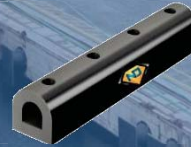




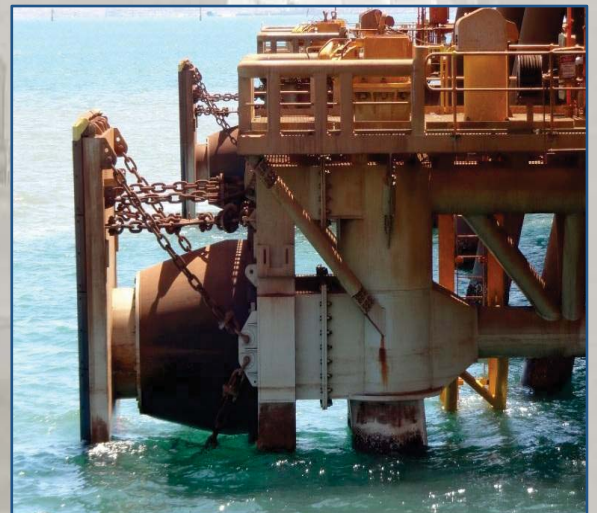
**ND MARITECH**  
INTERNATIONAL FZE  
*Marine Safety Provider Internationally*



# **BERTHING SOLUTION**

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## **FENDER CATALOG**



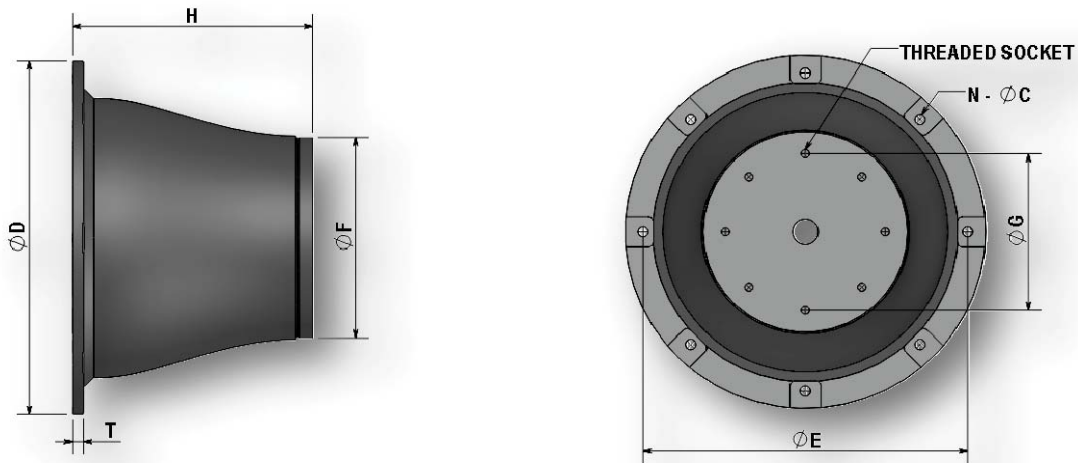
# NCN

## NCN – CONE FENDER

- NJ Maritech's NCN Cone Fender design meets the most demanding conditions of berthing due to its higher Energy Absorption to Reaction Force Ratio.
- Ideal for High Hull Pressure requirements.
- Simply & easy installation.



### DIMENSION



### SPECIFICATION

	H mm	ØD mm	ØE mm	ØF mm	ØG mm	T mm	N-ØC mm	BOLT SIZE mm	WEIGHT Kg.
<b>NCN 300</b>	300	450	405	255	195	13.5	4-20	M16	30
<b>NCN 500</b>	500	750	675	425	325	21	4-30	M24	140
<b>NCN 600</b>	600	900	810	510	390	22	6-30	M24	230
<b>NCN 700</b>	700	1050	945	595	455	26	6-38	M30	390
<b>NCN 800</b>	800	1200	1080	680	520	30	6-44	M36	540
<b>NCN 900</b>	900	1350	1215	765	585	30	6-44	M36	755
<b>NCN 1000</b>	1000	1500	1350	850	650	40	6-50	M42	1020
<b>NCN 1100</b>	1100	1650	1485	935	715	42	6-50	M42	1500
<b>NCN 1150</b>	1150	1725	1550	998	750	42	6-50	M42	1600
<b>NCN 1200</b>	1200	1800	1620	1020	780	45	8-50	M42	1960
<b>NCN 1300</b>	1300	1950	1755	1105	845	47	8-60	M48	2400
<b>NCN 1400</b>	1400	2100	1890	1190	930	54	8-60	M48	3000
<b>NCN 1600</b>	1600	2400	2160	1360	1060	58	8-66	M48	4600
<b>NCN 1800</b>	1800	2880	2625	1530	1190	75	10-66	M56	6600
<b>NCN 2000</b>	2000	3200	2920	1900	1540	80	10-66	M56	9200



## RATED PERFORMANCE

NCN FENDER

GRADE	NCN 300		NCN 500		NCN 600		NCN 700		NCN 800		NCN 900		NCN 1000		NCN 1100		NCN 1150		NCN 1200		NCN 1300		NCN 1400		NCN 1600		NCN 1800		NCN 2000	
	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m
0.7	52.3	8.7	145	40.7	209	70.6	285	111	372	166	470	236	581	324	703	431	768	492	836	560	982	711	1138	889	1486	1327	1882	1889	2324	2591
0.8	53.7	9.0	149	41.8	215	72.4	293	114	382	170	482	242	597	333	722	443	788	505	859	575	1008	731	1168	913	1527	1362	1933	1940	2386	2661
0.9	55.1	9.2	153	42.9	220	74.2	300	117	392	175	495	249	612	341	741	454	809	519	881	590	1035	750	1199	937	1567	1398	1984	1990	2449	2730
G1	56.5	9.5	157	44.0	226	76.0	308	120	402	179	508	255	628	350	760	466	830	532	904	605	1061	769	1230	961	1607	1434	2035	2041	2512	2800
1.1	57.9	9.7	161	45.1	232	77.8	316	123	412	184	521	261	644	359	779	478	851	545	927	620	1088	788	1261	985	1647	1470	2086	2092	2575	2870
1.2	59.3	9.9	165	46.2	237	79.6	323	126	422	188	534	268	659	367	798	489	872	559	949	635	1114	807	1292	1009	1687	1506	2136	2143	2638	2939
1.3	60.8	10.2	169	47.3	243	81.4	331	129	432	193	546	274	675	376	817	501	892	572	972	650	1141	827	1322	1033	1728	1541	2187	2193	2700	3009
1.4	62.2	10.4	173	48.4	248	83.2	338	132	442	197	559	281	691	385	836	512	913	585	994	665	1167	846	1353	1057	1768	1577	2238	2244	2763	3078
1.5	63.6	10.6	177	49.5	254	85.0	346	135	452	202	572	287	707	394	855	524	934	599	1017	681	1194	865	1384	1081	1808	1613	2289	2295	2826	3148
1.6	65.0	10.9	180	50.6	260	86.8	354	138	462	206	585	293	722	402	874	536	955	612	1040	696	1220	884	1415	1104	1848	1649	2340	2346	2889	3218
1.7	66.4	11.1	184	51.7	265	88.6	361	141	472	211	598	300	738	411	893	547	976	625	1062	711	1247	903	1446	1128	1888	1685	2391	2396	2952	3287
1.8	67.8	11.3	188	52.8	271	90.4	369	144	482	215	610	306	754	420	912	559	996	638	1085	726	1273	923	1476	1152	1929	1720	2442	2447	3014	3357
1.9	69.2	11.6	192	53.9	276	92.2	376	147	492	220	623	313	769	428	931	570	1017	652	1107	741	1300	942	1507	1176	1969	1756	2493	2498	3077	3426
G2	70.7	11.8	196	55.0	282	94.0	384	150	502	224	636	319	785	437	950	582	1038	665	1130	756	1326	961	1538	1200	2009	1792	2543	2549	3140	3496
2.1	72.4	12.0	201	56.0	289	95.8	394	153	515	228	652	325	805	445	974	593	1064	678	1158	770	1359	979	1576	1223	2059	1826	2607	2598	3218	3563
2.2	74.2	12.3	206	57.0	296	97.6	403	156	527	233	668	331	824	454	997	604	1090	690	1186	785	1392	998	1615	1246	2109	1860	2670	2647	3297	3630
2.3	75.9	12.5	211	58.0	303	99.4	413	159	540	237	683	337	844	462	1021	615	1116	703	1215	799	1425	1016	1653	1269	2160	1894	2734	2696	3375	3698
2.4	77.7	12.7	216	59.0	310	101	423	162	552	241	699	343	863	471	1045	626	1142	716	1243	814	1458	1034	1692	1292	2210	1928	2797	2745	3454	3765
2.5	79.5	12.9	221	60.0	318	103	433	165	565	246	715	350	883	479	1069	638	1168	729	1271	828	1492	1053	1730	1315	2260	1963	2861	2794	3532	3832
2.6	81.2	13.2	225	61.0	325	105	442	167	578	250	731	356	903	487	1092	649	1193	741	1299	842	1525	1071	1768	1337	2310	1997	2924	2843	3610	3899
2.7	83.0	13.4	230	62.0	332	107	452	170	590	254	747	362	922	496	1116	660	1219	754	1327	857	1558	1089	1807	1360	2360	2031	2988	2892	3689	3966
2.8	84.8	13.6	235	63.0	339	108	462	173	603	258	762	368	942	504	1140	671	1245	767	1356	871	1591	1107	1845	1383	2411	2065	3051	2940	3767	4034
2.9	86.5	13.8	240	64.0	346	110	471	176	615	263	778	374	961	513	1163	682	1271	779	1384	886	1624	1126	1884	1406	2461	2099	3115	2989	3846	4101
G3	88.3	14.1	245	65.0	353	112	481	179	628	267	794	380	981	521	1187	693	1297	792	1412	900	1657	1144	1922	1429	2511	2133	3178	3038	3924	4168
3.1	90.5	14.4	251	66.6	362	115	493	183	644	274	814	389	1006	534	1217	710	1329	812	1447	922	1699	1172	1970	1465	2574	2186	3258	3114	4022	4271
3.2	92.7	14.8	257	68.2	371	118	505	188	659	280	834	399	1030	547	1246	727	1362	831	1483	945	1740	1201	2018	1500	2637	2239	3337	3189	4120	4374
3.3	94.9	15.1	264	69.8	379	120	517	192	675	287	854	408	1055	560	1276	745	1394	851	1518	967	1782	1229	2066	1536	2699	2292	3417	3264	4218	4478
3.4	97.1	15.5	270	71.4	388	123	529	197	691	293	874	418	1079	573	1305	762	1427	871	1553	990	1823	1258	2114	1571	2762	2345	3496	3339	4316	4581
3.5	99.3	15.8	276	73.0	397	126	541	201	707	300	894	427	1104	586	1335	779	1459	891	1589	1012	1865	1286	2163	1607	2825	2398	3575	3415	4414	4684
3.6	101.5	16.2	282	74.6	406	129	553	205	722	307	913	436	1128	598	1365	796	1491	910	1624	1034	1906	1314	2211	1642	2888	2451	3655	3490	4512	4787
3.7	103.7	16.5	288	76.2	415	132	565	210	738	313	933	446	1153	611	1394	813	1524	930	1659	1057	1948	1343	2259	1678	2951	2504	3734	3565	4610	4890
3.8	105.9	16.9	295	77.8	423	134	577	214	754	320	953	455	1177	624	1424	831	1556	950	1694	1079	1989	1371	2307	1713	3013	2557	3813	3640	4708	4994
3.9	108.1	17.2	301	79.4	432	137	589	219	769	326	973	465	1202	638	1453	848	1589	969	1730	1102	2031	1400	2355	1749	3076	2610	3893	3716	4806	5097
G4	1103	18.0	307	81.0	441	140	601	223	785	333	993	474	1226	650	1483	865	1621	989	1765	1124	2072	1428	2403	1784	3139	2663	3972	3791	4904	5200

**NOTE :**

- Values shown are for Standard 70% deflection.
- Maximum deflection – 72.5%

## INTERMEDIATE DEFLECTION

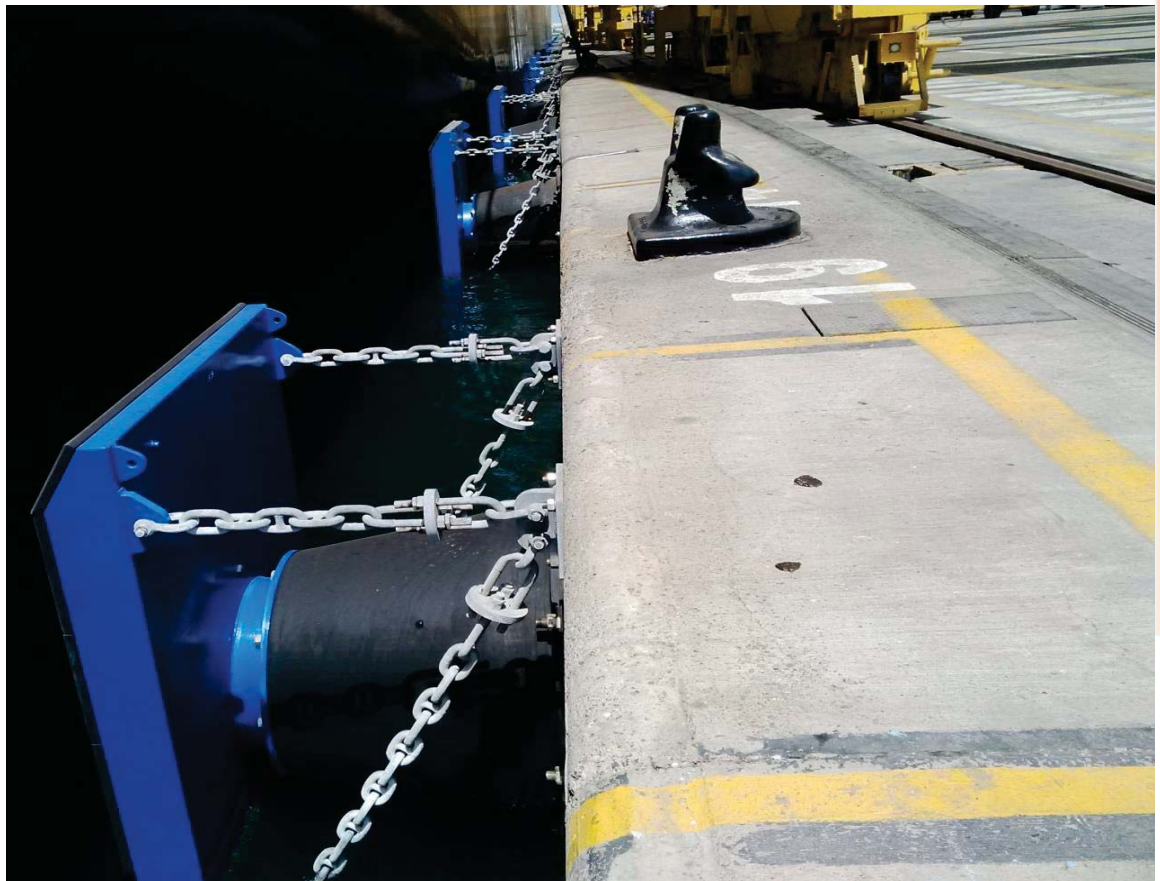
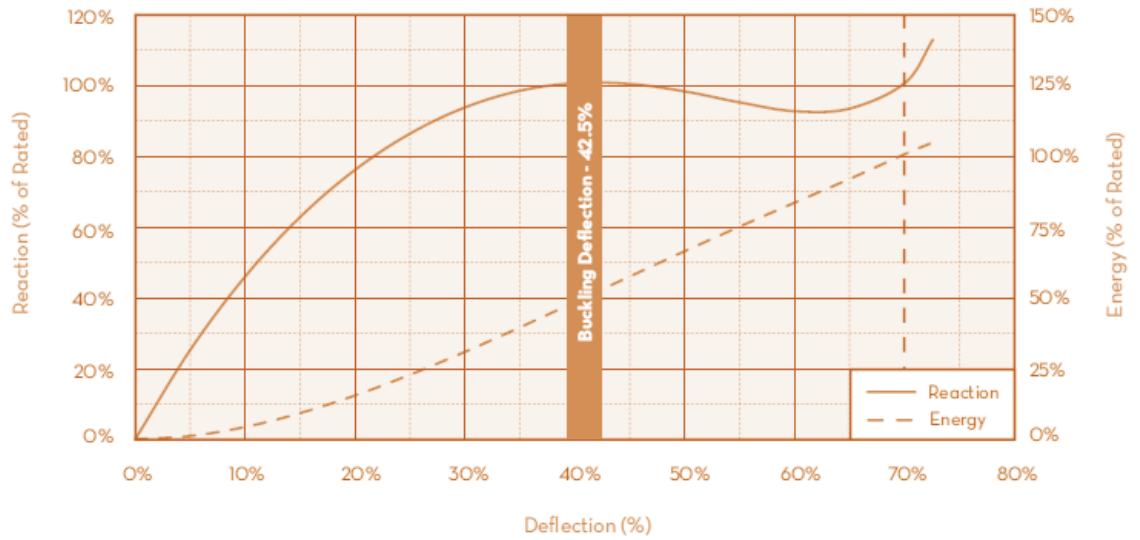
DEFLECTION (%)	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	72.5%
REACTION (%)	25%	46%	62%	76%	86%	93%	98%	99%	99%	97%	94%	92%	93%	100%	112%
ENERGY (%)	1%	4%	9%	15%	23%	31%	39%	48%	57%	66%	75%	83%	91%	100%	104%

### PIANC FACTORS

ANGLE FACTOR	
ANGLE	AF
0°	1.000
3°	1.039
5°	1.055
8°	1.029
10°	1.000
15°	0.856
20°	0.739

VELOCITY FACTOR	
TIME (sec)	VF
1	1.050
2	1.020
3	1.012
4	1.005
5	1.000
6	1.000
8	1.000
10	1.000

TEMPERATURE FACTOR	
TEMP.	TF
50°	0.882
40°	0.926
30°	0.969
23°	1.000
10°	1.056
0°	1.099
-10°	1.143
-20°	1.186
-30°	1.230



# NSC

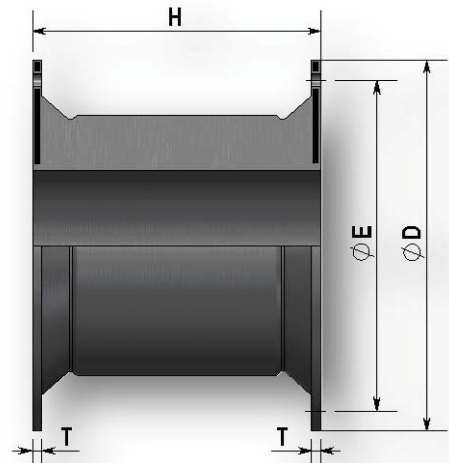
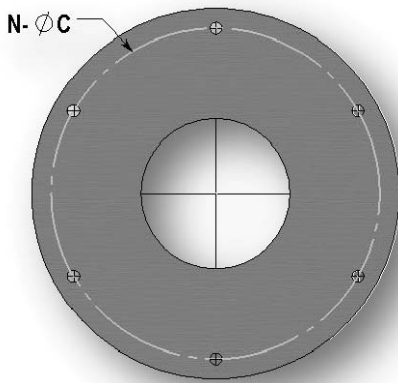
## NSC – CELL FENDER

- NJ Maritech’s NSC Cell fender design meets the most demanding conditions of berthing due to its higher energy absorption to reaction force ratio.
- Ideal for low Hull pressure requirements.
- Large weight supporting capabilities
- Simply & easy installation.
- Easy to install.



NSC FENDER

### DIMENSION



### SPECIFICATION

	H mm	ØD mm	ØE mm	T mm	N-ØC mm	BOLT SIZE mm	WEIGHT Kg.
<b>NSC 300</b>	300	480	400	15	4-21	M16	31
<b>NSC 400</b>	400	650	550	25	4-30	M22	83
<b>NSC 500</b>	500	650	550	25	4-32	M24	110
<b>NSC 630</b>	630	840	700	30	4-39	M30	235
<b>NSC 800</b>	800	1050	900	30	6-40	M30	410
<b>NSC 1000</b>	1000	1300	1100	35	6-47	M36	805
<b>NSC 1150</b>	1150	1500	1300	40	6-50	M42	1223
<b>NSC 1250</b>	1250	1650	1450	45	6-53	M42	1400
<b>NSC 1450</b>	1450	1850	1650	47	6-61	M48	2330
<b>NSC 1600</b>	1600	2000	1800	50	8-61	M48	3020
<b>NSC 1700</b>	1700	2100	1900	55	8-66	M56	3730
<b>NSC 2000</b>	2000	2200	2000	55	8-74	M64	5023
<b>NSC 2250</b>	2250	2550	2300	60	10-74	M64	7450
<b>NSC 2500</b>	2500	2950	2700	70	10-74	M64	10750
<b>NSC 3000</b>	3000	3350	3150	75	12-92	M76	16230



## RATED PERFORMANCE

GRADE	NSC 300		NSC 400		NSC 500		NSC 630		NSC 800		NSC 1000		NSC 1150		NSC 1250		NSC 1450		NSC 1600		NSC 1700		NSC 2000		NSC 2250		NSC 2500		NSC 3000	
	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m	R kN	E Kn-m
0.0	31.4	4.13	55.8	9.8	86.3	17.8	138	38.2	211	74.5	349	153	462	233	546	299	735	468	894	628	1009	753	1398	1227	2085	2060	2574	2826	3141	4131
0.1	32.2	4.23	57.2	10.0	88.5	18.4	141	39.1	217	76.7	358	157	474	239	560	307	753	480	916	644	1034	772	1433	1258	2122	2096	2619	2876	3219	4234
0.2	33.0	4.34	58.6	10.3	90.6	18.9	145	40.0	224	78.8	366	161	485	245	573	314	772	491	939	660	1060	791	1468	1288	2159	2133	2665	2926	3298	4336
0.3	33.8	4.44	60.0	10.5	92.8	19.5	148	40.8	230	81.0	375	164	497	250	587	322	790	503	961	675	1085	809	1502	1319	2196	2169	2710	2976	3376	4439
0.4	34.5	4.54	61.4	10.8	95.0	20.0	152	41.7	237	83.1	384	168	508	256	600	329	808	515	983	691	1110	828	1537	1350	2233	2206	2756	3026	3454	4541
0.5	35.3	4.64	62.8	11.0	97.2	20.6	155	42.6	243	85.3	393	172	520	262	614	337	827	527	1006	707	1136	847	1572	1381	2270	2242	2801	3076	3533	4644
0.6	36.1	4.75	64.2	11.3	99.3	21.2	158	43.5	249	87.4	401	176	532	268	628	344	845	538	1028	723	1161	866	1607	1411	2306	2278	2846	3125	3611	4747
0.7	36.9	4.85	65.6	11.5	101	21.7	162	44.4	256	89.6	410	180	543	274	641	352	863	550	1050	739	1186	885	1642	1442	2343	2315	2892	3175	3689	4849
0.8	37.7	4.95	67.0	11.7	104	22.3	165	45.2	262	91.7	419	183	555	279	655	359	881	562	1072	754	1211	903	1676	1473	2380	2351	2937	3225	3767	4952
0.9	38.5	5.05	68.4	12.0	106	22.8	169	46.1	269	93.9	427	187	566	285	668	367	900	573	1095	770	1237	922	1711	1503	2417	2388	2983	3275	3846	5054
G1	39.2	5.16	69.8	12.2	108	23.4	172	47.0	275	96.0	436	191	578	291	682	374	918	585	1117	786	1262	941	1746	1534	2454	2424	3028	3325	3924	5157
1.1	40.4	5.31	71.9	12.6	111	24.1	177	48.5	283	98.9	449	197	595	300	702	385	946	603	1151	809	1300	969	1798	1580	2527	2497	3119	3425	4042	5314
1.2	41.6	5.47	74.0	13.0	114	24.7	182	49.9	291	102	462	203	612	309	723	396	973	620	1184	833	1338	998	1851	1626	2601	2569	3210	3524	4160	5470
1.3	42.8	5.63	76.0	13.3	118	25.4	188	51.4	299	105	475	208	630	317	743	408	1001	638	1218	856	1375	1026	1903	1672	2674	2642	3301	3624	4278	5627
1.4	44.0	5.78	78.1	13.7	121	26.1	193	52.9	307	108	488	214	647	326	764	419	1028	655	1251	880	1413	1054	1956	1718	2748	2714	3392	3724	4396	5783
1.5	45.1	5.94	80.2	14.1	124	26.8	198	54.4	315	111	502	220	664	335	784	430	1056	673	1285	903	1451	1083	2008	1764	2821	2787	3483	3824	4514	5940
1.6	46.3	6.10	82.3	14.5	127	27.4	203	55.8	323	113	515	226	681	344	804	441	1083	690	1319	926	1489	1111	2060	1810	2894	2860	3573	3923	4631	6097
1.7	47.5	6.25	84.4	14.8	130	28.1	208	57.3	331	116	528	232	698	353	825	452	1111	708	1352	950	1527	1139	2113	1856	2968	2932	3664	4023	4749	6253
1.8	48.7	6.41	86.5	15.2	134	28.8	214	58.8	339	119	541	237	716	361	845	464	1138	725	1386	973	1564	1167	2165	1902	3041	3005	3755	4123	4867	6410
1.9	49.9	6.57	88.6	15.6	137	29.4	219	60.2	347	122	554	243	733	370	866	475	1166	743	1419	997	1602	1196	2218	1948	3115	3077	3846	4222	4985	6566
G2	51.0	6.72	90.7	15.9	140	30.1	224	61.7	355	125	567	249	750	379	886	486	1193	760	1453	1020	1640	1224	2270	1994	3188	3150	3937	4322	5103	6723
2.1	51.8	6.83	92.1	16.2	142	30.7	227	62.7	361	127	576	253	762	385	900	494	1211	772	1475	1036	1665	1243	2305	2025	3237	3198	3998	4389	5182	6826
2.2	52.6	6.93	93.5	16.4	144	31.2	231	63.7	366	129	585	257	773	391	913	501	1230	783	1498	1051	1690	1262	2340	2055	3286	3246	4058	4455	5261	6928
2.3	53.4	7.03	94.9	16.7	147	31.8	234	64.7	372	131	593	260	785	396	927	509	1248	795	1520	1067	1716	1281	2375	2086	3335	3293	4119	4522	5341	7031
2.4	54.2	7.13	96.4	16.9	149	32.3	238	65.7	378	133	602	264	796	402	940	516	1266	806	1542	1083	1741	1300	2410	2116	3384	3341	4179	4588	5420	7133
2.5	55.0	7.24	97.8	17.2	151	32.9	241	66.7	384	135	611	268	808	408	954	524	1285	818	1565	1099	1766	1319	2445	2147	3434	3389	4240	4655	5499	7236
2.6	55.8	7.34	99.2	17.4	153	33.4	244	67.6	389	137	620	272	819	414	968	531	1303	830	1587	1114	1791	1337	2479	2178	3483	3437	4301	4721	5578	7339
2.7	56.6	7.44	100.6	17.6	155	34.0	248	68.6	395	139	629	276	831	420	981	539	1321	841	1609	1130	1816	1356	2514	2208	3532	3485	4361	4788	5657	7441
2.8	57.4	7.54	102.0	17.9	158	34.5	251	69.6	401	141	637	279	842	425	995	546	1339	853	1631	1146	1842	1375	2549	2239	3581	3532	4422	4854	5737	7544
2.9	58.2	7.65	103.4	18.1	160	35.1	255	70.6	406.3	143	646	283	854	431	1008	554	1358	864	1654	1161	1867	1394	2584	2269	3630	3580	4482	4921	5816	7646
G3	59.0	7.75	104.8	18.4	162	35.6	258	71.6	412	145	655	287	865	437	1022	561	1376	876	1676	1177	1892	1413	2619	2300	3679	3628	4543	4987	5895	7749
3.1	59.7	7.85	106.1	18.6	164	36.1	261	72.5	417	147	663	291	876	443	1035	568	1394	887	1697	1192	1916	1431	2651	2329	3726	3675	4601	5050	5969	7849
3.2	60.4	7.95	107.4	18.8	166	36.5	264	73.4	422	149	671	294	887	448	1048	575	1411	898	1718	1207	1940	1449	2683	2358	3772	3721	4658	5113	6043	7949
3.3	61.2	8.05	108.7	19.1	168	37.0	268	74.2	428	150	680	298	898	454	1061	582	1429	909	1740	1222	1964	1466	2716	2387	3819	3768	4716	5176	6116	8049
3.4	61.9	8.15	110.0	19.3	170	37.4	271	75.1	433	152	688	302	909	459	1074	589	1446	920	1761	1237	1988	1484	2748	2416	3865	3815	4773	5239	6190	8149
3.5	62.6	8.25	111.4	19.6	172	37.9	274	76.0	438	154	696	306	920	465	1088	597	1464	932	1782	1252	2012	1502	2780	2446	3912	3862	4831	5303	6264	8249
3.6	63.4	8.35	112.7	19.8	174	38.4	277	76.9	443	156	704	309	931	470	1101	604	1481	943	1803	1266	2035	1520	2812	2475	3959	3908	4888	5366	6338	8348
3.7	64.1	8.45	114.0	20.4	176	38.8	280	77.8	448	158	712	313	942	476	1114	611	1499	954	1824	1281	2059	1538	2844	2504	4005	3955	4946	5429	6412	8448
3.8	64.9	8.55	115.3	20.3	178	39.3	284	78.6	454	159	721	317	953	481	1127	618	1516	965	1846	1296	2083	1555	2877	2533	4052	4002	5003	5492	6485	8548
3.9	65.6	8.65	116.6	20.5	180	39.7	287	79.5	459	161	729	320	964	487	1140	625	1534	976	1867	1311	2107	1573	2909	2562	4098	4048	5061	5555	6559	8648
G4	66.3	8.75	117.9	20.7	182	40.2	290	80.4	464	163	737	324	975	492	1153	632	1551	987	1888	1326	2131	1591	2941	2591	4145	4095	5118	5618	6633	8748

**NOTE :**

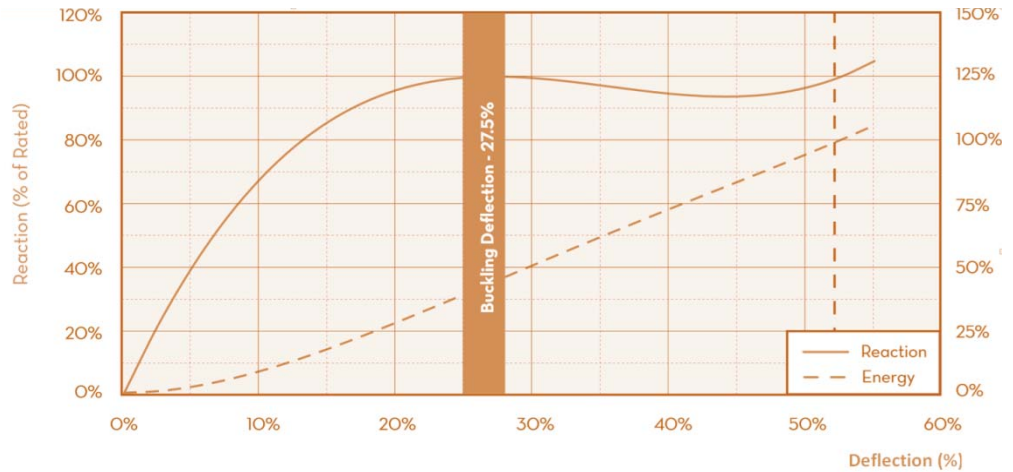
- Values shown are for standard 52.5% deflection.
- Maximum deflection – 55%

## INTERMEDIATE DEFLECTION

DEFLECTION (%)	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	52.5%	55%
REACTION (%)	40%	68%	86%	96%	99%	99%	97%	95%	94%	97%	100%	106%
ENERGY (%)	2%	9%	17%	28%	39%	51%	62%	73%	84%	94%	100%	106%

### PIANC FACTORS

ANGLE FACTOR	
ANGLE	AF
0°	1.000
3°	0.977
5°	0.951
8°	0.909
10°	0.883
15°	0.810
20°	0.652



VELOCITY FACTOR	
TIME (sec)	VF
1	1.005
2	1.002
3	1.001
4	1.001
5	1.000
6	1.000
8	1.000
≥10	1.000



TEMPERATURE FACTOR	
TEMP.	TF
50°	0.882
40°	0.926
30°	0.969
23°	1.000
10°	1.056
0°	1.099
-10°	1.143
-20°	1.186
-30°	1.230



# NAH

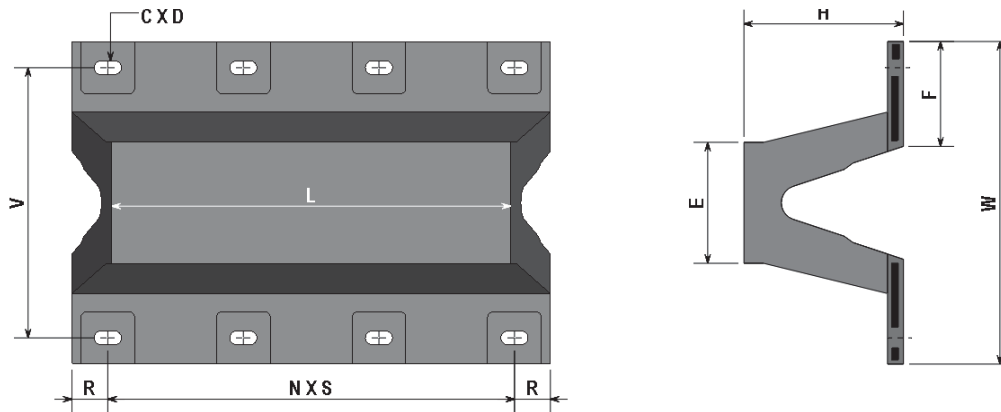
## ARCH FENDER

- NJ Maritech's NAH Arch fender has been optimized for increased Energy Absorption compared to common Arch Fenders.
- Ideal for High Hull Pressure Requirements.
- Can be installed Vertically or Horizontally
- These fenders can be supplied with either plain rubber faces, with UHMW-PE faces or with bolted steel frame with UHMW-PE



NAH FENDER

### DIMENSION



### SPECIFICATION

	H mm	W mm	V mm	E mm	F mm	C X D mm	BOLT SIZE mm	WEIGHT Kg.
<b>NAH 250</b>	250	500	410	164	160	32 X 64	M25	85
<b>NAH 300</b>	300	600	490	225	195	35 X 70	M30	125
<b>NAH 400</b>	400	800	670	300	260	42 X 84	M36	205
<b>NAH 500</b>	500	1000	840	375	325	47 X 94	M42	325
<b>NAH 600</b>	600	1200	1010	450	390	50 X 100	M48	480
<b>NAH 800</b>	800	1600	1340	600	520	68 X 136	M56	875
<b>NAH 1000</b>	1000	2000	1680	750	650	68 X 136	M56	1400

	1m		1.5m		2m		2.5m		3m		3.5m	
	R	N X S	R	N X S	R	N X S	R	N X S	R	N X S	R	N X S
<b>NAH 250</b>	130	1 X 865	135	2 X 680	135	3 X 620	130	3 X 790	135	4 X 715	120	5 X 673
<b>NAH 300</b>	140	1 X 870	140	2 X 685	140	3 X 625	140	3 X 790	145	4 X 715	140	5 X 674
<b>NAH 400</b>	150	1 X 900	150	2 X 700	147.5	3 X 635	150	3 X 800	150	4 X 725	150	5 X 680
<b>NAH 500</b>	160	1 X 930	160	2 X 715	160	3 X 645	160	3 X 810	165	4 X 730	160	5 X 686
<b>NAH 600</b>	170	1 X 960	170	2 X 730	170	3 X 655	170	3 X 820	170	4 X 740	170	5 X 692
<b>NAH 800</b>	180	1 X 1040	180	2 X 770	180	3 X 680	185	3 X 845	180	4 X 760	--	--
<b>NAH 1000</b>	200	1 X 1100	200	2 X 800	200	3 X 700	--	--	--	--	--	--



## RATED PERFORMANCE

GRADE	NAH 250		NAH 300		NAH 400		NAH 500		NAH 600		NAH 800		NAH 1000	
	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m
<b>G1</b>	145	15.2	174	21.6	231	39.2	289	60.8	347	87.0	463	156	578	243
<b>1.1</b>	147	15.5	177	21.9	235	39.8	294	61.8	353	88.5	471	159	588	247
<b>1.2</b>	150	15.7	179	22.2	239	40.4	299	62.8	358	90.0	478	161	597	251
<b>1.3</b>	152	16.0	182	22.5	243	41.0	303	63.7	364	91.5	486	164	607	255
<b>1.4</b>	155	16.2	185	22.8	247	41.6	308	64.7	370	93.0	493	166	617	259
<b>1.5</b>	157	16.5	188	23.1	250	42.2	313	65.7	376	94.5	501	169	627	263
<b>1.6</b>	159	16.7	190	23.3	254	42.7	318	66.7	381	96.0	509	171	636	267
<b>1.7</b>	162	17.0	193	23.6	258	43.3	323	67.7	387	97.5	516	174	646	271
<b>1.8</b>	164	17.2	196	23.9	262	43.9	327	68.6	393	99.0	524	176	656	275
<b>1.9</b>	167	17.5	198	24.2	266	44.5	332	69.6	398	101	531	179	665	279
<b>G2</b>	169	17.7	201	24.5	270	45.1	337	70.6	404	102	539	181	675	283
<b>2.1</b>	172	18.1	205	25.1	276	46.1	344	72.1	412	104	550	185	689	289
<b>2.2</b>	176	18.4	210	25.7	281	47.1	351	73.7	421	106	561	189	703	295
<b>2.3</b>	179	18.8	214	26.3	287	48.0	358	75.2	429	109	573	192	716	301
<b>2.4</b>	183	19.2	218	26.9	292	49.0	365	76.8	438	111	584	196	730	307
<b>2.5</b>	186	19.6	223	27.5	298	50.0	372	78.3	446	113	595	200	744	313
<b>2.6</b>	189	19.9	227	28.0	303	51.0	379	79.8	454	115	606	204	758	318
<b>2.7</b>	193	20.3	231	28.6	309	52.0	386	81.4	463	117	617	208	772	324
<b>2.8</b>	196	20.7	235	29.2	314	52.9	393	82.9	471	120	629	211	785	330
<b>2.9</b>	200	21.0	240	29.8	320	53.9	400	84.5	480	122	640	215	799	336
<b>G3</b>	203	21.4	244	30.4	326	54.9	407	86.0	488	124	651	219	813	342
<b>3.1</b>	209	22.0	251	31.4	340	56.6	419	88.5	503	128	671	226	838	352
<b>3.2</b>	215	22.7	259	32.4	356	58.2	431	91.0	517	131	690	232	862	363
<b>3.3</b>	222	23.3	266	33.3	371	59.9	444	93.5	532	135	710	239	887	373
<b>3.4</b>	228	24.0	274	34.3	386	61.5	456	96.0	546	138	729	245	911	383
<b>3.5</b>	234	24.6	281	35.3	402	63.2	468	98.5	561	142	749	252	936	394
<b>3.6</b>	240	25.2	288	36.3	417	64.9	480	101	576	146	769	258	960	404
<b>3.7</b>	246	25.9	296	37.3	432	66.5	492	104	590	149	788	265	985	414
<b>3.8</b>	253	26.5	303	38.2	447	68.2	505	106	605	153	808	271	1009	424
<b>3.9</b>	259	27.2	311	39.2	463	69.8	517	109	619	156	827	278	1034	435
<b>G4</b>	265	27.8	318	40.2	478	71.5	529	111	634	160	847	284	1058	445

**NOTE :**

- Values shown are for standard 52.5% deflection.
- Performance based on 1000mm length
- Maximum deflection of 55%
- Tolerance - ±10%

**PLAIN FINISH**



**BOUNDED UHMW**



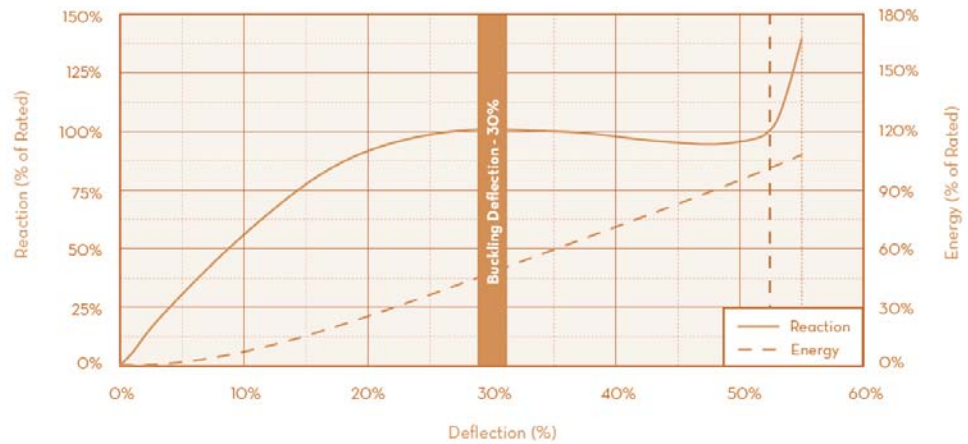
**BOLTED UHMW**



## INTERMEDIATE DEFLECTION

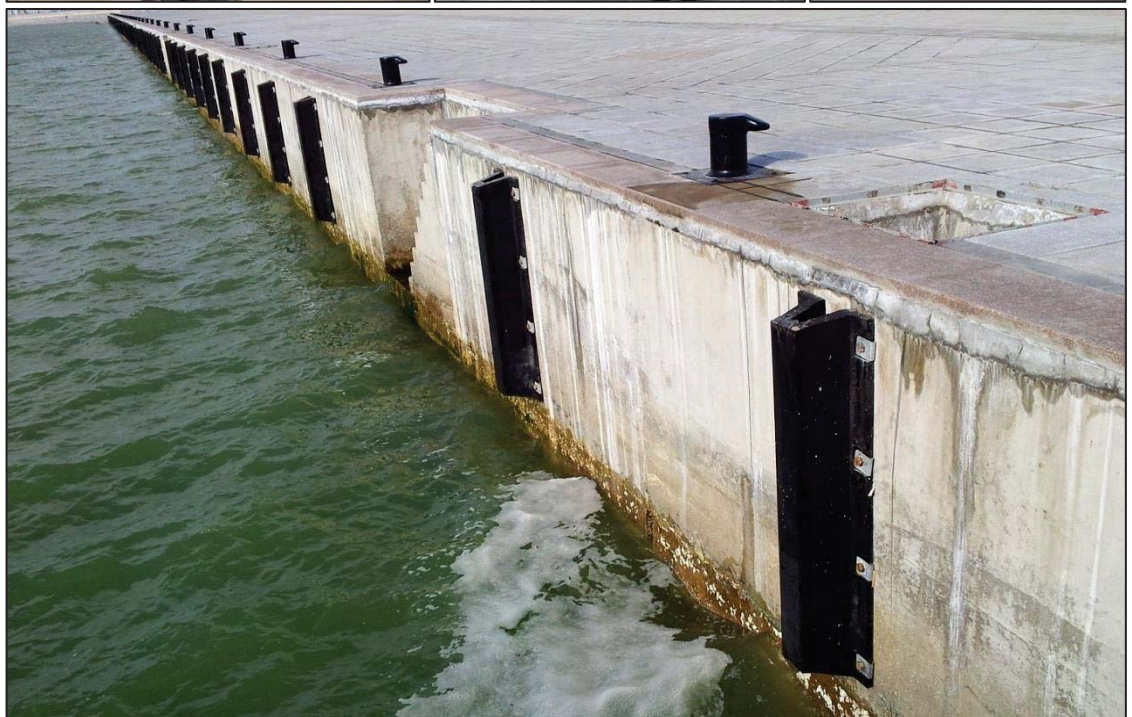
DEFLECTION (%)	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	52.5%	55%
REACTION (%)	30%	56%	77%	91%	98%	100%	99%	97%	95%	95%	100%	139%
ENERGY (%)	1%	7%	15%	25%	36%	47%	59%	71%	82%	94%	100%	107%

ANGLE FACTOR	
ANGLE	AF
0°	1.000
3°	0.963
5°	0.952
8°	0.939
10°	0.924
15°	0.817
20°	0.535



VELOCITY FACTOR	
TIME (sec)	VF
1	1.014
2	1.005
3	1.004
4	1.003
5	1.003
6	1.002
8	1.000
≥10	1.000

TEMPERATURE FACTOR	
TEMP.	TF
50°	0.882
40°	0.926
30°	0.969
23°	1.000
10°	1.056
0°	1.099
-10°	1.143
-20°	1.186
-30°	1.230



# NEL

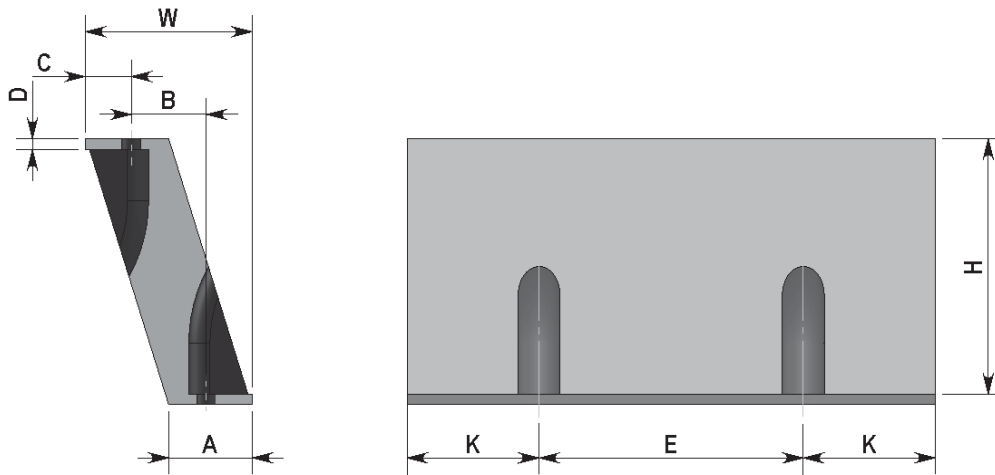
## ELEMENT/LEG FENDER

- NJ Maritech's NEL type fender provides compact solution for the mounting of fenders where space is limited.
- Vertical or Horizontal mounting of Leg fenders ensures optimum energy & low reaction.
- Leg fenders can be used in arrays with steel panels or with UHMW-PE shields as V-fenders.



NEL FENDER

### DIMENSION



### SPECIFICATION

	H mm	A mm	B mm	C mm	W mm	D mm	K mm	E mm	BOLT SIZE mm	WEIGHT Kg.
NEL 300	300	94	94	47	188	15	200	2X300	M20	39
NEL 400	400	125	124	63	250	17	250	500	M24	70
NEL 500	500	158	142	87	316	20	250	500	M30	110
NEL 550	550	172	170	87	344	20	250	500	M30	132
NEL 600	600	188	199	87	373	20	250	500	M30	156
NEL 750	750	235	230	118	466	26	250	500	M36	230
NEL 800	800	250	240	129	498	26	250	500	M36	283
NEL 1000	1000	322	310	162	634	31	250	500	M42	430
NEL 1250	1250	401	388	202	792	36	250	500	M48	655
NEL 1450	1450	454	445	228	910	41	250	500	M48	835
NEL 1600	1600	500	480	257	994	50	250	500	M56	1005

NOTE: Drawings & Pictures are for illustration purposes only & subject to change.



## RATED PERFORMANCE

GRADE	NEL 300		NEL 400		NEL 500		NEL 550		NEL 600		NEL 750		NEL 800		NEL 1000		NEL 1250		NEL 1450		NEL 1600	
	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m	R kN	E kN-m
0.7	80.8	11.2	108	20.0	135	31.2	149	37.7	162	44.8	203	69.7	216	80.1	270	125	338	195	391	262	432	319
0.8	83.2	11.5	112	20.5	139	32.1	153	38.8	166	46.2	209	71.8	222	82.4	278	129	348	201	403	270	444	328
0.9	85.6	11.9	115	21.1	143	33.0	158	39.9	171	47.5	215	73.9	229	84.7	286	132	358	206	414	277	457	338
G1	88.0	12.2	118	21.7	147	33.9	162	41.0	176	48.8	221	76.0	235	87.0	294	136	368	212	426	285	470	347
1.1	90.4	12.5	121	22.3	151	34.8	166	42.1	181	50.1	227	78.1	241	89.3	302	140	378	218	438	293	483	356
1.2	92.8	12.9	124	22.9	155	35.7	171	43.2	186	51.4	233	80.2	248	91.6	310	143	388	223	449	300	496	366
1.3	95.2	13.2	128	23.4	159	36.6	175	44.3	190	52.8	239	82.3	254	93.9	318	147	398	229	461	308	508	375
1.4	97.6	13.5	131	24.0	163	37.5	180	45.4	195	54.1	245	84.4	261	96.2	326	150	408	235	472	316	521	384
1.5	100	13.9	134	24.6	167	38.5	184	46.5	200	55.4	251	86.5	267	98.5	334	154	418	241	484	324	534	394
1.6	102	14.2	137	25.2	171	39.4	188	47.6	205	56.7	257	88.6	273	101	342	158	428	246	496	331	547	403
1.7	105	14.5	140	25.8	175	40.3	193	48.7	210	58.0	263	90.7	280	103	350	161	438	252	507	339	560	412
1.8	107	14.8	144	26.3	179	41.2	197	49.8	214	59.4	269	92.8	286	105	358	165	448	258	519	347	572	421
1.9	110	15.2	147	26.9	183	42.1	202	50.9	219	60.7	275	94.9	293	108	366	168	458	263	530	354	585	431
G2	112	15.5	150	27.5	187	43.0	206	52.0	224	62.0	281	97.0	299	110	374	172	468	269	542	362	598	440
2.1	114	15.8	153	28.1	191	43.9	210	53.1	229	63.3	287	99.0	305	112	382	176	478	275	554	370	611	449
2.2	117	16.2	156	28.7	195	44.8	215	54.2	234	64.6	293	101	312	115	390	179	488	280	565	377	624	459
2.3	119	16.5	160	29.3	199	45.7	219	55.3	238	65.9	299	103	318	117	398	183	498	286	577	385	636	468
2.4	122	16.8	163	29.9	203	46.6	224	56.4	243	67.2	305	105	325	119	406	187	508	292	588	392	649	478
2.5	124	17.2	166	30.5	207	47.6	228	57.6	248	68.5	311	107	331	122	414	191	518	298	600	400	662	487
2.6	126	17.5	169	31.0	211	48.5	232	58.7	253	69.8	317	109	337	124	422	194	528	303	612	408	675	496
2.7	129	17.8	172	31.6	215	49.4	237	59.8	258	71.1	323	111	344	126	430	198	538	309	623	415	688	506
2.8	131	18.1	176	32.2	219	50.3	241	60.9	262	72.4	329	113	350	128	438	202	548	315	635	423	700	515
2.9	134	18.5	179	32.8	223	51.2	246	62.0	267	73.7	335	115	357	131	446	205	558	320	646	430	713	525
G3	136	18.8	182	33.4	227	52.1	250	63.1	272	75.0	341	117	363	133	454	209	568	326	658	438	726	534
3.1	138	19.1	185	34.0	231	53.0	254	64.2	277	76.3	347	119	369	135	462	213	578	332	670	446	739	543
3.2	141	19.5	188	34.6	235	53.9	259	65.3	282	77.6	353	121	376	138	470	216	588	337	681	453	752	553
3.3	143	19.8	192	35.1	239	54.9	263	66.4	286	78.9	359	123	382	140	478	220	598	343	693	461	764	562
3.4	146	20.1	195	35.7	243	55.8	268	67.5	291	80.2	365	125	389	143	486	223	608	349	704	469	777	571
3.5	148	20.5	198	36.3	247	56.7	272	68.6	296	81.5	371	128	395	145	494	227	618	355	716	477	790	581
3.6	150	20.8	201	36.9	251	57.6	276	69.6	301	82.8	377	130	401	147	502	231	628	360	728	484	803	590
3.7	153	21.1	204	37.5	255	58.5	281	70.7	306	84.1	383	132	408	150	510	234	638	366	739	492	816	599
3.8	155	21.4	208	38.0	259	59.5	285	71.8	310	85.4	389	134	414	152	518	238	648	372	751	500	828	608
3.9	158	21.8	211	38.6	263	60.4	290	72.9	315	86.7	395	136	421	155	526	241	658	377	762	507	841	618
G4	160	22.1	214	39.2	267	61.3	294	74.0	320	88.0	401	138	427	157	534	245	668	383	774	515	854	627

**NOTE :**

- Values shown are for standard 57.5% deflection.
- Maximum deflection – 60%
- Tolerance - ±10%

## INTERMEDIATE DEFLECTION

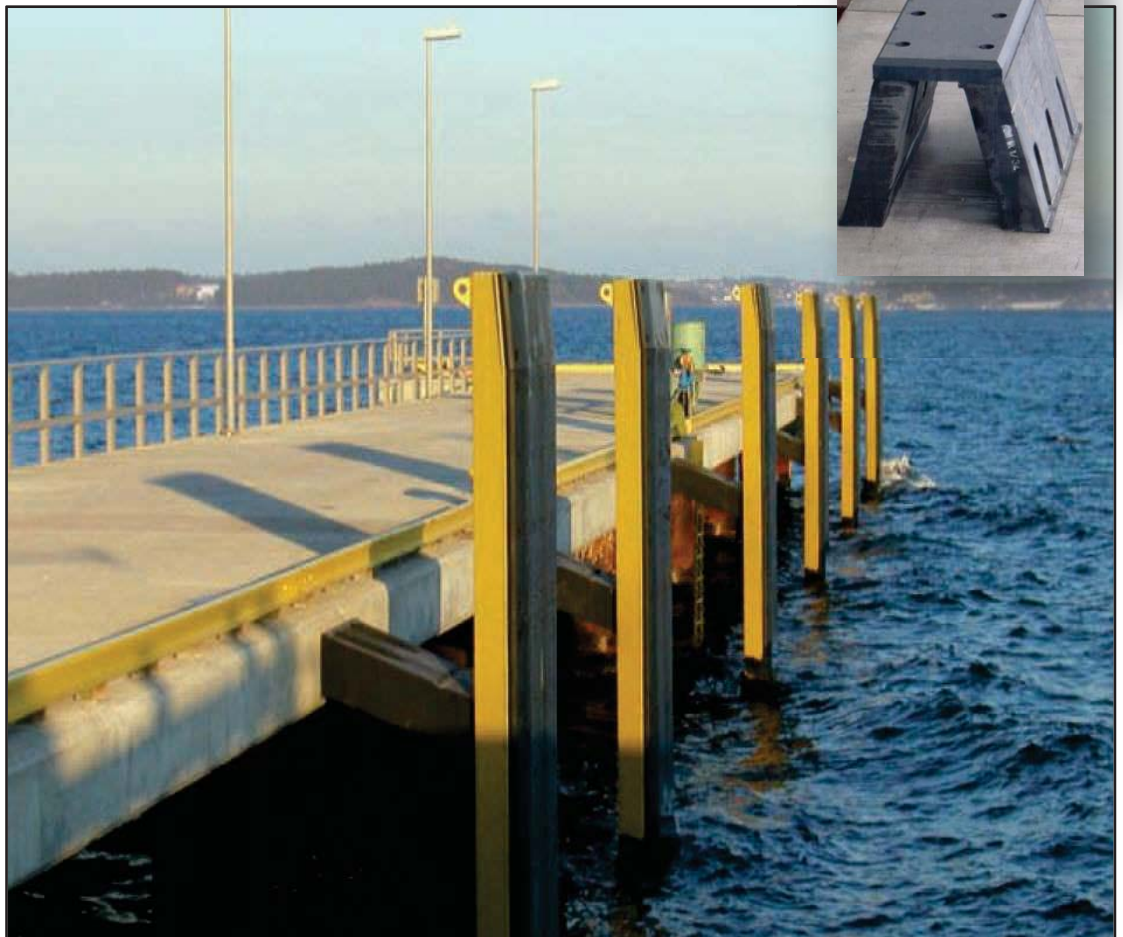
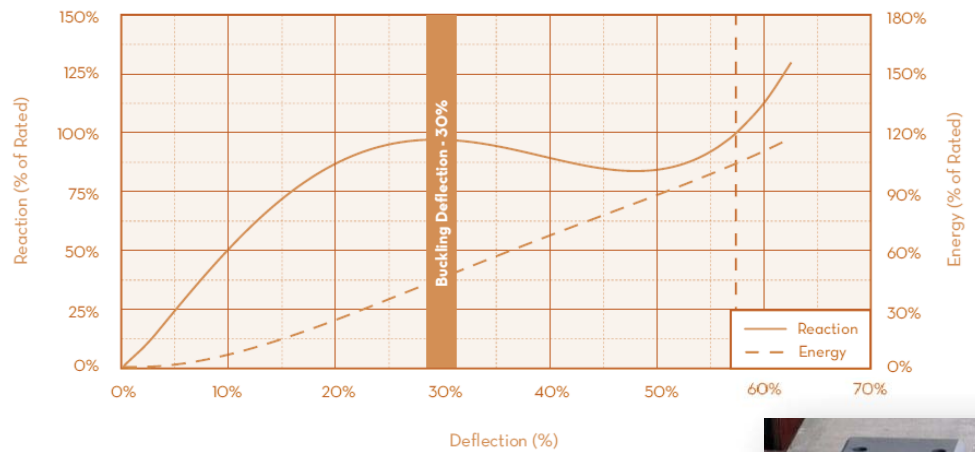
DEFLECTION (%)	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	57.5%	60%	62.5%
REACTION (%)	27%	52%	73%	87%	95%	97%	94%	89%	85%	84%	92%	100%	112%	129%
ENERGY (%)	1%	6%	14%	24%	34%	45%	55%	66%	76%	86%	96%	100%	108%	114%

### PIANC FACTORS

ANGLE FACTOR	
ANGLE	AF
0°	1.000
3°	1.039
5°	1.055
8°	1.029
10°	1.000
15°	0.856
20°	0.739

VELOCITY FACTOR	
TIME (sec)	VF
1	1.050
2	1.020
3	1.012
4	1.005
5	1.000
6	1.000
8	1.000
≥10	1.000

TEMPERATURE FACTOR	
TEMP.	TF
50°	0.882
40°	0.926
30°	0.969
23°	1.000
10°	1.056
0°	1.099
-10°	1.143
-20°	1.186
-30°	1.230



# NCY

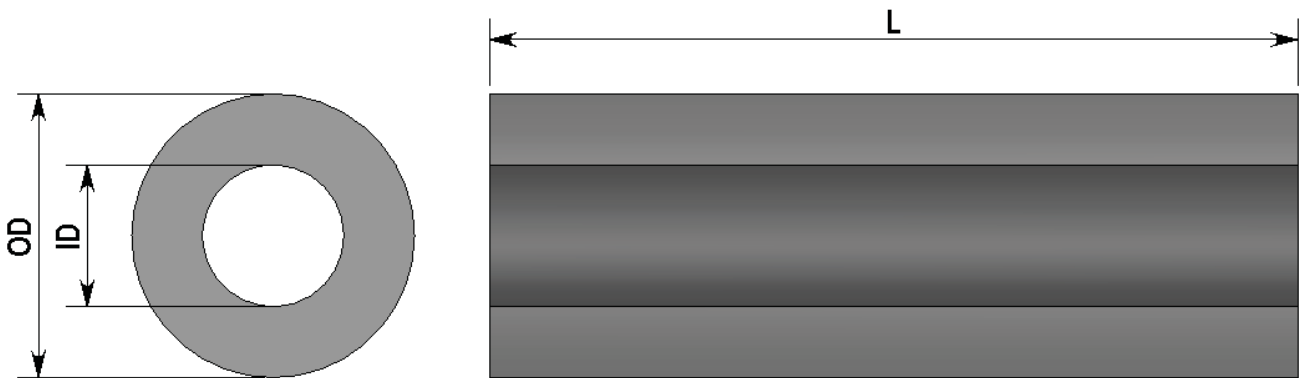
## CYLINDRICAL FENDER

- Used for Light/Medium duty applications for small Vessels.
- Wide Range of Sizes
- Very Simple Design & Easy to install.

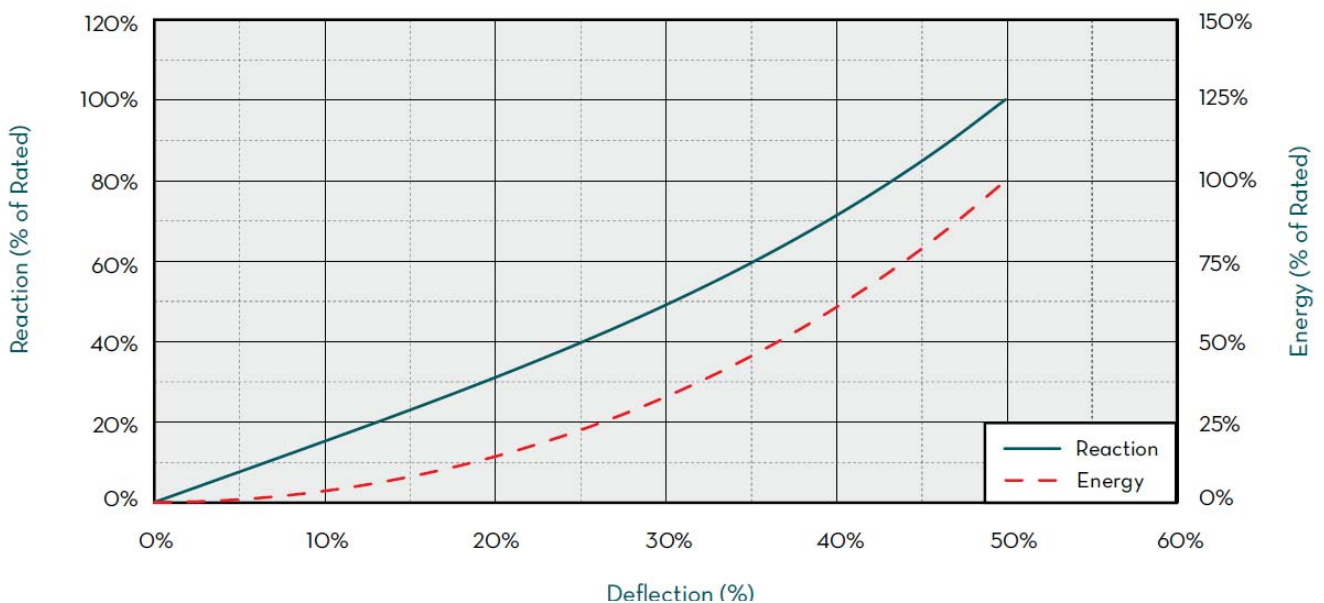


NCY FENDER

### DIMENSION



### PERFORMANCE CURVE



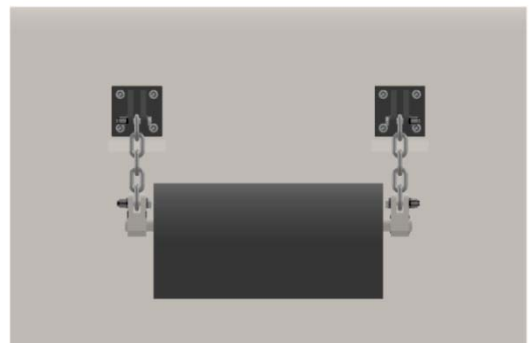
**SPECIFICATION**

OD mm	ID mm	WEIGHT Kg/m	G2		G3	
			R (Kn)	E (Kn-m)	R (Kn)	E (Kn-m)
150	75	16	44.0	1.11	73.0	2.30
200	100	39	60.0	1.92	95.0	4.20
250	125	46	75.0	2.95	120	6.50
300	150	66	89.0	4.42	143	9.0
350	175	90	104	5.90	167	13.0
400	200	118	119	7.37	191	17.0
500	250	184	148	11.8	239	26.0
600	300	265	179	17.7	286	37.0
700	350	361	208	22.8	334	50.0
800	400	471	237	30.2	383	66.0
900	450	596	268	38.3	430	84.0
1000	500	736	297	47.2	479	103
1100	550	890	331	56.7	528	129
1200	600	1060	363	70.0	574	152
1300	650	1244	392	79.6	623	179
1400	700	1442	422	94.3	670	208
1500	750	1656	451	108	718	238
1600	800	1884	481	130	776	282
1700	850	2127	511	152	824	338
1800	900	2384	541	182	872	406
1900	950	2657	570	212	920	487
2000	1000	2944	653	237	1054	584

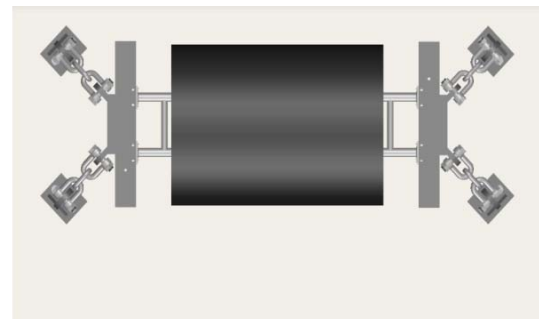
- Performance based on 1000mm length
- Values shown are for standard 50% deflection.



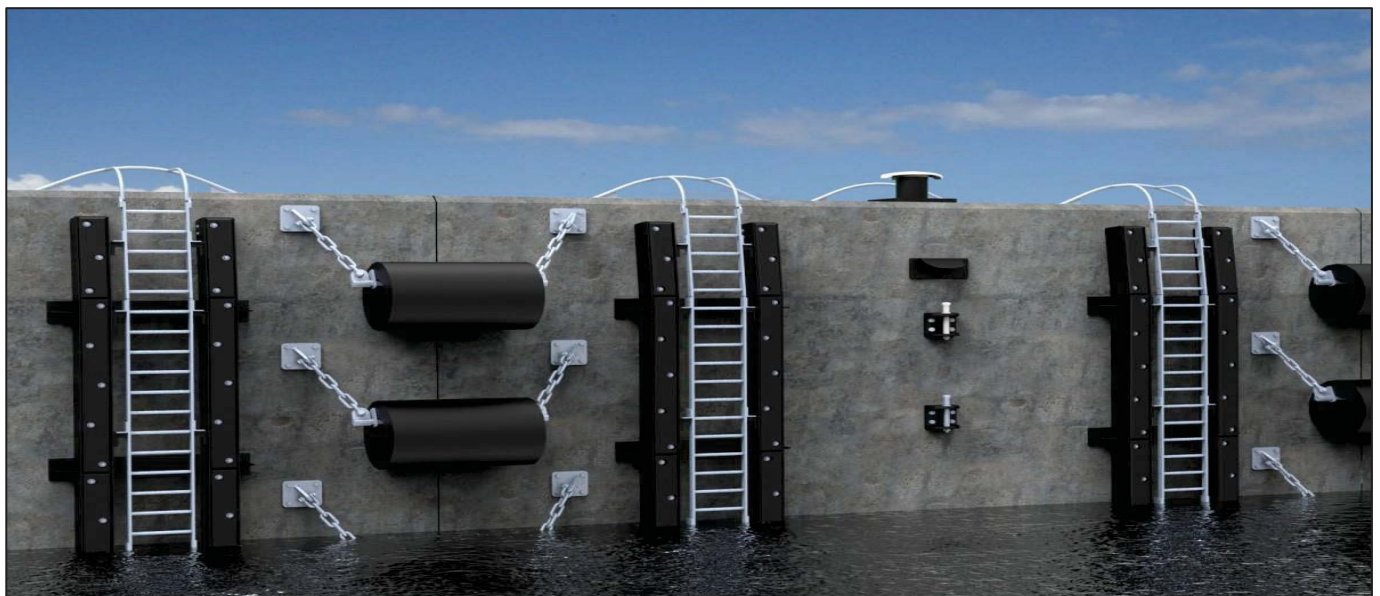
**CHAIN FIXING: < 600mm DIAMETER**



**BAR & CHAIN: 700 – 1600m DIAMETER**



**BRACKET : > 1200m DIAMETER**



# NPF

## PNEUMATIC FENDER

Pneumatic Rubber Fenders are widely used as the fender for Berthing Structures, as well as in Ship-to-Ship Service. Our NPF Series Pneumatic Fenders are fast and easy to deploy, maintaining large clearances between the Hull & the Jetty or other Vessel.

All NJ Maritech's Pneumatic Rubber Fenders are manufactured and 3rd Party Certified in compliance with **ISO 17357:2014**.

### APPLICATIONS

- In Ports with a Large tide differences
- For Ship-to-Ship lightering operations
- For all Navy Vessels



We supply Pneumatic Floating Fenders in different types, colors and sizes as follows,

- 2 different inside pressure levels to cover a wide performance range
- Standard colors grey and black
- Optional chain/tire net for heavy duty applications
- Diameters ranging from 300mm to 4500 mm and length ranging from 500mm to 12000mm.
- Special Hydro-Pneumatic version for submarines

## ADVANTAGES

### ■ INCLINED BERTHING

Pneumatic Fender will not lose performance when used with berthing angles up to 15°

### ■ ROUGH WHEATHER CONDITION

Pneumatic Fenders safely protect ships and mooring facilities even under rough weather conditions.

### ■ ADAPTABLE TO THE TIDE

Pneumatic Fenders float on the water in an unrestricted vertical plane corresponding to the tidal range and ship's vertical movement.

### ■ EXCELLENT PERFORMANCE

Pneumatic Fenders utilize the compressibility and elasticity of air to absorb energy. Therefore, the Energy Absorption capacity is substantially increased.

### ■ LOW AND UNIFORM SURFACE PRESSURE

The surface pressure of the Pneumatic fender is equal to the internal pressure.



## TYPES & FEATURES

There are two basic types of Pneumatic Fenders that comply with the International Standard,

- Chain-Tyre Net (CNT)
- Sling Type

### CHAIN & TYRE NET TYPE

The CNT type fender is covered by a chain TYRE AND RUBBER SLEEVES for additional protection. The chains are galvanized for greater corrosion resistance and covered by rubber sleeves to prevent abrasive damage to the outer rubber. The horizontal chains are fastened at each end to a ring shackle. CNTs are not available on fender sizes below 800 x 1200 mm. These types of fenders are the most common in use.



### SLING TYPE

Sling type has pad eyes for installation which are built-in the fender body without the CNT and the ring shackles. Handling of sling type fender is easy due to its light weight. A lifting eye is fitted to each end and the fender is slung by chain or wire rope.

These types of fenders are available across the whole size range. It is also covered by a wire net or fiber net for small size fenders.



## CONSTRUCTION

### OUTER RUBBER

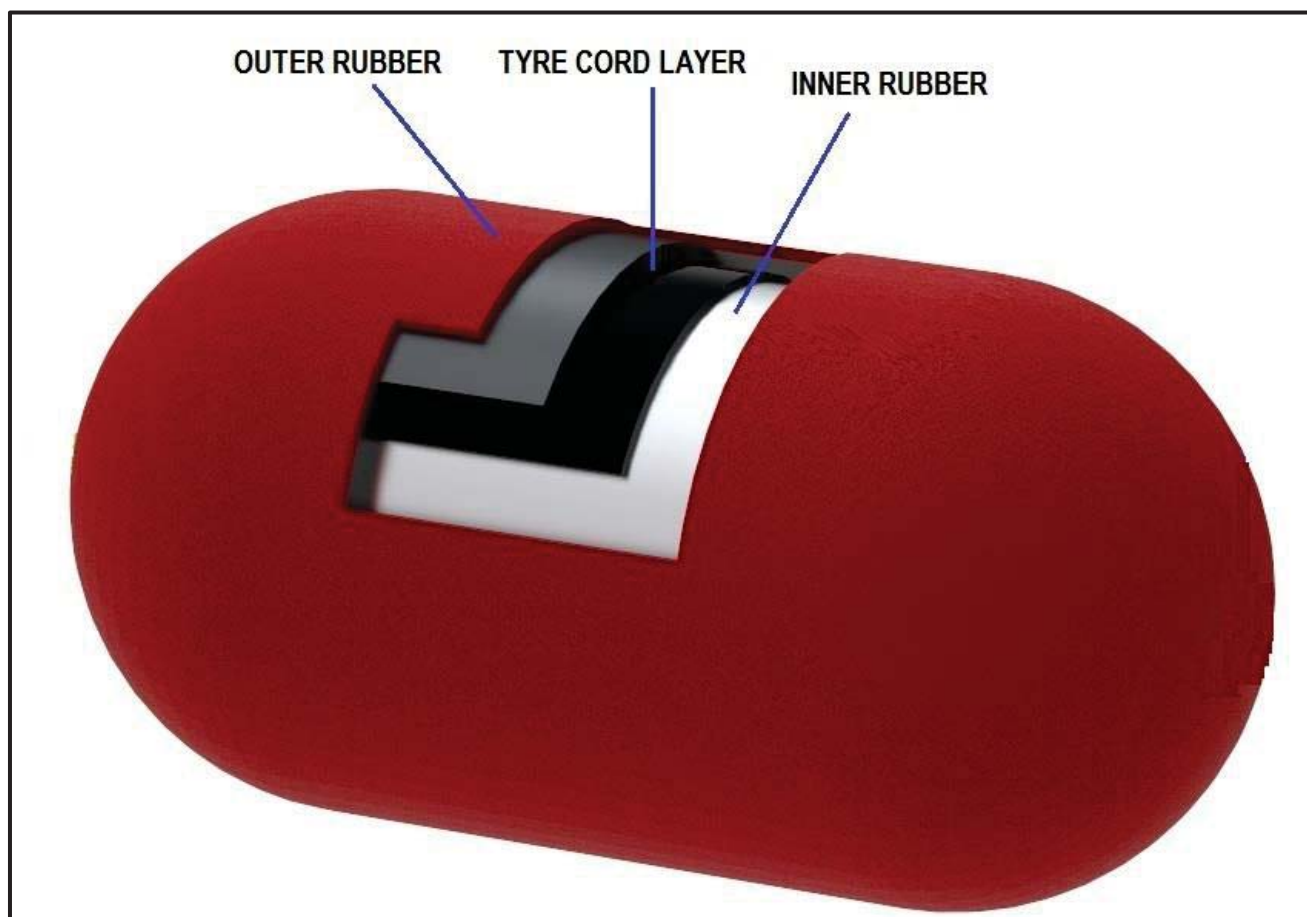
The Outer Rubber protects the cord layers and Inner layer from abrasion and other external forces. This compound has sufficient tensile and tear strength to withstand any weather condition and hard usage.

### CORD LAYERS

The Cord layers are arranged at ideal angles to hold the internal pressure and to distribute the stress evenly.

### INNER RUBBER

The Inner rubber layer seals the air inside, utilizing a compound equivalent to that of the liner or tube of the automobile tire.



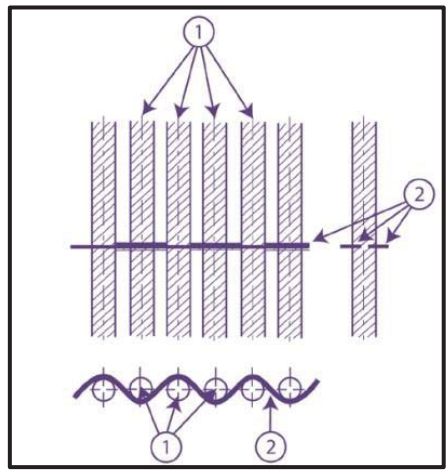
## MATERIAL PROPERTY

The material tests of the Outer and Inner rubber shall be conducted in accordance with the specification given in the table below.

### OUTER AND INNER RUBBER MATERIAL PROPERTIES REQUIREMENTS

TEST ITEM	TEST METHOD	REQUIRED VALUE	
		OUTER RUBBER	INNER RUBBER
<b>BEFORE AGEING</b>			
Tensile Strength	BS ISO 37	18 MPa or more	10 MPa or more
Elongation	BS ISO 37	400% or more	400% or more
Hardness	ISO 7619	60+/-10 (Durometer Hardness Test Type A)	50 +/- 10 (Durometer Hardness Test Type A)
<b>AFTER AGEING</b>	<b>ISO 188</b>	<b>Air Oven Ageing. 70°C +/-1°C. 96h</b>	<b>Air Oven Ageing. 70°C +/- 1°C. 96 h Tensile</b>
Tensile Strength	BS ISO 37	Not less than 80% of the Original Property	Not less than 80% of the Original Property
Elongation	BS ISO 37	Not less than 80% of the Original Property	Not less than 80% of the Original Property
Hardness	ISO 7619	Not to Exceed the Original Property by more than 8	Not to Exceed the Original Property by more than 8
Tear	BS ISO 34-1	400 N/cm or more	No requirement
Compression set	ISO 815	30% (70°C +/- 1°C for 22h) or less	No requirement
Static Ozone Ageing	ISO 1431-1	No Cracks after Elongation by 20% and exposure to 50 ppm <sub>1</sub> at 40°C for 96 h.	No requirement

**NOTE:** If the color of the outer rubber is not black, the material requirements will differ from those in this table. Properties of the inner and outer rubber as Adapted from ISO 17357: 2002 Ships and Marine Technology High-pressure Floating Pneumatic Rubber Fenders.



1. Warp threads that run vertically through the synthetic tire-cord pattern.
2. Weft threads that run perpendicular to the warp threads.

**PERFORMANCE (50 KPa)**

PNEUMATIC 50 (INTERNAL PRESSURE (50 KPa (0.5 Kgf/CM <sup>2</sup> ))							
FENDER SIZE	ENERGY ABSORPTION		REACTION FORCE		HULL PRESSURE (60% DEFL.)	SAFETY-VALVE PRESSURE	TEST PRESS. @ 0% DEFL.
	mm	KN-m	Tf-m	KN	Tf	KPa	KPa
300 X 500L	1.2	0.1	21	2.1	126	---	200
300 X 600L	1.5	0.1	26	2.5	125	---	200
500 X 800L	5.6	0.5	59	5.8	129	---	200
500 X 1000L	6	0.6	64	6.3	132	---	200
600 X 1000L	8	0.8	74	7.3	126	---	200
600 X 1200L	11	1.1	95	9.3	132	---	200
700 X 1500L	17	1.7	137	13	135	---	200
800 X 1200L	17	1.7	120	12	123	---	200
800 X 1500L	28	2.7	187	18	125	---	200
1000 X 1500L	32	3.1	182	18	122	---	200
1000 X 2000L	45	4.4	257	25	132	---	200
1200 X 1800L	57	5.6	265	26	123	---	200
1200 X 2000L	63	6.2	297	29	126	---	200
1200 X 3000L	98	9.6	460	45	145	---	200
1350 X 2500L	102	10	427	42	130	---	200
1350 X 3500L	154	15	650	64	142	---	200
1500 X 2500L	125	12	471	46	128	---	200
1500 X 3000L	153	15	579	57	132	---	200
1500 X 4000L	215	21	805	79	145	---	200
1700 X 3000L	191	19	639	63	128	---	200
1700 X 7200L	534	52	1769	173	152	---	200
2000 X 3000L	254	25	727	71	123	---	200
2000 X 3500L	308	30	875	86	128	---	200
2000 X 6000L	630	62	1750	172	143	---	200
2500 X 4000L	663	65	1381	135	137	175	250
2500 X 5500L	943	92	2019	198	148	175	250
2500 X 7700L	1341	131	2953	289	158	175	250
3000 X 5000L	1230	121	2221	218	139	175	250
3300 X 4500L	1175	115	1884	185	130	175	250
3300 X 6500L	1814	178	3015	295	146	175	250
3300 X 10600L	3067	301	5257	515	158	175	250
4500 X 7000L	3869	379	4695	460	134	175	250
4500 X 9000L	4752	466	5747	563	146	175	250
4500 X 12000L	6473	634	7984	782	154	175	250

**NOTE:** Above mentioned data can change with client specifications & local labor condition.

NPF FENDER

## PERFORMANCE (80 KPa)

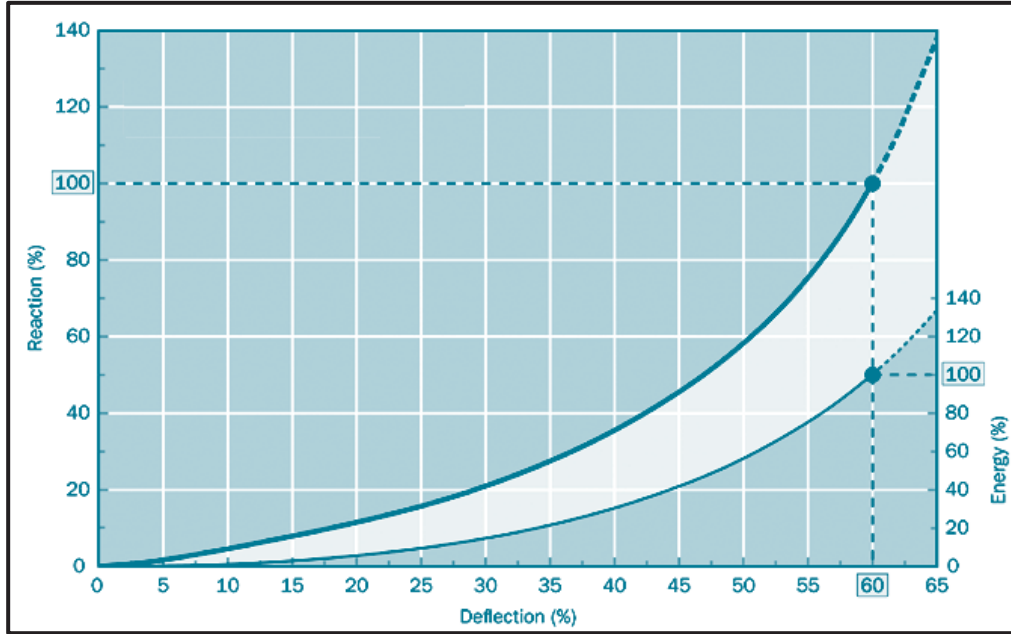
PNEUMATIC 80 (INTERNAL PRESSURE (80 KPa (0.8 Kg/CM <sup>2</sup> ))							
FENDER SIZE	ENERGY ABSORPTION		REACTION FORCE		HULL PRESSURE (60% DEFL.)	SAFETY-VALVE PRESSURE	TEST PRESS. @ 0% DEFL.
	mm	KN-m	Tf-m	KN	Tf	KPa	KPa
300 X 500L	1.7	0.2	28	2.7	166	---	250
300 X 600L	2.1	0.2	35	3.4	165	---	250
500 X 800L	7.5	0.7	78	7.6	170	---	250
500 X 1000L	8	0.8	85	8.3	174	---	250
600 X 1000L	11	1.1	98	9.6	166	---	250
600 X 1200L	15	1.5	125	12	173	---	250
700 X 1500L	24	2.4	180	18	177	---	250
800 X 1200L	24	2.4	158	15	163	---	250
800 X 1500L	39	3.8	246	24	165	---	250
1000 X 1500L	45	4.4	239	23	160	---	250
1000 X 2000L	63	6.2	338	33	174	---	250
1200 X 1800L	80	7.8	348	34	163	---	250
1200 X 2000L	88	8.6	390	38	166	---	250
1200 X 3000L	137	13	605	59	169	---	250
1350 X 2500L	141	14	561	55	170	---	250
1350 X 3500L	213	21	854	84	173	---	250
1500 X 2500L	175	17	619	61	170	---	250
1500 X 3000L	214	21	761	75	174	---	250
1500 X 4000L	300	29	1058	104	179	---	250
1700 X 3000L	267	26	840	82	168	---	250
1700 X 7200L	746	73	2325	228	195	---	250
2000 X 3000L	355	35	955	94	166	---	250
2000 X 3500L	430	42	1150	113	168	---	250
2000 X 6000L	880	86	2300	225	171	---	250
2500 X 4000L	925	91	1815	178	180	230	300
2500 X 5500L	1317	129	2653	260	195	230	300
2500 X 7700L	1872	183	3880	380	206	230	300
3000 X 5000L	1717	168	2919	286	183	230	300
3300 X 4500L	1640	161	2476	243	171	230	300
3300 X 6500L	2532	248	3961	388	191	230	300
3300 X 10600L	4281	420	6907	677	208	230	300
4500 X 7000L	5400	529	6188	606	176	230	300
4500 X 9000L	6633	650	7551	740	192	230	300
4500 X 12000L	9037	886	10490	1028	202	230	300

**NOTE:** Above mentioned data can change with client specifications & local labor condition.

## MASS PROPERTY

FENDER SIZE	PNEUMATIC 50			PNEUMATIC 80		
	BODY WEIGHT	CHAIN NET	SLING TYPE	BODY WEIGHT	CHAIN NET	SLING TYPE
mm	Kg.	Kg.	Kg.	Kg.	Kg.	Kg.
300 X 500L	11	---	12	12	---	14
300 X 600L	15	---	17	17	---	19
500 X 800L	26	---	29	30	---	33
500 X 1000L	34	---	37	36	---	39
600 X 1000L	42	---	45	45	---	48
600 X 1200L	46	---	49	40	---	53
700 X 1500L	47	---	80	80	---	83
800 X 1200L	70	170	73	73	173	76
800 X 1500L	95	205	98	100	210	103
1000 X 1500L	139	305	140	140	310	145
1000 X 2000L	160	360	164	170	370	175
1200 X 1800L	160	370	165	170	380	175
1200 X 2000L	174	400	180	185	410	180
1200 X 3000L	240	440	255	240	440	275
1350 X 2500L	245	420	230	280	545	285
1350 X 3500L	325	630	330	345	660	360
1500 X 2500L	280	680	284	305	405	310
1500 X 3000L	315	765	320	345	445	350
1500 X 4000L	385	889	390	400	900	405
1700 X 3000L	480	990	485	405	1115	510
1700 X 7200L	1040	2100	1044	1203	2240	1208
2000 X 3000L	420	1320	425	440	1350	445
2000 X 3500L	630	1530	635	660	1460	665
2000 X 6000L	900	1140	905	940	1400	950
2500 X 4000L	980	1480	1010	1105	1230	1110
2500 X 5500L	1210	2890	1240	1305	2985	1310
2500 X 7700L	1710	3700	1740	1840	3840	1855
3000 X 5000L	1610	4210	1640	1690	4240	1695
3300 X 4500L	1740	4140	1780	1840	4260	1855
3300 X 6500L	1980	4100	2020	2140	4270	2155
3300 X 10600L	2360	6850	2400	2405	6995	2510
4500 X 7000L	3900	8900	3440	4100	9100	4105
4500 X 9000L	4650	10900	4690	4895	11145	4900
4500 X 12000L	4475	13400	4815	5980	13705	5985

**RATED DEFLECTION**



Note: Standard manufacturing and performance tolerance - Energy: 100%, Reaction: 100 ± 10%, Deflection: 60 ± 5%

**PARALLEL COMPRESSION TEST**



**DEFLECTION: 0%**



**DEFLECTION: 30%**



**DEFLECTION: 60%**



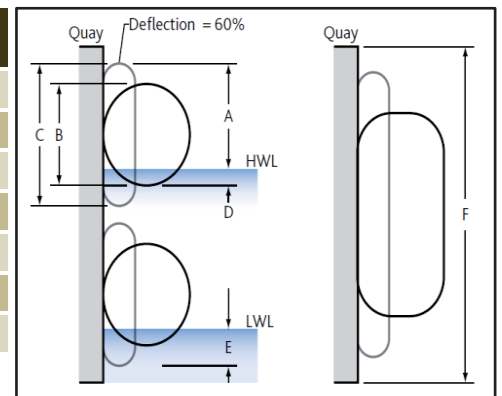
## INSTALLATION

At both ends of the fender's chain or wire net, first shackles, then swivel joints and then further shackle should be installed. A guy chain or guy rope is secured to the outer shackle. The swivel joint prevents twisting of the guy.



### INSTALLATION DIMENSIONS

SIZE	A	B	C	D	E	F
Ø1000 X 1500L	975	950	1350	200	375	2000
Ø1200 X 2000L	1200	1140	1620	220	430	2600
Ø1500 X 2500L	1525	1420	2050	250	525	3250
Ø2000 X 3500L	2050	1900	2700	300	650	4500
Ø2500 X 4000L	2490	2380	3380	450	890	5200
Ø3300 X 6500L	3380	3140	4460	500	1080	8500
Ø4500 X 9000L	4710	4270	6180	800	1470	12000



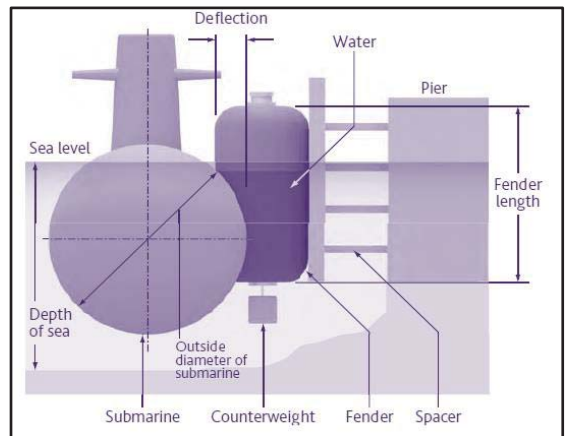


## HYDROPNEUMATIC FENDER

Submarines and other vessels that make contact below the waterline need a special fendering solution.

Hydro-Pneumatic fenders are filled with Air and Water, then fitted with a Counterweight to stand vertically and protect submerged hulls.

We can also provide the special calculations for Polytropic conditions (Saturated Air), other Air: Water Ratios, Hull curvatures and other variables to predict exact performance of Hydro-pneumatic fenders.



**PERFORMANCE TABLE:**

IP50	WATER : AIR	E	R
Ø1700 x 7200	65:35	592	1813
Ø2000 x 6000	65:35	647	1766
Ø2500 x 5500	65:35	928	2037
Ø3300 x 6500	55:45	1913	3169
Ø3300 x 10600	65:35	3120	5170
Ø4500 x 9100			

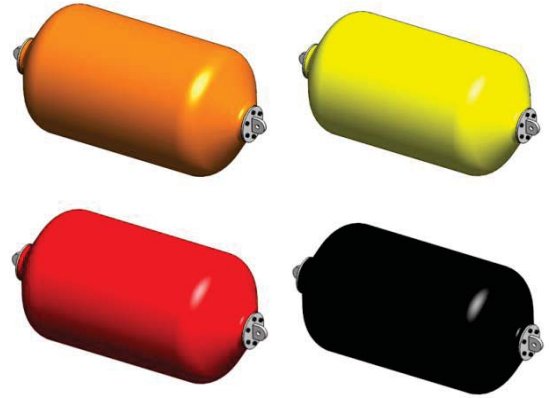
Please Ask NJ Maritech



# NFF

## FOAM FENDER

- High Energy Absorption & Low Reaction Force.
- Tough, Nylon reinforced Polyurethane Skin.
- Low Maintenance & Easy to install.
- Large Standoff distance.

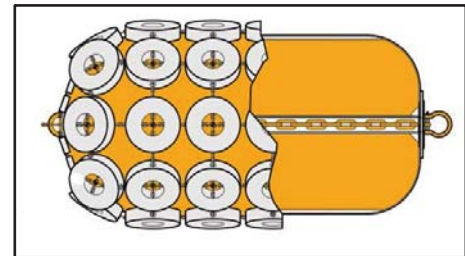


Available in Different Color

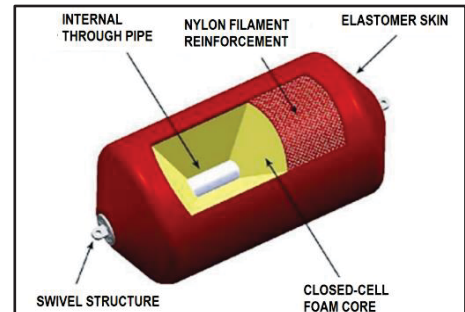
NFF FENDER

### SPECIFICATION

ITEM	SIZE	EA (Ton-m)	RF (Ton)
NFF 0.7	Ø700 X 1500L	3	13
NFF 1.0	Ø1000 X 1500L	5	17
	Ø1000 X 2000L	7	26
NFF 1.2	Ø1200 X 2000L	10	28
NFF 1.35	Ø1350 X 2500L	16	42
NFF 1.5	Ø1500 X 3000L	24	59
NFF 1.7	Ø1700 X 3000L	29	63
NFF 2.0	Ø2000 X 3500L	47	86
	Ø2000 X 4000L	56	102
NFF 2.5	Ø2000 X 4500L	64	118
	Ø2500 X 4000L	82	122
NFF 3.0	Ø2500 X 5500L	123	182
	Ø3000 X 6000L	189	234
NFF 3.3	Ø3300 X 4500L	153	172
	Ø3300 X 6500L	248	279



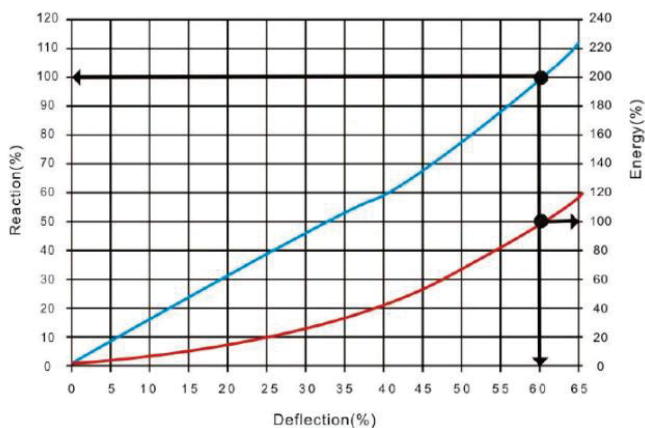
TYPE - A



TYPE - B

NOTE: Performance values are at 60% Compression.  
Specified Values may vary  $\pm 15\%$  due to variation in material, Temp. & Tolerances.

### PERFORMANCE CURVE



NJ Maritech's Foam Filled Fenders (NFF Series) are comply with the **PIANC** Guidelines.

# NDD

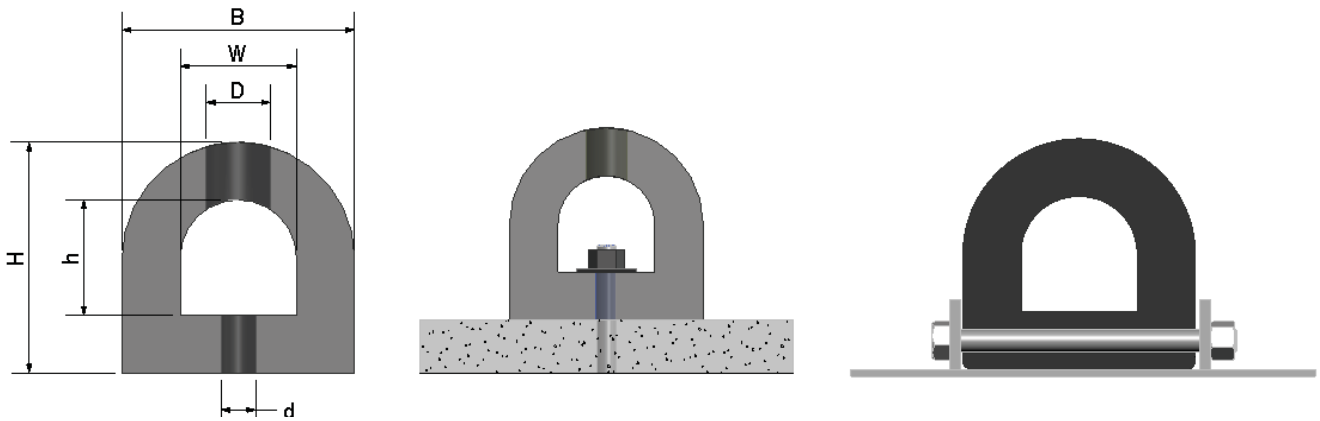
## NDD - FENDER

- Used for Light/medium duty applications for small vessels.
- Also commonly used on floating pontoons and inland waterways for dock protection.
- Easy to install.



NDD FENDER

### DIMENSION



### SPECIFICATION

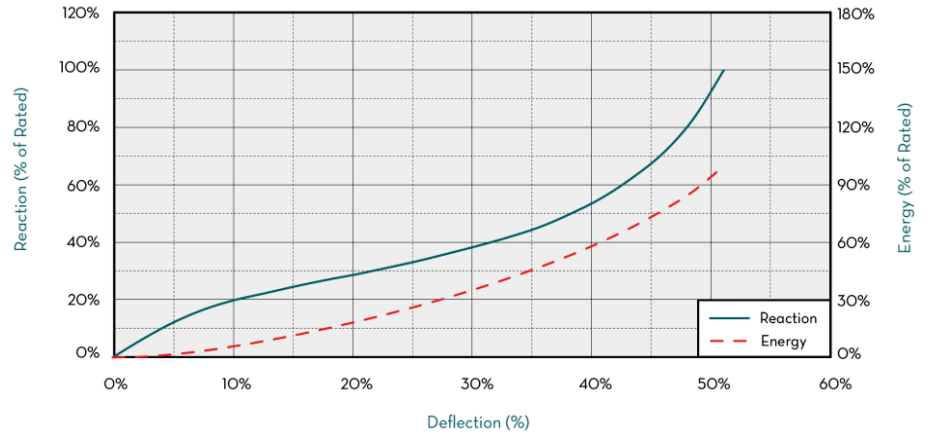
	H	B	w	h	D	d	BOLT SIZE	END DIST.	BOLT PITCH	FLAT BAR
<b>NDD 100</b>	100	100	50	50	30	15	M12	90-130	200-300	40 X 5
<b>NDD 150</b>	150	150	75	75	40	20	M16	110-150	250-300	60 X 8
<b>NDD 200</b>	200	200	100	100	50	25	M20	130-180	300-400	75 X 10
<b>NDD 250</b>	250	250	125	125	60	30	M24	140-200	350-450	100 X 10
<b>NDD 300</b>	300	300	150	150	60	30	M24	140-200	350-450	100 X 12
<b>NDD 350</b>	350	350	175	175	75	35	M30	140-200	350-450	125 X 12
<b>NDD 400</b>	400	400	200	200	630	635	M30	140-200	350-450	150 X 14
<b>NDD 500</b>	500	500	250	250	695	695	M36	160-230	400-500	175 X 20

NOTE: Performance values are per meter length of Fender.  
Drawings & Pictures are for illustration purposes only & subject to change.

**RATED PERFORMANCE**

**PERFORMANCE CURVE**

	EA (KN-m)	RF (KN)
NDD 100	1.4	77
NDD 150	3.1	84
NDD 200	5.6	152
NDD 250	8.9	190
NDD 300	12.8	232
NDD 350	17.6	270
NDD 400	23.2	305
NDD 500	36	384



- Performance based on 1000mm length
- Values shown are for standard 50% deflection.



# NDO

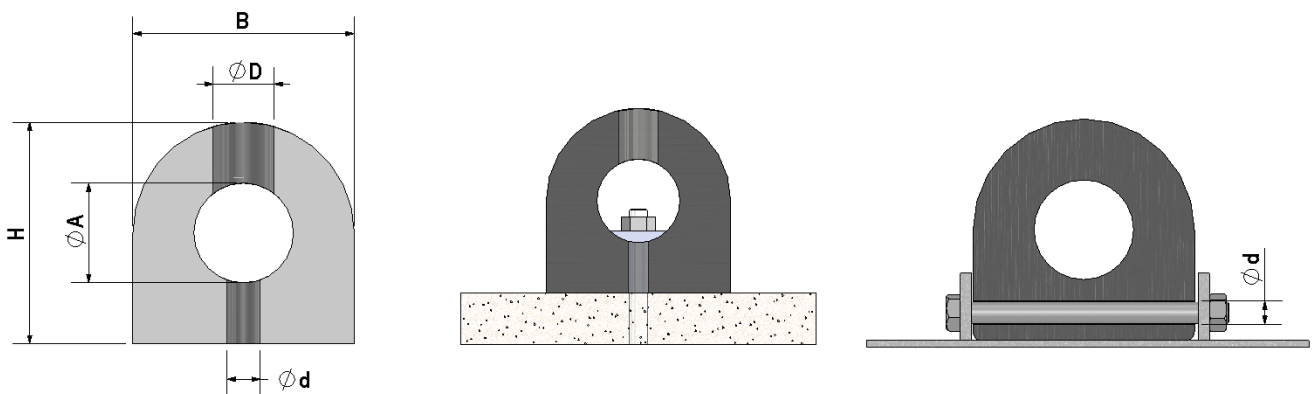
## NDO - FENDER

- Used for Light/medium duty applications for small vessels.
- Also commonly used on floating pontoons and inland waterways for dock protection.
- Easy to install.



NDO FENDER

### DIMENSION



### SPECIFICATION

	H	B	Ø A	Ø D	Ø d	BOLT SIZE	END DIST.	BOLT PITCH
NDO100	100	100	50	30	15	M12	90-130	200-300
NDO150	150	150	75	40	20	M16	110-150	250-300
NDO200	200	200	100	50	25	M20	130-180	300-400
NDO250	250	250	125	60	30	M24	140-200	350-450
NDO300	300	300	150	60	30	M24	140-200	350-450
NDO350	350	350	175	75	35	M30	140-200	350-450
NDO400	400	400	200	75	35	M30	140-200	350-450
NDO500	500	500	250	80	40	M36	160-230	400-500

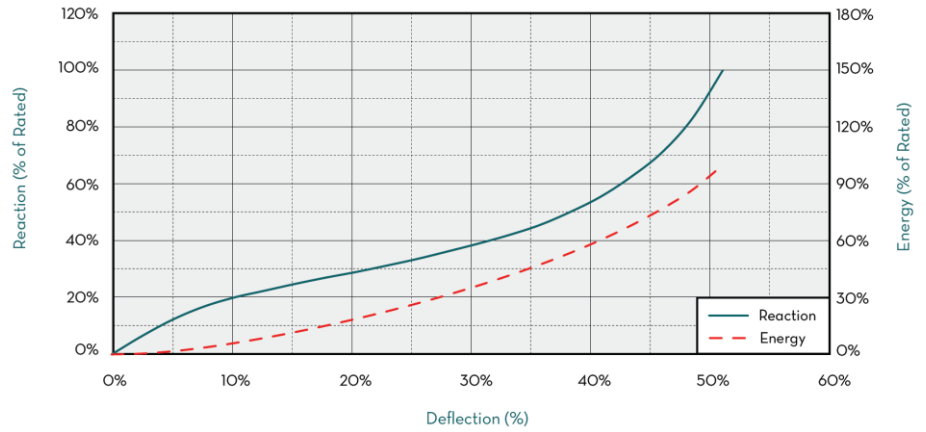
NOTE : Drawings & Pictures are for illustration purposes only & subject to change.

**RATED PERFORMANCE**

	EA (KN-m)	RF (KN)
NDO100	1.9	157
NDO150	4.2	233
NDO200	7.5	315
NDO250	11.8	390
NDO300	16.9	474
NDO350	23.0	545
NDO400	29.3	625
NDO500	46.5	790

- Performance based on 1000mm length
- Values shown are for standard 50% deflection.

**PERFORMANCE CURVE**



# NSD

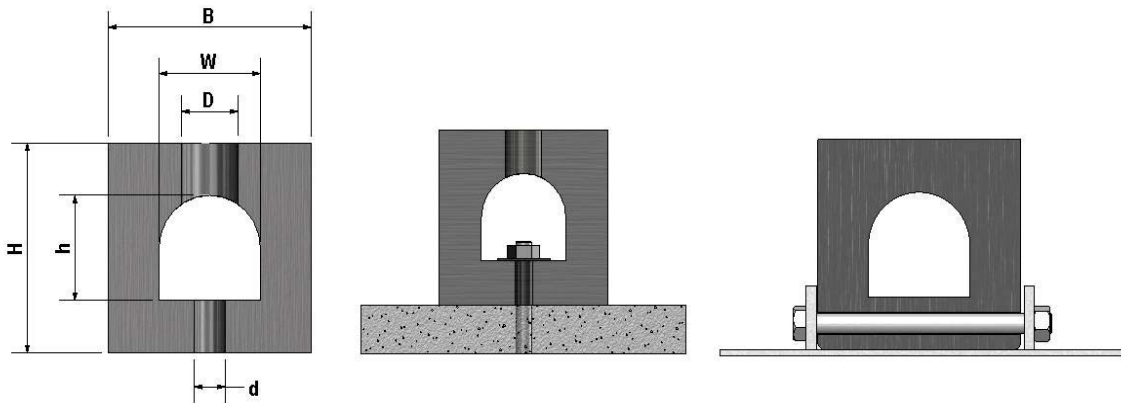
## NSD - FENDER

- Used for Light/medium duty applications for small vessels.
- Also commonly used on floating pontoons and inland waterways for dock protection.
- Easy to install.



NSD FENDER

### DIMENSION



### SPECIFICATION

	H	B	w	h	D	d	BOLT SIZE	END DIST.	BOLT PITCH	FLAT BAR	WEIGHT
<b>NSD 100</b>	100	100	50	50	30	15	M12	90-130	200-300	40 X 5	9.9
<b>NSD 150</b>	150	150	75	75	40	20	M16	110-150	250-300	60 X 8	22.7
<b>NSD 200</b>	200	200	100	100	50	25	M20	130-180	300-400	75 X 10	30.8
<b>NSD 250</b>	250	250	125	125	60	30	M24	140-200	350-450	100 X 10	49.4
<b>NSD 300</b>	300	300	150	150	60	30	M24	140-200	350-450	100 X 12	75.0
<b>NSD 350</b>	350	350	175	175	75	35	M30	140-200	350-450	125 X 12	92.0
<b>NSD 400</b>	400	400	200	200	75	35	M30	140-200	350-450	150 X 14	153.0
<b>NSD 500</b>	500	500	250	250	90	45	M36	160-230	400-500	175 X 20	239.0

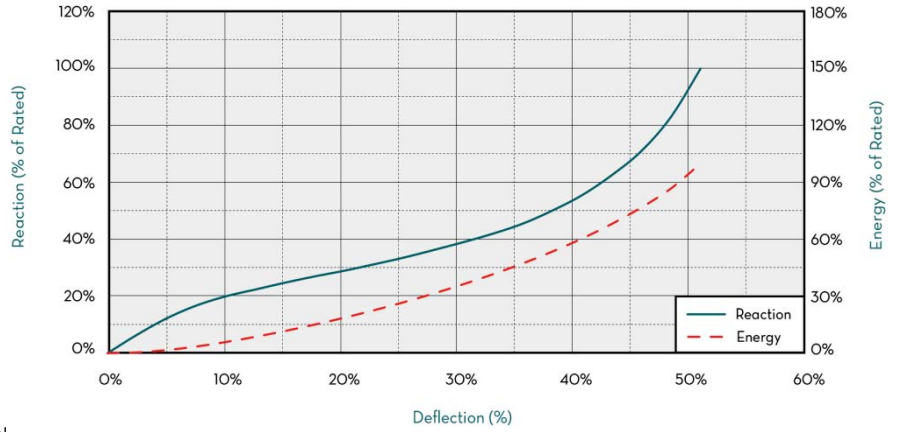
NOTE: Drawings & Pictures are for illustration purposes only & subject to change.  
Specified Values are per meter.

**RATED PERFORMANCE**

	EA (KN-m)	RF (KN)
<b>NSD 100</b>	2.7	136
<b>NSD 150</b>	6.4	206
<b>NSD 200</b>	11.3	275
<b>NSD 250</b>	17.6	343
<b>NSD 300</b>	25.5	412
<b>NSD 350</b>	34.3	471
<b>NSD 400</b>	45.2	589
<b>NSD 500</b>	70.7	736

- Performance based on 1000mm length
- Values shown are for standard 50% deflection.

**PERFORMANCE CURVE**





# NSO

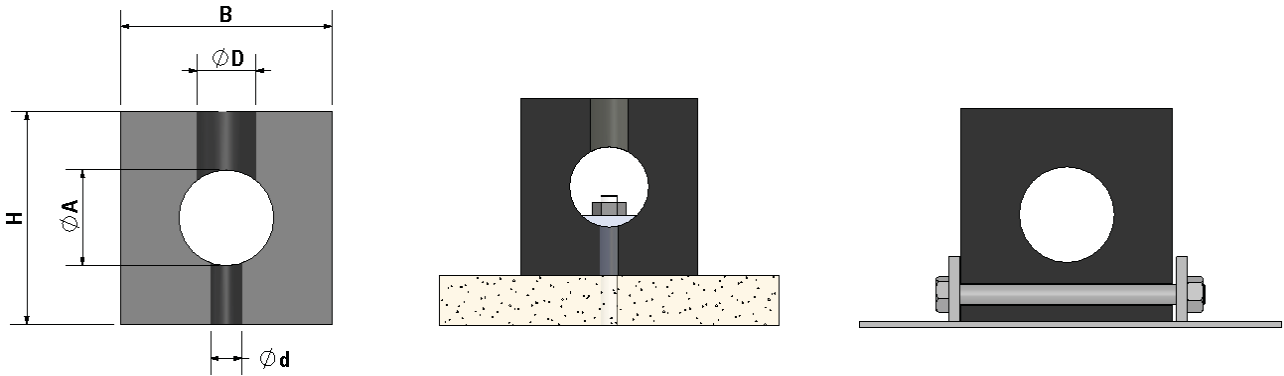
## NSO - FENDER

- Used for Light/medium duty applications for small vessels.
- Also commonly used on floating pontoons and inland waterways for dock protection.
- Easy to install.



NSO FENDER

### DIMENSION



### SPECIFICATION

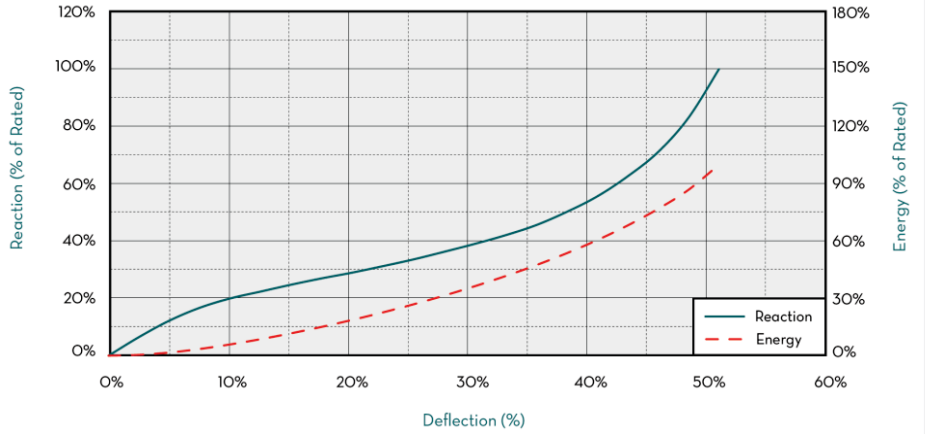
	H	B	Ø A	Ø D	Ø d	BOLT SIZE	END DIST.	BOLT PITCH
<b>NSO 100</b>	100	100	50	30	15	M12	90-130	200-300
<b>NSO 150</b>	150	150	75	40	20	M16	110-150	250-300
<b>NSO 200</b>	200	200	100	50	25	M20	130-180	300-400
<b>NSO 250</b>	250	250	125	60	30	M24	140-200	350-450
<b>NSO 300</b>	300	300	150	60	30	M24	140-200	350-450
<b>NSO 350</b>	350	350	175	75	35	M30	140-200	350-450
<b>NSO 400</b>	400	400	200	75	35	M30	140-200	350-450
<b>NSO 500</b>	500	500	250	80	40	M36	160-230	400-500

NOTE: Drawings & Pictures are for illustration purposes only & subject to change.  
Specified Values are per meter.

**RATED PERFORMANCE**

	EA (KN-m)	RF (KN)
<b>NSO 100</b>	1.9	157
<b>NSO 150</b>	6.4	260
<b>NSO 200</b>	11.2	343
<b>NSO 250</b>	17.6	435
<b>NSO 300</b>	25.3	520
<b>NSO 350</b>	34.2	605
<b>NSO 400</b>	45.0	688
<b>NSO 500</b>	70.2	865

**PERFORMANCE CURVE**



- Performance based on 1000mm length
- Values shown are for standard 50% deflection.



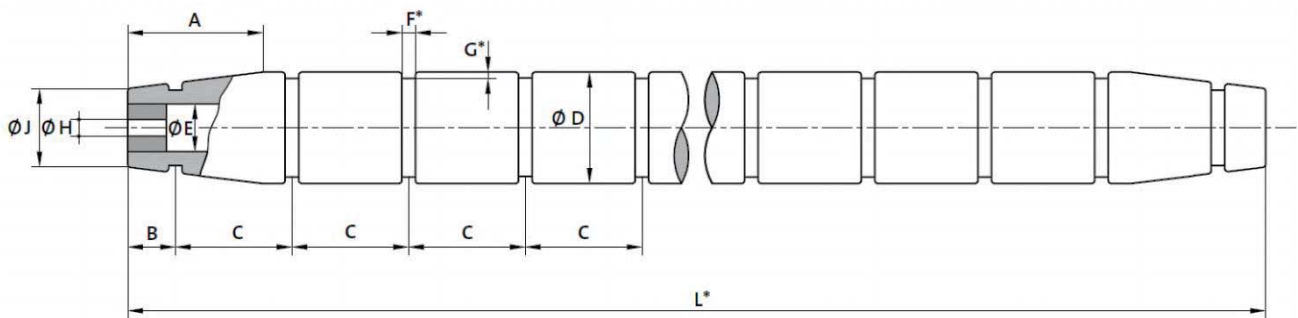
# TUG FENDER

## NTF FENDER

- Tug or Boat Fenders are harder & stable under more extreme conditions than any other fender type.
- A complete “ready to install” fender kit including tapered ends, connecting plugs, end plugs, drill holes as well as numbered stern and bow fender sets are available.



### DIMENSION



ØD (mm)	B (mm)	C (mm)	A (mm)	ØE (mm)	ØH (mm)	ØJ (mm)
200	150	530	500	100	75	150
250	200	570	500	125	75	190
300	225	600	700	150	75	225
350	250	630	800	175	100	260
400	300	670	800	200	100	300
500	300	730	900	250	100	375
600	350	800	900	300	125	450
700	350	860	1000	350	125	525
800	350	930	1000	400	125	600
900	350	1000	1100	450	150	675
1000	350	1060	1200	500	150	750



# W - FENDER

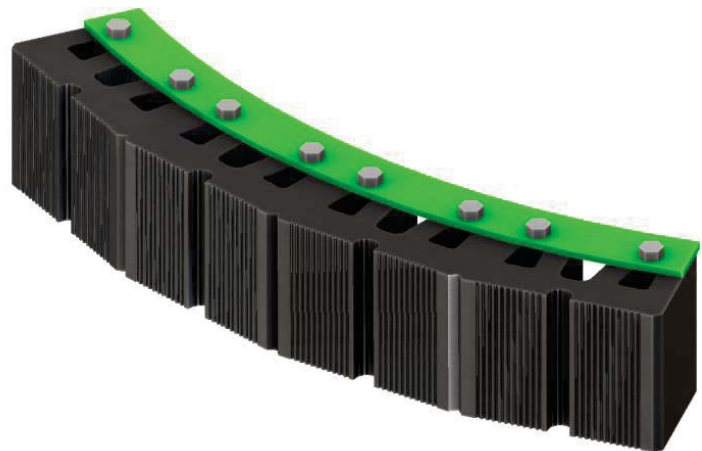
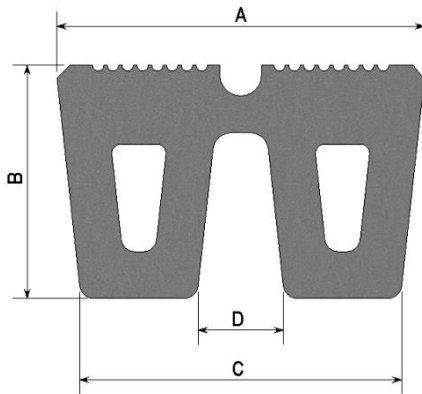
## NWF FENDER

- NWF fenders offer an excellent alternative to square fenders.
- A complete “ready to install” fender kit including connecting plugs, end plugs, drill holes as well as numbered stern and bow fender sets are available.



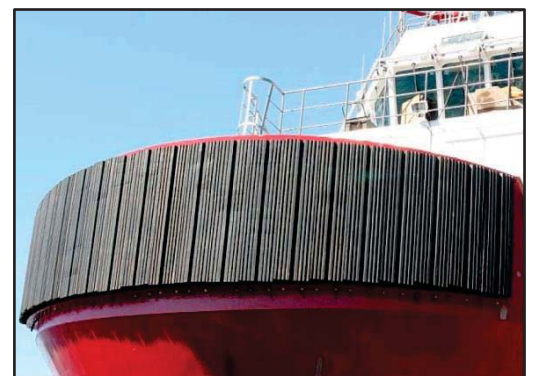
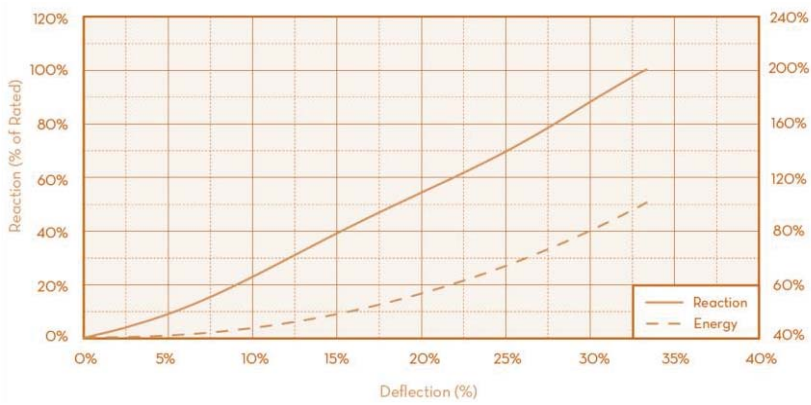
W - FENDERS

### DIMENSION



A (mm)	B (mm)	C (mm)	D (mm)	WEIGHT (Kg)
320	200	280	180	51
400	250	330	220	81
480	300	426	269	120
500	450	420	255	180

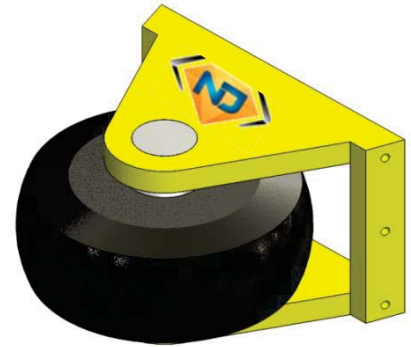
### PERFORMANCE



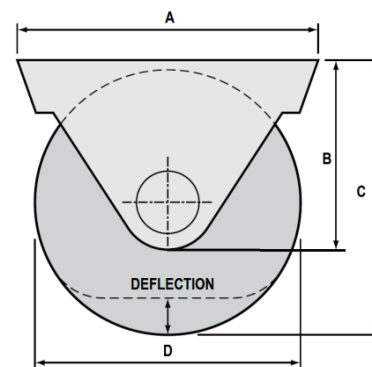
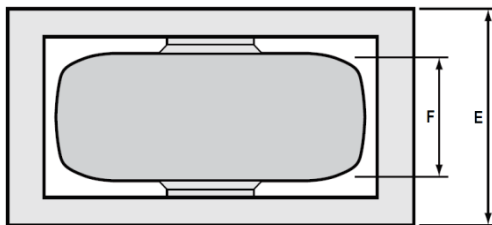
# ROLLER FENDER

## NRF FENDER

- NJ Maritech Roller Fender help Vessels maneuver into Berths & Narrow Channels.
- They are usually installed to Guide Ships in Restricted Spaces like walls of Dry Docks, On Corners & Lock Entrance.



### DIMENSION



TYPE	A mm	B mm	C mm	D Ø mm	E mm	F mm
110 X 45	1250	610	1150	1080	800	460
130 X 50	1530	740	1400	1320	950	510
140 X 60	1600	765	1450	1370	1000	610
175 X 70	2050	975	1850	1750	1250	690
200 X 75	2300	1110	2100	1980	1400	765
250 X 100	3000	1425	2700	2550	1800	895

### PERFORMANCE

TYPE	ENERGY kN-m	REACTION kN	DEFLECTION mm	PRESSURE bar
110 X 45	13	175	152	5.5
130 X 50	22	200	230	3.5
140 X 60	20	210	205	3.5
175 X 70	37	345	225	4.8
200 X 75	100	765	270	5.5
250 X 100	170	1000	345	5.5



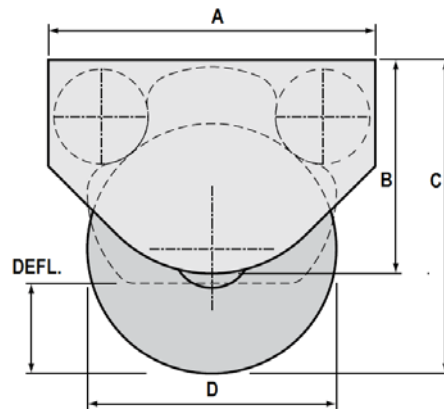
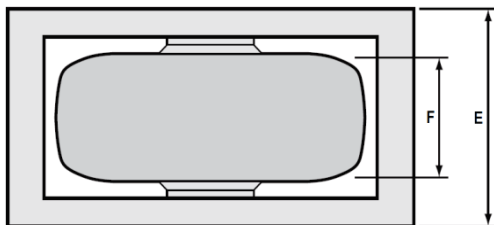
# WHEEL FENDER

## NWH FENDER

- NJ Maritech Wheel Fenders Protect Lock Corners and Guide Ships in Confined Spaces.
- The performance of Fender is not affected by the Loading and Sloping of the Ship & It is Suitable for all kinds of Harbors.



### DIMENSION



TYPE	A mm	B mm	C mm	D Ø mm	E mm	F mm
110 X 45	1700	1000	1450	1080	900	460
130 X 50	2000	1200	1750	1300	1000	510
175 X 70	2650	1500	2200	1750	1150	690
200 X 75	2750	1750	2550	1980	1250	760
250 X 100	3350	2200	3200	2550	1600	970
290 X 110	4200	2500	3750	2900	1700	1020

### PERFORMANCE

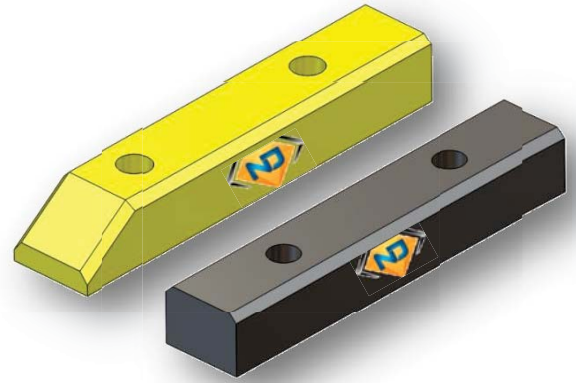
TYPE	ENERGY kN-m	REACTION kN	DEFLECTION mm	PRESSURE bar
110 X 45	33	150	400	5.5
130 X 50	61	220	500	3.5
175 X 70	100	315	600	4.8
200 X 75	220	590	700	5.5
250 X 100	440	920	925	5.5
290 X 110	880	1300	1200	5.8



# NCS

## NCS – CAR STOPPER

- NCS-PE Series of Car Stopper is made from High Density Polyethylene (HDPE).
- It resists rusting from exposure to sea water.
- Black & Yellow color combination is easy to catch driver's attention, especially.



NCS CAR STOPPER

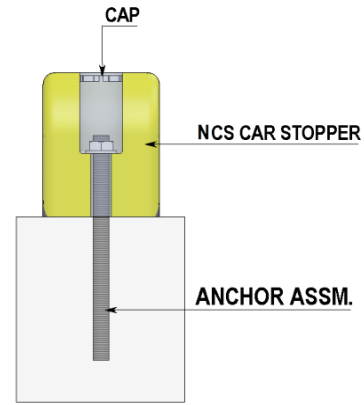
### FIXING DETAILS



TYPE - A



TYPE - B



FIXING DETAILS

### PROJECT SITE



# LIFEBUOY SET

## LIFEBUOY RING. CASE & STAND

LIFEBUOY SET

### PRODUCT DETAILS



#### SPECIFICATIONS

#### Lifebuoy Ring SOLAS 2,5kg

CODE	70090
WEIGHT	2.5 kg (5.11 lb)
DROP HEIGHT	80m
LIFEBUOY SHELL / INTERNAL MATERIAL	PE / PU Frothing
GRAB LINE MATERIAL	PE
HIGHLY VISIBLE COLOUR	YES
STORAGE TEMPERATURE	-30 C up to + 65 C
RESISTANT TO FLAME / DIESEL OIL	YES / YES
TESTED FOR OPERATION w. LIGHT & SMOKE SIGNAL	-
DIAMETER OUTER / INNER	730mm / 440mm



Set of Lifebuoy Ring Case,  
with 70090 Lifebuoy Ring  
& Floating Rope  
70090 Ring & 30m Floating Rope  
Code....71285



Mounting Kit Included

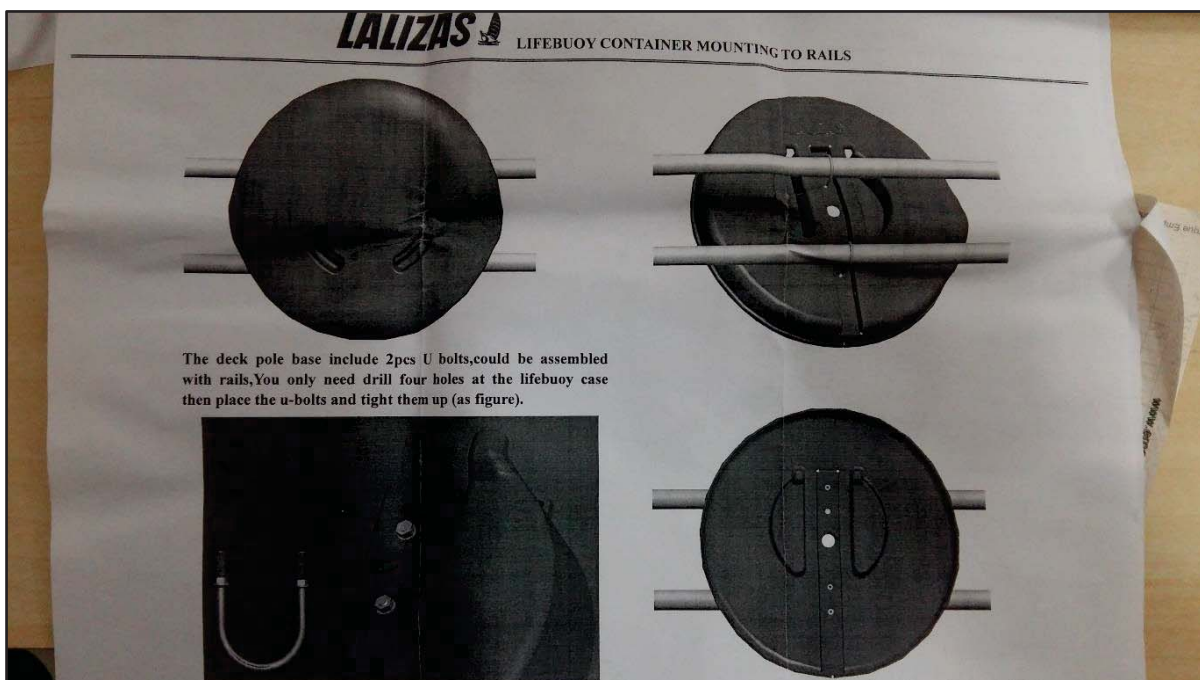
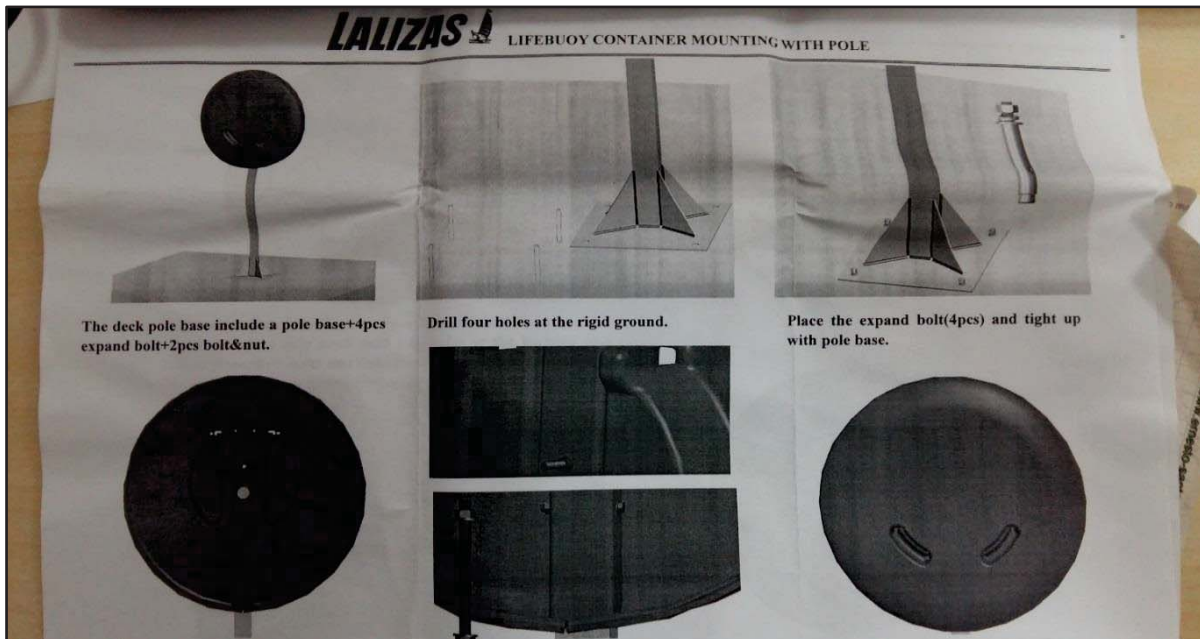


Deck Pole Base for  
Lifebuoy Ring Case

Code....71286



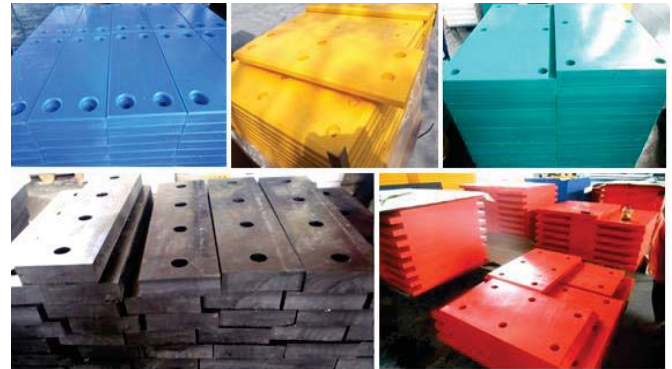
Product	Set of Lifebuoy Ring Case, with 70090 Ring & Floating Rope	Deck Pole Base for Lifebuoy Ring Case
Code	71285	71286
Material	Polyethylene, Orang	Galvanized Steel
Dimension	85 x 85 x 20 cm	30 x 30 x 150 cm
Describe	Includes 1 Ring Lifebuoy (Ref. 70090) + 1 Throwing Line 30m. Container Provides Protection & Easy Spotting of Ring Lifebuoys by Beaches/Rivers or Jetties	Includes a Pole Base + 4pcs Expand Bolt + 2pcs Bolt & Nut + 2pcs U Bolts. The Base could be fixed on the ground of Beaches/Lakes/Rivers or Jetties, and then container could be easily assembled. There are 2pcs of U Bolts could be assembled with Rail (Maximum Diameter 60mm) All fixing accessories are MS HDG.



# UHMW-PE

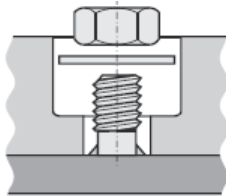
## FACIA PADS

- UHMW-PE possesses a low coefficient of friction which provides a smooth sliding surface for the vessel to travel along the fender panel.
- It has excellent abrasion resistance.
- Widely used on Fender Panels, V-fender shields, wall protection & beltings on workboats.

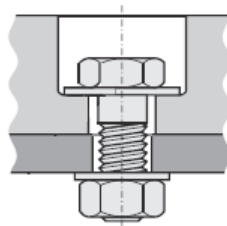


UHMW-PE

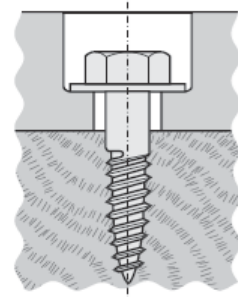
## FIXING DETAILS



Steel Panel



Open Structure



Timber Fixing

UHMW is easily available in below Colors as per the requirement,

GREEN	BLUE	RED	YELLOW
RAL6024	RAL5010	RAL3028	RAL1004
RAL6026	RAL5005		RAL1003
RAL6016			



## MATERIAL PROPERTY

UHMW-PE

PROPERTY	TEST METHOD	TEST RESULT	UNIT
Molecular weight	ASTM D-2857	3 - 5	1E6 g/mol
Density	ASTM D-792 JIS K 7112	>0.94	g/cm <sup>3</sup>
Tensile Strength, 73° F	ASTM D-638	5900	psi
Tensile Modulus of Elasticity, 73° F	ASTM D-638	116500	psi
Tensile Elongation (at Break), 73° F	ASTM D-638	>300	%
Flexural strength, 73° F	ASTM D-790	3800	psi
Flexural Modulus of Elasticity, 73° F	ASTM G-790	1165900	psi
Shear Strength, 73° F	ASTM D-732	--	--
Compressive strength, 10% Deformation, 73° F	ASTM D-695	3300	°C
Compressive Modulus of Elasticity, 73° F	ASTM D-695	100000	°C
Hardness, Rockwell, Scale as noted, 73° F	ASTM D-785	NA	
Hardness, Durometer, Shore "D" Scale, 73° F	ASTM D-2240	>65	--
Izod Impacts (notched), 73° F	ASTM D-256	No Break	--
Coefficient of friction (Dry vs Steel) Dynamic	QTM 55007	< 0.12	--
Limiting PV (With 4.1 Safety Factor Applied)	QTM 55007	2000	Ft. lbs. in
Sand Slurry Abrasion	ASTM D-4020	10	1018 Steel = 100

THERMAL			
Coefficient of Linear Thermal Expansion (-40° F to 300° F)	ASTM E-831 (TMA)	1.1 X 10 <sup>4</sup>	in/in/°F
Heat Deflection Temperature 264 psi	ASTM D-648	118	°F
Tq-Glass Transition (amorphous)	ASTM D-3418	NA	°F
Melting Point (Crystalline) peak	ASTM D-3418	275	°F
Continuous Service Temperature in Air (Max.)	--	180	--

✓ **NOTE :** All Values are for Black UHMW-PE 1000 UV Stabilized Pad & values for colored materials will vary.



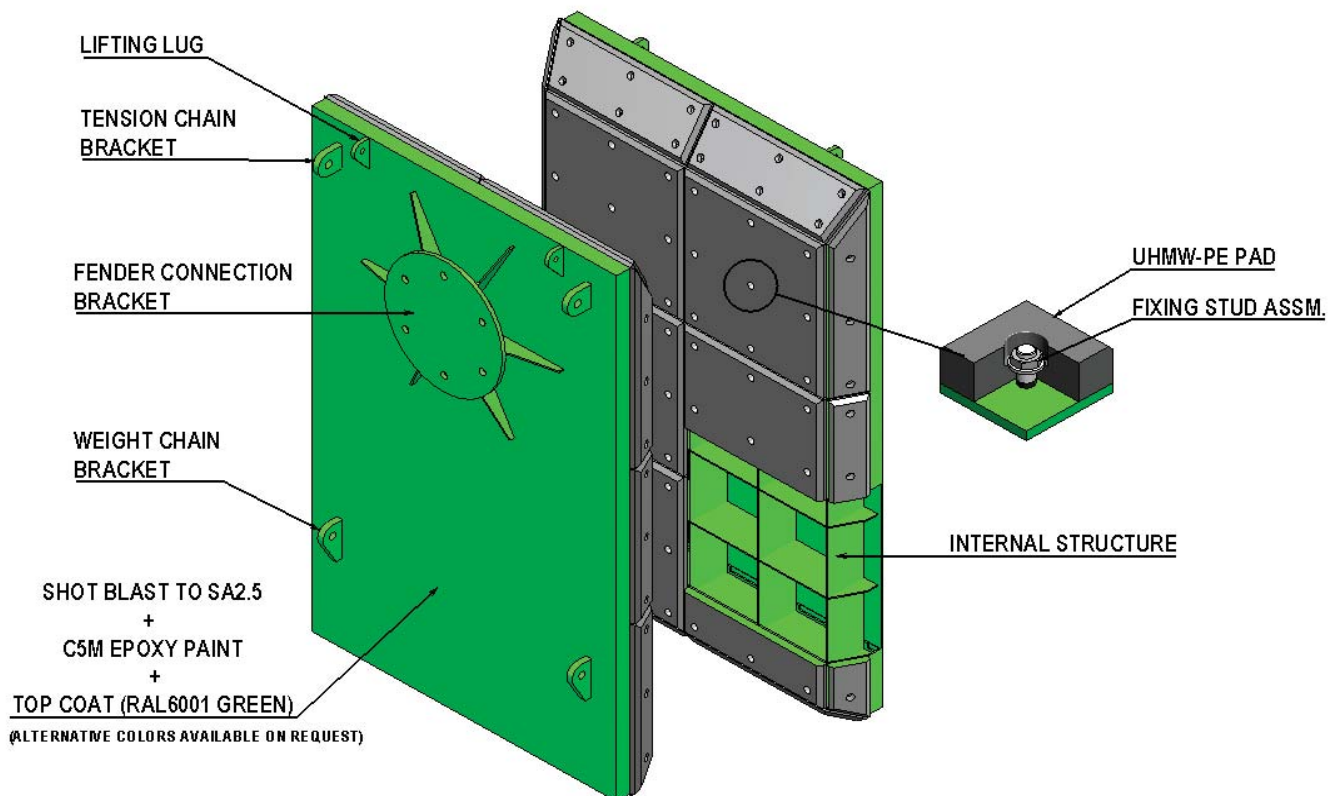
# FENDER PANEL

- Fender Panels distribute Reaction Forces to provide Low Hull Pressure & Cope with Large Tidal Variations.
- Every Panel of NJ Maritech Fender System is designed using Structural Analysis Programs & 3D CAD Modeling for Optimum Strength.
- Option Lead-in Bevels are Provided to Reduce the Snagging Risk.
- All Panels are supplied with Corrosion Protection by High Durability C5M Class Paint Systems to ISO-12944 & additional Corrosion allowances can be considered in Panel Designs whenever required.



FENDER PANEL

## CONSTRUCTION



## STEEL PROPERTIES

STANDARD	GRADE	YIELD STRENGTH (N/mm <sup>2</sup> )	TENSILE STRENGTH (N/mm <sup>2</sup> )	TEMPERATURE
GB/T1591-2008	Q345B	345	470	410
EN 10025	S235JR (1.0038)	210	320	420
	S275JR (1.0044)	230	340	440
	S355J2 (1.0570)	250	365	450
	S355JO (1.0553)	300	450	560
JIS G-3101	SS41	340	515	640
	SS50	400	605	785
	SM50	450	670	840
ASTM	A-36	425	700	900
	A-572	500	760	950

### STEEL THICKNESS

Exposed Both Faces	12mm
Exposed One Face	9mm
Internal ( Not Exposed )	8mm

(In accordance with PIANC 2002)

### TYP. PANEL WEIGHT

Light Duty	200 – 250 kg/m <sup>2</sup>
Medium Duty	250 – 300 kg/m <sup>2</sup>
Heavy Duty	300 – 400 kg/m <sup>2</sup>
Extreme Duty	≥ 400 kg/m <sup>2</sup>

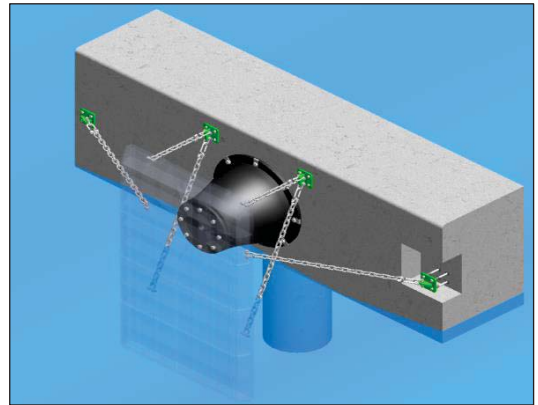


### FEATURES

- Available in Closed Box or in Open Structure.
- Pressure Tested for Water Tightness.
- C5M Modified Paint.
- Lifting Lugs.
- Lead-in Bevels & Chamfers.
- Corrosion allowances considered whenever required.

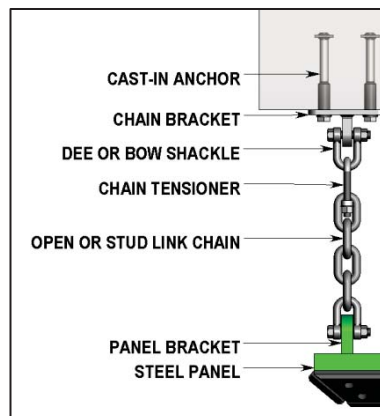
# FIXING ACCESSORIES

- Most of the heavy Fender systems need support by providing Tension, Weight & Shear chain assembly to control load impact during the vessel Berthing
- Open link or stud link chains are commonly used and these can be supplied in Mild Steel, Stainless Steel & Duplex Grades.

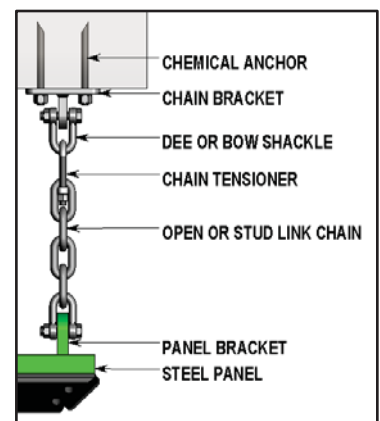


## APPLICATION

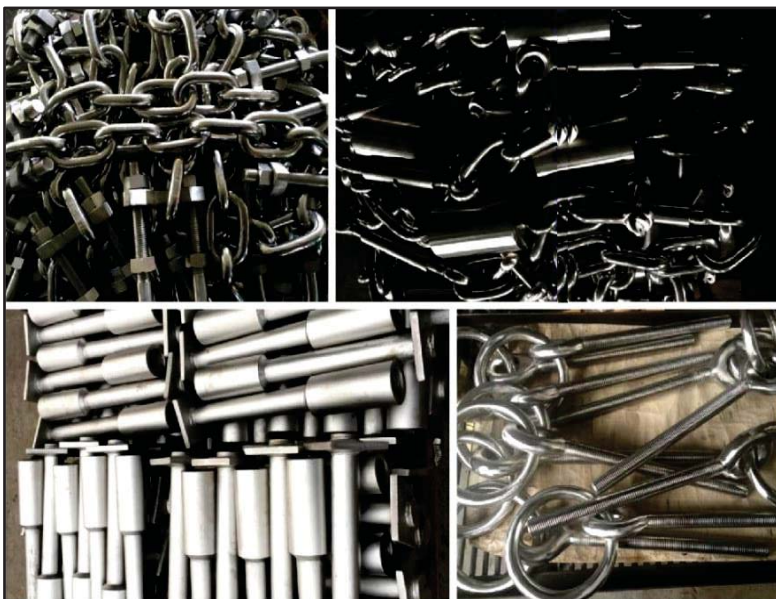
- For Heavy Fender Panels
- To Fix Cylindrical Fenders
- To Fix Floating Fenders
- For Safety Applications
- For Lifting & Installations



**FOR NEW JETTY**



**FOR EXISTING JETTY**



## RUBBER PROPERTIES

NJ MARITECH Rubber Compounds are designed for long life in Marine Environments. All Fenders are made using High Quality Natural Rubber and or/ Synthetic Rubber Compounds, formulated for high performance & reliability.

Rubber Compounds includes additives to resist the effects of Ozone and Ultra-Violet light. The Vulcanization Process (temperature, pressure & time) is strictly controlled to ensure homogenous products with excellent physical properties and rubber to metal bond strengths.



PROPERTY	TESTING STANDARD	CONDITION	REQUIREMENT
TENSILE	ASTM D412 Die C	Original	16 MPa (Min)
	AS 1180.2	Aged for 96 hours at 70° C	12.8 MPa (Min)
	BS 903.A2		
	ISO 37		
DIN 53504	Original	15 MPa (Min)	
	Aged for 168 hours at 70° C	12.75 MPa (Min)	
ELONGATION AT BREAK	ASTM D412 Die C	Original	350% (Min)
	AS 1180.2	Aged for 96 hours at 70° C	280% (Min)
	BS 903.A2		
	ISO 37		
DIN 53504	Original	300% (Min)	
	Aged for 168 hours at 70° C	240% (Min)	
HARDNESS (SHORE A)	ASTM D2240	Original	78° (Max)
	AS 1683.15.2	Aged for 96 hours at 70° C	Original Value +6° Point Increase
	BS 903.A6		
	ISO 815		
DIN 53505	Original	75° (Max)	
	Aged for 168 hours at 70° C	Original Value +5° Point Increase	
COMPRESSION SET	ASTM D395	Aged for 22 hours at 70° C	30% (Max)
	AS 1683.13B		
BS 903.A6	ISO 815	Aged for 24 hours at 70° C	40% (Max)
TEAR RESISTANCE	ASTM D624	Die B	70 kN/m (Min)
	AS 1683.12		
BS 903.A3	ISO 34.1	-	80 kN/m (Min)
OZONE RESISTANCE	ASTM D1149	1 ppm at 20% strain at 40°C for 100 hours	No cracking visible by eye
	AS 1683.24		
	BS 903.A43		
	DIN53509		
ISO 1431/1	ASTM D5963-04	Method B, 1000 revolutions	0.5 cc (Max)
ABRASION RESISTANCE	DIN 53516	Original	100mm3 (Max)
	BOND STRENGTH STEEL TO RUBBER	ASTM D429	Method B
BS903.A21		Section 21.1	

## REQUIRED DATA FOR FENDER SELECTION

1.	<b>SHIP TO QUAY USE</b>		
2.	<b>SITE LOCATION</b>		
3.	<b>TYPE</b>	Loading Berth	Unloading Berth
4.	<b>VESSEL DETAILS</b>		
4.1	Vessel Type		
4.2	Dead weight Tonnage (DWT)		Ton
4.3	Mass Displacement ( $M_D$ )		Ton
4.4	Length Overall ( $L_{OA}$ )		m
4.5	Length Bet <sup>n</sup> Perpendicular ( $L_{BP}$ )		m
4.6	Beam (B)		m
4.7	Laden Draft (D)		m
4.8	Freeboard (F)		m
5.	<b>BERTHING DATA</b>		
5.1	Berthing Mode	Side Berthing	Dolphin Berthing End Berthing
5.2	Structure Type	Open	Closed Semi-closed
5.3	Berthing Angle ( $\alpha$ )		Degree
5.4	Berthing Velocity ( $V_B$ )		m/sec
5.5	Permissible reaction force of dock		Ton
5.6	Permissible Hull Pressure		kN/m <sup>2</sup>
6.	<b>SEA CONDITIONS &amp; WEATHER</b>		
6.1	Tidal Range	HWL	m
		LWL	m
6.2	Maximum wave height at mooring		m
6.3	Maximum wind speed at mooring		m/sec
6.4	Max. Temperature		°C
7.	<b>REQUIRED NUMBER OF FENDERS</b>		
8.	<b>OTHER INFORMATION</b>		





## **NJ MARITECH INTERNATIONAL FZE**

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