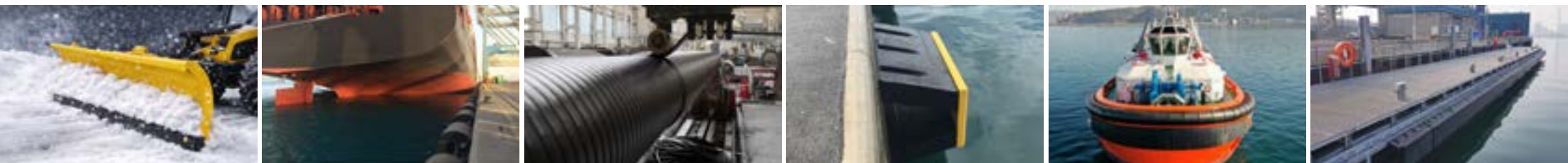


**EUROPE'S LARGEST
RUBBER AND POLYURETHANE
FENDER MANUFACTURER**



PRODUCT CATALOG

Bencros is a Slovak-Dutch company and a proud member of the international Vesper Group. We specialize in the rubber industry, offering unique and innovative bumper solutions specifically designed for the maritime sector.

Since 2010, Bencros has been a reliable partner in the global market, standing out as the only manufacturer of its kind in Europe. Over the years, we have established strong business relationships worldwide, and the demand for our high-quality products continues to increase.



LOCATED IN HEART OF EUROPE

EUROPEAN QUALITY, GREAT PRICE

FOUNDED IN 2010

6000 M² OF PRODUCTION SPACE AND OVER 90 EMPLOYEES

MANY YEARS OF EXPERIENCE IN RUBBER BUSINESS

EXCELLENT ROAD AND RAIL CONNECTION ACROSS THE CONTINENT

PRODUCTS USED AROUND THE WORLD

MONTHLY PRODUCTION IS 260-280T



PRODUCT OVERVIEW

ARCH FENDERS

- › Arch SX
- › Arch SX Corner
- › Arch SX - PE

BLADES & SCRAPERS

- › Snowplough Blades
- › Yard Scraper Blades
- › Scraper Blades Pointed Edges
- › Scraper Blades Square Edges

COMPOSITE FENDERS

- › Composite Fenders BCS-A & BCS-B
- › Composite Fenders BCT-A & BCT-B
- › Composite Fenders Specials

CYLINDRICAL FENDERS

- › Cylindrical Fenders Hollow
- › Cylindrical Fenders Solid

D FENDERS

- › DC-Fenders
- › DD-Fenders
- › DS-Fenders

DELTA FENDERS

- › Delta Fenders Hollow
- › Delta Fenders Custom

ELEMENT FENDERS

- › BCN Cone Fenders
- › Element Fender Legs
- › Element Fender Specials

FOAM FENDERS

- › Foam Fenders
- › Foam Filled PU Fenders

KEYHOLE FENDERS

- › Keyhole Fenders
- › Keyhole Fenders Ribbed
- › Keyhole Fender Blocks

SQUARE FENDERS

- › SD-Fenders
- › SC-Fenders
- › S-Fenders Solid

TOW WIRE PROTECTORS

- › Towing Shoes
- › Towing Sleeves

TUGBOAT FENDERS

- › M Fenders
- › Specials Block Shape
- › Specials D Shape
- › Specials Trapezium Shape
- › Trapezium with Steel Insert
- › Tug Cylindrical Fenders
- › V Fenders
- › W Fenders

VARIOUS

- › Aircraft Wheel Chocks
- › B-shaped Fender Profiles
- › Connection Plugs
- › Coupling Blocks for Pontoons
- › Fender Bars
- › Ladders
- › Lord Fender
- › MC Fender
- › BPP
- › Piggyback Blocks
- › Piles Protection
- › Plastic-UHMWPE Fender Pads
- › Push Knee Plates
- › Transition Pieces
- › Trapezoidal Fenders
- › U-shaped Fender Profiles

WING FENDERS

- › Wing Fenders Hollow
- › Wing Fenders Solid
- › Wing Fenders Custom



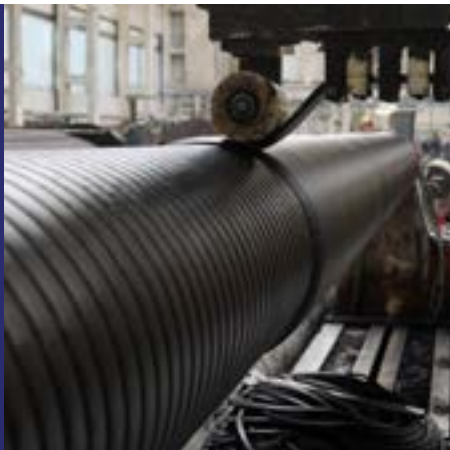
TUG CYLINDRICAL FENDERS

► Bencros Tug Cylindrical Fenders are built for long-lasting performance in tough marine conditions. Used worldwide, they offer durable hull protection for decades.

We manufacture large fenders with diameters over 1000 mm and lengths beyond 13 metres, easily joined to exceed 20 metres.

Mandrel-built with optional tapered ends and grooved profiles, they suit webbing straps or sleeved chains. Their flexible design allows easy fitting around bows and sterns with neat joints.

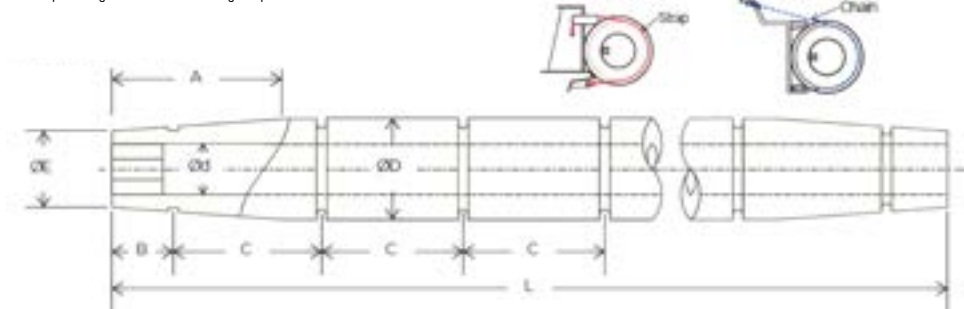
Ideal alongside our W-type, M-type, and Keyhole fenders. Contact Bencros to discuss your needs.



Constructed on a mandrel, Tug Cylindrical Fenders can be constructed with tapered ends and hot profiled grooves to suit webbing straps or sleeved chains.

STRAP FIXING

CHAIN FIXING



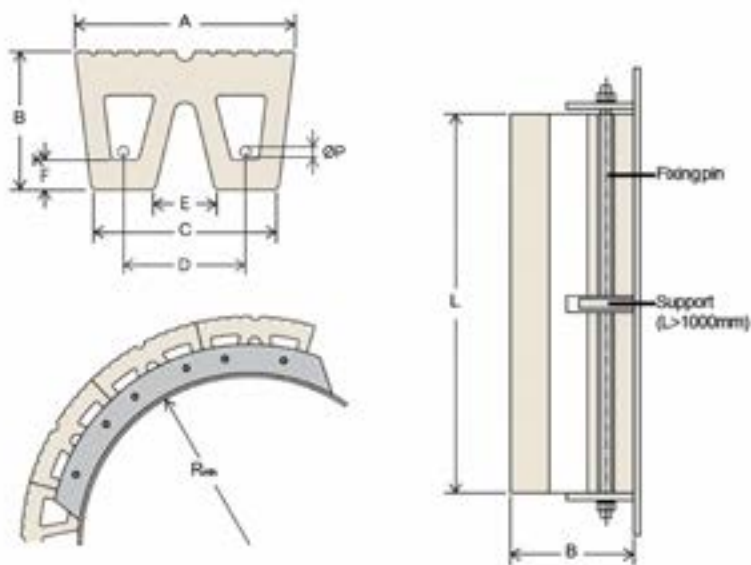
ØD	Ød	A	B	C	ØE
200	100-110	500	150	530	150
250	125-138	500	200	570	190
300	150-165	700	225	600	225
350	175-193	800	250	630	260
400	200-220	800	300	670	300
500	250-275	900	300	730	375
600	300-330	900	350	800	450
700	350-385	1000	350	860	525
800	400-440	1000	350	930	600
900	450-495	1100	350	1000	675
1000	500-550	1200	350	1060	750

ØD	Ød, (=0.50)	R ₁	Ød, (=0.60)	R ₂
200	100	110	120	87
250	125	138	150	109
300	150	165	180	131
350	175	193	210	152
400	200	220	240	174
500	250	275	300	218
600	300	330	360	261
700	350	385	420	305
800	400	440	480	348
900	450	495	540	392
1000	500	550	600	435

Performance tolerance is ±10%. Energy and reaction are per metre length and for Bencros C1 (standard) rubber grade. For special requirements and extra large diameters, please ask Bencros.

W FENDERS

Bencros W-Fenders are heavy-duty rubber fenders designed for tug bows, sterns, pontoons, and RoRo ramps. Their "W" profile ensures excellent grip and shock absorption, making them ideal for tough marine conditions. Made from durable rubber and mounted with steel pins, they are easy to install and replace. Available in various sizes to suit different vessel types and structures. They deliver long-lasting performance with minimal maintenance needs. Proven in demanding environments worldwide, W-fenders are a trusted choice for reliable vessel and dockside protection.

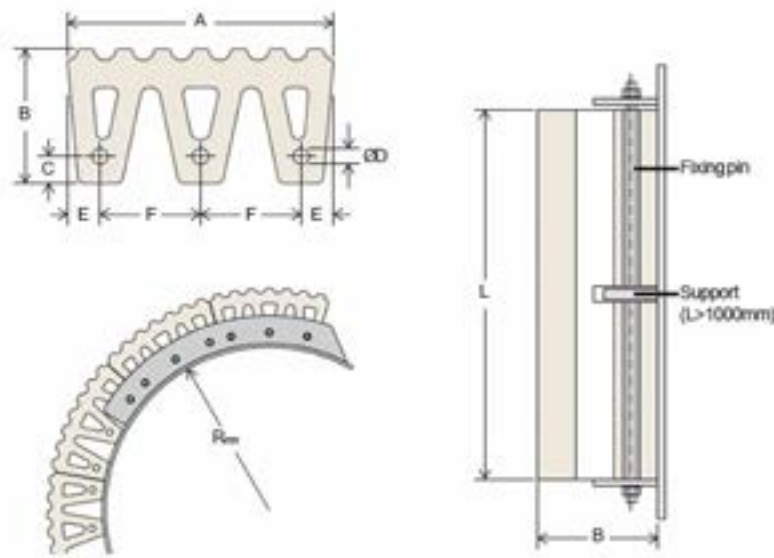


TYPE	A	B	C	D	E	F	ØP	LMAX	FLAT BAR	R(MIN)	WEIGHT
W-320	320	200	280	180	100	67	25	2000	100x20	600	51
W-400	400	250	350	220	110	75	30	2000	120x20	800	81
W-480	480	300	426	269	135	90	40	2000	140x20	900	120
W-500	500	450	420	250	90	100	40	2000	150x20	1000	180

Dimensions are in millimetres.
Weights are in kilogrammes per metre length.
For other sizes, fixing details and custom features. Please ask Bencros.

M FENDERS

Flexible M-shaped fenders ideal for vessel bows and sterns, providing excellent contour conformity. Their wide contact surface ensures reliable energy absorption and effective protection during berthing and pushing operations. Made from high-quality rubber, M-fenders resist wear, weather, and seawater, guaranteeing long service life. They are easy to install using standard mounting systems and can be supplied in different lengths and sizes to match various vessel types and operating needs.

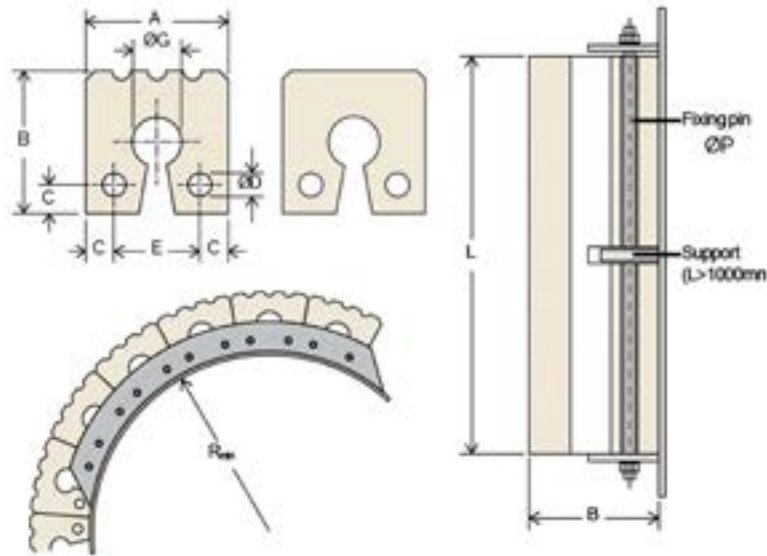


TYPE	A	B	C	ØD	E	F	ØP	LMAX	FLAT BAR	R(MIN)	WEIGHT
M-400	400	200	40	23	50	150	20	2000	100 x 15	450	56
M-500	500	250	50	27	60	190	24	2000	125 x 20	550	89
M-600	600	300	60	33	70	230	30	2000	150 x 20	650	132

Dimensions are in millimetres.
Weights are in kilogrammes per metre length.
For other sizes, fixing details and custom features. Please ask Bencros.

KEYHOLE FENDERS

- Bencros Keyhole Fenders are heavy-duty moulded rubber units designed for tug bows, sterns, pontoons, and RoRo ramp ends. Their robust construction delivers excellent energy absorption and reliable protection in demanding marine conditions. Mounted with steel pins through twin holes, they allow quick installation, secure fastening, and straightforward replacement when worn. Two main types available: Ribbed Keyhole Fenders, with a ribbed design that provides enhanced grip and extra resistance to wear, and Keyhole Fender Blocks, compact and robust units designed to deliver targeted impact protection in high-stress marine operations.



TYPE	A	B	C	ØD	ØP	E	ØG	LMAX	FLAT BAR	R(MIN)	WEIGHT
K-200	200	200	35	28	25	130	90	2000	100 x 15	450	33
K-250	250	250	50	33	30	150	100	2000	125 x 20	600	54
K-300	300	300	60	33	30	180	115	2000	150 x 20	800	80
K-350	350	350	70	33	30	210	125	2000	175 x 25	1000	114

Dimensions are in millimetres. Weights are in kilogrammes per fender.

Cross sectional tolerance is $\pm 5\%$ and length tolerance is $\pm 40\text{mm}$, unless otherwise agreed.

Other sizes, lengths, fixing locations, materials and colours are available. Please ask Bencros.



TUGBOAT FENDERS

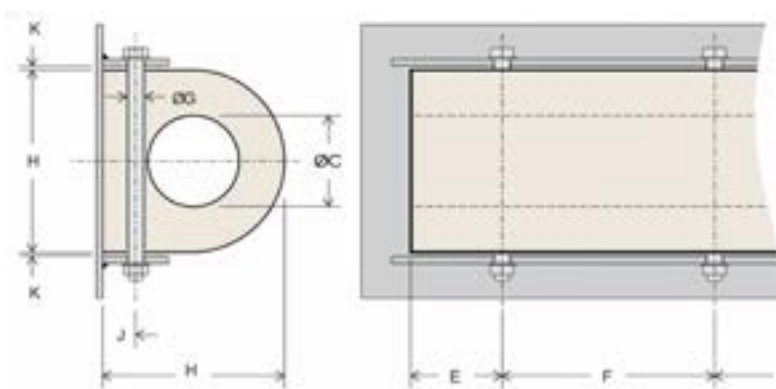
DC FENDERS

- Highly durable DC fenders for effective impact protection on ships and docks. Bencros DC fenders are ideal for jetties, wharfs, tugs, and loading bays. Available in moulded or extruded form, they can be cut to length, pre-drilled, chamfered, and shaped to suit project requirements. Standard C1 grade performance, with softer (low reaction) and harder (high energy) compounds available on request.



DD FENDERS

- Versatile DD fenders offering superior impact resistance and simple installation. Bencros DD fenders are highly durable and ideal for jetties, wharfs, tugs, and loading bays. Available in moulded or extruded form, they can be cut to length, pre-drilled, chamfered, and shaped as needed. Standard C1 grade, with optional softer or harder compounds on request.

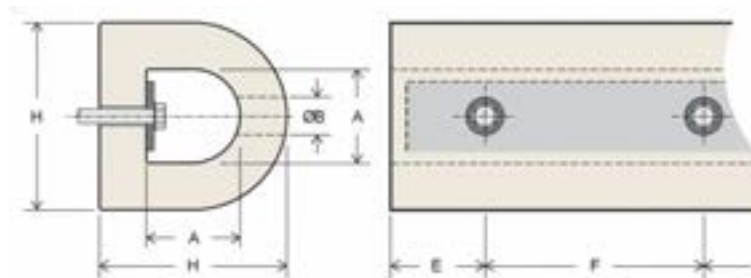


H	ØC	ØG	E	F	J	K	BOLTS	WEIGHT
100	30	18	90-130	200-300	25	5	M12	10.1
100	50	18	90-130	200-300	25	5	M12	9.9
150	75	24	110-150	250-350	30	6	M16	20
200	100	30	130-180	300-400	45	7.5	M20	37.4
250	125	36	140-200	350-450	50	10	M24	57.2
300	125	36	140-200	350-450	60	12.5	M24	83.7
300	150	36	140-200	350-450	60	12.5	M24	81.3
350	175	45	140-200	350-450	70	12.5	M30	109.5
400	200	45	140-200	350-450	80	15	M30	142.0
500	250	54	150-230	400-500	90	20	M36	208.0

Dimensions are in millimetres. Weights are in kilograms per fender.

Cross sectional tolerance is $\pm 5\%$ and length tolerance is $\pm 40\text{mm}$, unless otherwise agreed.

Other sizes, lengths, fixing locations, materials and colours are available. Please ask Bencros.



H	A	ØB	E	F	FLAT BAR	ANCHORS	WEIGHT	ENERGY	REACTION
100	50	30	90-130	200-300	40 x 5	M12	8.5	1.4	77
150	75	40	110-150	250-350	60 x 8	M16	18.5	3.2	115
200	100	50	130-180	300-400	80 x 10	M20	32.9	5.7	153
250	125	60	140-200	350-450	90 x 12	M24	51.5	8.9	191
300	150	60	140-200	350-450	110 x 12	M24	74.1	12.9	230
350	175	75	140-200	350-450	130 x 15	M30	101	17.6	268
380	190	75	140-200	350-450	140 x 15	M30	119	20	292
400	200	75	140-200	350-450	150 x 15	M30	132	23	306
500	250	90	160-230	400-500	180 x 20	M36	206	35.9	383

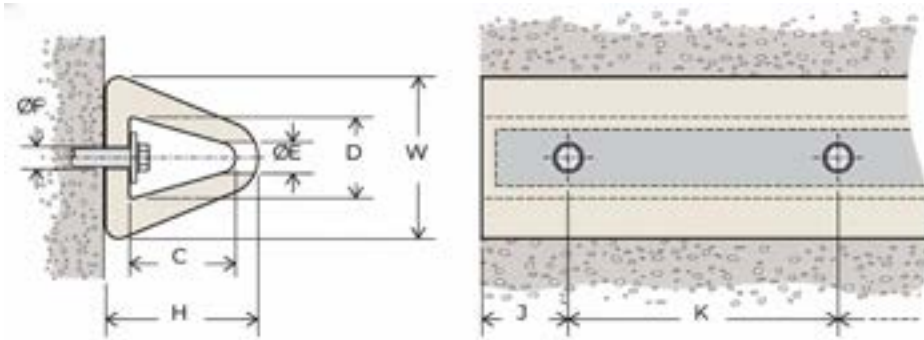
EPDM, polyurethane and other compound types are available.
For other sizes, fixing details and other custom features, please ask Bencros.

DS FENDERS

- Solid version available – DS Fenders, characterized by robust construction, straightforward installation, and reliable performance for the protection of vessels and quay structures.

DELTA FENDERS HOLLOW

- ▶ Compact, hollow delta fenders designed for effective energy absorption with minimal installation footprint. Bencros Delta Fenders feature a wide, stable base and large internal bore for soft, resilient contact. Ideal for marina pontoons, small boats, loading bays, and other space-limited areas. Supplied in long lengths, with options for pre-drilling, chamfering, and custom profiles on request.



W	H	C	D	ØE	ØF	J	K	FLAT BAR	BOLT	WEIGHT
60	50	40	30	20	10	70-110	150-250	15 x 3	M8	2.2
80	75	45	40	30	15	90-130	200-300	35 x 5	M10	3.1
110	100	65	68	30	15	90-130	200-300	40 x 5	M12	7.4
150	130	80	75	40	20	110-150	250-300	60 x 8	M16	13.5

Dimensions are in millimetres. Weights are in kilogrammes per fender.
Cross sectional tolerance is $\pm 5\%$ and length tolerance is $\pm 40\text{mm}$, unless otherwise agreed.
Other sizes, lengths, fixing locations, materials and colours are available. Please ask Bencros.

DELTA FENDERS CUSTOM

- ▶ Customized delta fenders tailored to unique specifications, ensuring optimized protection.



COMPOSITE FENDERS CF-A AND CF-B

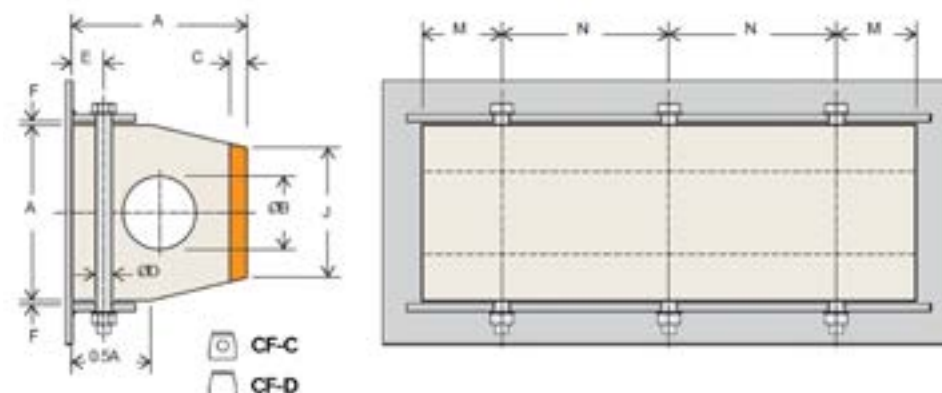
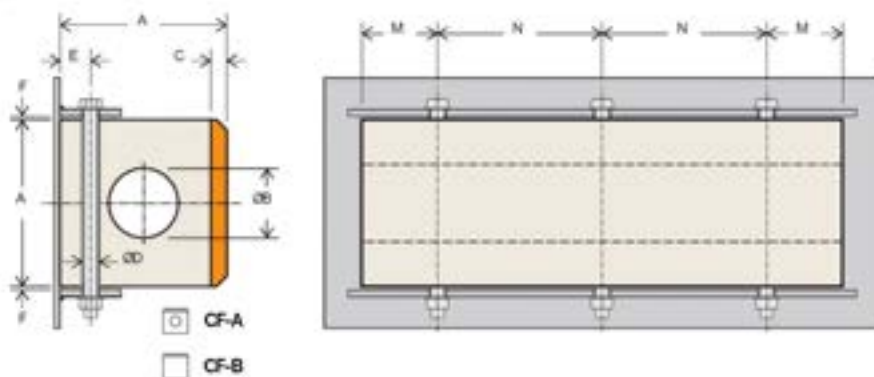
- Bencros CF-A and CF-B Composite Fenders feature a moulded rubber body with an integrally vulcanised UHMW-PE front plate.

Designed for durability and low friction, they are ideal for use on workboats, tugs, barges, and for protecting locks, ports, and bridge structures. Standard in black, with other colours available on request. Supplied pre-drilled and machined with a range of mounting options.



COMPOSITE FENDERS CF-C AND CF-D

- Bencros CF-C and CF-D Composite Fenders are moulded rubber profiles with a vulcanised UHMW-PE front plate. They provide durable, low-friction performance—ideal for beltings on workboats, tugs, and barges, as well as for protecting locks, ports, and bridges. Supplied in black as standard, with other colours available on request. Available pre-drilled and machined with various mounting options.



A	ØB	ØD	C	E	F	M	N	FLAT BAR	ANCHORS	WEIGHT CF-A	WEIGHT CF-B
100	30	15	20	25	10	90-130	200-300	50 x 6	M12	10.3	11.1
150	65	20	20	30	12	110-150	250-350	60 x 8	M16	21.5	27
200	75	25	25	45	20	130-180	300-400	80 x 10	M20	40.2	48
250	100	30	30	50	25	140-200	350-450	100x 10	M24	60.2	75
300	125	30	30	60	30	140-200	350-450	110 x 12	M24	92.1	108

Dimensions are in millimetres. Weights are in kilograms per fender.
Cross sectional tolerance is $\pm 5\%$ and length tolerance is $\pm 40\text{mm}$, unless otherwise agreed.
Other sizes, lengths, fixing locations, materials and colours are available. Please ask Bencros.

A	ØB	C	ØD	E	F	J	M	N	FLAT BAR	ANCHORS	WEIGHT CF-C	WEIGHT CF-D
80	42	10	15	25	6	60	90-130	200-300	45 x 6	M12	5.4	7
100	45	10	15	25	8	74	90-130	200-300	45 x 6	M12	8.4	11
120	62	12	20	30	10	88	110-150	250-350	60 x 8	M16	12.2	15.8
150	73	15	20	30	12	110	110-150	250-350	60 x 8	M16	19.7	24.8

Dimensions are in millimetres. Weights are in kilograms per fender.
Cross sectional tolerance is $\pm 5\%$ and length tolerance is $\pm 40\text{mm}$, unless otherwise agreed.
Other sizes, lengths, fixing locations, materials and colours are available. Please ask Bencros.

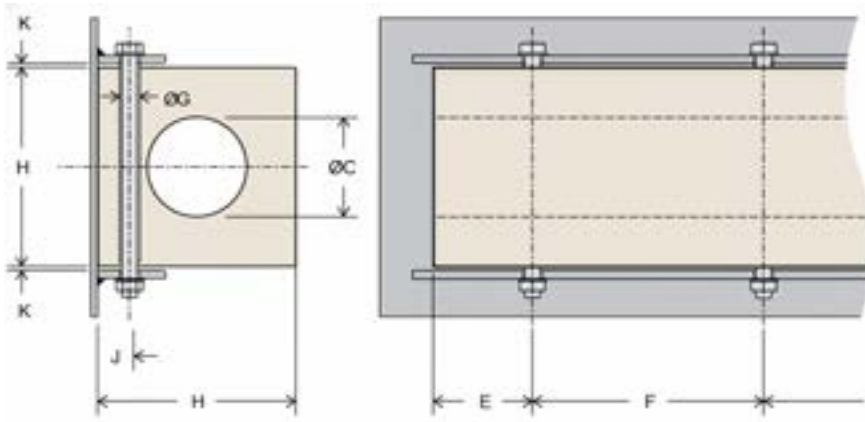
SC-FENDERS

- Bencros SC fenders offer durable impact protection for jetties, wharfs, tugs, and loading bays. Available in moulded or extruded form, cut to length, pre-drilled, and shaped as needed. Standard C1 grade, with softer or harder compounds available on request.



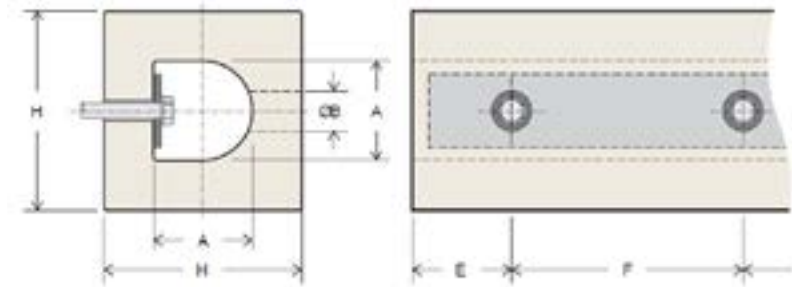
SD-FENDERS

- Bencros SD fenders are highly durable and ideal for impact protection on jetties, wharfs, tugs, and loading bays. Supplied moulded or extruded, cut to length, pre-drilled, and shaped as needed.
- Standard C1 grade, with optional softer or harder compounds on request.



H	ØC	E	F	ØG	J	K	FLAT BAR	BOLTS	WEIGHT	ENERGY	REACTION
100	30	90-130	200-300	15	25	5	50 x 6	M12	11.4	2.7	173
100	50	90-130	200-300	15	25	5	50 x 6	M12	11.1	2.7	173
150	65	110-150	250-350	20	30	6	60 x 8	M16	22	6.3	259
200	100	130-180	300-400	25	40	7.5	80 x 10	M20	39.5	11.3	345
250	100	140-200	350-450	30	50	10	90 x 12	M24	60	17.6	432
300	125	140-200	350-450	30	60	12.5	110 x 12	M24	95.6	26.5	538
300	150	140-200	350-450	30	60	12.5	110 x 12	M24	92.9	22.4	518
350	175	140-200	350-450	35	65	12.5	120 x 12	M30	121	34.5	604
400	200	140-200	350-450	35	70	15	130 x 15	M30	158	45.1	690
500	250	150-230	400-500	45	90	20	150 x 20	M36	247	70.5	863

Energy and reaction are per metre length and for Bencros C1 (standard) rubber grade. EPDM, polyurethane and other compound types are available. For other sizes, fixing details and other custom features. Please ask Bencros.



H	A	ØB	E	F	FLAT BAR	ANCHORS	WEIGHT	ENERGY	REACTION
100	50	30	90-130	200-300	40 x 5	M12	9.5	2.8	147
150	75	40	110-150	250-350	50 x 8	M16	22.1	6.4	221
200	100	50	130-180	300-400	70 x 10	M20	38.7	11.3	294
250	125	60	140-200	350-450	90 x 12	M24	59.3	17.7	368
300	150	60	140-200	350-450	100 x 12	M24	73	25.5	442
350	175	75	140-200	350-450	100 x 15	M30	89.3	34.6	515
400	200	75	140-200	350-450	150 x 15	M30	148.5	45.2	589
500	250	90	160-230	400-500	180 x 20	M36	232.1	70.7	736

Dimensions are in millimetres. Weights are in kilogrammes per fender. Cross sectional tolerance is $\pm 5\%$ and length tolerance is $\pm 40\text{mm}$, unless otherwise agreed. Other sizes, lengths, fixing locations, materials and colours are available. Please ask Bencros.

S-FENDERS SOLID

- Solid S-fenders delivering sturdy, reliable vessel and dock protection.



CYLINDRICAL FENDERS HOLLOW

Bencros hollow cylindrical fenders are highly durable and have been used worldwide for decades to protect hulls and berths in all conditions. Manufactured through extrusion, wrapping, or moulding, they can be supplied in nearly any diameter and length combination. Standard C1 grade ensures balanced performance, with softer (low reaction) and harder (high energy) compounds available on request.



OD	ID	E (kJ/m)	R (kN)	P (kJ/m ²)	WEIGHT (kg/m)
100	50	0.8	43	547	7
125	65	1.3	51	500	11
150	75	1.8	65	552	16
175	75	2.7	92	781	24
200	100	3.3	86	547	29
250	125	5.1	108	550	45
300	150	7.4	129	547	65
380	190	11.8	164	550	105
400	200	13.1	172	547	116
450	225	16.6	194	549	147
500	250	28.0	275	700	181
600	300	40.0	330	700	255
800	400	72	440	700	453
900	450	86	470	700	573
1000	500	112	550	700	707
1100	600	131	541	574	800
1200	600	162	660	700	1018
1300	700	184	650	591	1131
1400	700	220	770	700	1386
1400	800	208	649	516	1245
1500	750	253	825	700	1591
1500	800	246	760	605	1517
1600	800	288	880	700	1810
1600	900	273	757	535	1650
1800	900	364	990	700	2290
2000	1000	432	1060	700	2827
2000	1200	415	871	517	2414
2200	1200	524	1083	575	3204

Performance tolerance is ±10%. Energy and reaction are per metre length and for Bencros C1 (standard) rubber grade. For special requirements and extra large diameters, please ask Bencros.

CYLINDRICAL FENDERS SOLID

Durable solid cylindrical fenders designed for heavy-duty use in challenging marine environments.



OD ≤ 600mm

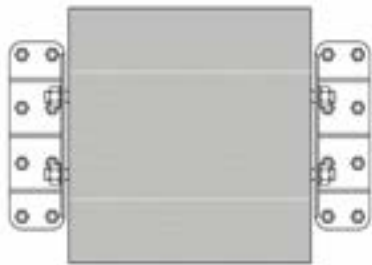
Small cylindrical fenders are commonly suspended using chains, shackles and brackets.



600mm ≤ OD ≤ 1600mm

Medium cylindrical fenders can be supported with solid round or circular hollow steel bars.

Chains and shackles connect to brackets or U-anchors on the structure. End stop plates are optional.



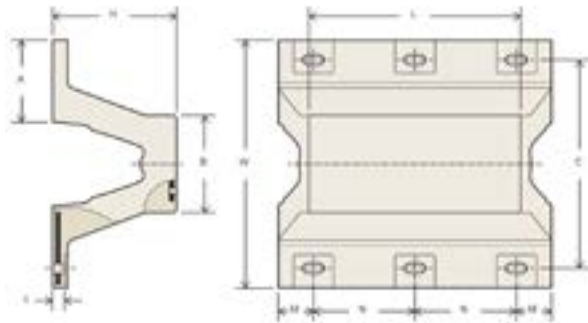
OD ≥ 1600mm

Large cylindrical fenders are mounted on robust brackets with central ladder retaining. Due to the special requirements for large cylindrical fenders, fixings are specially designed for each application. Ask Bencros for details.

ARCH SX FENDERS

- Bencros Arch SX fenders offer a robust design for general berths and exposed locations. Suitable for horizontal or vertical installation on new or existing structures.

Low maintenance ensures long service life and low ownership costs. Available in various sizes, with custom lengths and fixings on request.



H	W	A	B	C	t	SLOT	FIXINGS	1000	1500	2000	2500	3000	3500
250	500	178	200	400	18	58 x 29	M24	✓	✓	✓	✓	✓	✓
300	600	213	240	480	23	70 x 35	M30	✓	✓	✓	✓	✓	✓
400	800	285	320	640	27	82 x 41	M36	✓	✓	✓	✓	✓	✓
500	1000	358	400	800	29	82 x 41	M36	✓	✓	✓	✓	✓	✓
600	1200	425	480	960	34	94 x 47	M42	✓	✓	✓	✓	✓	
800	1500	520	640	1300	38	100 x 50	M48	✓	✓	✓	✓	✓	
1000	1800	610	800	1550	47	100 x 50	M48	✓	✓	✓	✓	✓	

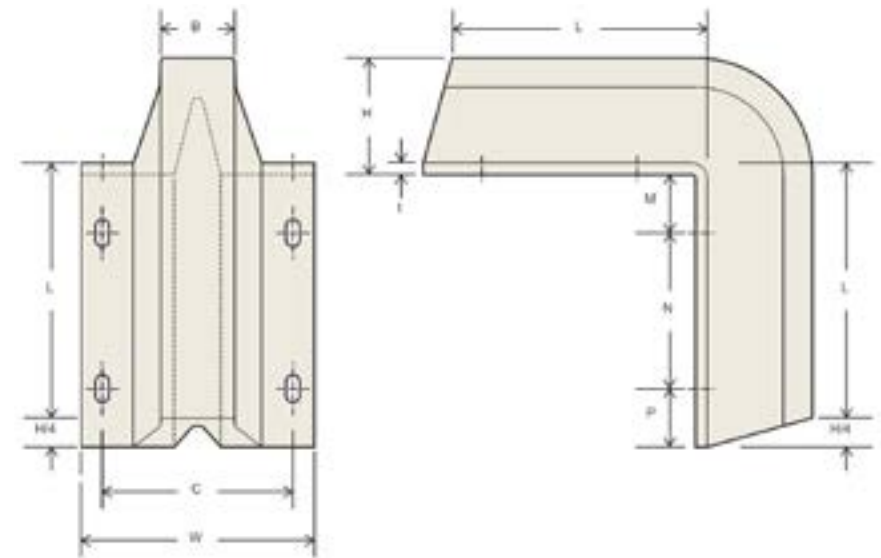
H	L = 1000			L = 1500			L = 2000			L = 2500			L = 3000			L = 3500		
	M	N	WEIGHT	M	N	WEIGHT	M	N	WEIGHT	M	N	WEIGHT	M	N	WEIGHT	M	N	WEIGHT
250	113	900	88	113	700	129	118	630	169	113	800	211	113	725	251	113	680	293
300	125	900	122	125	700	178	130	630	234	125	800	290	125	725	345	125	680	402
400	150	900	206	150	700	298	155	630	389	150	800	482	150	725	573	150	680	666
500	175	900	332	175	700	475	180	630	617	175	800	762	175	725	904	175	680	1048
600	200	900	476	200	700	676	205	630	875	200	800	1076	200	725	1276	Please ask Bencros		
800	250	900	840	250	700	1175	255	630	1510	250	800	1848	250	725	2183			
1000	300	900	1363	300	700	1879	305	630	2395	300	800	2918	300	725	3434			

Dimensions are in millimetres. Weights are in kilograms per fender.
Cross sectional tolerance is +5% and length tolerance is ±40mm, unless otherwise agreed.
Other sizes, lengths, fixing locations, materials and colours are available. Please ask Bencros.

ARCH SX CORNER

- Bencros Arch SX Corner fenders offer reliable protection for berth corners, lock entrances, and similar structures against impacts from smaller vessels. They share the same robust design as standard Arch fenders and are available with standard or custom leg lengths and angles.

Polyurethane versions in large sizes and high-visibility colours like orange or yellow are also available on request.



H	L	W	M	N	P	H/4	B	C	SLOT	FIXINGS	WEIGHT
150	713	300	250	400	100	38	98	240	48 x 24	M20	52
200	700	400	300	350	100	50	130	320	58 x 29	M24	94
250	748	500	260	420	130	63	162	400	58 x 29	M24	142
300	625	600	200	360	140	75	190	480	70 x 35	M30	208
400	Please ask Bencros										
500	Please ask Bencros										
600	Please ask Bencros										
800	1700	1500	350	650	250	200	640	1300	100 x 50	M48	2955
1000	Please ask Bencros										

Dimensions are in millimetres. Weights are in kilograms per fender.
Cross sectional tolerance is ±5% and length tolerance is ±40mm, unless otherwise agreed.
Other sizes, lengths, fixing locations, materials and colours are available. Please ask Bencros.

ARCH SX - PE

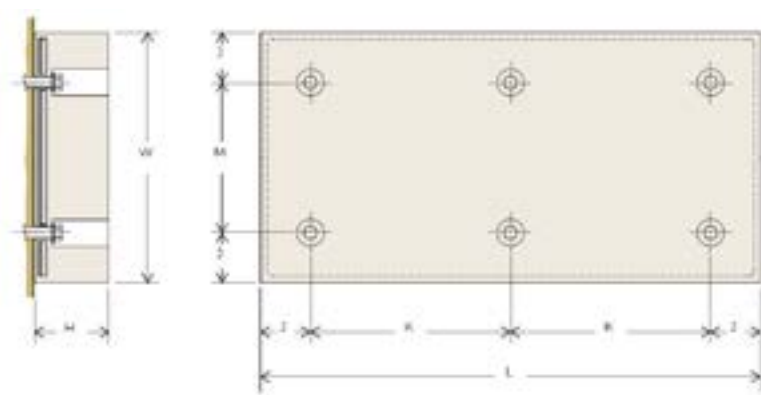
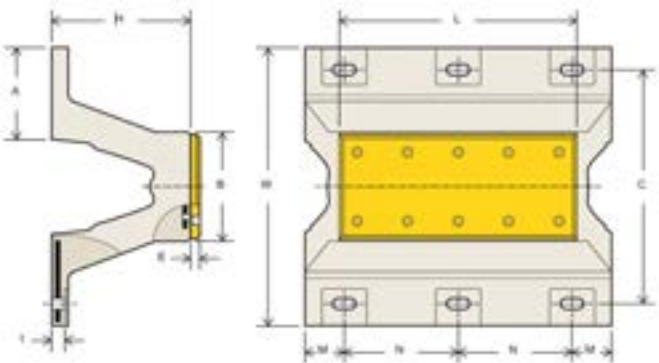
► Bencros Arch SX – PE fenders feature a durable design with a low-friction UHMW-PE front, ideal for berths and exposed areas where reduced shear is needed.

They install easily on new or existing structures, horizontally or vertically. Low maintenance ensures long service life and low ownership costs. Available in various sizes, with custom options on request.



MPP

► Bencros MPP panels are resilient fenders designed for berths used by smaller vessels, protecting both dock and hull from abrasion. Ideal where minimal clearance is needed, they reduce the risk of cargo falling between vessel and quay. An internally vulcanised steel plate ensures strong fixing, while the low profile keeps bolt stress low. MPP panels come standard with a flat face, with optional textured surfaces for added grip.



H	W	A	B	C	SLOT	FIXINGS	E	PE BOLTS	1000	1500	2000	2500	3000	3500
250	500	178	200	400	58 x 29	M24	40	M16	✓	✓	✓	✓	✓	✓
300	600	213	240	480	70 x 35	M30	40	M20	✓	✓	✓	✓	✓	✓
400	800	285	320	640	82 x 41	M36	40	M20	✓	✓	✓	✓	✓	✓
500	1000	358	400	800	82 x 41	M36	50	M24	✓	✓	✓	✓	✓	✓
600	1200	425	480	960	94 x 47	M42	50	M24	✓	✓	✓	✓	✓	✓
800	1600	520	640	1300	100 x 50	M48	60	M30	✓	✓	✓	✓	✓	✓
1000	1800	610	800	1550	100 x 50	M48	80	M36	✓	✓	✓	✓	✓	✓

H	L = 1000			L = 1500			L = 2000			L = 2500			L = 3000			L = 3500		
	M	N	WEIGHT	M	N	WEIGHT	M	N	WEIGHT	M	N	WEIGHT	M	N	WEIGHT	M	N	WEIGHT
250	113	900	102	113	700	150	118	630	198	113	800	246	113	725	294	113	680	343
300	125	900	140	125	700	204	130	630	269	125	800	334	125	725	398	125	680	464
400	150	900	230	150	700	333	155	630	437	150	800	541	150	725	645	150	680	749
500	175	900	369	175	700	531	180	630	693	175	800	856	175	725	1018	175	680	1181
600	200	900	524	200	700	748	205	630	972	200	800	1198	200	725	1422	Please ask Bencros		
800	250	900	916	250	700	1291	255	630	1665	250	800	2043	250	725	2420			
1000	300	900	1475	300	700	2048	305	630	2621	300	800	3201	300	725	3775			

Dimensions are in millimetres. Weights are in kilograms per fender.
Cross sectional tolerance is ±5% and length tolerance is ±40mm, unless otherwise agreed.
✓ Standard lengths; For non-standard lengths, please ask Bencros.

H	W	L	J	K	M	ANCHORS	WEIGHT
50	500	1000	100	800	300	4 x M20	45
50	600	1000	150	700	300	4 x M20	54
50	750	1000	150	700	450	4 x M20	67
50	500	1500	100	650	300	6 x M20	67
50	600	1500	150	600	300	6 x M20	80
50	750	1500	100	600	450	6 x M20	100
75	500	1000	100	800	300	4 x M20	59
75	600	1000	150	700	300	4 x M20	71
75	750	1000	150	700	450	4 x M20	88
75	500	1500	150	650	300	6 x M20	88
75	600	1500	150	600	300	6 x M20	106
75	750	1500	150	600	450	6 x M20	132
100	500	1000	150	800	300	4 x M20	73
100	600	1000	150	700	300	4 x M20	88
100	750	1000	150	700	450	4 x M20	109

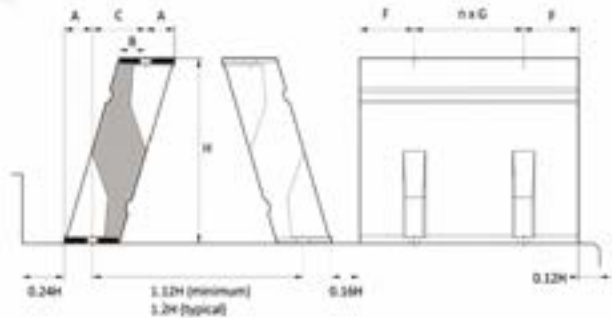
H	W	L	J	K	M	ANCHORS	WEIGHT
100	500	1500	100	650	300	6 x M20	109
100	600	1500	150	600	300	6 x M20	131
100	750	1500	100	600	450	6 x M20	164
125	500	1500	100	800	300	4 x M20	87
125	600	1500	150	700	300	4 x M20	104
125	750	1500	150	700	450	4 x M20	130
125	500	1500	100	650	300	6 x M20	130
125	600	1500	150	600	300	6 x M20	156
125	750	1500	100	600	450	6 x M20	195
150	500	1000	100	800	300	4 x M20	100
150	500	1500	100	650	300	6 x M20	151
150	600	1000	100	700	300	4 x M20	121
150	600	1500	150	600	300	6 x M20	181
150	750	1000	150	700	450	4 x M20	151
150	750	1500	150	600	450	6 x M20	227

Dimensions are in millimetres. Weights are in kilograms per fender.
Cross sectional tolerance is ±5% and length tolerance is ±40mm, unless otherwise agreed.
Other sizes, lengths, fixing locations, materials and colours are available. Please ask Bencros.

ELEMENT FENDER LEGS

- ▶ Modular element legs with high-performance design, ideal for complex fender arrangements. Bencros BME Elements are compression-moulded fenders with internal steel plates and concealed bolts.

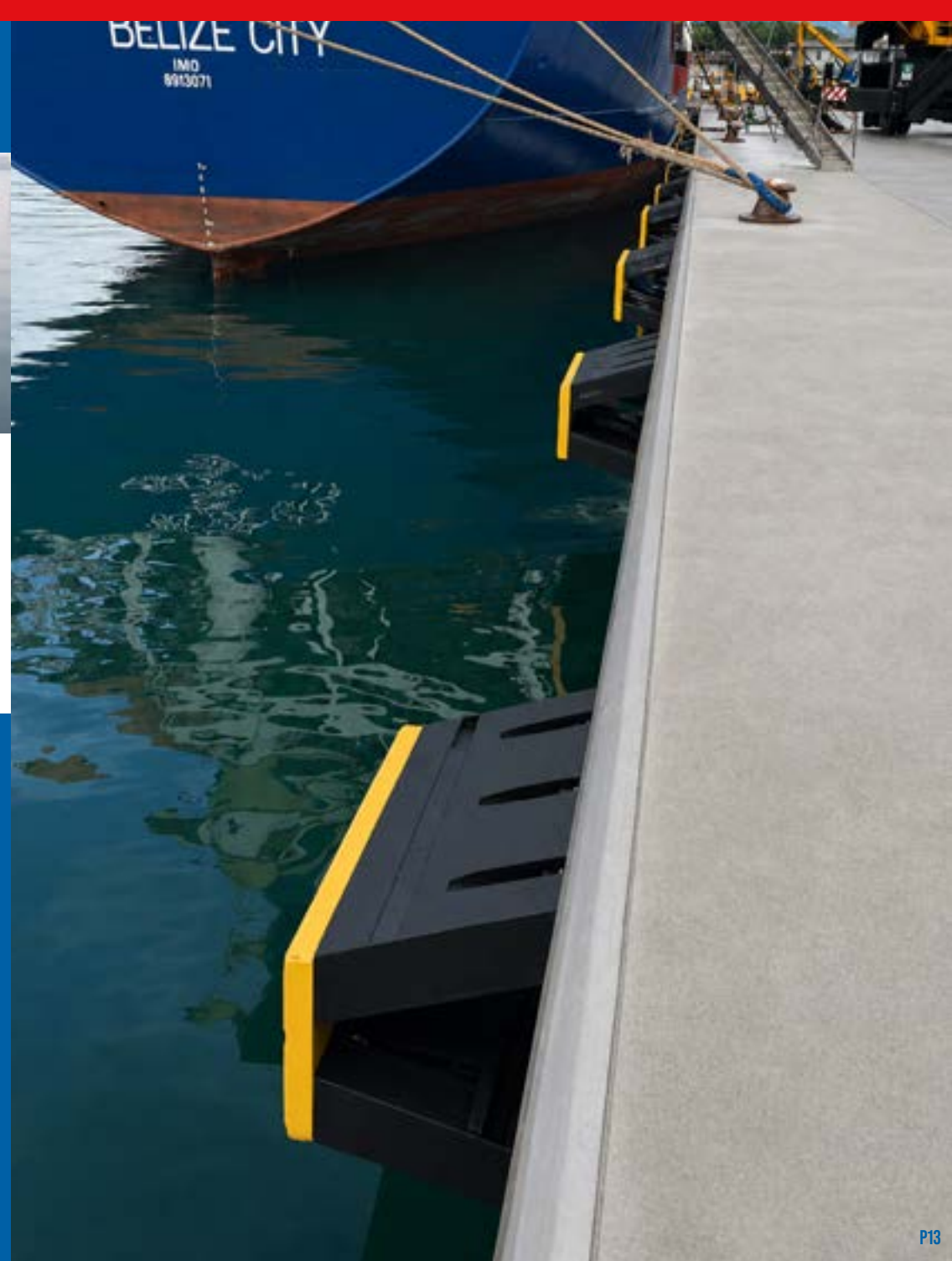
Easy to install and low maintenance, they suit simple V-fender setups with UHMW-PE or complex multi-panel systems. Available in standard and custom lengths, in various rubber grades to match different berth requirements.



H	A	B	F	n x G	FIXINGS	WEIGHT	L _{min}	600	900	1000	1200	1500	2000
250	40	40	F = 0.5 x [L - (n x G)]	300	M20	30	400	✓	✓		✓	✓	
300	47	47		400	M20	46	600	✓	✓		✓	✓	
400	63	62		500	M24	66	750			✓		✓	✓
500	77	77		500	M30	111	750			✓		✓	✓
550	87	85		500	M30	132	800			✓		✓	✓
600	87	101		500	M30	153	800			✓		✓	✓
700	113	112		500	M36	222	800			✓		✓	✓
750	118	117		500	M36	229	800			✓		✓	✓
800	129	121		500	M36	268	800			✓		✓	✓
900	145	144		500	M42	367	900			✓		✓	Δ
1000	162	166		500	M42	454	900		✓	✓		✓	Δ
1200	195	195		500	M48	625	900		✓	✓		✓	Δ
1250	202	199		500	M48	639	900			✓		✓	Δ
1400	220	224		500	M48	846	1000			✓		✓	Δ
1450	228	226		500	M48	873	1000			✓		✓	Δ
1600	261	246		500	M56	1114	1000			✓		✓	Δ

Dimensions are in millimetres. Weights are in kilogrammes per element, per metre.
Cross sectional tolerance is $\pm 5\%$ and length tolerance is $\pm 40\text{mm}$, unless otherwise agreed.

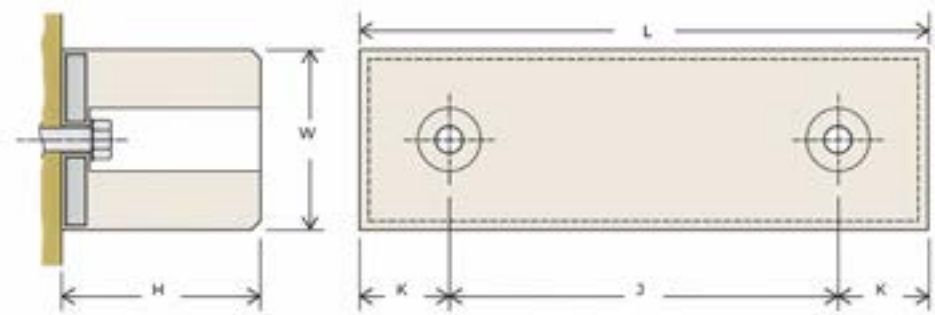
✓ Standard lengths; Δ Non-standard lengths (please ask Bencros).



Various

FENDER BARS

- ▶ Compact, ultra-durable rubber fender bars designed for reliable protection in confined or restricted spaces. Engineered to withstand heavy impacts and continuous abrasion, these fenders offer long-term performance even in demanding marine environments. Their slim, low-profile construction allows easy installation on vessels, docks, and structures where space is limited, while the high-quality rubber compound ensures excellent energy absorption and resistance to weather, saltwater, and UV exposure.



W	H	J	K	L	ANCHORS	WEIGHT	E	R
150	150	1 x 500	250	1000	2 x M24	38	16.7	638
150	150	2 x 500	250	1500	3 x M24	56	24.5	961
150	200	1 x 500	250	1000	2 x M24	43	16.7	441
150	200	2 x 500	250	1500	3 x M24	65	24.5	667
200	200	1 x 500	250	1000	2 x M30	65	26.5	824
200	200	2 x 500	250	1500	3 x M30	98	40.2	1236
200	250	1 x 500	250	1000	2 x M30	77	26.5	657
200	250	2 x 500	250	1500	3 x M30	116	40.2	991
200	300	1 x 500	250	1000	2 x M30	88	26.5	530
200	300	2 x 500	250	1500	3 x M30	132	40.2	795

Dimensions are in millimetres. Weights are in kilograms per fender.
Cross sectional tolerance is $\pm 5\%$ and length tolerance is $\pm 40\text{mm}$, unless otherwise agreed.
✓ Standard lengths; For non-standard lengths, please ask Bencros.

Various

PIGGYBACK BLOCKS

- ▶ Protective support is designed to secure cable and pipe piggybacking in offshore and subsea installations. Engineered to withstand harsh marine environments, these elements provide reliable separation, stability, and cushioning between bundled lines, reducing abrasion and mechanical stress during installation and operation. They can be manufactured from high-quality PU or natural SBR rubber, offering excellent durability, flexibility, and resistance to saltwater, impact, and long-term compression. Customizable in size, hardness, and configuration, these supports ensure safe handling and extended service life for critical subsea cable and piping systems.



PILES PROTECTION

- ▶ Pile protectors engineered to shield marine piles from impact, abrasion, and environmental wear. Manufactured from high-quality PU, these protectors offer excellent durability, resilience, and energy absorption, ensuring long-term performance in harsh marine conditions. Their tough, low-maintenance construction reduces damage caused by vessel contact, tidal movement, and floating debris, helping extend the service life of piles and surrounding structures. Ideal for ports, marinas, and waterfront facilities, these PU pile protectors provide dependable, continuous protection for both new and existing installations.



LADDERS

- Marine-grade ladders designed for safe and reliable access in demanding environments. Constructed from high-quality PU, these ladders offer excellent durability, resistance to corrosion, and long service life even in harsh marine conditions. The non-slip rubber rungs provide secure footing in wet or unstable situations, enhancing safety for crew and passengers. Lightweight yet robust, they are ideal for docks, pontoons, workboats, and service vessels where dependable and low-maintenance access equipment is essential.



LORD FENDER

- Heavy-duty fenders developed for industrial and marine use with superior energy absorption, designed to withstand extreme operating conditions while providing reliable protection for vessels, docks, and port infrastructure. Their robust construction ensures long service life with minimal maintenance, even in high-impact environments, while advanced materials and engineering help reduce reaction forces and maximize energy absorption, effectively preventing structural damage during berthing and ensuring consistent performance, durability, and safety across a wide range of maritime applications.



U-FENDER

- This customized U-type fender is designed to provide effective protection for a wide range of marine and industrial applications. The fender efficiently absorbs impact energy and distributes loads over a larger surface area, reducing stress on both the vessel and the structure. Manufactured from durable, high-quality materials, it ensures long-term performance, reliability, and resistance to harsh environmental conditions, making it suitable for various operational requirements.



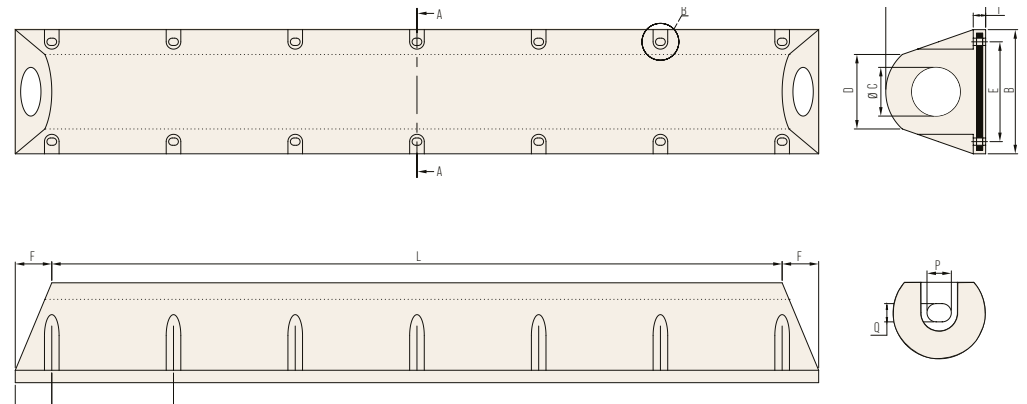
MC FENDER

- Medium-capacity molded fenders built for strength, durability, and flexibility across general marine applications. Made from high-quality rubber and reinforced with an internal steel plate, MC Fenders offer reliable energy absorption and improved structural integrity. Their heavy-duty, one-piece construction ensures long service life with minimal maintenance. This versatile design makes them ideal for ports, workboats, service vessels, and multipurpose berthing areas needing dependable, reinforced protection.



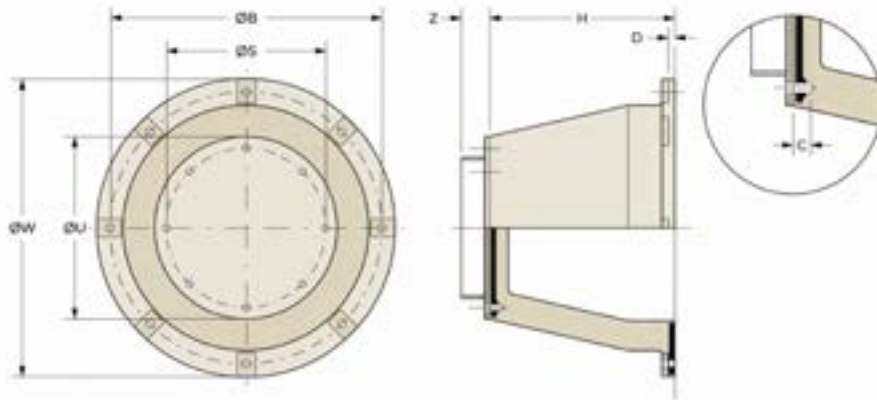
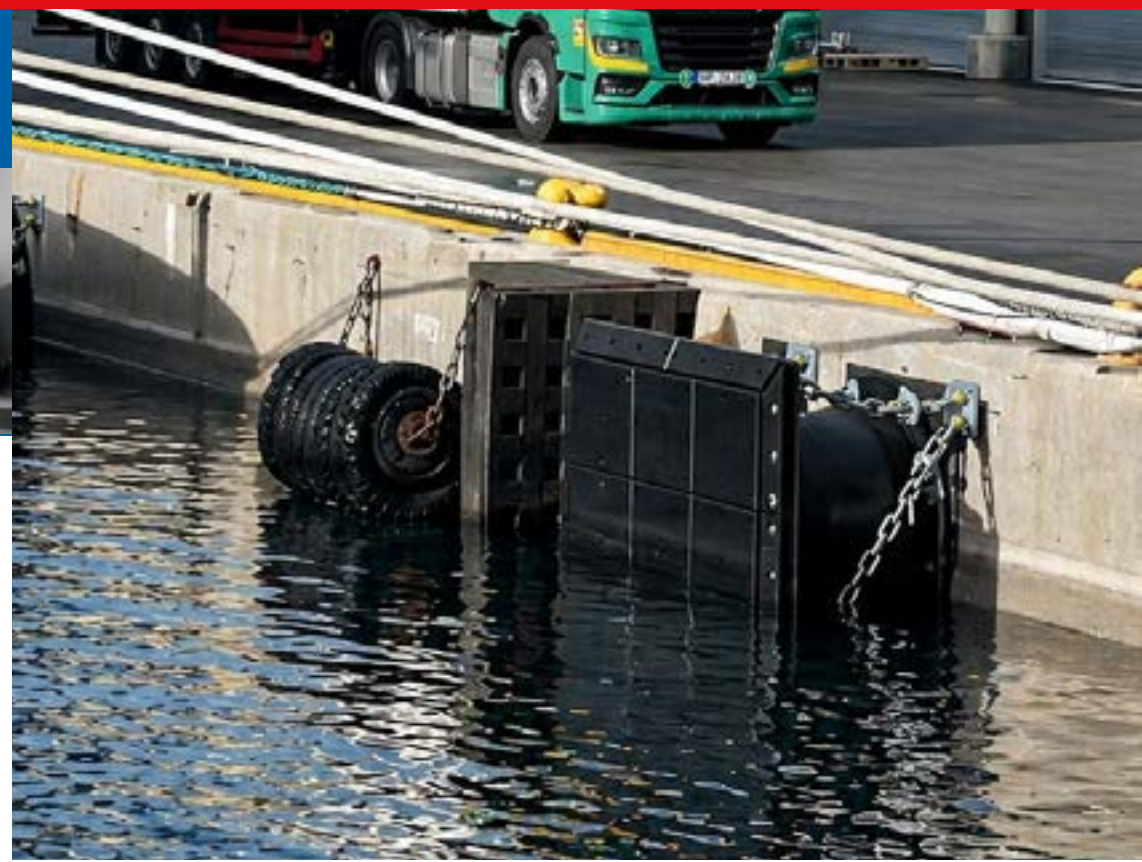
H	A	B	ØC	D	E	P X Q	F	G	H	LMAX	T	BOLT SIZE	WEIGHT
MC300	300	360	125	200	280	26 x 35	175	500	175	3500	40	M24	140
MC400	400	500	200	300	410	30 x 40	150	500	150	3000	50	M27	260
MC500	500	562	200	300	472	30 x 40	150	500	150	2500	50	M27	360
MC550	550	700	300	420	550	55 x 75	150	500	360	3000	75	M52	480
MC600	600	700	300	420	550	55 x 75	150	500	360	3000	125	M52	530

Dimensions are in millimetres. Weights are in kilogrammes per fender.
Cross sectional tolerance is $\pm 5\%$ and length tolerance is $\pm 40\text{mm}$, unless otherwise agreed.
Other sizes, lengths, fixing locations, materials and colours are available. Please ask Bencros.



CONE FENDERS

- Bencros Cone Fenders are high-performance modular fenders with a compact conical shape, internal steel plates, and concealed bolt sockets. They deliver excellent energy absorption even at compression angles up to 10° and require minimal maintenance.
- Easy to install with a frontal panel or behind a fender pile, fenders are a versatile and widely recommended solution for all berth types.



H	ØW	ØU	C	D	B (PCD)	S (PCD)	ANCHOR/BOLTS	WEIGHT
300	500	295	27-37	20-25	440	255	M20 x 4	40
350	570	330	27-37	20-25	510	275	M20 x 4	50
400	650	390	30-40	20-28	585	340	M24 x 4	76
500	800	490	32-42	30-38	730	425	M24 x 4	160
550	880	540	32-42	30-38	790	470	M24 x 4	210
600	960	590	40-52	35-42	875	515	M24 x 4	270
700	1120	685	40-52	35-42	1020	600	M30 x 4	411
800	1280	785	40-52	35-42	1165	685	M30 x 6	606
900	1440	885	40-52	35-42	1313	770	M30 x 6	841
1000	1600	980	50-65	40-50	1460	855	M36 x 6	1125
1050	1680	1030	50-65	45-55	1530	900	M36 x 6	1360
1100	1760	1080	50-65	50-58	1605	940	M36 x 6	1567
1200	1920	1175	57-80	50-58	1750	1025	M42 x 8	2028
1300	2080	1275	65-90	50-58	1900	1105	M48 x 8	2455

Dimensions are in millimetres. Weights are in kilograms per cone. Cross sectional and height tolerance is ±5%.

ELEMENT FENDER SPECIALS

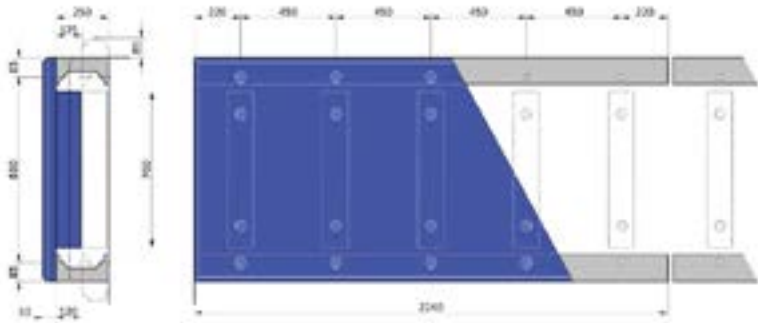
- Bencros Special Elements are designed for passenger pontoons, with a grooved, flat-top profile for safe boarding. Internal steel plates and UHMW-PE fronts provide durable, low-friction protection for frequent ferry traffic.

Available in various sizes and colours to suit specific requirements.



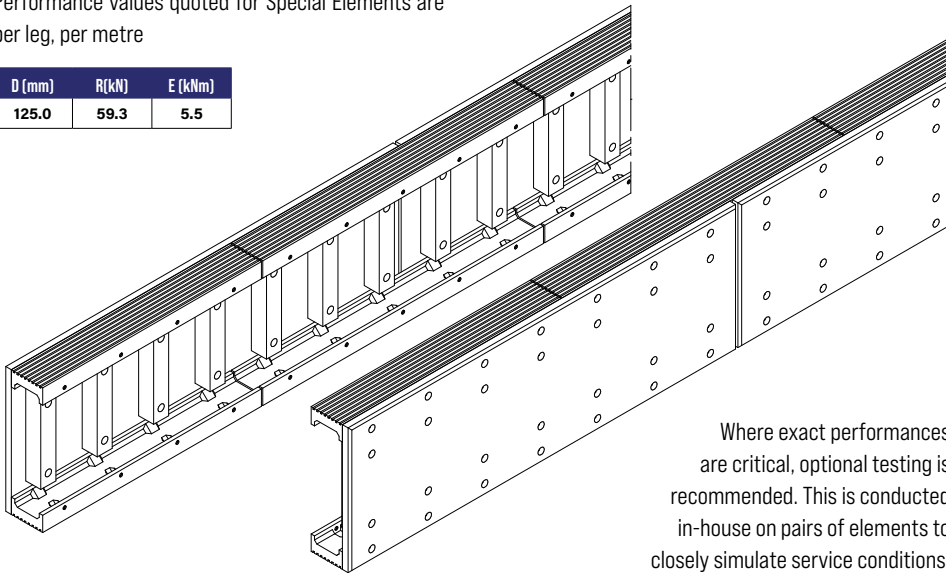
TRIANGLE FENDER SPECIALS

- This Bencros custom-made rubber fender is vulcanized directly onto a durable aluminum plate, creating a strong and long-lasting bond. It is specifically designed to protect vessels from impact and abrasion during docking and mooring operations. The combination of resilient rubber and lightweight, corrosion-resistant aluminum ensures reliable performance even in demanding marine environments.



Performance values quoted for Special Elements are per leg, per metre

D (mm)	R(kN)	E (kNm)
125.0	59.3	5.5



Where exact performances are critical, optional testing is recommended. This is conducted in-house on pairs of elements to closely simulate service conditions.

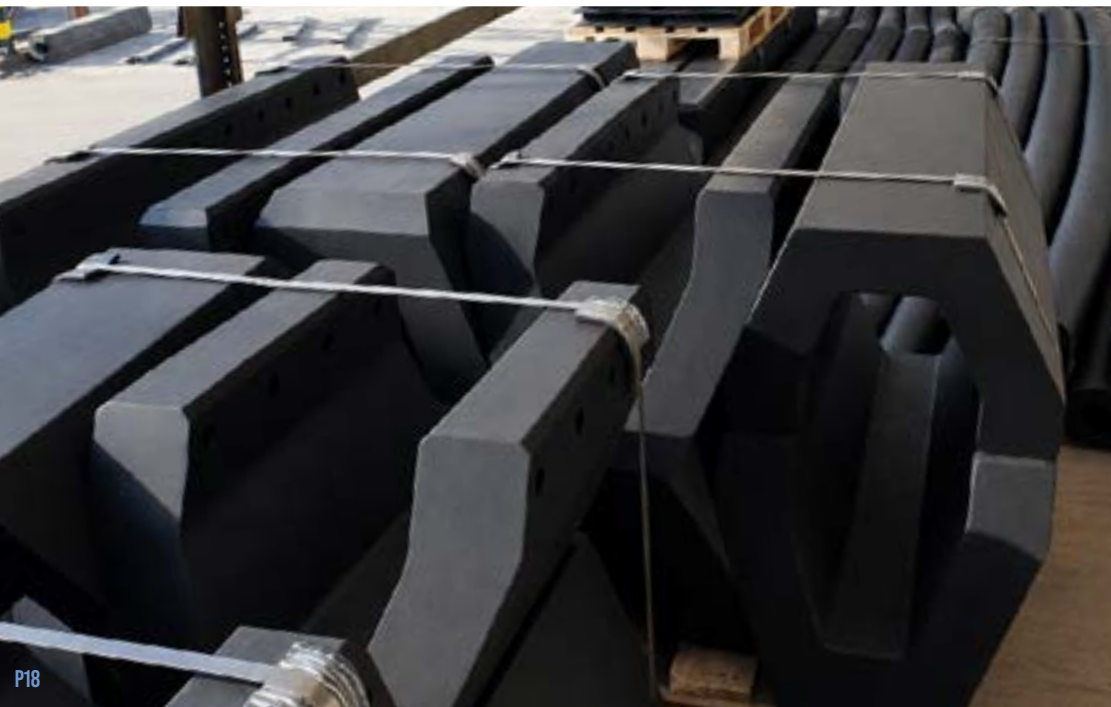
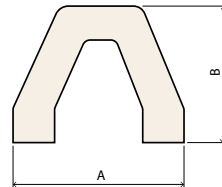


V FENDERS

- V-fenders have been successfully used across the world for many decades already. The relatively simple and very strong construction and durable rubber quality of these fenders provide very good protection for quay walls and corners. V-fenders consist of a single part and they are available in various heights and widths. If required, an UHMW-PE surface layer can also be added. V-fenders can be mounted either horizontally or vertically using bolts. The ends can be angled or chamfered. Bencros produces V-fender corners to protect quay corners, which are custom-made according to customer requirements.



CODE	A	B	MAX. LENGHT MM	WEIGHT KG/M
508X400	500	400	3000	115



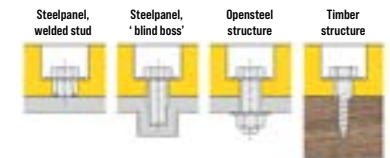
PLASTIC-UHMWPE FENDER PADS

- Bencros UHMW PE facings protect fender panels from impact and reduce friction against vessel hulls. They are also used as shields on V fenders and in composite fender systems.

With a low friction surface and beveled edges, they prevent snagging and abrasion. UHMW PE is ideal for impact protection even in areas without fenders. It does not rot, split, or degrade from UV or ozone exposure and is fully recyclable at the end of its service life.

FIXINGS

Fixings should match the underlying structure. Steel panels require welded studs or, ideally, 'blind boss' fixings for extra strength. We recommend oversize for bolting through open steel structures. Please ask Bencros about steel grades and finishes.



WEAR ALLOWANCE

Increasing the thickness (T) of a UHMW-PE facing provides more wear allowance (A), extending its working life, protecting the fender or substrate for longer and reducing routine maintenance.

T	A
30	5
40	10
50	15
70	25
100	40

FRICTION

UHMW-PE friction coefficient (μ) varies according to the contact pressure and opposing contact surface. Typical coefficients are provided for guidance [Source: BS6349-4: 2014]

PROPERTIES

The properties for Virgin (FQ1000) and regenerated grades are provided for reference. Virgin materials are available in black and other colours (red, white, blue etc). Regenerated grades offer a good compromise between price and longevity.

MATERIAL	AGAINST STEEL
UHMW-PE	0.15-0.2
HD-PE	0.3
NYLON	0.2
RUBBER	0.6-0.7
TIMBER	0.4
STEEL	0.5

PROPERTY	STANDARD	UNIT	VIRGIN GRADE	REGENERATED GRADE
DENSITY	ISO 1183-1	g/cm ³	0.93-0.94	0.94-0.96
MOLECULAR WEIGHT	Viscosimetric Method	g/mol	~5,000,000	3,000,000-6,000,000
FRICTION COEFFICIENT	ISO 8295	-	0.15-0.20	0.15-0.20
TENSILE STRENGTH	ISO 527	N/mm ²	≥17	≥17
BREAKING STRENGTH	ISO 527	N/mm ²	>40	>30
ELONGATION AT BREAK	ISO 527	%	≥50	≥50
BALL HARDNESS	ISO 1239-1	N/mm ²	38	38
SHORE HARDNESS	ISO 868	Shore D	61-63	64-66
IMPACT STRENGTH (V)	ISO 11542-2	mJ/mm ²	≥180 (coloured)	≥70
ABRASION RESISTANCE	ISO 15527	-	100	130-150
TEMPERATURE RANGE	-	°C	-200 to +80	-100 to +80
MELTING POINT	ISO 3146-C	°C	133-136	133-136
LINEAR EXPANSION	DIN 53752	K ⁻¹	~2×10 ⁻⁴	~2×10 ⁻⁴

FOAM FILLED PU FENDERS

- ▶ Foam Filled PU Fenders feature a durable polyurethane outer skin and a closed-cell foam core, providing excellent energy absorption with low reaction force for demanding marine applications. The non-marking, abrasion- and UV-resistant surface ensures long service life with minimal maintenance, while the foam core keeps the fender functional even if the outer layer is damaged, making it a reliable solution for ports, ship-to-ship operations, and offshore use.



PU PURALIS M FENDER

- ▶ The PU Puralis M Fender is a highly durable polyurethane fender designed to provide effective protection for vessels and port structures in demanding operating conditions. It features a robust, abrasion-resistant PU construction with low reaction force and high energy absorption capacity. The "M" shape ensures secure mounting and optimal load distribution during vessel contact. The material is resistant to UV radiation, weathering, and chemicals, ensuring long service life with minimal maintenance.



PU PIGGYBACK BLOCKS

- ▶ PU Piggyback Blocks made from high-quality polyurethane (PU) are designed to securely support cable and pipe piggybacking in offshore and subsea installations. Engineered for harsh marine environments, they provide reliable separation, stability, and cushioning between bundled lines, effectively reducing abrasion and mechanical stress during installation and operation. Fully customizable in size, hardness, and configuration, these supports ensure safe handling and extended service life for critical subsea cable and piping systems.



TOWING SHOES

- ▶ Towing shoes have a rectangular cross-section and a two-piece design. Unlike one-piece towing sleeves, they can be mounted after the rope is connected. The two halves clamp securely onto the rope with flush bolts. Beveled ends allow smooth passage over obstacles like railings.



TOWING SLEEVES

- ▶ Towing sleeves have a cylindrical shape and are made in one piece, so they must be installed before the rope is connected. One end can be beveled on request for smoother movement. Made from high-grade polyurethane, they offer excellent offshore wear resistance.



FOAM FENDERS

- Bencros Foam fenders deliver high energy absorption with low hull pressure and long-lasting performance. A reinforced, non-marking PU skin and closed-cell foam core ensure durability and excellent angular performance.

Available in various sizes, foam grades, and standard colours—custom options on request.



HULL PRESSURES				
CODE	DESCRIPTION	KPA	T/M ²	KSF
LR	Low Reaction	103	11	2,2
STD	Standard	172	18	3,6
HC	High Capacity	224	23	4,7
EHC	Extra High Capacity	327	33	6,8
SHC	Super High Capacity	447	46	9,4

DIAMETER × LENGTH		LOW REACTION		STANDARD		HIGH CAPACITY		EXTRA HIGH CAPACITY		SUPER HIGH CAPACITY		WEIGHT	CHAIN
METRIC (MM)	US (FT)	ENERGY	REACTION	ENERGY	REACTION	ENERGY	REACTION	ENERGY	REACTION	ENERGY	REACTION	STD	SIZE
600 × 1200	2 × 4	9	53	15	89	19	116	28	169	39	231	72	14
600 × 1800	2 × 6	15	88	24	147	31	191	46	280	64	383	105	14
600 × 2400	2 × 8	20	125	34	209	45	271	65	396	88	543	138	14
600 × 3000	2 × 10	26	160	43	267	57	347	83	507	113	694	171	19
700 × 1500	N/A	16	80	26	133	34	173	49	253	68	348	104	19
900 × 1500	3 × 5	25	120	42	200	54	262	80	383	110	520	136	19
900 × 1800	3 × 6	32	128	53	214	69	276	100	405	137	556	173	19
900 × 2400	3 × 8	45	182	75	302	98	391	142	574	194	787	214	19
900 × 3000	3 × 10	58	235	96	391	125	507	183	743	251	1019	268	19
900 × 3700	3 × 12	71	288	118	480	153	623	224	912	306	1250	336	19
900 × 4300	3 × 14	84	342	140	569	182	738	266	1081	363	1481	390	19
1000 × 1500	N/A	28	104	47	173	61	225	89	329	122	450	154	19
1000 × 2000	N/A	41	152	68	254	88	330	129	483	177	660	208	19
1200 × 1800	4 × 6	49	150	81	249	106	325	155	472	212	649	308	25
1200 × 2000	N/A	55	168	91	280	118	364	173	532	237	728	336	25
1200 × 2400	4 × 8	72	222	121	369	157	480	229	703	313	961	399	25
1200 × 3000	4 × 10	96	297	160	494	207	641	304	939	416	1286	497	25
1200 × 3700	4 × 12	119	363	198	605	258	787	376	1148	515	1575	614	25
1200 × 4900	4 × 16	165	504	275	841	358	1094	523	1597	716	2184	803	25
1200 × 6100	4 × 20	212	646	353	1076	458	1401	670	2046	917	2798	1000	25
1350 × 2500	N/A	91	251	152	418	198	543	289	794	395	1087	475	25
1500 × 2400	5 × 8	110	267	183	445	239	578	348	845	476	1157	507	25
1500 × 3000	5 × 10	147	357	244	596	317	774	464	1134	635	1548	638	32
1500 × 3700	5 × 12	183	446	305	743	397	965	580	1410	793	1931	790	32
1500 × 4300	5 × 14	219	534	365	890	475	1157	693	1690	948	2313	920	32
1500 × 4900	5 × 16	255	622	424	1036	552	1348	807	1971	1104	2696	1051	32
1500 × 5500	5 × 18	290	710	484	1183	629	1539	919	2246	1258	3078	1182	32
1800 × 3700	6 × 12	244	497	407	827	529	1076	773	1570	1058	2153	1103	32
1800 × 4300	6 × 14	296	600	494	1001	641	1303	938	1904	1283	2602	1277	32
1800 × 4900	6 × 16	347	707	579	1179	752	1535	1100	2242	1505	3065	1451	32
1800 × 5500	6 × 18	399	814	666	1357	865	1766	1265	2580	1731	3527	1634	32
1800 × 6100	6 × 20	450	918	751	1530	976	1988	1428	2909	1952	3977	1808	32
2000 × 3500	N/A	272	507	454	845	590	1099	863	1606	1180	2197	1240	38
2000 × 4000	N/A	324	603	540	1005	702	1307	1026	1910	1404	2613	1413	38
2000 × 4500	N/A	374	697	624	1161	811	1509	1186	2206	1622	3019	1595	44
2100 × 4300	7 × 14	396	691	660	1152	858	1499	1254	2189	1716	2994	1615	44
2100 × 4900	7 × 16	467	814	778	1357	1011	1766	1479	2580	2023	3527	1849	44
2100 × 5500	7 × 18	537	937	895	1561	1163	2028	1700	2967	2327	4061	2074	44
2100 × 6100	7 × 20	608	1059	1013	1766	1316	2295	1924	3354	2633	4591	2307	44
2100 × 6700	7 × 22	678	1182	1129	1971	1468	2562	2146	3745	2937	5124	2532	44
2400 × 3700	8 × 12	432	659	720	1094	936	1423	1367	2082	1870	2856	1859	44
2400 × 4300	8 × 14	504	769	839	1281	1091	1664	1594	2433	2182	3332	2161	44
2400 × 4900	8 × 16	596	911	994	1517	1292	1971	1889	2882	2584	3946	2462	51
2400 × 5500	8 × 18	689	1051	1148	1753	1493	2277	2182	3332	2986	4555	2764	51
2400 × 6100	8 × 20	782	1193	1303	1988	1693	2584	2476	3777	3388	5169	3066	51
2400 × 6700	8 × 22	875	1335	1458	2224	1895	2891	2770	4226	3790	5783	3368	51
2500 × 4000	N/A	481	718	801	1197	1041	1556	1522	2274	2083	3112	2107	51
2500 × 5500	N/A	720	1073	1200	1788	1560	2324	2280	3397	3120	4649	2902	51
2700 × 4300	9 × 14	634	859	1056	1432	1372	1859	2007	2718	2746	3723	2687	51
2700 × 4900	9 × 16	724	982	1207	1637	1569	2126	2293	3109	3137	4257	2999	51
2700 × 5500	9 × 18	840	1140	1399	1899	1820	2469	2659	3608	3638	4938	3311	51
2700 × 6100	9 × 20	956	1298	1593	2162	2072	2811	3028	4106	4142	5623	3683	51
2700 × 6700	9 × 22	1072	1455	1787	2424	2323	3154	3395	4608	4646	6303	4054	51
3000 × 4900	10 × 16	879	1073	1466	1788	1905	2326	2785	3398	3811	4648	3331	51
3000 × 5500	10 × 18	1023	1249	1706	2082	2217	2705	3240	3954	4435	5413	3768	51
3000 × 6000	N/A	1111	1377	1851	2295	2406	2984	3517	4361	4813	5967	4206	64
3000 × 6100	10 × 20	1167	1425	1946	2375	2530	3087	3697	4515	5059	6174	4130	64
3000 × 6700	10 × 22	1311	1601	2186	2669	2842	3470	4153	5071	5682	6939	4636	64

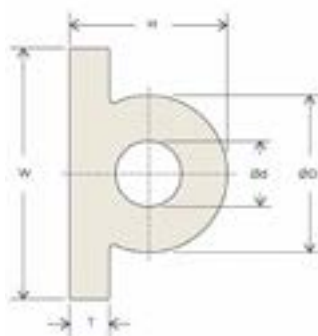
Custom sizes available on request

(Units: kN, kJ, kg, mm)



WING FENDERS HOLLOW

- ▶ Lightweight wing fenders with a hollow core are designed to deliver versatile, efficient protection across a wide range of applications. Their innovative hollow structure reduces overall weight while maintaining strength and durability, making them easy to handle, install, and reposition as needed. The flexible design allows the fenders to absorb impact energy effectively, minimizing stress on both vessels and docking structures. Ideal for ports, marinas, and various marine environments, these fenders provide reliable performance, adaptability, and long service life even under demanding conditions.



ØD = H	ØD	W	T	WEIGHT HOLLOW	WEIGHT SOLID
100	50	180	25	11	13
150	75	215	30	20	26
150	75	245	30	21	27
200	100	280	40	36	40
200	100	320	40	38	48
200	100	350	40	70	81
250	125	330	50	58	69
250	125	370	50	65	76
250	125	410	50	62	73
250	100	410	50	67	78



Dimensions are in millimetres, weights are in kilogramme per metre. For other sizes, fixing details and custom features, please ask Bencros.

Fixing methods:



To Steel



To concrete

WING FENDERS SOLID

Solid wing fenders engineered for high-impact absorption and easy mounting.

WING FENDERS CUSTOM

Tailored wing fender solutions, adaptable to vessel contours and specific performance need



TRANSITION PIECES

- ▶ Transition elements designed to create a smooth, secure connection between different fender types or shapes. Manufactured from high-quality PU, these components offer excellent durability, flexibility, and resistance to wear, ensuring long-lasting performance in marine environments. Their precise geometry allows for seamless alignment of fender systems, improving energy absorption and reducing stress at connection points. Ideal for custom berthing layouts, complex hull contours, and installations requiring a clean, continuous protective surface.



TRAPEZOIDAL FENDERS

- ▶ Durable rubber fenders engineered in a trapezoid profile to provide enhanced grip, increased contact area, and dependable energy absorption. This time-tested, simple design delivers excellent wear characteristics and long service life, even under demanding marine conditions. Available in lengths up to approximately 3 metres, these fenders can be manufactured from natural SBR or EPDM black rubber, ensuring strong resistance to weathering, abrasion, and UV exposure. Flexible configuration options allow for modifications to suit specific vessel or dock requirements, making them a versatile and reliable choice for a wide range of berthing applications.



U-SHAPED FENDER PROFILES

- ▶ Protective rubber profiles with U-shape for wrapping over edges or pipes. They provide effective protection against impact, abrasion, and wear in demanding environments. Easy to install, they ensure a secure fit on various edge types and diameters. Suitable for marine, industrial, and transport applications where reliable edge protection is required.



AIRCRAFT WHEEL CHOCKS

- ▶ Ensure maximum safety during aircraft maintenance and parking operations with our premium range of rubber wheel chocks. Engineered for durability and stability, each chock is manufactured from high-quality, weather-resistant rubber that maintains its grip and structural integrity even under extreme operating conditions. Their anti-slip surface and reinforced design provide dependable immobilization for a wide variety of aircraft types.



B-SHAPED FENDER PROFILES

- ▶ Our B-profile fenders are designed to offer exceptional flexibility, resilience, and protection in demanding environments. Their unique B-shaped geometry allows for efficient energy absorption while maintaining a compact profile, making them ideal for use along narrow edges, loading docks, vessel hulls, or industrial structures where space is limited. Easy to install and adaptable to a variety of surfaces, they provide long-lasting protection and cost-effective wear resistance.



CONNECTION PLUGS FOR CYLINDRICAL FENDER SYSTEMS

- ▶ These robust connection plugs are engineered to create secure, seamless joins between cylindrical fender segments. Designed for both strength and precision, the plugs help maintain the structural integrity and alignment of the entire fender system. By offering a clean, consistent finish and enhanced functionality, our connection plugs contribute to a safer and more efficient protective system for docks, vessels, and waterfront facilities.



COUPLING BLOCKS FOR PONTOONS

- ▶ Resilient rubber blocks for safe and flexible connection between floating pontoons.



SNOW PLOUGH BLADES

- ▶ Our snow plough blades are engineered for reliable performance in harsh winter conditions. Made from heavy-duty rubber or polyurethane, they offer outstanding wear resistance while remaining flexible enough to protect road surfaces. Designed to fit a wide range of ploughs, they ensure efficient snow clearing and long service life.



YARD SCRAPER BLADES

- ▶ Durable scraper blades for use in agricultural and industrial yards. Available in rubber or polyurethane. Built to withstand heavy use, minimise surface damage and deliver reliable cleaning performance.



SCRAPER BLADES – POINTED EDGES

- ▶ Precision-engineered rubber blades with pointed edges for effective debris removal in narrow grooves and uneven surfaces. Ideal for intensive scraping applications.



SCRAPER BLADES – SQUARE EDGES

- ▶ Square-edged rubber blades for wide, uniform scraping. Designed for consistent performance on flat surfaces, providing clean results with every pass.



SPECIALS D SHAPE

- Custom D-shaped fenders are designed specifically for applications requiring reliable protection combined with simple installation. Their versatile profile makes them ideal for docks, vessels, workboats, and various industrial marine applications. D fenders provide excellent shock absorption while protecting structures from impact damage during berthing and maneuvering operations. Various sizes, fixing options, and custom-made dimensions are available upon request.



SPECIALS TRAPEZIUM SHAPE

- Specialized trapezium-shaped fenders are designed to provide enhanced energy absorption and superior impact resistance in demanding marine environments. Their unique geometry allows efficient load distribution and improved contact performance during berthing operations. These fenders are suitable for a wide range of applications, including workboats, tugboats, and industrial marine structures. Custom dimensions and configurations can be produced according to project requirements.



TRAPEZIUM WITH STEEL INSERT

- Enhanced trapezium fenders reinforced with integrated steel inserts provide exceptional strength, structural stability, and durability for heavy-duty marine applications. The steel reinforcement improves mounting security and allows the fender to withstand increased operational loads and repeated impacts. Custom dimensions and reinforcement configurations can be tailored to meet specific project and installation requirements.



SPECIALS BLOCK SHAPE

- Custom block-shaped fenders designed and manufactured according to precise customer specifications for specialized marine applications. These fenders provide reliable impact protection and excellent durability even in demanding operating conditions. Their versatile design allows adaptation to various vessel types, quay structures, and installation requirements. Block fenders are commonly used where standard profiles are not suitable or where enhanced surface protection is required.

Various

PUSH KNEE PLATES

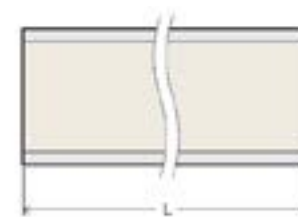
- Bencros Push Knee Fenders are tough rubber pads bonded to steel or aluminium plates, built for harsh conditions. Commonly used between tug and barge, they provide a resilient connection.

Available in various thicknesses to suit different softness needs, they are easy to install, low maintenance, and cost-efficient.

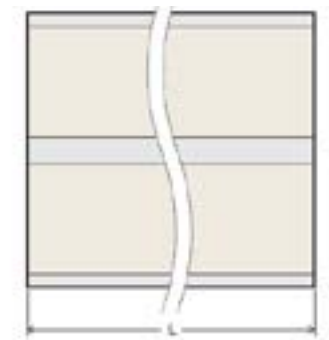
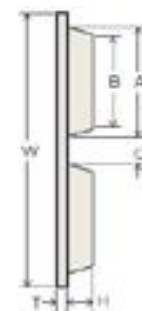
Contact Bencros for more details.



Single Push Knee



Double Push Knee



METRIC				US UNITS (INCHES)								WEIGHT		
W	L	T	H	W	L	T	H	A	B	C	TYPE	BASE	KG	LBS
254	914	20	76	10	36	3/4	3	200	175	-	Single	Steel	51	113
254	914	12	64	10	36	1/2	2.5	200	175	-	Single	Steel	34	75
254	914	6	51	10	36	1/4	2	200	175	-	Single	Steel	21	47
254	1219	20	76	10	48	3/4	3	200	175	-	Single	Steel	69	151
254	1219	12	64	10	48	1/2	2.5	200	175	-	Single	Steel	46	101
508	914	20	76	20	36	3/4	3	200	175	50	Double	Steel	94	207
508	914	12	64	20	36	1/2	2.5	200	175	50	Double	Steel	61	135
508	914	6	51	20	36	1/4	2	200	175	50	Double	Steel	37	82
508	1219	20	76	20	48	3/4	3	200	175	50	Double	Steel	128	283
508	1219	12	64	20	48	1/2	2.5	200	175	50	Double	Steel	84	186
508	1219	6	51	20	48	1/4	2	200	175	50	Double	Steel	52	114

Dimensions are in millimetres, weights are in kilogramme per metre (unless where stated).
Weights are for steel base plate option. Aluminium base plate option is a special order item.

For other sizes, fixing details and custom features, please ask Bencros.

PREMIUM ON-SITE MEASUREMENT & SERVICE PROGRAM

► We come on site to measure and tailor your Tug fenders!

In many cases, customers do not have complete or accurate technical drawings, which can lead to fenders that do not fit properly on the tugboat. To avoid these issues, we offer on-site measurement services carried out by our experienced technical engineers or dedicated team.

Our specialists will visit your location, take precise measurements, and ensure that the fender solution is perfectly tailored to your vessel. This approach guarantees optimal fit, performance, and durability.

We also offer express delivery options, as well as collection of old fenders and their environmentally responsible recycling – providing you with a complete, hassle-free service.



COMPLIANCE & CERTIFICATIONS



COMPOUNDS

Bencros fenders use high quality Natural Rubber (NR) and Styrene Butadiene Rubber (SBR) blends for their strength and durability in marine environments. Compounds meet or exceed international requirements including PIANC, EAU-E62 and ASTM D2000. The material properties list common test standards and methods. Tests are conducted on laboratory made specimens under controlled conditions. Alternative test methods and special compounds in EPDM and Polyurethane are also available. Please ask Bencros for details.

PROPERTY	TEST STANDARD	CONDITIONS	REQUIREMENTS
TENSILE STRENGTH	ISO 37/BS 903-A2(S1)	Original	≥ 16.0 MPa (≥ 2321 psi)
	ASTM D412 Die C	After 96h @ 70°C	≥ 12.8 MPa (≥ 1856 psi)
ELONGATION AT BREAK	ISO 37/BS 903-A2(S1)	Original	≥ 350%
	ASTM D412 Die C	After 96h @ 70°C	≥ 280%
HARDNESS	ISO 7619-1/BS 903-A57	Original	≤ 78° Shore A
	ASTM D2240	After 96h @ 70°C	≤ original +6° Shore A
COMPRESSION SET	ISO 815-1/BS 903-A6	22h @ 70°C	≤ 30%
	ASTM D395 Method B		
TEAR RESISTANCE	ISO 34-1/BS 903-A3 Method C	Crescent type	≥ 60 kN/m (≥ 400 lbf/in)
	ASTM D624 Die B		
OZONE RESISTANCE	ISO 1431-1/BS 903-A43	50pphm @ 20% strain, after 100h @ 40°C	No cracks
	ASTM D1149		
SEAWATER RESISTANCE	ISO 1817	28 days @ 95°C (+2°C)	Hardness: ≤ ±10° Shore A
	ASTM D471		Volume: ≤ +10/-5%
ABRASION RESISTANCE	ISO 4649 Method A	1000 revolutions	≤ 120 mm³
	ASTM D5963 Method A		
	BS 903-A9 Method A		
BOND STRENGTH: RUBBER TO STEEL	ISO 813/BS 903-A21		≥ 7 N/mm (≥ 40 lbf/in)
	ASTM D429 Method B		
DYNAMIC FATIGUE†	ASTM D430 Method B	15,000 cycles	Grade 0-2

Dynamic Fatigue testing is a chargeable optional extra. Gradings are: Grade 0: No cracking has occurred
Grade 1: ≤10 pin pricks under 0.5mm long visible to the naked eye
Grade 2: > 10 pin pricks under 0.5mm long visible to the naked eye

Bencros NR-SBR rubber compounds can be specified for ASTM D2000 compliance, as commonly requested on many North American projects. Typical compound examples include:

ASTM D2000 CALLOUT	HARDNESS	COMMENTS
3BA 720 A14 B13 C12 EA14	70 Shore A	NR/SBR compound with 2000psi tensile and 300% elongation
3BA 620 A14 B13 C12 EA14	60 Shore A	NR/SBR compound with 2000psi tensile and 300% elongation
3BA 720 A14 B13 C12 EA14 F17	70 Shore A	As above, -40°C (-40°F) low temperature, non-brittle test for cold climates
3BA 620 A14 B13 C12 EA14 F17	60 Shore A	As above, -40°C (-40°F) low temperature, non-brittle test for cold climates

TOLERANCES

Bencros fenders are quality controlled at all stages of manufacture. We operate to the standard tolerances below, but in specific cases more stringent tolerances may be agreed. Please discuss your requirements with Bencros.

DIMENSIONS	FENDER TYPE	DIMENSION	TOLERANCE	NOTE
MOULDED FENDERS	BME, BAS, BAP	All dimensions	±3% or ±2mm	2
		Bolt to bolt	±2mm	3
MOULDED PROFILES	BDD, BDC, BSD, BSC	Cross-section	±4% or ±4mm	2
		Length	-0mm / +40mm	4
		Hole Centres	±4mm	3
		Drilled hole diameters	±3mm	
CYLINDRICAL FENDERS	BCY, BCT	Outside diameter	±4% or ±4mm	2
		Inside diameter	±4% or ±4mm	2
		Length	-0mm / +40mm	4
EXTRUDED FENDERS	All types	Cross-section	±4% or ±4mm	2
		Length	-0mm / +40mm	4
		Hole Centres	±4mm	3
		Drilled hole diameters	±3mm	
COMPOSITE FENDERS	BCS, BCT	Cross-section	±3% or ±2mm	2
		Length	-0mm / +40mm	4
		Hole Centres	±4mm	3
TUG FENDERS	BTK, BTW, BTM	Cross-section	±3% or ±2mm	2
		Length	-0mm / +40mm	4

- Dimensions are stated at 23°C unless otherwise agreed.
- Whichever is greater
- Non-cumulative when drilled
- L ≤ 2000mm (for L > 2000mm, please ask Bencros)

PERFORMANCE	FENDER TYPE	PARAMETER	TOLERANCE
MOULDED FENDERS	BME, BAS, BAP	Reaction and Energy	±10%
MOULDED PROFILES	BDD, BDC, BSD, BSC	Reaction and Energy	±20%
CYLINDRICAL FENDERS	BCY, BCT	Reaction and Energy	±20%
EXTRUDED FENDERS	All types	Reaction and Energy	±20%
COMPOSITE FENDERS	BCS, BCT	Reaction and Energy	±20%
TUG FENDERS	BTK, BTW, BTM	Reaction	±20%

- Refer to fender performance test protocol
- Deflection is not a pass/fail criterion.
- Performance verification testing is charged as an optional extra.

CV TESTING

► Bencros testing protocol for high performance solid rubber dock fenders¹ is adopted from PIANC². The test press is equipped with load and deflection transponders which are calibrated annually. Fenders are pre-conditioned and thermally stabilised before 10% of fenders are performance tested. Additionally, all fenders with a nominal rated reaction of 1000kN are preconditioned before shipment. Please ask Bencros for further details.



- Each fender is given a unique serial number, traceable to manufacturing and material records.
- Fenders are tested under coaxial (vertical) compression.
- Pre-conditioning involves at least three initial compression cycles³ followed by a recover period of at least one hour before measured testing.
- Compression speed is 2-8 cm/min (nominally 1mm/s for 'constant velocity' CV-method tests).
- Test temperature is 23°C ±5°C.⁴
- Deflection is expressed in metres (m) and is measured at increments of 0.01H to 0.05H (where H is the uncompressed height of the fender).
- Reaction force is expressed in kilonewtons (kN) and is recorded to at least a deflection at which the permitted minimum energy absorption is achieved.⁵
- Energy absorption is expressed in kilonewton-metres (kNm) and is calculated as the integral of reaction and deflection, calculated using Simpson's Rule.
- The maximum or high-end reaction force should not be more than the fender's mean rated reaction plus tolerance. The minimum or low-end energy absorption should not be less than the fender's mean rated energy minus tolerance. Deflection is not a pass/fail requirement.^{6,7}
- 10% of the ordered fenders (rounded up to a whole unit) are verification tested.
- If any sample does not meet the specifications, sampling is increased to 20% of fenders (rounded up to a unit). Non-conforming fenders are rejected and segregated.
- If further samples do not meet the specifications, all remaining fenders will be tested. Only fenders verified as meeting the performance will be delivered.

1. Moulded fenders include BME Elements, BAS and BAP Arch Fenders, BME Elements are tested in pairs.
2. PIANC refers to the Permanent International Association of Navigation Congresses, Report of Working Group 33 (Guidelines for the design of Fender systems: 2002, Appendix A).
3. Reaction force is not recorded for pre-compression testing.
4. Where ambient temperature is outside of this range, fenders will be normalised to this temperature range in a conditioning room for an appropriate period (dependent upon fender size and as defined by PIANC). Alternatively the performance values will be corrected according to Bencros published temperature correction factors.
5. Reaction force (and corresponding calculated energy absorption) shall be the exact recorded value and not corrected or otherwise adjusted for speed correction unless required by the project specifications.
6. Permitted values for reaction and energy are catalogue values and applicable manufacturing tolerances.
7. The deflection at which minimum energy permitted energy absorption is achieved may differ from the nominal "rated" deflection indicated in the catalogue for the relevant fender type.
8. Standard PIANC testing is charged in addition to the fender price. Additional testing frequency, third party witnessing and temperature conditioning costs are also charged for.

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330+ CUSTOM FENDER SOLUTIONS

Tailored protection for every marine project – from ports to offshore

FAST DELIVERY: 10 DAYS TO 6 WEEKS

Rapid production and delivery from the heart of Europe

RESPONSIBLE END-OF-LIFE RECYCLING

Sustainable solutions focused on recycling and reuse

SUSTAINABLE EUROPEAN MANUFACTURING

European-made with a focus on quality and environmental care

**STRENGTH YOU CAN RELY ON
– AT SEA AND ASHORE**