa	1715	2849	142
3500*5500	50Kpa	1816	3015	145
350 0*6 00	50Kpa	2477	4112	152
4500*9000	50Kpa	48455	5988	155
4500*12000	50Kps	6473	7984	154

Pneumatic 80 Kpa fender size and performance requirements

Nominal size diameter x length (mm)	Initial internal pressure Kpa	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
500*1000	80Kpa	8	85	174
600*1000	80Kpa	11	98	166
700*1500	80Kpa	24	180	177
1000*1500	80Kpa	45	239	160
1000*2000	80Kpa	63	338	174
1200*2000	80Kpa	88	390	166
1350*2500	80Kpa	142	561	170
1500*3000	80Kpa	214	761	174
1700*3000	80Kpa	267	840	168
2000*3500	80Kpa	430	1150	168
2500*4000	80Kpa	925	1815	180
2500*5500	80Kpa	1317	2653	195
3300*4500	80Kpa	1640	2476	171
3300*6500	80Kpa	2532	3961	191
3300*10600	80Kpa	4281	6907	208
4500*9000	80Kpa	6633	7551	192
4500*12000	80Kpa	9037	10490	202

2.Marine Rubber Airbag

Marine airbags are innovative products with independent intellectual property rights in China. This product is mainly used in the fields of ship loading and unloading, lifting and handling of heavy objects, and buoyancy assistance for underwater installation. Marine airbags are widely used, and their products are less limited by the site and do not require large mechanical equipment, which can shorten the construction period and save a lot of money. Through years of development practice, airbags have the characteristics of safety, efficiency, green environmental protection, and flexibility.

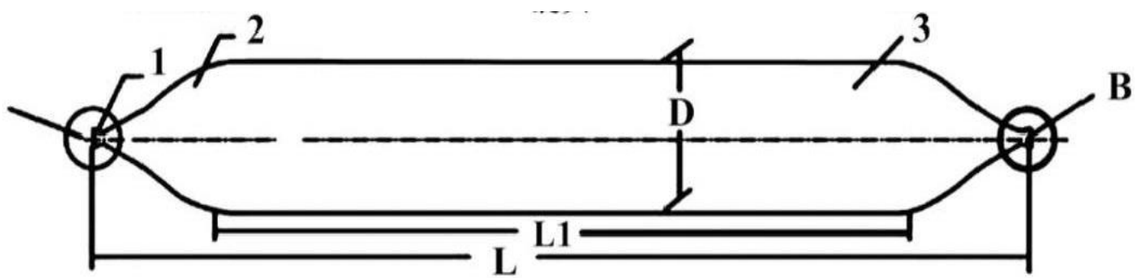


Manufacturing technology: Whole Intertwine Technology

Airbags overall frame structure use cross whole intertwine technology, the overall structure is more reasonable, texture, no juncture, high loads, more safety than lap technology(roller), more than 20% bearing capacity.

Inflatable Marine Airbags composed of interlaced by longitude and latitude nylon cord rubber layers and stainless-steel end fittings.

1: Steel end fitting **2: Airbag head** **3. Airbag body**



D=Diameter **L=Overall length** **L1=Effective length**

A= Inflatable Accessories **B=Sealed end ring**

4 Marine Fenders Airbag has passed the ISO14409 standard, we guarantee that all our products are high standard performance. Our airbags have been successfully approved by classification societies such as BV, CCS, DNV, etc.

List of Airbag Model, Working Pressure, Corresponding Working Height, and Capacity.

Series	Model	Diameter	Working Pressure	Working Height(m)			Beating Capacity (Ton/m)		
				0.4	0.5T	0.6D	0.4D	.5D	0.6D
S1	S10	0.8	0.20		0.40	0.		2.6	0.0
			0.16	0.40	0.50	0.60	5.	12.6	0.0
		1.2	0. 14	0.48	0.60		5.8	13.2	0.
			0.	0.60	0.75	0.90	15.5	13.0	10.4
	S11	0.8	0.19	0.32	0.40	0.48	14.3	11.9	9.5
			0.15	0.40	0.50	0.60	4.1	1.8	9.4
		1.2	0.13	0.48	0.60	0.72	4.7	12.2	9.8
			10	0.60	0.75	0.90		1.8	9.4
	S12	0.8	0.24	0.32	0.40	0.48	18.1	15.1	2.1
			0.19	0.40	0.50	0.60	7.9	4.9	1.9
		1.2	0.16	0.48	0.60	0.72	18.1	15.1	2.1
		.5	0.	50	75	0.90	8.4	5.3	2.2
		1.8	0.	0.72	0.90	1.08	17.0	14.1	1.3
S2	S20		0.24	0.40	0.50	0.60	22.6	18.8	15.]
		1.2	0.20	0.48	0.60	0.72	22.6	18.8	5.
		.5	0.16	0.60	0.75	0.90	22.6	18.8	5.1
		.8	0.	0.72	0.90	1.08	22.0	18.4	4.7
		2	0.12	0.80	1.00	20	22.6	18.8	5.1
	S21		0.	0.40	0.50	0.60	25.4	21.2	7.0
		1.2		0.48	0.60	0.72	26.0	21.7	7.3
		.5	0.18	0.60	0.75	0.90	25.4	21.2	7.0
		1.8		72	0.90	08	25.4	21.2	7.0
				0.80	1.00	20	26.4	22.0	7.6
	S22		0.	0.40	0.50	0.60	29.2	24.3	9.5
		1.2			0.60	72	29.4	24..5	9.6
		.5			0.75	0.90	28.3	23.6	8.8
		.8	0.17	0.72	0.90	1.08	28.8	24.0	9.2
			0.	0.80	1.00	20	28.3	23.6	8.4
		2.5	0.12	1.00	1.26	50	28.3	23.6	8.8
S3	S30			0.40	0.50	0.60	33.0	27.5	22.0
		1.2	0.29	0.48	0.60	0.72	32.8	27.3	21.9
		.5		60	0.75	0.90	2.5	27.	1.7
		1.8		0.72	0.90	08	32.2	26.8	21.5
		2		0.8	1.00	20	32.0	26.7	01
		2.5	0.14	1.00	1.25	1.50	33.0	27.5	22.0

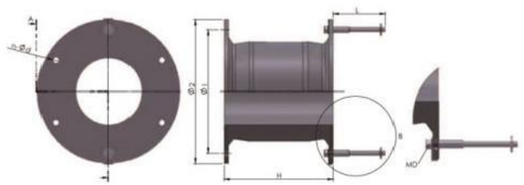
3.Solid Rubber Fender

Solid rubber fender is installed on the dock or ship to absorb the collision energy between the ship and the dock or ship when it is docked or moored to protect the ship/dock from damage. Products are standard, low reaction force, high reaction force, ultra- high return force type. According to the style, it can be divided into super arch (DA)type, super drum (SC)type, cone type CONE CELL, GD type, D type, cymbal type, rotating D type, etc.

Cell Rubber Fender

Super Cell Rubber Fender

Specs sizes

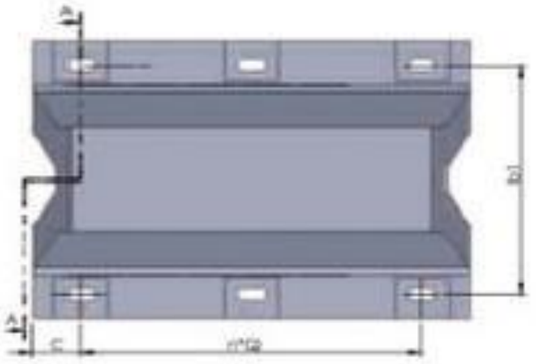


Super Arch Rubber Fender

Super Arch Rubber Fender

1.Highenergy absorption and low reaction force.
2.Higher stress dispersion and long service life.
3.Itcan be installed firmlyand replaced easily.

Specs sizes

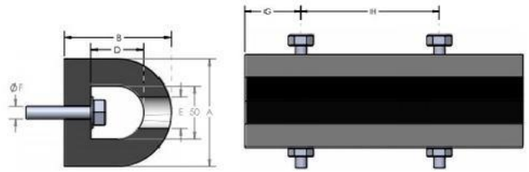


D-D TYPE FENDERS

Extruded D-Fenders are simple rubber pro the structure. Extrusions can be made in vi drilled to suit each application. Pre-curved available on request.

APPLICATIONS

- Jetties and wharves for small craft
- Tugs and workboats
- Pontoon protection
- Inland waterways
- General purpose fendering



DIMENSIONS

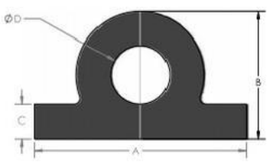
A	B	C	D	E	F	G	H	FLAT BAR	BOLT SIZE	LENGTH
75	75	35	35	30	15	100	200	35x5	M12	3000
100	100	50	50	30	15	100	200	40x5	M12	3000
125	125	50	50	40	20	125	250	50x6	M18	3000
150	150	75	75	40	20	125	250	60x8	M20	3000
200	200	100	100	50	25	175	350	80x10	M24	3000
250	250	125	125	60	30	175	350	90x12	M24	3000
300	300	150	150	60	30	175	350	110x12	M24	3000
350	350	175	175	75	35	175	350	130x15	M30	3000
400	400	200	200	75	35	175	350	150x15	M30	3000
600	500	250	250	90	45	200	400	180x20	M36	3000

The above table covers our standards sizes only. However, we can design and build to our customer's individual requirements. All dimensions in MM. Overall Dimensional Tolerances 15%.

WING-TYPE FENDER

Wing-Type fenders offer the high energy absorption required for tugs, barges and other service vessels. Their cross sections are designed for solid mounting and complete coverage. Wing Type fenders are designed for vessel mounting. They combine the impressive energy absorption capabilities of a cylindrical design with the convenience of wing mounting. They are also used in pilot boats, heavy tugs, barges and ferries.

DIMENSIONS



A	B	C	D	LENGTH
120	65	18	25	2000
140	45	18	20	2000
160	100	25	30	2000
177	80	20	40	2000
180	100	25	50	2000
218	150	30	75	2000
245	200	30	75	2000
260	200	40	100	2000
328	250	40	100	2000
330	200	50	125	2000
350	350	40	100	2000
376	250	50	100	2000
410	250	50	100	2000
410	250	50	125	2000

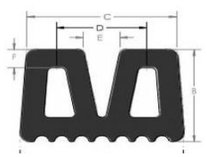
The above table covers our standards sizes only. However, we can design and build to our customer's individual requirements. All dimensions in MM. Overall Dimensional Tolerances 15%.

W-TYPE FENDER

W Type fenders are installed on the bow of Ocean-going tugs, to protect the hull against damaged caused during pushing and pulling operations/towage. These fenders are installed in similar mariner as those of Keyhole Fenders.

FEATURES
- Extreme-duty design
- Twin-lag attachment
- Open Bone for every installation
- Grooved for extra grip
- Fits around tight bends

APPLICATIONS
- Ocean-going tugs
- Icebreakers
- large harbor tugs
- Bridge and pile protection



DIMENSIONS

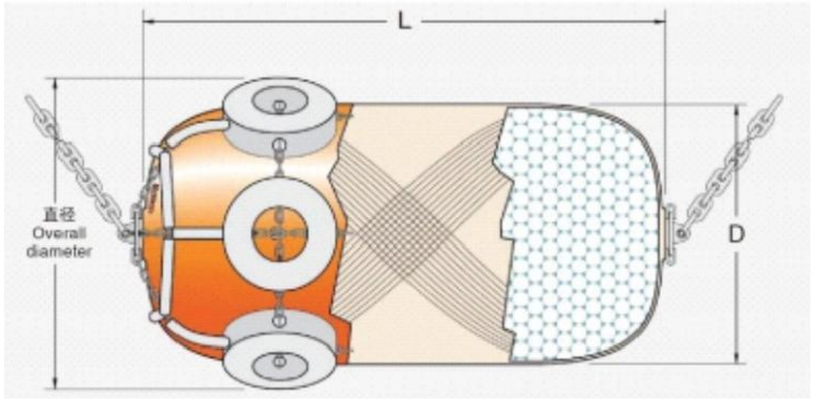
A	B	C	D	E	F	K	G PIN	FLAT BAR	LENGTH
320	200	280	180	100	60	25	25	100X20	2000
400	350	350	220	110	75	30	30	120X20	2000
450	425	425	200	136	85	85	40	140X20	2000
500	450	420	255	120	100	75	40	150X20	2000

The above table covers our standards sizes only. However, we can design and build to our customer's individual requirements. All dimensions in MM. Overall Dimensional Tolerances ±5%.

4.Foam Filled Fenders

Foam filled fender. Also called EVA solid fender. It's a new type of fender using light weighed high elasticity Form as cushion medium, widely applied to harbors, offshore. STS and STD operation

Our Foam Filled Fender is made of environmental protection material and high elasticity polymeric material. Long service life and high economic value of this products achieved by the quality material with performance of high strength.



Unsinkable foam core

Tough Polyurethane skin

Various mooring options

Filament reinforcement matrix

Chain-tire net

Unique Serial number

Technical Parameter

Model	D (mm)	L (mm)	Compressible%		
			counterforce (KN)	Energy Absorption (KJ)	Weight (kg)
0500×1000L	500	1000	71	8	34
0600×1000L	600	1000	86	12	45
0700×1500L	700	1500	161	27	101
01000×1500L	1000	1500	205	49	206
01000×2000L	1000	2000	274	64	275
01200×2000L	1200	2000	337	93	405
01200×2400L	1200	2400	390	110	475
01350×2500L	1350	2500	463	145	626
01500×3000L	1500	3000	624	216	927
01700×3000L	1700	3000	696	273	1191
02000×3500L	2000	3500	990	456	1923
02000×4000L	2000	4000	1110	505	2298
02200×4500L	2200	4500	1396	679	2992
02500×4000L	2500	4000	1386	781	3434
02500×5000L	2500	5000	1750	985	4272
03000×5000L	3000	5000	2050	1410	6411
03000×6000L	3000	6000	2460	1695	7293
03300×6500L	3300	6500	2950	2245	8335
04500×9000L	4500	9000	19650	7860	21460

5. Navigation Buoy



Navigation buoy is an artificial sign that helps guide the ship to navigate, locate and mark obstructions and warning, and provide safety information for various kinds of water activities. Navigation buoys are in or near navigable waters to indicate the location of waterways, anchorages, beach hazards and other obstructions, to indicate water depth and wind regime, and to direct traffic in narrow waterways.

Polyethylene Navigation Buoy Technical Parameter

Type	HNF0.8	HNF1.2	HNF1.5	HNF1.8	HNF2.4	HNF3.0
Body Diameter(mm)	800	1200	1500	1800	2400	3000
Overall, Height(mm)	1600	2250	3900	5500	7400	4850
Freeboard(mm)	400	400	600	700	1000	600
Focal Plane Height(mm)	1095	1680	2660	3175	4575	3050
Draft(mm)	600	600	1200	2500	3000	1300
Reserved Buoyancy(kg)	200	450	1000	1780	4500	4200

OUR CLIENTS