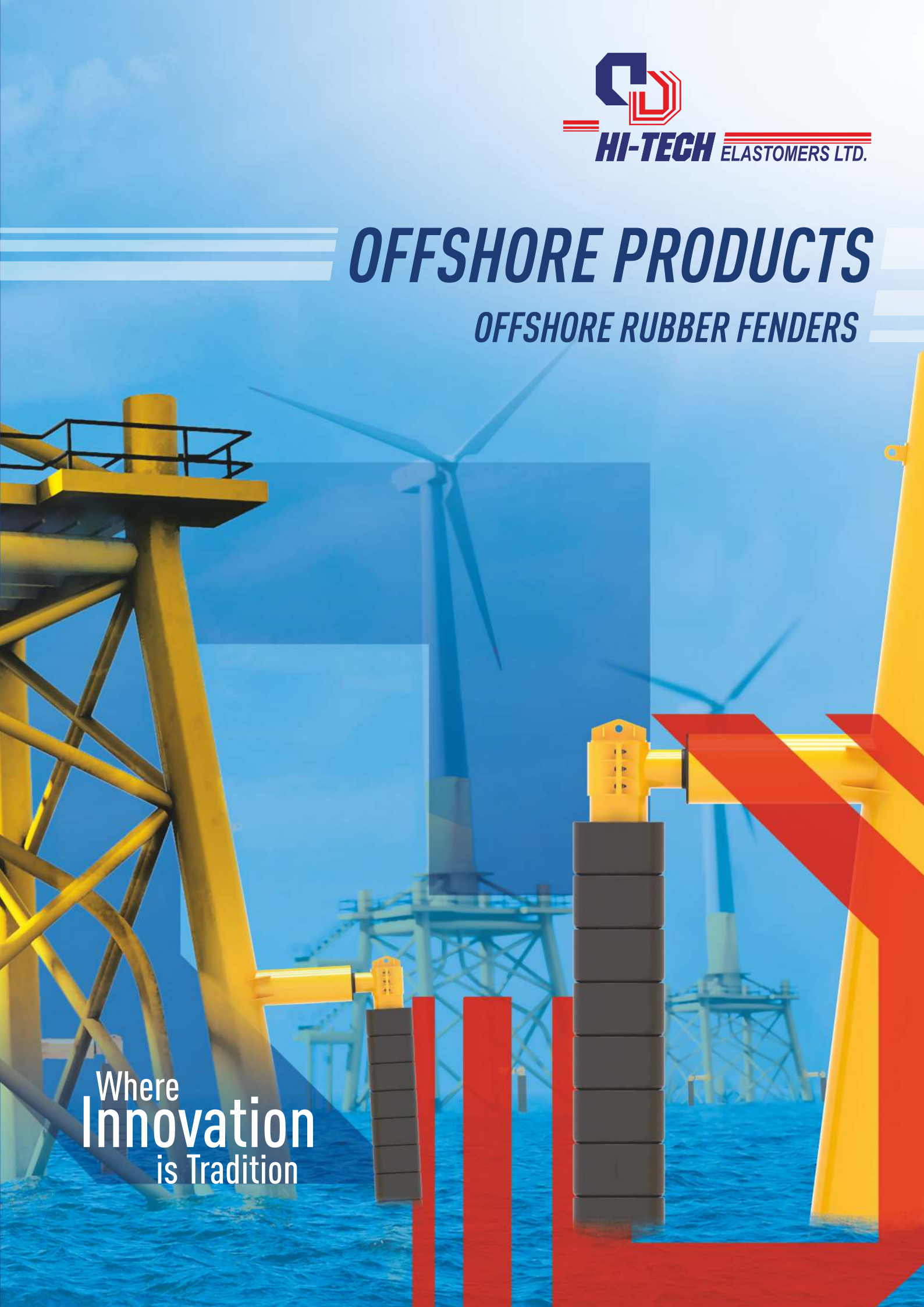
HI-TECH ELASTOMERS LTD.

OFFSHORE PRODUCTS

OFFSHORE RUBBER FENDERS



SHOCK CELL

Hi-Tech Shock Cell offers reliable and efficient protection for offshore platforms. The Shock Cell is based on our expertise in manufacturing specialised rubber products for the marine industry and can operate under even the most extreme offshore weather.

It is simple to install, and maintenance-free. Prior to delivery, every unit is load tested. Shock cells are manufactured in a wide range of sizes depending on the load and diameter of the jacket leg. Additionally, the shock cell can be supplied with an eccentric bumper ring

FEATURES

- Absorbs the energy of a barge or vessel
- Protects the jacket leg during berthing of vessels
- Supports the boat landing structure
- Excellent Axial load taking capacity

APPLICATIONS

- Offshore Platform Jacket structure
- Boat landing structure
- Barge bumpers

OFFSHORE RUBBER FENDERS

SHOCK CELL

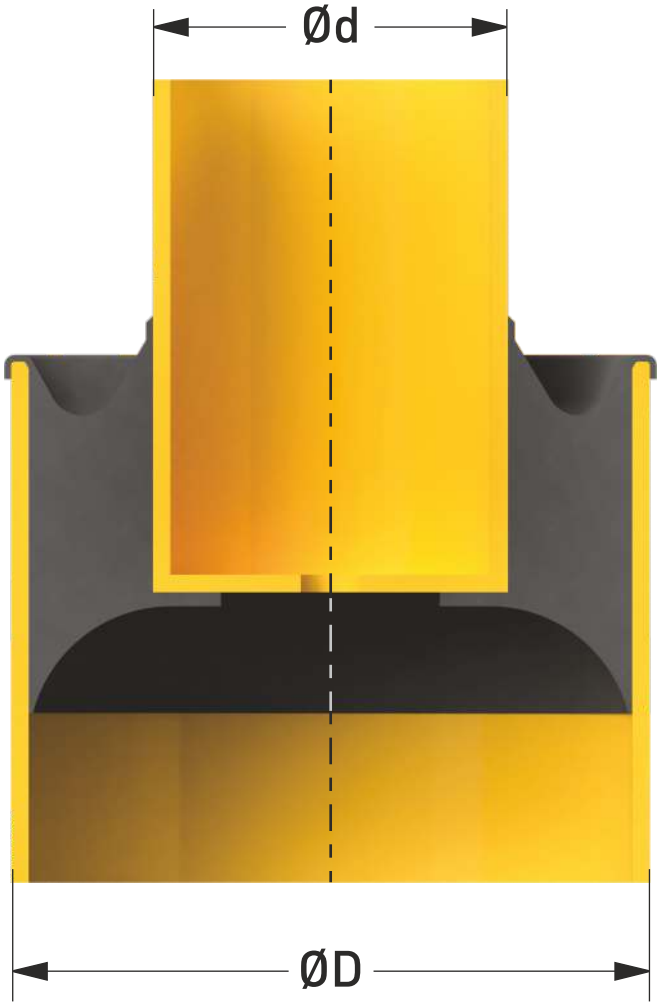
Hitech Shock Cell offers excellent energy absorption even at high angles. Two co-eccentric tubes are bonded with specially designed rubber elements in middle. This arrangement leads to a very strong bond and allows for high deflections and low reaction. Hitech Shock Cell can absorb energy both in compression and torsion It is having extremely good resistance to both axial and bending.

The high-tensile rubber compound guarantees outstanding resilience and good mechanical strength. They work well in harsh climatic conditions and are appropriate for the marine environment. Excellent resistance to seawater, UV radiation, and ozone aging is provided by a special compound design. Used frequently in conjunction with an eccentric rubber ring and a bumper post it absorbs berthing energy and compensates for tidal variations. It prevents structural damage by absorbing the berthing energy and gives low reaction force to the hull of the vessel.

DIMENSION CHART

MODEL	ØD	Ød
HSA3560	610	356
HSA4076	762	406
HSA4676	762	457
HSA4090	914	406
HSA4690	914	457
HSA5090	914	508

[Units: mm, kg]



PERFORMANCE CHART

MODEL	E(T-M)	R(T)
HSA3560	6.25	60.0
HSA4076	14.0	120.0
HSA4676	16.5	155.0
HSA4090	24.0	140.0
HSA4690	22.0	160.0
HSA5090	20.0	150.0

R: REACTION FORCE, **E**: ENERGY ABSORPTION TOLERANCE **±10%**

OFFSHORE RUBBER FENDERS

SHOCK CELL with EBR

DIMENSION

MODEL	ØB	Øb	ØD	Ød
HSC1630	670	245	762	406
HSC1830	670	273	762	457
HSC1836	805	305	914	457
HSC2036	805	305	914	508

[Units: mm, kg]

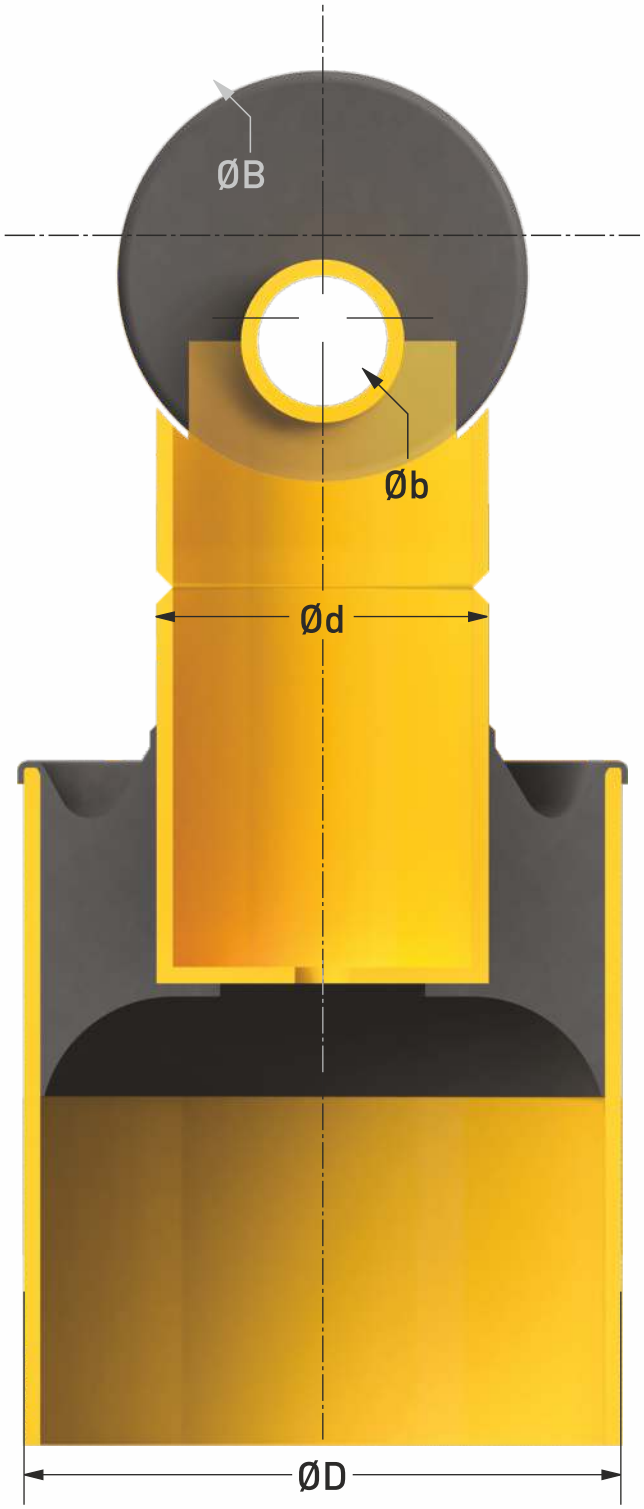
PERFORMANCE

MODEL	E(T-M)	R(T)
HSC1630	21	120
HSC1830	23	155
HSC1836	29	160
HSC2036	27	150

R: REACTION FORCE, **E**: ENERGY ABSORPTION TOLERANCE **±10%**

HOW IT WORKS

The Boat Landing System consists primarily of the Shock Cells, Eccentric Bumper Rings (EBR) and a steel contact surface. On impact by a berthing vessel, the steel surface transfers the load to the EBRs and the Shock Cells. Kinetic energy is absorbed and dissipated as heat and a smaller reaction force against the vessel by the rubber as it undergoes shear and tension. The load is therefore reduced, and the vessel can berth without damaging the platform structure. The strong bonding achieved between the rubber and the steel during the manufacturing process ensures that this arrangement will safely dissipate and reduce the external load without damaging the platform.



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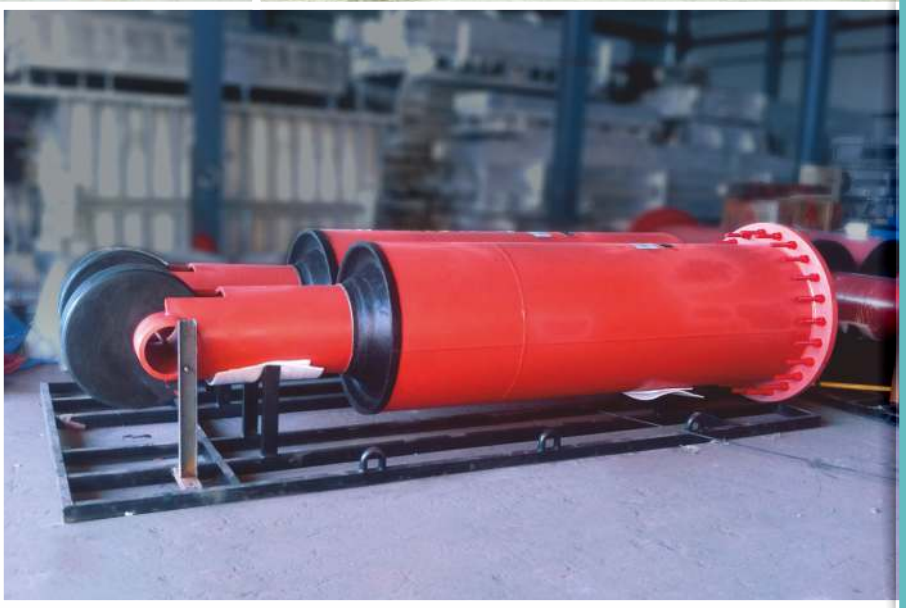
PRODUCT INSTALLATION PICTURES



BARGE BUMPER ASSEMBLY

Hitech barge bumper system are used to absorb the berthing energy of the barges and tugs at offshore rigs. Two shock cells and a bumper post with revolving rubber rings constitute a barge bumper. This kind of arrangement enables loads to be absorbed both axially and horizontally, making it perfect for tough offshore conditions.

There are two different types of barge bumpers: one has a basic shock cell and the other has a shock cell that has an eccentric bumper ring attached. This type of configuration reduces the point load stress concentration on the bumper post and steel element and may support even higher loads.

FEATURES

- Capable of absorbing both axial and lateral loads
- Virtually maintenance free
- Can be deployed in areas with high tidal variations
- The specially designed bumper post will allow smooth and even load distribution
- Rotating bumper rings will rotate upon impact thus eliminating point abrasions

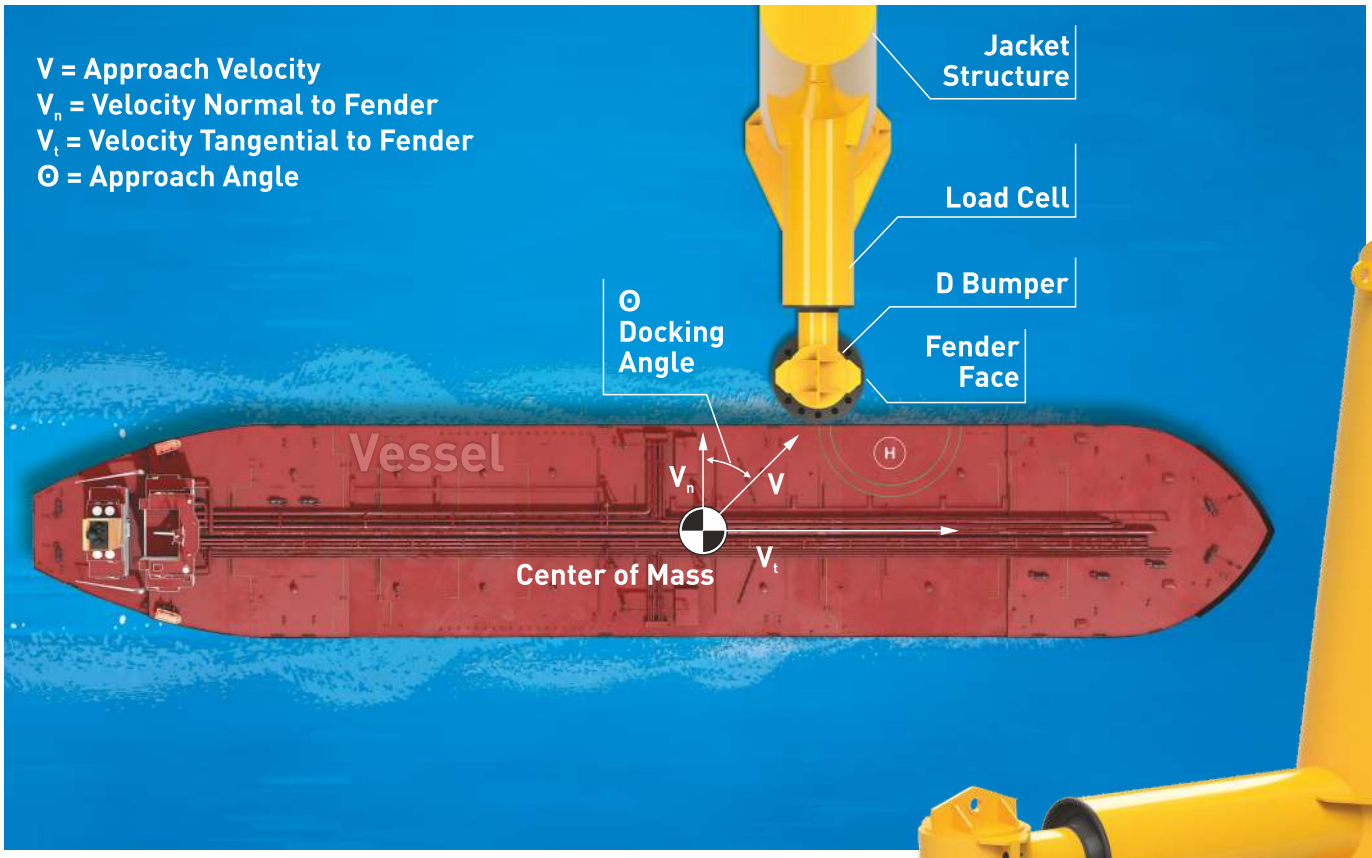
APPLICATIONS

- Offshore Platforms
- Drilling Platforms

OFFSHORE RUBBER FENDERS

BARGE BUMPER ASSEMBLY

All the components are NDT tested and Shock Cells are tested for axial as well as lateral load deflection simulating the loading conditions. Contact Post of Hi-Tech Barge Bumper Assembly is made of High Tensile Steel which resist bending in case of point impacts and protects entire Barge Bumper Assembly. Our Barge Bumpers and Shock Cells are extensively used on various platforms. The concentric tubular design of our Shock Cells ensures very high mechanical strength in lateral and loading conditions. It also smoothens the impact of Vessels deflecting axially giving a good cushion effect. Hi-Tech Barge Bumper Assemblies are available in two different design as shown here.



Hi-Tech fendering products are elastomeric by design and primarily function to protect offshore structures against structural damage caused by vessel impact. Because our fendering products are elastomeric, the greatest energy absorption of the fender and/or internal stress/strain relationship of the elastomer material.

Energy absorption capacities of elastomeric fendering systems can be varied by elastomer compound selection, fendering geometry and the number of fendering units and types.

OFFSHORE RUBBER FENDERS

BARGE BUMPER ASSEMBLY

L1. TO MATCH THE EXISTING FITMENT

L2. TO MATCH THE EXISTING FITMENT

1. TOP SHOCK CELL SA-5090

2. BOTTOM SHOCK CELL SA-5090

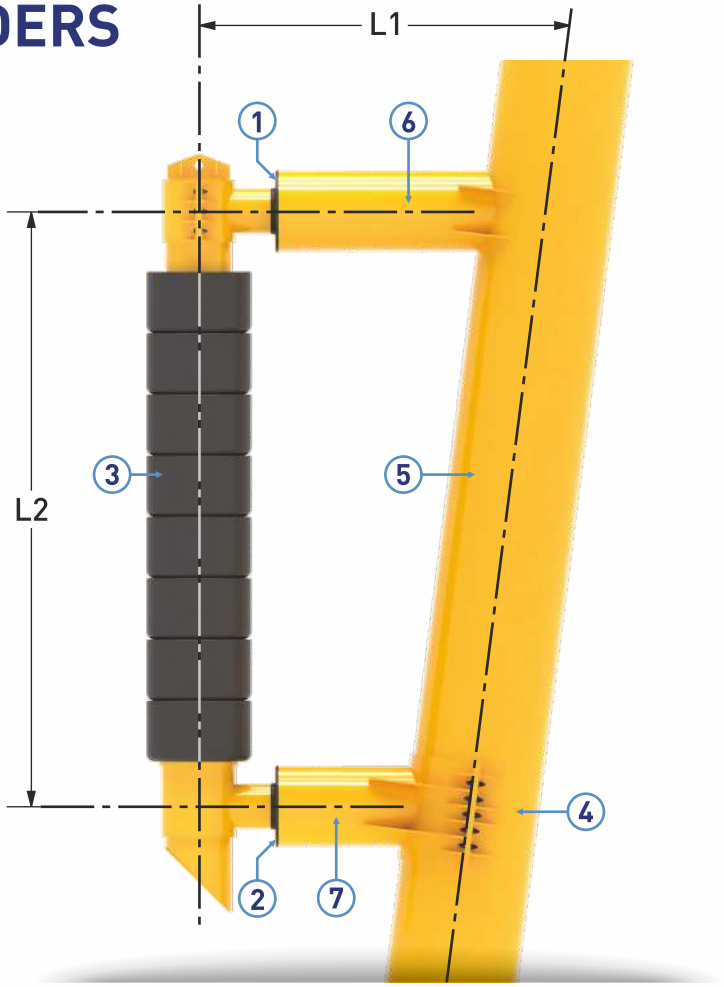
3. CONTECT POST

4. BOTTOM CLAMP

5. JACKET LEG

6. TOP EXTENSION PIPE

7. BOTTOM PIPE



BARGE BUMPER ASSEMBLY WITH ERR

L1. TO MATCH THE EXISTING FITMENT

L2. TO MATCH THE EXISTING FITMENT

1. TOP SHOCK CELL

2. BOTTOM SHOCK CELL

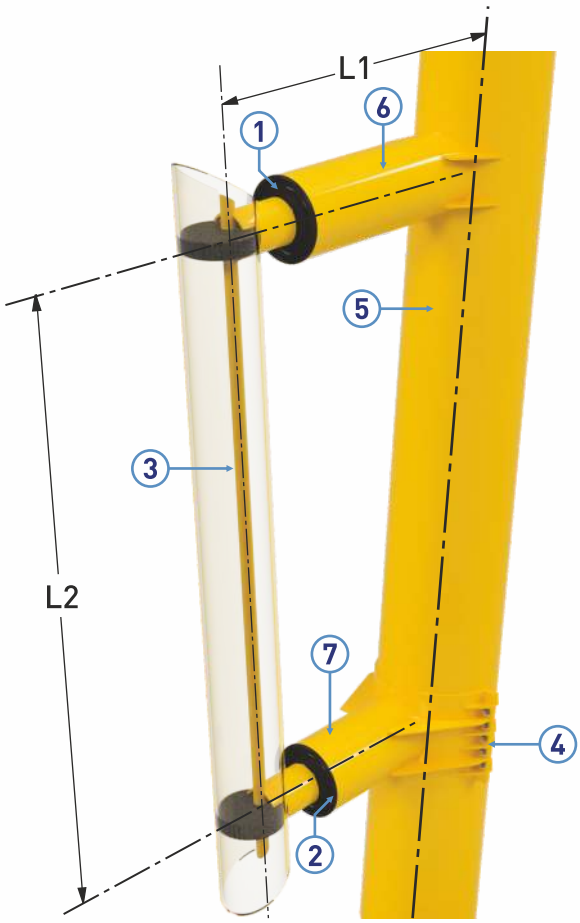
3. CONTECT POST

4. BOTTOM CLAMP

5. JACKET LEG

6. TOP EXTENSION PIPE

7. BOTTOM PIPE



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PRODUCT INSTALLATION PICTURES

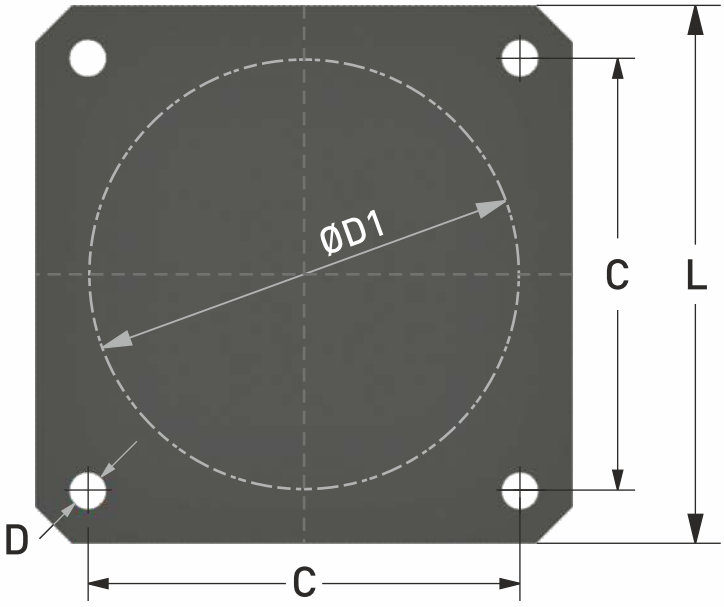
OFFSHORE RUBBER FENDERS

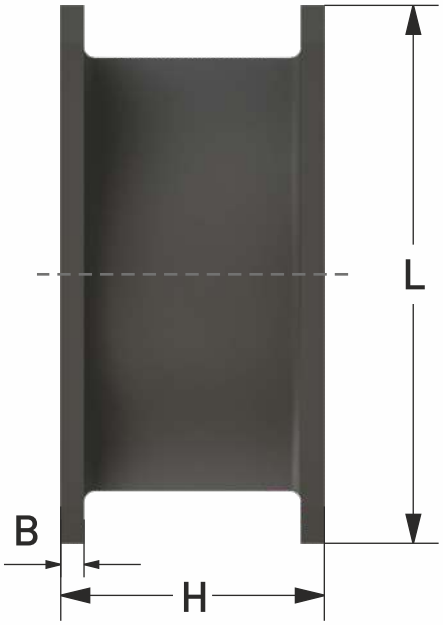
SHEAR FENDERS

Hitech shear fenders are used in low-energy and less throw applications. To absorb the impact, the rubber element deflects laterally. Shear fenders are the most suitable fenders for offshore uses including boat landings and barge bumpers.

They are perfect for the offshore field because they have a small footprint and are capable of supporting extremely large loads. A wide range of rubber compounds can be customized to suit the application and loads.

Custom made Shear Fender can also be manufactured as per clients' requirements





DIMENSION

MODEL	L	B	C	D	ØD1	H	WEIGHT
SF 270H	680	35	510	50	510	270	240
SF 500H	1020	45	820	70	820	500	815

[Units: mm, kg]

PERFORMANCE

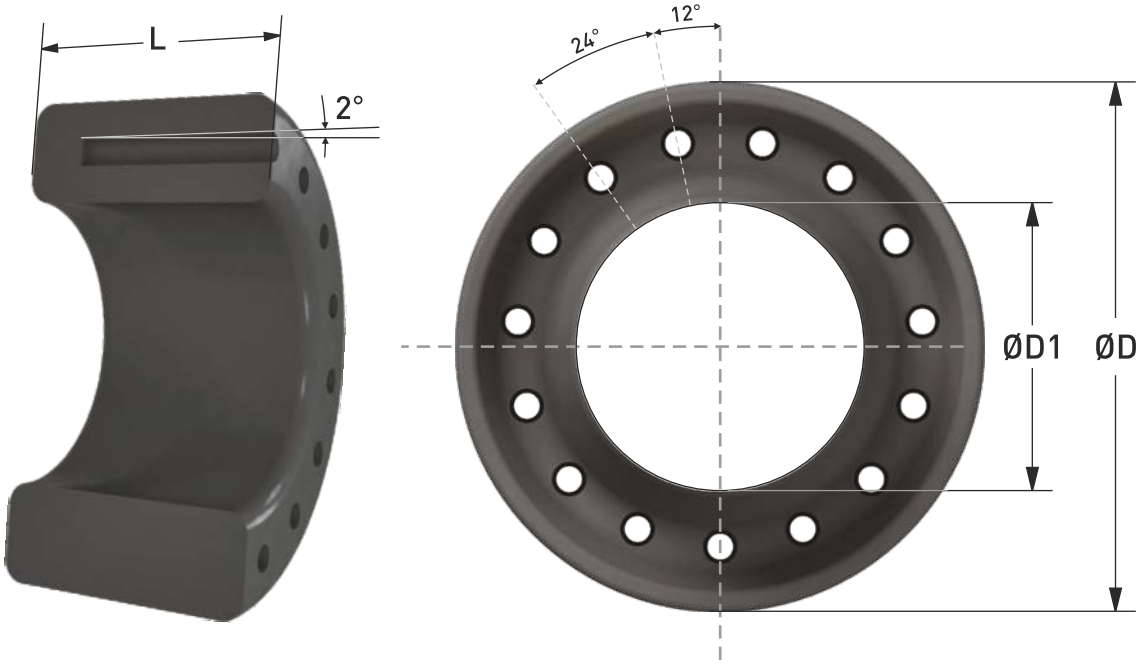
MODEL NO.	SF 270	SF 500
DEFLECTION MM.	270	500
E(I-M)	4.8	12.5
R(T)	34.5	50.5

R: REACTION FORCE, **E**: ENERGY ABSORPTION TOLERANCE **±10%**
The Performance and Weight Values mentioned are subject to change without notice.

FLOATOVER SOLUTIONS

BUMPER RINGS

Hi-Tech Bumper Rings are the part of Barge Bumpers, which absorbs and dissipate berthing energy while rotating on to the Contact Post of Barge Bumpers. Its rotating movement reduces Shear Force to be exerted by rubbing of Barges/Boats while berthing. They find extensive application in different configuration & Barge Bumper Assemblies. Hi-Tech Bumper Rings are versatile and can be used for different function & specification depending upon exact duty and working These rings can also be supplied from high abrasive resistant polyurethane rubber



DIMENSION

MODEL	L	ØD	ØD1	WEIGHT
HBR 2036	330	914	635	240

[Units: mm, kg]

RUBBING STRIPS

Hitech rubbing strips are high-grade and abrasion-resistant rubber elements strongly bonded with steel back supports. They are used to protect the offshore jacket legs or boat landing from impacts and abrasion which increases their service life. Specially designed strips display very high shear strength which is necessary for a harsh offshore environment.

Hitech offers rubbing strips in various alterations depending on load and application.

FEATURES

- Made from high-quality rubber
- Available in welded and bolted forms
- Provides valuable protection
- No maintenance
- Extreme weather resistance
- Durable & easy to install

FLOATOVER SOLUTIONS
RUBBING STRIPS

JACKET LEG RUBBING STRIPS

Hitech Jacket Leg Rubbing Strips are custom built Arch Fender for protecting the offshore platform transportation and launching. They absorb considerable shock and protect the Offshore Jacket Legs from the Barges and Vessel while transporting/launching. They have long life and reliability and offer excellent resistance to sea water.

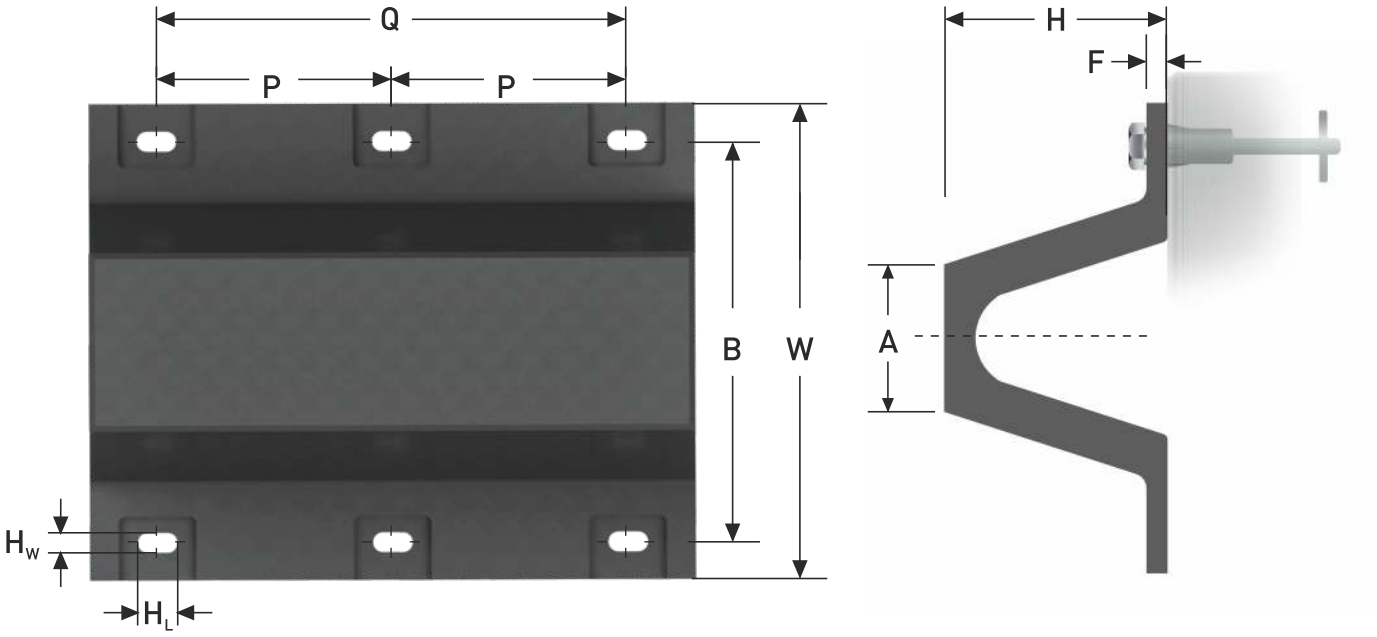
DIMENSIONS

	Q	H	B	W	A	F	L	P	$H_W \times H_L$	FIXING BOLT Size & Qty
HAT 150	3000	150	240	326	98	16–20	50	500	20×40	M16 × 6
HAT 200	3000	200	320	422	130	18–25	50	500	25×50	M20 × 6
HAT 250	3500	250	400	500	163	20–30	62.5	500	28×56	M24 × 6
HAT 300	3500	300	480	595	195	25–32	75	500	28×56	M24 × 6
HAT 400	3500	400	640	808	260	25–32	100	500	35×70	M30 × 6
HAT 500	3500	500	800	981	325	25–32	125	500	42×84	M36 × 6
HAT 600	3000	600	960	1160	390	28–40	150	500	48×96	M42 × 6
HAT 800	3000	800	1300	1550	520	41–50	200	500	54×108	M48 × 6
HAT 1000	3000	1000	1550	1850	650	50–62	250	500	54×108	M48 × 6

* Standard tolerances will apply.
* Spacing of bolt can be changed.
* The data are subject to change without notice.
* The above table shows standard sizes. Custom design special sizes are available on request/as per project.

[Units: mm, kg/m]

HAT RUBBER BODY



L	1000	1500	2000	2500	3000	3500
ANCHORS	6 No	8 No	10 No	12 No	14 No	16 No

Non-standard lengths, profiles and bolting patterns are available on request.

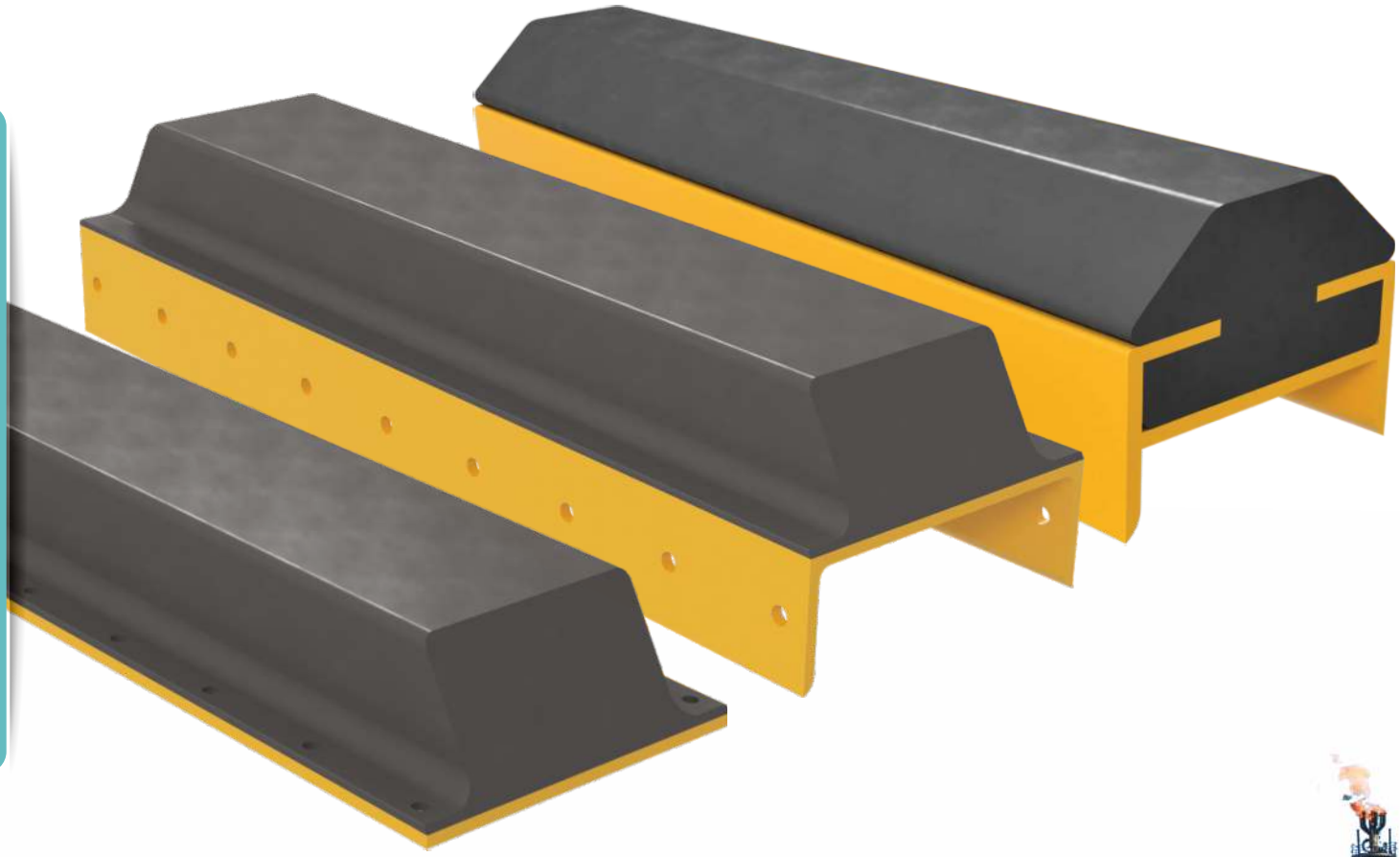
Larger bolts are required when connecting HAT fenders to steel panels.

FLOATOVER SOLUTIONS
RUBBING STRIPS

LANDING RUBBING STRIPS

Hitech rubbing strips are high-grade and abrasion-resistant rubber elements strongly bonded with steel back supports. They are used to protect the offshore jacket legs or boat landing from impacts and abrasion which increases their service life. Specially designed strips display very high shear strength which is necessary for a harsh offshore environment.

Hitech offers rubbing strips in various alterations depending on load and application.



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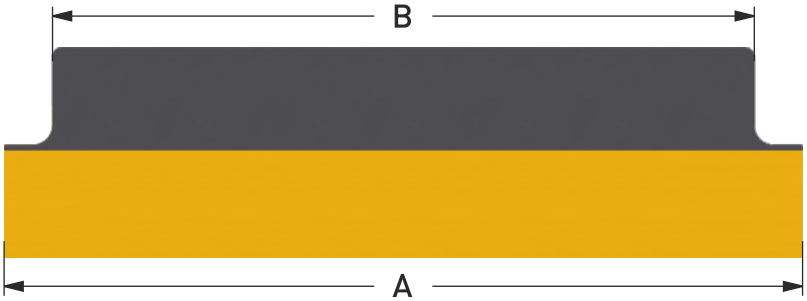
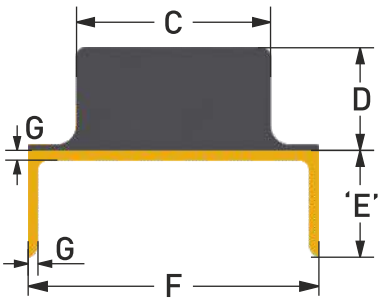
FLOATOVER SOLUTIONS

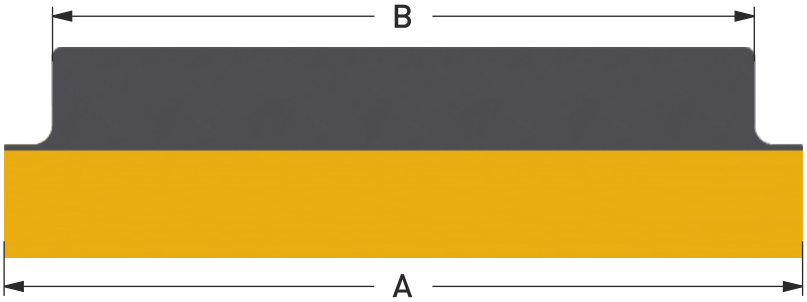
RUBBING STRIPS

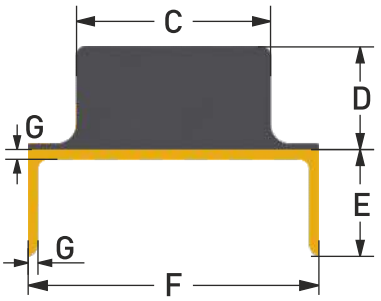
HLSR 50



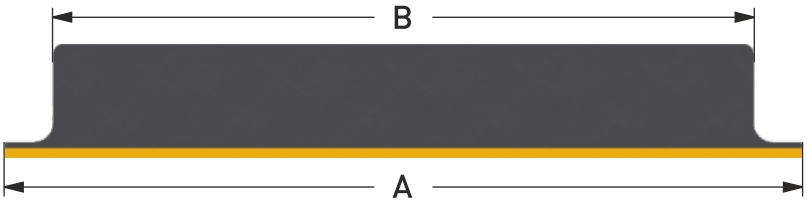


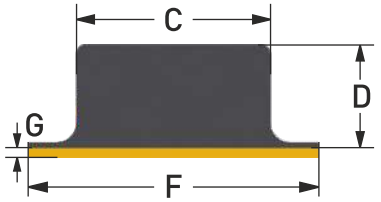
HLSR 60



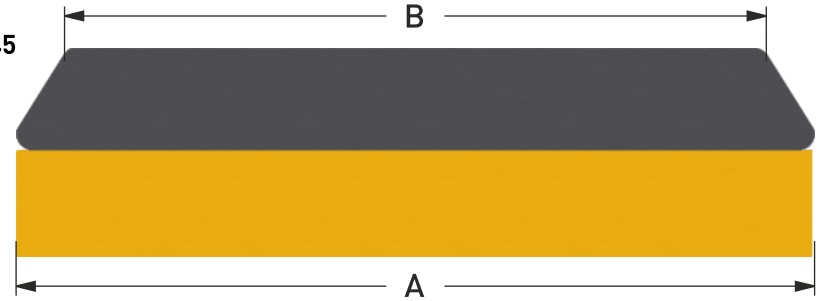


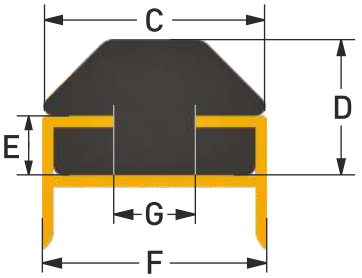
HLSR 90





HLSR 145





DIMENSION

MODEL	A	B	C	D	F	G
HLSR 50	1500 to 9500	1400 9400	150	50	150	12
HLSR 60	1500 to 9500	1400 9400	150	60	250	12
HLSR 90	1500 to 9500	1400 9400	150	90	250	15
HLSR 145	1500 to 9500	1400 9400	200	145	200	90

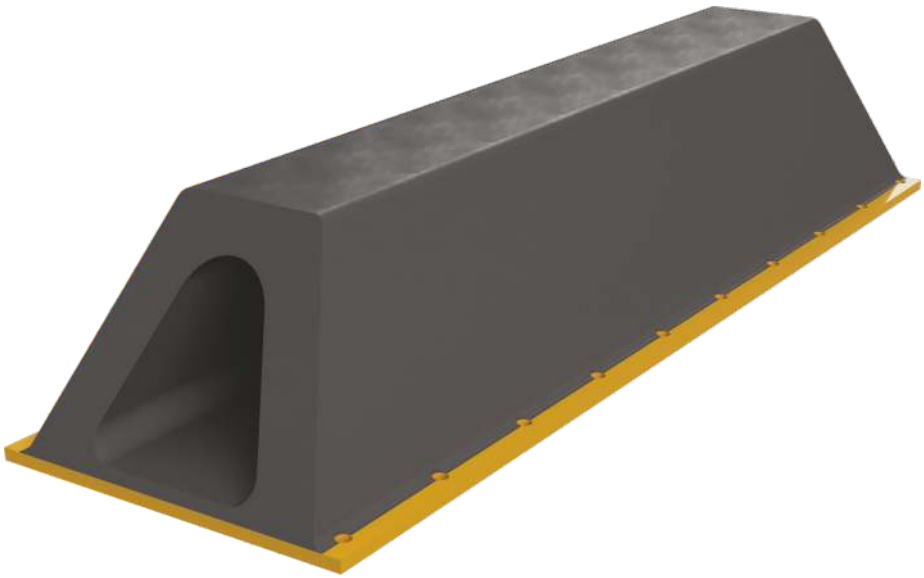
• Dimension 'E' to be arrived at depending on the pile dia
• Various lengths are available as per specific requirement

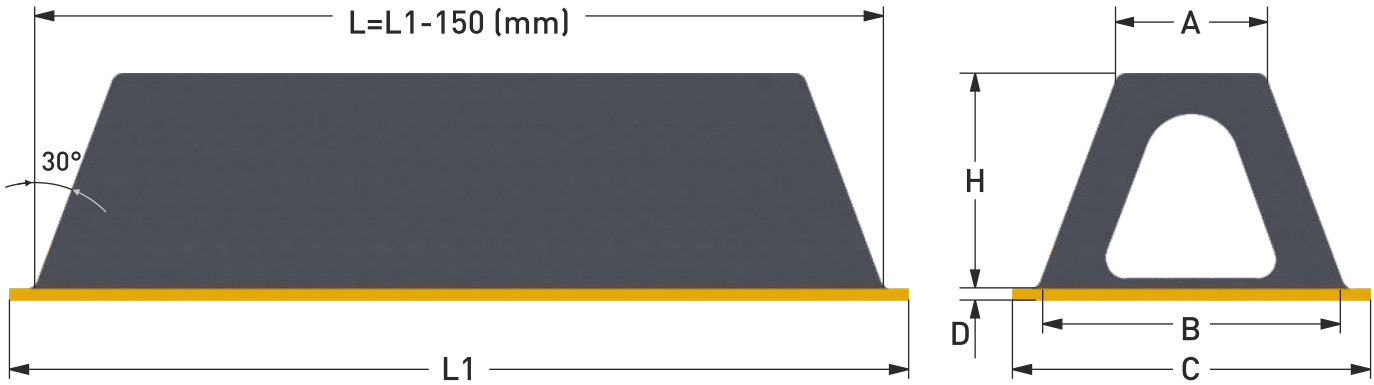
[Units: mm, kg]

FLOATOVER SOLUTIONS
RUBBING STRIPS

D-TYPE BOAT LANDING RUBBING FENDER

Most frequently employed for boat landing applications on offshore platforms are D type boat landing fenders. These fenders are composed of hollow, low-friction rubber in a D shape for boat landing wear and tear applications. These fenders have the function absorbs the impact load on the jacket structure. These fenders are very durable, reliable, and maintenance-free. According to the boat landing design, these fenders are provided in a variety of lengths and fitting configurations.





DIMENSION

DD 150					DD 225				
A	B	C	D	H	A	B	C	D	H
100	200	255	20	150	158	300	355	20	255

[Units: mm]

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PRODUCT INSTALLATION PICTURES

NOTES

NOTES

HI-TECH ELASTOMERS LTD.

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OFFICE
227, Hitech Elastomers, Santej-Vadsar Road,
Gandhinagar, Gujarat, INDIA - 384004.

Phone : +91-9824 654 671
Email : vpsales@hitechelastomers.com
sales1@hitechelastomers.com
sales@hitechelastomers.com

MANUFACTURING PLANT I:
798, Sola-Kalol Highway, Rakanpur,
Dist.: Gandhinagar, Gujarat, INDIA - 384002.

MANUFACTURING PLANT II:
227, Santej-Vadsar Road, Santej,
Dist. Gandhinagar, Gujarat, INDIA - 384004.

www.hitechelastomers.com