

PORTS / QUAYS / DRY DOCKS

Fixed Marine Fenders

Rubber fender bodies, systems and accessories for fixed berthing installations.

Cone fender systems at an industrial berth.

RUBBER FENDERS / FRONTAL PANELS / FACE PADS
CHAINS / CONNECTIONS / ANCHORING

PRODUCT RANGE / 1

Protection at the berth

Coordinate the fender body, contact surface and connections with the berth structure and operating conditions.

01 / CELL FENDERS

Cell Fenders

02 / CONE FENDERS

Cone Fenders

03 / JSA ARCH FENDERS

JSA Arch Fenders

04 / JSB ARCH FENDERS

JSB Arch Fenders

05 / UNIT ELEMENT FENDERS

Unit Element Fenders

06 / JST150 FENDERS

JST150 Fenders

07 / JST200 FENDERS

JST200 Fenders

08 / CYLINDRICAL FENDERS

Cylindrical Fenders

09 / WHEEL FENDERS

Wheel Fenders

10 / STEP FENDERS

Step Fenders

11 / JAL ARCH FENDER LADDERS

JAL Arch Fender Ladders

Application-specific catalogues

Floating Fenders covers pneumatic and floating foam-filled systems. Vessel Fenders & Boat Collars covers vessel-mounted rubber profiles, custom extrusions and foam collars.

Protection at the berth

Coordinate the fender body, contact surface and connections with the berth structure and operating conditions.

12 / JAC ARCH CORNER FENDERS

JAC Arch Corner Fenders

13 / JDO280 × 540

JDO280 × 540

14 / JDO-A300 × 540

JDO-A300 × 540

15 / JDO-B300 × 540

JDO-B300 × 540

16 / JDO300 × 600

JDO300 × 600

17 / COMPOSITE FENDERS JCP-A

Composite Fenders JCP-A

18 / COMPOSITE FENDERS JCP-B

Composite Fenders JCP-B

19 / RUBBER LADDERS

Rubber Ladders

20 / SD FENDERS

SD Fenders

21 / ROLLER FENDERS

Roller Fenders

SYSTEM COMPONENTS

Panels & Accessories

Application-specific catalogues

Floating Fenders covers pneumatic and floating foam-filled systems. Vessel Fenders & Boat Collars covers vessel-mounted rubber profiles, custom extrusions and foam collars.

Cell *Fenders*



Cell fender bodies staged for handling.

Cell Fenders

Cell rubber bodies support frontal panels for fixed berth protection.

PRODUCT

Fixed rubber fender

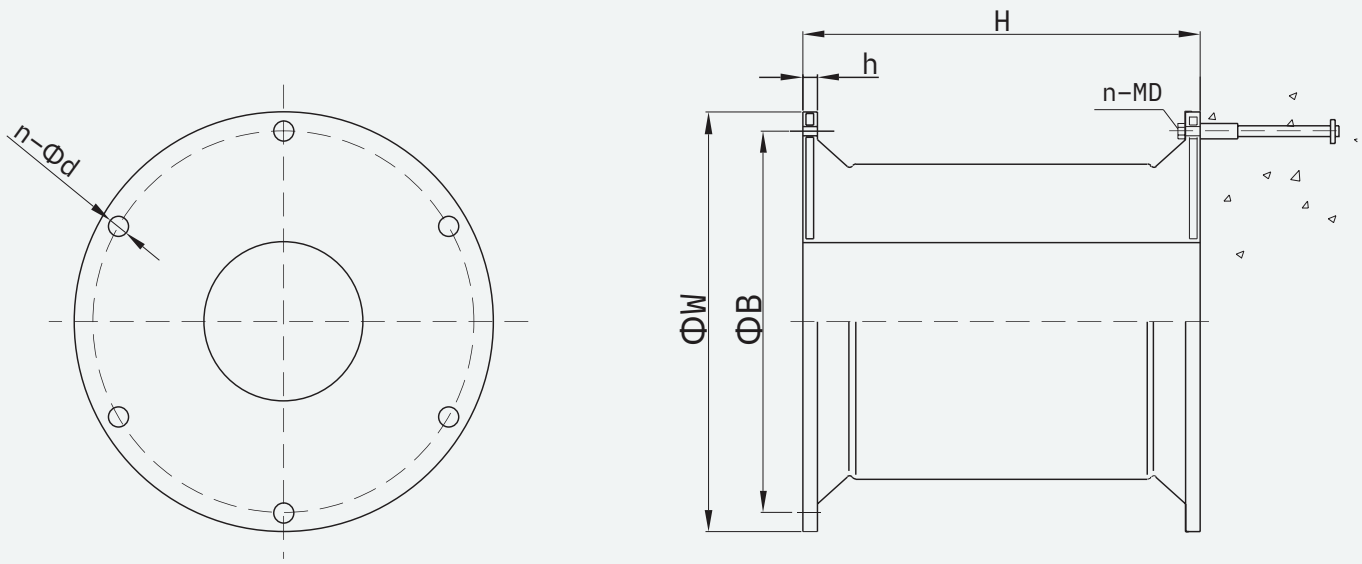
RANGE

Dimensions, performance and installation options on the following pages

Specification overview

Size options	JSC400H to JSC3000H
Compression conditions	52.5%, 55.0%
Rubber grades	RL, RO, RH, RS, RE

Cell Fenders / Dimensions



Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Dimensions

Model	H	ΦW	Mounting diameter ΦB	h	d	n-MD	Weight
JSC400H	400	650	550	25	30	4-M22	78
JSC500H	500	650	550	25	32	4-M24	110
JSC630H	630	840	700	30	39	4-M30	230
JSC800H	800	1050	900	30	40	6-M33	410
JSC1000H	1000	1300	1100	35	47	6-M39	820
JSC1150H	1150	1500	1300	40	50	6-M42	1215
JSC1250H	1250	1650	1450	45	53	6-M45	1490
JSC1450H	1450	1850	1650	47	61	6-M52	2330
JSC1600H	1600	2000	1800	50	61	8-M52	3020
JSC1700H	1700	2100	1900	55	66	8-M56	3730
JSC2000H	2000	2200	2000	55	74	8-M64	5260
JSC2250H	2250	2550	2300	60	74	10-M64	7450
JSC2500H	2500	2950	2700	70	74	10-M64	10750
JSC3000H	3000	3350	3150	85	90	12-M76	18600

Cell Fenders / Technical Data



Cell fender body with flanged ends



Cell fender bodies staged for handling.

Reaction R: kN; energy absorption E: kNm.

Compression 52.5%

Model	RL / R	RL / E	RO / R	RO / E	RH / R	RH / E	RS / R	RS / E	RE / R	RE / E
JSC400H	51	9	64	11	83	14	96	17	110	19
JSC500H	86	18	108	23	140	30	162	36	182	40
JSC630H	138	38	172	48	224	62	258	72	290	80
JSC800H	211	75	275	98	355	125	412	145	464	163
JSC1000H	349	153	436	195	567	249	655	287	737	324
JSC1150H	462	233	578	297	750	379	865	437	975	492
JSC1250H	546	299	682	382	886	486	1022	561	1153	632
JSC1450H	735	468	918	596	1193	760	1376	876	1551	987
JSC1600H	894	628	1117	801	1453	1020	1676	1177	1888	1326
JSC1700H	1009	753	1262	960	1640	1224	1892	1413	2131	1591
JSC2000H	1398	1227	1746	1564	2270	1994	2619	2300	2941	2591
JSC2250H	2085	2060	2454	2472	3188	3150	3679	3628	4145	4095
JSC2500H	2574	2826	3028	3391	3937	4322	4543	4987	5118	5618
JSC3000H	—	—	3750	4300	4482	5160	—	—	—	—

Performance tolerance: ±10%. — = data unavailable for this grade. JSC3000H: RO and RH grades only.

Cell Fenders / Performance

Reaction R: kN; energy absorption E: kNm.

Compression 55.0%

Model	RL / R	RL / E	RO / R	RO / E	RH / R	RH / E	RS / R	RS / E	RE / R	RE / E
JSC400H	59	9.5	75	12	97	15	112	18	125	21
JSC500H	99	19	125	25	160	32	187	38	210	43
JSC630H	147	40	182	50	237	67	274	76	309	85
JSC800H	225	78	292	102	378	132	437	153	493	173
JSC1000H	372	163	463	203	603	264	696	304	784	343
JSC1150H	491	247	614	309	798	401	920	463	1037	521
JSC1250H	581	316	725	396	942	516	1087	594	1225	669
JSC1450H	781	495	976	619	1269	804	1464	928	1649	1045
JSC1600H	950	665	1189	832	1544	1080	1781	1247	2007	1405
JSC1700H	1073	798	1342	997	1743	1300	2012	1495	2266	1685
JSC2000H	1485	1299	1856	1624	2413	2111	2783	2435	3136	2743
JSC2250H	2216	2180	2607	2566	3390	3336	3911	3848	4406	4337
JSC2500H	2737	2992	3220	3520	4182	4576	4829	5280	5441	5949
JSC3000H	—	—	4217	4635	5099	5510	—	—	—	—

Performance tolerance: ±10%. — = data unavailable for this grade. JSC3000H: RO and RH grades only.

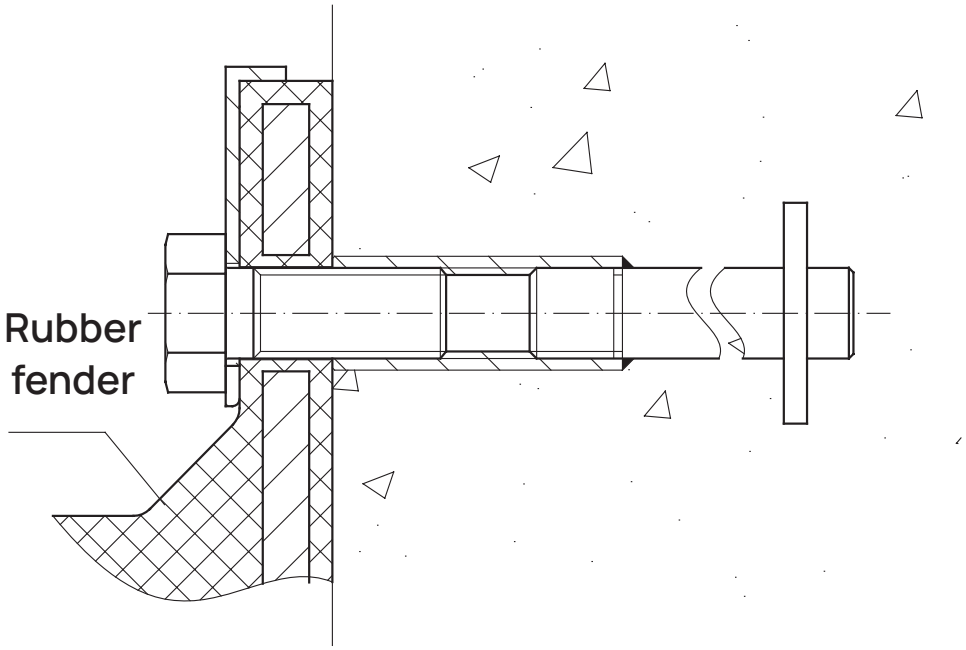
Deflection, reaction and energy as percentages.

Compression factors

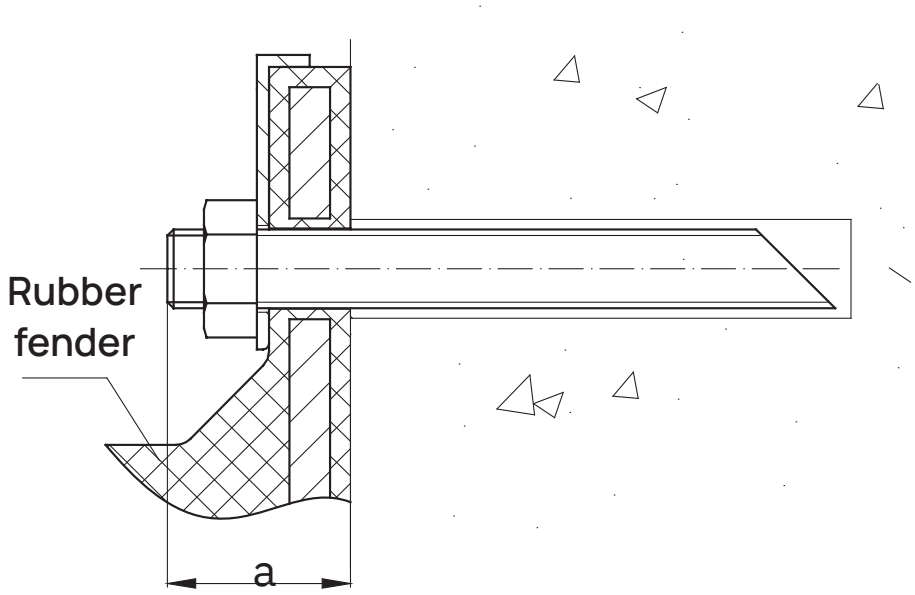
Deflection (%)	E(%)	R(%)
0%	0	0
5%	2	30
10%	6.8	58
15%	15	80
20%	25	93
25%	37	98
30%	50	99

Deflection (%)	E(%)	R(%)
35%	60	97.5
40%	70	95
45%	83	96
50%	97	97
52.5%	100	100
55%	106	106

Fixing arrangements

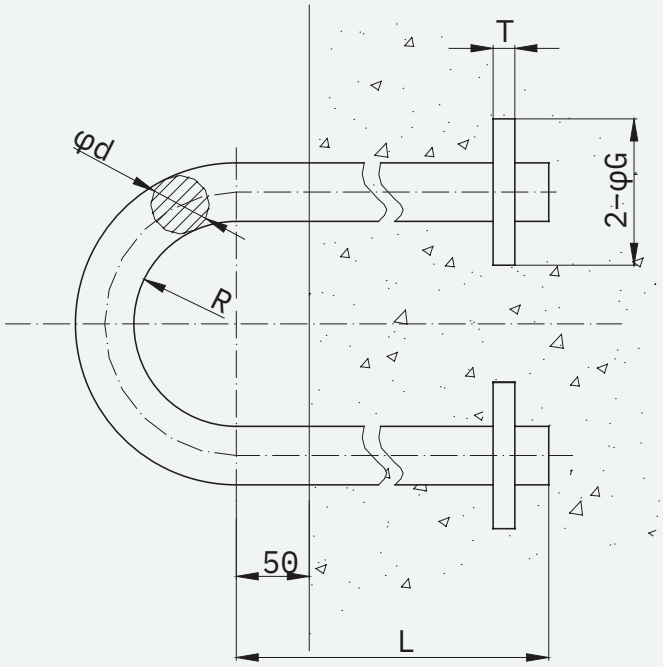


Cast-in anchor / Fender fixing to new concrete.



Resin-bolt fixing / Fender fixing to existing concrete or where cast-in anchors are unsuitable.

Cell Fenders / Installation



Dimensions in mm. Drawing not to scale.

Connection sizes for JSC 500-3000.

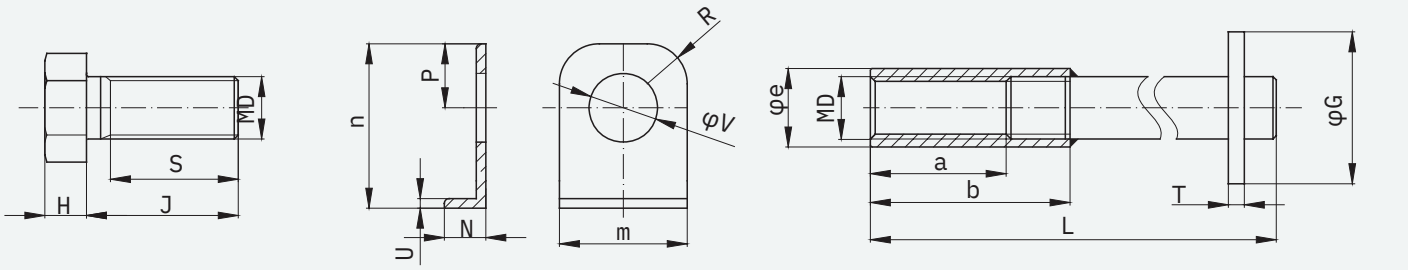
Dimensions and nominal fixing sizes: mm.

Cell U-ring dimensions / JSC 500-3000

Model	Rod Φd	Bend radius R	L	Plate ΦG	Plate T
JSC500H	Φ40	R70	600	Φ100	20 ~ 30
JSC630H	Φ40	R70	600	Φ100	20~30
JSC800H	Φ50	R80	650	Φ110	20 ~ 30
JSC1000H	Φ55	R90	730	Φ120	20~30
JSC1150H	Φ60	R100	780	Φ140	25~35
JSC1250H	Φ60	R100	780	Φ140	25~35
JSC1450H	Φ60	R100	780	Φ140	25~35
JSC1600H	Φ65	R105	830	Φ150	25~35
JSC1700H	Φ65	R105	830	Φ150	25~35
JSC2000H	Φ70	R115	880	Φ160	25~35
JSC2250H	Φ70	R115	880	Φ160	25~35
JSC2500H	Φ80	R120	930	Φ160	25~35
JSC3000H	Φ80	R120	930	Φ160	25~35

Cell Fenders / Installation

Hexagon bolt | Washer | Anchor socket | Foot rod | Foot board



Dimensions in mm. Drawing not to scale.

Dimensions and nominal fixing sizes: mm.

Cell fender fixing Type I (new concrete) / 1

Model	MD	Bolt H	Bolt J	Bolt S	Washer m	Washer N	Washer n	Washer P	Washer U
JSC400H	M22	15	65	55	50	20	82	25	5
JSC500H	M24	17	65	55	50	20	82	25	5
JSC630H	M30	19	80	70	60	25	107	30	5
JSC800H	M33	23	80	70	65	25	117	35	5
JSC1000H	M39	26	95	80	80	26	148	40	6
JSC1150H	M42	26	100	80	85	28	151	43	6
JSC1250H	M45	30	110	90	90	30	153	45	6
JSC1450H	M52	35	120	95	100	34	158	50	6
JSC1600H	M52	35	120	95	100	34	158	50	6
JSC1700H	M56	35	135	110	105	40	165	55	8
JSC2000H	M64	40	145	125	115	40	170	60	8
JSC2250H	M64	40	150	125	115	43	195	60	8
JSC2500H	M64	40	160	125	115	50	197	60	10
JSC3000H	M76	50	190	145	140	55	182	70	10

Dimensions and nominal fixing sizes: mm.

Cell fender fixing Type I (new concrete) / 2

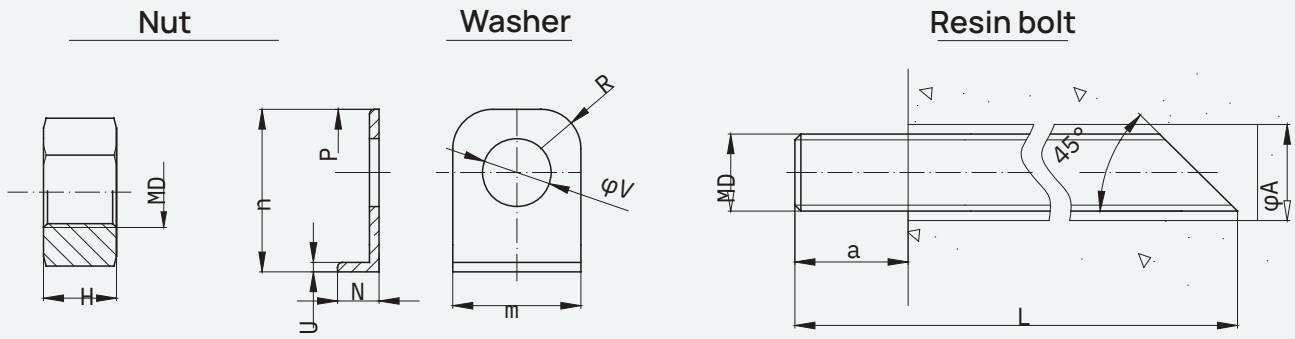
Model	Washer V	Washer R	Socket b	Socket Øe	Socket a	Plate ØG	Plate T	Assembly L
JSC400H	25	15	80	31	50	70	6-10	220
JSC500H	28	15	80	34	50	70	6-10	240
JSC630H	34	15	100	39	65	80	10-12	300
JSC800H	36	15	100	44	65	80	10-12	330
JSC1000H	43	25	120	49	75	90	10-12	390
JSC1150H	46	25	120	54	75	100	12-16	420

Cell Fenders / Installation

Dimensions and nominal fixing sizes: mm.

Cell fender fixing Type I (new concrete) / 2

Model	Washer V	Washer R	Socket b	Socket Øe	Socket a	Plate ØG	Plate T	Assembly L
JSC1250H	49	30	130	59	80	100	12-16	450
JSC1450H	56	30	140	69	85	130	12-16	500
JSC1600H	56	30	140	69	85	130	12-16	500
JSC1700H	62	30	150	74	90	130	16-20	560
JSC2000H	70	40	170	79	105	150	16-20	640
JSC2250H	70	40	170	79	105	150	16-20	640
JSC2500H	70	50	170	79	105	175	16-20	640
JSC3000H	84	50	200	94	125	175	20-24	760



Dimensions in mm. Drawing not to scale.

Dimensions and nominal fixing sizes: mm.

Cell fender fixing Type II (existing concrete / unsuitable cast-in anchors) / 1

Model	MD	Nut H	Washer m	Washer N	Washer n	Washer P	Washer U	Washer V	Washer R
JSC400H	M22	20	50	20	82	25	5	25	15
JSC500H	M24	22	50	20	82	25	5	28	15
JSC630H	M30	26	60	25	107	30	5	34	15
JSC800H	M33	28	65	25	117	35	5	36	15
JSC1000H	M39	32	80	26	148	40	6	43	25
JSC1150H	M42	34	85	28	151	43	6	46	25
JSC1250H	M45	36	90	30	153	45	6	49	30
JSC1450H	M52	42	100	34	158	50	6	56	30
JSC1600H	M52	42	100	34	158	50	6	56	30
JSC1700H	M56	45	105	40	165	55	8	62	30
JSC2000H	M64	51	115	40	170	60	8	70	40

Cell Fenders / Installation

Dimensions and nominal fixing sizes: mm.

Cell fender fixing Type II (existing concrete / unsuitable cast-in anchors) / 1

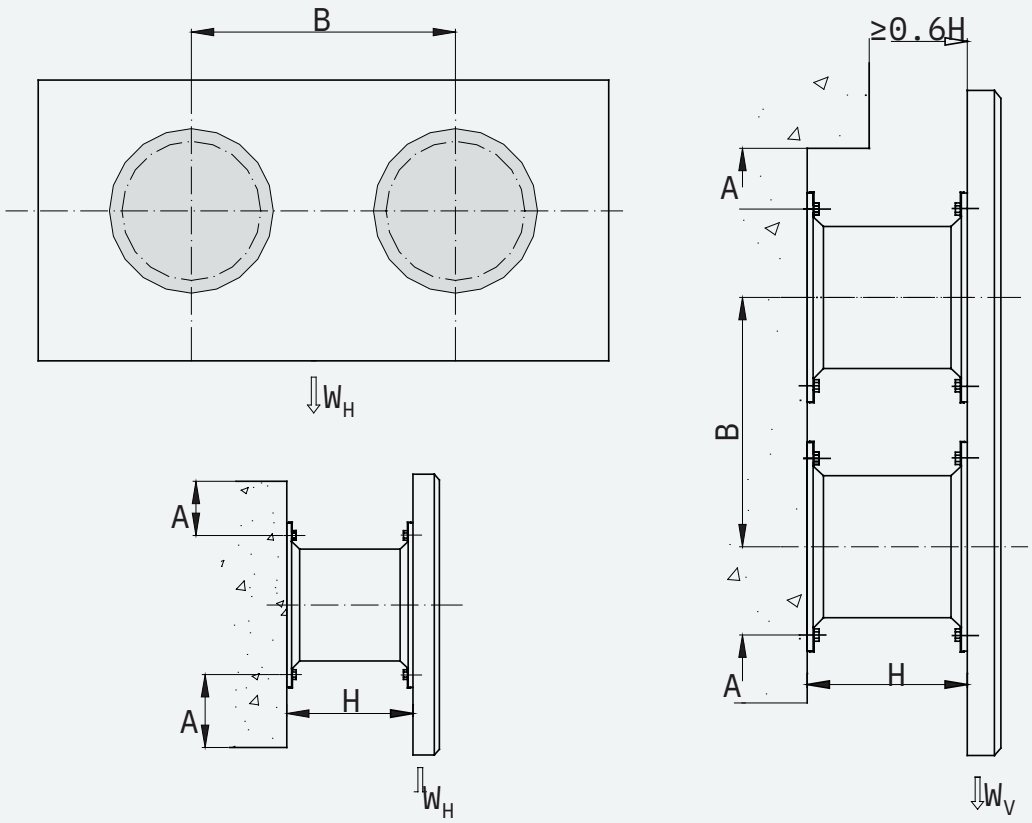
Model	MD	Nut H	Washer m	Washer N	Washer n	Washer P	Washer U	Washer V	Washer R
JSC2250H	M64	51	115	43	195	60	8	70	40
JSC2500H	M64	51	115	50	197	60	10	70	50
JSC3000H	M76	64	140	55	182	70	10	84	50

Dimensions and nominal fixing sizes: mm.

Cell fender fixing Type II (existing concrete / unsuitable cast-in anchors) / 2

Model	Resin bolt a	Resin bolt L	Resin bolt A
JSC400H	60	260	28
JSC500H	60	280	30
JSC630H	70	360	38
JSC800H	75	400	42
JSC1000H	85	460	50
JSC1150H	95	510	55
JSC1250H	105	550	60
JSC1450H	115	630	65
JSC1600H	115	630	65
JSC1700H	125	680	68
JSC2000H	130	780	75
JSC2250H	140	780	75
JSC2500H	150	780	75
JSC3000H	180	940	88

Cell Fenders / Installation



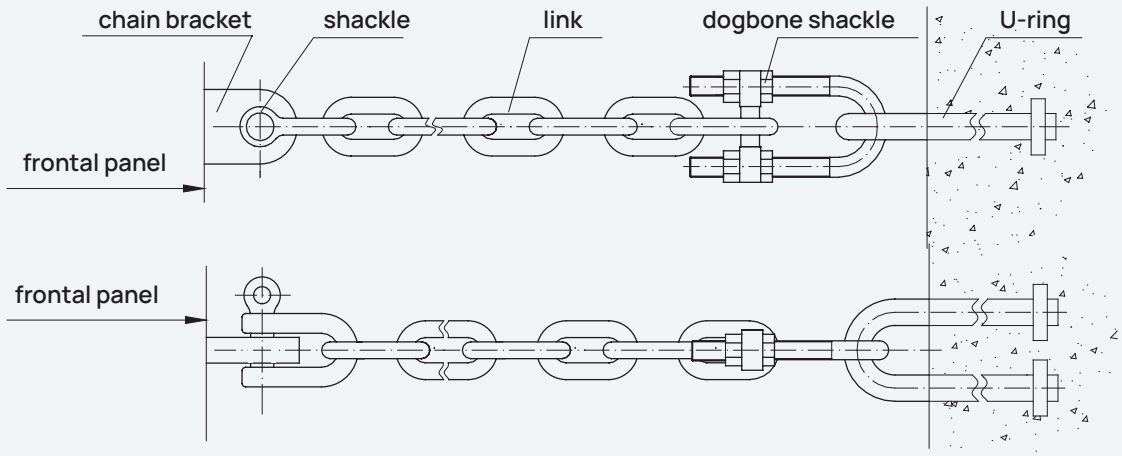
Dimensions in mm. Drawing not to scale.

Dimensions and nominal fixing sizes: mm.

Cell fender anchor/concrete-edge minimum spacing guide

Model	A	B
JSC400H	180	700
JSC500H	185	700
JSC630H	210	880
JSC800H	230	1120
JSC1000H	255	1500
JSC1150H	280	1730
JSC1250H	290	1870
JSC1450H	350	2180
JSC1600H	350	2400
JSC1700H	380	2550
JSC2000H	430	2880
JSC2250H	430	3360
JSC2500H	450	3730
JSC3000H	510	4500

Cell Fenders / Installation



Dimensions in mm. Drawing not to scale.

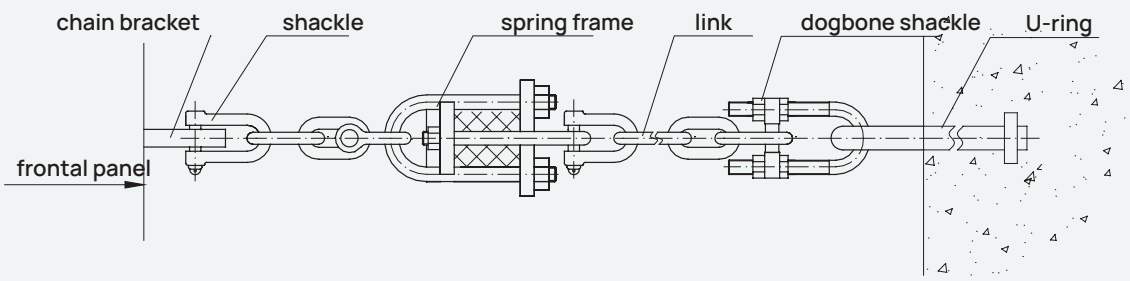
Connection sizes for JSC 500-3000.

Nominal fixing sizes and dimensions: mm; breaking load: kN.

Cell chain/shackle specification and breaking load / JSC 500-3000

Model	Shackle size	Link diameter	Dogbone shackle size	Breaking load
JSC500H	M22	Ø20	M30	78
JSC630H	M22	Ø20	M30	78
JSC800H	M25	Ø25	M36	109
JSC1000H	M32	Ø28	M39	135
JSC1150H	M32	Ø32	M42	188
JSC1250H	M36	Ø34	M45	202
JSC1450H	M38	Ø36	M48	227
JSC1600H	M38	Ø38	M52	253
JSC1700H	M42	Ø40	M56	280
JSC2000H	M45	Ø42	M56	309
JSC2250H	M45	Ø42	M56	309
JSC2500H	M50	Ø46	M60	371
JSC3000H	M50	Ø46	M60	371

Cell Fenders / Installation



Dimensions in mm. Drawing not to scale.

Connection sizes for JSC 500-3000.

Nominal fixing sizes and dimensions: mm; breaking load: kN.

Cell spring-chain specification / JSC 500-3000

Model	Shackle size	Link diameter	Spring-frame size	Rubber-spring size	Dogbone shackle size	Breaking load
JSC500H	M22	Ø20	M30	Ø100 × Ø30 × 150	M30	78
JSC630H	M22	Ø20	M30	Ø100 × Ø30 × 150	M30	78
JSC800H	M25	Ø25	M30	Ø100 × Ø30 × 150	M36	109
JSC1000H	M32	Ø28	M36	Ø100 × Ø30 × 150	M39	135
JSC1150H	M32	Ø32	M36	Ø100 × Ø30 × 150	M42	188
JSC1250H	M36	Ø34	M42	Ø100 × Ø30 × 150	M45	202
JSC1450H	M38	Ø36	M42	Ø150 × Ø50 × 200	M48	227
JSC1600H	M38	Ø38	M48	Ø150 × Ø50 × 200	M52	253
JSC1700H	M42	Ø40	M48	Ø150 × Ø50 × 200	M56	280
JSC2000H	M45	Ø42	M56	Ø150 × Ø50 × 200	M56	309
JSC2250H	M45	Ø42	M56	Ø150 × Ø50 × 200	M56	309
JSC2500H	M50	Ø46	M56	Ø150 × Ø50 × 200	M60	371
JSC3000H	M50	Ø46	M56	Ø150 × Ø50 × 200	M60	371

Cone *Fenders*



Cone fender systems along an industrial quay.

Cone Fenders

Cone rubber bodies form the energy-absorbing element of a panel-supported fender system.

PRODUCT

Fixed rubber fender

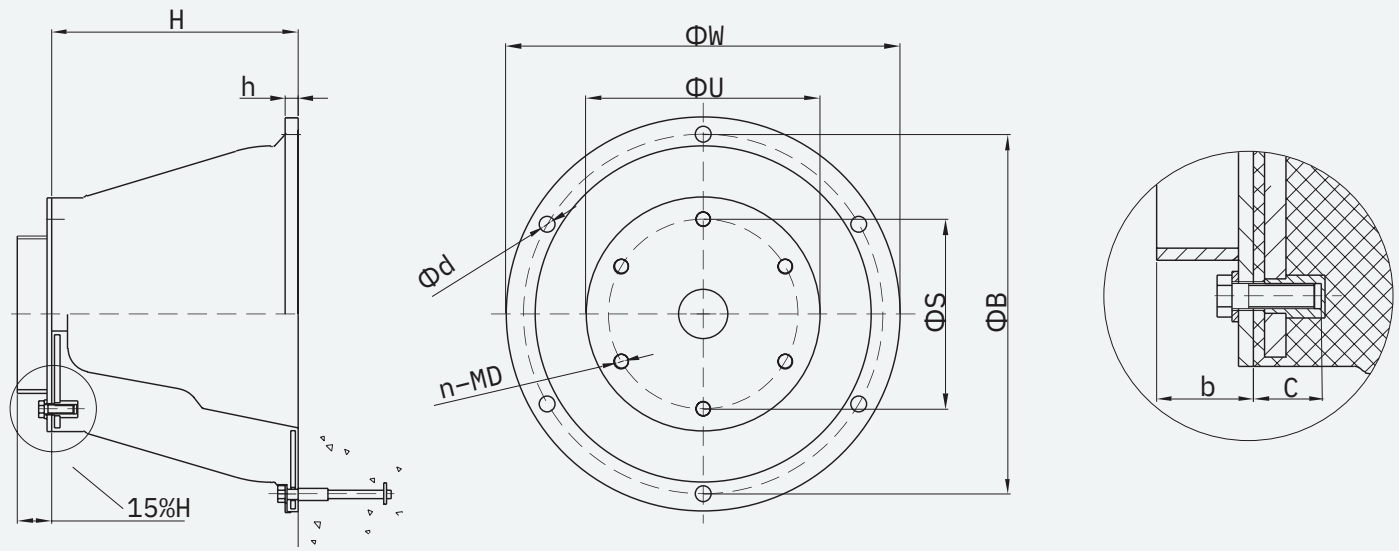
RANGE

Dimensions, performance and installation options on the following pages

Specification overview

Size options	JCO300 to JCO2000
Compression conditions	70.0%, 72.5%
Rubber grades	RL, RO, RH, RS

Cone Fenders / Dimensions



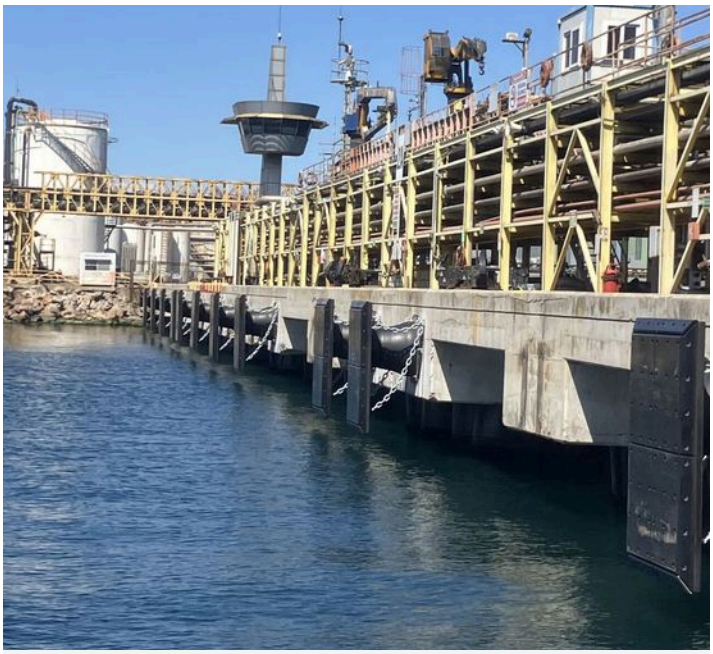
Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Dimensions

Model	H	h	ΦU	ΦW	ΦS	ΦB	n-MD	d	b	C	Weight
JCO300	300	13.5	255	450	195	405	4-M16	20	45~65	30	30
JCO350	350	25	300	570	235	510	4-M20	25	53~73	32	56
JCO400	400	18	340	600	260	540	4-M20	25	60~80	32	77
JCO500	500	21	425	750	325	675	4-M24	30	75~95	35	140
JCO600	600	22	510	900	390	810	6-M24	30	90~110	40	230
JCO700	700	26	595	1050	455	945	6-M30	38	105~125	50	390
JCO800	800	30	680	1200	520	1080	6-M36	44	120~140	55	540
JCO900	900	33	765	1350	585	1215	6-M36	44	135~155	65	755
JCO1000	1000	40	850	1500	650	1350	6-M42	50	150~170	75	1020
JCO1100	1100	42	935	1650	715	1485	6-M42	50	165~185	75	1500
JCO1150	1150	42	998	1725	750	1550	6-M42	50	170~195	75	1600
JCO1200	1200	45	1020	1800	780	1620	8-M42	50	180~210	80	1960
JCO1300	1300	47	1105	1950	845	1755	8-M48	57	195~225	80	2400
JCO1400	1400	54	1190	2100	930	1890	8-M52	60	210~235	80	3000
JCO1600	1600	58	1360	2400	1060	2160	8-M56	66	240~270	85	4600
JCO1800	1800	75	1530	2880	1190	2625	10-M56	66	270~290	85	6600
JCO2000	2000	80	1900	3200	1540	2920	10-M56	66	300~320	85	9200

Cone Fenders / Technical Data



Fender systems along a quay wall



Cone fender systems along an industrial quay.

70.0% compression condition.

Reaction R: kN; energy absorption E: kNm.

Compression 70.0%

Model	RL / R	RL / E	RO / R	RO / E	RH / R	RH / E	RS / R	RS / E
JCO300	59	7.7	68	9.2	84	11.8	104	14.4
JCO350	80	12.5	93	14.8	114	19	141	23.1
JCO400	105	18	124	22	150	28.3	185	34.6
JCO500	165	37	200	47	268	63	335	79
JCO600	225	75	283	94	382	127	480	157
JCO700	308	120	384	150	522	181	652	235
JCO800	402	179	502	224	706	294	862	368
JCO900	508	255	635	306	862	399	1078	494
JCO1000	628	350	784	437	1078	541	1339	669
JCO1100	800	408	927	495	1146	650	1430	830
JCO1150	830	532	1038	666	1392	882	1764	1029
JCO1200	890	560	1106	705	1396	882	1746	1103
JCO1300	1125	750	1320	1043	1705	1310	2125	1585
JCO1400	1150	860	1443	1079	1804	1349	2255	1686
JCO1600	1418	1234	1814	1548	2268	1935	3024	2419
JCO1800	1912	1804	2401	2264	3000	2830	3750	3538
JCO2000	2660	2840	2990	3192	3541	3806	4262	4637

Performance tolerance: ±10%.

Cone Fenders / Technical Data

72.5% compression condition.

Reaction R: kN; energy absorption E: kNm.

Compression 72.5%

Model	RL / R	RL / E	RO / R	RO / E	RH / R	RH / E	RS / R	RS / E
JCO300	65	8.3	75	10	94	12	115	15.6
JCO350	88	13.5	105	16	125	20	155	25
JCO400	115	19.6	137	24	165	30.8	204	37.5
JCO500	193	41	232	50	311	70	380	90
JCO600	258	85	319	104	429	129	542	161
JCO700	341	124	426	154	568	192	691	243
JCO800	428	208	576	252	833	316	930	380
JCO900	558	270	703	334	957	431	1189	517
JCO1000	698	380	882	478	1213	588	1507	735
JCO1100	833	432	1019	527	1259	681	1570	865
JCO1150	919	588	1152	717	1593	938	1985	1103
JCO1200	979	583	1229	735	1536	919	1920	1149
JCO1300	1200	800	1537	1077	1900	1360	2312	1640
JCO1400	1278	896	1604	1124	2005	1405	2506	1756
JCO1600	1575	1285	2016	1613	2520	2016	3150	2520
JCO1800	2125	1880	2667	2359	3333	2948	4166	3686
JCO2000	2960	3060	3320	3430	3933	4070	4750	4935

Performance tolerance: ±10%.

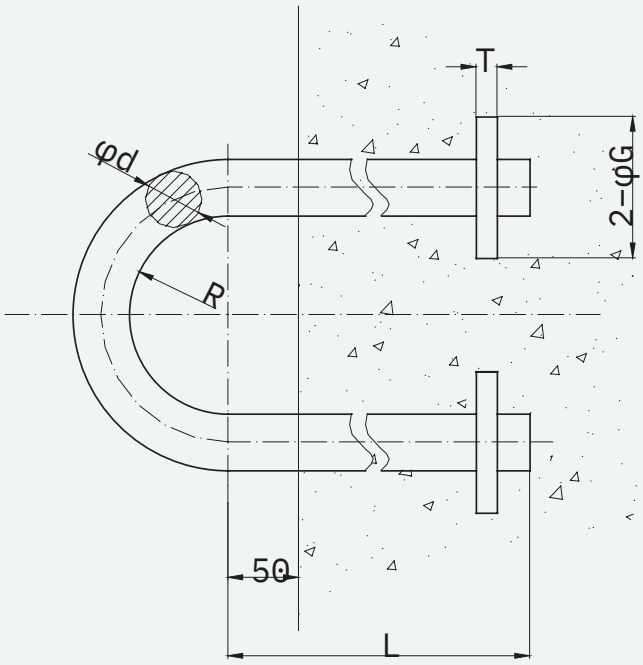
Deflection, reaction and energy as percentages.

Compression factors

Deflection (%)	E(%)	R(%)
0%	0	0
5%	4.5	24
10%	5.7	52
15%	13.7	69
20%	18.3	80
25%	25	90
30%	32	97
35%	41	98.5

Deflection (%)	E(%)	R(%)
40%	52	100
45%	59.5	98.5
50%	68.4	98
55%	79	92
60%	87	90
65%	92	91
70%	100	100
72.5%	105	107

Cone Fenders / Installation



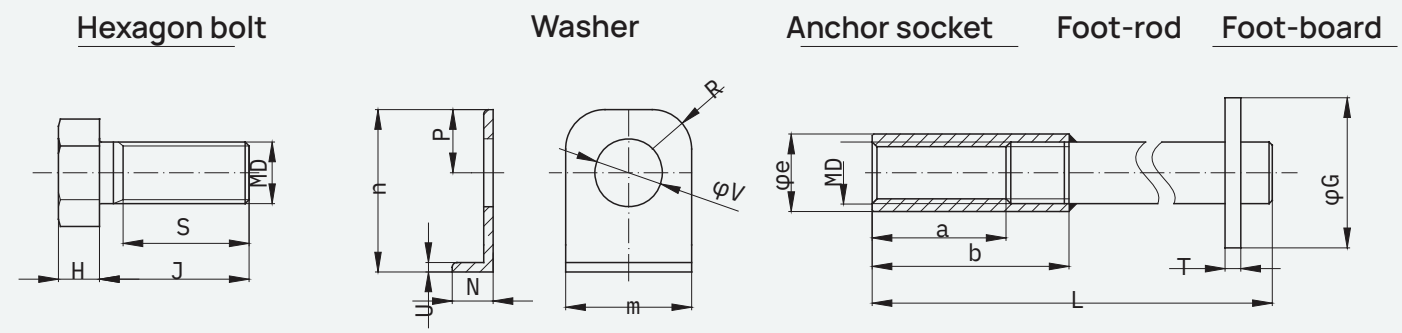
Dimensions in mm. Drawing not to scale.

Dimensions and nominal fixing sizes: mm.

Cone U-ring dimensions / JCO500-2000

Model	Rod Φd	Bend radius R	L	Plate ΦG	Plate T
JCO500	Φ50	R80	650	Φ110	20~30
JCO600	Φ55	R90	730	Φ120	20～30
JCO700	Φ55	R90	730	Φ120	20~30
JCO800	Φ55	R90	730	Φ120	20~30
JCO900	Φ60	R100	780	Φ140	25~35
JCO1000	Φ60	R100	780	Φ140	25~35
JCO1100	Φ60	R100	780	Φ140	25~35
JCO1150	Φ65	R105	830	Φ150	25~35
JCO1200	Φ65	R105	830	Φ150	25~35
JCO1300	Φ65	R105	830	Φ150	25~35
JCO1400	Φ65	R105	830	Φ150	25~35
JCO1600	Φ70	R115	880	Φ160	25~35
JCO1800	Φ70	R115	880	Φ160	25~35
JCO2000	Φ80	R120	930	Φ160	25~35

Cone Fenders / Installation



Dimensions in mm. Drawing not to scale.

Dimensions and nominal fixing sizes: mm.

Cone fender fixing Type I (new concrete) / 1

Model	MD	Bolt H	Bolt J	Bolt S	Washer m	Washer N	Washer n	Washer P	Washer U
JCO300	M16	10	50	35	35	10	41	13	3
JCO350	M20	17	60	40	40	15	57	20	5
JCO400	M20	17	50	40	35	15	55	18	5
JCO500	M24	17	60	50	55	20	73	28	5
JCO600	M24	17	60	50	55	20	80	28	5
JCO700	M30	19	75	65	65	20	93	33	5
JCO800	M36	23	85	75	70	24	102	35	5
JCO900	M36	23	90	80	70	24	111	35	9
JCO1000	M42	26	100	80	85	26	126	43	6
JCO1100	M42	26	105	90	85	26	134	43	6
JCO1150	M42	26	105	90	85	28	139	43	6
JCO1200	M42	26	110	90	85	31	144	43	8
JCO1300	M48	30	120	95	100	31	158	50	8
JCO1400	M52	35	130	100	110	34	170	55	8
JCO1600	M56	35	140	110	120	34	192	60	10
JCO1800	M56	35	150	110	120	34	207	60	10
JCO2000	M56	35	160	130	130	45	212	60	10

Dimensions and nominal fixing sizes: mm.

Cone fender fixing Type I (new concrete) / 2

Model	Washer V	Washer R	Socket b	Socket Øe	Socket a	Plate ØG	Plate T	Assembly L
JCO300	20	5	65	26	35	60	4-8	160
JCO350	23	10	70	30	40	65	6-10	200

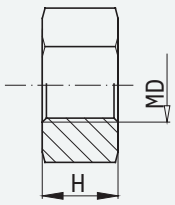
Cone Fenders / Installation

Dimensions and nominal fixing sizes: mm.

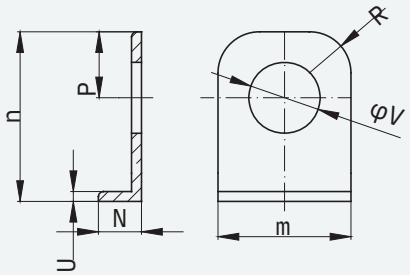
Cone fender fixing Type I (new concrete) / 2

Model	Washer V	Washer R	Socket b	Socket Øe	Socket a	Plate ØG	Plate T	Assembly L
JCO400	23	10	70	30	40	65	6-10	200
JCO500	28	15	80	34	50	70	6-10	240
JCO600	28	15	80	34	50	70	6-10	240
JCO700	34	15	100	39	65	80	10-12	300
JCO800	40	15	110	47	70	85	10-12	360
JCO900	40	15	110	47	70	85	10-12	360
JCO1000	46	25	120	54	75	100	12-16	420
JCO1100	46	25	120	54	75	100	12-16	420
JCO1150	46	25	120	54	75	100	12-16	420
JCO1200	46	25	120	54	75	100	12-16	420
JCO1300	52	30	140	64	85	130	12-16	480
JCO1400	56	30	140	69	85	130	12-16	520
JCO1600	60	30	150	74	90	140	16-20	560
JCO1800	60	30	150	74	90	140	16-20	560
JCO2000	60	30	150	74	90	140	16-20	560

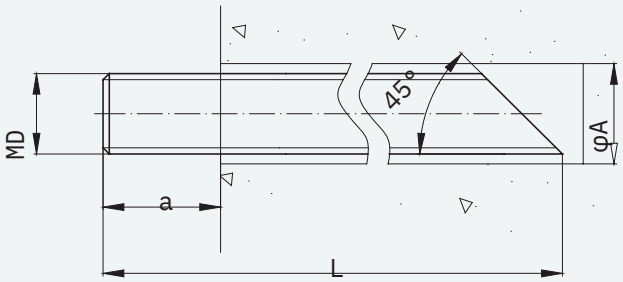
Nut



Washer



Resin bolt



Dimensions in mm. Drawing not to scale.

Dimensions and nominal fixing sizes: mm.

Cone fender fixing Type II (existing concrete / unsuitable cast-in anchors) / 1

Model	MD	Nut H	Washer m	Washer N	Washer n	Washer P	Washer U	Washer V	Washer R
JCO300	M16	10	35	10	41	41	3	20	5
JCO350	M20	17	40	15	57	57	5	23	10
JCO400	M20	17	35	15	55	55	5	23	10

Cone Fenders / Installation

Dimensions and nominal fixing sizes: mm.

Cone fender fixing Type II (existing concrete / unsuitable cast-in anchors) / 1

Model	MD	Nut H	Washer m	Washer N	Washer n	Washer P	Washer U	Washer V	Washer R
JCO500	M24	17	55	20	73	28	5	28	15
JCO600	M24	17	55	20	80	28	5	28	15
JCO700	M30	19	65	20	93	33	5	34	15
JCO800	M36	23	70	24	102	35	5	40	15
JCO900	M36	23	70	24	111	35	6	40	15
JCO1000	M42	26	85	26	126	43	6	46	25
JCO1100	M42	26	85	26	134	43	9	46	25
JCO1150	M42	26	85	28	139	43	6	46	25
JCO1200	M42	26	85	31	144	43	8	46	25
JCO1300	M48	30	100	31	158	50	8	52	30
JCO1400	M52	35	110	34	170	55	8	56	30
JCO1600	M56	35	120	34	192	60	10	60	30
JCO1800	M56	35	120	34	207	60	10	60	30
JCO2000	M56	35	130	45	212	60	10	60	30

Dimensions and nominal fixing sizes: mm.

Cone fender fixing Type II (existing concrete / unsuitable cast-in anchors) / 2

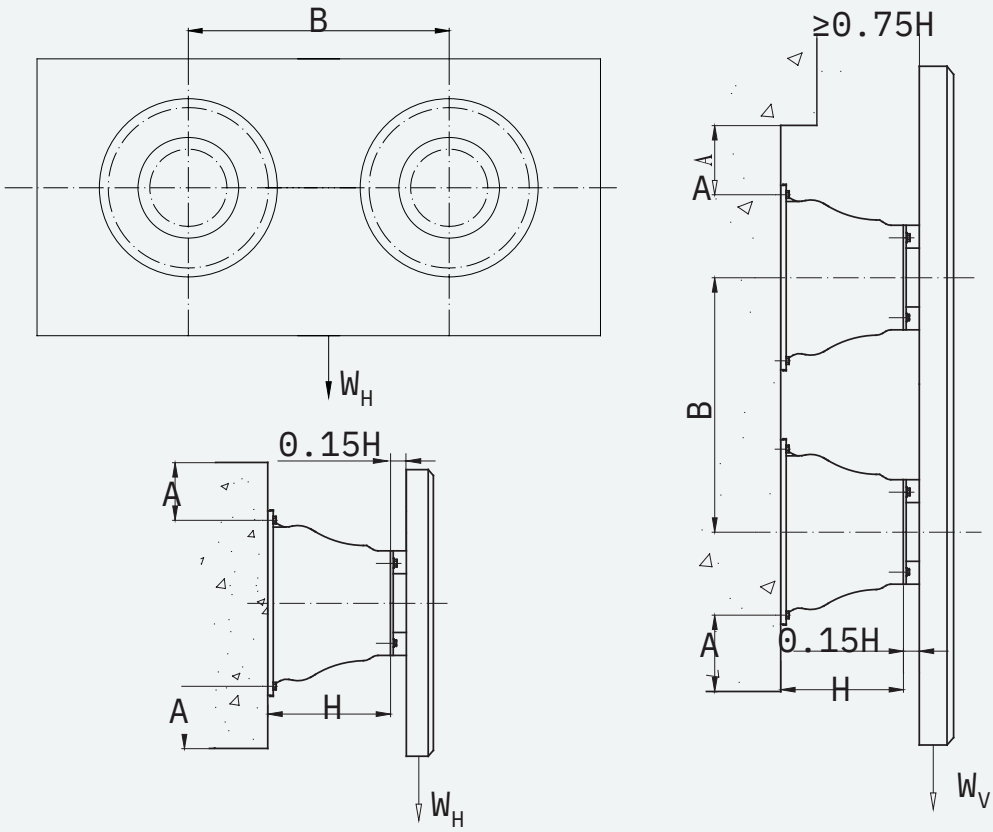
Model	Resin bolt a	Resin bolt L	Resin bolt A
JCO300	40	200	32
JCO350	55	240	25
JCO400	50	240	25
JCO500	55	280	30
JCO600	55	280	30
JCO700	65	360	38
JCO800	75	440	46
JCO900	80	440	46
JCO1000	95	510	55
JCO1100	95	510	55
JCO1150	95	510	55
JCO1200	105	510	55

Cone Fenders / Installation

Dimensions and nominal fixing sizes: mm.

Cone fender fixing Type II (existing concrete / unsuitable cast-in anchors) / 2

Model	Resin bolt a	Resin bolt L	Resin bolt A
JCO1300	115	580	60
JCO1400	120	600	65
JCO1600	135	680	68
JCO1800	140	680	68
JCO2000	160	680	68



Dimensions in mm. Drawing not to scale.

Dimensions and nominal fixing sizes: mm.

Cone fender anchor/concrete-edge minimum spacing guide / JCO500-2000

Model	A	B
JCO500	240	850
JCO600	240	1020
JCO700	300	1190

Cone Fenders / Installation

Dimensions and nominal fixing sizes: mm.

Cone fender anchor/concrete-edge minimum spacing guide / JCO500-2000

Model	A	B
JCO800	360	1360
JCO900	360	1530
JCO1000	420	1700
JCO1100	420	1870
JCO1150	420	1955
JCO1200	420	2040
JCO1300	480	2220
JCO1400	480	2420
JCO1600	480	2820
JCO1800	430	3220
JCO2000	450	3600

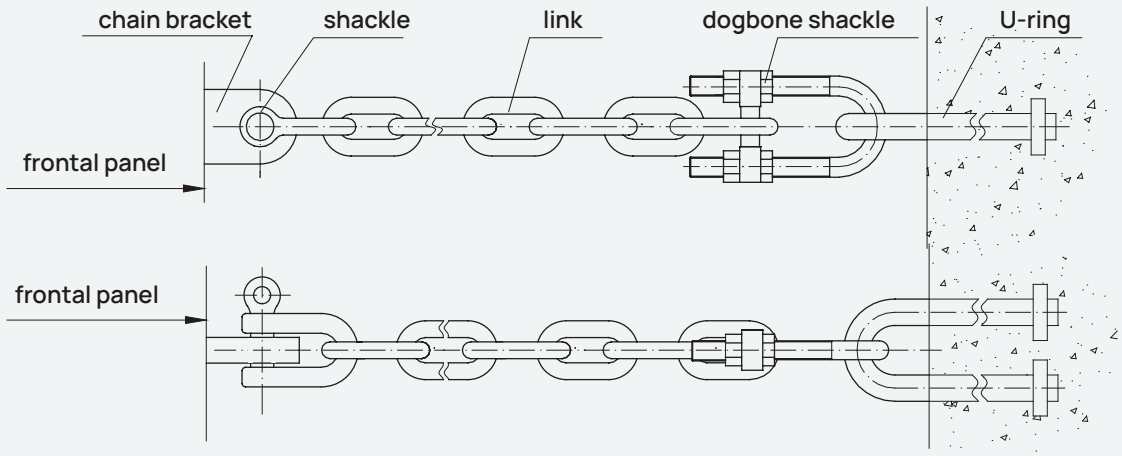
Weights: kg. n = fender count; W = fender weight; WH / WV = horizontal / vertical panel weight.

Panel weight guide / RL, RO and RH

Rubber grade	Horizontal orientation limit	Vertical orientation limit
RL	WH≤n*0.85*W	Wv≤n*1.0*W
RO	WH≤n*1.0*W	Wv≤n*1.25*W
RH	WH≤n*1.3*W	Wv≤n*1.55*W

Additional panel support chains may be required above these guide limits.

Cone Fenders / Installation



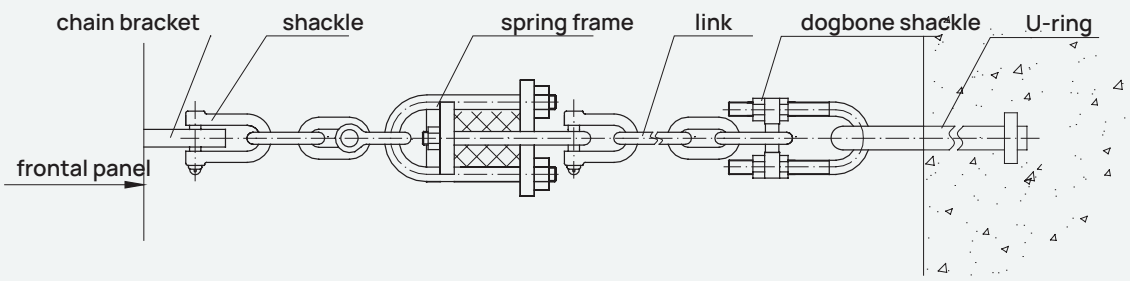
Dimensions in mm. Drawing not to scale.

Nominal fixing sizes and dimensions: mm; breaking load: kN.

Cone chain/shackle specification and breaking load / JCO500-2000

Model	Shackle size	Link diameter	Dogbone shackle size	Breaking load
JCO500	M25	Ø25	M36	109
JCO600	M25	Ø25	M36	109
JCO700	M32	Ø28	M39	135
JCO800	M32	Ø32	M42	188
JCO900	M36	Ø34	M45	202
JCO1000	M38	Ø36	M48	227
JCO1100	M38	Ø36	M48	227
JCO1150	M38	Ø38	M52	253
JCO1200	M42	Ø40	M56	280
JCO1300	M42	Ø40	M56	280
JCO1400	M42	Ø40	M56	280
JCO1600	M45	Ø42	M56	309
JCO1800	M45	Ø42	M56	309
JCO2000	M50	Ø46	M64	371

Cone Fenders / Installation



Dimensions in mm. Drawing not to scale.

Nominal fixing sizes and dimensions: mm; breaking load: kN.

Cone spring-chain specification / JCO500-2000

Model	Shackle size	Link diameter	Spring-frame size	Rubber-spring size	Dogbone shackle size	Breaking load
JCO500	M22	Ø25	M30	Ø100 × Ø30 × 150	M30	78
JCO600	M22	Ø25	M30	Ø100 × Ø30 × 150	M30	78
JCO700	M25	Ø28	M30	Ø100 × Ø30 × 150	M36	109
JCO800	M32	Ø32	M36	Ø100 × Ø30 × 150	M39	135
JCO900	M32	Ø34	M36	Ø100 × Ø30 × 150	M42	188
JCO1000	M36	Ø36	M42	Ø100 × Ø30 × 150	M45	202
JCO1100	M38	Ø36	M42	Ø150 × Ø50 × 200	M48	227
JCO1150	M38	Ø38	M42	Ø150 × Ø50 × 200	M52	253
JCO1200	M42	Ø40	M48	Ø150 × Ø50 × 200	M56	280
JCO1300	M42	Ø40	M48	Ø150 × Ø50 × 200	M56	280
JCO1400	M42	Ø40	M48	Ø150 × Ø50 × 200	M56	280
JCO1600	M45	Ø42	M56	Ø150 × Ø50 × 200	M56	309
JCO1800	M45	Ø42	M56	Ø150 × Ø50 × 200	M56	309
JCO2000	M50	Ø46	M56	Ø150 × Ø50 × 200	M60	371

JSA Arch *Fenders*



Arch fender bodies in a workshop.

JSA Arch Fenders

Arch fenders provide a directly mounted rubber contact profile. The body size and fixing pattern vary with the selected model.

PRODUCT

Fixed rubber fender

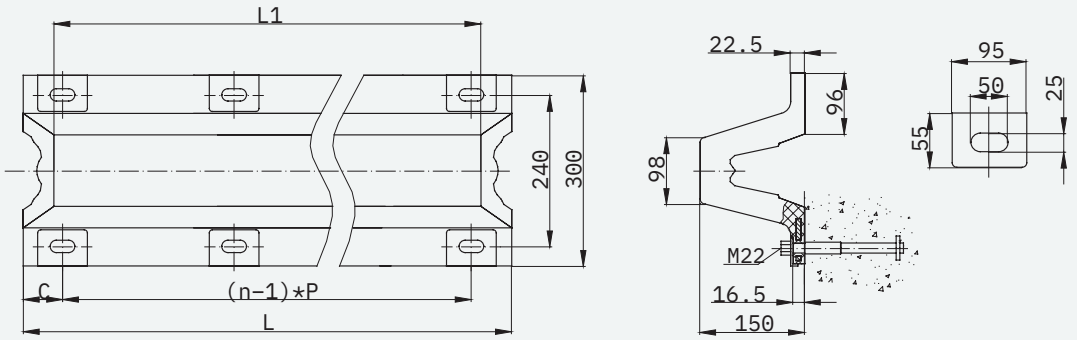
RANGE

Dimensions, performance and installation options on the following pages

Specification overview

Size options	JSA150*1000 to JSA1000*2000
Compression conditions	45.0%, 50.0%, 52.5%, 55.0%
Rubber grades	RL, RO, RH, RS

JSA Arch Fenders / Dimensions



Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

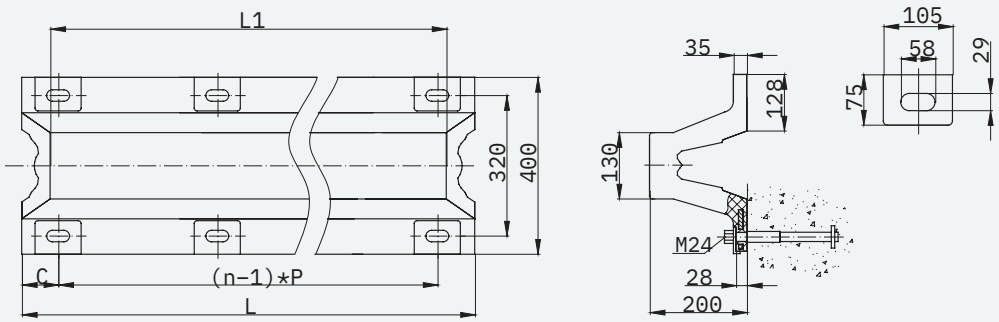
Dimensions

Model	C	P	L1	L	n	Weight
JSA150*1000	110	855	1000	1075	2	37
JSA150*1500	112.5	675	1500	1575	3	56
JSA150*2000	107.5	620	2000	2075	4	73
JSA150*2500	110	785	2500	2575	4	91
JSA150*3000	107.5	715	3000	3075	5	108
JSA150*3500	110	671	3500	3575	6	126



Arch-profile rubber fenders in storage

JSA Arch Fenders / Dimensions

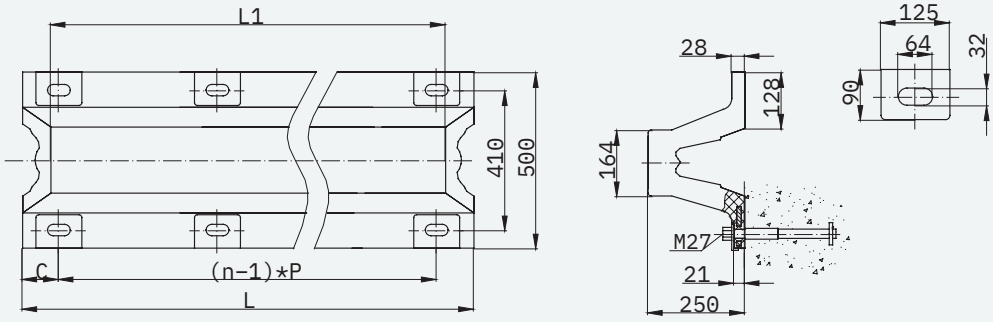


Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Dimensions

Model	C	P	L1	L	n	Weight
JSA200*1000	120	860	1000	1100	2	62
JSA200*1500	120	680	1500	1600	3	91
JSA200*2000	120	620	2000	2100	4	122
JSA200*2500	122.5	785	2500	2600	4	151
JSA200*3000	120	715	3000	3100	5	180
JSA200*3500	120	672	3500	3600	6	210



Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Dimensions

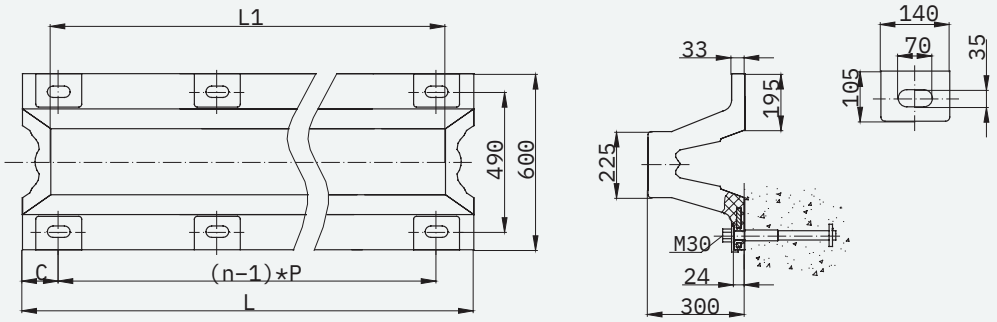
Model	C	P	L1	L	n	Weight
JSA250*1000	130	865	1000	1125	2	85
JSA250*1500	132.5	680	1500	1625	3	130
JSA250*2000	132.5	620	2000	2125	4	170
JSA250*2500	127.5	790	2500	2625	4	225

JSA Arch Fenders / Dimensions

Dimensions in mm; weights in kg.

Dimensions

Model	C	P	L1	L	n	Weight
JSA250*3000	132.5	715	3000	3125	5	270
JSA250*3500	120	673	3500	3625	6	310



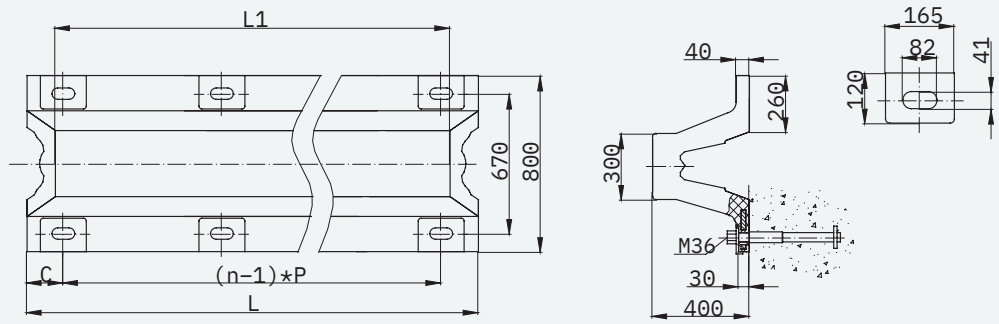
Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Dimensions

Model	C	P	L1	L	n	Weight
JSA300*1000	140	870	1000	1150	2	125
JSA300*1500	140	685	1500	1650	3	178
JSA300*2000	137.5	625	2000	2150	4	233
JSA300*2500	140	790	2500	2650	4	308
JSA300*3000	145	715	3000	3150	5	370
JSA300*3500	140	674	3500	3650	6	435

JSA Arch Fenders / Dimensions

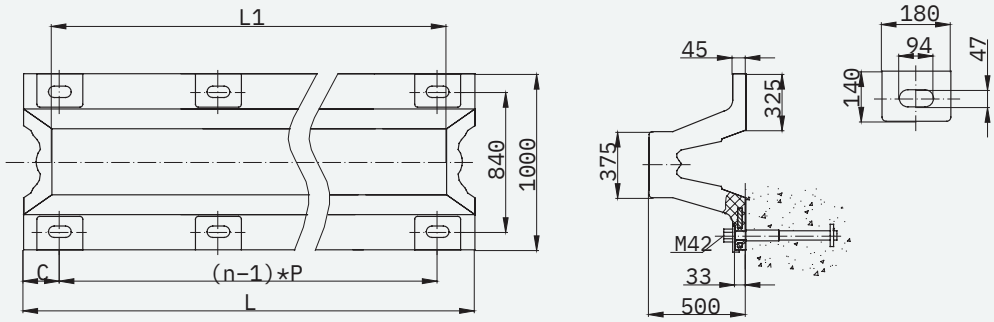


Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Dimensions

Model	C	P	L1	L	n	Weight
JSA400*1000	150	900	1000	1200	2	205
JSA400*1500	150	700	1500	1700	3	300
JSA400*2000	147.5	635	2000	2200	4	391
JSA400*2500	150	800	2500	2700	4	430
JSA400*3000	150	725	3000	3200	5	635
JSA400*3500	150	680	3500	3700	6	738



Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Dimensions

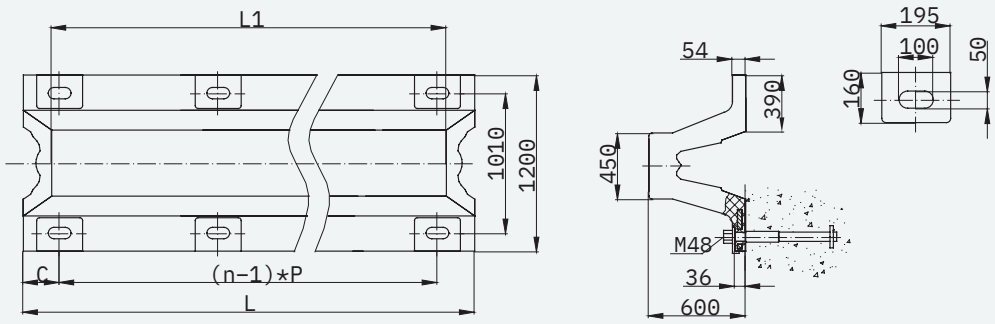
Model	C	P	L1	L	n	Weight
JSA500*1000	160	930	1000	1250	2	325
JSA500*1500	160	715	1500	1750	3	460
JSA500*2000	157.5	645	2000	2250	4	600
JSA500*2500	160	810	2500	2750	4	805

JSA Arch Fenders / Dimensions

Dimensions in mm; weights in kg.

Dimensions

Model	C	P	L1	L	n	Weight
JSA500*3000	165	730	3000	3250	5	953
JSA500*3500	160	686	3500	3750	6	1110



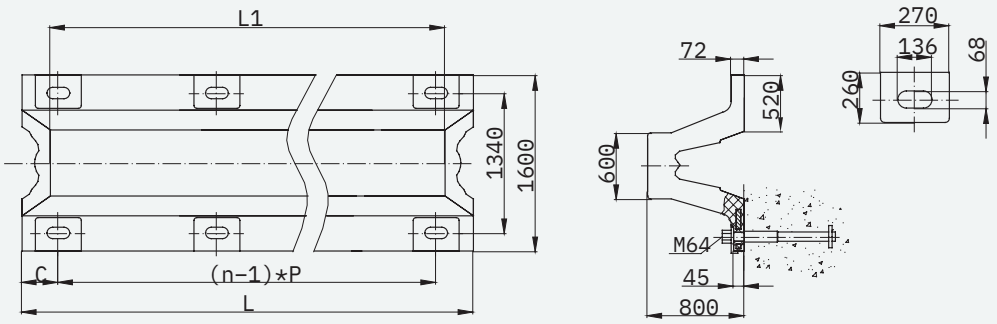
Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Dimensions

Model	C	P	L1	L	n	Weight
JSA600*1000	170	960	1000	1300	2	480
JSA600*1500	170	730	1500	1800	3	680
JSA600*2000	167.5	655	2000	2300	4	882
JSA600*2500	170	820	2500	2800	4	1100
JSA600*3000	170	740	3000	3300	5	1341
JSA600*3500	170	692	3500	3800	6	1581

JSA Arch Fenders / Technical Data

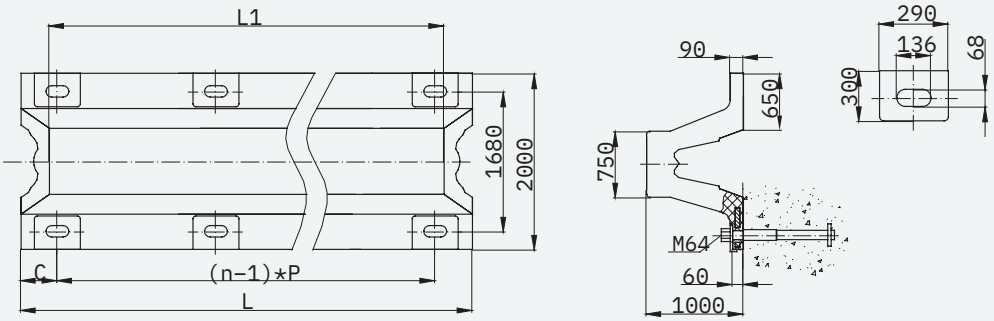


Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Dimensions

Model	C	P	L1	L	n	Weight
JSA800*1000	180	1040	1000	1400	2	875
JSA800*1500	180	770	1500	1900	3	1225
JSA800*2000	180	680	2000	2400	4	1585
JSA800*2500	182.5	845	2500	2900	4	2040
JSA800*3000	180	760	3000	3400	5	2410
JSA800*3500	180	885	3500	3900	5	2800



Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Dimensions

Model	C	P	L1	L	n	Weight
JSA1000*1000	200	1100	1000	1500	2	1400
JSA1000*1500	200	800	1500	2000	3	1910
JSA1000*2000	200	700	2000	2500	4	2441

JSA Arch Fenders / Performance

Reaction R: kN; energy absorption E: kNm.

Compression 45.0%

Model	RL / R	RL / E	RO / R	RO / E	RH / R	RH / E	RS / R	RS / E
JSA150*1000	56	3	84	4	112	6	129	7
JSA150*1500	84	5	126	6	168	9	194	11
JSA150*2000	112	6	168	8	224	12	258	14
JSA150*2500	140	8	211	10	280	15	323	18
JSA150*3000	168	9	252	12	336	18	387	21
JSA150*3500	196	11	294	14	392	21	452	25

Performance tolerance: ±10%.

Reaction R: kN; energy absorption E: kNm.

Compression 50.0%

Model	RL / R	RL / E	RO / R	RO / E	RH / R	RH / E	RS / R	RS / E
JSA150*1000	76	4	113	5	151	7	174	8
JSA150*1500	114	6	170	8	227	11	261	12
JSA150*2000	152	7	226	10	302	14	348	16
JSA150*2500	190	9	283	13	378	18	435	20
JSA150*3000	228	10	339	15	453	21	522	24
JSA150*3500	266	12	396	18	529	25	609	28

Performance tolerance: ±10%.

Reaction R: kN; energy absorption E: kNm.

Compression 52.5%

Model	RL / R	RL / E	RO / R	RO / E	RH / R	RH / E	RS / R	RS / E
JSA200*1000	76	6	113	10	151	12	174	14
JSA200*1500	114	9	170	16	227	18	260	21
JSA200*2000	151	12	226	20	302	24	347	28
JSA200*2500	189	15	283	26	378	30	434	35
JSA200*3000	227	18	339	31	453	37	520	42
JSA200*3500	265	21	396	36	528	43	607	49
JSA250*1000	148	16	172	18	208	22	270	28
JSA250*1500	222	24	258	27	312	33	405	42
JSA250*2000	296	32	344	36	416	44	540	56
JSA250*2500	370	40	430	45	520	58	675	70
JSA250*3000	444	48	516	54	624	66	810	84

JSA Arch Fenders / Performance

Reaction R: kN; energy absorption E: kNm.

Compression 52.5%

Model	RL / R	RL / E	RO / R	RO / E	RH / R	RH / E	RS / R	RS / E
JSA250*3500	518	56	602	63	728	77	945	98
JSA300*1000	177	22	206	26	249	31	324	41
JSA300*1500	266	33	309	39	374	47	486	62
JSA300*2000	354	44	412	52	498	62	648	82
JSA300*2500	443	55	515	65	623	78	810	103
JSA300*3000	531	66	618	78	747	93	972	123
JSA300*3500	620	77	721	91	872	109	1134	144
JSA400*1000	236	40	275	46	332	56	432	73
JSA400*1500	354	60	413	69	498	84	648	110
JSA400*2500	590	100	688	115	830	140	1080	183
JSA400*3000	708	120	825	138	996	168	1296	219
JSA400*3500	826	140	963	161	1162	196	1512	256
JSA500*1000	295	62	344	72	415	87	540	113
JSA500*1500	443	93	516	108	623	131	810	170
JSA500*2000	590	124	688	144	830	174	1080	226
JSA500*2500	738	155	860	180	1038	218	1350	283
JSA500*3000	885	186	1032	216	1245	261	1620	339
JSA500*3500	1033	217	1204	252	1453	305	1890	396
JSA600*1000	354	89	412	104	498	126	647	163
JSA600*1500	531	134	618	156	747	189	971	245
JSA600*3000	1062	267	1236	312	1494	378	1941	489
JSA600*3500	1239	312	1442	364	1743	441	2265	571
JSA800*1000	472	159	550	185	664	223	864	290
JSA800*1500	708	239	825	278	996	335	1296	435
JSA800*2000	944	318	1100	370	1328	446	1728	580
JSA800*2500	1180	398	1375	463	1660	558	2160	725
JSA800*3000	1416	477	1650	555	1992	669	2592	870
JSA800*3500	1652	557	1925	648	2324	781	3024	1015
JSA1000*1000	590	248	688	289	830	349	1080	454
JSA1000*1500	885	372	1032	434	1245	524	1620	681
JSA1000*2000	1180	496	1376	578	1660	698	2160	908
JSA400*2000	472	80	550	92	664	112	864	146
JSA600*2000	708	178	824	208	996	252	1294	326

JSA Arch Fenders / Performance

Reaction R: kN; energy absorption E: kNm.

Compression 52.5%

Model	RL / R	RL / E	RO / R	RO / E	RH / R	RH / E	RS / R	RS / E
JSA600*2500	885	223	1030	260	1245	315	1618	408

Performance tolerance: ±10%.

Reaction R: kN; energy absorption E: kNm.

Compression 55.0%

Model	RL / R	RL / E	RO / R	RO / E	RH / R	RH / E	RS / R	RS / E
JSA200*1000	104	7	153	11	204	13	234	15
JSA200*1500	155	11	230	17	306	20	331	23
JSA200*2000	207	14	307	22	407	26	469	30
JSA200*2500	258	18	384	28	509	33	586	38
JSA200*3000	311	21	460	33	453	37	703	45
JSA200*3500	362	25	537	39	713	33	820	53
JSA250*1000	205	17	239	19	288	23	375	30
JSA250*1500	308	26	359	29	432	35	563	45
JSA250*2000	410	34	478	38	576	46	750	60
JSA250*2500	513	43	598	48	720	58	938	75
JSA250*3000	616	51	718	57	864	69	1125	90
JSA250*3500	718	60	837	67	1008	81	1313	105
JSA300*1000	246	24	286	28	346	33	450	44
JSA300*1500	369	36	429	42	519	50	675	66
JSA300*2000	492	48	572	56	692	66	900	88
JSA300*2500	615	60	715	70	865	83	1125	110
JSA300*3000	738	72	858	84	1038	99	1350	132
JSA300*3500	861	84	1001	98	1211	116	1575	154
JSA400*1000	328	43	382	49	461	60	600	78
JSA400*1500	492	65	573	74	692	90	900	117
JSA400*2500	820	108	955	123	1153	150	1500	195
JSA400*3000	984	129	1146	147	1383	180	1800	234
JSA400*3500	1148	151	1337	172	1614	210	2100	273
JSA500*1000	410	66	478	77	576	93	750	121
JSA500*1500	615	99	717	116	864	140	1125	182
JSA500*2000	820	132	956	154	1152	186	1500	242
JSA500*2500	1025	165	1195	193	1440	233	1875	303

JSA Arch Fenders / Performance

Reaction R: kN; energy absorption E: kNm.

Compression 55.0%

Model	RL / R	RL / E	RO / R	RO / E	RH / R	RH / E	RS / R	RS / E
JSA500*3000	1230	198	1434	231	1728	279	2250	363
JSA500*3500	1435	231	1673	270	2016	326	2625	424
JSA600*1000	492	95	572	111	692	135	899	175
JSA600*1500	738	143	858	167	1038	203	1349	263
JSA600*3000	1476	285	1716	333	2076	405	2697	525
JSA600*3500	1722	333	2002	389	2422	473	3147	613
JSA800*1000	656	170	764	198	922	239	1200	311
JSA800*1500	984	255	1146	297	1383	359	1800	467
JSA800*2000	1312	340	1528	396	1844	478	2400	622
JSA800*2500	1640	425	1910	496	2305	598	3000	778
JSA800*3000	1968	510	2292	594	2766	717	3600	933
JSA800*3500	2296	595	2674	693	3227	837	4200	1089
JSA1000*1000	820	266	956	310	1153	374	1500	486
JSA1000*1500	1230	399	1434	465	1730	561	2250	729
JSA1000*2000	1640	532	1912	620	2306	748	3000	972
JSA400*2000	656	86	764	98	922	120	1200	156
JSA600*2000	984	190	1144	222	1384	270	1798	350
JSA600*2500	1230	238	1430	278	1730	338	2248	438

Performance tolerance: ±10%.

Deflection, reaction and energy as percentages.

Compression factors

Deflection (%)	E(%)	R(%)	Deflection (%)	E(%)	R(%)
0	0	0	35	59	99
5	1	23	40	70	96
10	5	48	45	82	92
15	12	70	50	92	92
20	22	87	52.5	100	100
25	33	96	55	107	136
30	45	100			

JSB Arch *Fenders*



Arch fenders with blue face pads.

JSB Arch Fenders

Arch fenders with steel frames and UHMW-PE face pads provide a coordinated contact assembly.

PRODUCT

Fixed rubber fender

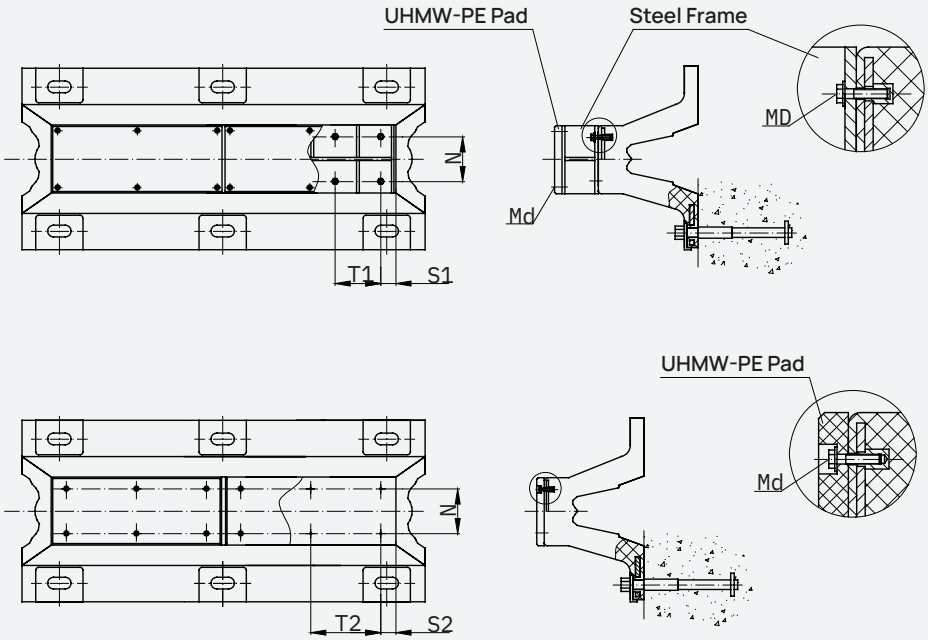
RANGE

Dimensions, performance and installation options on the following pages

Specification overview

Size options	JSB150 to JSB1000
Compression conditions	50.0%
Rubber grades	RL, RO, RH, RS

JSB Arch Fenders / Dimensions

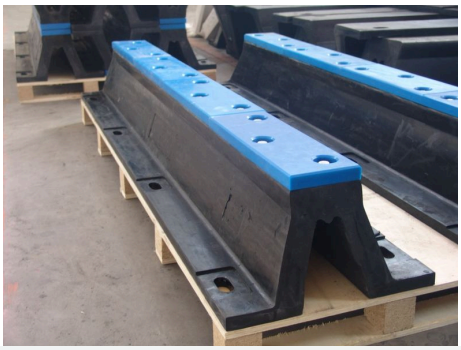


Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Dimensions / 1

Model	N	Md (steel frame)	T1 (steel frame)	S1 (steel frame)	MD (steel frame)	T2 (UHMW-PE pad)	S2 (UHMW-PE pad)
JSB150	0	M16	250~300	125	M16	300~400	60
JSB200	0	M16	250~300	125	M16	300~400	60
JSB250	64	M16	250~300	125	M20	300~400	60~85
JSB300	105	M16	250~300	125	M24	300~400	65~85
JSB400	180	M16	250~300	125	M27	300~400	65~85
JSB500	245	M16	250~300	125	M30	300~400	65~85
JSB600	310	M16	250~300	125	M30	300~400	65~85
JSB800	440	M16	250~300	125	M36	300~400	65~85
JSB1000	570	M16	250~300	125	M36	300~400	65~85



Arch fenders with UHMW-PE face pads



Quay-side fender panels with face pads

JSB Arch Fenders / Technical Data

Dimensions in mm; weights in kg.

Dimensions / 2

Model	Max allowable length
JSB150	≤3500
JSB200	≤3500
JSB250	≤3500
JSB300	≤3500
JSB400	≤3500
JSB500	≤3500
JSB600	≤3500
JSB800	≤3500
JSB1000	≤2000

Performance for 1000 mm length; rated deflection 50%.

Reaction R: kN; energy absorption E: kNm.

Compression 50.0%

Model	RL / R	RL / E	RO / R	RO / E	RH / R	RH / E	RS / R	RS / E
JSB150	78	3	116	5	155	7	181	7
JSB200	103	6	157	8	208	11	241	13
JSB250	144	12	165	15	196	19	257	24
JSB300	158	16	200	21	242	27	326	35
JSB400	229	31	261	41	316	49	413	64
JSB500	269	54	354	64	401	78	511	102
JSB600	299	71	386	83	462	108	613	133
JSB800	456	126	510	150	621	200	831	265
JSB1000	539	221	659	262	788	312	1015	417

Performance tolerance: ±10%.

Unit Element *Fenders*



Unit element rubber fenders in a workshop.

Unit Element Fenders

Unit element rubber fenders can be arranged to suit the required performance and installation interface.

PRODUCT

Fixed rubber fender

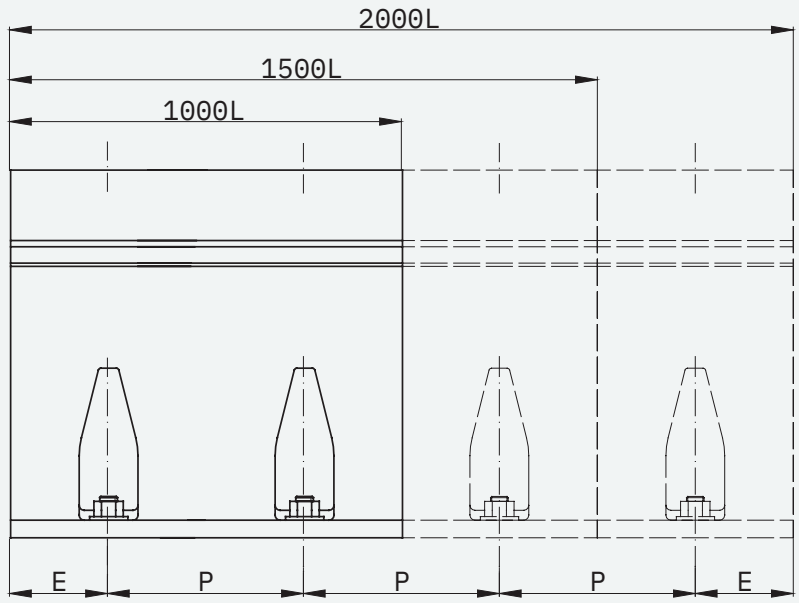
RANGE

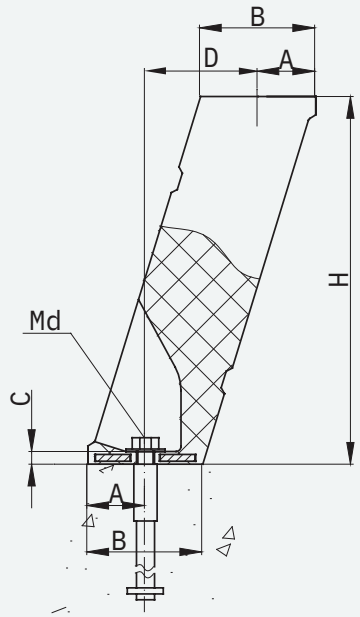
Dimensions, performance and installation options on the following pages

Specification overview

Size options	JME300 to JME1600
Compression conditions	57.5%
Rubber grades	RO, RH

Unit Element Fenders / Dimensions





Dimensions in mm. Drawing not to scale.

Dimensions: mm; weight: kg/m.

Dimensions

Model	H	A	B	C	D	Md	E	P	Weight
JME300	300	47	94	15	94	M20	250	500	39
JME400	400	63	125	17	124	M24	250	500	70
JME500	500	87	158	20	142	M30	250	500	110
JME550	550	87	172	20	170	M30	250	500	132
JME600	600	87	188	20	199	M30	250	500	156
JME750	750	118	235	26	230	M36	250	500	230
JME800	800	129	250	26	240	M36	250	500	283
JME1000	1000	162	322	31	310	M42	250	500	430
JME1250	1250	202	401	36	388	M48	250	500	655
JME1450	1450	228	454	41	454	M48	250	500	835
JME1600	1600	257	500	55	480	M56	250	500	1005

Dimensions: mm; weight: kg/m.

Length options

Model range	Preferred lengths (mm)	Typical other lengths (mm)	Maximum (mm)
JME300	1000, 1500, 2000	600, 900, 1200	2000
JME400-JME750	1000, 1500, 2000	900, 1200	2000

Unit Element Fenders / Technical Data

Dimensions: mm; weight: kg/m.

Length options

Model range	Preferred lengths (mm)	Typical other lengths (mm)	Maximum (mm)
JME800-JME1250	1000, 1500, 2000	900, 1200	2000
JME1450-JME1600	1000, 1200, 1500, 2000	On request	2000

Other non-standard lengths are available on request.

Single element, 1000 mm long; rated deflection 57.5%.

Reaction R: kN; energy absorption E: kNm.

Compression 57.5%

Model	RO / R	RO / E	RH / R	RH / E
JME300	110	15	161	22
JME400	150	27	214	39
JME500	187	43	267	61
JME550	206	52	294	75
JME600	224	62	320	89
JME750	282	96	402	137
JME800	299	110	428	157
JME1000	374	172	534	245
JME1250	467	268	667	383
JME1450	543	361	775	516
JME1600	599	440	855	628

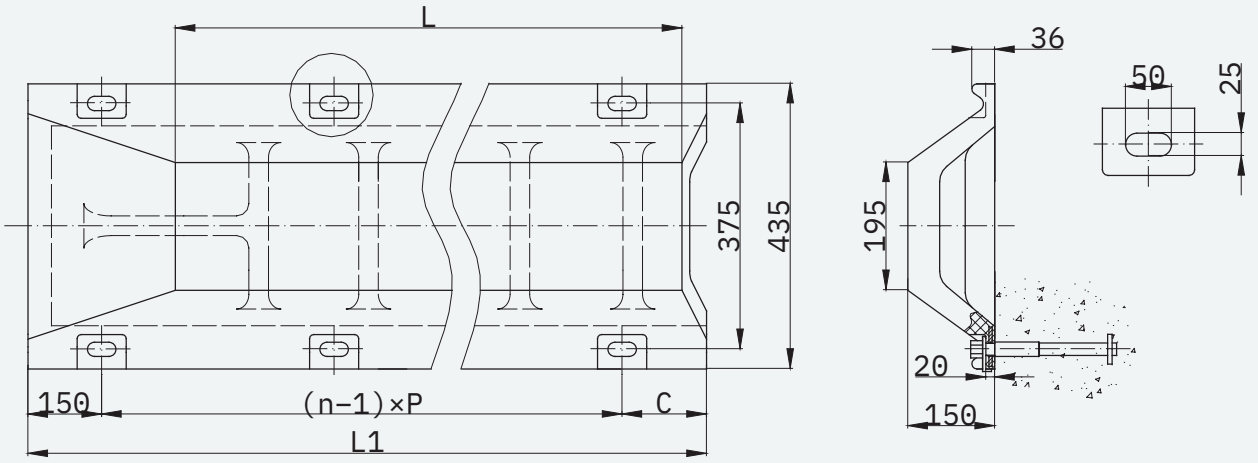
Performance tolerance: ±10%.

Deflection, reaction and energy as percentages.

Compression factors

Deflection (%)	E(%)	R(%)	Deflection (%)	E(%)	R(%)
0	0	0	35	51	97
5	2	24	40	62	90
10	6	47	45	73	84
15	12	71	50	83	85
20	22	87	55	94	92
25	30	96	57.5	100	100
30	41	100	60	106	112

JST150 Fenders



Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Dimensions

Model	L	L1	C	P	n	Weight
JST150*1000	1000	1225	125	475	3	65
JST150*1500	1500	1725	125	725	3	100
JST150*2000	2000	2225	125	650	4	130

Rated deflection 50%; performance for the listed fender sizes and lengths.

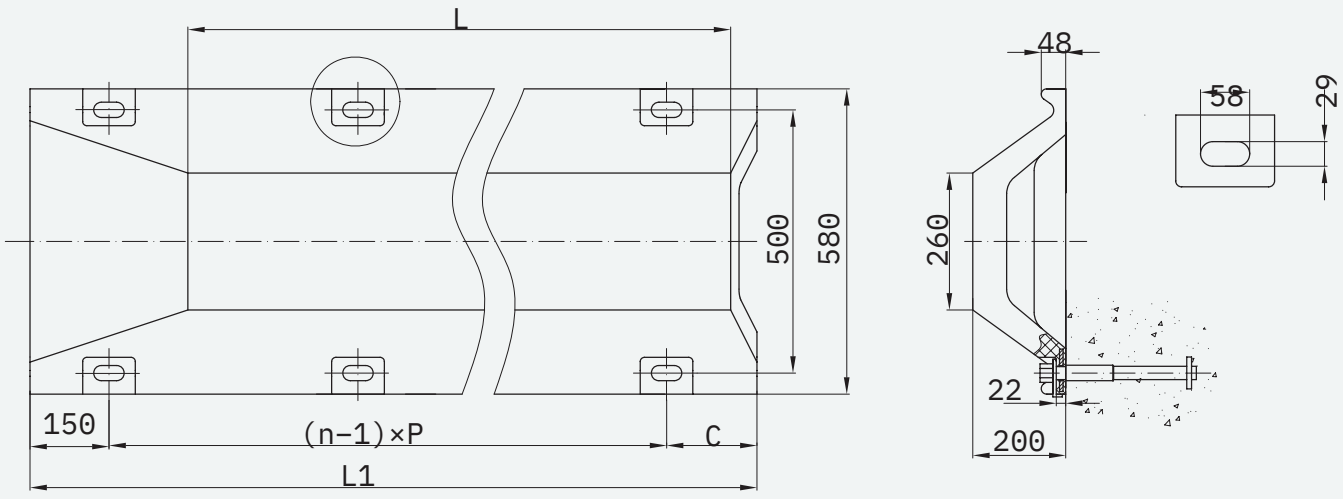
Reaction R: kN; energy absorption E: kNm.

Compression 50.0%

Model	R (kN)	E (kNm)
JST150*1000	308	8
JST150*1500	460	12
JST150*2000	616	16

Performance tolerance: ±10%.

JST200 Fenders



Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Dimensions

Model	L	L1	C	P	n	Weight
JST200*1000	1000	1301	121	515	3	95
JST200*1500	1500	1801	131	760	3	135
JST200*2000	2000	2301	126	675	4	180

Rated deflection 50%; performance for the listed fender sizes and lengths.

Reaction R: kN; energy absorption E: kNm.

Compression 50.0%

Model	R (kN)	E (kNm)
JST200*1000	650	18
JST200*1500	980	27
JST200*2000	1300	36

Performance tolerance: ±10%.

Cylindrical *Fenders*



Smooth cylindrical rubber fenders in a storage yard.

Cylindrical Fenders

Smooth cylindrical rubber fenders can be mounted to suit the quay arrangement and vessel movements.

PRODUCT

Fixed rubber fender

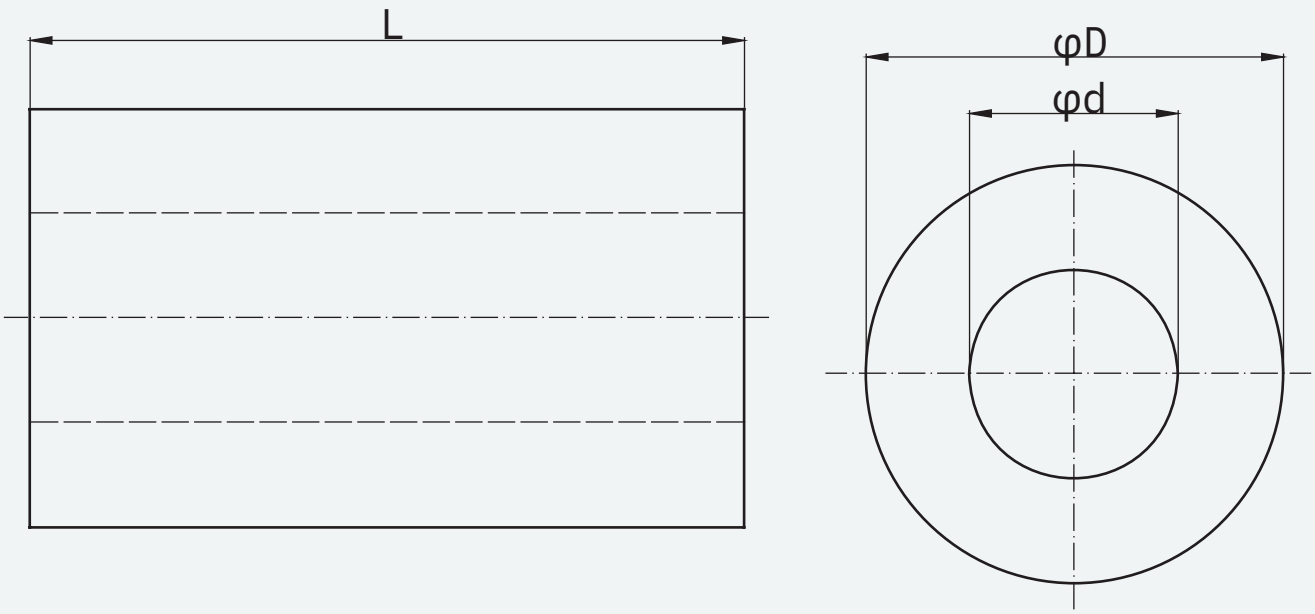
RANGE

Dimensions, performance and installation options on the following pages

Specification overview

Size options	JCY150*75 to JCY2000*1000
Compression conditions	50%; single fender, 1000 mm long

Cylindrical Fenders / Dimensions



Dimensions in mm. Drawing not to scale.

Size D x d: mm.

Cylindrical sizes

Model / D×d (mm)	Outer diameter D (mm)	Inner diameter d (mm)
JCY150*75	150	75
JCY200*100	200	100
JCY250*125	250	125
JCY300*150	300	150
JCY350*175	350	175
JCY400*200	400	200
JCY500*250	500	250
JCY600*300	600	300
JCY700*350	700	350
JCY800*400	800	400
JCY900*450	900	450
JCY1000*500	1000	500
JCY1100*550	1100	550
JCY1200*600	1200	600
JCY1300*650	1300	650
JCY1400*700	1400	700
JCY1500*750	1500	750
JCY1600*800	1600	800

Cylindrical Fenders / Technical Data

Size D x d: mm.

Cylindrical sizes

Model / D×d (mm)	Outer diameter D (mm)	Inner diameter d (mm)
JCY1700*850	1700	850
JCY1800*900	1800	900
JCY1900*950	1900	950
JCY2000*1000	2000	1000



Cylindrical fenders along a quay edge.

Reaction: kN; energy absorption: kNm. Rated deflection: 50%; single fender, 1000 mm long.

Compression performance

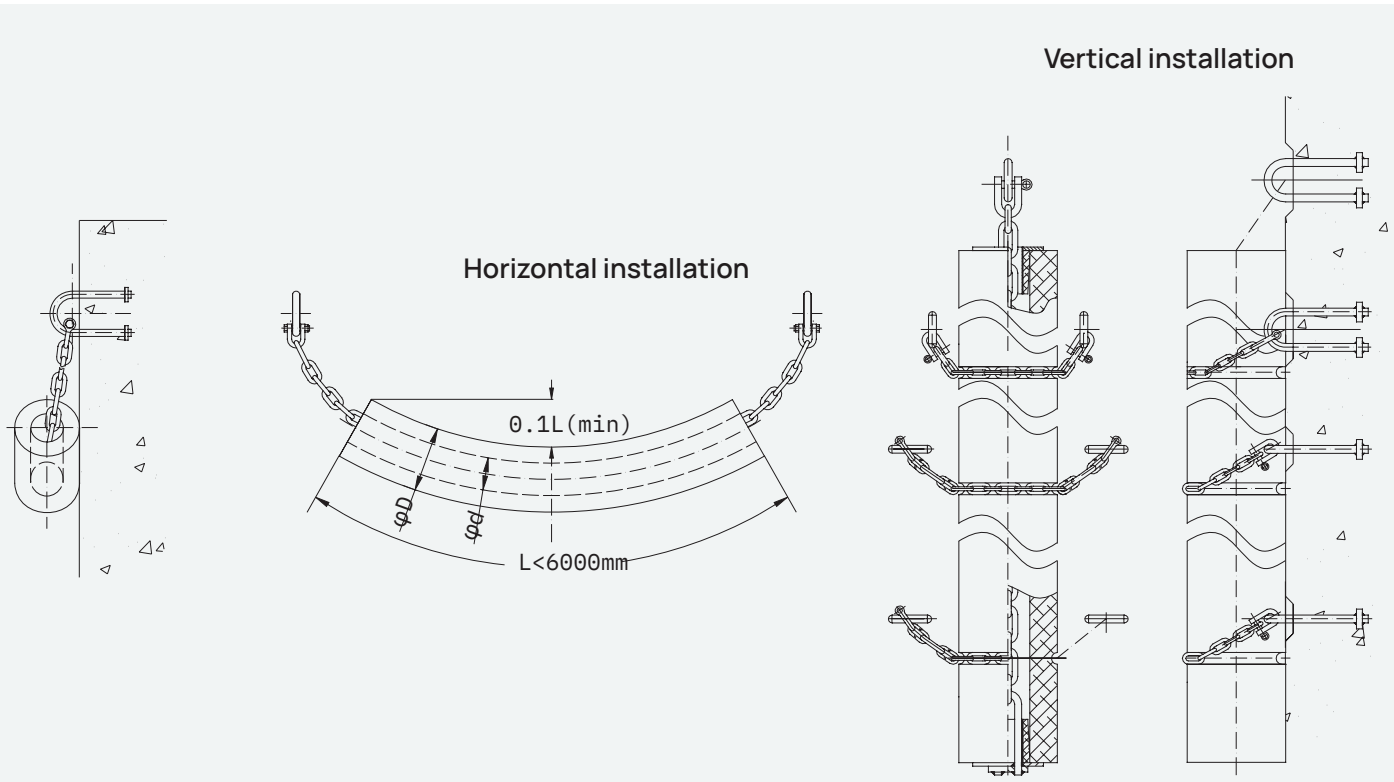
Model / D×d (mm)	RO reaction force	RO energy absorption	RH reaction force	RH energy absorption
JCY150*75	44	1.5	73	2.3
JCY200*100	60	2.6	95	4.2
JCY250*125	75	4	120	6.5
JCY300*150	89	6	143	9
JCY350*175	104	8	167	13
JCY400*200	119	10	191	17
JCY500*250	148	16	239	26
JCY600*300	179	24	286	37
JCY700*350	208	31	334	50
JCY800*400	237	41	383	66
JCY900*450	268	52	430	84
JCY1000*500	297	64	479	103
JCY1100*550	331	77	528	129
JCY1200*600	363	95	574	152

Cylindrical Fenders / Technical Data

Reaction: kN; energy absorption: kNm. Rated deflection: 50%; single fender, 1000 mm long.

Compression performance

Model / D×d (mm)	RO reaction force	RO energy absorption	RH reaction force	RH energy absorption
JCY1300*650	392	108	623	179
JCY1400*700	422	128	670	208
JCY1500*750	451	147	718	238
JCY1600*800	481	176	776	282
JCY1700*850	511	206	824	338
JCY1800*900	541	247	872	406
JCY1900*950	570	288	920	487
JCY2000*1000	653	321	1054	584



Dimensions in mm. Drawing not to scale.

Dimensions and nominal fixing sizes: mm.

Suspension chain sizes

Model	D	d	chain diameter
*JCY120	120	60	Φ 14
JCY150	150	75	Φ16
*JCY180	180	90	Φ16
JCY200	200	100	Φ18

Cylindrical Fenders / Installation

Dimensions and nominal fixing sizes: mm.

Suspension chain sizes

Model	D	d	chain diameter
*JCY220	220	110	Φ18
*JCY240	240	120	Φ20
JCY250	250	125	Φ20
*JCY260	260	130	Φ20
JCY300	300	150	Φ 24
JCY350	350	175	Φ25
*JCY390	390	195	Φ28
JCY400	400	200	Φ28
*JCY440	440	220	Φ28
*JCY460	460	230	Φ30
*JCY480	480	240	Φ30
JCY500	500	250	Φ32
*JCY530	530	265	Φ32
*JCY540	540	270	Φ32
JCY600	600	300	Φ36
JCY700	700	350	Φ36

* Non-standard sizes available.

Dimensions and nominal fixing sizes: mm.

Horizontal suspension limits

Fender length L (mm)	Minimum mid-span sag
Less than 6000	0.1L

Roller fender systems



Tyre-wheel



Rubber roller



Foam-filled roller

Tyre-wheel, rubber roller and foam-filled roller fenders.

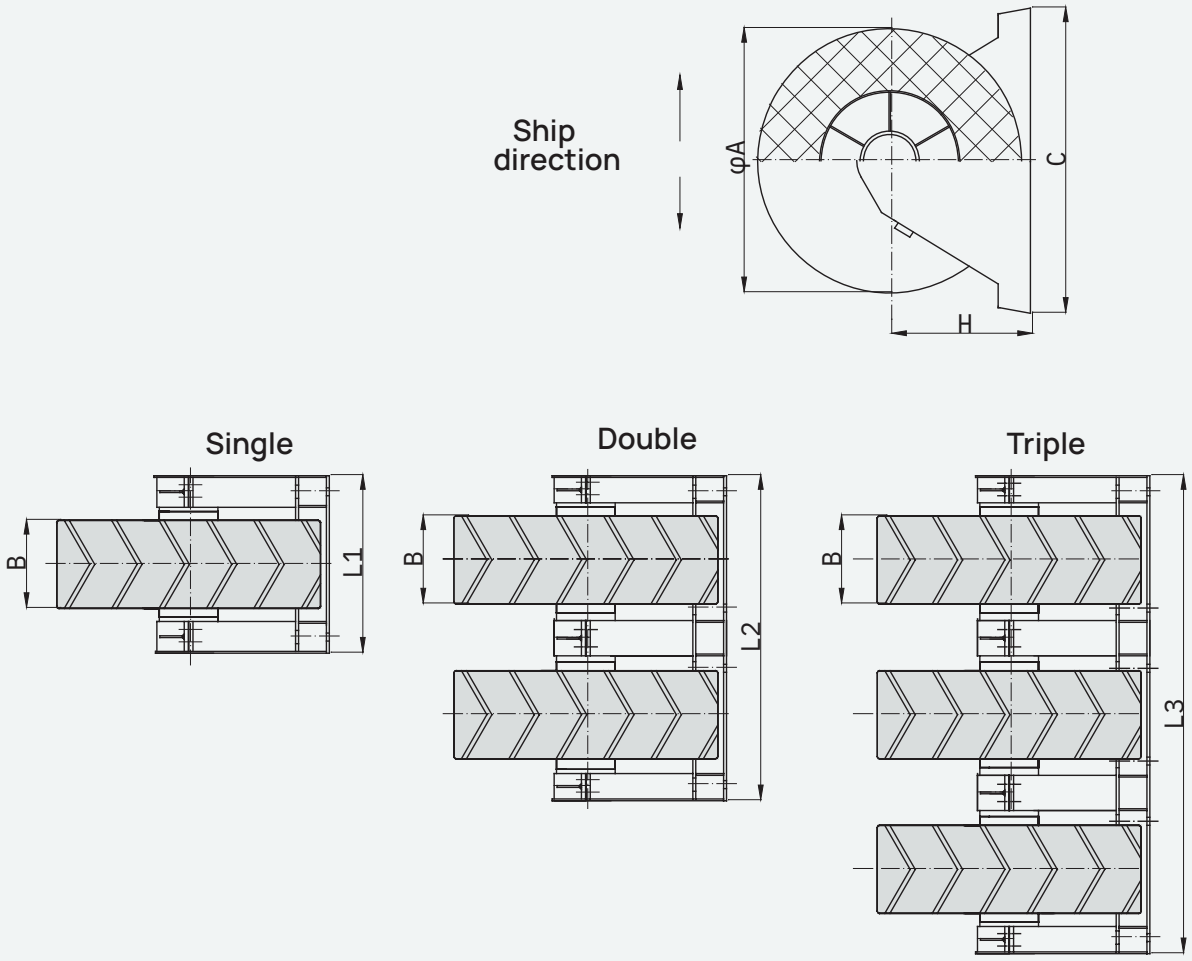
Rotating contact at the berth

Wheel fenders provide rotating contact for constrained vessel movements. Coordinate the wheel profile, frame and stack arrangement with the vessel contact geometry.

Wheel configuration guide

Selection item	Options
Body profiles	Type A, Type B and Type C
Stack arrangements	Single, Double and Triple
Performance	Select the required reaction, energy absorption and maximum deflection.
Installation	Confirm frame dimensions and berth connections on the installation drawing.

Wheel Fenders / Dimensions



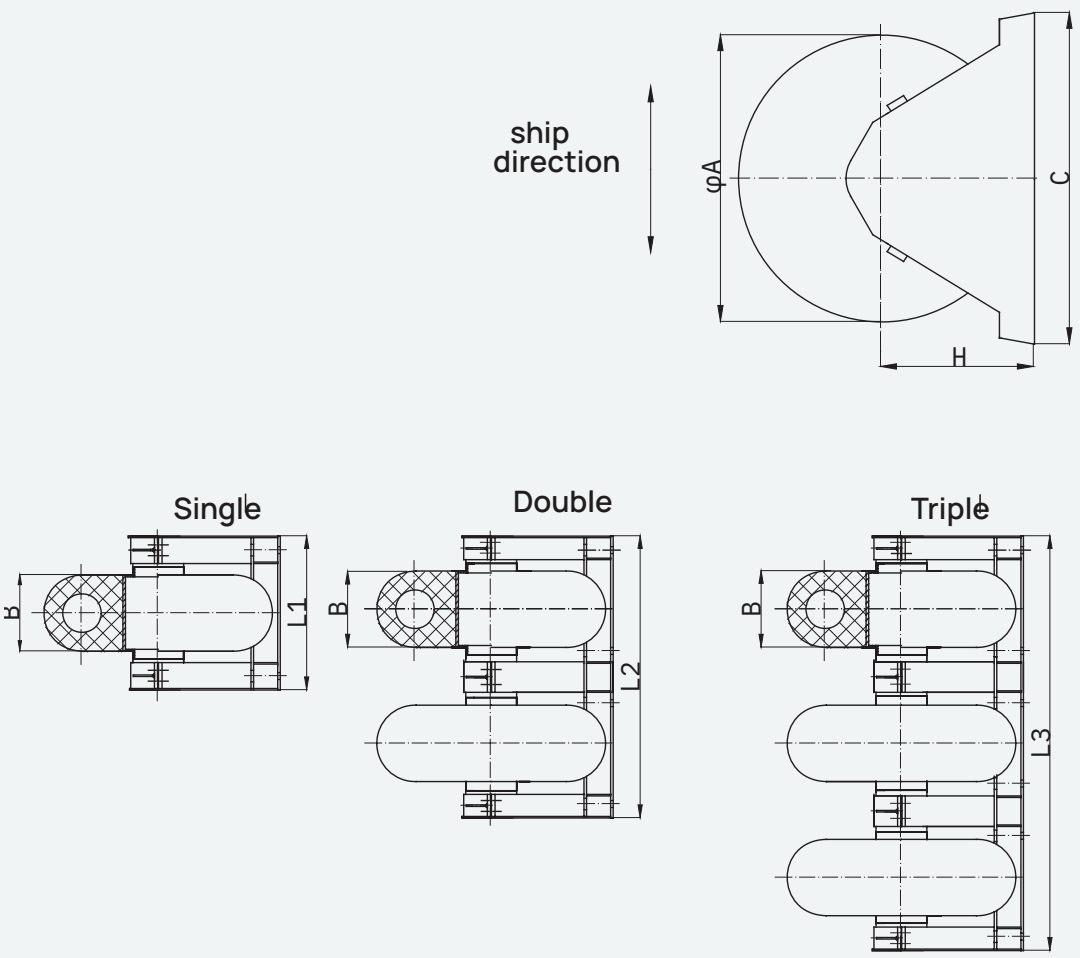
Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

A type dimensions

Model / A×B (mm)	A	B	C	H	L1	L2	L3
JWH-A-600×200	600	200	695	320	420	770	1120
JWH-A-750×250	750	250	870	400	510	935	1360
JWH-A-900×300	900	300	1040	495	610	1120	1630
JWH-A-1200×400	1200	400	1380	640	820	1500	2180
JWH-A-1500×500	1500	500	1740	800	1010	1850	2690
JWH-A-1800×600	1800	600	2080	960	1210	2215	3220
JWH-A-2100×700	2100	700	2440	1155	1410	2590	3770
JWH-A-2400×800	2400	800	2770	1280	1610	2950	4290

Wheel Fenders / Dimensions



Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

B type dimensions / 1

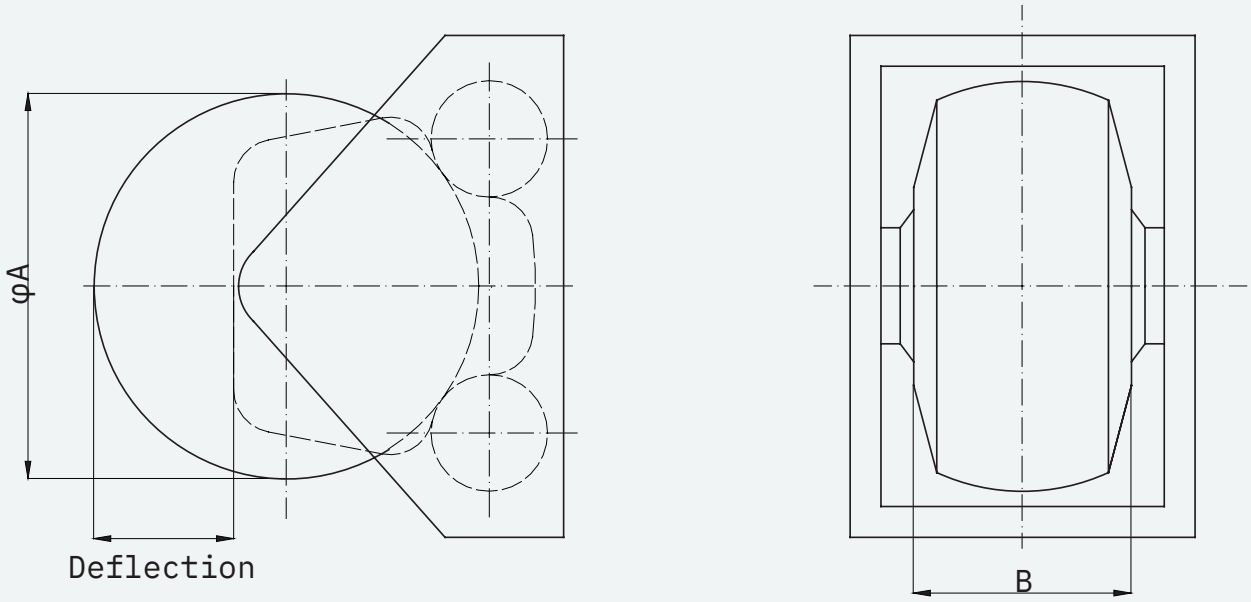
Model / A×B (mm)	C	H	Single L1	Single weight	Double L2	Double weight	Triple L3
JWH-B-600×200	695	320	420	127	770	245	1120
JWH-B-750×250	870	400	510	249	935	501	1360
JWH-B-900×300	1040	495	610	465	1120	878	1630
JWH-B-1200×400	1380	640	820	1045	1500	2041	2180
JWH-B-1500×500	1740	800	1010	2011	1850	3915	2690
JWH-B-1800×600	2080	960	1210	3441	2215	6701	3220
JWH-B-2100×700	2440	1155	1410	5610	2590	10925	3770

Wheel Fenders / Technical Data

Dimensions in mm; weights in kg.

B type dimensions / 2

Model / A×B (mm)	Triple weight
JWH-B-600×200	365
JWH-B-750×250	735
JWH-B-900×300	1291
JWH-B-1200×400	3005
JWH-B-1500×500	5784
JWH-B-1800×600	9891
JWH-B-2100×700	15895



Dimensions in mm. Drawing not to scale.

Size A x B in mm.

Type C wheel sizes

Model / A×B (mm)
JWH-C-1200×400
JWH-C-1500×500
JWH-C-1800×600
JWH-C-2100×700
JWH-C-2400×800
JWH-C-2700×900
JWH-C-3000×1000

Wheel Fenders / Performance

Dimensions and maximum deflection in mm; reaction R in kN; energy E in kNm.

Wheel performance / Single, Double and Triple

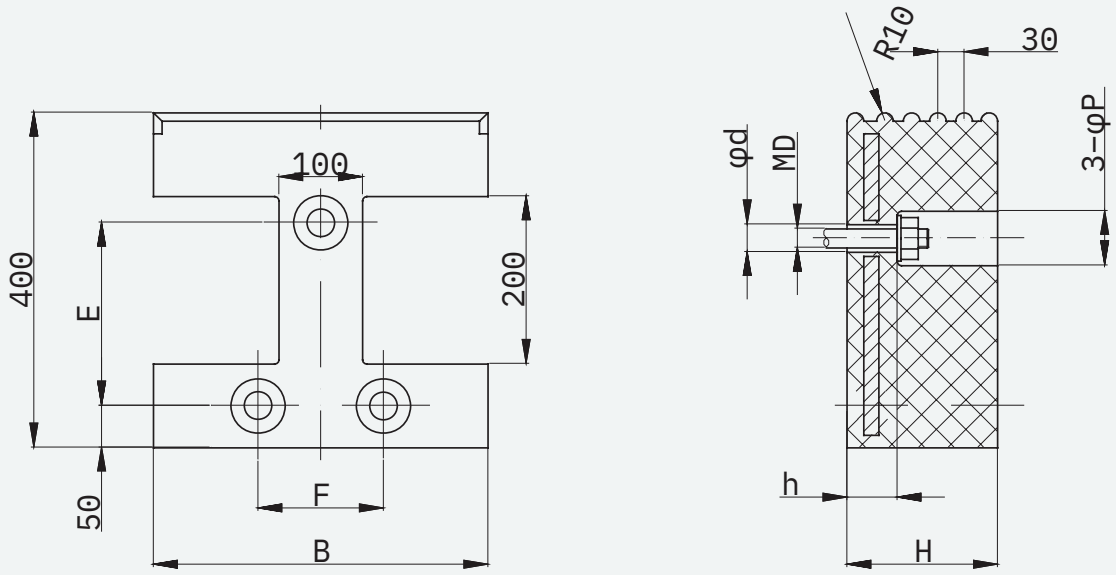
Model / A×B (mm)	Maximum deflection	Single reaction	Single energy absorption	Double reaction	Double energy absorption	Triple reaction	Triple energy absorption
JWH-600×200	125	67	2	134	5	202	7
JWH-750×250	159	105	5	210	9	315	14
JWH-900×300	185	151	8	302	16	453	24
JWH-1200×400	260	269	19	539	39	814	58
JWH-1500×500	325	419	38	843	76	1264	113
JWH-1800×600	390	608	65	1215	130	1823	196
JWH-2100×700	455	823	102	1647	204	2470	306

Dimensions and maximum deflection in mm; reaction R in kN; energy E in kNm.

Type C compression performance

Model / A×B (mm)	Maximum deflection	Single reaction	Single energy absorption	Double reaction	Double energy absorption	Triple reaction	Triple energy absorption
JWH-C-1200×400	431	248	48	496	96	744	144
JWH-C-1500×500	541	388	94	776	187	1166	281
JWH-C-1800×600	650	559	162	1217	323	1676	485
JWH-C-2100×700	762	761	257	1519	514	2283	770
JWH-C-2400×800	851	990	383	1980	766	2969	1147
JWH-C-2700×900	964	1254	546	2509	1088	3763	1637
JWH-C-3000×1000	1074	1548	749	3097	1499	4645	2244

Step Fenders / Dimensions



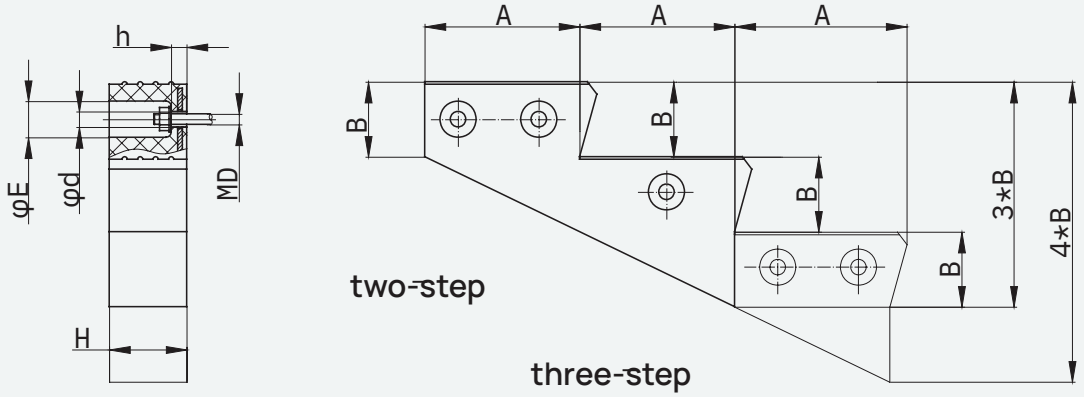
Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Type I dimensions

Model	B	H	E	F	h	d	P	MD	Weight
JSP-I-400×300×200	300	200	220	150	90	30	60	M24	21
JSP-I-400×400×200	400	200	220	150	90	30	60	M24	28
JSP-I-400×300×521	300	521	200	150	60	33	65	M27	50
JSP-I-400×400×521	400	521	200	150	60	33	65	M27	70

Step Fenders / Dimensions

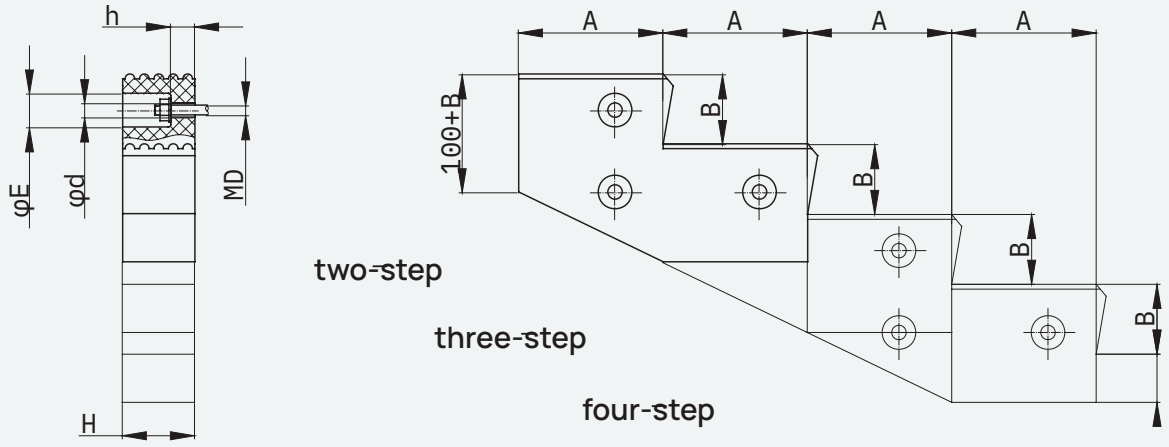


Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Type II A dimensions

Model	A	B	H	h	E	d	MD
JSP-II-A-300×145×150	300	145	150	30	70	30	M24
JSP-II-A-300×150×150	300	150	150	30	70	30	M24



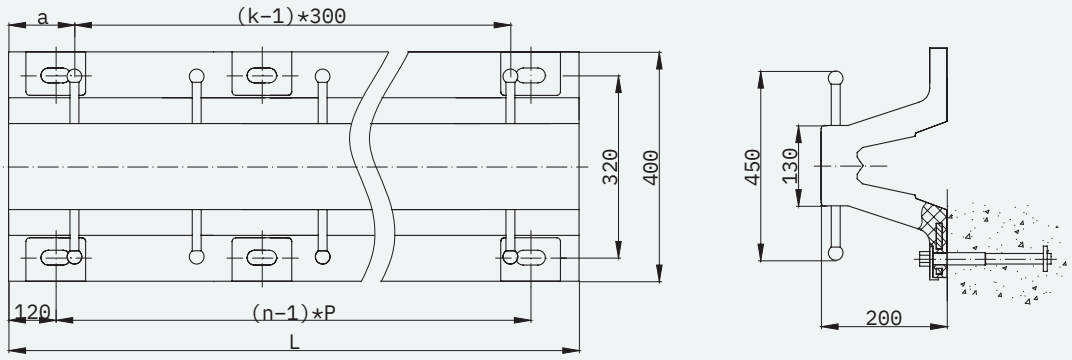
Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

STEP FENDERS Type II B Series dimensions

Model	A	B	H	h	E	d	MD
JSP-II-B-300×145×150	300	145	150	50	70	30	M24

JAL Arch Fender Ladders / Dimensions

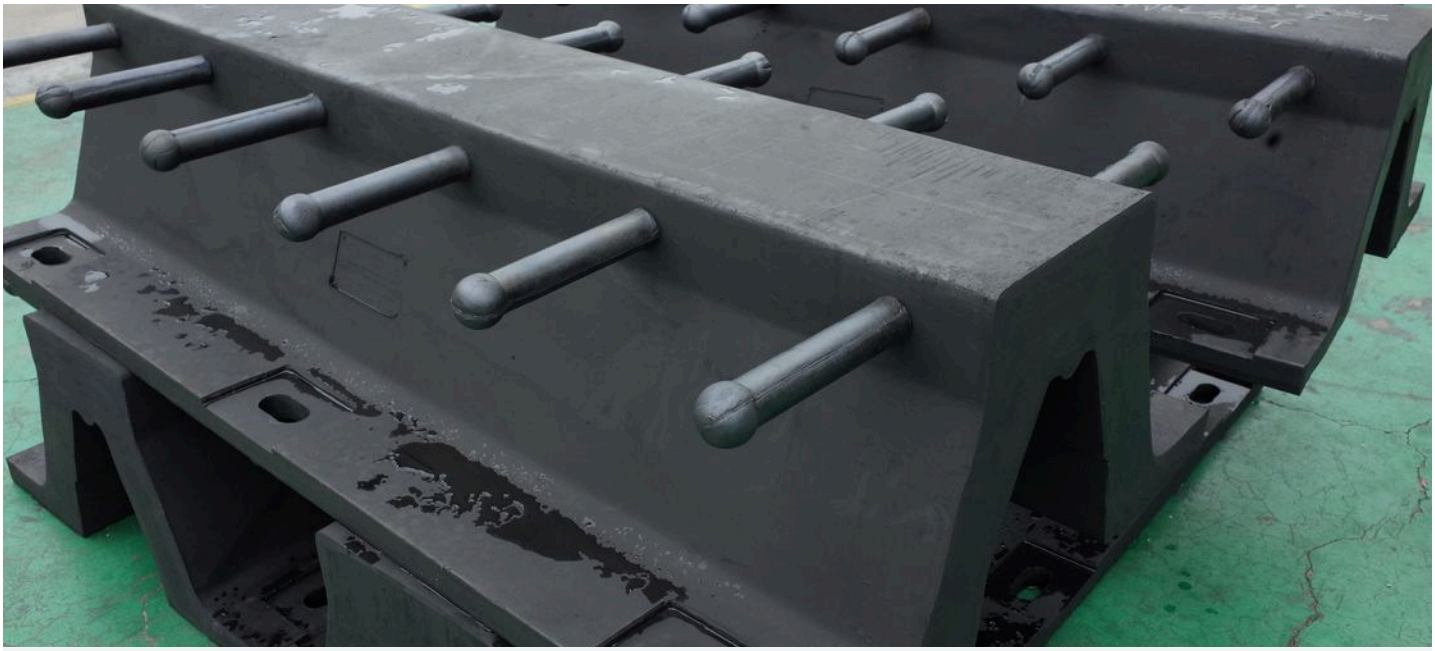


Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

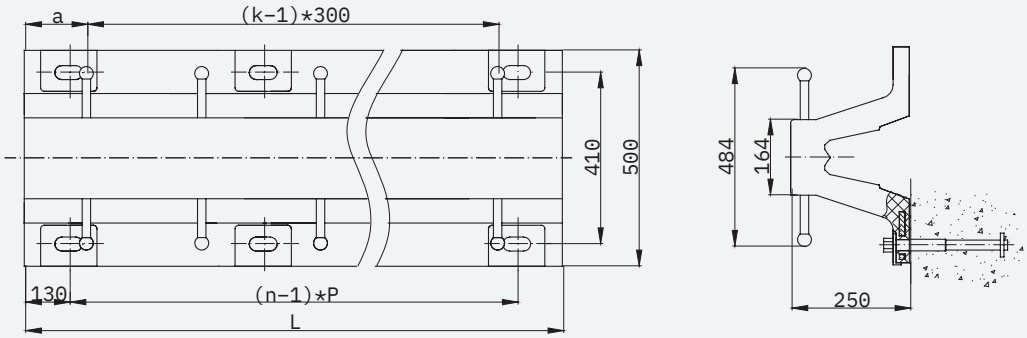
JAL200 ladder dimensions

Model	n	P	L	a	k	Weight
JAL200*1500	3	630	1500	150	5	90
JAL200*1800	3	780	1800	150	6	100
JAL200*2100	4	620	2100	150	7	120
JAL200*2200	4	653	2200	200	7	125
JAL200*2400	4	720	2400	150	8	145
JAL200*2700	5	615	2700	150	9	161
JAL200*3000	5	690	3000	150	10	180
JAL200*3300	6	612	3300	150	11	198
JAL200*3600	6	672	3600	150	12	216



Arch ladder fenders in a workshop

JAL Arch Fender Ladders / Dimensions



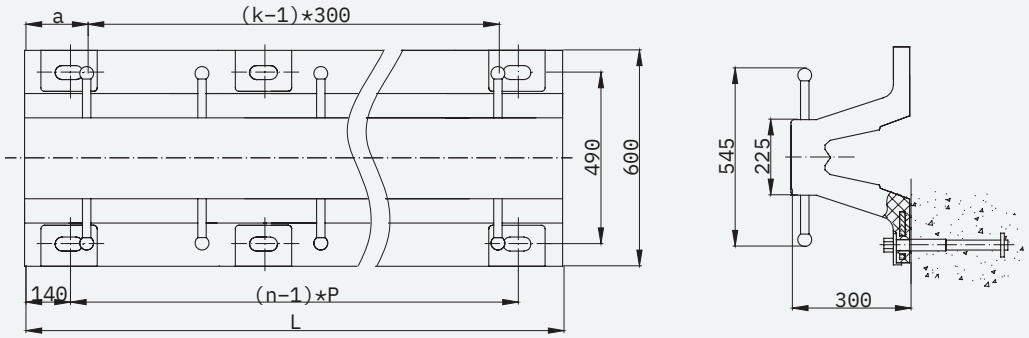
Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

JAL250 ladder dimensions

Model	n	P	L	a	k	Weight
JAL250*1500	3	620	1500	150	5	130
JAL250*1800	3	770	1800	150	6	160
JAL250*2100	4	613	2100	150	7	185
JAL250*2200	4	647	2200	200	7	190
JAL250*2400	4	713	2400	150	8	210
JAL250*2700	5	610	2700	150	9	240
JAL250*3000	5	685	3000	150	10	260
JAL250*3300	6	608	3300	150	11	290
JAL250*3600	6	668	3600	150	12	320

JAL Arch Fender Ladders / Dimensions



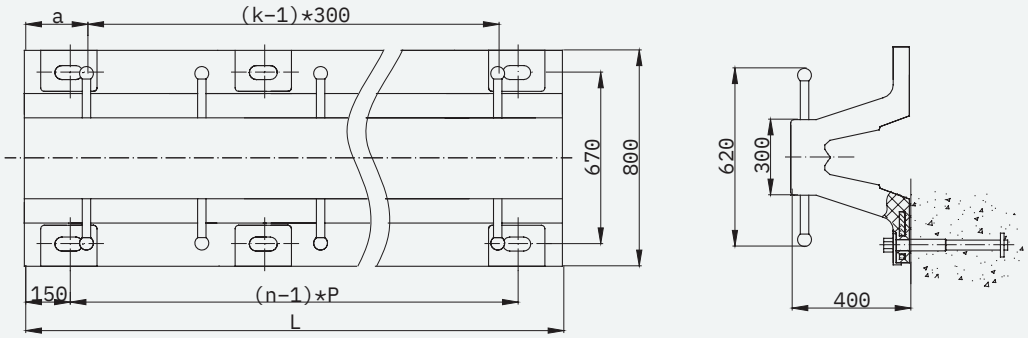
Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

JAL300 ladder dimensions

Model	n	P	L	a	k	Weight
JAL300*1500	3	610	1500	150	5	180
JAL300*1800	3	760	1800	150	6	215
JAL300*2100	4	606	2100	150	7	260
JAL300*2200	4	640	2200	200	7	285
JAL300*2400	4	706	2400	150	8	310
JAL300*2700	5	605	2700	150	9	350
JAL300*3000	5	680	3000	150	10	388
JAL300*3300	6	604	3300	150	11	426
JAL300*3600	6	664	3600	150	12	465

JAL Arch Fender Ladders / Dimensions



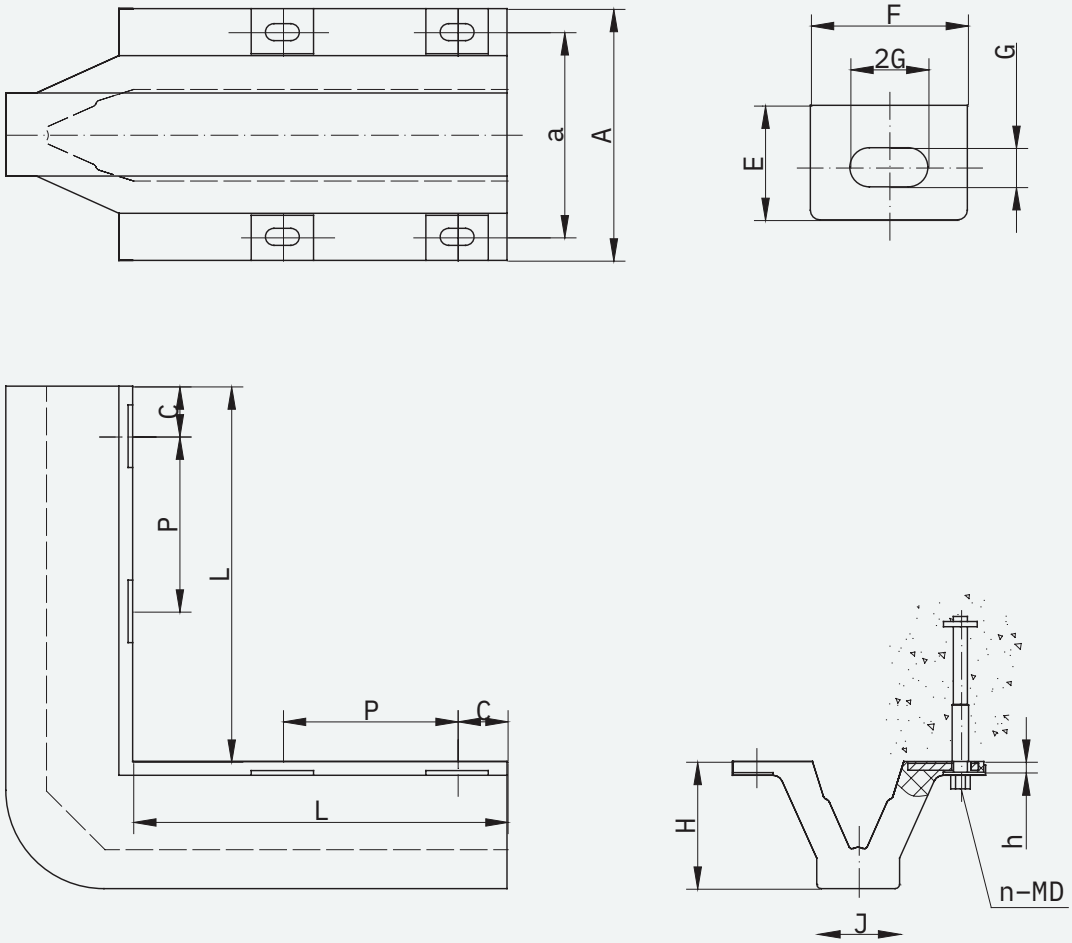
Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

JAL400 ladder dimensions

Model	n	P	L	a	k	Weight
JAL400*1500	3	600	1500	150	5	300
JAL400*1800	3	750	1800	150	6	360
JAL400*2100	4	600	2100	150	7	420
JAL400*2200	4	633	2200	200	7	440
JAL400*2400	4	700	2400	150	8	480
JAL400*2700	5	600	2700	150	9	540
JAL400*3000	5	675	3000	150	10	600
JAL400*3300	6	600	3300	150	11	660
JAL400*3600	6	660	3600	150	12	720

JAC Arch Corner Fenders / Dimensions



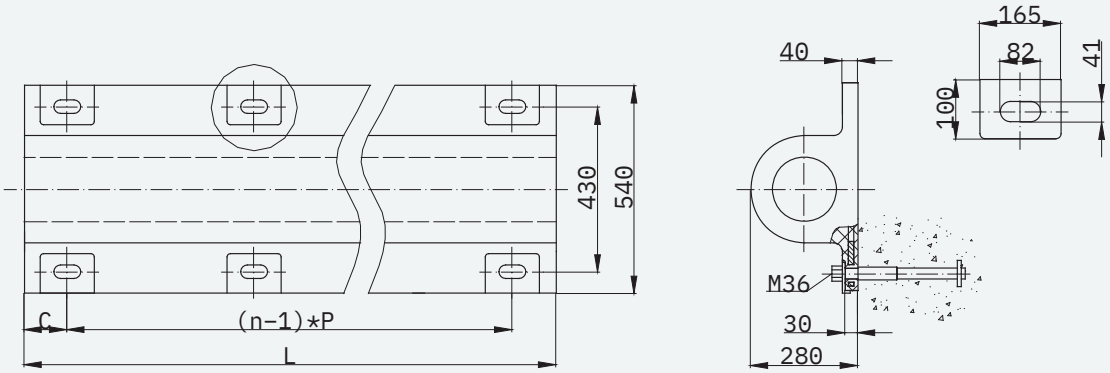
Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

Corner fender dimensions

Model	H	L	A	a	J	h	C	P	F	G	E	n-MD
JAC250*750L	250	750	500	410	164	20.5	100	350	125	32	90	8-M27
JAC250*1000L	250	1000	500	410	164	20.5	150	550	125	32	90	8-M27
JAC300*1000L	300	1000	600	490	225	24	140	575	140	35	105	8-M30

D-profile Fender Family / Technical Data



Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

JDO280 × 540 / Dimensions

Model	C	P	L	n	Weight
JDO280*540*1000	150	700	1000	2	124
JDO280*540*1500	150	600	1500	3	182
JDO280*540*2000	145	570	2000	4	255
JDO280*540*2500	150	550	2500	5	328
JDO280*540*3000	150	540	3000	6	402



D-profile rubber fenders



Molded D-profile fenders prepared for handling

D-profile Fender Family / Technical Data

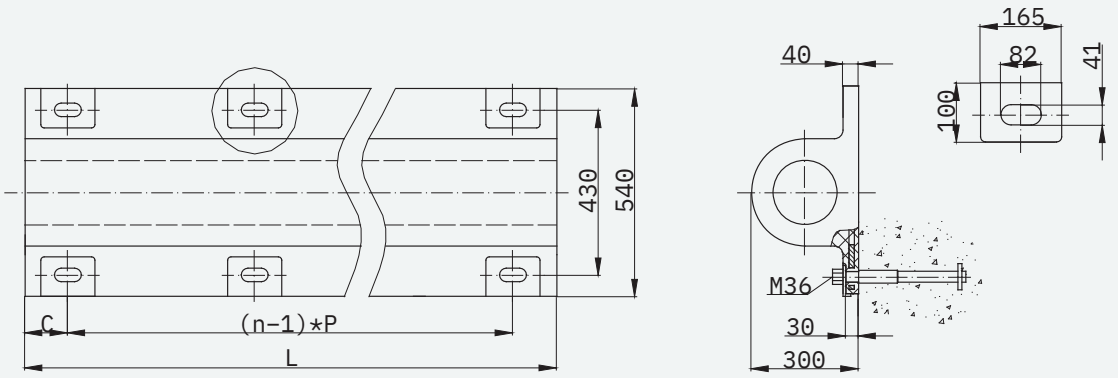
Single fender at the listed length; rated deflection 50%.

Reaction R: kN; energy absorption E: kNm.

JDO280 × 540 / Compression 50%

Model	R (kN)	E (kNm)
JDO280*540*1000	375	14
JDO280*540*1500	565	21
JDO280*540*2000	750	28
JDO280*540*2500	940	35
JDO280*540*3000	1130	42

Performance tolerance: ±10%.



Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

JDO-A300 × 540 / Dimensions

Model	C	P	L	n	Weight
JDO-A300*540*1000	150	700	1000	2	130
JDO-A300*540*1500	150	600	1500	3	197
JDO-A300*540*2000	145	570	2000	4	270
JDO-A300*540*2500	150	550	2500	5	340
JDO-A300*540*3000	150	540	3000	6	420

Single fender at the listed length; rated deflection 50%.

Reaction R: kN; energy absorption E: kNm.

JDO-A300 × 540 / Compression 50%

Model	R (kN)	E (kNm)
JDO-A300*540*1000	375	17
JDO-A300*540*1500	605	24

D-profile Fender Family / Technical Data

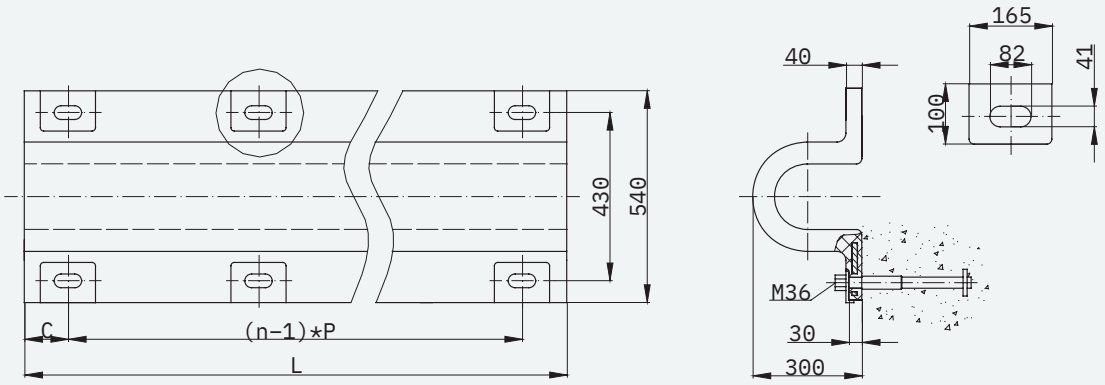
Single fender at the listed length; rated deflection 50%.

Reaction R: kN; energy absorption E: kNm.

JDO-A300 × 540 / Compression 50%

Model	R (kN)	E (kNm)
JDO-A300*540*2000	780	33
JDO-A300*540*2500	974	39
JDO-A300*540*3000	1166	47

Performance tolerance: ±10%.



Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

JDO-B300 × 540 / Dimensions

Model	C	P	L	n	Weight
JDO-B300*540*1000	150	700	1000	2	102
JDO-B300*540*1500	150	600	1500	3	156
JDO-B300*540*2000	145	570	2000	4	210
JDO-B300*540*2500	150	550	2500	5	270
JDO-B300*540*3000	150	540	3000	6	330

Single fender at the listed length; rated deflection 50%.

Reaction R: kN; energy absorption E: kNm.

JDO-B300 × 540 / Compression 50%

Model	R (kN)	E (kNm)
JDO-B300*540*1000	450	18
JDO-B300*540*1500	696	27
JDO-B300*540*2000	898	38
JDO-B300*540*2500	1120	45

D-profile Fender Family / Technical Data

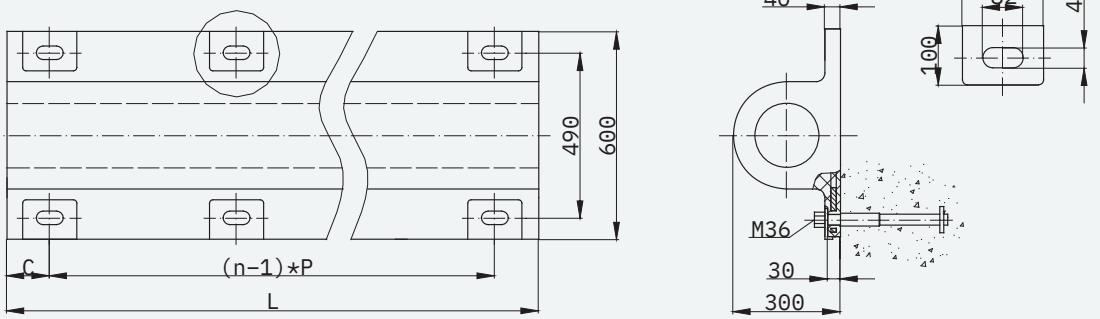
Single fender at the listed length; rated deflection 50%.

Reaction R: kN; energy absorption E: kNm.

JDO-B300 × 540 / Compression 50%

Model	R (kN)	E (kNm)
JDO-B300*540*3000	1341	54

Performance tolerance: ±10%.



Dimensions in mm. Drawing not to scale.

Dimensions in mm; weights in kg.

JDO300 × 600 / Dimensions

Model	C	P	L	n	Weight
JDO300*600*1000	150	700	1000	2	144
JDO300*600*1500	150	600	1500	3	202
JDO300*600*2000	145	570	2000	4	290
JDO300*600*2500	150	550	2500	5	370
JDO300*600*3000	150	540	3000	6	450

Single fender at the listed length; rated deflection 50%.

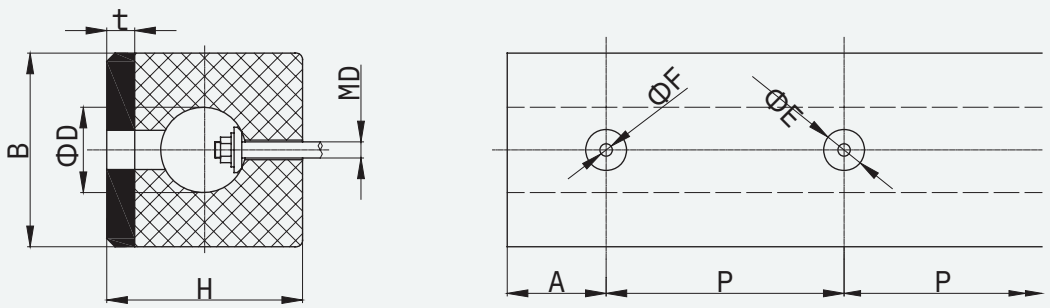
Reaction R: kN; energy absorption E: kNm.

JDO300 × 600 / Compression 50%

Model	R (kN)	E (kNm)
JDO300*600*1000	495	20
JDO300*600*1500	765	30
JDO300*600*2000	989	39
JDO300*600*2500	1237	49
JDO300*600*3000	1484	59

Performance tolerance: ±10%.

Composite Fenders JCP-A



Dimensions in mm. Drawing not to scale.

Dimensions: mm; weight: kg/m.

Dimensions

Model	B	H	D	t	A	P	MD	F	E	Weight
JCP-A150	150	150	75	20	100 ~ 150	400~500	M22	28	60	25
JCP-A200	200	200	100	25	100 ~ 150	400~500	M24	30	60	45
JCP-A250	250	250	125	30	100 ~ 200	400~500	M27	33	65	70
JCP-A300	300	300	150	30	100 ~ 200	400~600	M30	35	65	100

Performance per metre; rated deflection 40%.

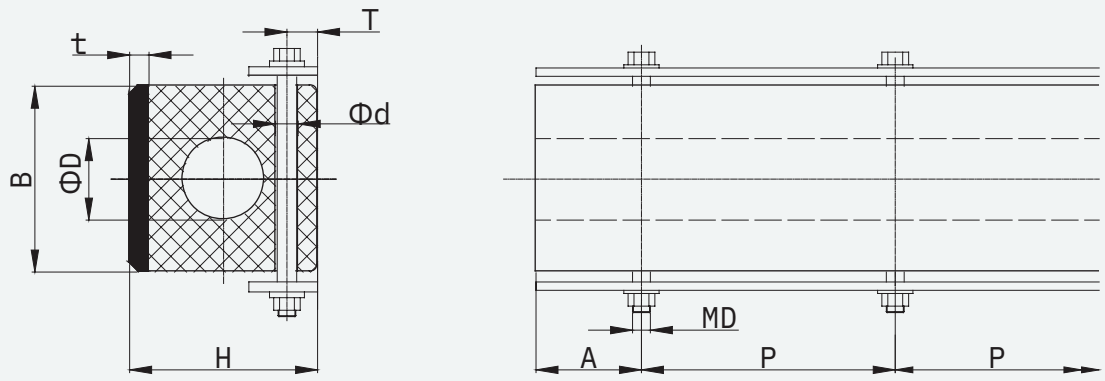
Reaction R: kN; energy absorption E: kNm.

Compression 40%

Model	R (kN)	E (kNm)
JCP-A150	136	3.8
JCP-A200	173	6.8
JCP-A250	225	10.6
JCP-A300	273	15

Performance tolerance: ±10%.

Composite Fenders JCP-B



Dimensions in mm. Drawing not to scale.

Dimensions: mm; weight: kg/m.

Dimensions

Model	B	H	D	T	d	t	A	P	MD	Weight
JCP-B150	150	150	75	30	27	20	100 ~ 150	400~500	M22	25
JCP-B200	200	200	100	35	30	25	100 ~ 150	400~500	M24	45
JCP-B250	250	250	125	45	33	30	100 ~ 200	400~500	M27	70
JCP-B300	300	300	150	55	36	30	100~200	400 ~600	M30	100

Performance per metre; rated deflection 50%.

Reaction R: kN; energy absorption E: kNm.

Compression 50%

Model	R (kN)	E (kNm)
JCP-B150	262	6
JCP-B200	346	11
JCP-B250	430	17
JCP-B300	515	25

Performance tolerance: ±10%.

Rubber *Ladders*



Rubber ladder assemblies in a workshop.

Rubber Ladders

Rubber ladders provide stepped access at the berth with a flexible rubber profile.

HEIGHTS

200, 250, 300 and 400 mm

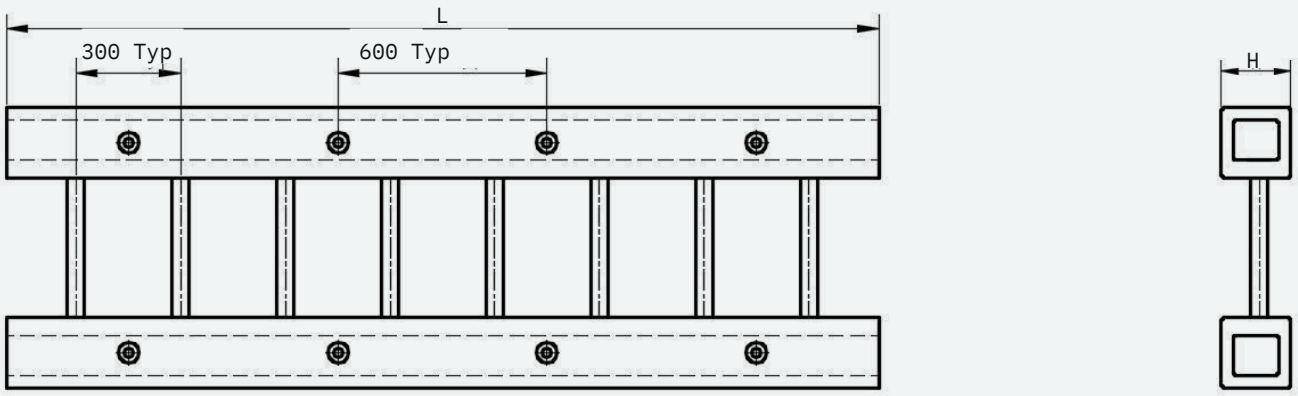
LENGTHS

900 to 3000 mm

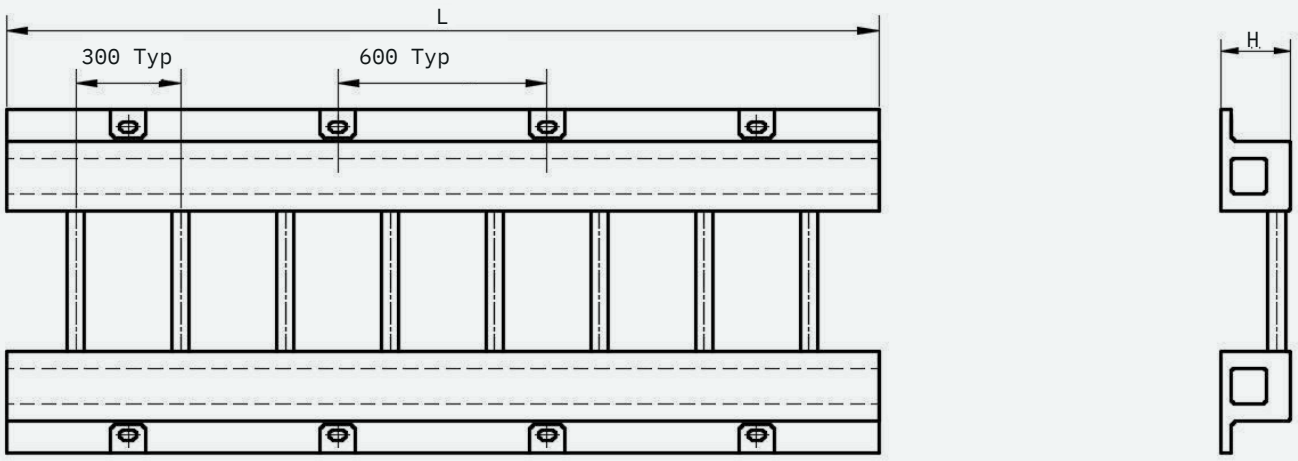
Specification overview

Size options	JRL200H to JRL400H

Rubber Ladders / Dimensions



Type-1



Type-2

Dimensions in mm. Drawing not to scale.

Dimensions: mm.

Height and length options

Model	Height H (mm)	Length L (mm)
JRL200H	200	900
JRL200H	200	1200
JRL200H	200	1500
JRL200H	200	1800
JRL200H	200	2100
JRL200H	200	2400
JRL200H	200	2700
JRL200H	200	3000
JRL250H	250	900
JRL250H	250	1200
JRL250H	250	1500
JRL250H	250	1800

Rubber Ladders / Dimensions

Dimensions: mm.

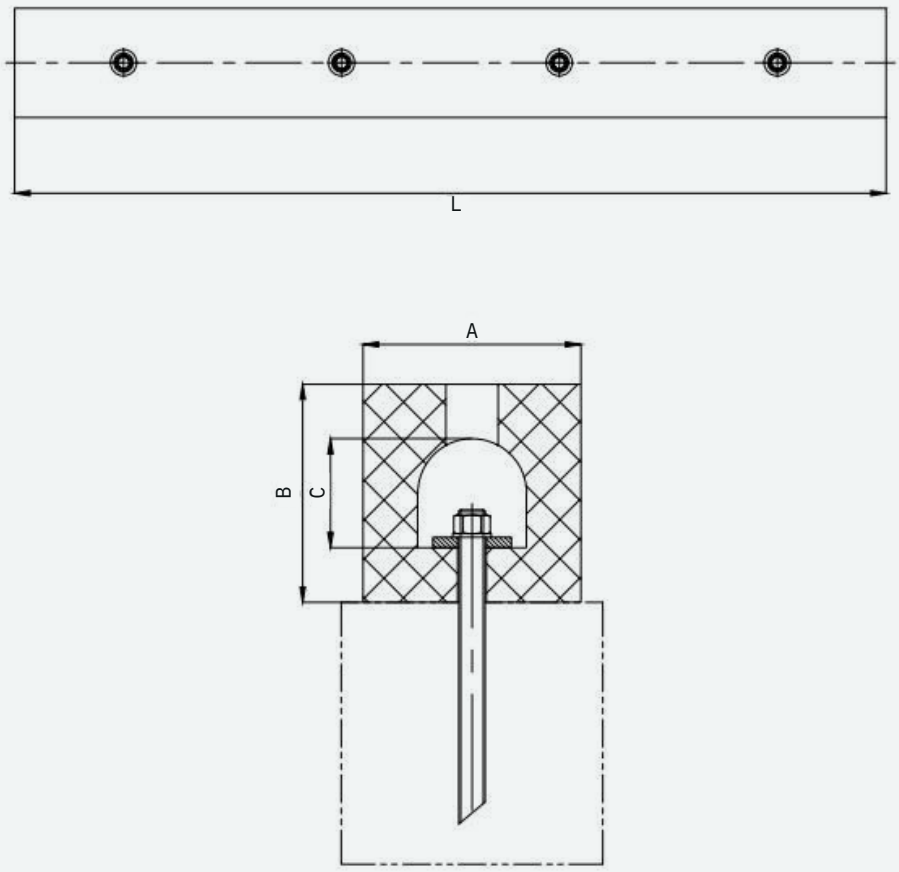
Height and length options

Model	Height H (mm)	Length L (mm)
JRL250H	250	2100
JRL250H	250	2400
JRL250H	250	2700
JRL250H	250	3000
JRL300H	300	900
JRL300H	300	1200
JRL300H	300	1500
JRL300H	300	1800
JRL300H	300	2100
JRL300H	300	2400
JRL300H	300	2700
JRL300H	300	3000
JRL400H	400	900
JRL400H	400	1200
JRL400H	400	1500
JRL400H	400	1800
JRL400H	400	2100
JRL400H	400	2400
JRL400H	400	2700
JRL400H	400	3000



Rubber ladder fenders in storage

SD Fenders / Dimensions



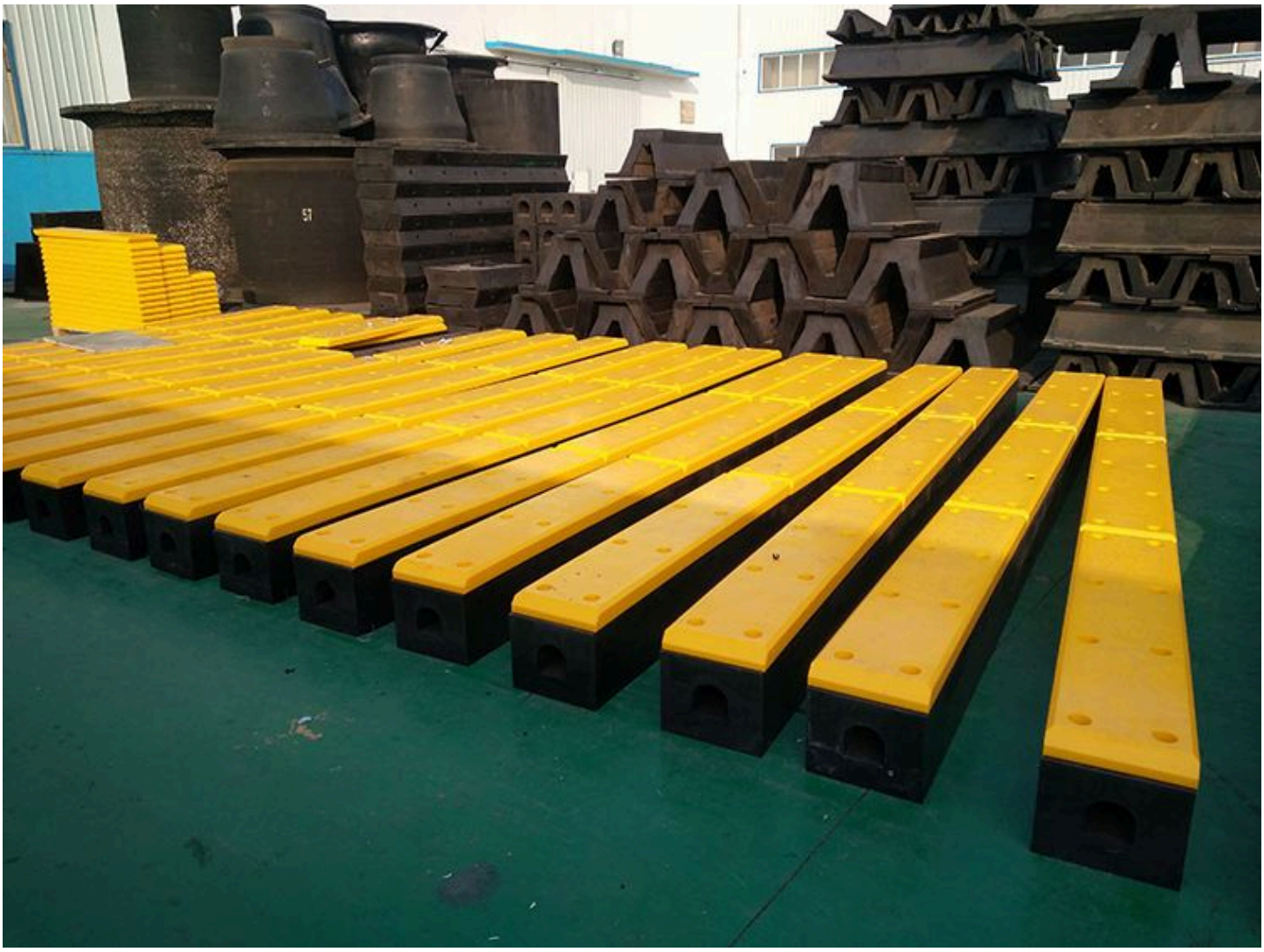
Dimensions in mm. Drawing not to scale.

Dimensions: mm; reference weight: kg/m.

Dimensions

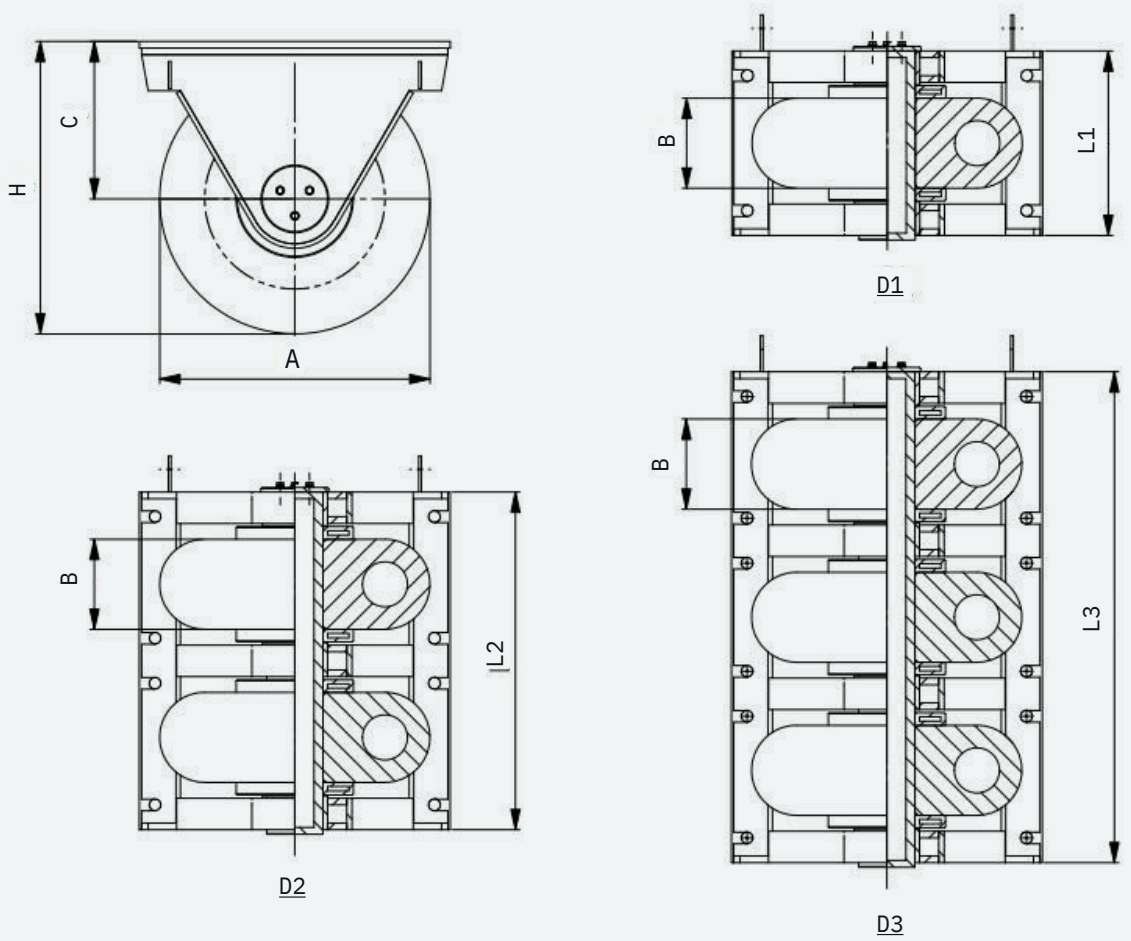
Type	A	B	C	L(max.)	Reference Weight(kg/m)
JSD 150×150	150	150	75	3000	23
JSD 200×200	200	200	100	3000	40
JSD 300×300	300	300	150	3000	90
JSD 400×400	400	400	200	3000	160
JSD 500×500	500	500	250	3000	251

SD Fenders / Product photograph



SD fenders with yellow face pads

Roller Fenders / Dimensions



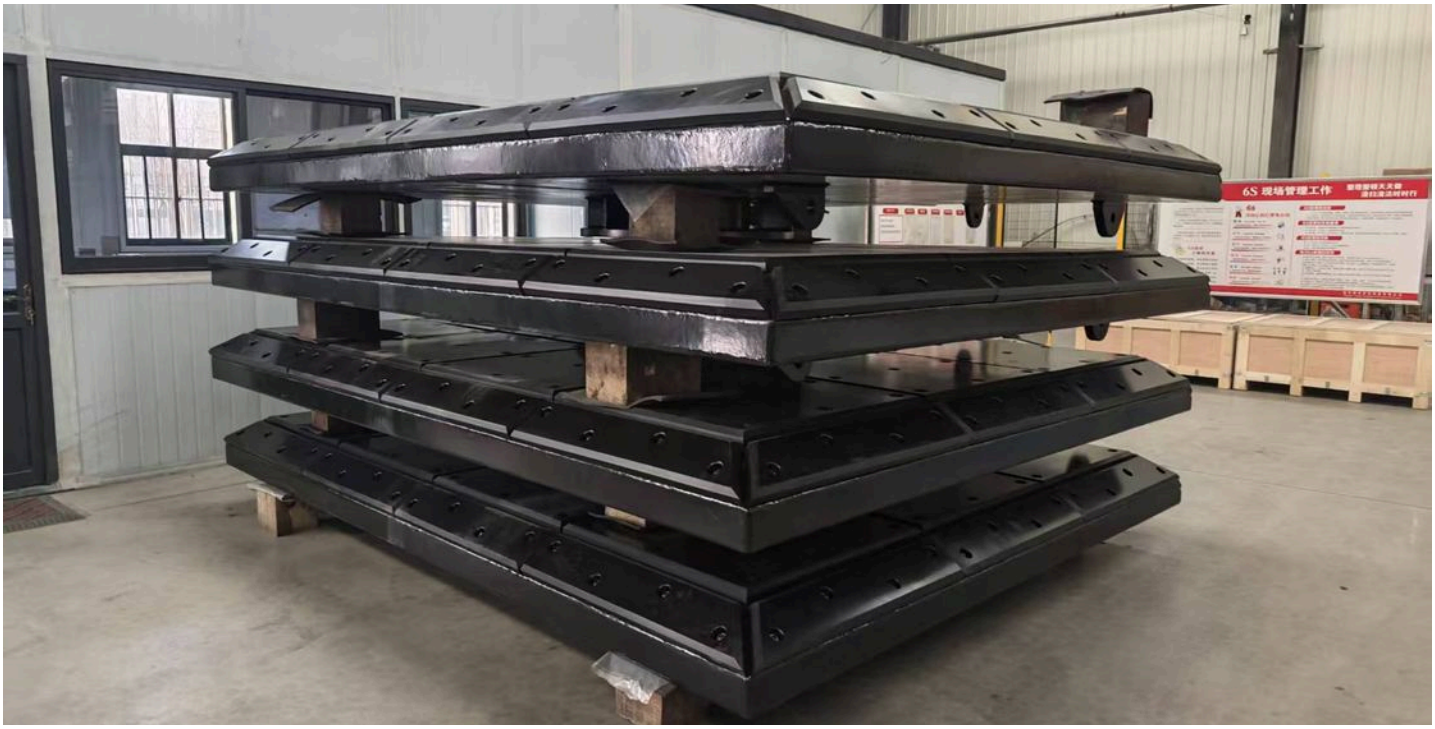
Dimensions in mm. Drawing not to scale.

Dimensions: mm.

Dimensions

Model / A×B (mm)	A	B	C	H	L1	L2	L3
JRF600×200	600	200	320	620	420	770	1120
JRF750×250	750	250	400	775	510	935	1360
JRF900×300	900	300	480	930	610	1120	1630
JRF1200×400	1200	400	640	1240	820	1500	2180
JRF1500×500	1500	500	800	1550	1010	1850	2690
JRF1800×600	1800	600	960	1860	1210	2215	3220
JRF2100×700	2100	700	1155	2205	1410	2590	3770
JRF2400×800	2400	800	1280	2480	1610	2950	4290
JRF2700×900	2700	900	1440	2790	1810	-	-
JRF3000×1000	3000	1000	1600	3100	2010	-	-

Panels and contact surfaces



Steel frontal panels fitted with face pads.

Frontal panels and face pads form the contact surface of a panel-supported fender system. Coordinate the panel, rubber body, connections and berth structure on the installation drawing.



Arch fenders with blue face pads.

System Accessories / Dimensions

Units: kg/m²

Frontal Panels / Frontal panel typical areal weight

Panel duty	Typical areal weight
LIGHT DUTY	200 – 250
MEDIUM DUTY	250 – 300
HEAVY DUTY	300 – 400
EXTREME DUTY	≥ 400

Typical panel areal weights exclude UHMW-PE face pads.

Units: mm

Frontal Panels / Minimum steel thickness by exposure

Exposure category	Minimum thickness
EXPOSED BOTH FACES	≥ 12
EXPOSED ONE FACE	≥ 9
INTERNAL (NOT EXPOSED)	≥ 8

Plate thickness depends on panel structure, loads and exposure.

Units shown by property.

UHMW-PE Face Pads / UHMW-PE pad typical properties

Property	Test method	Unit	Typical value: virgin	Typical value: regenerated
Density	ISO 1183-1	g/cm3	0.94 – 0.95	0.95 – 0.96
Notched Impact Strength (Charpy)	ISO 11542-2	kJ/m2	140 – 170	100 – 130
Abrasion Index (Sand-slurry)	ISO/DIS 15527(Draft)	100	100 – 110	130 – 150
Yield Strength	ISO/R 50mm/min	N/mm2	15 – 20	15 – 20
Elongation at Break*	ISO/R 50mm/min	%	>50	>50
Dynamic Friction (PE-Steel)	Pm = 1N/mm2 V = 10m/min	–	0.15	0.15
Hardness	ISO 868 / DIN 53505 3s value, 6mm sample	Shore D	63	63 – 66
Operating Temperature	–	°C	–80 to +80	–80 to +80
Thermal Expansion	DIN 53752	K-1	≈ 2 × 10-4	≈ 2 × 10-4
Molecular Weight	Viscometric	g/mol	4,200,000	4,200,000
Melting Point	ASTM D3418	°C	137 – 143	137 – 143

System Accessories / Dimensions

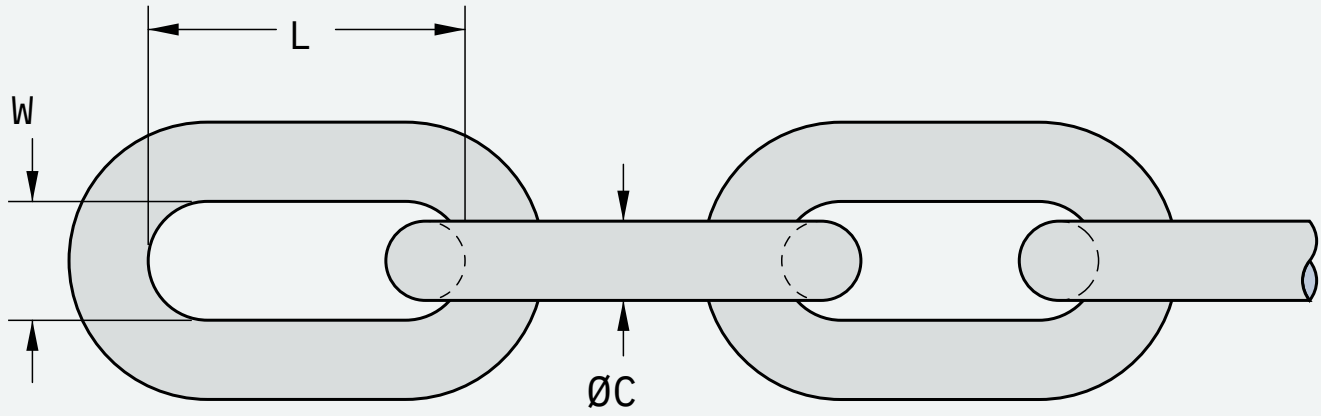
Units: mm

UHMW-PE Face Pads / UHMW-PE pad wear allowances

Application	Pad thickness t (mm)	Wear allowance W (mm)	Bolt
Light duty	30	3 – 5	M16
Medium duty	40	7 – 10	M16-M20
Medium duty	50	10 – 15	M16-M20
Heavy duty	60	15 – 19	M24-M30
Heavy duty	70	18 – 25	M24-M30
Heavy duty	80	22 – 32	M24-M30
Extreme duty	90	25 – 36	M30-M36
Extreme duty	100	28 – 40	M30-M36

Typical wear allowances depend on the fixing detail.

Open Link Chains



Dimensions in mm. Drawing not to scale.

Units: inch, mm, kN, kg/link

Open Link Chains / Open-link chain dimensions, proof load and breaking load / 1

Chain diameter (inch)	Chain diameter ØC	Link length L	Link width W	U2 proof load	U2 breaking load	U3 proof load	U3 breaking load
1/2	12.5	50	19	41.2	82.6	56.4	112.8
9/16	14	56	21	51.0	101.9	70.8	141.5
5/8	16	64	24	66.2	132.3	92.4	184.8
11/16	17.5	70	26	78.9	157.8	110.6	221.1

System Accessories / Dimensions

Units: inch, mm, kN, kg/link

Open Link Chains / Open-link chain dimensions, proof load and breaking load / 1

Chain diameter (inch)	Chain diameter ØC	Link length L	Link width W	U2 proof load	U2 breaking load	U3 proof load	U3 breaking load
3/4	19	76	29	93.6	187.2	130.3	260.6
13/16	20.5	82	31	108.6	217.3	151.7	303.4
7/8	22	88	33	125.4	250.9	174.4	349.4
15/16	24	96	36	149.9	298.9	207.9	415.8
1-1/16	26	104	39	175.4	350.8	244.0	488.0
1-1/8	28	112	42	203.8	406.7	283.0	566.0
1-3/16	30	120	45	234.2	467.5	324.9	649.8
1-1/4	32	128	48	265.6	531.2	369.6	739.3
1-5/16	34	136	51	299.9	599.8	417.3	834.6
1-7/16	36	144	54	336.1	672.3	467.8	935.7
1-1/2	38	152	57	374.4	748.7	521.3	1042.5
1-9/16	40	160	60	414.5	829.1	577.6	1155.2
1-5/8	42	168	63	457.7	915.3	636.8	1273.6
1-3/4	44	176	66	502.7	999.6	698.9	1398.0
1-13/16	46	184	69	548.8	1097.6	763.9	1527.8
1-7/8	48	192	72	597.8	1195.6	831.7	1663.5
2	50	200	75	648.8	1293.6	902.5	1805.0
2-1/16	52	208	78	697.6	1395.3	976.1	1952.3
2-1/8	54	216	81	752.3	1504.7	1052.7	2105.4
2-3/16	56	224	84	809.1	1618.2	1132.1	2264.2
2-5/16	58	232	87	867.9	1735.8	1214.4	2428.8
2-3/8	60	240	90	928.8	1857.6	1299.6	2599.2
2-7/16	62	248	93	991.8	1983.5	1387.7	2775.4
2-1/2	64	256	96	1056.8	2113.5	1478.7	2957.3
2-9/16	66	264	99	1123.9	2247.7	1572.5	3145.0
2-11/16	68	272	102	1193.0	2386.0	1669.3	3338.5
2-3/4	70	280	105	1264.2	2528.4	1768.9	3537.8

U2 and U3 grades are separate. Proof load and breaking load are distinct parameters.

System Accessories / Dimensions

Units: inch, mm, kN, kg/link

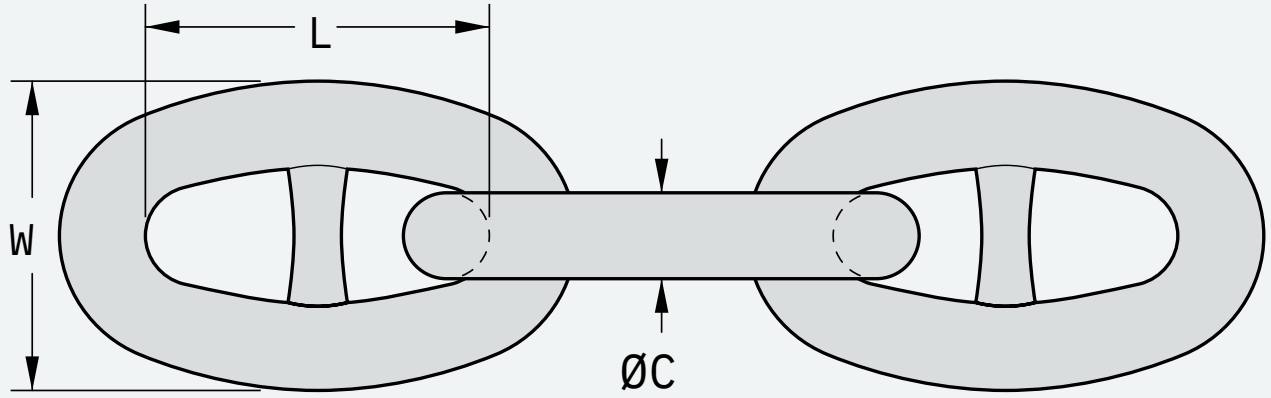
Open Link Chains / Open-link chain dimensions, proof load and breaking load / 2

Chain diameter (inch)	Weight per link
1/2	0.17
9/16	0.22
5/8	0.32
11/16	0.45
3/4	0.54
13/16	0.72
7/8	0.84
15/16	1.20
1-1/16	1.39
1-1/8	1.72
1-3/16	2.13
1-1/4	2.58
1-5/16	3.11
1-7/16	3.68
1-1/2	4.32
1-9/16	5.02
1-5/8	5.81
1-3/4	7.10
1-13/16	7.64
1-7/8	8.69
2	9.80
2-1/16	11.14
2-1/8	12.98
2-3/16	13.86
2-5/16	15.42
2-3/8	17.07
2-7/16	18.78
2-1/2	21.52
2-9/16	22.82
2-11/16	24.74
2-3/4	27.23

U2 and U3 grades are separate. Proof load and breaking load are distinct parameters.

System Accessories / Dimensions

Stud Link Chains



Dimensions in mm. Drawing not to scale.

Units: mm, kg/link, kN

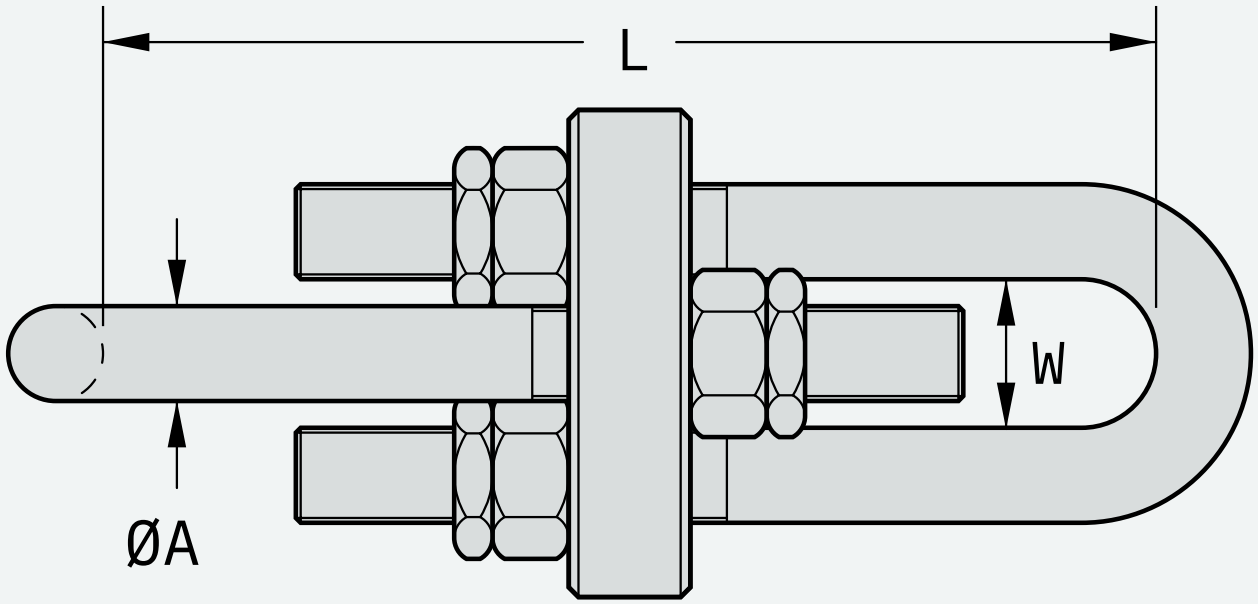
Stud Link Chains / Stud-link chain common-link dimensions and MBL

Chain diameter ØC	Common link length L	Common link width W	Weight per link	MBL SL2 (U2)	MBL SL3 (U3)
19	76	68	0.6	210	300
22	88	79	0.9	280	401
26	104	94	1.5	389	556
28	112	101	1.9	449	642
32	128	115	2.8	583	833
34	136	122	3.4	655	937
38	152	137	4.7	812	1160
42	168	151	6.3	981	1400
44	176	158	7.3	1080	1540
48	192	173	9.4	1270	1810
52	208	187	12	1480	2110
58	232	209	17	1810	2600
64	256	230	22	2190	3130
70	280	252	30	2580	3690
76	304	274	38	3010	4300
90	360	324	63	4090	5840

Select the chain grade and connection components for the system loads.

System Accessories / Dimensions

Chain Tensioners



Dimensions in mm. Drawing not to scale.

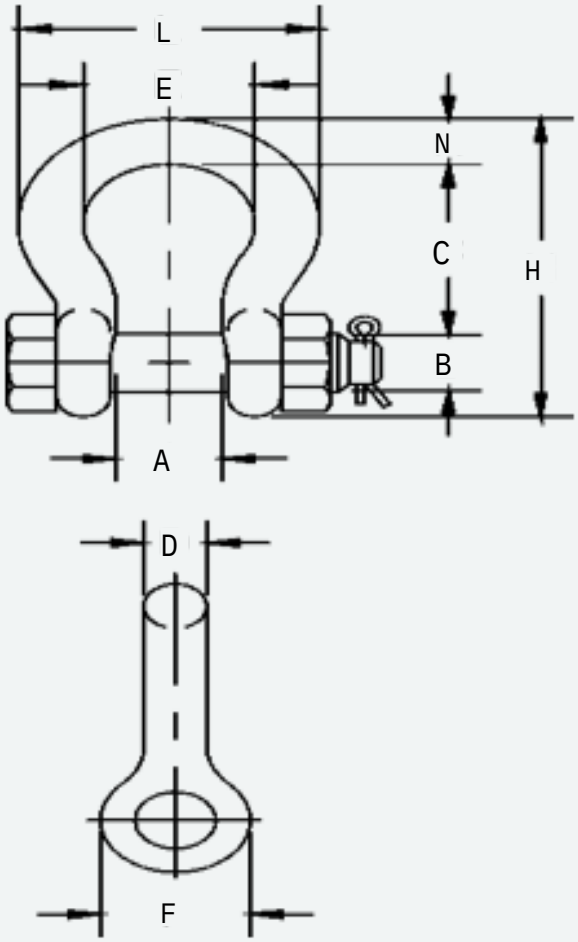
Units: mm, kg

Chain Tensioners / Chain tensioner dimensions and weight

Chain size	Thread diameter ØA	Length L range	Width W	Weight
16	M16	200–240	40	2.7
18	M18	220–280	45	2.5
20	M20	235–305	50	5.3
22	M22	265–345	56	6.6
22	M24	280–370	60	8.8
25	M27	310–420	68	12
30	M30	345–465	76	17
32	M33	385–525	82	21
35	M36	420–560	90	27
40	M42	480–650	106	45
45	M48	545–745	120	64
50	M52	595–805	130	80
55	M56	640–880	140	99
60	M60	685–945	150	122
60	M64	730–1010	160	147

System Accessories / Dimensions

Bow Shackles



Dimensions in mm. Drawing not to scale.

Nominal body size: inch; WLL: tonne; NBL: kN; weight: kg; dimensions A-N: mm.

Bow Shackles / G-2130 high-strength shackle

Size(in)	WLL(t)	NBL(kN)	kg	A	B(pinØ)	C	D(bodyØ)	E	F	H	L	N
3/16	+1/3	19.9	0.03	9.65	6.35	22.4	4.85	15.2	14.2	37.3	24.9	4.85
1/4	1/2	29.9	0.05	11.9	7.85	28.7	6.35	19.8	15.5	46.7	32.5	6.35

System Accessories / Dimensions

Nominal body size: inch; WLL: tonne; NBL: kN; weight: kg; dimensions A-N: mm.

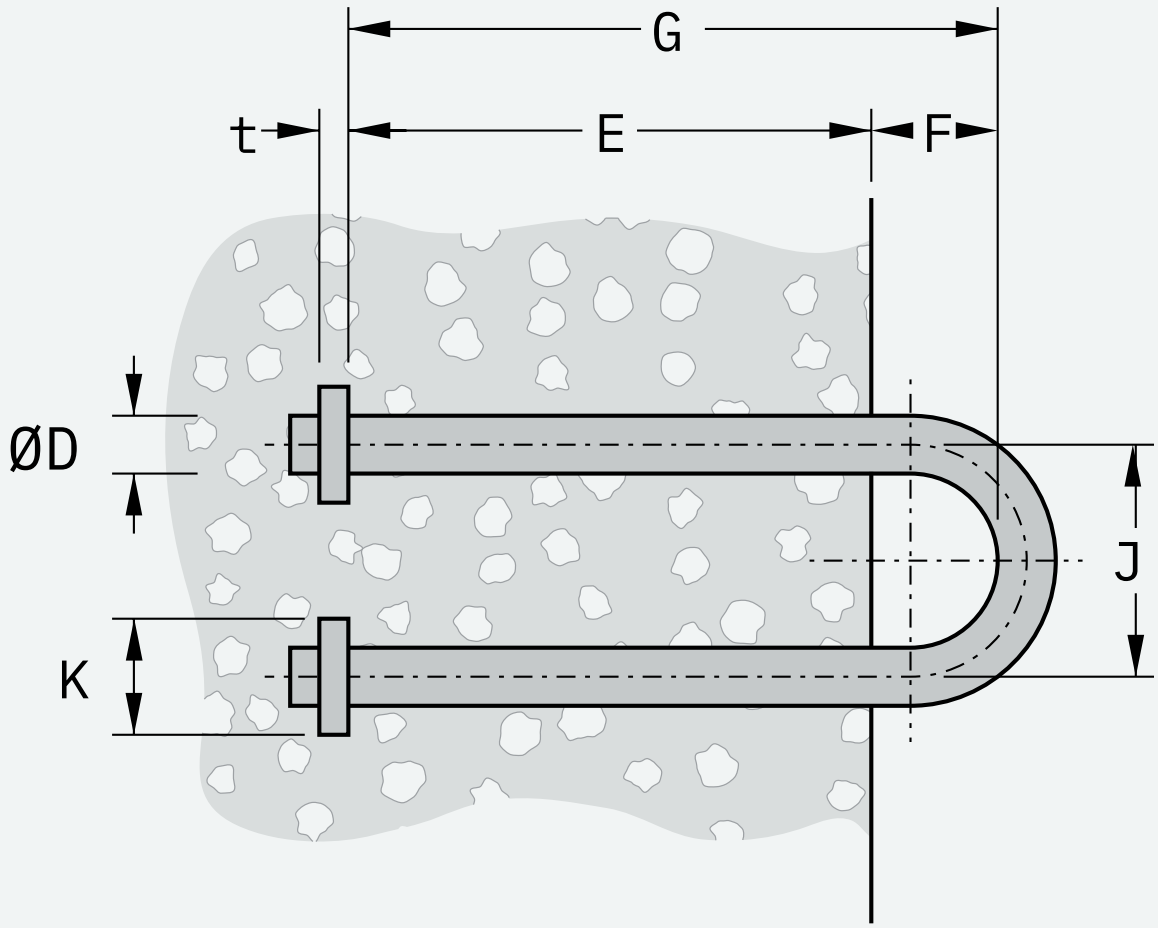
Bow Shackles / G-2130 high-strength shackle

Size(in)	WLL(t)	NBL(kN)	kg	A	B(pinØ)	C	D(bodyØ)	E	F	H	L	N
5/16	3/4	44.9	0.1	13.5	9.65	31	7.85	21.3	19.1	53	37.3	7.85
3/8	1	59.8	0.15	16.8	11.2	36.6	9.65	26.2	23.1	63	45.2	9.65
7/16	1-1/2	89.8	0.22	19.1	12.7	42.9	11.2	29.5	26.9	74	51.5	11.2
1/2	2	119.7	0.36	20.6	16	47.8	12.7	33.3	30.2	83.5	58.5	12.7
5/8	3-1/4	194.5	0.76	26.9	19.1	60.5	16	42.9	38.1	106	74.5	17.5
3/4	4-3/4	284.2	1.23	31.8	22.4	71.5	19.1	51	46	126	89	20.6
7/8	6-1/2	388.9	1.79	36.6	25.4	84	22.4	58	53	148	102	24.6
1	8-1/2	508.6	2.57	42.9	28.7	95.5	25.4	68.5	60.5	167	119	26.9
1-1/8	9-1/2	568.5	3.75	46	31.8	108	28.7	74	68.5	190	131	31.8
1-1/4	12	718.1	5.31	51.5	35.1	119	31.8	82.5	76	210	146	35.1
1-3/8	13-1/2	807.95	7.18	57	38.1	133	35.1	92	84	233	162	38.1
1-1/2	17	1017.3	9.43	60.5	41.4	146	38.1	98.5	92	254	175	41.1
1-3/4	25	1496.0	15.4	73	51	178	44.5	127	106	313	225	57
2	35	2094.4	23.7	82.5	57	197	51	146	122	348	253	61
2-1/2	55	3291.2	44.6	105	70	267	66.5	184	145	453	327	79.5
3	85	5086.5	70	127	82.5	330	76	200	165	546	365	92
3-1/2	120	7180.9	120	133	95.5	372	92	229	203	626	419	105
4	150	7779.3	153	140	108	368	104	254	229	653	468	116

WLL is the working load limit. NBL is the nominal breaking load.

System Accessories / Dimensions

U-Anchors



Dimensions in mm. Drawing not to scale.

Units: mm, kg, kN

U-Anchors / U-anchor dimensions, weight and NBL / 1

Bar diameter ØD	E	F	G	J	K	Plate thickness t	Weight
26	260	60	320	104	50	12	3.4
30	300	70	370	120	50	15	5.1
34	340	70	410	136	60	15	7.3
36	360	70	430	144	60	20	8.6
42	420	90	510	168	70	20	14
44	440	100	540	176	80	20	16
48	480	100	580	192	80	25	21
50	500	110	610	200	90	25	24
56	560	120	680	224	100	30	33
60	600	130	730	240	110	30	41
66	660	140	800	264	120	35	55

System Accessories / Dimensions

Units: mm, kg, kN

U-Anchors / U-anchor dimensions, weight and NBL / 1

Bar diameter ØD	E	F	G	J	K	Plate thickness t	Weight
74	740	160	900	296	130	40	77

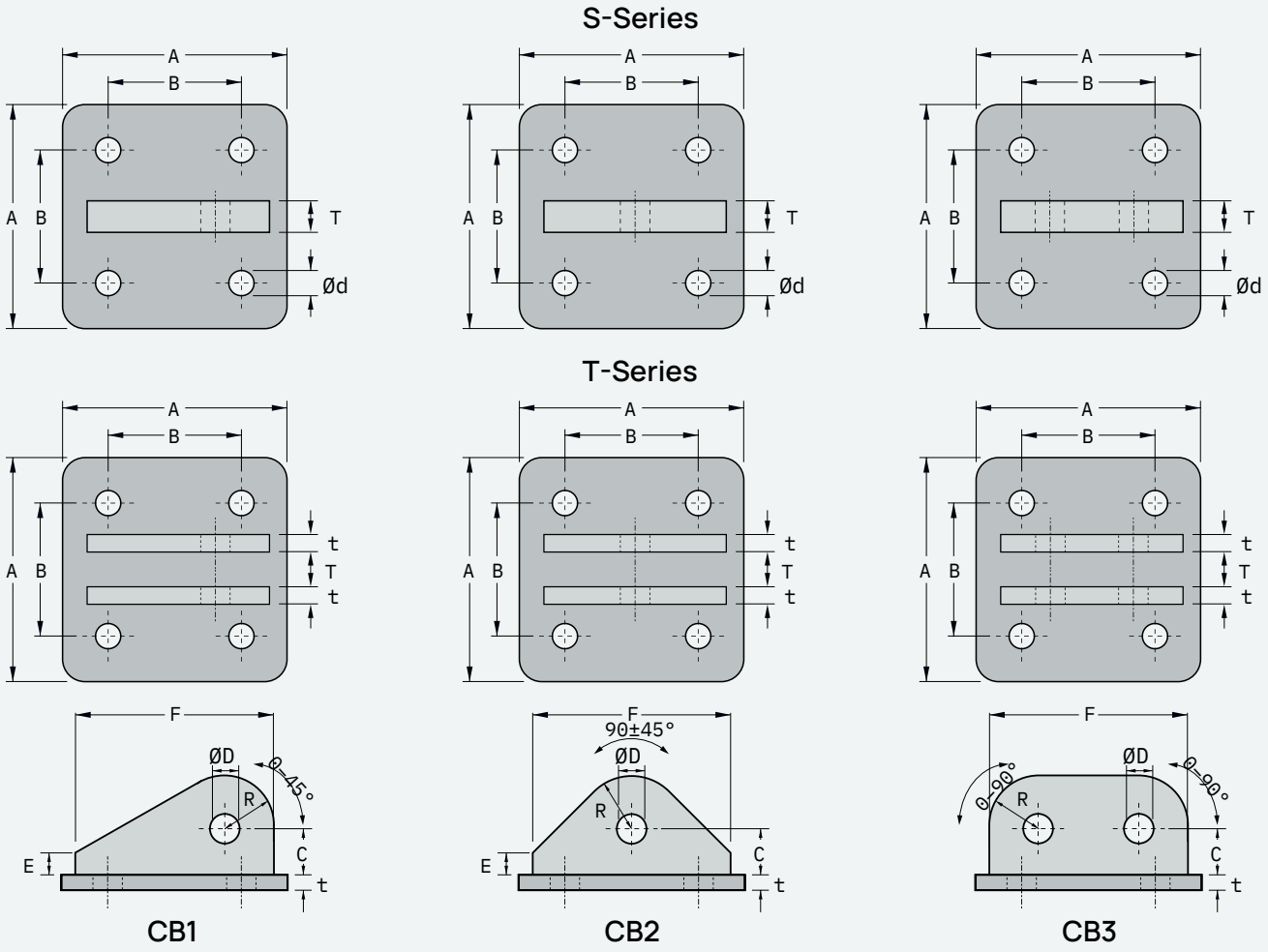
Units: mm, kg, kN

U-Anchors / U-anchor dimensions, weight and NBL / 2

Bar diameter ØD	NBL
26	209
30	264
34	304
36	393
42	492
44	566
48	644
50	770
56	900
60	1010
66	1275
74	1570

System Accessories / Dimensions

Chain Brackets



Dimensions in mm. Drawing not to scale.

Dimensions and nominal connection sizes: mm.

Chain Brackets / Chain bracket dimensions and connection sizes / 1

A	B	C	E (CB1/CB3)	E (CB2)	F	Ød	R
190	110	40	20	75	160	24	40
220	130	45	20	90	190	24	50
250	150	50	25	100	210	28	55
280	160	60	25	115	240	28	65
320	190	65	35	130	270	36	75
350	210	70	35	140	300	36	80
380	220	80	35	155	320	42	85
420	250	85	40	170	360	42	95
440	260	90	40	180	360	50	100

Chain bracket geometry and anchors depend on the connection arrangement.

System Accessories / Dimensions

Dimensions and nominal connection sizes: mm.

Chain Brackets / Chain bracket dimensions and connection sizes / 2

A	t	T	Single-lug shackle size	Single-lug ØD	Twin-lug bolt pin	Twin-lug ØD	Anchor
190	15	30	19	28	M24 x 90	28	2/4 x M20
220	15	30	22	28	M24 x 90	28	2/4 x M20
250	20	40	25	36	M30 x 120	36	2/4 x M24
280	20	40	28	36	M30 x 120	36	2/4 x M24
320	25	45	32	42	M36 x 140	42	2/4 x M30
350	25	50	35	42	M36 x 140	42	2/4 x M30
380	30	50	38	50	M42 x 160	50	2/4 x M36
420	30	60	42	50	M42 x 170	50	2/4 x M36
440	30	60	44	60	M48 x 180	60	2/4 x M42

Chain bracket geometry and anchors depend on the connection arrangement.

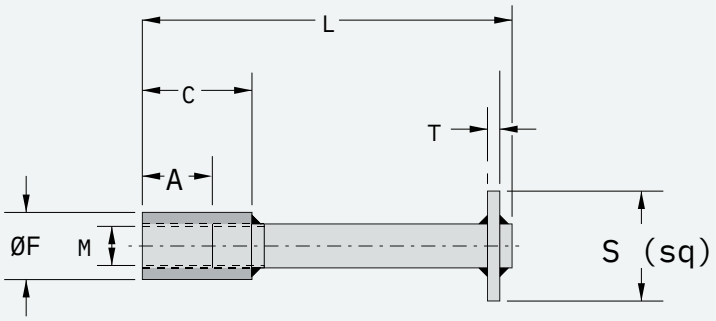


Galvanized chain brackets

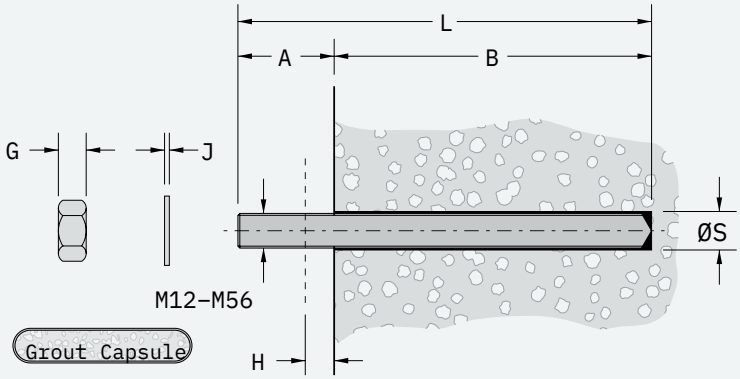
System Accessories / Dimensions

NC3 Anchors

NC3 ANCHOR



EC2 ANCHOR



Dimensions in mm. Drawing not to scale.

Units: mm, kg

NC3 Anchors / NC3 cast-in anchors

Thread	A	C	ØF	L	S (square)	T	Weight
M20	40	60	30	200	63	10	1.1
M22	44	66	32	225	63	10	1.4
M24	48	73	36	250	75	10	1.9
M27	54	84	40	265	75	10	2.4
M30	60	95	45	270	100	10	3.5
M36	72	112	54	320	100	12	5.5
M42	84	134	63	360	100	12	8.1
M48	96	156	72	400	100	15	12
M56	112	182	84	550	120	15	20
M64	128	208	100	600	130	20	30
M76	152	242	114	700	150	20	46

System Accessories / Dimensions

Units: mm, kg

EC2 Anchors / EC2 bonded anchors / 1

Thread	B	E	G	J	L (typical)	ØS	Capsule
M12	110	5 – 8	10	2.5	–	15	1 × C12
M16	140	6 – 9	13	3	175	20	1 × C16
M20	170	6 – 9	16	3	240	25	1 × C20
M24	210	8 – 12	19	4	270	28	1 × C24
M27	240	8 – 12	22	4	330	30	1 × C24
M30	280	8 – 12	24	4	360	35	1 × C30
M36	330	10 – 15	29	5	420	40	1 × C30
M42	420	14 – 21	34	7	500	50	2 × C30
M48	480	16 – 24	38	8	580	54	2 × C30 + 1 × C24
M56	560	18 – 27	45	9	–	64	4 × C30

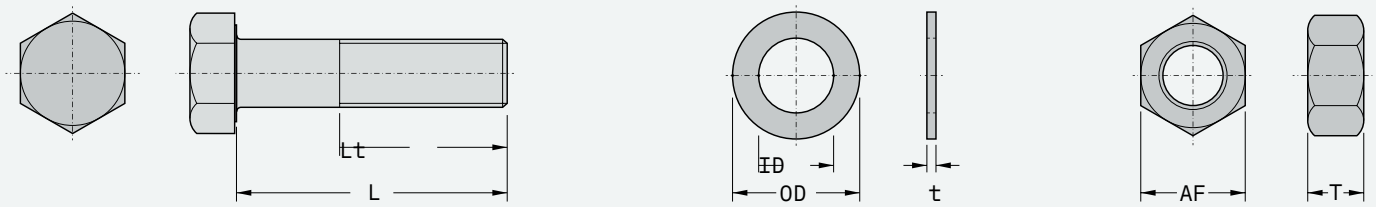
Units: mm, kg

EC2 Anchors / EC2 bonded anchors / 2

Thread	Weight
M12	0.15
M16	0.26
M20	0.57
M24	0.92
M27	1.42
M30	1.91
M36	3.21
M42	5.21
M48	7.90
M56	13.0

System Accessories / Dimensions

Bolts, Nuts & Washers



Dimensions in mm. Drawing not to scale.

Units: mm², mm, kg

Bolts, Nuts & Washers / Bolt, nut and washer dimensions / 1

Size	Thread area	Washer OD	Washer ID	Washer thickness t	Washer weight	Nut AF	Nut thickness T
M16	157	30	18	3	0.01	24	13
M20	245	37	22	3	0.02	30	16
M24	353	44	26	4	0.03	36	19
M27	459	52	29	4	0.05	41	22
M30	561	56	33	4	0.06	46	24
M36	817	66	39	5	0.09	55	29
M42	1120	78	45	7	0.18	65	34
M48	1470	92	52	8	0.28	75	38
M56	2030	105	62	9	0.40	85	45
M64	2680	115	70	9	0.45	95	51

Select mounting bolts to match the fender fixing schedule and the specified connection on the installation drawing.

Units: mm², mm, kg

Bolts, Nuts & Washers / Bolt, nut and washer dimensions / 2

Size	Nut weight	Typical thread length L≤125	Typical thread length L>125	Thread pitch
M16	0.04	38	44	2.0
M20	0.07	46	52	2.5
M24	0.12	54	60	3.0
M27	0.23	60	66	3.0
M30	0.24	66	72	3.5
M36	0.40	78	84	4.0
M42	0.63	90	96	4.5
M48	0.90	102	108	5.0
M56	1.43	118	124	5.5
M64	2.09	134	140	6.0

Select mounting bolts to match the fender fixing schedule and the specified connection on the installation drawing.

System Accessories / Dimensions

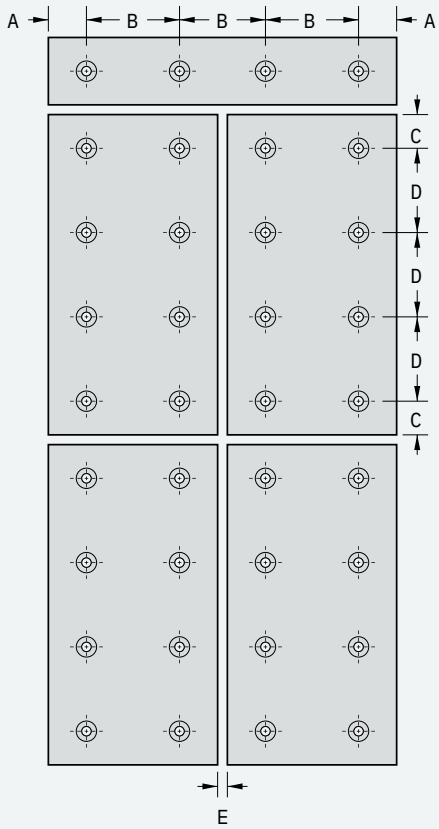
Units: MPa or grade

Fastener Grades / Fastener grades and strength

Property	Galvanized 4.6	Galvanized 8.8	Stainless A-50	Stainless A-70
Bolt grade	4.6	8.8	A-50	A-70
Nut grade	4	8	A-50	A-70
Tensile strength (MPa)	400	800	500	700
0.2% yield stress (MPa)	240	640	210	450

Stainless fastener sizes and grades are confirmed for the selected fixing arrangement.

UHMW-PE Fixing



Dimensions in mm. Drawing not to scale.

Units: mm

UHMW-PE Fixing / UHMW-PE pad fixing layout typical dimensions

Letter	Meaning	Typical dimension
A	edge distance	45–80
B	horizontal fixing pitch	250–350
C	pad edge clearance	45–80
D	vertical fixing pitch	300–450
E	gap between pads	5–10

Fixing layout depends on pad thickness and application. Use oversized washers.

Product gallery / 01



Arch-profile rubber fenders in storage



Arch fenders with UHMW-PE face pads



Arch fenders with face pads, workshop view



Quay-side fender panels with face pads

Product gallery / 02



Cell fender bodies staged for handling



Cell fender body with flanged ends

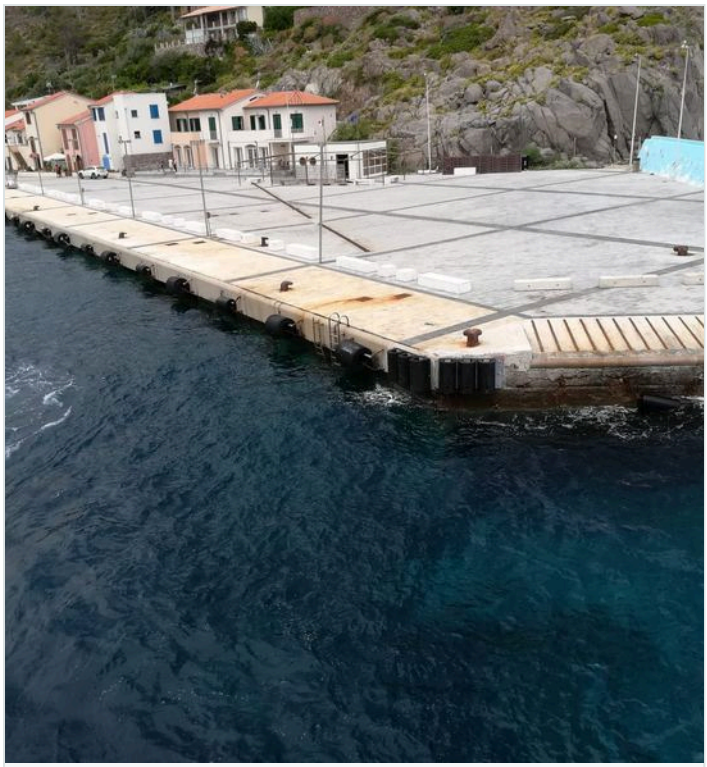


Cone fender systems installed along a quay



Fender systems along a quay wall

Product gallery / 03



Cylindrical fenders along a quay edge



Cylindrical rubber fenders in storage

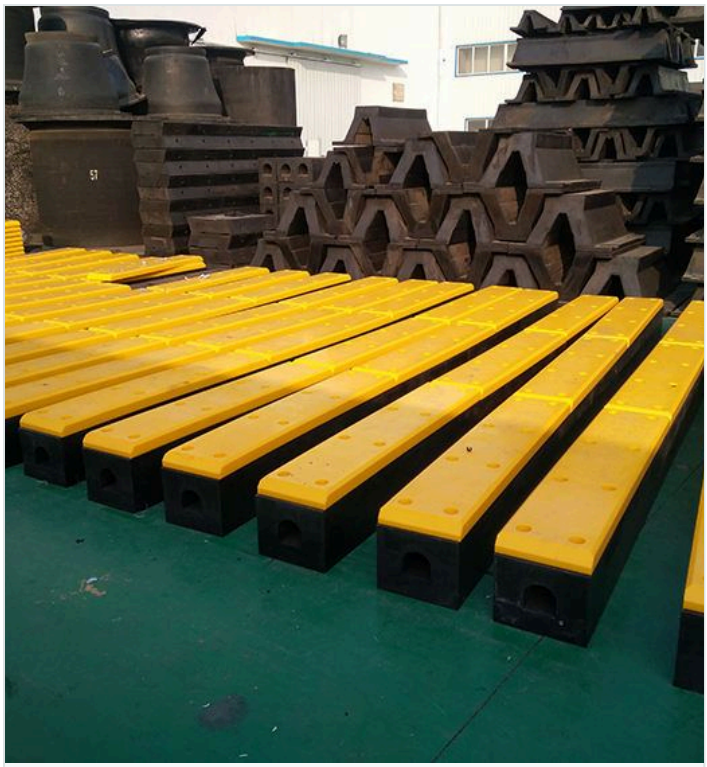


D-profile rubber fenders



Molded D-profile fenders prepared for handling

Product gallery / 04



SD fenders with yellow face pads



Rubber ladder fenders in storage



Arch ladder fenders in a workshop



Fender chain assemblies and threaded adjustment hardware

Product gallery / 05



Galvanized chain brackets



Steel frontal panels with polymer face pads



UHMW-PE face pads with drilled fixing holes



Frontal panels prepared for shipment

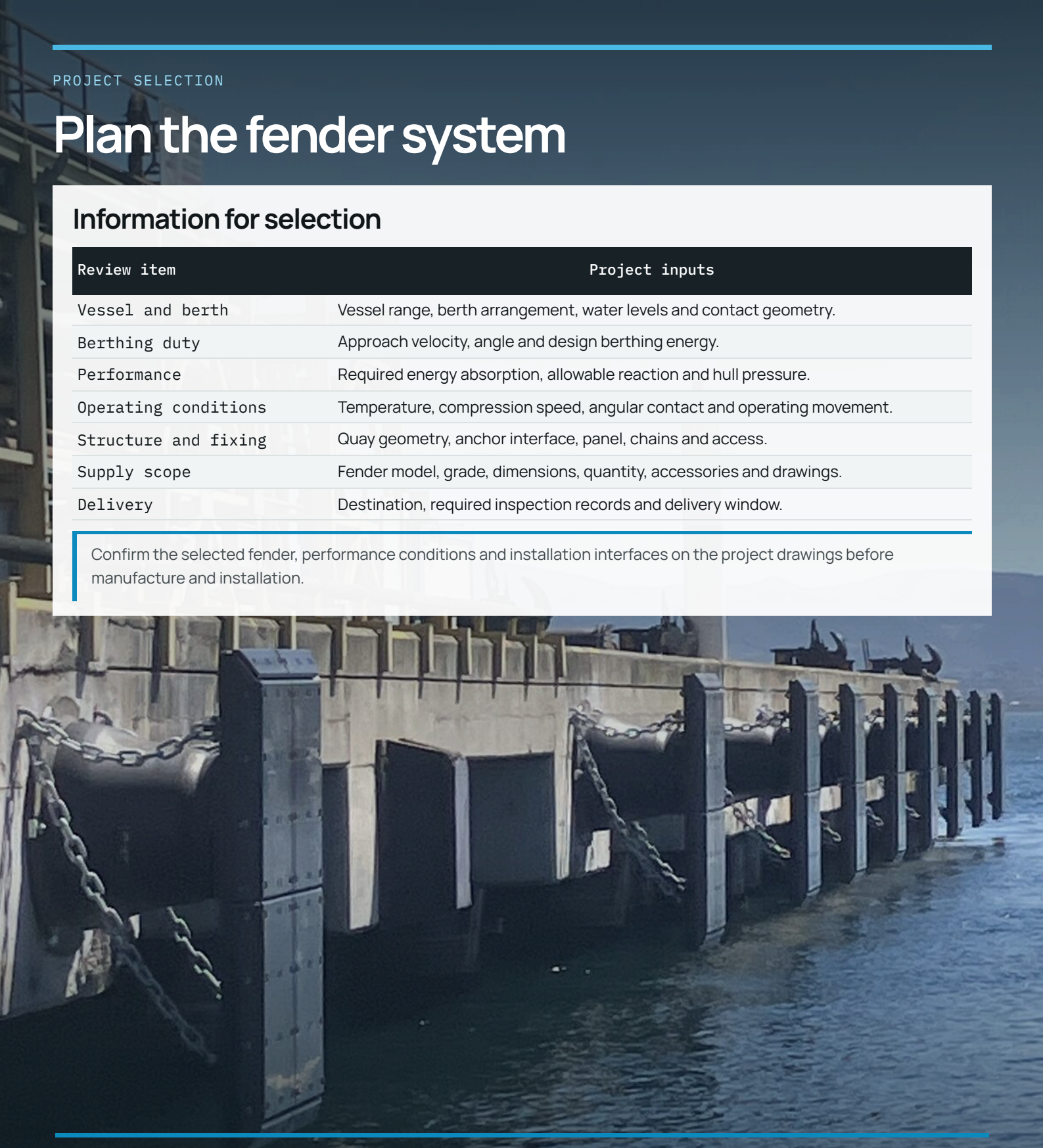
PROJECT SELECTION

Plan the fender system

Information for selection

Review item	Project inputs
Vessel and berth	Vessel range, berth arrangement, water levels and contact geometry.
Berthing duty	Approach velocity, angle and design berthing energy.
Performance	Required energy absorption, allowable reaction and hull pressure.
Operating conditions	Temperature, compression speed, angular contact and operating movement.
Structure and fixing	Quay geometry, anchor interface, panel, chains and access.
Supply scope	Fender model, grade, dimensions, quantity, accessories and drawings.
Delivery	Destination, required inspection records and delivery window.

Confirm the selected fender, performance conditions and installation interfaces on the project drawings before manufacture and installation.



PROJECT ENQUIRIES

Send Your Enquiry Now.

info@jettyguard.com jettyguard.com

Jettyguard Engineering Technology (Chongqing) Co., Ltd.