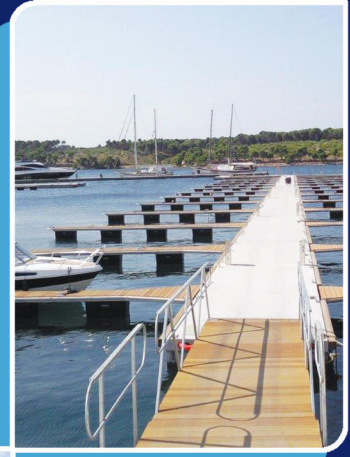


Equipment for Marinas & Port construction projects



EST. 1936

KATRADIS GROUP OF COMPANIES



KATRADIS GROUP OF COMPANIES

Major Port Organizations and Authorities, Marinas & Construction Companies that we co-operate with

Construction Companies:

ARCHIMEDES S.A.
ARCHIRODON S.A.
C.A.A. PROJECT I.K.E.
ORCON I.K.E.
P & C DEVELOPMENT S.A.
SICAP S.A.
TEMES S.A.
UTC TEAM I.K.E.
A & T. KONTODIMAZ
AVAX S.A.
ERGOMARE S.A.
EPGOTEM S.A.
METKA S.A.
METRO S.A.
INTRAKAT S.A.
TEKAL S.A.
TOMI S.A.
TERNA S.A.
CR. CONSTANTINIDIS S.A.
K. & P. TECNIKI S.A.
Grafist D.o.o. - Slovenia
Shipbuilding D.o.o. - Croatia
De Vlaamse Waterweg nv - Belgium

Marinas :

Tres Canne Marina - Monte Negro
Izola - Slovenia Marina
Drage - Croatia Marina
Gouvia Marina
Kalamata Marina
Kleopatra Marina
Preveza Marina
Lefkada Marina
Saint Kosmas Marina
Floisvos Marina
Alimos Marina
Vouliagmeni Marina
Olympic Marine
Zeas Marina
Sani Marina
Leros Marina
Saint Nikolaos Marina
Kos Marina
Mitilini Marina
Rodos Marina
Samos Marina
Benitses Marina
Paleokastritsa Marina

Port Authorities:

Piraeus Port Authority S.A
Thessaloniki Port Authority S.A
Patras Port Authority S.A
Heraklion Port Authority S.A
Volos Port Authority S.A
Corfu Port Authority S.A
Igoumenitsa Port Authority S.A
Elefsis Port Authority S.A
Rafina Port Authority S.A
Kavala Port Authority S.A
Alexandroupolis Port Authority S.A
Lavrio Port Authority S.A
OLNE S.A.
Mykonos Municipal Port Fund
Harbour Management Organization of Chania
Skyros Port Fund
Poros Municipal Port Organization





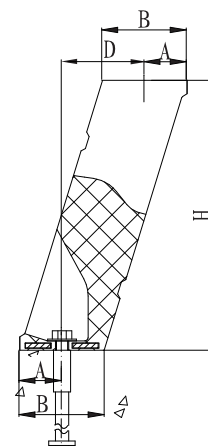
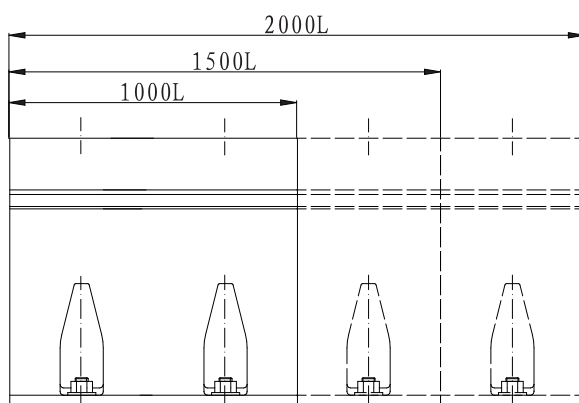
FENDERS

Unit Element Fenders




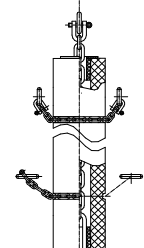
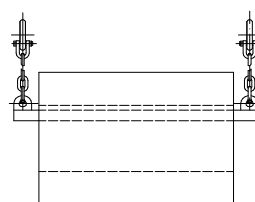
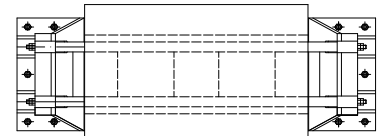
TYPE	DIMENSIONS				Rated Deflection 57,5%			
					RO		RH	
	H	A	B	D	R:KN	E:KNm	R:KN	E:KNm
ME300	300	47	94	94	110	15	161	22
ME400	400	63	125	124	150	27	214	39
ME500	500	87	158	142	187	43	267	61
ME550	550	87	172	170	206	52	294	75
ME600	600	87	188	199	224	62	320	89
ME750	750	118	235	230	282	96	402	137
ME800	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

1. Performance tolerance: +/- 10%
2. Values are for a single fender, 1000mm long.



Cylindrical Fenders

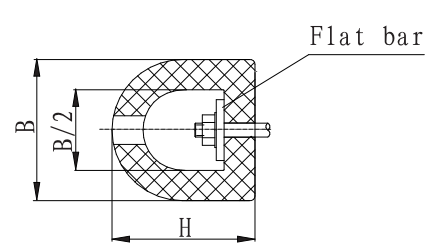


D*d	Rated Deflection 50,0% (Απόκλιση)				Typical fixing arrangement
	RO		RH		
	R:KN	E:KNm	R:KN	E:KNm	
150*75	44	1,5	73	2,3	 
200*100	60	2,6	95	4,2	
250*125	75	4	120	6,5	
300*150	89	6	143	9	
350*175	104	8	167	13	
400*200	119	10	191	17	
500*250	148	16	239	26	
600*300	179	24	286	37	
700*350	208	31	334	50	
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	

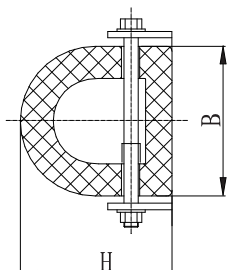
Extruded Fenders



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



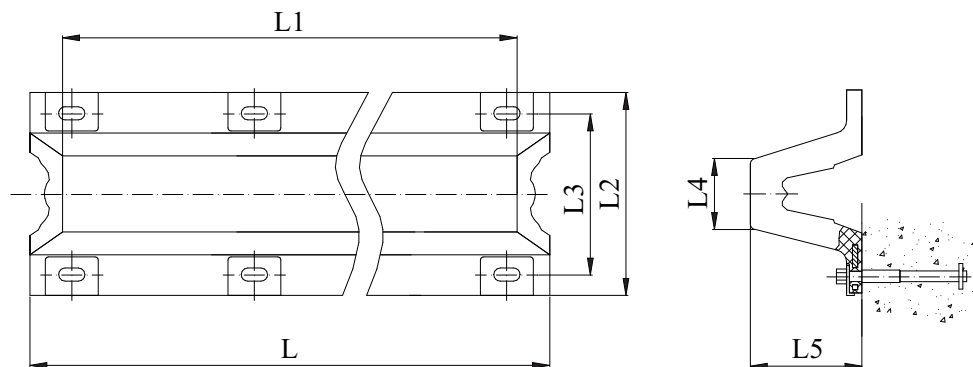
TYPE-B	DIMENSIONS		Rated Deflection 50%	
	B	H	R:KN	E:KNm
150	150	150	150	3,5
200	200	200	199	6,3
250	250	250	250	9,9
300	300	300	299	14,2
350	350	350	351	19
400	400	400	399	25



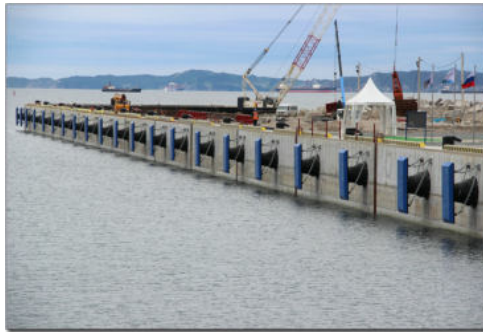
Arch Fenders



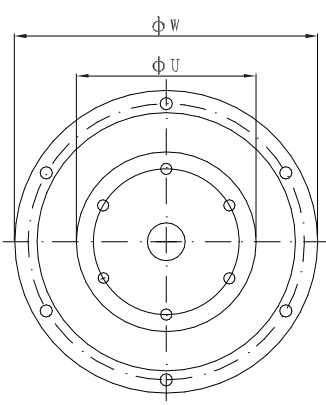
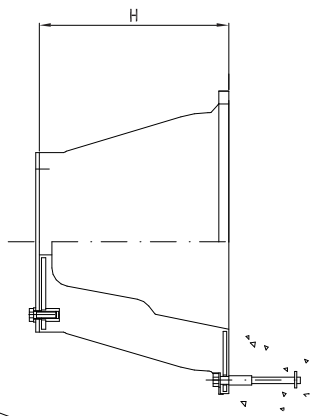
A*L	L1	L	L2	L3	L4	L5	RATED PERFORMANCE								
							RL		RO		RH		RS		
							Rated Deflection 45%	Max. Deflection 50%	Rated Deflection 45%	Max. Deflection 50%	Rated Deflection 45%	Max. Deflection 50%	Rated Deflection 45%	Max. Deflection 50%	
150*1000	R	1000	1075	300	240	98	150	56	76	84	113	112	151	129	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



Cone Fenders



TYPE	DIMENSIONS			RL		RO		RH		RS		
				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%	
	R	H	ΦU	ΦW								
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	703	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

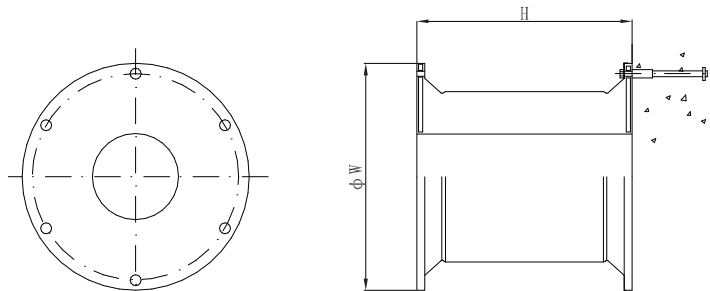


* Reaction force
* Energy absorption

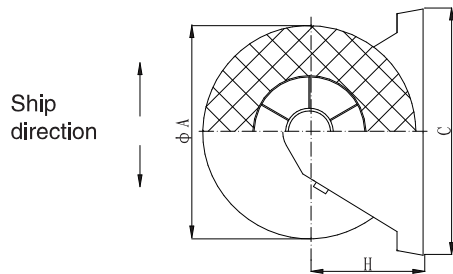
Cell Fenders



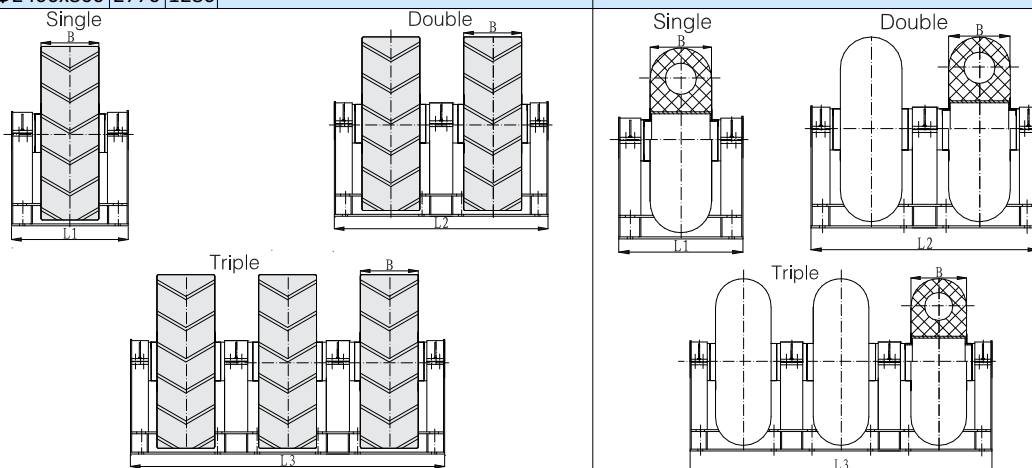
TYPE	DIMENSIONS		RL		RO		RH		RS		RE		
			Rated deflection	Max. deflection	Rated deflection	Max. deflection	Rated deflection	Max. deflection	Rated deflection	Max. deflection	Rated deflection	Max. deflection	
	H	ΦW	52,5%	55%	52,5%	55%	52,5%	55%	52,5%	55%	52,5%	55%	
CELL400H	R	400	650	51	59	64	75	83	97	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				



Wheel Fenders



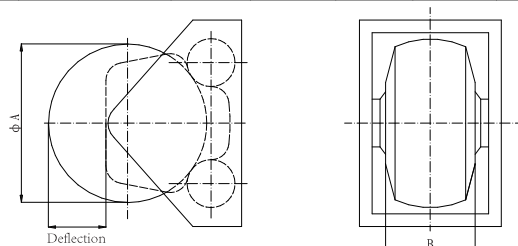
Size A x B	TYPE - A/B								TYPE - B						
	Single				Double		Triple		Max. deflection $\delta_{max.}(mm)$	Single		Double		Triple	
	C	H	L1	Weight	L2	Weight	L3	Weight		R:KN	E:KNm	R:KN	E:KNm	R:KN	E:KNm
Φ600x200	695	320	420	127	770	245	1120	365	125	67	2	134	5	202	7
Φ750x250	870	400	510	249	935	501	1360	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	TYPE - C						
	Max. deflection $\delta_{max.}(mm)$	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

Features:

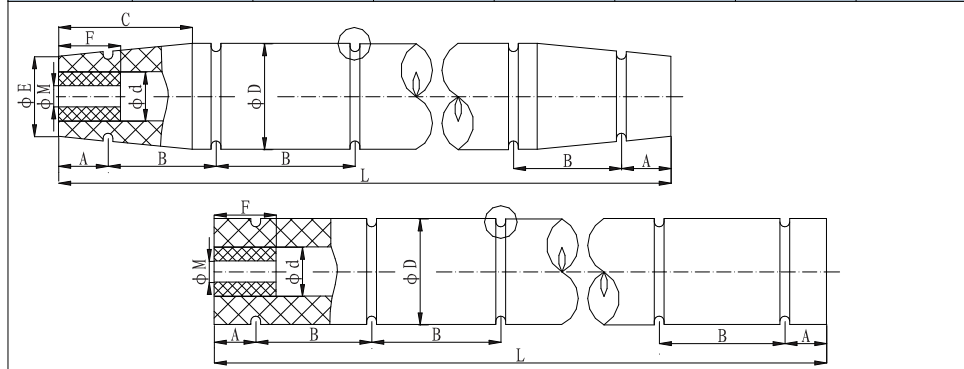
C type wheel fenders can rotate on three fixed axes, their deflection double increased, and the energy absorption is also increased by more than doubled



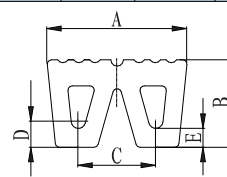
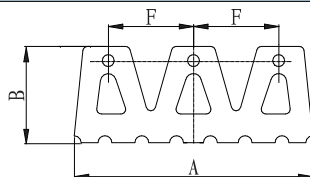
Tug Fenders



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



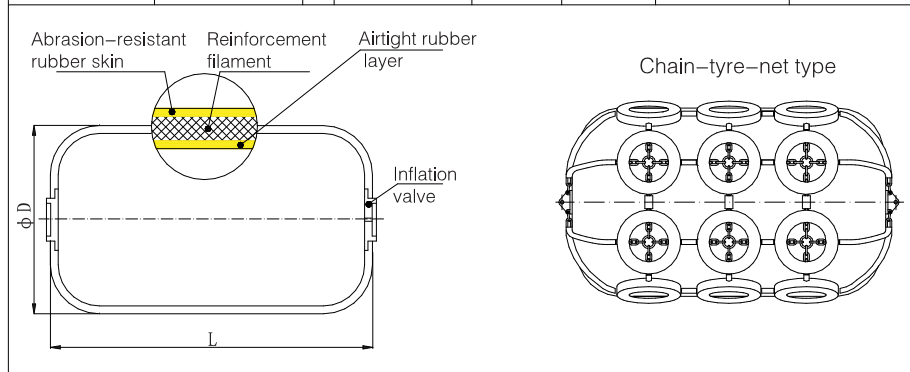
M FENDERS						W FENDERS							
	A	B	F	Lmax.	Weight	Type	A	B	C	D	E	Lmax.	Weight
M400	400	200	150	2000	60	W320-200	320	200	180	67	50	2000	59
M500	500	250	190	2000	95	W400-250	400	250	220	75	55	2000	87
M600	600	300	230	2000	142	W480-300	480	300	265	90	65	2000	129
						W500-450	500	450	270	100	75	2000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



Pneumatic Fenders



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	2820	32	1049	464
3300*6500	2585	P	2680	5265	44	2981	1795
4500*9000	4575	P	4810	9385	50	5688	4688



Remark:
Upon request, pressure valve can be installed also to other dimensions.

Pneumatic Fenders Selection

PETROLEUM				
Equivalent Displacement Coefficient [C]	Relative Velocity	Berthing Energy	Suggested Fenders	
			Tonnes	m/s
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
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 (Liquified Gases), 2nd edition, 1995, OCIMF
3. "C" is calculated as per the following equation;

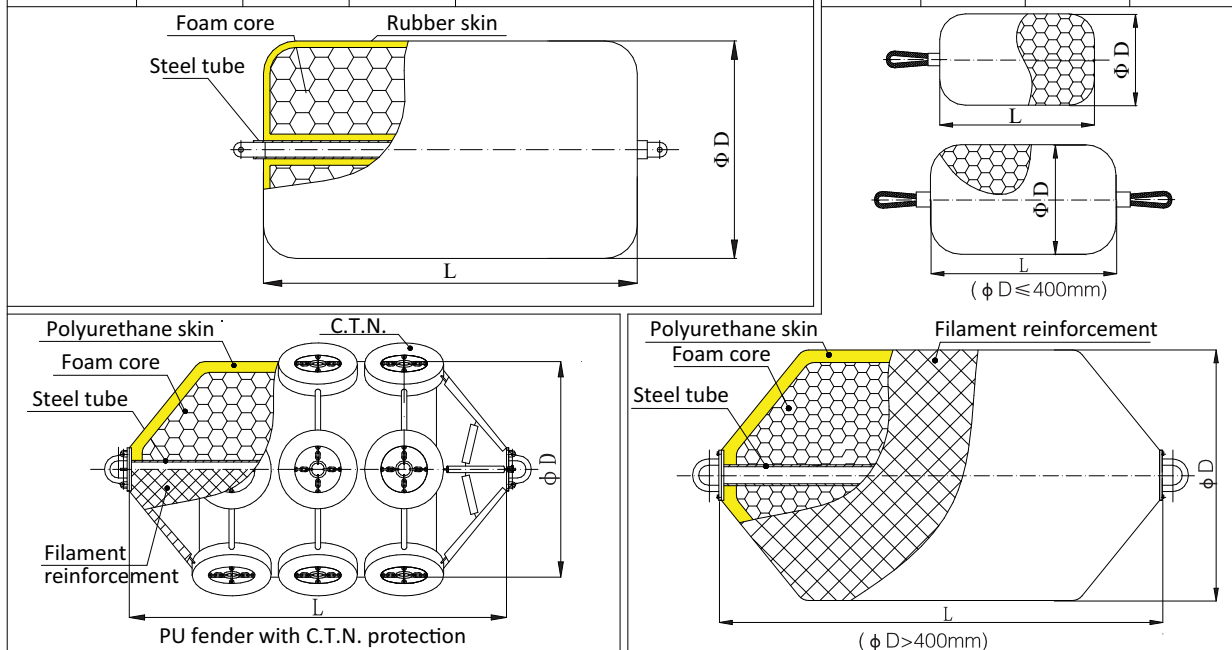
$$C = \frac{2 \times \text{DisplacementShipA} \times \text{DisplacementShipB}}{\text{DisplacementShipA} \times \text{DisplacementShipB}}$$

4. If "C" is between two coefficients, the selected fender size will be for the larger coefficient in the tables.

Foam Fenders



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 $\phi 18$ nylon rope	300	500	19	1,8
400*800	56	2,6	30	two ends have $\phi 18$ nylon ropes	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



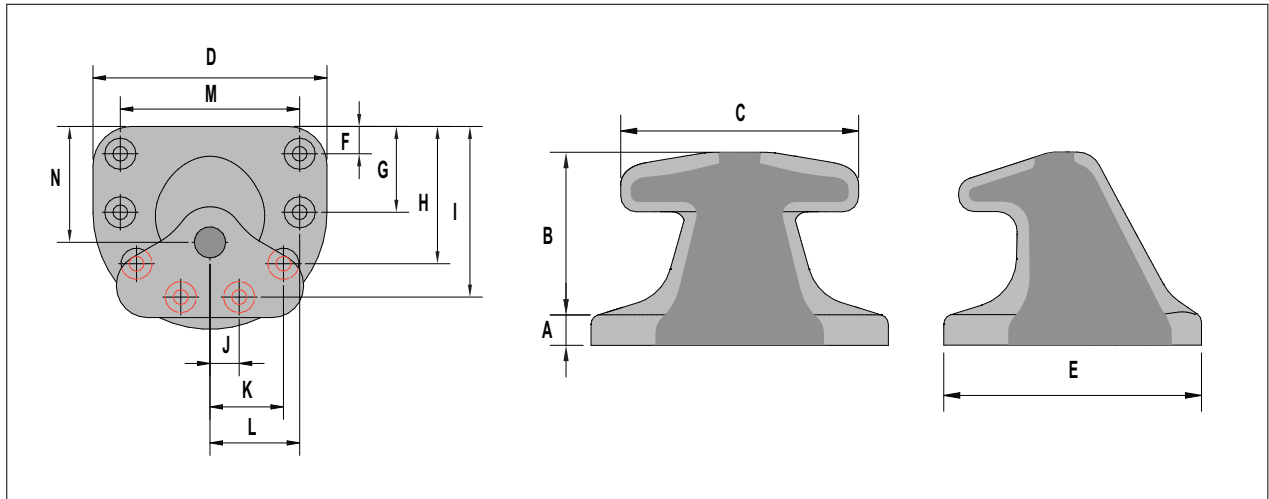
1. Other dimensions are available on requests

2. Performance tolerance +10%



BOLLARDS

T-Head Bollards



Dimensions (mm)	SWL 10T	SWL 15T	SWL 20T	SWL 30T	SWL 50T	SWL 75T	SWL 100T	SWL 125T	SWL 150T	SWL 200T
A	47	52	54	57	70	80	80	87	93	97
B	199	219	240	250	308	354	413	458	492	521
C	305	335	351	366	451	518	610	671	719	762
D	381	419	438	457	564	648	762	838	899	952
E	330	363	380	396	489	561	660	726	779	826
F	44	49	51	53	66	76	89	98	105	111
G	-	-	-	-	-	-	305	335	360	349
H	-	-	232	242	298	298	496	546	586	559
I	243	267	329	343	423	463	572	629	674	694
J	103	114	0	0	0	105	0	0	0	119
K	-	-	152	159	196	241	195	215	231	299
L	-	-	-	-	-	-	291	320	343	365
M	292	321	336	351	432	497	584	643	689	730
N	189	208	217	226	279	321	377	415	445	472
Bolt Size	M24	M24	M24	M30	M36	M42	M42	M48	M48	M56
Bolt Length	450	450	450	450	600	600	600	750	750	915
Bolt Qty	4	4	5	5	5	6	7	7	7	8

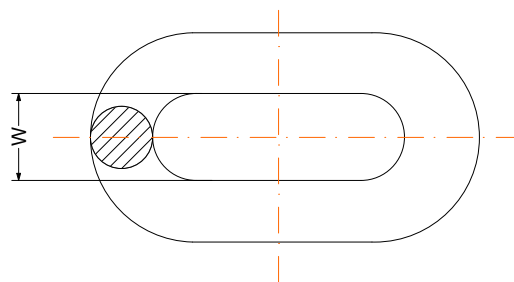


CHAINS & ACCESSORIES

Long Link Chain



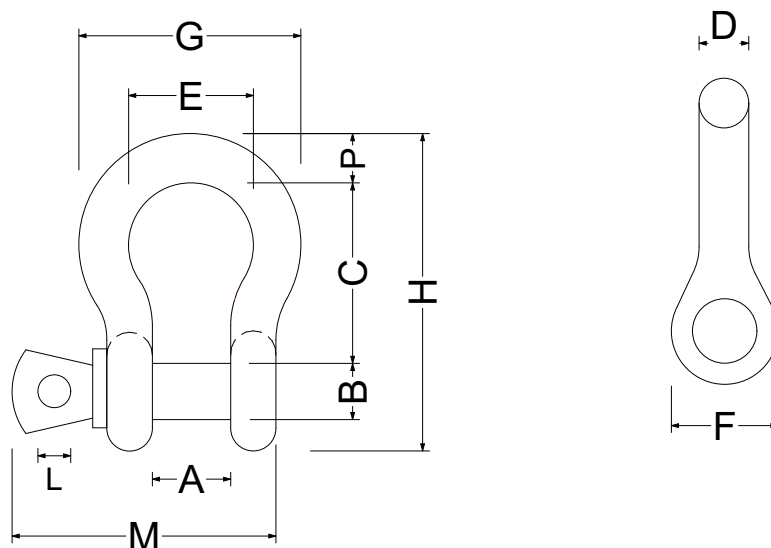
Size (d)	PITCH (L)	INNER WIDTH (W)	MBL	kgr./m.
10,00	65,00	18,00	6,00	1,75
13,00	82,00	23,40	10,10	2,95
16,00	100,00	28,80	15,30	4,45
18,00	108,00	27,00	19,30	5,70
20,00	120,00	30,00	23,80	7,00
22,00	132,00	33,00	28,60	8,50
25,00	150,00	37,50	36,80	10,90
30,00	180,00	45,00	52,40	15,70
32,00	192,00	48,00	59,40	17,80
36,00	216,00	54,00	74,60	22,60
40,00	240,00	60,00	91,40	27,80



Shackles G209



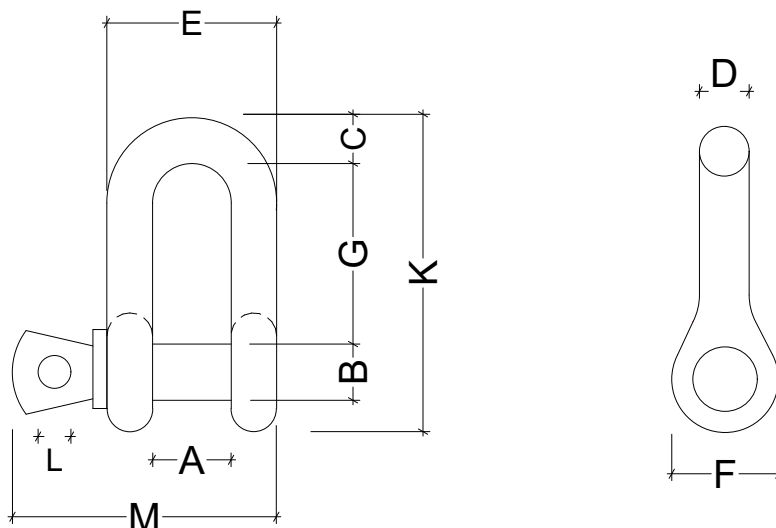
Nominal Size (in.)	Weight Each (kg)	Dimensions											Working Load Limit (tons)
		(mm)											
D		A	B	C	D	E	F	G	H	L	M	P	
3/16	0,03	9,65	6,35	22,4	4,85	15,2	14,2	24,9	37,3	4,06	28,4	4,85	0,33
1/4	0,05	11,9	7,85	28,7	6,35	19,8	15,5	32,5	46,7	4,85	35,1	6,35	0,5
5/16	0,09	13,5	9,65	31	7,85	21,3	19,1	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



Shackles G210



Nominal Size (in.)	Weight Each (kg)	Dimensions										Working Load Limit (tons)
		(mm)										
D		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



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

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

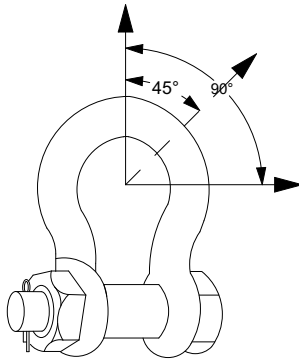
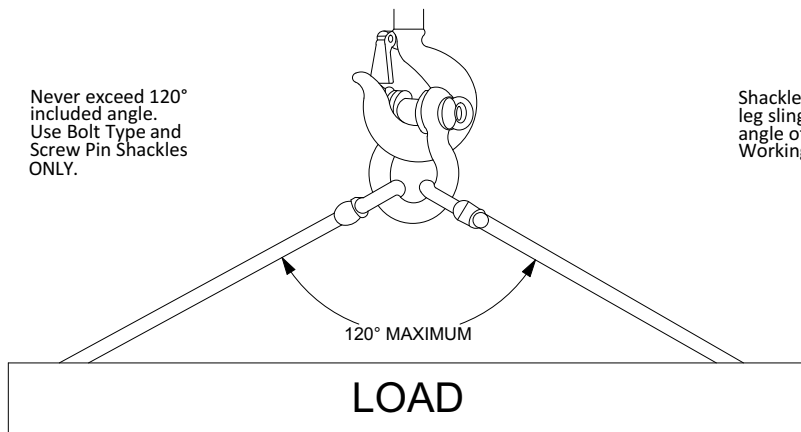


Table 1	
Side Loading Reduction Chart for Screw Pin and Bolt Type Shackles Only+	
Angle of Side Load from Vertical In - Line of Shackle	Adjusted Working Load Limit
0° - 5° In - Line*	100% of Rated Working Load Limit
45° from In - Line*	70% of Rated Working Load Limit
90° from In - Line*	50% of Rated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

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

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

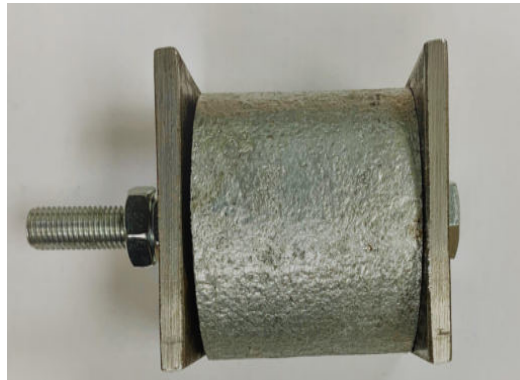
Never exceed 120° included angle. Use Bolt Type and Screw Pin Shackles ONLY.



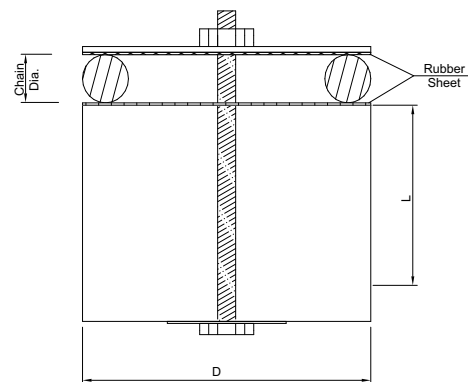
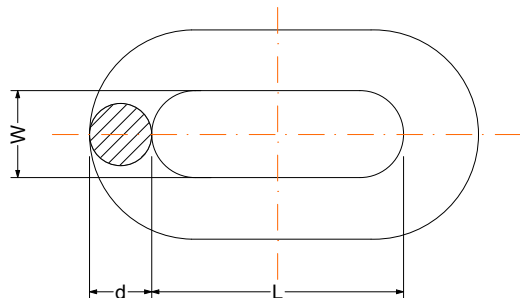
Shackles symmetrically loaded with two leg slings having a maximum included angle of 120° can be utilized to full Working Load Limit.

For shackles more than 125 metric tons, the maximum included angle is 90 degrees for full working load limit. Contact Katradis Technical Advisor if included angle is greater than 90 degrees.

Anodes



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





SERVICE & FIRE **FIGHTING PEDESTALS**

Marine Pedestal Model S700-L



Technical specifications		
CASING MATERIAL	AISI 316L	
DIMENSIONS (DXLXH MM)	190X265X757	
PEDESTAL PROTECTION	IP 56 STANDARD	YES
	IP 67	OPT.
TERMINAL BLOCKS FOR LINE CONNECTION	Connection through 5 poles in/out terminal blocks for R S T N PE conductors	YES
INSTALLABLE TERMINAL BLOCKS	Threaded pin joint from 6 up to 12 mm for cable lugs from 50 to 300 mm ²	YES
SINGLE PHASE SOCKETS (230 VAC 1P+N+PE)	16A / 32A / 63A	YES
	125A	YES
	16A / 32A / 63A	YES
	125A	YES
THREE PHASE SOCKETS (400 VCA 3P+N+PE)	250A	NO
	400A	NO
	630A	NO
	IP 67	YES
SOCKETS PROTECTION	IP 67	YES

Other features	
GENERAL	
CONFORMITY	Our products are designed, manufactured and tested to meet the regulations that guarantee their compliance with CE Marking standards (EN 60439-1)
OPERATING TEMPERATURE	-30°C +70°C
IMPACT RESISTANCE	IK 10
ACCESS	Through lockable door
FIXING IN PLACE	With 4 x M10 bolts
LIGHTING	High efficiency LED
PROTECTION	Through fuse or 2A MTD
WATER DISTRIBUTION	
CONNECTION TO WATER MAIN	Through 3/4" or 1/2" female coupling. Through
CONNECTION TO WATER OUTLETS	1/2" nickel-plated brass ball valves. Quick coupling valves for standard gardening
AVAILABLE METERING SYSTEMS	
ELECTRICITY METER	Progressive with display of kWh used
WATER METER	Litre-counter with display of consumption for each user
PREPAID SYSTEM	Intelligent electric E-Power socket
REMOTE METERING	Through E-Power with fieldbus communication

Marine Pedestal Model S1000-L



🔧 Technical specifications

CASING MATERIAL	AISI 316L	
DIMENSIONS (DXLXH MM)	190X265X1000	
PEDESTAL PROTECTION	IP 56 STANDARD	YES
	IP 67	OPT.
TERMINAL BLOCKS FOR LINE CONNECTION	Connection through 5 poles in/out terminal blocks for R S T N PE conductors	YES
INSTALLABLE TERMINAL BLOCKS	Threaded pin joint from 6 up to 12 mm for cable lugs from 50 to 300 mm ²	YES
SINGLE PHASE SOCKETS (230 VAC 1P+N+PE)	16A / 32A / 63A	YES
	125A	YES
THREE PHASE SOCKETS (400 VCA 3P+N+PE)	16A / 32A / 63A	YES
	125A	YES
	250A	NO
	400A	NO
	630A	NO
SOCKETS PROTECTION	IP 67	YES

⚙️ Other features

GENERAL

CONFORMITY	Our products are designed, manufactured and tested to meet the regulations that guarantee their compliance with CE Marking standards (EN 60439-1)
OPERATING TEMPERATURE	-30°C +70°C
IMPACT RESISTANCE	IK 10
ACCESS	Through lockable door
FIXING IN PLACE	With 4 x M10 bolts
LIGHTING	High efficiency LED
PROTECTION	Through fuse or 2A MTD
WATER DISTRIBUTION	
CONNECTION TO WATER MAIN	Through 3/4" or 1/2" female coupling. Through quick coupling for 20mm polyethylene pipes
CONNECTION TO WATER OUTLETS	1/2" nickel-plated brass ball valves. Quick coupling valves for standard gardening connector
AVAILABLE METERING SYSTEMS	
ELECTRICITY METER	Progressive with display of kWh used
WATER METER	Litre-counter with display of consumption for each user
PREPAID SYSTEM	Intelligent electric E-Power socket
REMOTE METERING	Through E-Power with fieldbus communication



Marine Pedestal Model S1000-XL



🔧 Technical specifications		
CASING MATERIAL	AISI 316L	
DIMENSIONS (DXLXH MM)	220X350X1000	
PEDESTAL PROTECTION	IP 56 STANDARD	YES
	IP 67	OPT.
TERMINAL BLOCKS FOR LINE CONNECTION	Connection through 5 poles in/out terminal blocks for R S T N PE conductors	YES
INSTALLABLE TERMINAL BLOCKS	Threaded pin joint from 6 up to 12 mm for cable lugs from 50 to 300 mm ²	YES
SINGLE PHASE SOCKETS (230 VAC 1P+N+PE)	16A / 32A / 63A	YES
	125A	YES
THREE PHASE SOCKETS (400 VCA 3P+N+PE)	16A / 32A / 63A	YES
	125A	YES
	250A	YES
	400A	NO
	630A	NO
SOCKETS PROTECTION	IP 67	YES



⚙️ Other features	
GENERAL	
CONFORMITY	Our products are designed, manufactured and tested to meet the regulations that guarantee their compliance with CE Marking standards (EN 60439-1)
OPERATING TEMPERATURE	-30°C +70°C
IMPACT RESISTANCE	IK 10
ACCESS	Through lockable door
FIXING IN PLACE	With 4 x M10 bolts
LIGHTING	High efficiency LED
PROTECTION	Through fuse or 2A MTD
WATER DISTRIBUTION	
CONNECTION TO WATER MAIN	Through 3/4" or 1/2" female coupling. Through quick coupling for 20mm polyethylene pipes
CONNECTION TO WATER OUTLETS	1/2" nickel-plated brass ball valves. Quick coupling valves for standard gardening connector
AVAILABLE METERING SYSTEMS	
ELECTRICITY METER	Progressive with display of kWh used
WATER METER	Litre-counter with display of consumption for each user
PREPAID SYSTEM	Intelligent electric E-Power socket
REMOTE METERING	Through E-Power with fieldbus communication

Marine Pedestal Model S1000-XXL



🔧 Technical specifications		
CASING MATERIAL		AISI 316L
DIMENSIONS (DXLXH MM)		300X600X1000
PEDESTAL PROTECTION	IP 56 STANDARD	YES
	IP 67	OPT.
TERMINAL BLOCKS FOR LINE CONNECTION	Connection through 5 poles in/out terminal blocks for R S T N PE conductors	YES
INSTALLABLE TERMINAL BLOCKS	Threaded pin joint from 6 up to 12 mm for cable lugs from 50 to 300 mm ²	YES
SINGLE PHASE SOCKETS (230 VAC 1P+N+PE)	16A / 32A / 63A	YES
	125A	YES
THREE PHASE SOCKETS (400 VCA 3P+N+PE)	16A / 32A / 63A	YES
	125A	YES
	250A	YES
	400A	YES
	630A	NO
SOCKETS PROTECTION	IP 67	YES

⚙️ Other features	
GENERAL	
CONFORMITY	Our products are designed, manufactured and tested to meet the regulations that guarantee their compliance with CE Marking standards (EN 60439-1)
OPERATING TEMPERATURE	-30°C +70°C
IMPACT RESISTANCE	IK 10
ACCESS	Through lockable door
FIXING IN PLACE	With 4 x M10 bolts
LIGHTING	High efficiency LED
PROTECTION	Through fuse or 2A MTD
WATER DISTRIBUTION	
CONNECTION TO WATER MAIN	Through 3/4" or 1/2" female coupling. Through quick coupling for 20mm polyethylene pipes
CONNECTION TO WATER OUTLETS	1/2" nickel-plated brass ball valves. Quick coupling valves for standard gardening connector
AVAILABLE METERING SYSTEMS	
ELECTRICITY METER	Progressive with display of kWh used
WATER METER	Litre-counter with display of consumption for each user
PREPAID SYSTEM	Intelligent electric E-Power socket
REMOTE METERING	Through E-Power with fieldbus communication

Marine Pedestal Model S700L & XL FIRE



S700-L FIRE	
DIMENSIONS (DXLXH MM)	220X350X752
SPACE FOR FIRE EXTINGUISHER	6-9 Kg powder type
HOSE	20-40 mt approved triple action nozzle
OPTIONAL	Break- glass emergency button for fire alarm
OPTIONAL	Life buoy hook



S700-XL FIRE	
DIMENSIONS (DXLXH MM)	220X700X755
SPACE FOR FIRE EXTINGUISHER	6-9 Kg powder type
HOSE	20-40 mt approved triple action nozzle
OPTIONAL	Break- glass emergency button for fire alarm
OPTIONAL	Life buoy hook

Marine Pedestal Model SMART K



🔧 Technical specifications		
CASING MATERIAL	POLYMER HDPE/ADT UV PROTECTION	
DIMENSIONS (DXLXH MM)	265X350X800	
PEDESTAL PROTECTION	IP 56 STANDARD	YES
	IP 67	OPT.
TERMINAL BLOCKS FOR LINE CONNECTION	Connection through 5 poles in/out terminal blocks for R S T N PE conductors	YES
INSTALLABLE TERMINAL BLOCKS	Threaded pin joint from 6 up to 12 mm for cable lugs from 50 to 300 mm ²	YES
SINGLE PHASE SOCKETS (230 VAC 1P+N+PE)	16A / 32A / 63A	YES
	125A	YES
THREE PHASE SOCKETS (400 VCA 3P+N+PE)	16A / 32A / 63A	YES
	125A	YES
	250A	NO
	400A	NO
SOCKETS PROTECTION	630A	NO
	IP 67	YES

⚙️ Other features	
GENERAL	
CONFORMITY	Our products are designed, manufactured and tested to meet the regulations that guarantee their compliance with CE Marking standards (EN 60439-1)
OPERATING TEMPERATURE	-30°C +70°C
IMPACT RESISTANCE	IK 10
ACCESS	Through lockable door
FIXING IN PLACE	With 4 x M10 bolts
LIGHTING	High efficiency LED
PROTECTION	Through fuse or 2A MTD
WATER DISTRIBUTION	
CONNECTION TO WATER MAIN	Through ¾" or ½" female coupling. Through quick coupling for 20mm polyethylene pipes
CONNECTION TO WATER OUTLETS	½" nickel-plated brass ball valves. Quick coupling valves for standard gardening connector
AVAILABLE METERING SYSTEMS	
ELECTRICITY METER	Progressive with display of kWh used
WATER METER	Litre-counter with display of consumption for each user
PREPAID SYSTEM	Intelligent electric E-Power socket
REMOTE METERING	Through E-Power with fieldbus communication

Marine Pedestal Model SMART



CASING MATERIAL		POLYMER HDPE/ADT UV PROTECTION
DIMENSIONS (DXLXH MM)		270X450X1095
PEDESTAL PROTECTION	IP 56 STANDARD	YES
	IP 67	OPT.
TERMINAL BLOCKS FOR LINE CONNECTION	Connection through 5 poles in/out terminal blocks for R S T N PE conductors	YES
INSTALLABLE TERMINAL BLOCKS	Threaded pin joint from 6 up to 12 mm for cable lugs from 50 to 300 mm ²	YES
SINGLE PHASE SOCKETS (230 VAC 1P+N+PE)	16A / 32A / 63A	YES
	125A	YES
THREE PHASE SOCKETS (400 VCA 3P+N+PE)	16A / 32A / 63A	YES
	125A	YES
	250A	YES
	400A	YES
	630A	NO
SOCKETS PROTECTION	IP 67	YES

GENERAL	
CONFORMITY	Our products are designed, manufactured and tested to meet the regulations that guarantee their compliance with CE Marking standards (EN 60439-1)
OPERATING TEMPERATURE	-30°C +70°C
IMPACT RESISTANCE	IK 10
ACCESS	Through lockable door
FIXING IN PLACE	With 4 x M10 bolts
LIGHTING	High efficiency LED
PROTECTION	Through fuse or 2A MTD
WATER DISTRIBUTION	
CONNECTION TO WATER MAIN	Through ¾" or ½" female coupling. Through quick coupling for 20mm polyethylene pipes
CONNECTION TO WATER OUTLETS	½" nickel-plated brass ball valves. Quick coupling valves for standard gardening connector
AVAILABLE METERING SYSTEMS	
ELECTRICITY METER	Progressive with display of kWh used
WATER METER	Litre-counter with display of consumption for each user
PREPAID SYSTEM	Intelligent electric E-Power socket
REMOTE METERING	Through E-Power with fieldbus communication

Marine Pedestal Model SMART-C



CASING MATERIAL		POLYMER HDPE/ADT UV PROTECTION
DIMENSIONS (DXLXH MM)		450X590X1400
PEDESTAL PROTECTION	IP 56 STANDARD	YES
	IP 67	OPT.
TERMINAL BLOCKS FOR LINE CONNECTION	Connection through 5 poles in/out terminal blocks for R S T N PE conductors	YES
INSTALLABLE TERMINAL BLOCKS	Threaded pin joint from 6 up to 12 mm for cable lugs from 50 to 300 mm ²	YES
SINGLE PHASE SOCKETS (230 VAC 1P+N+PE)	16A / 32A / 63A	YES
	125A	YES
THREE PHASE SOCKETS (400 VCA 3P+N+PE)	16A / 32A / 63A	YES
	125A	YES
	250A	YES
	400A	NO
	630A	NO
SOCKETS PROTECTION	IP 67	YES



GENERAL	
CONFORMITY	Our products are designed, manufactured and tested to meet the regulations that guarantee their compliance with CE Marking standards (EN 60439-1)
OPERATING TEMPERATURE	-30°C +70°C
IMPACT RESISTANCE	IK 10
ACCESS	Through lockable door
FIXING IN PLACE	With 4 x M10 bolts
LIGHTING	High efficiency LED
PROTECTION	Through fuse or 2A MTD
WATER DISTRIBUTION	
CONNECTION TO WATER MAIN	Through 3/4" or 1/2" female coupling. Through quick coupling for 20mm polyethylene pipes
CONNECTION TO WATER OUTLETS	1/2" nickel-plated brass ball valves. Quick coupling valves for standard gardening connectors
AVAILABLE METERING SYSTEMS	
ELECTRICITY METER	Progressive with display of kWh used
WATER METER	Litre-counter with display of consumption for each user
PREPAID SYSTEM	Intelligent electric E-Power socket
REMOTE METERING	Through E-Power with fieldbus communication

Marine Pedestal Model SMART-X



CASING MATERIAL		POLYMER HDPE/ADT UV PROTECTION
DIMENSIONS (DXLXH MM)		318X368X974
PEDESTAL PROTECTION	IP 56 STANDARD	YES
	IP 67	NO
TERMINAL BLOCKS FOR LINE CONNECTION	Connection through 5 poles in/out terminal blocks for R S T N PE conductors	NO
INSTALLABLE TERMINAL BLOCKS	Threaded pin joint from 6 up to 12 mm for cable lugs from 50 to 300 mm ²	NO
SINGLE PHASE SOCKETS (230 VAC 1P+N+PE)	16A / 32A / 63A	YES
	125A	NO
THREE PHASE SOCKETS (400 VCA 3P+N+PE)	16A / 32A / 63A	YES
	125A	NO
	250A	NO
	400A	NO
	630A	NO
SOCKETS PROTECTION	IP 67	YES

GENERAL	
CONFORMITY	Our products are designed, manufactured and tested to meet the regulations that guarantee their compliance with CE Marking standards (EN 60439-1)
OPERATING TEMPERATURE	-30°C +70°C
IMPACT RESISTANCE	IK 10
ACCESS	Through lockable door
FIXING IN PLACE	With 4 x M10 bolts
LIGHTING	High efficiency LED
PROTECTION	Through fuse or 2A MTD
WATER DISTRIBUTION	
CONNECTION TO WATER MAIN	Through ¾" or ½" female coupling. Through quick coupling for 20mm polyethylene pipes
CONNECTION TO WATER OUTLETS	½" nickel-plated brass ball valves. Quick coupling valves for standard gardening connector
AVAILABLE METERING SYSTEMS	
ELECTRICITY METER	Progressive with display of kWh used
WATER METER	Litre-counter with display of consumption for each user
PREPAID SYSTEM	Intelligent electric E-Power socket
REMOTE METERING	Through E-Power with fieldbus communication

Marine Pedestal Model SMART FIRE & SMART-K FIRE



DIMENSIONS (DXLXH MM)	270X450X1095
SPACE FOR FIRE EXTINGUISHER	6-9 Kg powder type
HOSE	20-40 mt approved triple action nozzle
OPTIONAL	Break- glass emergency button for fire alarm
OPTIONAL	Life buoy hook



DIMENSIONS (DXLXH MM)	260X350X800
SPACE FOR FIRE EXTINGUISHER	6-9 Kg powder type
HOSE	20-40 mt approved triple action nozzle
OPTIONAL	Break- glass emergency button for fire alarm
OPTIONAL	Life buoy hook

Marine Pedestal Model SMART E-POWER

E-POWER is an innovative and intelligent socket with an integrated system for measuring energy and water consumption; it uses RFID (Radio Frequency Identification) technology that is able to identify a user and apply a prepaid payment system.

 <p style="text-align: center;">SOCKET WITH E-POWER SYSTEM</p>	SOCKETS	Electrically interlocked 240VAC 16-32-63-125 A / 400 VAC 3P+N+PE up to 1000 A and more
	PROTECTION CLASS	IP67
	BILLING	With prepaid and/or centralized billing system
	ACTIVATION	By means of a transponder (contact-less key), remote with SMARTPLUS CLOUD, remote with GSM (activation of users and alarms through the user's mobile phone)
	COMMUNICATION	RS485 Baud-rate 19200 MOD-BUS protocol, cable length 2400mt max / EIB-KONNEX BUS
	LANGUAGE	Italian, English, French, German, Spanish, customizable
	DIAGNOSTICS	Local with results on display
	ELECTRICITY METERING	Electronic meter
	WATER METERING	Plastic litre-counter turbine
	 <p style="text-align: center;">PEDESTAL WITH E-POWER SYSTEM</p>	OPERATION
BILLING		Stand alone: consumption and balance are shown on socket display on pedestal. Centralized: by means of a communication cable, a supervisor constantly monitors the electricity and water consumption and the socket status.
TRANSPONDER TOP- UP		The transponder can be topped up through an automatic recharge system with a banknote or credit card reader (PayPal as well) or via a top-up system to be used at the reception.
MATERIAL		Shock-resistant plastic
DISPLAY		16 character transfective high-contrast backlit LCD (extended temperature operation)
 <p style="text-align: center;">PEDESTAL WITH E-POWER SYSTEM</p>	TRANSPONDER READER MODULE	Intelligent, stand-alone
	BUZZER	Piezoelectric sounder for monitoring transactions and alarms
	DISPLAYED DATA	ON-OFF-FAULT socket status, electricity-water metering, credit balance, diagnostics
	OPERATING TEMPERATURE	-20°C +90°C

PEDESTALS AND MARINAS ACCESSORIES

Special accessories for pedestals and marinas.



CABLE HOLDER



QUICK COUPLING 1/2"
NICKEL-PLATED VALVES



MOSAIC
CUSTOMIZATION



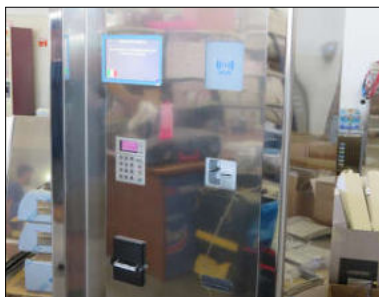
LOGO
CUSTOMIZATION



COMMUNICATION
SYSTEM



MODULE C/W
TV & TELEPHONE SOCKET



AUTOMATIC
CASH MACHINE



ACCESS CONTROL
TRANSPONDER READER



DESKTOP TRANSPONDER
READER AND
TRANSPONDER KEY



EQUIPMENT PRODUCTS

Katradis Group of Companies and The Marina Planet project, represent a pool of Greek and Italian Companies, leaders in yachting and marina equipment products, starting from lifting cranes (Travel Lifts) and Motorized Trailers, tug for crafts, boats and caravans, pump out systems and wastewater treatment and all the equipment for docks, starting from dock pedestals, dock fenders and bollards.

The Group is organized as a specialized network of international manufacturers and dealers, offering a large range of products and major service to the final client.





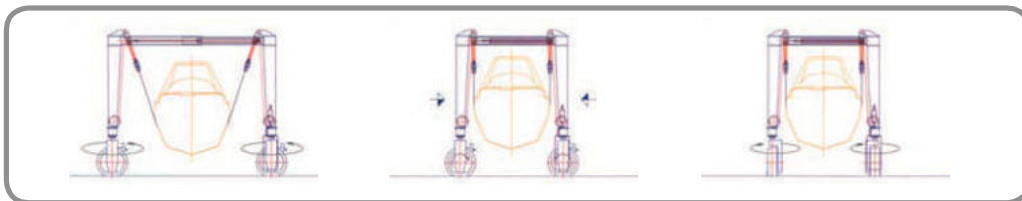
MARINE BOAT HOIST

Marine hoists on rubber wheels or rail with capacity from 10 up to 1000 tons.
Also available amphibian models with "U" shaped variable track cross equipped with various types of steering, weighing, remote control and personalizations on request.

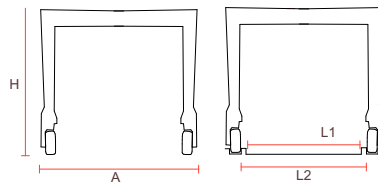


Trollift

A major innovation that thanks to telescopic cross perfectly coordinated steering and engine, through a sophisticated - but also tested electronic control - will reduce the gauge of the machine even with suspended boat.



Technical Data



Model	E15	E25	E35	E50	E75	E100	E160
Maximun Load Capacity	15 T	25 T	35 T	50 T	75 T	100 T	160 T
Boat Length (m)	14	16	18	20	22	29	32
Overall Dim. A / H (m)	6.1/5.5	6.7/6.1	6.7/6.1	7.6/6.9	8.0/7.5	10.3/9.2	11.6/10.1
Overall Dim. L1 / L2 (m)	4.6/4.9	5.2/5.5	5.2/5.5	6.1/6.4	6.4/6.7	7.9/8.5	8.5/9.1

Model	E200	E300	E400	E500	E600	E800	E1000
Maximun Load Capacity	200 T	300 T	400 T	500 T	600 T	800 T	1000 T
Boat Length (m)	38	46	51	52	68	82	91
Overall Dim. A / H (m)	13.6/11.3	14.0/11.9	16.75/13.7	15.8/14.5	20.10 / 18.0	21.65 / 18.3	24.4 / 20.4
Overall Dim. L1 / L2 (m)	9.14/9.75	9.75/10.35	10.67/11.25	11.58/12.2	14.0/14.3	14.63/15.52	16.75/16.76

Dimensions could be modified upon request.



FLAG CRANES

Industrial cranes and lifting equipment for marble industry, shipyards, precast concrete and metal working.



Technical Data

	CAPACITY	PILLAR HEIGHT	ARM LENGHT	COUNTER WEIGHT
BNC 5	5 T	5-8 m	4-8 m	no
BNC 10	10T	6-14 m	5-12 m	yes
BNC 15	15T	6-14 m	5-12 m	yes
BNC 20	20T	6-14 m	5-12 m	yes
BNC 25	25T	6-14 m	5-12 m	yes
BNC 30	30T	6-14 m	5-12 m	yes

The arm rotation is full 360° with internal rotation gear; gearmotor controlled by an electronic inverter.

The carriage lifting by cable hoist, dual lifting speed (4/1 m/min').

The carriage movement is electric powered by dual speed (5/20m/min')

The crane control is radio operated (included) plus emergency push button.

All the models have the possibility to be customized upon request.



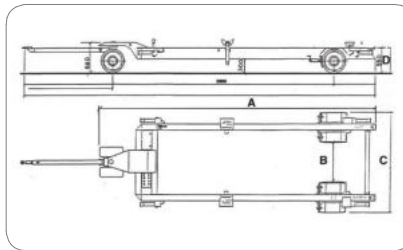
BOAT TRAILERS

Self-propelled trailer, fitted with:

- Remote control
- Self levelling , balancing , steering wheel sets
- Solid tires
- Frontal- rear separated hydraulic lifting
- Frontal – rear separated steering
- Open end design
- Telescopic bars
- Re-entering forks for cradle lifting

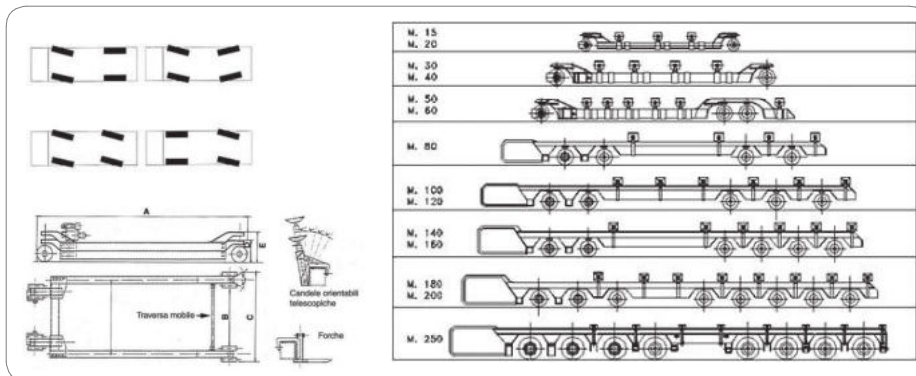


Hanged trailers



model	T 10	T 15	T 25	T 35
capacity (ton)	10	15	25	35
A (mm)	7000	8000	9000	10000
B (mm)	1300	1500	1600	1800
C (mm)	2500	2700	3200	3400
D (mm)	550	600	800	850
E (mm)	250	250	250	250

Remote controlled self propelled trailers



model	M 15 M 20	M 30 M 40	M 50 M 60	M 80	M 100 M 120	M 140	M 160	M 180	M 200	M 250
capacity (ton)	10-20	30-40	50-60	80	100-120	140	160	180	200	250
engine (hp)	28	47	63	84	117	130	140	160	170	230
speed (km/h)	3	3	3	2	2	2	2	2	2	2
A (mm)	7700	10900	12500	15600	18000	18000	18500	20000	20000	21000
B (mm)	2180 2100	2760 2720	2760 2720	2720	2920 2900	3000 2900	3000 2900	2900	2900	2900
C (mm)	3420 3500	4400 4500	4400 4480	5000	5000	5000	5000	5000	5000	5200
D (mm)	795 830	990 1040	1020 1070	1085	1085	1220	1220	1220	1220	1520
E (mm)	250	300	300	300	300	300	300	300	300	300

Possibility of models up to capacity of 1000 tons.

PUMP OUT & WATER TREATMENT



Sewage and Bilge water fixed pump out unit.



Sewage and Bilge water mobile pump out unit.



Sewage and Bilge water Continuous vacuum pump out and treatment station.



0,5-4 m3/h chemical-physical or filtration for carenage water and rain water treatment.



Desalination watermakers for marinas



Oily bilge water treatment plants.

TREATMENT EFFECTIVENESS

- Hydrocarbons : from 300.000 ppm to < 1 ppm;
- C.O.D. : from 95.000 ppm to < 160 ppm;
- Surfactants : from 80 ppm to < 1 ppm.



Dry Dock and First Rain Water Treatment Plant

This system was designed to treat water coming from the cleaning of the hulls of boats and ships, and for the treatment of rain water in shipyards. The system flow rate is 500 L/h or 1.000 L/h.

Technical parameters

Capacity: 500 L / h (25 ° C)

inlet pressure: 0.3 Mpa

Conductivity water input: $\leq 1000 \mu/S$

Pressure: 0.5 Kg / cm²

Power: 1.2 Kw

Power: 220 v 50 Hz

Lw : ≤ 35 db



Control Pannel

inner tank

Water treatment process

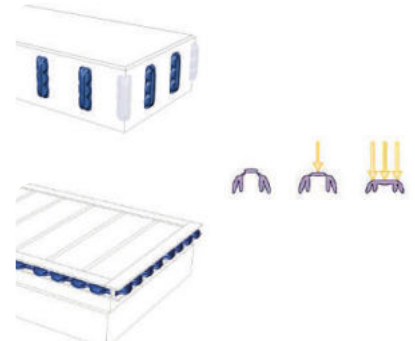


Final product



BORDER-FENDERS

The fenders are stamped in E.V.A. and are ideal for safety in port areas or where the boats are subject to risks. The combination of material and its design make the EVA fenders also resistant to high compression.



B 80



Ethylene Vinyl Acetate printed 85x12x8 cm

B 90



Ethylene Vinyl Acetate printed 95x17x12 cm

L 60 & B 60



Ethylene Vinyl Acetate printed 60x34x18 cm

LC 60 & BC 60



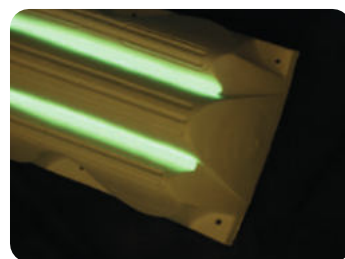
Ethylene Vinyl Acetate printed 60x30x13 cm

B 100



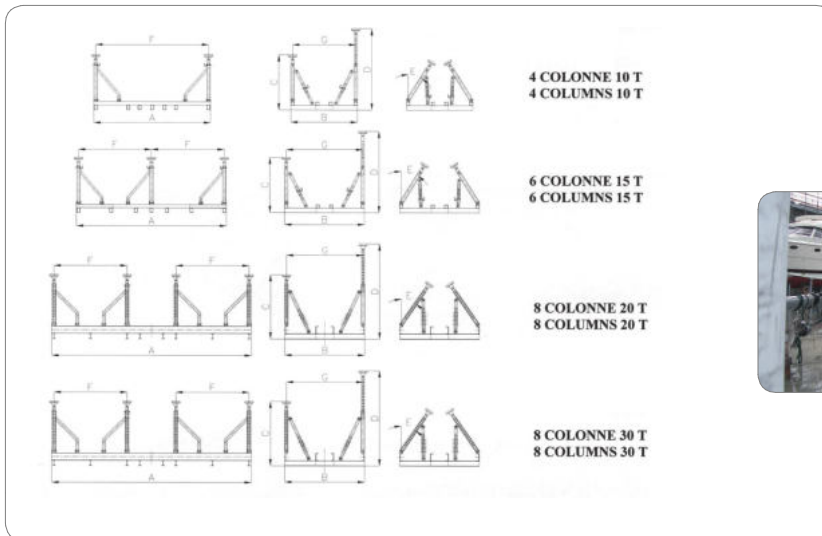
Ethylene Vinyl Acetate printed 95x34x18 cm

fluorescenti



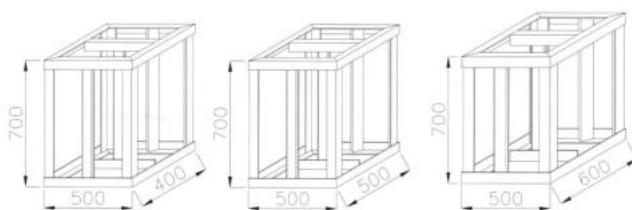
Fluorescent solar

Boat cradles



model	4 columns	6 columns	8 columns	8 columns
capacity (ton)	10	15	20	30
A (mm)	3500	4500	6000	7000
B (mm)	2000	2400	2400	2400
C (mm)	1680	1680	1954	1954
D (mm)	2475	2475	2892	2892
E (°)	32	32	35	35
F (mm)	3634	2188	2200	2200
G (mm)	1900	2300	2300	2300

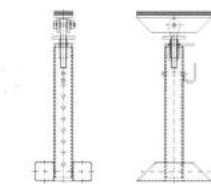
Boat stands



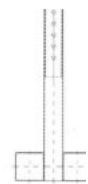
SERIE LEGGERA PORTATA 10 T
PESO- 28 kg
LIGHT MODEL CAP.10 T
WEIGHT ~ 28 kg

SERIE INTERMEDIA PORTATA 15 T
PESO- 48 kg
MEDIUM MODEL CAP.15 T
WEIGHT- 48 kg

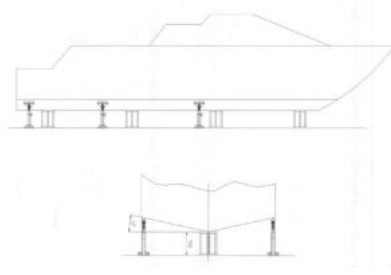
SERIE PESANTE PORTATA 20 T
PESO- 62 kg
HEAVY MODEL CAP.20 T
WEIGHT- 62 kg



SERIE LEGGERA /LIGHT MODEL



SERIE PESA





Hangars for storage and painting of Yachts

Production of temporary structures for the storage of boats and varnishing both mobile and stationary- also taylor made.



Paint



Cabins for yacht painting.

Move



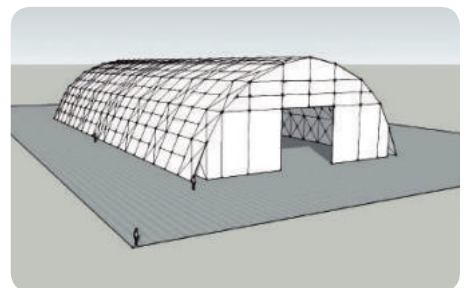
Sturdy galvanized steel structures on wheels easy to move.

Cover



Modular yacht halls in aluminium / pvc

Big



Structures with an elliptical roof.



Lifting equipment

Production of lifting equipment like spreaders, hooks, ropes, slings, and other ground handling equipment. High standards of quality and safety with innovative products and at the highest levels.



BC4R/20 4,5 x 3,5 m



Sling Cross-adjustable and foldable

DC4R/15 4,2 x 4,5 m



Adjustable and collapsible spacer Cross

DQ4R/40 5 x 5 m



Adjustable Spacer Square

BH4M/10 3 x 2 m



Rectangular fixed Sling

BH4R/10 3,5 x 3,5 m



Adjustable Sling H



PONTOONS

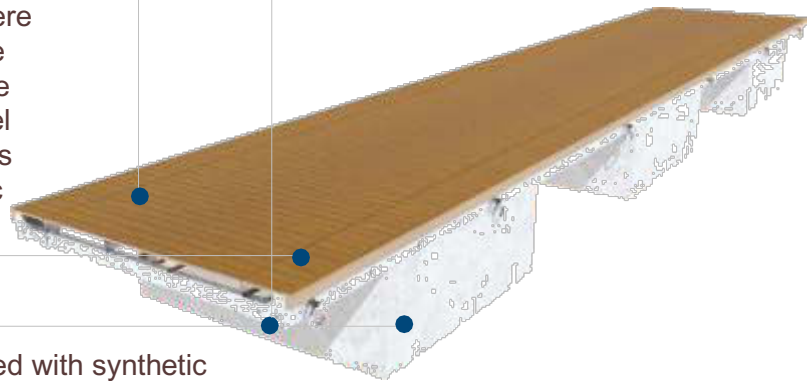
Pontoon model CLS.

High displacement and discontinuous buoyancy floating pontoon.

- Load-bearing frame made up of steel sections for structural installations, electro-welded and subjected to protective treatment by means of hot galvanizing, in accordance with UNI EN ISO1461 standards.

- The decking surface is made with exotic wood slats or WPC (Wood Plastic Composite) composite material, worked on the surface with longitudinal grooves and fixed to the battens with stainless steel screws.

- On the sides of the walking surface there are compartments for housing the technological systems, which can be completely inspected through channel covers in aluminum alloy or precious exotic wood or WPC (Wood Plastic Composite) composite material.



- Floating elements in concrete reinforced with synthetic fibers, with a first quality closed cell expanded polystyrene core guaranteed minimum condensation of 15 Kg / mc. Each float is anchored by means of stainless

- The main side profiles are designed for fixing the mooring elements (rings, anchoring systems, fingers, etc.), by means of modular holes with a pitch of 50 cm and are equipped with a fender in precious exotic wood or in WPC (Wood Plastic Composite) composite material.











- Reinforcement plates not less than 15mm thick welded to the load-bearing frame, are positioned at the end of the jetty in the area of the junction system.

Suitable for protected basins, with reference to the AIPCN recommendations
 Heavy Series: with wind speed up to 40m / sec and Hs 500mm, "limit" condition
 Light Series: with wind speed up to 30m / sec and Hs 300mm, "safety" conditions



Pontoon model PE.
 Low displacement and discontinuous buoyancy floating pontoon.



Lengths *	Widths *
 6 m.  8 m.  10 m.  12 m.	<div style="display: flex; flex-direction: column;"> <div style="display: flex; align-items: center;">  2,00 mt. <div style="margin-left: 10px;"> <p>Main profile: UPN180 Free board: 50 ~ 60cm.mt. Distributed overload: 120 ~ 220Kg/Sqm.</p> </div> </div> <hr/> <div style="display: flex; align-items: center;">  2,35 mt. <div style="margin-left: 10px;"> <p>Main profile: UPN180 Free board: 50 ~ 60cm. Distributed overload: 120 ~ 220Kg. / Sqm.</p> </div> </div> </div>
	<div style="display: flex; align-items: center;">  2,50 mt. <div style="margin-left: 10px;"> <p>Main profile: UPN180 - 220 Free board: 50 ~ 70cm. Distributed overload: 120 ~ 400Kg. / Sqm.</p> </div> </div> <hr/> <div style="display: flex; align-items: center;">  3,00 mt. <div style="margin-left: 10px;"> <p>Main profile: UPN220 - 260 Free board 60 ~ 80 cm. Distributed overload: 200~400 Kg./mq.</p> </div> </div> <p style="text-align: right; font-size: small;">*other dimensions possible on request</p>

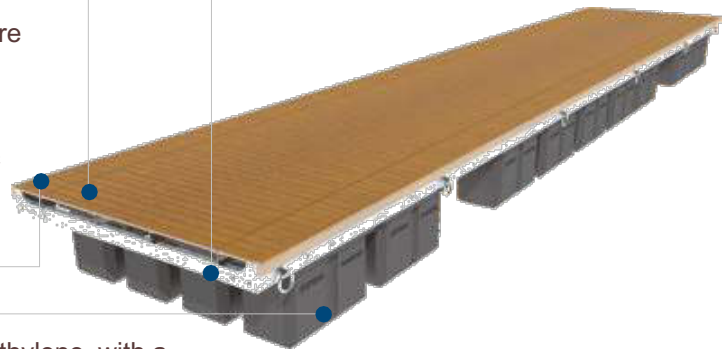
Pontoon model PE.

Low displacement and discontinuous buoyancy floating pontoon.

- Load-bearing frame made up of steel sections for structural installations, electro-welded and subjected to protective treatment by means of hot galvanizing, in accordance with UNI EN ISO1461 standards.

- The decking surface is made with exotic woodslats or WPC (Wood Plastic Composite) composite material, worked on the surface with longitudinal grooves and fixed to the battens with stainless steel screws.

- On the sides of the walking surface there are compartments for housing the technological systems, which can be completely inspected through channel covers in aluminum alloy or precious exotic wood or in WPC (Wood Plastic Composite) composite material.



- Floating elements made of rotational polyethylene, with a first quality closed cell expanded polystyrene core with a guaranteed minimum density of 15 Kg / mc, each float is anchored by means of special guides and fixed with stainless steel studs.

- The main lateral profiles are designed for fixing the mooring elements (rings, anchoring systems, fingers, etc.), by means of modular holes with a pitch of 50 cm and are equipped with a fender in precious exotic wood or in composite material WPC (Wood Plastic Composite).



- Reinforcement plates not less than 15mm thick welded to the load-bearing frame, are positioned at the end of the jetty in the area of the junction system.









Suitable for protected basins, with reference to the AIPCN recommendations
 Heavy series: with wind speed up to 40 m / sec and Hs 500mm, "limit" condition
 Light series: with wind speed up to 30 m / sec and Hs 300mm, "safety" condition



Pontoon model MEGA

High displacement and continuous buoyancy floating pontoon.



Lengths *	Widths *	
 6 m.  8 m.  10 m.  12 m.	 2,00 mt. Main profile: UPN180 Free board: 50 ~ 60cm.mt. Distributed overload: 120 ~ 220Kg/Sqm.	 2,50 mt. Main profile: UPN180 - 220 Free board: 50 ~ 70cm. Distributed overload: 120 ~ 400Kg. / Sqm.
	 2,35 mt. Main profile: UPN180 Free board: 50 ~ 60cm. Distributed overload: 120 ~ 220Kg. / Sqm.	 3,00 mt. Main profile: UPN220 - 260 Free board 60 ~ 80 cm. Distributed overload: 200~400 Kg./mq.

*other dimensions possible on request

Pontoon model MEGA

High displacement and continuous buoyancy floating pontoon.

● Load-bearing frame made up of steel sections for structural installations, electro-welded and subjected to protective treatment by means of hot galvanizing, in accordance with UNI EN ISO1461 standards.

● The decking surface is made with exotic woodslats or WPC (Wood Plastic Composite) composite material, worked on the surface with longitudinal grooves and fixed to the battens with stainless steel screws.

● On the sides of the walking surface there are compartments for housing the technological systems, which can be completely inspected through channel covers in aluminum alloy, exotic wood or in WPC (Wood Plastic Composite) composite material.

● One-piece float made of reinforced concrete with improved adhesion steel bars, having a high quality closed cell expanded polystyrene core anchored to the frame by means of stainless steel studs.

● The main side profiles are designed for fixing the mooring elements (rings, anchoring systems, fingers, etc.), by means of modular holes with a pitch of 50 cm and are equipped with a fender in precious exotic wood or in WPC (Wood Plastic Composite) composite material.

● Reinforcement plates not less than 15mm thick welded to the load-bearing frame, are positioned at the end of the jetty in the area of the junction system.



Suitable for protected basins, with reference to the AIPCN recommendations

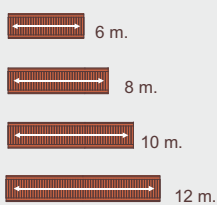


Pontoon model CLS


Low displacement and discontinuous buoyancy floating pontoon.




Lengths*




Widths*




2,00 mt.
Main profile: 7Kg/m
Free board: 50 ~ 60 cm.
Distributed overload: 120~220 Kg./mq.



2,35 mt.
Main profile: 7Kg/m
Free board: 50 ~ 60 cm.
Distributed overload: 120~220 Kg./mq.



2,50 mt.
Main profile: 7-11Kg/m
Free board: 50 ~70 cm.
Distributed overload: 120~400 Kg./mq.



3,00 mt.
Main profile: 7-11Kg/m
Free board: 60 ~80 cm.
Distributed overload: 200~400 Kg./mq.

* other dimensions possible on request

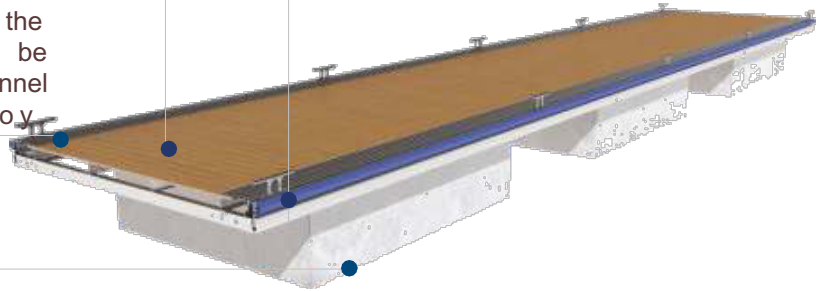
Pontoon model CLS

Low displacement and discontinuous buoyancy floating pontoon.

The supporting frame is made with extruded aluminum alloy profiles for marine use (main profile 7 kg / m), electro-welded in an inert atmosphere with the MIG-TIG process. Physical state T5 / T6 according to standards EN 515 - Mechanical characteristics T5 / T6 according to standards 755-2

The decking surface is made with exotic wood slats or WPC (Wood Plastic Composite) composite material, worked on the surface with longitudinal grooves and fixed to the battens with stainless steel screws.

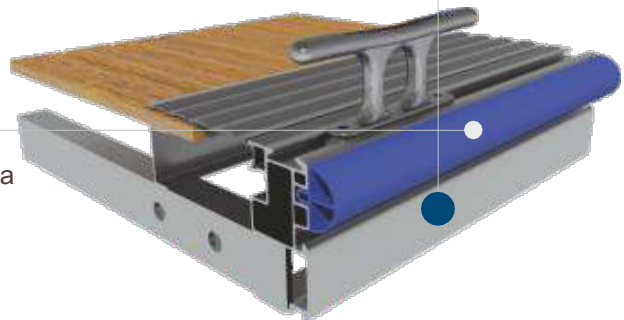
On the sides of the walking surface there are compartments for housing the technological systems, which can be completely inspected through channel covers in aluminum alloy.



Floating elements in concrete reinforced with synthetic fibers, having the core in closed cell expanded polystyrene of first quality condensation minimum guaranteed of 15 Kg / mc. Each float is anchored by means of stainless steel studs.

The main lateral profiles are designed to house the anchoring systems with continuous module (fender, cleats, finger, etc.)

The side fender is fixed to the pontoon by means of a special guide with continuous development, made of anti-aging and stain-resistant plastic material.










Product suitable for protected basins with maximum wind speed: up to 30m / sec. and maximum height of the significant wave (H_s^*): 300mm, "safety" conditions, with reference to the AIPCN recommendations



Pontoon model PE

Low displacement and discontinuous buoyancy floating pontoon.



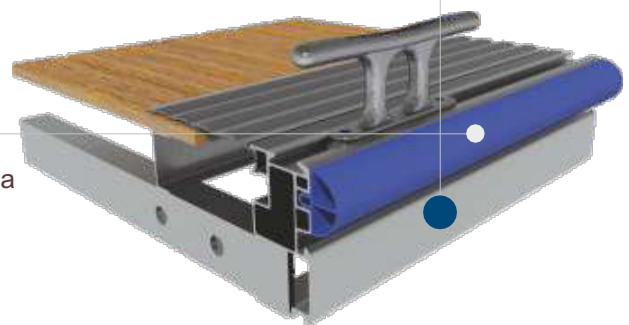
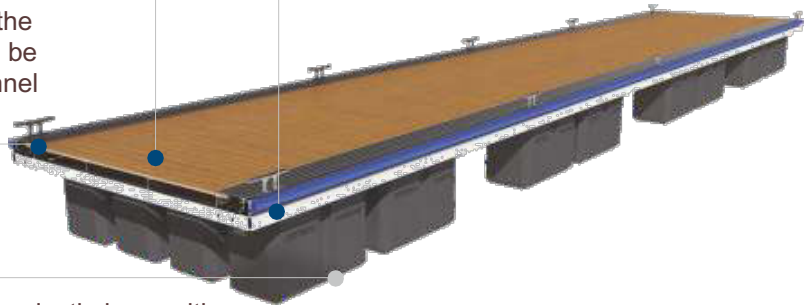
Lengths*	Widths*	
 6 m.  8 m.  10 m.  12 m.	 2,00 mt. Main profile: 7Kg/m Free board: 50 ~ 60 cm. Distributed overload: 120~220 Kg./mq .	 2,50 mt. Main profile: 7-11Kg/m Free board: 50 ~70 cm. Distributed overload: 120~400 Kg./mq.
	 2,35 mt. Main profile: 7Kg/m Free board: 50 ~ 60 cm. Distributed overload: 120~220 Kg./mq.	 3,00 mt. Main profile: 7-11Kg/m Free board: 60 ~80 cm. Distributed overload: 200~400 Kg./mq.

* other dimensions possible on request

Pontoon model PE

Low displacement and discontinuous buoyancy floating pontoon.

- The supporting frame is made with extruded aluminum alloy profiles for marine use (main profile 7 kg / m), electro-welded in an inert atmosphere with the MIG-TIG process. Physical state T5 / T6 according to standards EN 515 - Mechanical characteristics T5 / T6 according to standards 755 -2
- The decking surface is made with exotic wood slats or WPC (Wood Plastic Composite) composite material, worked on the surface with longitudinal grooves and fixed to the battens with stainless steel screws.
- On the sides of the walking surface there are compartments for housing the technological systems, which can be completely inspected through channel covers in aluminum alloy.
- Floating elements made of rotational polyethylene, with a first quality closed cell expanded polystyrene core with a guaranteed minimum density of 15 Kg / mc, each float is anchored by means of special guides and fixed with stainless steel studs.
- The main lateral profiles are designed to house the anchoring systems with continuous module (fender, cleats, finger, etc.)
- The side fender is fixed to the pontoon by means of a special guide with continuous development, made of anti-aging and stain-resistant plastic material.



Product suitable for protected basins with maximum wind speed: up to 30m / sec. and maximum height of the significant wave (H_s^*): 300mm, "safety" conditions, with reference to the AIPCN recommendations



Pontoon model CONCRETE

High displacement and continuous buoyancy floating pontoon



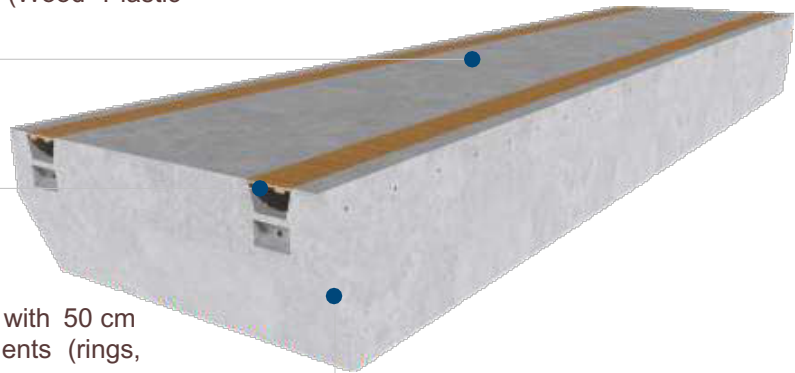
Lengths*	Widths*	
 8 m.	 3,00 mt.	 3,50 mt.
 12 m.	Free board: 60 cm. Distributed overload: 600 Kg./mq.	Free board: 60 ~80 cm. Distributed overload: 600~800 Kg./mq.
 16 m.	 4,00 mt.	
 20 m.	Free board: 60 ~80 cm. Distributed overload: 600~800 Kg./mq.	

Pontoon model CONCRETE

High displacement and continuous
buoyancy floating pontoon

Monobloc floating dock, made of sulphate-resistant concrete C-35-45 (UNI EN 206-1) reinforced with FeB44K steel rods) having a core made of first quality polyurethane foam.

- The surface finish of the walking surface can be made of scratched concrete or with overlapping decking in precious exotic wood or WPC (Wood Plastic Composite) composite material.



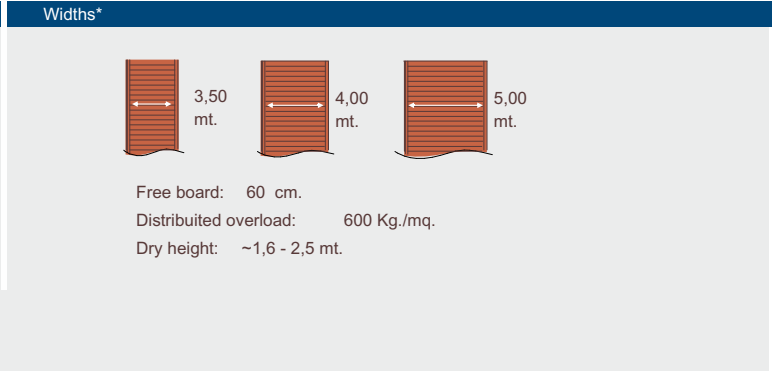
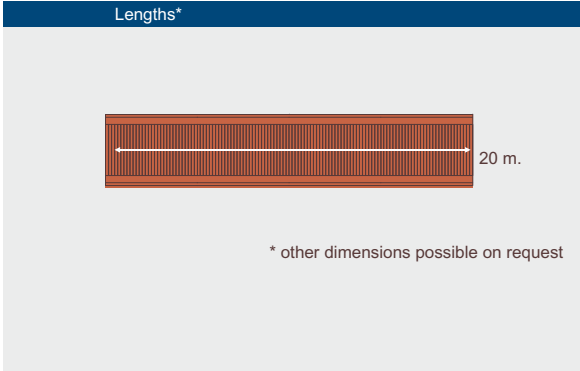
- Lateral modular holes are prepared with 50 cm pitch for fixing the mooring elements (rings, anchoring systems, fingers, etc.)

- On the sides of the walkway there are compartments for housing the technological systems that can be fully inspected through raceways made of exotic wood or other finish. Inside them, near the vertices, there are wells for anchoring the catenaries and for the joining systems.

Product suitable for the construction of high-comfort landing places in protected basins with reference to the AIPCN recommendations It can also be used as a wave motion attenuator light.



Wave Attenuators
 High displacement and high structural capacity breakwater



Wave Attenuators

High displacement and high structural capacity breakwater

The floating structure is made of sulphate-resistant concrete C-35-45 (UNI EN 206-1) reinforced with FeB44K steel bars) with improved adhesion to hot galvanized. Polystyrene internal core is closed cell with high density type.

The surface finish of the walking surface can be made of scratched concrete or with overlapping decking in precious exotic wood or WPC (Wood Plastic Composite) composite material.

At the sides of the walkway there are polyifers for housing the technological systems. The side fender is available in special profiles in WPC (Wood Plastic Composite) composite material or in precious exotic wood.



Product suitable for use as a wave motion attenuator to protect partially sheltered basins and / or as a mooring dock for high stability.

Possibility of laying in longitudinal coupling for the construction of double-width systems

L (m)	Wave attenuation	Hs (m)	Wave attenuation			
	Wave height reference		Significant wave height reference			
5		0,2				
10	78%	0,4	75%	62%	50%	
15	58%	0,6	72%	60%	46%	39%
20	36%	0,8	70%	57%	43%	36%
25	27%	1		48%	37%	32%
30		0,2		35%	30%	26%
		1,4			19%	17%
		1,6				
			3	3,5	4	4,5 (T) s



Access Gangways

The supporting frame and the side handrails are made with special aluminum alloy profiles, resistant to the aggression of the marine environment, electro-welded with inert gas Tig-Mig procedure.

The decking surface is made of exotic wood slats of precious composite material WPC (Wood Plastic Composite), worked on the surface with longitudinal grooves and fixed to the battens with stainless steel screws.

The connection to the quay is made with a hot-dip galvanized steel structure and is available in the articulated version for piers anchored in chains and in the linear hinge version for piers anchored with piles. Pontoon connection is made with hot-dip galvanized steel flap or, in the gangway version with portal, with anti-aging plastic fender installed on the headboard.

Plastic sliding wheels, complete with stainless steel pins and bearings, together with support plates to be fixed on the pontoon, complete the product.

Available in the version with articulated platform, to be used when the free edge of the pontoon can cross the platform level.

Also available in the variant with steel profiles for structural use, electro-welded and subjected to protective treatment through hot-dip galvanizing, according to UNI EN ISO 1461 standards.



Gangway for walkways

The structure is made of hot-dip galvanized steel *, complete with plates and struts for anchoring to the quay, walking surface and side fender made of exotic wood slats or composite material WPC (Wood Plastic Composite), to be used when it is necessary to position one or more gangways parallel to the bench.

*Available in the variant in stainless steel or aluminum alloy.



Self-supporting gangway

Available in the version in hot-dip galvanized steel (Saturno line) or in aluminum alloy (Gioveline), with walking surface and side fender made of precious exotic wood slats or WPC (Wood Plastic Composite) composite material, complete with connection to the quay, hinges for connection to the dock and floating support unit.

To be used for the connection between the quay and the galley pontoon without interruption, maintaining the same technical and dimensional characteristics of the pontoon.

Finger & mini finger

Finger and mooring rods are made of metal structure, such as:

- with extruded aluminum alloy profiles for marine use (main profile 3/6 kg / m), electro-welded in an inert atmosphere with MIG-TIG process. Physical state T5 / T6 according to standards EN 515 - Mechanical characteristics T5 / T6 according to standards 755-2.
- with steel profiles for structural uses, electro-welded and subjected to protective treatment by hot-dip galvanizing, according to UNI EN ISO1461 standards.

The walking surface is made with slats in precious exotic wood or composite material WPC (Wood Plastic Composite), worked on the surface with longitudinal grooves and fixed to the battens with stainless steel screws.

The side fender is made of anti-aging plastic material, precious exotic wood or composite material WPC (Wood Plastic Composite).





The floats are made of rotational polyethylene, with a first quality closed cell expanded polystyrene core with a minimum condensation of 15Kg / mc or with a concrete casing. Each float is anchored by means of stainless steel hardware.

The mooring points are made with aluminum cleats and are in variable quantities depending on the length / type of finger.

Available in versions:






- pileguide head
- fixed quay, with articulated roots
- head wire pontoon, with hammer-head root
- with angled structure









Lengths available		Widths available	
 4,5 m.	 6 m.	 15 cm.	 25 cm.

Finger & mini finger



Lengths available			Widths available	
 6 m.	 8 m.	 10 m.	 70 cm.	 1,00 mt.



Lengths available		Widths available	
 10 m.	 12 m.	 1,00 mt.	 1,50 mt.
 16 m.	 20 m.		

Accessories



Steel mooring ring

Mooring ring in hot galvanized steel or polished stainless steel, complete with bolts for fixing to the floating pontoon.



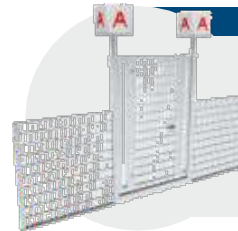
Mooring cleat

Mooring cleat in aluminum alloy, complete with stainless steel fixings.



Hot-hip cast iron

Mooring cleat in hot galvanized cast iron.



Pontoon access gate

Made of electro-welded steel, subjected to a hot-dip galvanizing treatment, complete with anti-corrosion locks. Options: electronic



Hard wood pile

Post in precious exotic wood or in hot galvanized steel for anchoring pontoons or mooring boats.



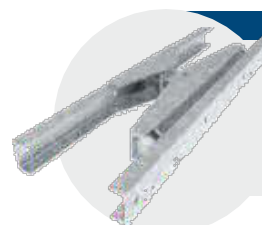
Quay he beams

Made of aluminum or electro-welded and hot-dip galvanized steel, complete with sliding pads in self-lubricating plastic material and stainless steel fixing system.



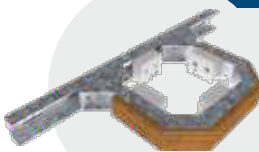
Ladder

Ascent ladder for wharf and fixed quay, made of stainless steel.



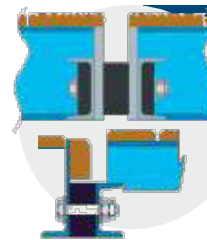
Polydirectional joint

Cardan joint in hot galvanized steel, for the or to gona let ra el element the floats, complete with cover



Pileguide for Giove/Saturno

Made of aluminum or hot-dip galvanized steel, complete with self-lubricating plastic sliding pads and stainless steel fixing system.



Joining system

Junction system between pontoon / pontoon and finger / pontoon, made with stainless steel tie rods and additive neoprene shock absorbers.



Mooring bollard

Mooring cleat in hot-dip galvanized or polished stainless steel, complete



Fiber glass resin cap

Cap in fiber glass pigmented resin with high chromatic resistance gelcoat.

Accessories



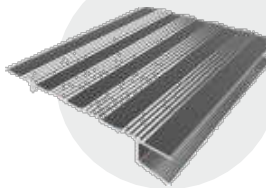
Mooring finger float

Floating elements in rotational polyethylene, with a first quality closed cell expanded polystyrene core; each float is anchored by means of cross currents



PE float

Floating elements in rotational polyethylene, with a first quality closed cell expanded polystyrene core; each float is anchored by means of cross currents integrated in the main frame.



Alluminium duct cover

Aluminum alloy duct cover complete with stainless steel fixing screws.



Exotic wood or WPC duct cover

Duct cover in precious exotic wood or WPC (Wood Plastic Composite) composite material, for lineaSaturno docks.



Omega bracket and head bracket

Bracket for anchoring with chain, in hot galvanized steel, complete with stainless steel fixing system.



Intermediate and head plate

Bracket for anchoring with chain, in hot galvanized steel, complete with stainless steel fixing system.



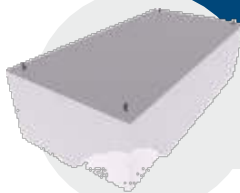
Exotic wood / WPC fender

Side fender element in exotic wood or WPC (Wood Plastic Composite) composite material.



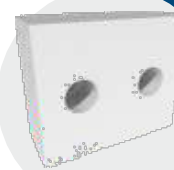
Delta section plastic fender

Delta section fender in stain-resistant and anti-aging plastic material complete with stainless steel fixing screws.



Extra or additional float

Concrete reinforced Float with synthetic fibers, with a high quality closed cell expanded polystyrene core.



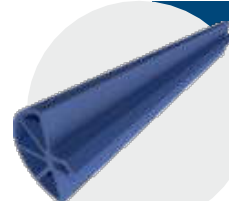
Pads for pileguide

Self-lubricating plastic post guide plug, complete with stainless steel fixing screws.



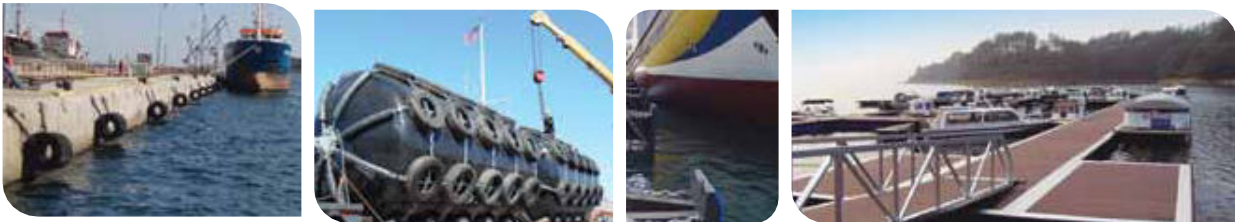
Sliding gangway wheels

Sliding wheel for gangways in plastic material complete with stainless steel roller bearing.



Semicircular section plastic fender

Pontoon and finger fender, made of stain-resistant, aging-resistant plastic material.



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