



EST. 1936

GROUP OF COMPANIES



Port Infrastructure Equipment





Port Infrastructure

KATRADIS S.A., established in Piraeus in 1936 by Mr. Konstantinos Katradis, originally specialized in Mooring Ropes for high-demand applications. The company has expanded its expertise to include a wide range of industrial and commercial activities, such as mooring and hoisting Wire Ropes, Anodes, Anchors, Chains, and complete Port and Marina Equipment Solutions.

With almost 90 years of experience, KATRADIS S.A. offers a broad portfolio, including mooring ropes, chains and accessories, fenders, buoys, floating pontoons, navigation aids, pedestals, and more. These products are renowned for their durability and quality, certified by Lloyd's Register and ISO standards, including ISO 9001:2015 for quality management and ISO 14001:2015 for environmental responsibility.

Port Infrastructure Solutions

Mooring Systems: Secure Mooring Lines, Fenders, and Bollards for secure docking.

Anchoring Systems: Reliable Anchors and Chains for diverse seabed conditions.

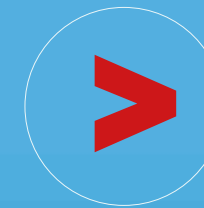
Navigation Aids: Buoys, Beacons, and Navigation Lights to ensure maritime safety.

Pontoons and Floating Docks: Durable and customizable docking solutions.

Our Commitment to Excellence

KATRADIS S.A. partners with leading global manufacturers and collaborates with Port Authorities and Marina Operators to deliver the most suitable quality-price solutions for every project. Supported by a team of expert chemical, metallurgical, and mechanical engineers, the company provides innovative technical solutions and comprehensive after-sales support.

Our commitment to sustainability and advanced technology is validated by ISO certifications, including ISO 14064 and ISO 27001, ensuring environmentally-friendly practices and secure operations. Trusted by over 10,000 vessels and a diverse clientele of shipping companies, construction firms, offshore operators, and port organizations worldwide, KATRADIS S.A. continues to uphold its tradition of excellence in every project.



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Fenders

Fenders

Unit Element Fenders

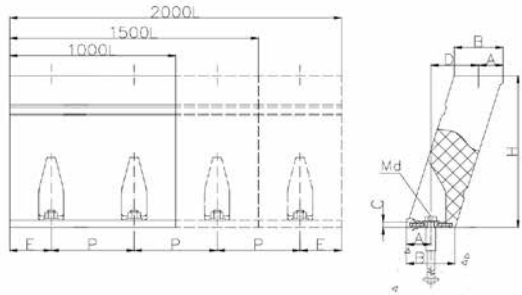
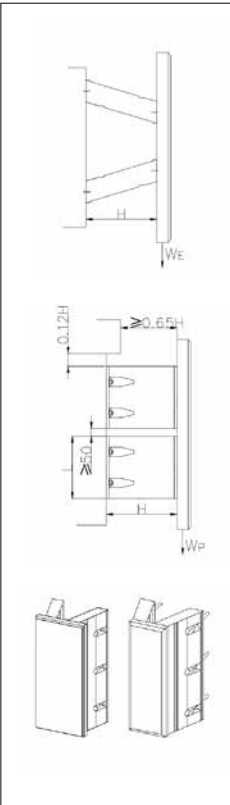
With high-performance capabilities, ME Fenders offer reliable protection during mooring operations. Their modular design allows for customizable configurations, accommodating different lengths and directions to match specific berthing conditions. This adaptability makes ME Fenders a dependable choice for various marine environments.

FEATURES

- Highly efficient shape
- High shear resistance
- Wide range of performance

APPLICATIONS

- Container terminals
- Tanker berths
- Ro-Ro and cruise ships
- Bulk and general cargo berths



TYPE	DIMENSIONS				Rated Deflection 57,5%			
					RO		RH	
	H	A	B	D	R:KN	E:KNm	R:KN	E:KNm
ME300	300	47	94	94	110	15	161	22
ME400	400	63	125	124	150	27	214	39
ME500	500	87	158	142	187	43	267	61
ME550	550	87	172	170	206	52	294	75
ME600	600	87	188	199	224	62	320	89
ME750	750	118	235	230	282	96	402	137
ME800	800	129	250	240	299	110	428	157
ME1000	1000	162	322	310	374	172	534	245
ME1250	1250	202	401	388	467	268	667	383
ME1450	1450	228	454	454	543	361	775	516
ME1600	1600	257	500	480	599	440	855	628

Fenders

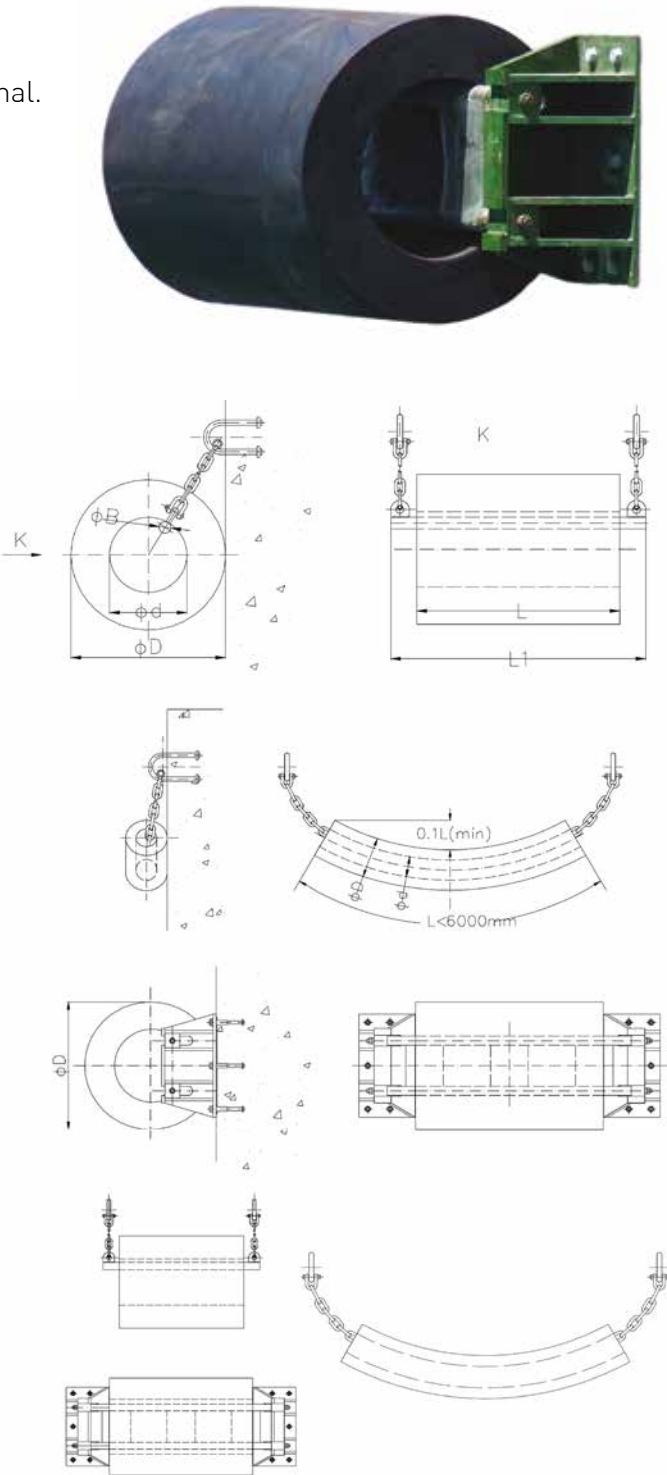
Cylindrical Fenders

Cylindrical fenders offer a straightforward and flexible option for docking protection. Their easy installation and progressive reaction make them suitable for a variety of vessels, from small boats to large ships. They are an excellent choice for safeguarding the upper areas of gravity quay walls, ensuring reliable performance in various docking scenarios.

- FEATURES
- Low hull pressure
 - Low reaction, reasonable energy absorption
 - Easy to install and maintain
 - Fit for rolling and pitching of berthing vessels
 - Versatile installation vertical, horizontal, diagonal.

- APPLICATIONS
- Bulk cargo berths
 - General cargo quays
 - Ro-Ro and ferry terminals
 - Fishing and workboat berths
 - Pontoons and floating structures

D*d	Rated Deflection 50,0%			
	RO		RH	
	R:KN	E:KNm	R:KN	E:KNm
150*75	44	1,5	73	2,3
200*100	60	2,6	95	4,2
250*125	75	4	120	6,5
300*150	89	6	143	9
350*175	104	8	167	13
400*200	119	10	191	17
500*250	148	16	239	26
600*300	179	24	286	37
700*350	208	31	334	50
800*400	237	41	383	66
900*450	268	52	430	84
1000*500	297	64	479	103
1100*550	331	77	528	129
1200*600	363	95	574	152
1300*650	392	108	623	179
1400*700	422	128	670	208
1500*750	451	147	718	238
1600*800	481	176	776	282
1700*850	511	206	824	338
1800*900	541	247	872	406
1900*950	570	288	920	487
2000*1000	653	321	1054	584



Fenders

Extruded D-type Fenders

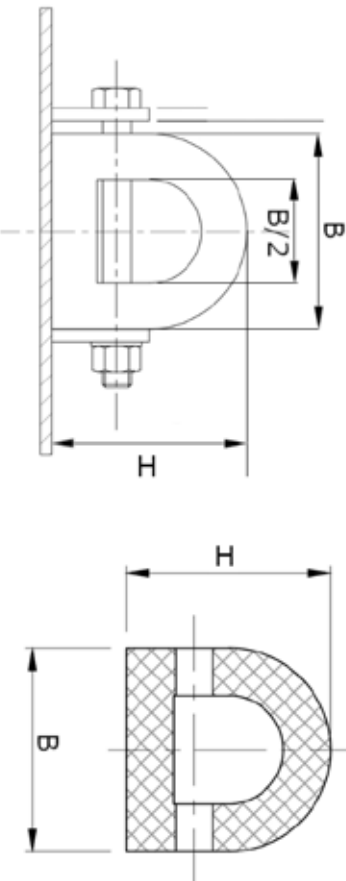
Extruded fenders are straightforward rubber profiles that can be easily attached to structures using bolts. Available in any length, these fenders can be cut and drilled to fit specific applications, offering a customizable solution for various docking and berthing needs.

- FEATURES
- All kinds of standard size
 - Any length could be available
 - Various fixing methods
 - Black or gray color
- APPLICATIONS
- Jetties and wharves for small craft
 - Tugs and workboats
 - Pontoon protection
 - Inland waterways
 - General purpose fendering



TYPE-A	DIMENSIONS		Rated Deflection 40%	
	B	H	R:KN	E:KNm
100	100	100	42	0,8
150	150	150	75	2
200	200	200	101	3,6
250	250	250	126	5,7
300	300	300	151	8,2
350	350	350	176	10,8
400	400	400	202	14,5
500	500	500	252	22,7

TYPE-B	DIMENSIONS		Rated Deflection 40%	
	B	H	R:KN	E:KNm
150	150	150	150	3,5
200	200	200	199	6,3
250	250	250	250	9,9
300	300	300	299	14,2
350	350	350	351	19
400	400	400	399	25
400	400	400	202	14,5



Fenders

Arch Fenders

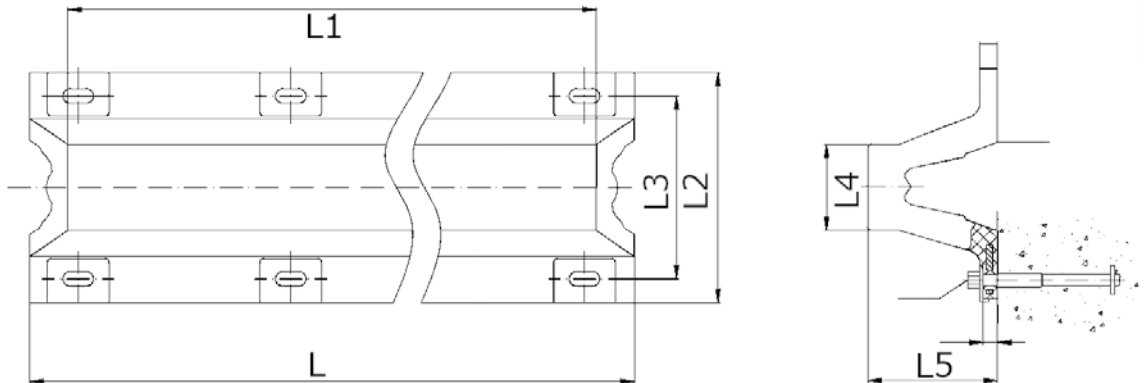
As an advanced V-type fender, Arch fenders are designed to be simple and tough, suitable for challenging environments. The DGH-B variant offers flexibility by allowing the attachment of UHMW-PE face pads or steel panels, providing effective protection and adaptability to different docking needs.

FEATURES

- Low reaction force, high energy absorption
- Simple and effective structure, long service time
- Can be fitted with frontal panel
- Wide range of standard sizes, meeting various design conditions.

APPLICATIONS

- General cargo berths
- Ro-Ro berths
- Workboat harbors
- Barge and tug berths



A*L		L1	L	L2	L3	L4	L5	RATED PERFORMANCE							
								RL		RO		RH		RS	
								Rated Deflection 45%	Max. Deflection 50%	Rated Deflection 45%	Max. Deflection 50%	Rated Deflection 45%	Max. Deflection 50%	Rated Deflection 45%	Max. Deflection 50%
150*1000	R	1000	1075	300	240	98	150	56	76	84	113	112	151	129	174
	E							3	4	4	5	6	7	7	8
200*1000	R	1000	1100	400	320	130	200	76	104	113	153	151	204	174	234
	E							6	7	10	11	12	13	14	15
250*1000	R	1000	1125	500	410	164	250	148	205	172	239	208	288	270	375
	E							16	17	18	19	22	23	28	30
300*1000	R	1000	1150	600	490	225	300	177	246	206	286	249	346	324	450
	E							22	24	26	28	31	33	41	44
400*1000	R	1000	1200	800	670	300	400	236	328	275	382	332	461	432	600
	E							40	43	46	49	56	60	73	78
500*1000	R	1000	1250	1000	840	375	500	295	410	344	478	415	576	540	750
	E							62	66	72	77	87	93	113	121
600*1000	R	1000	1300	1200	1010	450	600	354	492	412	572	498	692	647	899
	E							89	95	104	111	126	135	163	175
800*1000	R	1000	1400	1600	1340	600	800	472	656	550	764	664	922	864	1200
	E							159	170	185	198	223	239	290	311
1000*1000	R	1000	1500	2000	1680	750	1000	590	820	688	956	830	830	1080	1500
	E							248	266	289	310	349	349	454	486

Fenders

Cone Fenders

Cone fenders represent the third generation of cell fenders, offering superior performance and efficiency. Their conical shape ensures stability even at large compression angles, making them suitable for various berthing conditions. Available in a wide range of standard sizes, Cone fenders can be tailored to meet specific docking needs.

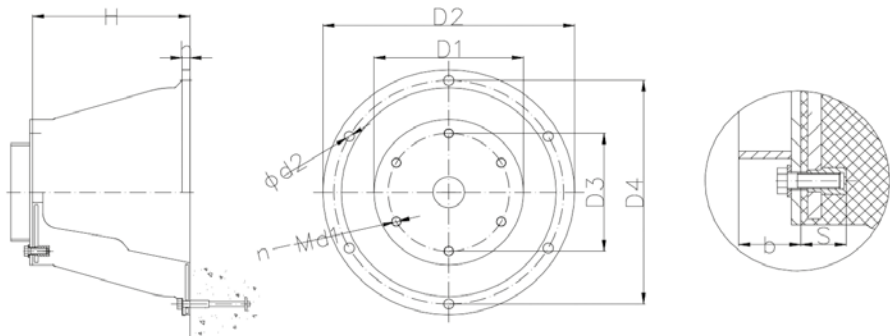


FEATURES

- Big deflection, high performance
- Can support large panels
- Better performance on angle compression
- No performance loss under 10 degrees angle
- Wide range sizes, can meet multi-design requirements
- Easy and quick installation

APPLICATIONS

- General cargo berths
- Oil and LNG facilities
- Container terminals
- Ro-Ro and cruise terminals
- Bulk terminals



TYPE		DIMENSIONS			RL		RO		RH		RS	
		H	ΦU	ΦW	Reaction force 70%	Energy absorption 72,5%	Reaction force 70%	Energy absorption 72,5%	Reaction force 70%	Energy absorption 72,5%	Reaction force 70%	Energy absorption 72,5%
Cone 300	R	300	255	450	59	65	68	75	84	94	104	115
	E				7,7	8,3	9,2	10	11,8	12	14,4	15,6
Cone 350	R	350	300	570	80	88	93	105	114	125	141	155
	E				12,5	13,5	14,8	16	19	20	23,1	25
Cone 400	R	400	340	600	105	115	124	137	150	165	185	204
	E				18	19,6	22	24	28,3	30,8	34,6	37,5
Cone 500	R	500	425	750	165	193	200	232	268	311	335	380
	E				37	41	47	50	63	70	79	90
Cone 600	R	600	510	900	225	258	283	319	382	429	480	542
	E				75	85	94	104	127	129	157	161
Cone 700	R	700	595	1050	308	341	384	426	522	568	652	691
	E				120	124	150	154	181	192	235	243
Cone 800	R	800	680	1200	402	428	502	576	706	833	862	930
	E				179	208	224	252	294	316	368	380
Cone 900	R	900	765	1350	508	558	635	103	862	957	1078	1189
	E				255	270	306	334	399	431	494	517
Cone 1000	R	1000	850	1500	628	698	784	882	1078	1213	1339	1507
	E				350	380	437	478	541	588	669	735
Cone 1100	R	1100	935	1650	800	833	927	1019	1146	1259	1430	1570
	E				408	432	495	527	650	681	830	865
Cone 1150	R	1150	998	1725	830	919	1038	1152	1392	1593	1764	1985
	E				532	588	666	717	882	938	1029	1103
Cone 1200	R	1200	1020	1800	890	979	1106	1229	1396	1536	1746	1920
	E				560	583	705	735	882	919	1103	1149
Cone 1300	R	1300	1105	1950	1125	1200	1320	1537	1705	1900	2125	2312
	E				750	800	1043	1077	1310	1360	1585	1640
Cone 1400	R	1400	1190	2100	1150	1278	1443	1604	1804	2005	2255	2506
	E				860	896	1079	1124	1349	1405	1686	1756
Cone 1600	R	1600	1360	2400	1418	1575	1814	2016	2268	2520	3024	3150
	E				1234	1285	1548	1613	1935	2016	2419	2520
Cone 1800	R	1800	1530	2880	1912	2125	2401	2667	3000	3333	3750	4166
	E				1804	1880	2264	2359	2830	2948	3538	3686
Cone 2000	R	2000	1900	3200	2660	2960	2990	3320	3541	3933	4262	4750
	E				2840	3060	3192	3430	3806	4070	4637	4935

Fenders

Cell Fenders

With a history of extensive use worldwide, Cell fenders remain a trusted choice for many berthing applications. Recent enhancements have increased their performance and durability, yet they retain the original dimensions to ensure compatibility with existing installations. This makes Cell fenders both a practical and efficient solution.

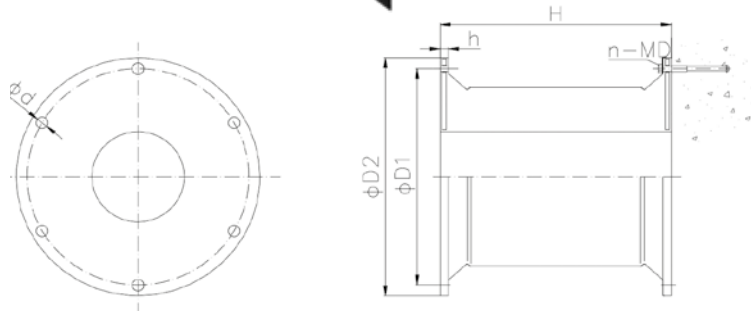


FEATURES

- Ideal for low hull pressure requirements
- Can be combined with large frontal panels
- Wide range of performance

APPLICATIONS

- Bulk Terminals
- Container Terminals
- Ro-Ro
- Cruises Terminals
- Oil and LNG facilities
- Offshore platforms
- Multi user berths



TYPE		DIMENSIONS		RL		RO		RH		RS		RE	
		H	ΦW	Rated deflection 52,5%	Max. deflection 55%	Rated deflection 52,5%	Max. deflection 55%	Rated deflection 52,5%	Max. deflection 55%	Rated deflection 52,5%	Max. deflection 55%	Rated deflection 52,5%	Max. deflection 55%
CELL400H	R	400	650	51	59	64	75	83	97	96	112	110	125
	E			9	9,5	11	12	14	15	17	18	19	21
CELL500H	R	500	650	86	99	108	125	140	160	162	187	182	210
	E			18	19	23	25	30	32	36	38	40	43
CELL630H	R	630	840	138	147	172	182	224	237	258	274	290	309
	E			38	40	48	50	62	67	72	76	80	85
CELL800H	R	800	1050	211	225	275	292	355	378	412	437	464	493
	E			75	78	98	102	125	132	145	153	163	173
CELL1000H	R	1000	1300	349	372	436	463	567	603	655	696	737	784
	E			153	163	195	203	249	264	287	304	324	343
CELL1150H	R	1150	1500	462	491	578	614	750	798	865	920	975	1037
	E			233	247	297	309	379	401	437	463	492	521
CELL1250H	R	1250	1650	546	581	682	725	886	942	1022	1087	1153	1225
	E			299	316	382	396	486	516	561	594	632	669
CELL1450H	R	1450	1850	735	781	918	976	1193	1269	1376	1464	1551	1649
	E			468	495	596	619	760	804	876	928	987	1045
CELL1600H	R	1600	2000	894	950	1117	1189	1453	1544	1676	1781	1888	2007
	E			628	665	801	832	1020	1080	1177	1247	1326	1405
CELL1700H	R	1700	2100	1009	1073	1262	1342	1640	1743	1892	2012	2131	2266
	E			753	798	960	997	1224	1300	1413	1495	1591	1685
CELL2000H	R	2000	2200	1398	1485	1746	1856	2270	2413	2619	2783	2941	3136
	E			1227	1299	1564	1624	1994	2111	2300	2435	2591	2743
CELL2250H	R	2250	2550	2085	2216	2454	2607	3188	3390	3679	3911	4145	4406
	E			2060	2180	2472	2566	3150	3336	3628	3848	4095	4337
CELL2500H	R	2500	2950	2574	2737	3028	3220	3937	4182	4543	4829	5118	5441
	E			2826	2992	3391	3520	4322	4576	4987	5280	5618	5949
CELL3000H	R	3000	3350			3750	4217	4482	5099				
	E					4300	4635	5160	5510				

Fenders

Wheel Fenders

Wheel fenders are commonly used on exposed corners to assist ships in maneuvering into berths and navigating into narrow channels. They are particularly effective for guiding vessels through locks and dry-dock entrances, providing reliable protection and reducing the risk of damage.



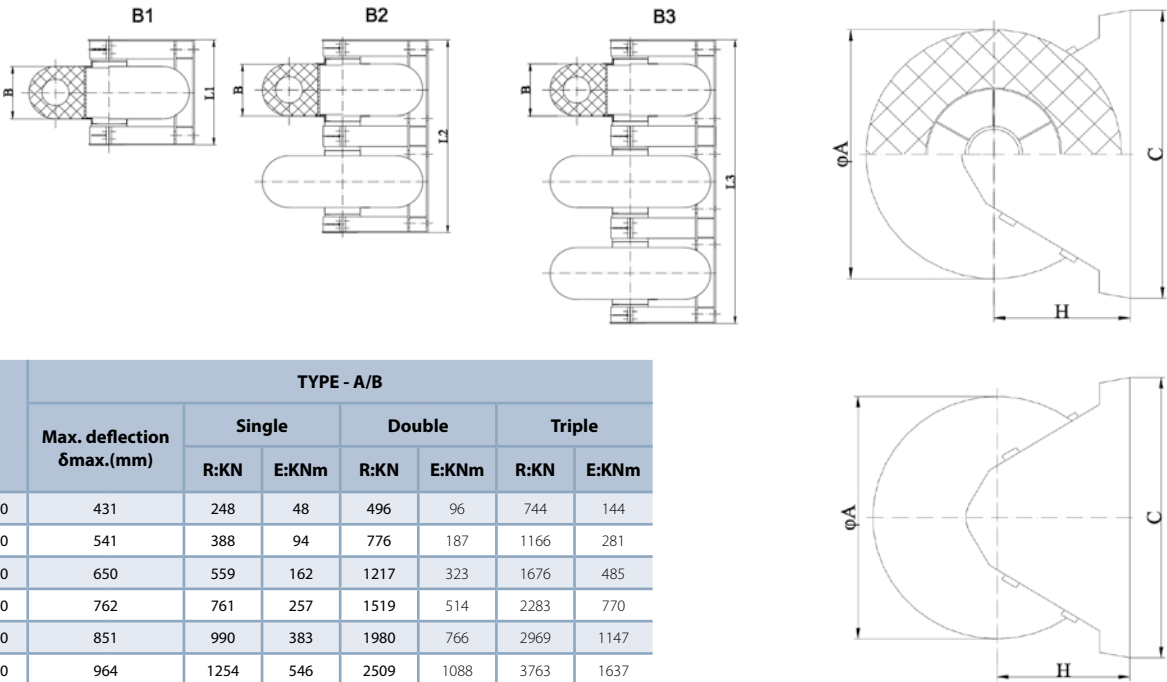
FEATURES

- Low rolling resistance
- Low maintenance cost
- Used in single or multiple rows

APPLICATIONS

- Dry-dock entrances and walls
- Lock approaches
- Exposed corners

Size A x B	TYPE - A/B								TYPE - B						
	Single				Double		Triple		Max. deflection δmax.(mm)	Single		Double		Triple	
	C	H	L1	Weight	L2	Weight	L3	Weight		R:KN	E:KNm	R:KN	E:KNm	R:KN	E:KNm
Φ600x200	695	320	420	127	770	245	1120	365	125	67	2	134	5	202	7
Φ750x250	870	400	510	249	935	501	1360	735	159	105	5	210	9	315	14
Φ900x300	1040	495	610	465	1120	878	1630	1291	185	151	8	302	16	453	24
Φ1200x400	1380	640	820	1045	1500	2041	2180	3005	260	269	19	539	39	814	58
Φ1500x500	1740	800	1010	2011	1850	3915	2690	5784	325	419	38	843	76	1264	113
Φ1800x600	2080	960	1210	3441	2215	6701	3220	9891	390	608	65	1215	130	1823	196
Φ2100x700	2440	1155	1410	5610	2590	10925	3770	15895	455	823	102	1647	204	2470	306
Φ2400x800	2770	1280													



Size	Max. deflection δmax.(mm)	TYPE - A/B					
		Single		Double		Triple	
		R:KN	E:KNm	R:KN	E:KNm	R:KN	E:KNm
Φ1200x400	431	248	48	496	96	744	144
Φ1500x500	541	388	94	776	187	1166	281
Φ1800x600	650	559	162	1217	323	1676	485
Φ2100x700	762	761	257	1519	514	2283	770
Φ2400x800	851	990	383	1980	766	2969	1147
Φ2700x900	964	1254	546	2509	1088	3763	1637
Φ3000x1000	1074	1548	749	3097	1499	4645	2244

Fenders

Tug Fenders

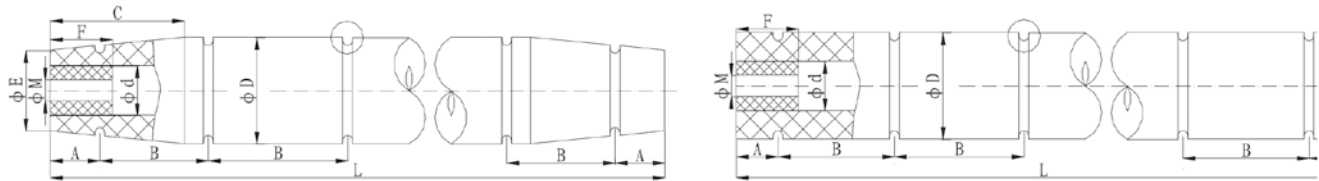
Tug cylindrical fenders offer flexibility in size and length, making them a popular choice for use on the bow or stern of tug boats. They can be curved to suit specific dimensions, ensuring optimal protection during pushing operations. M-Type and W-Type fenders further enhance protection, offering reliable defense for the sides of tug boats against impacts and abrasions.



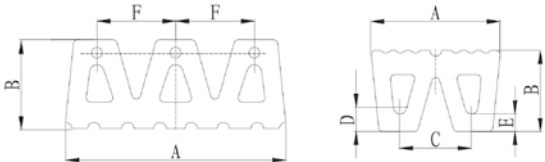
- FEATURES**
- Simple design and economic
 - Flexible, practical structure
 - Available in any required lengths

- APPLICATIONS**
- Tug boat
 - Workboat
 - Flatboat

D*d	E	Amax.	Bmax.	C	M	F	Weight
250*125	190	200	570	500	75	300	47
300*150	225	225	600	700	75	350	68
380*190	280	225	650	800	100	400	110
400*200	300	250	670	800	100	400	122
450*225	350	250	700	850	100	400	155
480*240	350	250	700	850	100	400	176
500*250	375	280	730	900	100	400	190
540*270	375	280	730	900	100	400	223
600*300	450	300	800	900	125	500	275
700*350	500	350	870	950	125	500	375
800*400	600	350	930	1000	125	500	490
900*450	675	350	1000	1100	150	500	620



M FENDERS						W FENDERS							
	A	B	F	Lmax.	Weight	Type	A	B	C	D	E	Lmax.	Weight
M400	400	200	150	2000	60	W320-200	320	200	180	67	50	2000	59
M500	500	250	190	2000	95	W400-250	400	250	220	75	55	2000	87
M600	600	300	230	2000	142	W480-300	480	300	265	90	65	2000	129
						W500-450	500	450	270	100	75	2000	193



Fenders

Pneumatic fenders

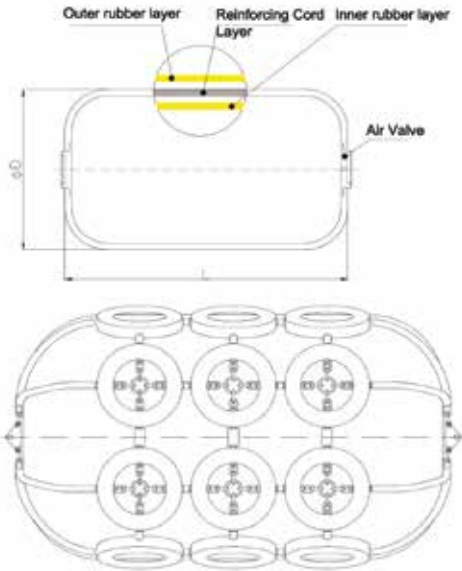
Pneumatic fenders are perfect for ship-to-wharf and ship-to-ship operations, providing excellent cushioning during transfers. For enhanced protection, larger fenders are often equipped with a grid, ensuring durability and impact resistance in demanding conditions.



- FEATURES**
- Easy and fast to deploy
 - Very low reaction, high energy absorption
 - Suitable for small and large tidal ranges
 - Easy to install

- APPLICATIONS**
- Oil and gas tankers
 - Fast ferries and aluminum vessels
 - Temporary and permanent installations

Size D*L	Fender body (kgr.)	Chain net (kgr.)	Total (kgr.)	Chain (mm)	Deflection 60%	
					R: KN	E: KNm
300*500	8	-	8	10	14	1
400*800	20	-	20	12,5	30	3
500*1000	25	20	45	12,5	54	5
600*1000	28	22	50	14	65	7
700*1500	64	150	214	16	115	14
1000*1500	125	190	315	16	156	28
1000*2000	175	230	405	16	217	38
1200*2000	208	300	508	19	253	54
1200*2400	248	320	568	19	30	64
1350*2400	270	330	600	22	410	104
1500*3000	225	490	715	22	486	128
1700*3000	365	580	945	26	542	163
2000*3500	585	980	1565	28	743	263
2200*4500	1080	1090	2170	30	1078	417
2500*4000	1560	P	1260	32	1049	464
3300*6500	2585	P	2680	44	2981	1795
4500*9000	4575	P	4810	50	5688	4688



Fenders

Pneumatic fenders selection

Selecting the right pneumatic fender is crucial for ensuring the safety and efficiency of berthing operations. Our comprehensive guide helps you choose the ideal fender size and quantity based on your vessel's specific requirements.

SELECTION GUIDE:

Utilize the following table to determine the appropriate fender based on your vessel's displacement, relative velocity, and berthing energy. This ensures optimal protection and efficiency during docking procedures.

PETROLEUM				
Equivalent Displacement Coefficient [C]	Relative Velocity	Berthing Energy	Suggested Fenders	
Tonnes	m/s	Tonnes.m	Diameter x Length (m)	Quantity
1.000	0,3	2,4	1,0x2,0	3 or more
3.000	0,3	7,0	1,5x3,0	- // -
6.000	0,3	14,0	2,5x5,5	- // -
10.000	0,25	17,0	3,3x6,5	- // -
30.000	0,25	40,0	3,3x6,5	4 or more
50.000	0,2	48,0	3,3x6,5	- // -
100.000	0,15	54,0	3,3x6,5	- // -
150.000	0,15	71,0	3,3x6,5	5 or more
200.000	0,15	93,0	3,3x6,5	- // -
330.000	0,15	155,0	4,5x9,0	4 or more
500.000	0,15	231,0	4,5x9,0	- // -

LIQUIFIED GAS				
Equivalent Displacement Coefficient [C]	Relative Velocity	Berthing Energy	Suggested Fenders	
Tonnes	m/s	Tonnes.m	Diameter x Length (m)	Quantity
1.000	0,3	4,0	1,0x2,0	3
3.000	0,3	12,0	1,5x3,0	3
5.000	0,3	24,0	2,0x3,5	3
8.000	0,25	25,0	2,0x3,5	3
20.000	0,25	61,0	3,3x4,5	3
40.000	0,20	74,0	3,3x4,5	4
80.000	0,15	78,0	3,3x4,5	4

NOTES:

- 1. Ship to Ship Transfer Guide (Petroleum), 4th edition, 2005, OCIMF
- 2. Ship to Ship Transfer Guide (Liquefied Gasses), 2nd edition, 1995, OCIMF

“C” is calculated as per the following equation:

$$C = \left(\frac{2 \times \text{Displacement Ship A}}{\text{Displacement Ship B}} \right)^{1/3}$$

If “C” is between two coefficients, the selected fender size will be for the larger coefficient in the Table.



Fenders

Foam Fenders

Foam fenders are available with either a rubber skin or polyurethane skin, making them a versatile choice for varying conditions. They are especially suitable for areas with large grid ranges and for ship-to-ship transfers. Larger fenders often come with a chain-tyre-net for added durability and protection.

FEATURES

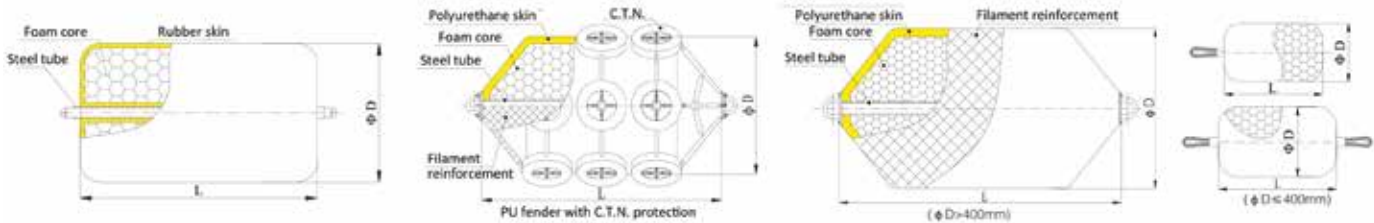
- Unsinkable design
- Low reaction and high energy absorption
- Operate floating or suspended
- Easy to install

APPLICATIONS

- Cruise ships
- Container vessels
- Bulk cargo
- Ro-Ro and ferries
- Oil and gas tankers



FLOATING RUBBER FENDER					FLOATING PU FENDERS			
Size D*L	Deflection 60%		Weight (kgr.)	Remarks	D	L	Deflection 60%	
	R: KN	E: KNm					R: KN	E: KNm
300*500	38	1,8	10	one end has	300	500	19	1,8
400*800	56	2,6	30	two ends have	400	800	40	6,8
500*1000	71	8	68		500	1000	48	8
600*1000	86	12	99					
700*1500	161	27	202					
1000*1500	205	49	412		1000	1500	170	58
1000*2000	274	64	550					
1200*2000	337	93	810		1200	2000	278	89
1200*2400	390	110	950					
1350*2500	463	145	1252					
1500*3000	624	216	1855		1500	3000	567	238
2000*3500					2000	2000	800	448
2200*3000					2200	3000	830	500
2500*4000					2500	4000	1195	888
3000*5000					3000	5000	1640	1000
3400*6000					3400	6000	1968	1202
4300*6000					4300	6000	3485	2214



Bollards

Bollards

Material Properties

The commonly used materials for mooring bollards are cast steel and ductile cast iron. Both of them have their advantages during applications. However, some applications and operational conditions necessitate the use of specific materials. For example, in extreme temperatures of -20°C or below, regular cast iron becomes very brittle and easily cracked and is therefore not recommended.



Similarly in hot humid environment where the water has high saline content, cast steel is not recommended as it has a poor rate of resistance to corrosion.

Properties	Ductile Cast Iron			Cast Steel		
	Quality	Equivalent standards		Quality	Equivalent standards	
	GB/T1348-2009 QT450-10	ISO 450-10	ASTM 65-45-12	GB/T11352 ZG230-450	ISO 23-450W	ASTM 65-35
Yield Strength	≥310 (Mpa)	≥310 (Mpa)	≥310 (Mpa)	≥230 (Mpa)	≥230 (Mpa)	≥240 (Mpa)
Tensile Strength	≥450 (Mpa)	≥450 (Mpa)	≥448 (Mpa)	≥450 (Mpa)	≥450 (Mpa)	≥450 (Mpa)
Elongation	≥10 (%)	≥10 (%)	≥12 (%)	≥22 (%)	≥22 (%)	≥24 (%)



Advantage of Ductile Cast Iron: More corrosion resistant than steel and can tolerate compromised coatings better than steel. Ductile cast iron is more fluid during casting stage which results in a smoother finish.

Advantage of Cast Steel: Available in a wide range of strengths, this allows the bollard to be commercially competitive versus thicker cast iron bollards. The ductility of cast steel gives the needed structural margin in the event of an overload situation.

According to GB/T1348-2009 QT450-10 and GB/T11352 ZG230-450, the required testing procedure of the mooring bollard consists of the following:

Material Certification: From each metal pouring from the casting process, a sample must be taken. The sample should then have its material properties checked and certified by an independent third party.

Dimensional Accuracy: Once the bollard is cast, it should be thoroughly checked for dimensional accuracy with its supplied drawings.

Design Calculations: Cross referencing both the material and dimensional properties of the bollard, the manufacturer should supply design calculations demonstrating the suitability of the proposed bollard for the required design load.

We can provide ABS, LR, BV, CCS etc. 3rd party certifications for mooring bollards.

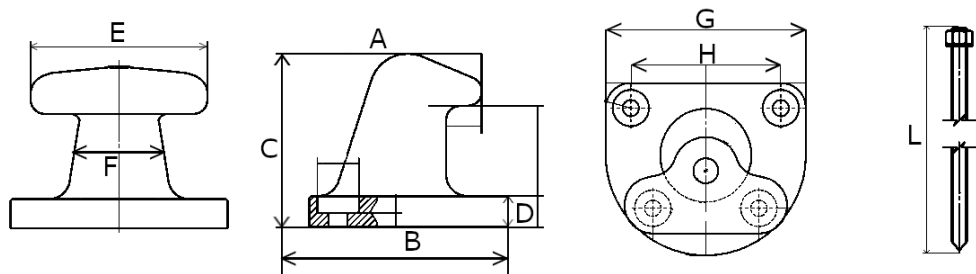
Bollards

T-Heads Bollards

T-Head Bollards are a quintessential element in modern port infrastructure, providing a secure and efficient mooring solution for a variety of vessels. Our T-Head Bollards are designed to meet the highest standards of strength, durability, and performance, ensuring the safe mooring of ships in any environmental condition.



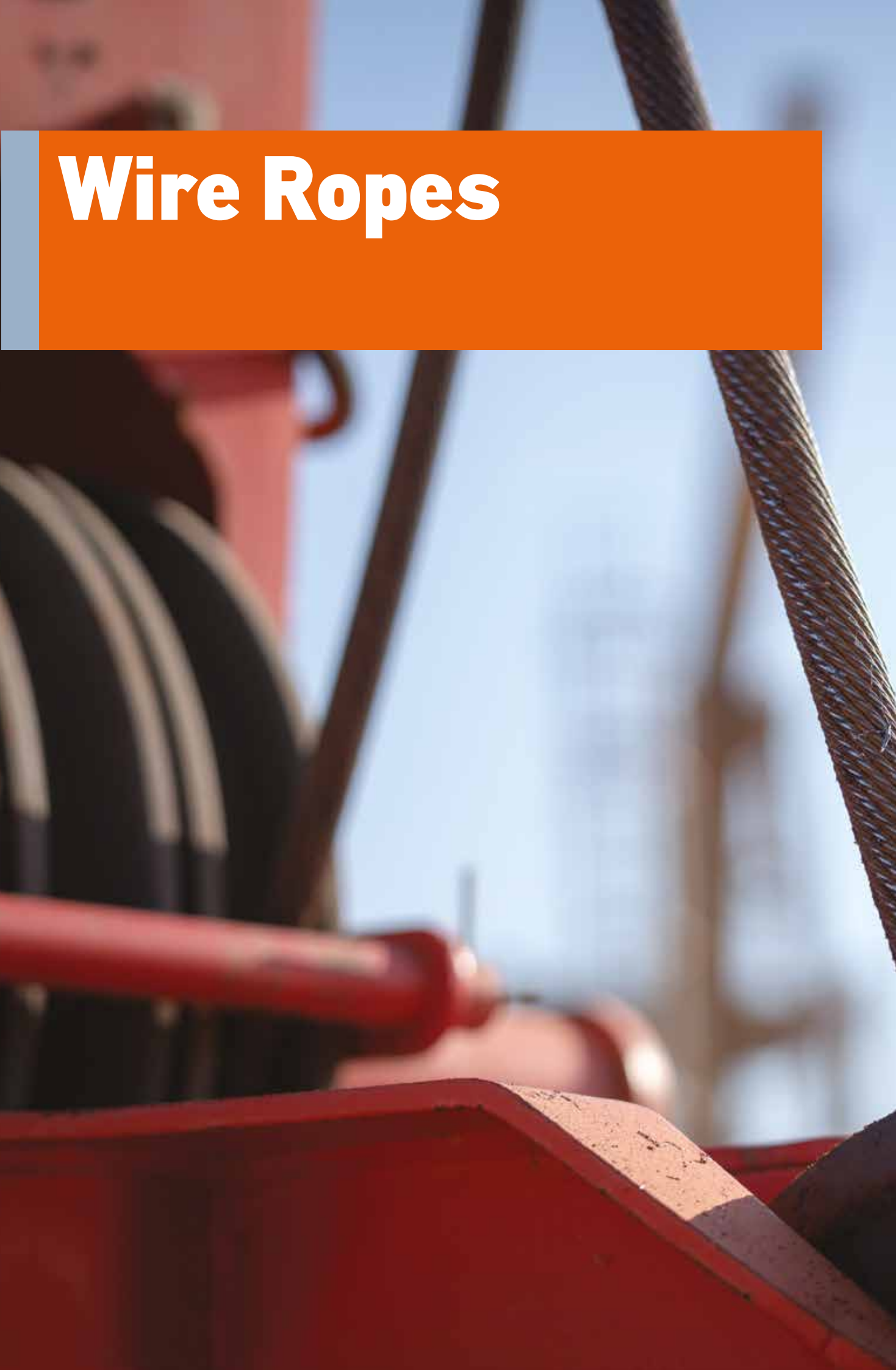
T-Head Bollards are ideal for use in commercial ports, marinas, and shipyards, providing a reliable mooring point for vessels of all sizes. They are particularly beneficial in areas with high tidal variations and strong currents, where secure mooring is critical.



Capacity Ton	Dimension(mm)								Bolts (mm)	
	A	B	C	D	E	F	G	H	Q'ty	L
20	330	380	280	50	350	175	440	335	5	500
30	470	540	380	64	458	250	597	490	5	500
50	477	540	400	70	550	260	640	500	5	500
80	570	650	478	80	600	305	800	640	6	800
100	575	650	453	90	600	350	800	650	7	800
150	654	750	500	90	700	400	900	700	7	1000
200	775	900	600	100	800	460	1100	850	7	1000
300	840	930	730	120	820	470	1106	914	8	1400

The **T head bollards** are produced using qualified raw materials with the advanced casting process. And the surface treatment of the **T head bollard** is coating by epoxy paint to make it much smoother.





Wire Ropes

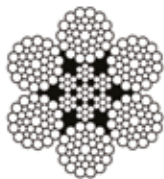
Wire Ropes

HYPERMAX 6S - 6x36 WS Steel Core (IWRC)

A non rotation resistant wire rope with round wires, ideal for cargo runner, hoisting, luffing, mooring, towing, anchoring etc..
Also suitable for fabrication of steel wire rope slings for lifting operations.

FEATURES

- **IWRC Core** – Higher strength & stability than fiber core
- **Parallel Lay Construction** – Ensures long lifespan
- **Standard:** EN 12385
- **Class:** 6x36



Nominal diameter	Approx. weight	Minimum breaking load	
		1770N/mm²	1960N/mm²
mm	Kg/m	KN	
12	0.589	90.7	100
14	0.802	124	137
16	1.050	161	179
18	1.330	204	226
20	1.640	252	279
22	1.980	305	338
24	2.360	363	402
26	2.760	426	472
28	3.210	494	547
30	3.700	570	631
32	4.190	645	715
34	4.750	731	810
36	5.300	817	904
38	5.920	914	1012
40	6.540	1010	1120
42	7.230	1115	1235
44	7.920	1220	1350
46	8.670	1335	1480
48	9.420	1450	1610
50	10.260	1575	1750
52	11.100	1700	1890
54	11.950	1840	2060
56	12.800	1980	2190
58	13.750	2125	2350
60	14.700	2270	2510

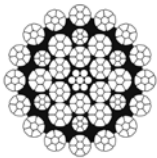
Wire Ropes

HYPERFLEX C - 35(W)xK7 Compacted

The 35(W)xK7 Compacted wire rope belongs in the multi strand, rotation resistant classification but its strands are compacted and is used as hoisting wire rope.

FEATURES

- **Highly Flexible** – 3-layer construction
- **Lang’s Lay** – Ideal for multi-layer spooling on winch drums
- **2160 Tensile Strength** – Available upon request
- **Corrosion Resistant** – Drawn galvanized, internally & externally lubricated
- **Optional Inner Plastification** – Enhanced protection, extended service life, improved fatigue resistance, and increased safety



Nominal diameter	Approx. weight	Minimum breaking load 1960N/mm ²
mm	Kg/m	KN
10	0.50	91
12	0.74	133
13	0.86	155
14	1.00	180
15	1.15	215
16	1.30	244
18	1.70	309
19	1.85	345
20	2.10	375
21	2.25	414
22	2.50	450
23	2.77	490
24	2.95	530
25	3.15	590
26	3.50	620
27	3.75	670
28	4.08	720
29	4.30	775
30	4.65	830
32	5.55	940
34	5.95	1050
36	6.70	1180
38	7.08	1250
40	7.85	1380

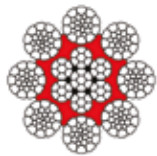
Wire Ropes

HYPERSTRONG 8C – 8x26 Compacted

This wire rope belongs in the non rotation resistant classification but its strands are compacted and it is used mainly as luffing wire rope on high efficiency ship & harbour mobile cranes, container bridge cranes, overhead travelling hoists, mineral loading cranes.

FEATURES

- **Flexible 8-strand rope** for long service life, suited as hoisting and luffing rope.
- **Longer service life** for best profitability due to excellent flexural fatigue properties
- **Resistance against corrosion** due to drawn galvanized wires in combination with special plastic insert
- **High flexibility** due to its innovative rope construction
- **Trouble –free operation** – due to outstanding absorption of dynamic forces such as shock-loads and vibrations
- **OEM approved**



Nominal diameter	Approx. weight	Minimum breaking load		
		1770N/mm ²	1960N/mm ²	2160N/mm ²
mm	Kg/m	KN		
10	0.46	79	87	96
11	0.55	95	105	115
12	0.69	114	126	139
13	0.81	137	152	168
14	0.93	159	176	194
15	1.06	182	201	222
16	1.20	206	229	252
17	1.35	233	258	284
18	1.55	260	288	318
19	1.71	294	326	359
20	1.89	324	359	395
21	2.15	363	401	442
22	2.34	396	439	484
23	2.54	433	480	529
24	2.75	462	512	564
25	2.97	508	562	620
26	3.19	546	605	667
27	3.51	588	651	717
28	3.76	640	708	781
28.6	3.90	659	730	804
29	4.03	682	755	832
30	4.30	740	819	903
32	4.90	842	932	1027
34	5.59	936	1036	1142
36	6.26	1055	1168	1287
38	6.96	1195	1323	1458
40	7.71	1312	1453	1601
42	8.45	1449	1604	1768
44	9.27	1573	1742	1920

Anchors & Chains

Anchors

Stockless Anchors

We supply commonly used stockless anchors like Hall, Spek and Union types, but we can provide, at a short notice, any type needed. Comprehensive stocks of new and second hand anchors and chains are held in Piraeus and China and these stocks allow KATRADIS to provide the quickest delivery service possible worldwide.

Quality Standards

Common stockless anchors belong to Class F with efficiency ranging from 4-6. The performance of an anchor is affected by many different factors, to name a few: fluke area and design, shank design, soil conditions, load conditions



PROOF LOAD, Kg							
Weight of Anchor (kgs)	Proof Test	Weight of Anchor (kgs)	Proof Test	Weight of Anchor (kgs)	Proof Test	Weight of Anchor (kgs)	Proof Test
50.00	2370	900.00	18600	3600	54800	6900	80700
55.00	2570	950.00	19500	3700	55800	7000	81300
60.00	2760	1000.00	20300	3800	56800	7200	82600
65.00	2950	1050.00	21200	3900	57800	7400	83800
70.00	3130	1100.00	22000	4000	58800	7600	85000
75.00	3300	1150.00	22800	4100	59800	7800	86100
80.00	3460	1200.00	23600	4200	60700	8000	87000
90.00	3700	1250.00	24400	4300	61600	8200	88100
100.00	3990	1300.00	25200	4400	62500	8400	89200
120.00	4520	1350.00	26000	4500	63400	8600	90300
140.00	5000	1400.00	26700	4600	64300	8800	91400
160.00	5430	1450.00	27500	4700	65100	9000	92400
180.00	5850	1500.00	28300	4800	65800	9200	93400
200.00	6250	1600.00	29800	4900	66600	9400	94400
225.00	6810	1700.00	31300	5000	67400	9600	95300
250.00	7180	1800.00	32700	5100	68200	9800	96200
275.00	7640	1900.00	34200	5200	69000	10000	97100
300.00	8110	2000.00	35600	5300	69800	10500	99300
325.00	8580	2100.00	36900	5400	70500	11000	101500
350.00	9050	2200.00	38300	5500	71300	11500	103600
375.00	9520	2300.00	39600	5600	72000	12000	105700
400.00	9980	2400.00	40900	5700	72700	12500	107800
425.00	10500	2500.00	42200	5800	73500	13000	109900
450.00	10900	2600.00	43500	5900	74200	13500	111900
475.00	11400	2700.00	44700	6000	74900	14000	113900
500.00	11800	2800.00	45900	6100	75500	14500	115900
550.00	12700	2900.00	47100	6200	76200	15000	117700
600.00	13500	3000.00	48300	6300	76900	15500	119500
650.00	14300	3100.00	49400	6400	77500	16000	120900
700.00	15200	3200.00	50500	6500	78200	16500	122200
750.00	16100	3300.00	51600	6600	78800	17000	123500
800.00	16900	3400.00	52700	6700	79400	17500	124700
850.00	17800	3500.00	53800	6800	80100	18000	125900

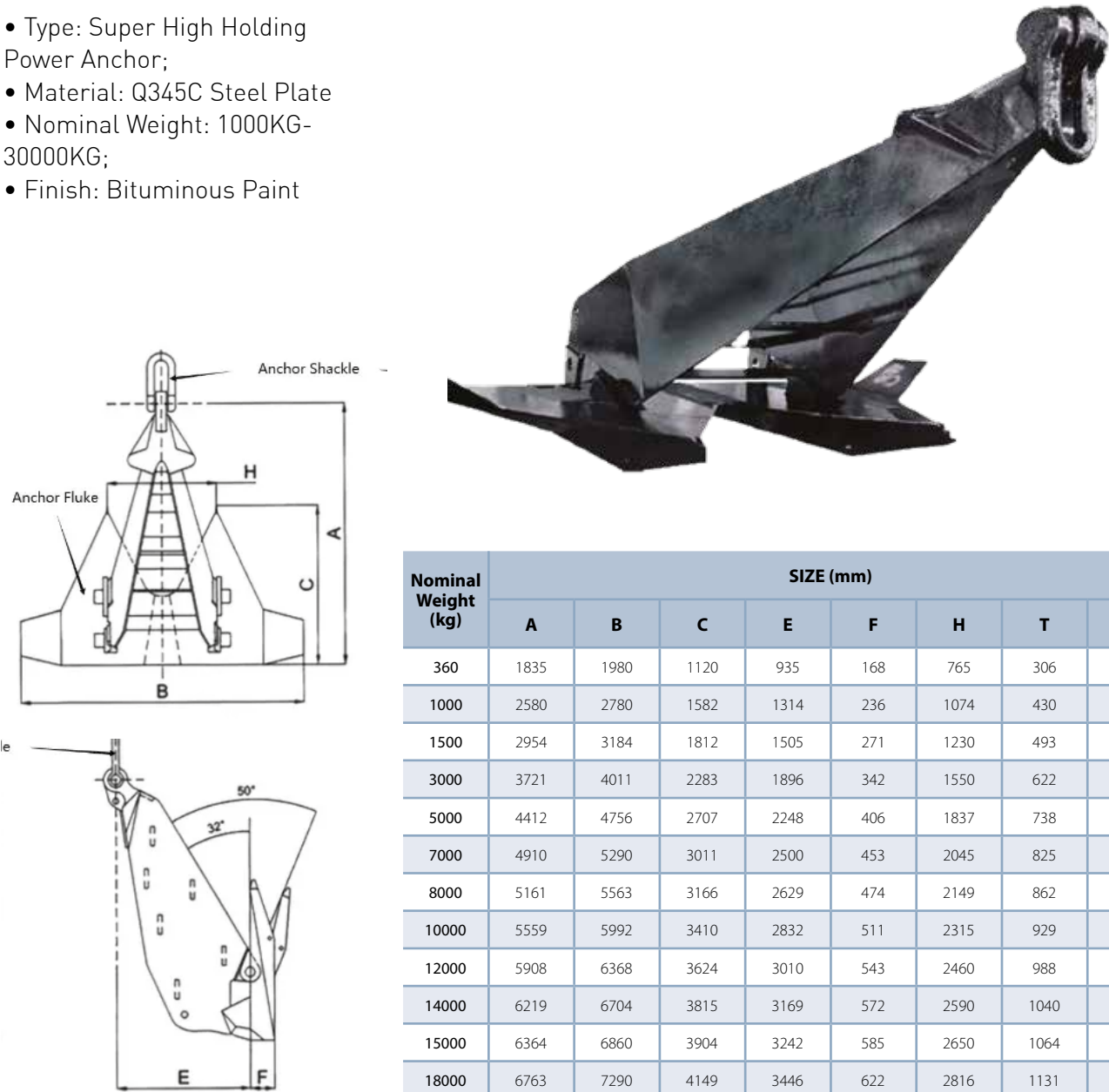
■ Anchors

Stevpris Mk5 Anchor

Stevpris MK5 anchor is a type of super high holding power anchor and is widely used in offshore mooring and platform mooring.

Features:

- Type: Super High Holding Power Anchor;
- Material: Q345C Steel Plate
- Nominal Weight: 1000KG-30000KG;
- Finish: Bituminous Paint



Nominal Weight (kg)	SIZE (mm)							
	A	B	C	E	F	H	T	S
360	1835	1980	1120	935	168	765	306	48
1000	2580	2780	1582	1314	236	1074	430	62
1500	2954	3184	1812	1505	271	1230	493	80
3000	3721	4011	2283	1896	342	1550	622	90
5000	4412	4756	2707	2248	406	1837	738	110
7000	4910	5290	3011	2500	453	2045	825	117
8000	5161	5563	3166	2629	474	2149	862	130
10000	5559	5992	3410	2832	511	2315	929	140
12000	5908	6368	3624	3010	543	2460	988	150
14000	6219	6704	3815	3169	572	2590	1040	160
15000	6364	6860	3904	3242	585	2650	1064	170
18000	6763	7290	4149	3446	622	2816	1131	180
20000	7004	7550	4297	3569	644	2917	1171	190
22000	7230	7794	4436	3684	665	3011	1209	200
25000	7545	8133	4629	3844	694	3142	1262	200
30000	8018	8643	4919	4085	737	3339	1341	220

■ Chains

Studlink Chains

Studlink chain cables are one of the most important tools of the ship for its anchoring operations. Katradis studlink chain cables are produced using diligent production techniques, compliance to International standards & class societies’ rules and regulations with attention to every link.

Studlink chains are heavy-duty anchor chains designed for use in demanding marine and off-shore applications. They feature reinforced links with a central stud that enhances tensile strength and reduces the risk of chain twisting during operation.



Ship chain proof and breaking loads					
Chain Diameter	Grades				Min Weight (Kg per length of 27.5m)
	Proof Load, kN		Breaking Load, kN		
	0.00981d² (44-0.08d)	0.01373d² (44-0.08d)	0.01373d² (44-0.08d)	0.01961d² (44-0.08d)	
mm	Grade 2	Grade 3	Grade 2	Grade 3	Kg
14	82	116	116	165	130
16	107	150	150	216	160
17.5	128	179	179	256	190
19	150	211	211	301	225
20.5	175	244	244	349	265
22	201	281	281	401	300
24	238	333	333	475	360
26	278	389	389	556	420
28	321	450	450	642	490
30	367	514	514	734	565
32	416	583	583	832	635
34	468	655	655	936	720
36	523	732	732	1045	800
38	581	812	812	1160	895
40	640	896	896	1280	1000
42	703	984	984	1406	1100
44	769	1076	1076	1537	1200
46	837	1171	1171	1673	1300
48	908	1270	1270	1814	1440
50	981	1373	1373	1961	1560
52	1057	1479	1479	2113	1680
54	1135	1589	1589	2269	1795
56	1216	1702	1702	2430	1925
58	1299	1818	1818	2597	2060
60	1384	1938	1938	2767	2200
62	1472	2060	2060	2943	2350
64	1562	2187	2187	3123	2520
66	1655	2316	2316	3308	2680
68	1749	2448	2448	3496	2850
70	1846	2583	2583	3690	3030
73	1995	2792	2792	3988	3290
76	2149	3007	3007	4295	3550
78	2254	3154	3154	4505	3755
81	2415	3380	3380	4827	4035
84	2580	3612	3612	5158	4395
87	2750	3849	3849	5498	4710
90	2924	4093	4093	5845	5005
92	3042	4258	4258	6081	5200
95	3223	4510	4510	6442	5570
97	3345	4682	4682	6687	5760
100	3532	4943	4943	7060	6130

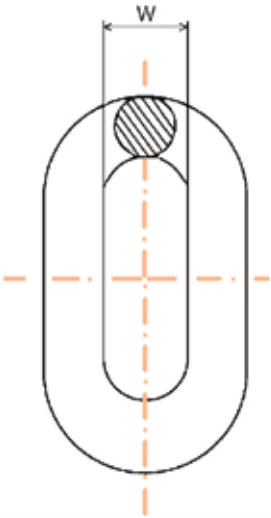
Chains

Long Link Chains

We stock studless long link chains with KATRADIS quality test certificates and optionally with IACS class test certificates. Designed for versatility and shackle compatibility, our chains meet various mooring and anchoring needs with prompt delivery. Our 250-ton capacity testing facility, approved by classification societies, ensures top quality through rigorous testing.

Finish: Hot dip galvanization for maximum wear and corrosion resistance (optional).

Diameter (d)	Pitch (L)	Inner width (W)	MBL	Proof Load	Approx. Weight/m
	mm		Tons	Tons	kilos
10	65	18	6	3	1,75
13	82	23,4	10,1	5,05	2,95
16	100	28,8	15,3	7,65	4,45
18	108	27	19,3	9,65	5,7
20	120	30	23,8	11,9	7
22	132	33	28,6	14,3	8,5
24	144	36	33,9	16,95	9,98
25	150	37,5	36,8	18,4	10,9
26	156	39	39,7	19,85	11,7
28	168	42	45,8	22,9	13,6
30	180	45	52,4	26,2	15,7
32	192	48	59,4	29,7	17,8
34	204	51	66,8	33,4	20,1
36	216	54	74,6	37,3	22,6
38	228	57	82,8	41,4	25,1
40	240	60	91,4	45,7	27,8
42	252	63	100	50	30,7
44	264	66	110	55	33,5
46	276	69	119	59,5	36,6
48	288	72	130	65	39,9



HP Shackles

High Performance Shackles

Shackles

HPS-209 Hot-dip galvanized

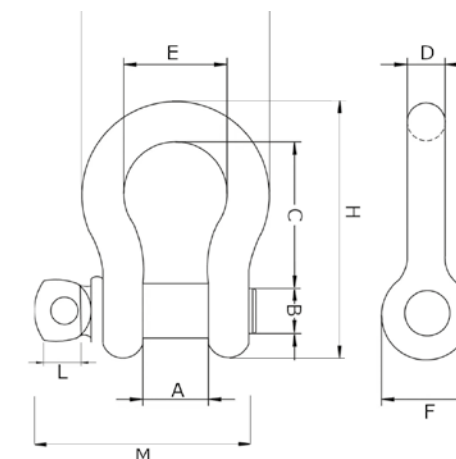
HPS-209 Screw pin anchor shackles exceed the load performance requirements of Federal Specification RR-C-271F Type IVA, Grade A, Class 2.

Material: Premium-quality forged steel for superior durability

Corrosion Resistance: Specially treated to withstand harsh maritime conditions

Load Capacity: High load-bearing capacity for heavy duty port rigging tasks

Construction: Precision engineering ensures secure connections



Nominal Size (in.)	Weight Each (kg)	Dimensions (mm)											Working Load Limit (tons)
		A	B	C	D	E	F	G	H	L	M	P	
3/16	0,03	9,65	6,35	22,4	4,85	15,2	14,2	24,9	37,3	4,06	28,4	4,85	0,33
1/4	0,05	11,9	7,85	28,7	6,35	19,8	15,5	32,5	46,7	4,85	35,1	6,35	0,5
5/16	0,09	13,5	9,65	31	7,85	21,3	19,1	37,3	53	5,6	42,2	7,85	0,75
3/8	0,14	16,8	11,2	36,6	9,65	26,2	23,1	45,2	63	6,35	51,5	9,65	1
7/16	0,17	19,1	12,7	42,9	11,2	29,5	26,9	51,5	74	7,85	60,5	11,2	1,5
1/2	0,33	20,6	16	47,8	12,7	33,3	30,2	58,5	83,5	9,65	68,5	12,7	2
5/8	0,62	26,9	19,1	60,5	16	42,9	38,1	74,5	106	11,2	85	17,5	3,25
3/4	1,07	31,8	22,4	71,5	19,1	51	46	89	126	12,7	101	20,6	4,75
7/8	1,64	36,6	25,4	84	22,4	58	53	102	148	12,7	114	24,6	6,5
1	2,28	42,9	28,7	95,5	25,4	68,5	60,5	119	167	14,2	129	26,9	8,5
1-1/8	3,36	46	31,8	108	29,5	74	68,5	131	190	16	142	31,8	9,5
1-1/4	4,31	51,5	35,1	119	32,8	82,5	76	146	210	17,5	156	35,1	12
1-3/8	6,14	57	38,1	133	36,1	92	84	162	233	19,1	174	38,1	13,5
1-1/2	7,8	60,5	41,4	146	39,1	98,5	92	175	254	20,6	187	41,1	17
1-3/4	12,6	73	51	178	46,7	127	106	225	313	25,4	231	57	25
2	20,4	82,5	57	197	53	146	122	253	348	31	263	61	35
2-1/2	38,9	105	70	267	69	184	145	327	453	35,1	330	79,5	55

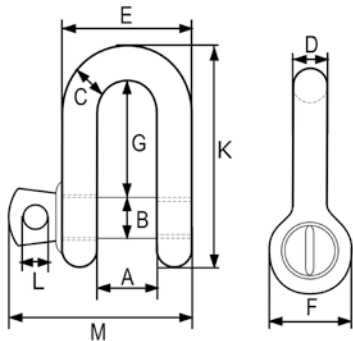
Proof load = 2x WLL, Minimum Breaking Load = 6x WLL

Shackles

HPS-210 Hot-dip galvanized

Hot dip Galvanized D-type shackle type HPS -210 is used as an auxiliary fastener for lifting, securing and moving loads. The screw connection provides quick installation and removal of the shackle.

- Material:** Premium-quality forged steel for superior durability
- Corrosion Resistance:** Specially treated to withstand harsh maritime conditions
- Load Capacity:** High load-bearing capacity for heavy duty port rigging tasks
- Construction:** Precision engineering ensures secure connections



Nominal Size (in.)	Weight Each (kg)	Dimensions (mm)										Working Load Limit (tons)
		A	B	C	D	E	F	G	K	L	M	
1/4	0,05	11,9	7,85	6,35	6,35	24,6	15,5	22,4	40,4	4,85	35,1	0,5
5/16	0,08	13,5	9,65	7,85	7,85	29,5	19,1	26,2	48,5	5,6	42,2	0,75
3/8	0,13	16,8	11,2	9,65	9,65	35,8	23,1	31,8	58,5	6,35	51,5	1
7/16	0,2	19,1	12,7	11,2	11,2	41,4	26,9	36,6	67,5	7,85	60,5	1,5
1/2	0,27	20,6	16	12,7	12,7	46	30,2	41,4	77	9,65	68,5	2
5/8	0,57	26,9	19,1	15,7	16	58,5	38,1	51	95,5	11,2	85	3,25
3/4	1,2	31,8	22,4	20,6	19,1	70	46	60,5	115	12,7	101	4,75
7/8	1,43	36,6	25,4	24,6	22,4	81	53	71,5	135	12,7	114	6,5
1	2,15	42,9	28,7	25,4	25,4	93,5	60,5	81	151	14,2	129	8,5
1-1/8	3,06	46	31,8	31,8	28,7	103	68,5	91	172	16	142	9,5
1-1/4	4,11	51,5	35,1	35,1	31,8	115	76	100	191	17,5	156	12
1-3/8	5,28	57	38,1	38,1	35,1	127	84	111	210	19,1	174	13,5
1-1/2	7,23	60,5	41,4	41,1	38,1	137	92	122	230	20,6	187	17
1-3/4	12,1	73	51	54	44,5	162	106	146	279	25,4	231	25
2	19,2	82,5	57	60	51	184	122	172	312	31	263	35
2-1/2	32,5	105	70	66,5	66,5	238	145	203	377	35,1	330	55

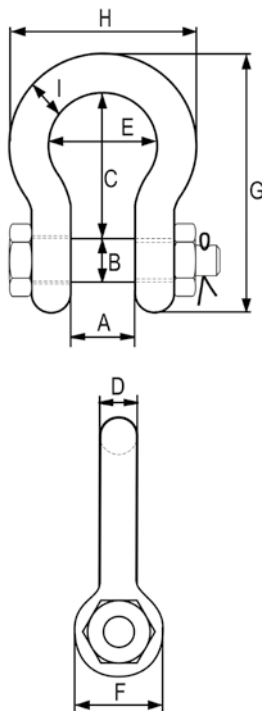
Proof load = 2x WLL, Minimum Breaking Load = 6x WLL

Shackles

HPS-2130 Hot-dip galvanized

The HPS-2130 Shackle offers exceptional performance and reliability for heavy-duty rigging tasks, making it an ideal choice for marine and industrial applications.

- Material:** Premium-quality forged steel for superior durability
- Corrosion Resistance:** Specially treated to withstand harsh maritime conditions
- Load Capacity:** High load-bearing capacity for heavy duty port rigging tasks
- Construction:** Precision engineering ensures secure connections



Nominal Size (in.)	Weight Each (kg)	Dimensions (mm)									Working Load Limit (tons)
		A	B	C	D	E	F	H	L	N	
3/16	0,03	9,65	6,35	22,4	4,85	15,2	14,2	37,3	24,9	4,85	0,33
1/4	0,05	11,9	7,85	28,7	6,35	19,8	15,5	46,7	32,5	6,35	0,50
5/16	0,10	13,5	9,65	31,0	7,85	21,3	19,1	53,0	37,3	7,85	0,75
3/8	0,15	16,8	11,2	36,6	9,65	26,2	23,1	63,0	45,2	9,65	1
7/16	0,22	19,1	12,7	42,9	11,2	29,5	26,9	74,0	51,5	11,2	1,5
1/2	0,36	20,6	16,0	47,8	12,7	33,3	30,2	83,5	58,5	12,7	2,0
5/8	0,62	26,9	19,1	60,5	16,0	42,9	38,1	106	74,5	17,5	3,25
3/4	1,23	31,8	22,4	71,5	19,1	51,0	46,0	126	89,0	20,6	4,75
7/8	1,79	36,6	25,4	84,0	22,4	58,0	53,0	148	102	24,6	6,5
1	2,28	42,9	28,7	95,5	25,4	68,5	60,5	167	119	26,9	8,5
1-1/8	3,75	46,0	31,8	108	28,7	74,0	68,5	190	131	31,8	9,5
1-1/4	5,31	51,5	35,1	119	31,8	82,5	76,0	210	146	35,1	12
1-3/8	7,18	57,0	38,1	133	35,1	92,0	84,0	233	162	38,1	13,5
1-1/2	9,43	60,5	41,4	146	38,1	98,5	92,0	254	175	41,1	17
1-3/4	15,4	73,0	51,0	178	44,5	127	106	313	225	57,0	25
2	23,7	82,5	57,0	197	51,0	146	122	348	253	61,0	35
2-1/2	44,6	105	70,0	267	66,5	184	145	453	327	79,5	55
3	70	127	82,5	330	76,0	200	165	546	365	92,0	85
3-1/2	120	133	95,5	372	92,0	229	203	626	419	105	120
4	153	140	108	368	104	254	229	653	468	116	150

Proof load = 2x WLL, Minimum Breaking Load = 6x WLL

Shackles

HPS-2150 Hot-dip galvanized

The HPS-2150 Shackle is engineered to meet the highest standards of performance and reliability, making it a top choice for demanding port rigging tasks.

- Material:** Premium-quality forged steel for superior durability
- Corrosion Resistance:** Specially treated to withstand harsh maritime conditions
- Load Capacity:** High load-bearing capacity for heavy duty port rigging tasks
- Construction:** Precision engineering ensures secure connections



Nominal Size (in.)	Weight Each (kg)	Dimensions (mm)									Working Load Limit (tons)
D		A	B	D	F	G	K	M	P	R	
1/4	0,06	11,9	7,85	6,35	15,5	19,1	40,4	24,6	39,6	6,35	0,50
5/16	0,10	13,5	9,65	7,85	19,1	25,4	48,5	29,5	46,2	7,85	0,75
3/8	0,15	16,8	11,2	9,65	23,1	31,0	58,5	35,8	55,0	9,65	1
7/16	0,22	19,1	12,7	11,2	26,9	36,1	67,5	41,1	63,5	11,2	1,5
1/2	0,34	20,6	16,0	12,7	30,2	41,4	77,0	46,0	71,0	12,7	2,0
5/8	0,67	26,9	19,1	16,0	38,1	51,0	95,5	58,5	89,5	16,0	3,25
3/4	1,14	31,8	22,4	19,1	46,0	60,5	115	70,0	103	20,6	4,75
7/8	1,74	36,6	25,4	22,4	53,0	71,5	135	81,0	120	24,6	6,5
1	2,52	42,9	28,7	25,4	60,5	81,0	151	93,5	135	25,4	8,5
1-1/8	3,45	46,0	31,8	28,7	68,5	91,0	172	103	150	31,8	9,5
1-1/4	4,90	51,5	35,1	31,8	76,0	100	191	115	165	35,1	12
1-3/8	6,24	57,0	38,1	35,1	84,0	111	210	127	183	38,1	13,5
1-1/2	8,39	60,5	41,4	38,1	92,0	122	230	137	196	41,1	17
1-3/4	14,2	73,0	51,0	44,5	106	146	279	162	230	54,0	25
2	21,2	82,5	57,0	51,0	122	172	312	184	264	60,0	35
2-1/2	38,6	105	70,0	66,5	145	203	377	238	344	66,5	55
3	56	127	82,5	76,0	165	216	429	279	419	89,0	85

Proof load = 2x WLL, Minimum Breaking Load = 6x WLL

Shackles

Shackle Precautions

When using shackles, always ensure they are the correct size and type for the load. Inspect them for any signs of wear, cracks, or damage before each use. Avoid exceeding the rated load capacity, and make sure the pin is properly secured. Ensure the shackle is aligned correctly with the load to prevent side loading, which reduces its loading capacity. Regular maintenance and proper storage are key to ensuring the shackle's longevity and safety in use.

SIDE LOADED RATING REDUCTION TABLE FOR 3/16"-3" (120 METRIC TONS)

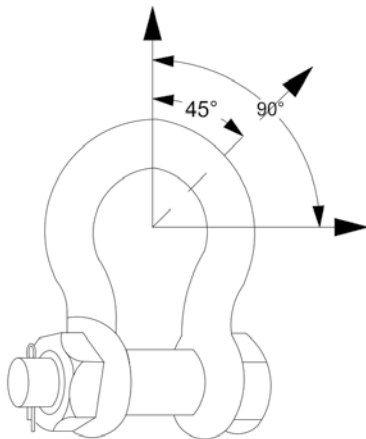
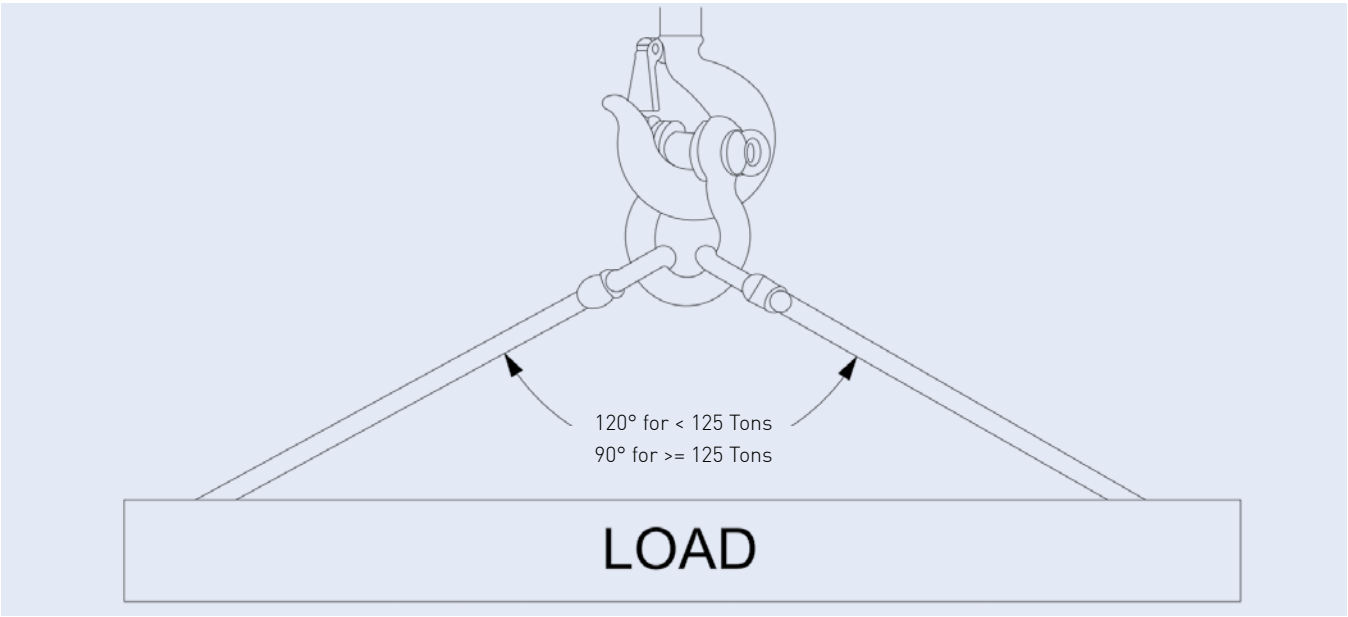


Table 1	
Side Loading Reduction Chart for Screw Pin and Bolt Type Shackles Only+	
Angle of Side Load from Vertical In - Line of Shackle	Adjusted Working Load Limit
0° - 5° In - Line*	100% of Rated Working Load Limit
45° from In - Line*	70% of Rated Working Load Limit
90° from In - Line*	50% of Rated Working Load Limit

+ In-Line load is applied perpendicular to pin. * DO NOT SIDE LOAD ROUND PIN SHACKLE.

Angle loads must be applied in the plane of the bow.

➤ For shackles larger than 125 metric tons, where the angle of the side load is greater than 5 degrees, contact KATRADIS Technical Advisor.



For shackles with WLL bigger than 125 metric tons, the maximum included angle is 90 degrees for full working load limit.

Anodes

Anodes

Chain Anodes

Crafted to withstand harsh marine environments, these anodes offer simple installation, robust protection, and cost-effective corrosion prevention.



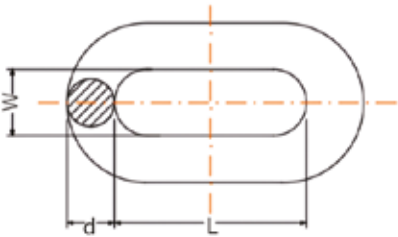
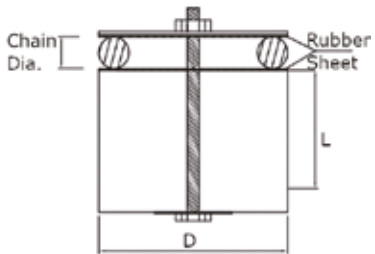
Chain anodes are engineered to provide long-lasting corrosion protection in harsh marine conditions. With their robust construction, these anodes are designed to withstand the rigors of saltwater exposure, ensuring effective and reliable performance. They offer simple installation, making them an efficient solution for protecting chains and other metal components from corrosion. Ideal for various marine applications, chain anodes deliver a cost-effective approach to safeguarding equipment, reducing maintenance costs, and extending the lifespan of valuable assets.



- Cadmium-Free Composition
- Eco-Friendly
- High-Quality Materials
- Long-Lasting Protection
- Certified Performance
- Cost-Effective Solution



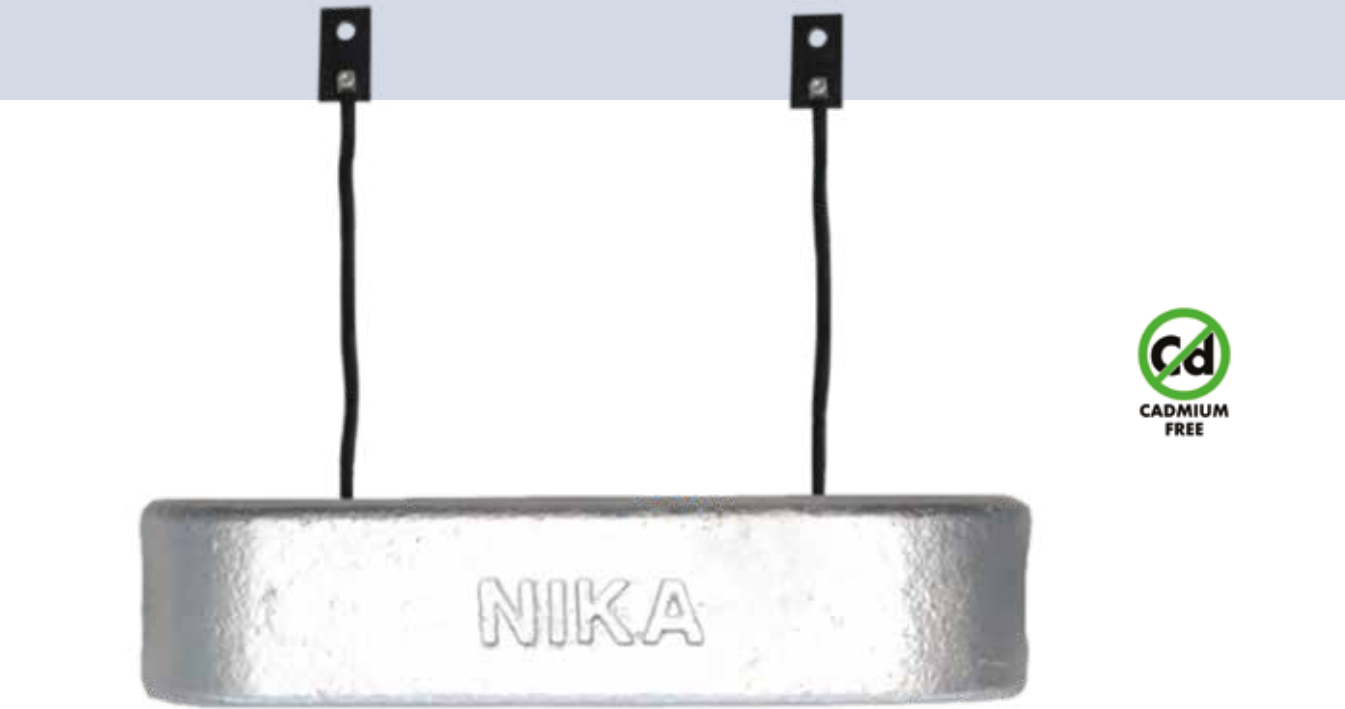
CHAIN DIA.	CHAIN DIMENSIONS		ANODE DIMENSIONS	
	L	W	LENGTH	DIAMETER
10	65,00	18,00	35	28
13	82,00	23,40	43	36
16	100,00	28,80	52	45
18	108,00	27,00	54	45
20	120,00	30,00	60	50
22	132,00	33,00	66	55
25	150,00	37,50	60-75	63
30	180,00	45,00	60-75	75
32	192,00	48,00	60-75	80
36	216,00	54,00	60-75	90
40	240,00	60,00	60-75	100



Anodes

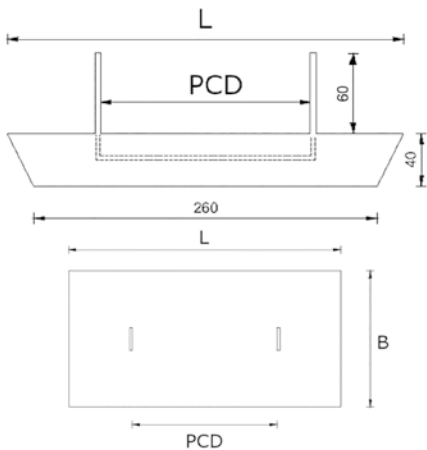
Zinc Anode with Premounted Cable

This zinc anode comes with a pre-assembled cable and cable shoe for easy bolted or welded connections to under water structures. Available in various sizes and cable shoe options, it ensures reliable corrosion protection. Heat shrinkable tubing protects the cable terminations for added durability.



Zinc anode with pre-assembled cable and cable shoe, designed for bolted or welded connection to submerged structures. The set can be provided with different anode dimensions and a variety of cable shoes. The cable termination sections are protected with heat shrinkable tubing.

- Cadmium-Free Composition
- Eco-Friendly
- High-Quality Materials
- Long-Lasting Protection
- Certified Performance



CATHODIC PROTECTION TYPE	DIMENSIONS (mm)				WEIGHT (kg)		INSERT (mm)
	A	B	C	H	NET	GROSS	
N55ZH	300	400	90	40	5.0	5.5	40×6
N125ZH	465	565	110	40	12.0	12.5	40×6
N165ZH	520	620	120	40	15.3	16.5	50×6
N230ZH	680	780	128	40	21.5	23.0	50×6





Since its establishment in 1936, KATRADIS Group has grown into a global leader in marine solutions, continually driven by a commitment to innovation, quality, and sustainability. Operating from our expansive 50,000m² facilities in Greece, we are now in our third generation of leadership, upholding a tradition of excellence in the maritime industry.

Our product line includes advanced synthetic mooring ropes and a full range of marine equipment, engineered to meet the highest industry standards as well as environmentally-friendly cadmium-free anodes. These products play a critical role in the development and maintenance of ports, marinas, and offshore structures, as well as serving the aquaculture and yachting sectors. Trusted worldwide, KATRADIS is dedicated to enhance the operational efficiency and longevity of marine assets, ensuring they meet the demands of modern maritime operations while being environmentally-friendly.



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- ARCHIRODON S.A. C.A.A.
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- De Vlaamse Waterweg
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