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Various **Marine Fenders**

Pneumatic Fender

Foam Filled Fender

System Fender

Solid Fender

Ship Fender

Misc & Accessories

YMI Co Ltd



Your best Maritime Innovation partner

MAIN FACILITY

The human spirit breathing together with high technology!

YMI has an abundant future and expert skill manufacturer.

At the core of YMI's research system is the combination of human and nature, there is always a warm human spirit to lead the way to better products.

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〈ISO 14001:2015〉



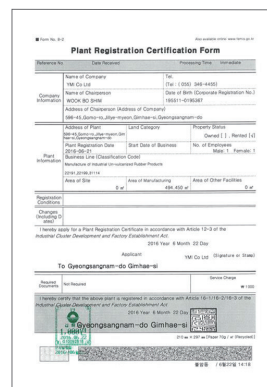
〈ISO 9001:2015〉



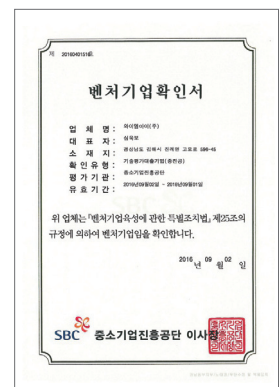
〈ISO 17357〉



〈Cert of patent〉



〈Cert of Factory Registration〉



〈Cert of Venture Business〉

Management Philosophy



Greetings,
All the times, We sincerely appreciate for customers that sent unstinting support and encouragement for YMI.

"On the basis of human and technique, We contribute to public welfare by creating the best products and services."

YMI repeated change and innovation on the basis of our management ideology and quality management philosophy.

For producing the most safe, convenient, and excellent quality goods, We constantly make an investment in a development of human resource and advancement of technology and business process renovation(BPR).

Accordingly, going forward the company representing Korea in our professional field is our DREAM on the basis of the customer's support.



YMI has every effort to retain the best talented man-power in each field and technology capability focusing on the core product areas that symbolizes the technology to create the best value added for our customers.

Customers!

YMI wish to start a new challenge for becoming a 21st century's small hidden champion based on the high level technical and quality-mindset, talented man-power.

Every employee of YMI industry will make a firm promise doing our best to provide the best satisfaction for our customer.

Best Regards.

Pesident **Mr. Wook Bo, Shim**

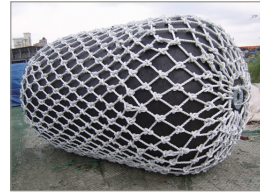
Various Marine Fender

Pneumatic Fender

PNEUMATIC FENDER
REPAIR SERVICE
RENTAL SERVICE

①	②	③
④	⑤	⑥

- ①CHAIN NET(CTN)
- ②ROPE-NET
- ③NEO COVER
- ④SLING TYPE
- ⑤DOUBLE LAYER
- ⑥SUBMARINE PNEUMATIC FENDER



Foam Filled Fender

①	①	②
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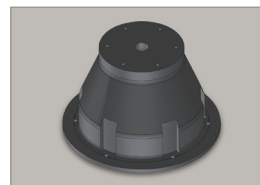
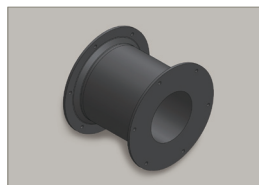
- ①FOAM FILLED FENDER
- ②FOAM FILLED BUOY



System Fender

①	②	③
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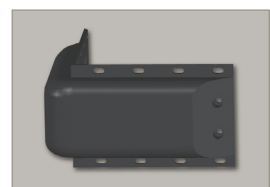
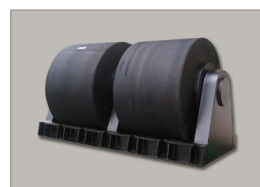
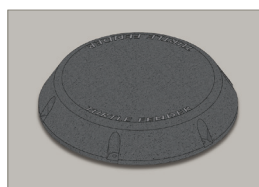
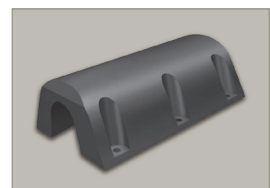
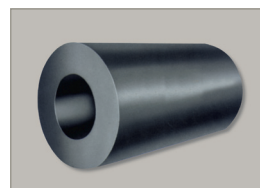
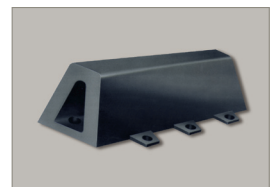
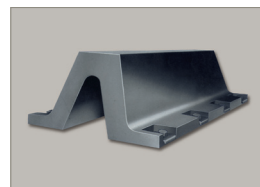
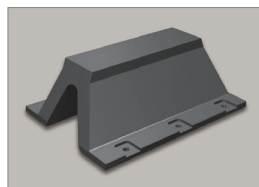
- ①CELL FENDER
- ②CONE FENDER
- ③TR FENDER



Solid Fender

①	②	③
④	⑤	⑥
⑦	⑧	⑨

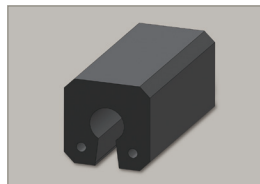
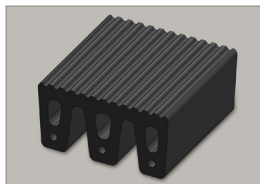
- ①NV FENDER
- ②OV FENDER
- ③CV FENDER
- ④BP FENDER
- ⑤CY FENDER
- ⑥SBP FENDER
- ⑦TURTLE FENDER
- ⑧ROLLER FENDER
- ⑨CORNER FENDER



Ship Fender

①	②	③
④	⑤	⑥
⑦		

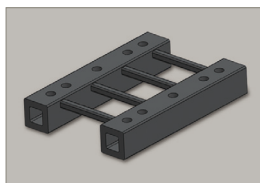
- ①D & DA FENDER
- ②DC & RC FENDER
- ③BC FENDER
- ④W-FENDER
- ⑤KEY HOLE FENDER
- ⑥EVA FENDER
- ⑦Y-EVA FENDER



Misc & Accessories

①	①	①
②	③	③
④	⑤	⑥
⑦	⑦	⑦

- ①BOLLARD
- ②LADDER
- ③CAR STOPPER
- ④EDGE PROTECTOR
- ⑤DREDGING HOSE
- ⑥EXPANSION JOINT
- ⑦FIXING



Pneumatic Fender

Pneumatic Fender(YPF)



Feature

1. High energy absorption and low reaction force
2. Adjustable PF performance against different initial pressure
3. The lowest maintenance costs
4. The most suitable for areas caused by large or small tides
5. An optional chain net & tires for heavy duty applications



Performance Table

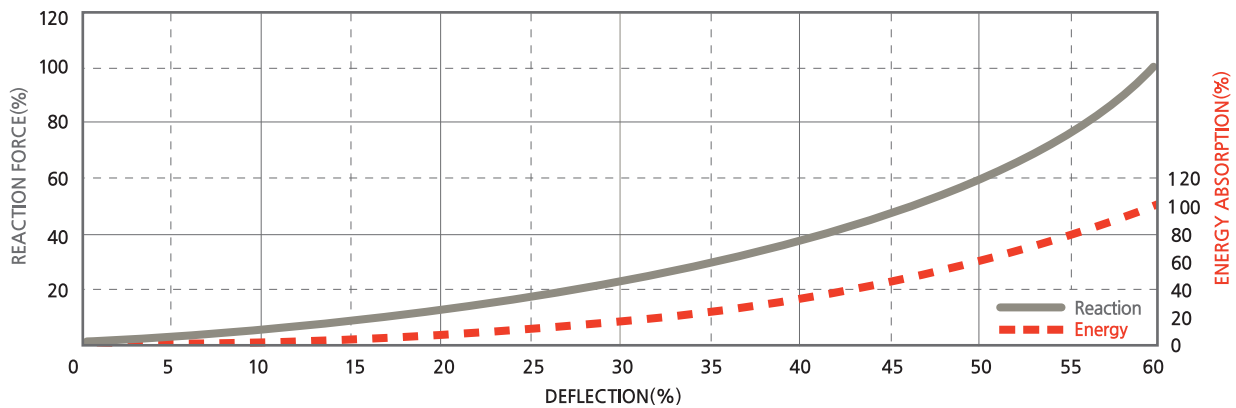
Fender size		Internal Pressure : 50KPa(0.5kgf/cm ²)			Internal Pressure : 80KPa(0.8kgf/cm ²)			Approx. Weight(kg)	
		Energy Absorption	Reaction Force	Hull Pressure at 60% Def.	Energy Absorption	Reaction Force	Hull Pressure at 60% Def.		
mm(D)	mm(L)	kN-m	kN	KPa	kN-m	kN	KPa	Body only	With CTN
YPF 300	500	1.2	21	126	1.7	28	166	12	-
	600	1.5	26	125	2.1	35	165	17	-
YPF 500	800	5.6	59	129	7.5	78	170	30	-
	1000	6	64	132	8	85	174	36	-
YPF 600	1000	8	74	126	11	98	166	45	-
	1200	11	95	132	15	125	173	50	-
YPF 700	1500	17	137	135	24	180	177	80	-
YPF 800	1200	17	120	123	24	158	163	73	173
	1500	28	187	125	39	246	165	100	210
YPF 1000	1500	32	182	122	45	239	160	140	310
	2000	45	257	132	63	338	174	170	370
YPF 1200	1800	57	265	123	80	348	163	170	380
	2000	63	297	126	88	390	166	185	410
	3000	98	460	145	137	605	169	270	570
YPF 1350	2500	102	427	130	141	561	170	280	545
	3500	154	650	142	213	854	173	355	660
YPF 1500	2500	125	471	128	175	619	170	305	705
	3000	153	579	132	214	761	174	345	745
	4000	215	805	145	300	1058	179	400	900
YPF 1700	3000	191	639	128	267	840	168	505	1115
	7200	534	1769	152	746	2325	195	1203	2250
YPF 2000	3000	254	727	123	355	955	166	550	1350
	3500	308	875	128	430	1150	168	660	1560
	6000	630	1750	143	880	2300	171	945	2200
YPF 2500	4000	663	1381	137	925	1815	180	1105	2610
	5500	943	2019	148	1317	2653	195	1305	2985
	7700	1341	2953	158	1872	3880	206	1850	3840
YPF 3000	5000	1230	2221	139	1717	2919	183	1690	4290
YPF 3300	4500	1175	1884	130	1640	2476	171	1850	4260
	6500	1814	3015	146	2532	3961	191	2150	5270
	10600	3067	5257	158	4281	6907	208	2505	6995
YPF 4500	7000	3869	4695	134	5400	6188	176	4100	9100
	9000	4752	5747	146	6633	7551	192	4895	11145
	12000	6473	7984	154	9037	10490	202	5980	13705

Notes

- Above detail performance of components can be changed depending on owner specification and local environment condition.
- Detail performance will be guided by our drawing and specification.

Pneumatic Fender

Performance Curve

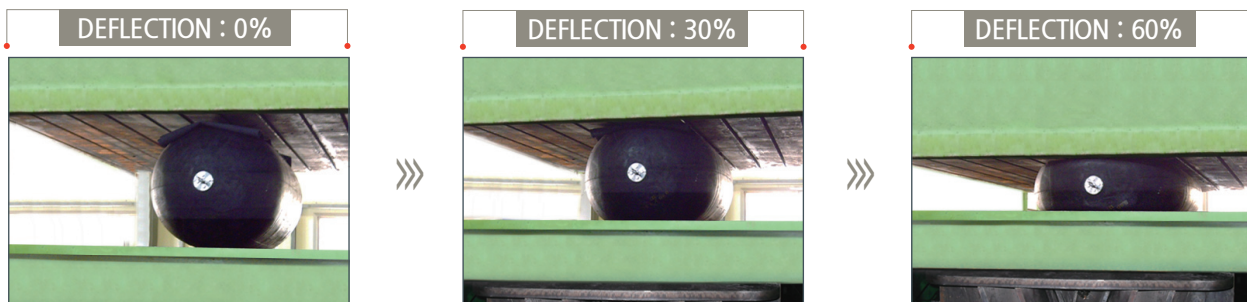


Performance of Intermediate Deflection

Deflection(%)	0%	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%
Reaction(%)	0%	3%	6%	9%	13%	18%	23%	29%	36%	45%	58%	75%	100%
Energy(%)	0%	0%	1%	4%	7%	11%	16%	24%	32%	44%	58%	76%	100%

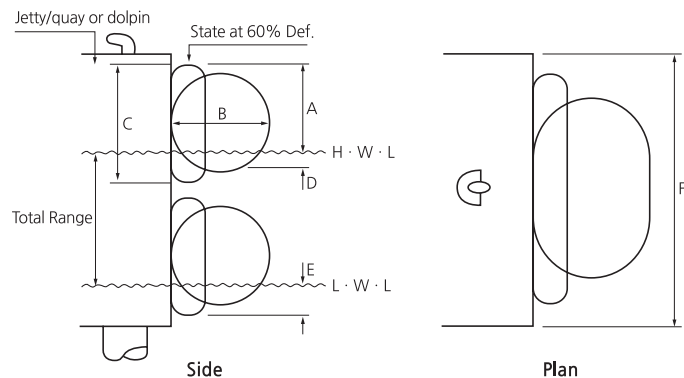


Compression Test



- Notes**
- The above compression test is according to JIS K6301-1994.
 And about the same size, in the case of identifying the test method above the two kinds, below two methods are adopted
 - hardness test : Spring type hardness test(A type)
 - aging test : air heating aging test / test temperature $-70 \pm 1^{\circ}\text{C}$ / test time -96 hours
 - Above detail performance of components can be changed depending on owner specification and local environment condition.
 Detail performance will be guided by our drawing and specification.

Dimension of installation at jetty

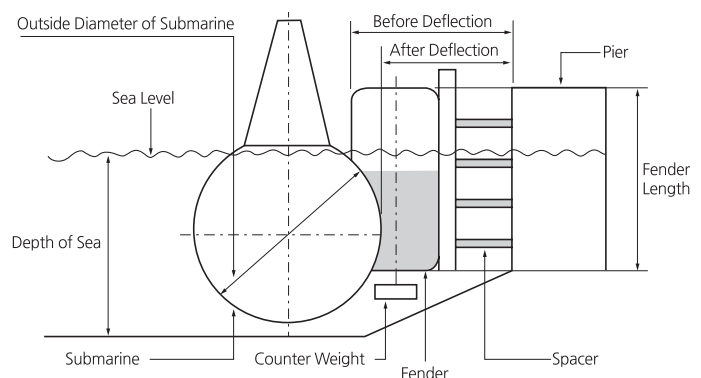


Installation Dimension

Unit : mm

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

Typical Fender Arrangement for Submarine



Submarine Type Fender Performance Table(Initial Pressure : 50kPa)

Size	Ø1700 X 7200L		Ø2000 X 6000L		Ø2500 X 5500L		Ø3300 X 6500L		Ø3300 X 10600L		Ø4500 X 9000L	
DEF[%]	60	45	60	45	60	45	60	45	60	45	60	45
Water Ratio[%]	0.0	65.0	0.0	65.0	0.0	65.0	0.0	65.0	0.0	65.0	0.0	65.0
R · F[kN]	1769	611	1750	599	2019	686	3015	1246	5257	1275	5747	2191
E · A[kN-m]	534	134	650	155	2953	223	1814	615	3067	589	4752	865

- R · F : Reaction Force[kN] - E · A : Energy Absorption[kN-m] - Tolerance : ±5% or ±10%

Pneumatic Fender

Neo Cover



During ship coming alongside the pier for welding repairing, Fender defect is often occurs because welding flame is dropped to a fender



Fender surface defect can be prevented and fender body can be protected it covered by fire-retardant rubber(Neo Cover). So, Fender defect can be prevented in advance

Rent & Repair



Proceed exchange work and body repair with long time know-how

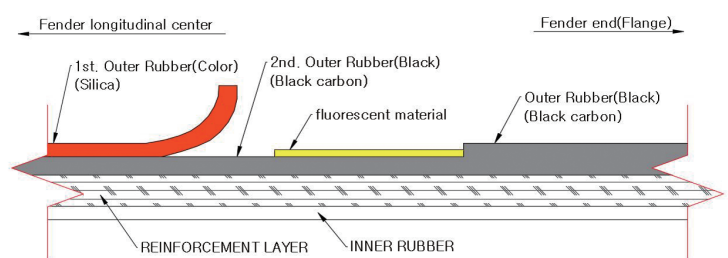


Each standard size product reserves For arriving at a field in a short time

Double Layer



Durability of products is innovatively improved because around Lug is composed of black color rubber with high tension



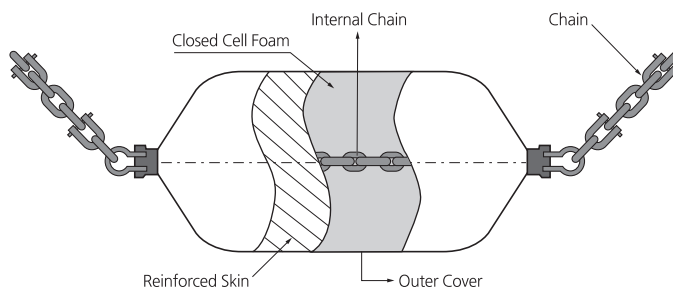
Double layer is for making up for the existing pneumatic fender's fault by covering double layer on outer of pneumatic fender. It is for enhancing durability by using black color rubber with high property of matter inside floor of colored rubber with rapid aging.

Foam Filled Fender

Foam Filled Fender(YFF)



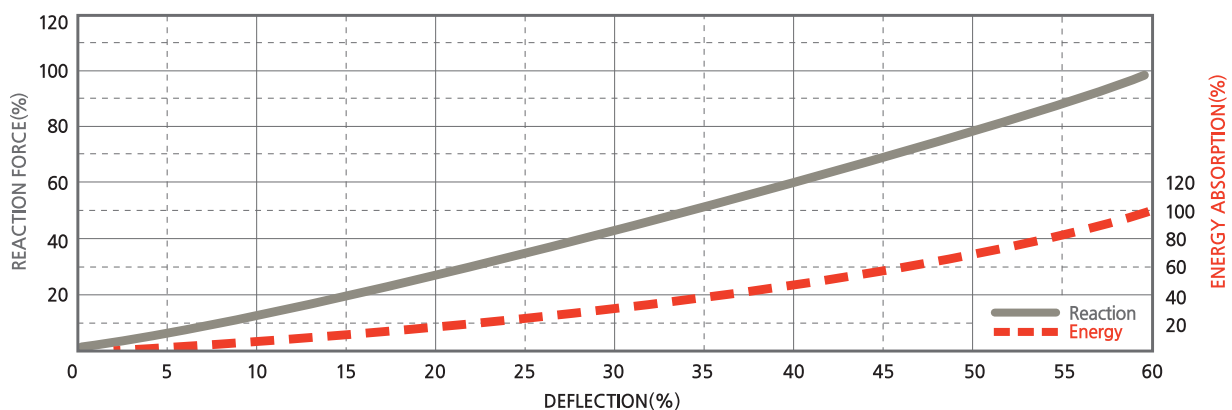
| Drawing |



Feature

Foam Filled Fender is unsinkable and has long-life term. And It is strong durability against sunlight, seawater and abrasion, and large size Foam Filled Fender is provided chain and tire net.

| Performance Curve |



| Performance of Intermediate Deflection |

Deflection(%)	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%
Reaction(%)	7%	15%	21%	28%	36%	43%	52%	59%	69%	79%	89%	100%
Energy(%)	1%	3%	6%	10%	16%	24%	32%	42%	54%	68%	83%	100%

Foam Filled Fender

Performance Table

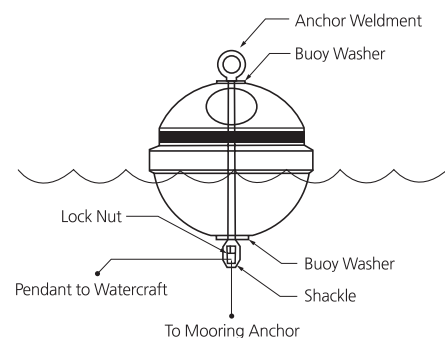
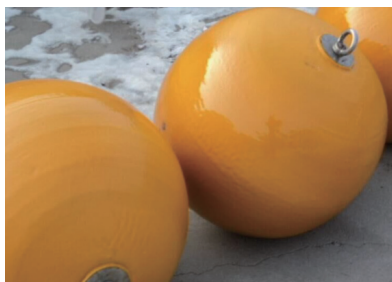
Unit : mm

Diameter	700		1000		1200		1350		1500	1700	2000			2500			3000		3300	
Length	1500	2000	1500	2000	2000	2500	2500	3000	3000	3000	3500	4000	4500	4000	4500	5500	4900	6000	4500	6500
LOW REACTION																				
R · F[kN]	82.3	118	106	153	171	229	253	318	347	370	506	606	694	717	806	1070	906	1376	1011	1641
E · A[kN-m]	17.6	23.5	29.4	41.2	52.9	76.4	88.2	118	141	171	271	323	376	482	541	717	859	1111	900	1452
STANDARD CAPACITY																				
R · F[kN]	137	196	176	255	284	382	421	529	578	617	843	1009	1156	1196	1343	1784	1509	2293	1686	2734
E · A[kN-m]	29.4	39.2	49.0	68.6	88.2	127	147	196	235	284	451	539	627	804	902	1196	1431	1852	1499	2421
HIGH CAPACITY																				
R · F[kN]	176	235	225	333	363	451	539	647	755	804	1098	1303	1509	1558	2107	2323	2303	2979	2195	3543
E · A[kN-m]	29.4	49.0	58.8	88.2	118	147	196	235	304	363	588	706	813	1039	1421	1558	1862	2401	1950	3146
EXTRA HIGH CAPACITY																				
R · F[kN]	255	333	333	480	529	666	794	951	1098	1176	1607	1911	2205	2274	3087	3401	3371	4361	3205	5184
E · A[kN-m]	49.0	68.6	88.2	127	176	216	284	343	441	539	862	1029	1186	1519	2068	2283	2715	3518	2842	4596
SUPER HIGH CAPACITY																				
R · F[kN]	343	461	549	657	725	911	1088	1303	1499	1607	2195	2617	3018	3107	4224	4645	4606	5968	4390	7095
E · A[kN-m]	68.6	88.2	127	176	235	294	392	470	608	735	1176	1401	1617	2087	2832	3116	3714	4812	3891	6292

Notes

- Above detail performance of components can be changed depending on owner specification and local environment condition.
- Detail performance will be guided by our drawing and specification.

Foam Filled Buoy(YFB)

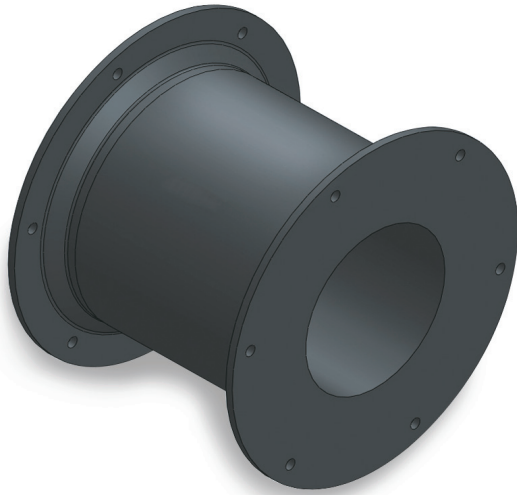


Foam Filled Fender Net Type



System Fender

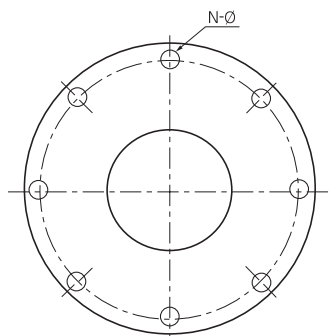
Cell Fender(YCL)



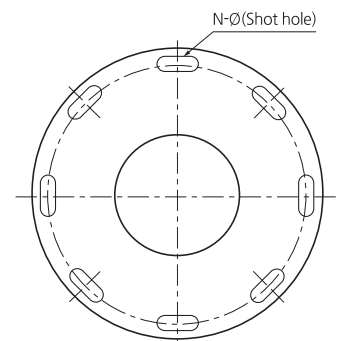
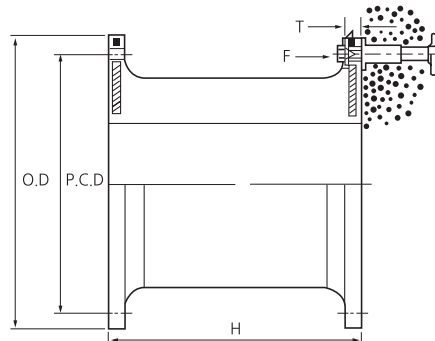
Feature

1. Increased energy absorption and lower load transmitted.
2. Self supporting : Cell-type fender can support its own weight plus that of the frontal system.
(Supporting limits are described later)
3. By adjusting frontal system space, required hull pressure (face pressure) can be easily controlled and changed
4. A wide selection of fender types is available.

| Drawing |



Panel Side



Wharf Side(slot)

| Dimension |

Unit : mm

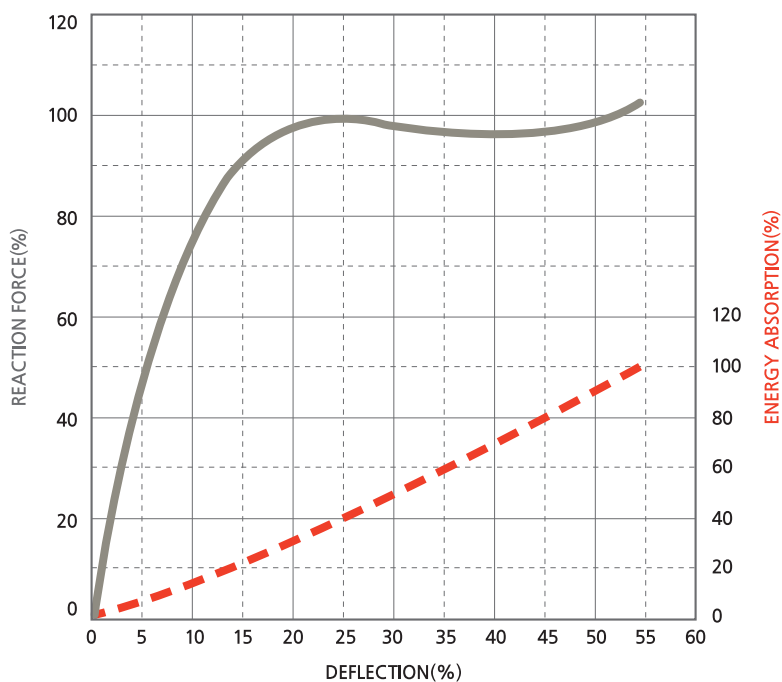
Dimension Height	F	O.D	P.C.D	N-Ø	N-Ø (Slot Hole)	T
YCL 300H	M20(3/4")	400	340	4-25	4-25×35	15
YCL 500H	M24 (1")	650	550	4-32	4-32×40	25
YCL 630H	M27 (1 1/8")	840	700	4-39	4-39×49	25
YCL 650H	M27 (1 1/8")	870	730	4-39	4-39×49	25
YCL 800H	M30 (1 1/4")	1050	900	6-40	6-40×50	30
YCL 1000H	M36 (1 1/2")	1300	1100	6-47	6-47×58	35
YCL 1150H	M42 (1 3/4")	1500	1300	6-50	6-50×65	37
YCL 1200H	M42 (1 3/4")	1550	1350	6-53	6-53×65	40
YCL 1250H	M42 (1 3/4")	1650	1450	6-53	6-53×65	40
YCL 1400H	M48 (2")	1800	1600	6-60	6-60×75	42
YCL 1450H	M48 (2")	1850	1650	6-60	6-60×75	42
YCL 1600H	M48 (2")	2000	1800	8-60	8-60×75	45
YCL 1700H	M56 (2 1/4")	2100	1900	8-66	8-66×80	50
YCL 2000H	M64 (2 1/2")	2200	2000	8-74	8-74×95	50
YCL 2250H	M64 (2 1/2")	2550	2300	10-74	10-74×95	57
YCL2500H	M64 (2 1/2")	2950	2700	10-74	10-74×95	70

Notes

- Above detail dimension of components can be changed depending on owner specification and local environment condition.
- Detail dimension will be guided by our drawing and specification.

System Fender

| Performance Curve |



| Performance of Intermediate Deflection |

Deflection(%)	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	52.5%	55%
Reaction(%)	45%	75%	90%	98%	100%	99%	98%	96%	97%	99%	100%	105%
Energy(%)	3%	8%	17%	30%	41%	50%	61%	72%	84%	95%	100%	106%

| PIANC Factors |

Angle Factor	
Angle	AF
0°	1.000
3°	0.976
5°	0.951
8°	0.911
10°	0.885
15°	0.807
20°	0.655

Velocity Factor	
TIME(sec)	VF
1	1.007
2	1.004
3	1.002
4	1.001
5	1.000
6	1.000
8	1.000
10	1.000

Temperature Factor	
TEMP	TF
-30°	1.205
-20°	1.165
-10°	1.128
0°	1.092
10°	1.054
23°	1.000
30°	0.975
40°	0.945
50°	0.935

Performance Table

Unit : mm

Size		300H	500H	630H	650H	800H	1000H	1150H	1200H	1250H	1400H	1450H	1600H	1700H	2000H	2250H	2500H
Performance																	
G280	R · F[kN]	65.8	183	290	309	468	731	966	1052	1141	1432	1536	1870	2111	2922	3698	4565
	E · A[kN-m]	8.8	41.3	82.6	90.7	169	330	502	571	645	906	1007	1353	1622	2642	3761	5159
G270	R · F[kN]	63.9	177	281	300	458	709	938	1021	1108	1390	1491	1815	2049	2836	3589	4431
	E · A[kN-m]	8.6	40.1	80.1	88.0	164	321	487	554	626	879	977	1313	1575	2564	3651	5008
G260	R · F[kN]	61.9	172	273	291	440	688	909	990	1074	1348	1445	1760	1987	2750	3480	4297
	E · A[kN-m]	8.3	38.8	77.7	85.3	159	311	473	537	607	853	948	1273	1527	2486	3540	4856
G250	R · F[kN]	60.0	167	264	281	426	666	881	959	1041	1305	1400	1705	1925	2664	3372	4163
	E · A[kN-m]	8.1	37.6	75.3	82.7	154	301	458	520	588	826	918	1233	1479	2409	3429	4704
G240	R · F[kN]	58.1	161	256	272	413	645	852	928	1007	1263	1355	1650	1863	2578	3263	4028
	E · A[kN-m]	7.8	36.4	72.9	80.0	149	291	443	504	569	800	888	1193	1431	2331	3319	4553
G230	R · F[kN]	56.1	156	247	263	399	623	824	897	974	1221	1310	1595	1801	2492	3154	3894
	E · A[kN-m]	7.5	35.2	70.4	77.3	144	282	428	487	550	773	859	1154	1384	2253	3208	4401
G220	R · F[kN]	54.2	150	239	254	385	602	796	866	940	1179	1265	1540	1739	2406	3045	3760
	E · A[kN-m]	7.3	34.0	68.0	74.7	139	272	414	470	531	746	829	1114	1336	2176	3098	4249
G210	R · F[kN]	52.2	145	230	245	371	580	767	835	906	1137	1220	1485	1676	2320	2937	3625
	E · A[kN-m]	7.0	32.8	65.6	72.0	134	262	399	453	512	720	799	1074	1288	2098	2987	4097
G200	R · F[kN]	50.3	140	222	236	358	559	739	804	873	1095	1174	1430	1614	2234	2828	3491
	E · A[kN-m]	6.8	31.6	63.1	69.3	129	253	384	436	493	693	770	1034	1241	2020	2876	3746
G190	R · F[kN]	48.4	134	213	227	344	537	710	773	839	1053	1129	1375	1552	2148	2719	3357
	E · A[kN-m]	6.5	30.3	60.7	66.7	124	243	369	420	474	666	740	995	1193	1942	2766	3794
G180	R · F[kN]	46.4	129	205	218	330	516	682	743	806	1011	1084	1320	1490	2063	2610	3223
	E · A[kN-m]	6.2	29.1	58.3	64.0	119	233	355	403	455	640	711	955	1145	1865	2655	3642
G170	R · F[kN]	44.5	124	196	209	316	494	654	712	772	969	1039	1265	1428	1977	2502	3088
	E · A[kN-m]	6.0	27.9	55.9	61.3	114	223	340	386	436	613	681	915	1097	1787	2544	3490
G160	R · F[kN]	42.6	118	188	200	303	473	625	681	739	926	994	1210	1366	1891	2393	2954
	E · A[kN-m]	5.7	26.7	53.4	58.7	109	214	325	369	417	586	651	875	1050	1709	2434	3339
G150	R · F[kN]	40.6	113	179	191	289	451	597	650	705	884	949	1155	1304	1805	2284	2820
	E · A[kN-m]	5.5	25.5	51.0	56.0	104	204	310	352	398	560	622	835	1002	1632	2323	3187
G140	R · F[kN]	38.7	107	171	182	275	430	568	619	671	842	903	1100	1242	1719	2175	2686
	E · A[kN-m]	5.2	24.3	48.6	53.3	99.4	194	295	336	379	533	592	796	954	1554	2213	3035
G130	R · F[kN]	36.8	102	162	173	261	408	540	588	638	800	858	1045	1180	1633	2067	2551
	E · A[kN-m]	4.9	23.1	46.1	50.7	94.5	185	281	319	360	506	563	756	907	1476	2102	2883
G120	R · F[kN]	34.8	96.7	154	163	248	387	511	557	604	758	813	990	1118	1547	1958	2417
	E · A[kN-m]	4.7	21.9	43.7	48.0	89.5	175	266	302	341	480	533	716	859	1399	1991	2732
G110	R · F[kN]	32.9	91.3	145	154	234	365	483	526	571	716	768	935	1056	1461	1849	2283
	E · A[kN-m]	4.4	20.6	41.3	45.3	84.5	165	251	285	323	453	503	676	811	1321	1881	2580
G100	R · F[kN]	31.0	85.9	136	145	220	344	455	495	537	674	723	880	993	1375	1740	2148
	E · A[kN-m]	4.2	19.4	38.9	42.7	79.6	155	236	269	304	426	474	637	763	1243	1770	2428

- R · F : Reaction Force[kN] - E · A : Energy Absorption[kN-m] - Tolerance : $\pm 5\%$ or $\pm 10\%$ - Rated Deflection : 52.5% - Maximum Deflection : 55%

Compression Test

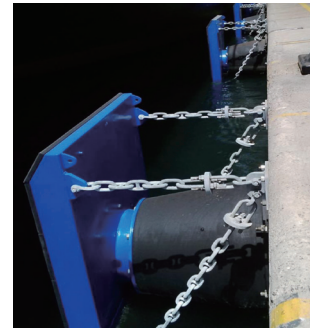


Notes

- Above detail performance of components can be changed depending on owner specification and local environment condition.
- Detail performance will be guided by our drawing and specification.

System Fender

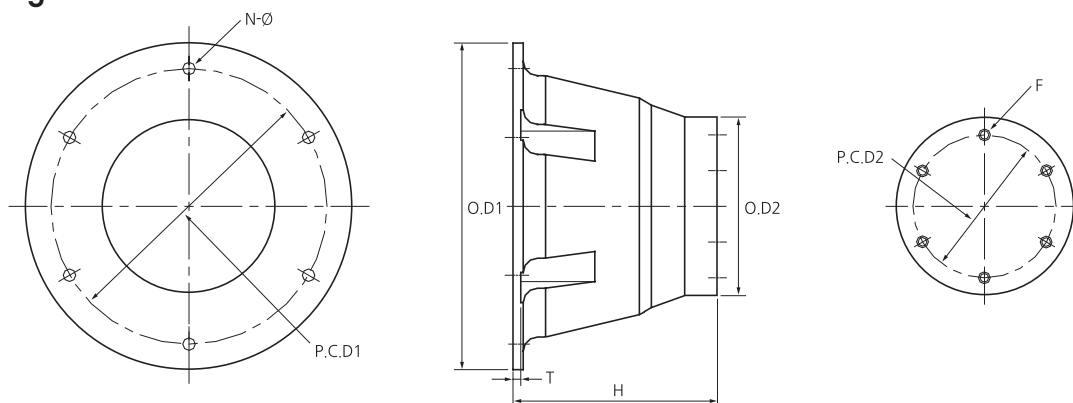
Cone Fender(YCN)



Feature

1. YMI's cone fender design meets the most demanding conditions of berthing due to its higher energy absorption and lower reaction force ratio.
2. Ideal Fender for High Hull pressure requirements.
3. Simply & easy installation

| Drawing |



| Dimension |

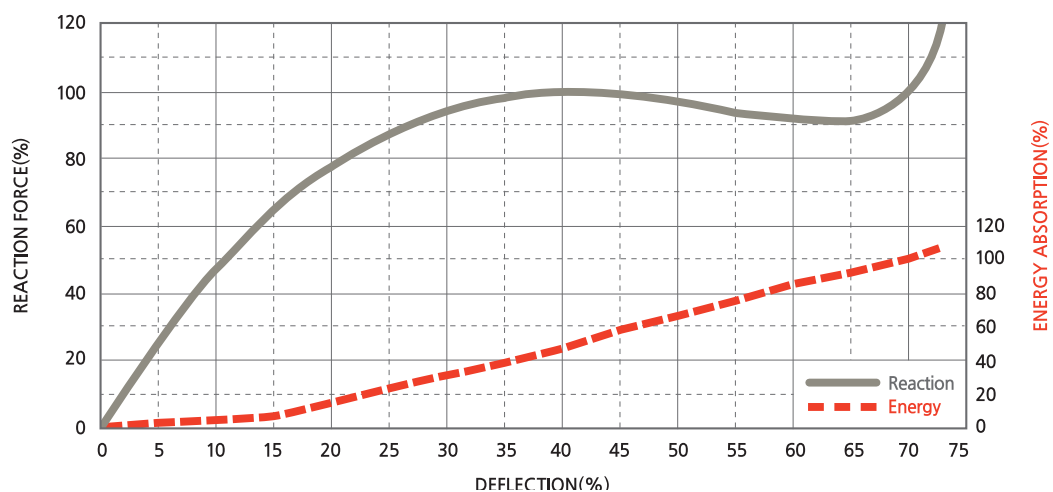
Unit : mm

Dimension Height	F	O.D1	P.C.D1	O.D2	P.C.D2	T	N-Ø
YCN 300H	M20(3/4")	500	440	262	210	18	4-26
YCN 350H	M20(3/4")	575	510	306	245	20	4-26
YCN 400H	M20(3/4")	650	585	350	280	20	4-26
YCN 500H	M24(1")	820	730	436	350	22	4-30
YCN 600H	M24(1")	900	810	525	420	23	4-30
YCN 700H	M30(1 1/4")	1120	1020	615	490	26	4-38
YCN 800H	M36(1 1/2")	1250	1165	700	560	31	6-44
YCN 900H	M36(1 1/2")	1450	1313	785	630	36	6-44
YCN 1000H	M42(1 3/4")	1600	1460	875	700	38	6-50
YCN 1150H	M42(1 3/4")	1850	1550	1000	805	41	6-50
YCN 1200H	M42(1 3/4")	1920	1750	1050	840	46	8-50
YCN 1300H	M48(2")	2080	1900	1140	910	50	8-60
YCN 1400H	M48(2")	2240	2040	1230	980	53	8-60
YCN 1600H	M48(2")	2500	2330	1400	1120	80	8-60
YCN 1800H	M56(2 1/4")	2880	2620	1575	1260	90	10-70
YCN 2000H	M56(2 1/4")	3200	2920	1700	1400	100	10-70

Notes

- Above detail dimension of components can be changed depending on owner specification and local environment condition.
- Detail dimension will be guided by our drawing and specification.

Performance Curve



Performance of 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%	100%	99%	97%	94%	92%	90%	100%	120%
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°	1.000
5°	1.000
8°	0.991
10°	0.982
15°	0.935
20°	0.876

Velocity Factor	
TIME(sec)	VF
1	1.048
2	1.025
3	1.014
4	1.006
5	1.000
6	1.000
8	1.000
10	1.000

Temperature Factor	
TEMP	TF
-30°	1.205
-20°	1.165
-10°	1.128
0°	1.092
10°	1.054
20°	1.000
30°	0.975
40°	0.945
50°	0.935

System Fender

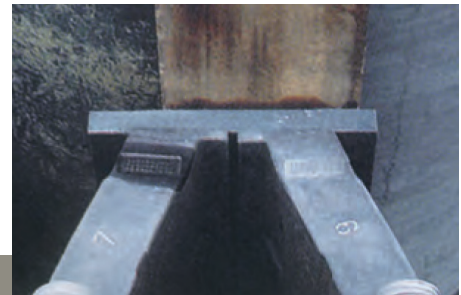
Performance Table

	Grade	YCN 300		YCN 500		YCN 600		YCN 700		YCN 800		YCN 900		YCN 1000		YCN 1100		YCN 1150		YCN 1200		YCN 1300		YCN 1400		YCN 1600		YCN 1800		YCN 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
G430	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
G420	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
G410	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
G400	G1	56.5	9.5	157	44	226	76	308	120	402	179	508	255	628	350	760	466	830	532	904	605	1061	769	1230	961	1607	1434	2035	2041	2512	2800
G390	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
G380	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
G370	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
G360	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
G350	1.5	63.6	10.6	177	49.5	254	85	346	135	452	202	572	287	707	394	855	524	934	599	1017	681	1194	865	1400	1168	1808	1613	2289	2295	2826	3148
G340	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
G330	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
G320	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
G310	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
G300	G2	70.7	11.8	196	55	282	94	384	150	502	224	636	319	785	437	950	582	1038	665	1130	756	1326	961	1538	1200	2009	1792	2009	1792	3140	3496
G290	2.1	72.4	12.0	201	56	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
G280	2.2	74.2	12.3	206	57	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
G270	2.3	75.9	12.5	211	58	303	99.4	413	159	540	237	683	337	844	462	1021	615	1116	703	1215	799	1425	1016	1790	1412	2160	1894	2734	2696	3375	3698
G260	2.4	77.7	12.7	216	59	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
G250	2.5	79.5	12.9	221	60	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
G240	2.6	81.2	13.2	225	61	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
G230	2.7	83.0	13.4	230	62	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
G220	2.8	84.8	13.6	235	63	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
G210	2.9	86.5	13.8	240	64	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
G200	G3	88.3	14.1	245	65	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
G190	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
G180	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
G170	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
G160	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
G150	3.5	99.3	15.8	276	73	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
G140	3.6	101.5	16.5	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
G130	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
G120	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
G110	3.9	108.1	17.2	301	79.4	432	137	589	219	769	326	973	465	1202	637	1453	848	1589	969	1730	1102	2031	1400	2355	1749	3076	2610	3893	3716	4806	5097
G100	G4	110.3	18	307	81	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

Notes

- Above detail performance of components can be changed depending on owner specification and local environment condition.
- Detail performance will be guided by our drawing and specification.
- Values shown are for standard 70% deflection.
- Maximum deflection - 72.5%
- Tolerance - $\pm 10\%$

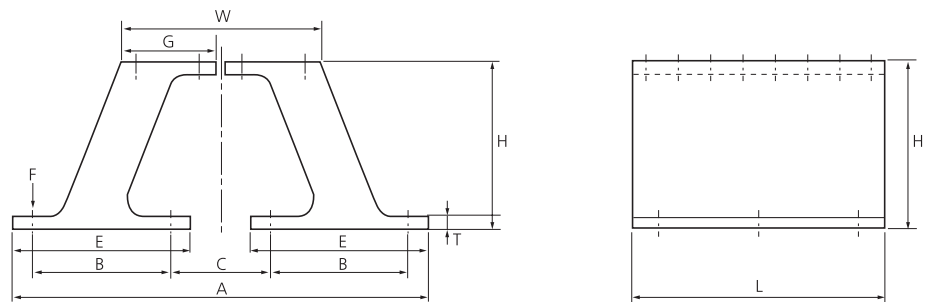
TR - Fender(YTR)



Feature

1. The choice of symmetrical and asymmetric boltings
2. Excellent high shear strength in lengthwise wise plan
3. Sizes to suit every application
4. Easy and quick installation

Drawing



Dimension

Unit : mm

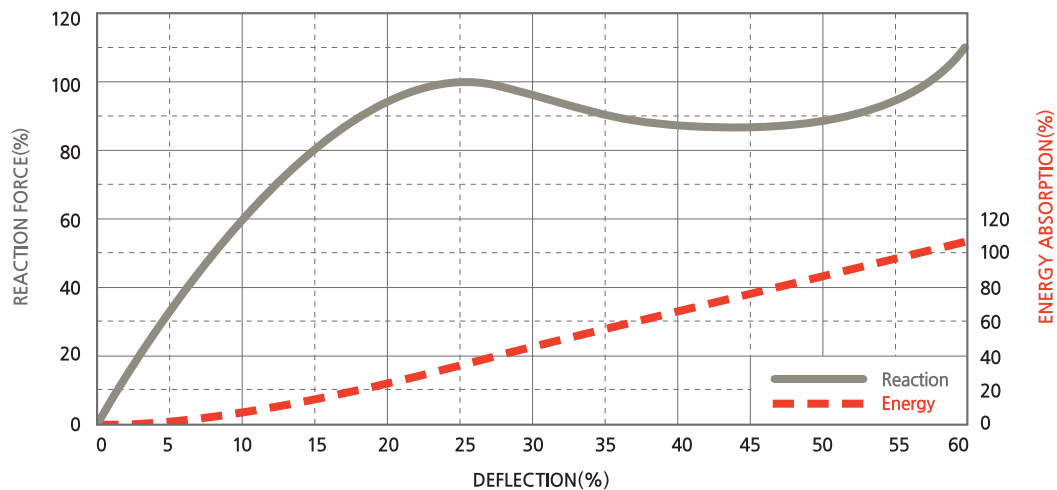
Dimension Height	F	A	B	C	E	G	T	W	L
YTR 600H	M48(2")	1435	450	375	592.5	180	50	965	1000 ~ 3000
YTR 800H	M64(2 1/2")	1850	585	480	765	240	60	800	
YTR 1000H	M64(2 1/2")	2180	685	610	890	300	65	1000	
YTR 1150H	M64(2 1/2")	2500	800	650	1005	345	65	1150	
YTR 1300H	M76(3")	2740	880	750	1115	395	65	1300	
YTR 1450H	M76(3")	3100	1000	800	1300	675	100	1450	
YTR 1600H	M76(3")	3300	1100	800	1400	750	100	1600	
YTR 1800H	M76(3")	3670	1200	970	1500	830	110	1800	
YTR 2000H	M76(3")	4050	1300	1150	1600	880	120	2000	
YTR 2250H	M76(3")	4400	1400	1300	1700	945	130	2250	
YTR 2500H	M76(3")	4860	1500	1560	1800	1000	140	2500	

Notes

- Above detail dimension of components can be changed depending on owner specification and local environment condition.
- Detail dimension will be guided by our drawing and specification.

System Fender

Performance Curve



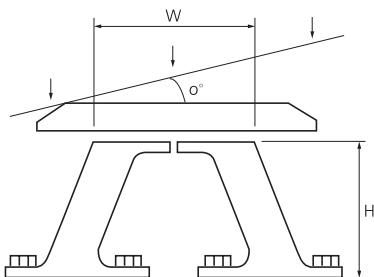
Performance of Intermediate Deflection

Deflection(%)	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	57.5%	60%
Reaction(%)	32%	58%	79%	94%	100%	95%	90%	87%	86%	89%	93%	100%	110%
Energy(%)	2%	6%	13%	24%	35%	44%	56%	65%	75%	85%	94%	100%	106%

Angular Berthing

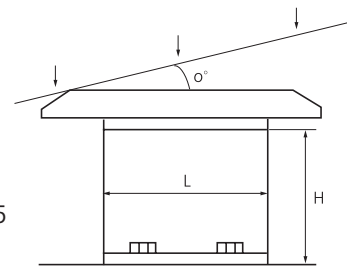
Fender System 1
[Transversal
Angular Berthing]

- Case1 : $W=H$
- Case2 : $W=1.25H$
- Case3 : $W=1.5H$



Fender System 2
[Longitudinal
Angular Berthing]

- Case1 : $W=L/H=1$
- Case2 : $W=L/H=1.5$
- Case3 : $W=L/H=2$



Angular Performance Factor

Angle		0°		3°		6°		9°		12°		15°	
Performance		R · F	E · A	R · F	E · A	R · F	E · A	R · F	E · A	R · F	E · A	R · F	E · A
Transversal Angular	Case1 [W=1]	1.00	1.00	0.95	0.94	0.93	0.88	0.92	0.82	0.91	0.76	0.90	0.70
	Case2 [W=1.25H]	1.00	1.00	0.94	0.92	0.92	0.85	0.90	0.78	0.88	0.70	0.86	0.63
	Case3 [W=1.5H]	1.00	1.00	0.93	0.90	0.91	0.82	0.88	0.74	0.85	0.65	0.82	0.56
Longitudinal Angular	Case1 [L/H=1]	1.00	1.00	0.97	0.94	0.94	0.89	0.92	0.85	0.90	0.80	0.88	0.75
	Case2 [L/H=1.5]	1.00	1.00	0.94	0.92	0.93	0.85	0.90	0.78	0.86	0.72	0.80	0.65
	Case3 [L/H=2]	1.00	1.00	0.94	0.89	0.92	0.80	0.89	0.72	0.89	0.65	0.90	0.58

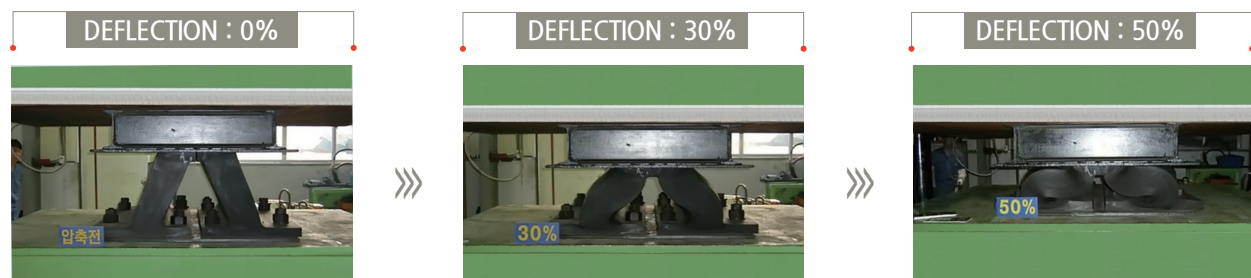
Performance Table

Unit : mm

Size		YTR 600H	YTR 800H	YTR 1000H	YTR 1150H	YTR 1300H	YTR 1450H	YTR 1600H	YTR 1800H	YTR 2000H	YTR 2250H	YTR 2500H
Performance												
G260	R · F[kN]	645	859	1074	1236	1397	1558	1719	1934	2148	2418	2686
	E · A[kN-m]	175	311	486	642	821	1021	1243	1573	1942	2459	3036
G250	R · F[kN]	623	831	1038	1195	1350	1506	1661	1869	2077	2337	2596
	E · A[kN-m]	169	300	469	620	794	987	1202	1521	1878	2377	2935
G240	R · F[kN]	602	802	1003	1154	1303	1454	1604	1805	2005	2257	2507
	E · A[kN-m]	163	290	453	599	766	953	1161	1468	1813	2295	2833
G230	R · F[kN]	580	773	967	1113	1257	1403	1547	1740	1934	2176	2417
	E · A[kN-m]	158	279	437	577	739	919	1119	1416	1748	2213	2732
G220	R · F[kN]	559	745	931	1071	1210	1351	1490	1676	1862	2095	2327
	E · A[kN-m]	152	269	421	556	712	885	1078	1363	1683	2131	2631
G210	R · F[kN]	537	716	895	1030	1164	1299	1432	1611	1790	2015	2238
	E · A[kN-m]	146	259	405	535	684	851	1036	1311	1619	2049	2530
G200	R · F[kN]	516	688	859	989	1117	1247	1375	1547	1719	1934	2148
	E · A[kN-m]	140	248	389	513	657	817	995	1258	1554	1967	2429
G190	R · F[kN]	494	659	824	948	1071	1195	1318	1482	1647	1854	2059
	E · A[kN-m]	134	238	372	492	630	783	953	1206	1489	1885	2327
G180	R · F[kN]	473	630	788	906	1024	1143	1260	1418	1576	1773	1969
	E · A[kN-m]	128	228	356	471	602	749	912	1154	1424	1803	2226
G170	R · F[kN]	451	602	752	865	978	1091	1203	1354	1504	1692	1880
	E · A[kN-m]	123	217	340	449	575	715	870	1101	1360	1721	2125
G160	R · F[kN]	430	573	716	824	931	1039	1146	1289	1432	1612	1790
	E · A[kN-m]	117	207	324	428	547	681	829	1049	1295	1639	2024
G150	R · F[kN]	408	544	680	783	884	987	1089	1225	1361	1531	1701
	E · A[kN-m]	111	197	308	406	520	647	788	996	1230	1557	1923
G140	R · F[kN]	387	516	645	742	838	935	1031	1160	1289	1451	1611
	E · A[kN-m]	105	186	291	385	493	613	746	944	1165	1475	1821
G130	R · F[kN]	365	487	609	700	791	883	974	1096	1217	1370	1522
	E · A[kN-m]	99.2	176	275	364	465	579	705	891	1101	1393	1720
G120	R · F[kN]	344	458	573	659	745	831	917	1031	1146	1289	1432
	E · A[kN-m]	93.4	166	259	342	438	545	663	839	1036	1311	1619
G110	R · F[kN]	322	430	537	618	698	779	859	967	1074	1209	1343
	E · A[kN-m]	87.6	155	243	321	411	511	622	787	971	1229	1518
G100	R · F[kN]	301	401	501	577	652	727	802	902	1003	1128	1253
	E · A[kN-m]	81.7	145	227	299	383	477	580	734	906	1148	1417

- R · F : Reaction Force[kN] - E · A : Energy Absorption[kN-m] - Tolerance : $\pm 5\%$ or $\pm 10\%$ - Rated Deflection : 57.5% - Maximum Deflection : 60%

Compression Test

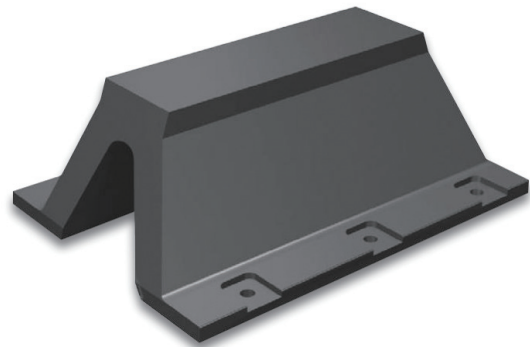


Notes

- Above detail performance of components can be changed depending on owner specification and local environment condition.
- Detail performance will be guided by our drawing and specification.

Solid Fender

NV Fender(YNV)



Feature

1. NV fender is enhanced more against OV Fender.
2. NV fender has 15% increased E.A compared with other arch fender
3. Compression capacity is increased from 45% to 52.5%
4. R.F 17% and 32% surface reaction force is decreased If NV is compared to other arch fender with same E.A

Dimension

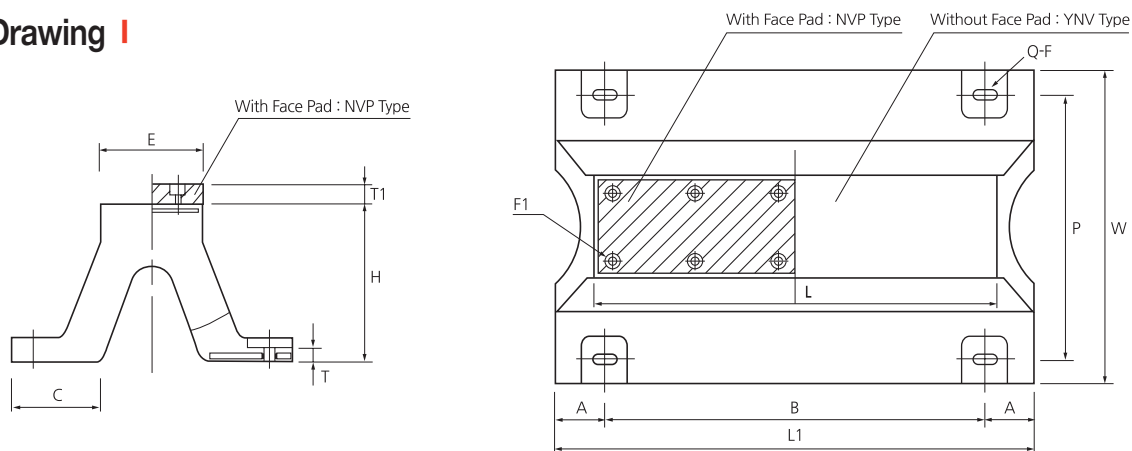
Unit : mm

H	F	P	W	C	E	T	NVP Type		L=1000 (Q=4)	L=1500 (Q=6)	L=2000 (Q=8)	L=2500 (Q=8)	L=3000 (Q=10)
									A	A	A	A	A
							F1	T1	B	B	B	B	B
									L1	L1	L1	L1	L1
YNV 150	M22 (7/8")	240	300	96	120	18	M16	30	110	112.5	107.5	110	107.5
									855	675 x 2	620 x 3	785 x 3	715 x 4
									1075	1575	2075	2575	3075
YNV 200	M24 (1")	320	400	128	160	18	M16	30	120	120	120	122.5	120
									860	680 x 2	620 x 3	785 x 3	715 x 4
									1100	1600	2100	2600	3100
YNV 250	M27 (1 1/8")	410	500	160	200	23	M16	30	130	132.5	132.5	127.5	132.5
									865	680 x 2	620 x 3	790 x 3	715 x 4
									1125	1625	2125	2625	3125
YNV 300	M30 (1 1/4")	490	600	192	240	23	M16	40	140	140	137.5	140	145
									870	685 x 2	625 x 3	790 x 3	715 x 4
									1150	1650	2150	2650	3150
YNV 400	M36 (1 1/2")	670	800	256	320	30	M16	40	150	150	147.5	150	150
									900	700 x 2	635 x 3	800 x 3	725 x 4
									1200	1700	2200	2700	3200
YNV 500	M42 (1 3/4")	840	1000	320	400	35	M20	50	160	160	157.5	160	165
									930	715 x 2	645 x 3	810 x 3	730 x 4
									1250	1750	2250	2750	3250
YNV 600	M48 (2")	1010	1200	384	480	40	M20	50	170	170	167.5	170	170
									960	730 x 2	655 x 3	820 x 3	740 x 4
									1300	1800	2300	2800	3300
YNV 800	M64 (2 1/2")	1340	1600	501	640	45	M24	60	180	180	180	182.5	180
									1040	770 x 2	680 x 3	845 x 3	760 x 4
									1400	1900	2400	2900	3400
YNV 1000	M64 (2 1/2")	1680	2000	640	800	50	M24	60	200	200	200	202.5	200
									1100	800 x 2	700 x 3	865 x 3	775 x 4
									1500	2000	2500	3000	3500

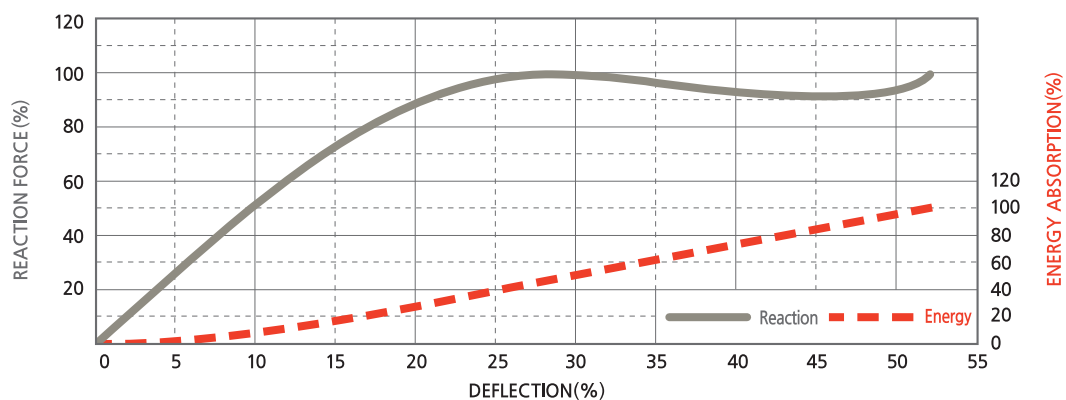
Notes

- Above detail dimension of components can be changed depending on owner specification and local environment condition.
- Detail dimension will be guided by our drawing and specification.

I Drawing I



I Performance Curve I



I Performance Table I

·Tolerance : $\pm 10\%$

Size	Rubber Grade Performance	R_H		R_M		R_L	
		R·F(kN)	E·A(kN·m)	R·F(kN)	E·A(kN·m)	R·F(kN)	E·A(kN·m)
YNV 150H		117.6	6.86	107.8	5.88	88.2	4.9
YNV 200H		166.6	12.74	137.2	10.78	117.6	8.82
YNV 250H		205.8	20.58	176.4	17.64	147	13.72
YNV 300H		245	29.4	215.6	25.48	166.6	20.58
YNV 400H		323.4	51.94	294	45.08	225.4	36.26
YNV 500H		411.6	81.34	352.8	70.56	284.2	56.84
YNV 600H		490	117.6	421.4	98	343	81.34
YNV 800H		646.8	205.8	568.4	176.4	450.8	147
YNV 1000H		813.4	323.4	705.6	284.2	568.4	225.4

·R·F=Reaction Force ·E·A=Energy Absorption

[Deflection 52.5%, Per 1m Length]

I Compression Test I

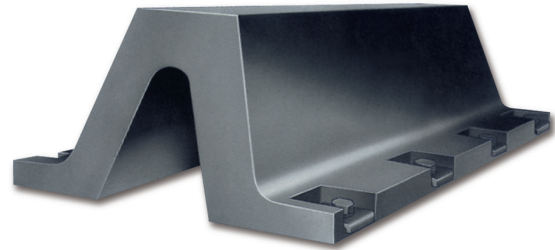


Notes

- Above detail performance of components can be changed depending on owner specification and local environment condition.
- Detail performance will be guided by our drawing and specification.

Solid Fender

OV Fender(YOV)



Feature

1. OV has a great energy absorption and low reaction force.
2. The arch type can reduce hull.
3. The arch type fender has a various size and energy capacity.
4. It is easy setup and suitable for every docking facility.

Dimension

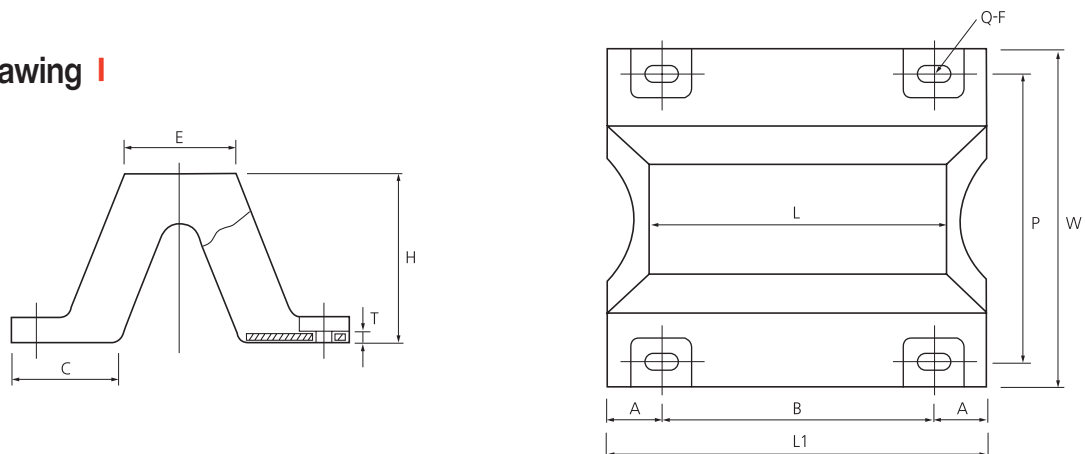
Unit : mm

H	F	P	W	C	E	T	L=1000 (Q=4)	L=1500 (Q=6)	L=2000 (Q=8)	L=2500 (Q=8)	L=3000 (Q=10)	L=3500 (Q=12)
							A	A	A	A	A	A
							B	B	B	B	B	B
							L1	L1	L1	L1	L1	L1
YOV 150	M22 (7/8")	240	300	96	97.5	17	110	112.5	107.5	110	107.5	110
							855	675 x 2	620 x 3	785 x 3	715 x 4	671 x 5
							1075	1575	2075	2575	3075	3575
YOV 200	M24 (1")	320	400	128	130	17	120	120	120	122.5	120	120
							860	680 x 2	620 x 3	785 x 3	715 x 4	672 x 5
							1100	1600	2100	2600	3100	3600
YOV 250	M27 (1 1/8")	410	500	160	162.5	22	130	132.5	132.5	127.5	132.5	130
							865	680 x 2	620 x 3	790 x 3	715 x 4	673 x 5
							1125	1625	2125	2625	3125	3625
YOV 300	M30 (1 1/4")	490	600	192	195	23	140	140	137.5	140	145	140
							870	685 x 2	625 x 3	790 x 3	715 x 4	674 x 5
							1150	1650	2150	2650	3150	3650
YOV 400	M36 (1 1/2")	670	800	256	260	31	150	150	147.5	150	150	150
							900	700 x 2	635 x 3	800 x 3	725 x 4	680 x 5
							1200	1700	2200	2700	3200	3700
YOV 500	M42 (1 3/4")	840	1000	320	325	34	160	160	157.5	160	165	160
							930	715 x 2	645 x 3	810 x 3	730 x 4	686 x 5
							1250	1750	2250	2750	3250	3750
YOV 600	M48 (2")	1010	1200	384	390	40	170	170	167.5	170	170	170
							960	730 x 2	655 x 3	820 x 3	740 x 4	692 x 5
							1300	1800	2300	2800	3300	3800
YOV 800	M64 (2 1/2")	1340	1600	501	525	45	180	180	180	182.5	180	-
							1040	770 x 2	680 x 3	845 x 3	760 x 4	-
							1400	1900	2400	2900	3400	-
YOV 1000	M64 (2 1/2")	1680	2000	640	650	49	200	200	200	202.5	200	-
							1100	800 x 2	700 x 3	865 x 3	775 x 4	-
							1500	2000	2500	3000	3500	-

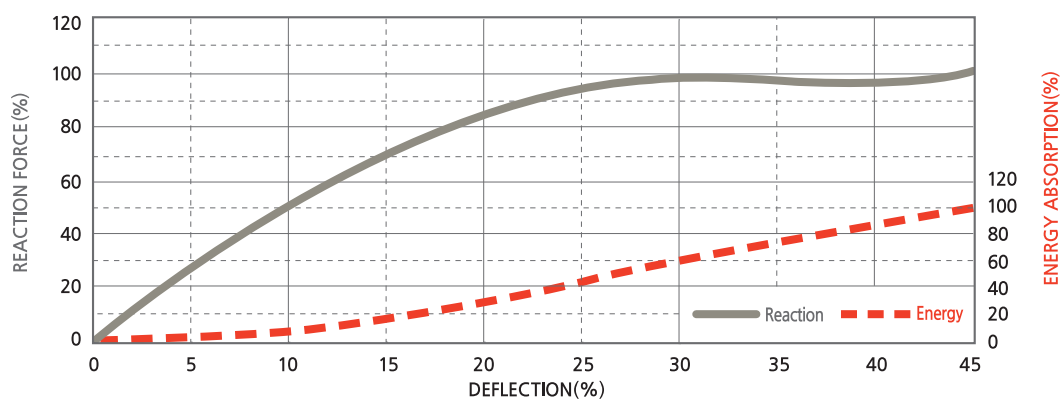
Notes

- Above detail dimension of components can be changed depending on owner specification and local environment condition.
- Detail dimension will be guided by our drawing and specification.

I Drawing I



I Performance Curve I



I Performance Table I

·Tolerance : $\pm 10\%$

Size	Rubber Grade	R_H		R_M		R_L	
	Performance	R·F(kN)	E·A(kN·m)	R·F(kN)	E·A(kN·m)	R·F(kN)	E·A(kN·m)
YOY 150H		107.8	4.9	88.2	3.92	58.8	2.94
YOY 200H		147	9.8	117.6	7.84	78.4	4.9
YOY 250H		186.2	15.68	147	11.76	98	7.84
YOY 300H		225.4	21.56	166.6	15.68	117.6	9.8
YOY 400H		294	39.2	235.2	29.4	156.8	19.6
YOY 500H		372.4	60.76	294	45.08	186.2	29.4
YOY 600H		441	88.2	333.2	63.7	235.2	39.2
YOY 800H		588	156.8	470.4	117.6	313.6	78.4
YOY 1000H		735	245	588	176.4	372.4	117.6

[Deflection 45%, Per 1m Length]

I Compression Test I

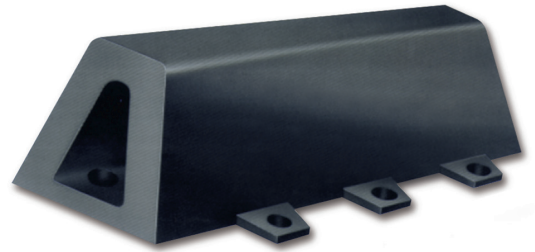


Notes

- Above detail performance of components can be changed depending on owner specification and local environment condition.
- Detail performance will be guided by our drawing and specification.

Solid Fender

CV Fender(YCV)



Feature

1. The fender is the most common fender in the field.
2. Steel plate is embedded in the whole bottom of fender.
3. R.F and E.A are physically stable type on all direction.
4. It is easy setup and maintenance.

Dimension

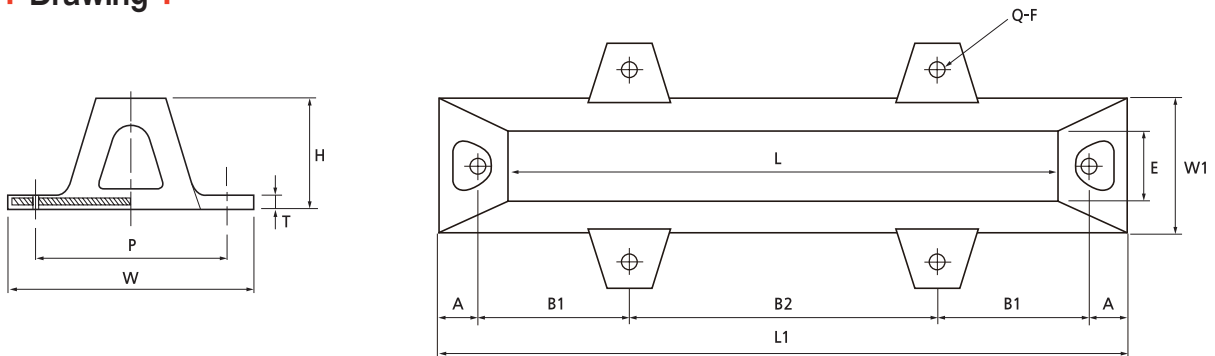
Unit : mm

H	F	P	W	W1	E	T	L=1000(Q=4)	L=1500(Q=4)	L=2000(Q=6)	L=2500(Q=6)	L=3000(Q=8)	L=3500(Q=8)
							A	A	A	A	A	A
							B1	B1	B1	B1	B1	B1
							B2	B2	B2	B2	B2	B2
							L1	L1	L1	L1	L1	L1
YCV 200	M24 (1")	350	445	250	125	25	70	70	70	70	70	70
							555	805	605	855	655	905
							-	-	900	900	900 x 2	900 x 2
							1250	1750	2250	2750	3250	3750
YCV 300	M30 (1 1/4")	530	645	375	188	35	75	75	75	75	75	75
							600	850	600	850	600	850
							-	-	1000	1000	1000 x 2	1000 x 2
							1350	1850	2350	2850	3350	3850
YCV 400	M36 (1 1/2")	710	840	500	250	40	85	85	85	85	85	85
							640	890	540	790	440	690
							-	-	1200	1200	1200 x 2	1200 x 2
							1450	1950	2450	2950	3450	3950
YCV 500	M42 (1 3/4")	860	1000	625	315	40	100	100	100	100	100	100
							675	925	675	925	675	925
							-	-	1000	1000	1000 x 2	1000 x 2
							1550	2050	2550	3050	3550	4050
YCV 600	M48 (2")	1050	1210	750	375	50	115	115	115	115	115	115
							710	960	700	950	690	940
							-	-	1020	1020	1020 x 2	1020 x 2
							1650	2150	2650	3150	3650	4150
YCV 700	M48 (2")	1180	1380	880	450	55	115	115	115	115	115	115
							635	885	635	885	635	885
							-	-	1000	1000	1000 x 2	1000 x 2
							1500	2000	2500	3000	3500	4000
YCV 800	M64 (2 1/2")	1350	1550	1000	500	60	130	130	130	130	130	130
							670	920	645	895	620	870
							-	-	1050	1050	1050 x 2	1050 x 2
							1600	2100	2600	3100	3600	4100
YCV 1000	M64 (2 1/2")	1600	1800	1250	625	65	150	150	150	150	150	150
							700	950	600	850	500	750
							-	-	1200	1200	1200 x 2	1200 x 2
							1700	2200	2700	3200	3700	4200

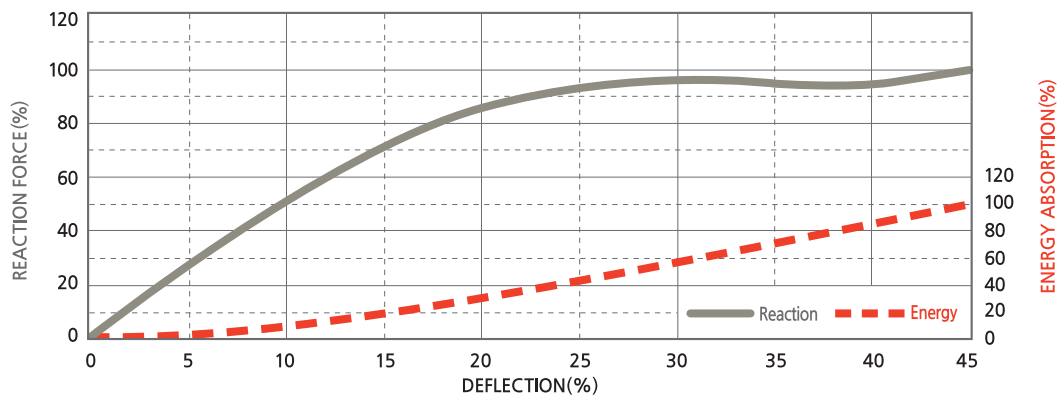
Notes

- Above detail dimension of components can be changed depending on owner specification and local environment condition.
- Detail dimension will be guided by our drawing and specification.

I Drawing I



I Performance Curve I



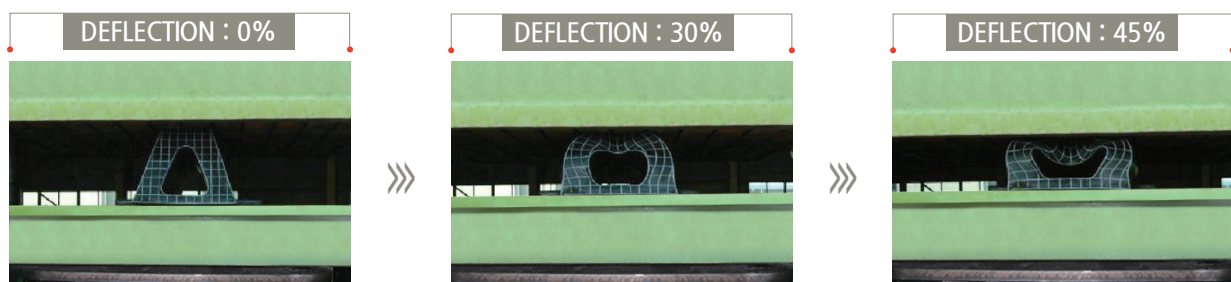
I Performance Table I

·Tolerance : $\pm 10\%$

Size	Rubber Grade Performance	R_H		R_M		R_L	
		R·F(kN)	E·A(kN·m)	R·F(kN)	E·A(kN·m)	R·F(kN)	E·A(kN·m)
YCV 200H		147	9.8	117.6	7.84	78.4	4.9
YCV 300H		225.4	21.56	166.6	15.68	117.6	9.8
YCV 400H		294	39.2	235.2	29.4	156.8	19.6
YCV 500H		372.4	60.76	294	45.08	186.2	29.4
YCV 600H		441	88.2	333.2	63.7	235.2	39.2
YCV 800H		588	156.8	470.4	117.6	313.6	78.4
YCV 1000H		735	245	588	176.4	372.4	117.6
YCV 1300H		960.4	411.6	764.4	303.8	480.2	196

[Deflection 45%, Per 1m Length]

I Compression Test I



Notes

- Above detail performance of components can be changed depending on owner specification and local environment condition.
- Detail performance will be guided by our drawing and specification.

Solid Fender

BP Fender(YBP)



Feature

1. Appropriated for protecting docking facility from lateral berthing load.
2. Minimum damage because of an unbreakable type.
3. Suitable for vessel hull with wide field

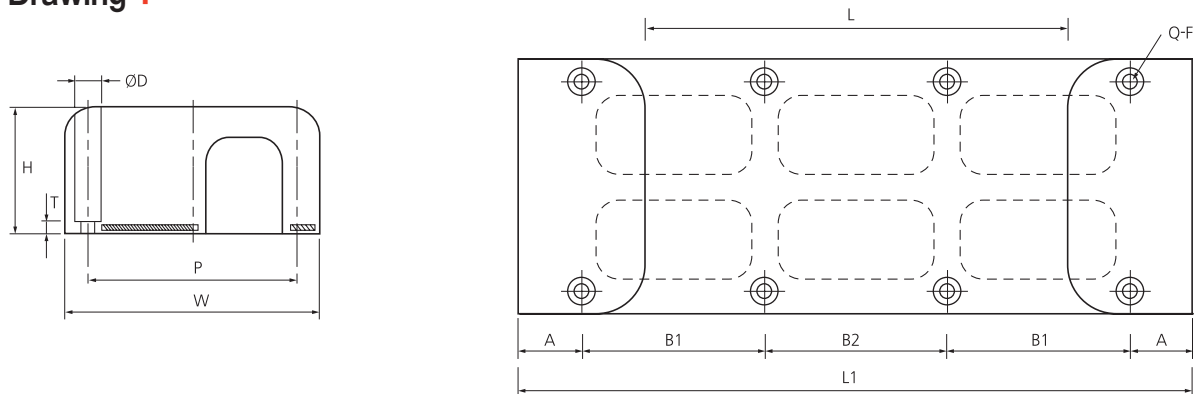
Dimension

Unit : mm

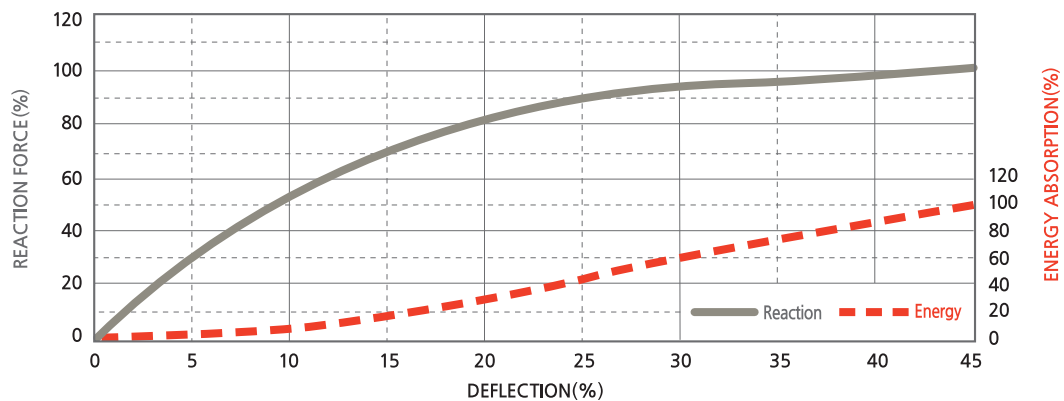
H	F	P	W	ΦD	T	L=1000(Q=6)	L=1500(Q=6)	L=2000(Q=8)	L=2500(Q=8)	L=3000(Q=10)
						A	A	A	A	A
						B1	B1	B1	B1	B1
						B2	B2	B2	B2	B2
YBP 150	M24 (1")	200	300	65	25	L1	L1	L1	L1	L1
						75	75	75	75	75
						575	825	720	885	790
						-	-	710	880	785 x 2
YBP 200	M30 (1 1/4")	290	400	75	30	1300	1800	2300	2800	3300
						100	100	100	100	100
						600	850	735	900	800
						-	-	730	900	800 x 2
YBP 250	M30 (1 1/4")	380	500	80	35	1400	1900	2400	2900	3400
						125	125	125	125	125
						625	875	750	920	815
						-	-	750	910	810 x 2
YBP 300	M36 (1 1/2")	470	600	90	35	1500	2000	2500	3000	3500
						150	150	150	150	150
						650	900	770	935	825
						-	-	760	930	825 x 2
YBP 400	M36 (1 1/2")	640	800	90	40	1600	2100	2600	3100	3600
						200	200	200	200	200
						700	950	800	970	850
						-	-	800	960	850 x 2
YBP 500	M42 (1 3/4")	820	1000	110	50	1800	2300	2800	3300	3800
						250	250	250	250	250
						750	1000	835	1000	875
						-	-	830	1000	875 x 2
YBP 600	M48 (2")	990	1200	125	60	2000	2500	3000	3500	4000
						300	300	300	300	300
						800	1050	870	1035	900
						-	-	860	1030	900 x 2
YBP 800	M64 (2 1/2")	1340	1600	145	65	2200	2700	3200	3700	4200
						400	400	400	400	400
						900	1150	935	1100	950
						-	-	930	1100	950 x 2
YBP 1000	M64 (2 1/2")	1700	2000	160	70	2600	3100	3600	4100	4600
						500	500	500	500	500
						1000	1250	1000	1170	1000
						-	-	1000	1160	1000 x 2
YBP 1300	M76 (3")	2250	2600	190	75	3000	3500	4000	4500	5000
						650	650	650	650	650
						1150	1400	1100	1270	1075
						-	-	1100	1260	1075 x 2
YBP 1300	M76 (3")	2250	2600	190	75	3600	4100	4600	5100	5600
						-	-	-	-	-

Notes • Above detail dimension of components can be changed depending on owner specification and local environment condition.
• Detail dimension will be guided by our drawing and specification.

I Drawing I



I Performance Curve I



I Performace Table I

·Tolerance : $\pm 10\%$

Size		YBP 150(H)	YBP 200(H)	YBP 250(H)	YBP 300(H)	YBP 400(H)	YBP 500(H)	YBP 600(H)	YBP 800(H)	YBP 1000(H)	YBP 1300(H)
Performance											
Def.45%	R·F(kN)	1254.4	1901.2	2518.6	3018.4	4155.2	5292	5801.6	6644.4	8310.4	10094
	E·A(kN-m)	16.66	37.24	49.98	69.58	117.6	166.6	235.2	362.6	568.4	872.2

[Deflection 45%, Per 1m Length]

I Compression Test I



Notes

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- Detail performance will be guided by our drawing and specification.

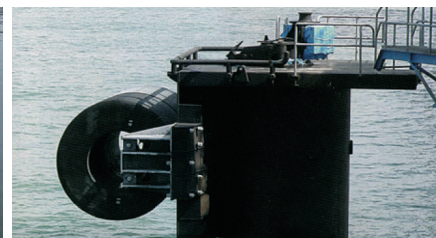
Solid Fender

CY Fender(YCY)



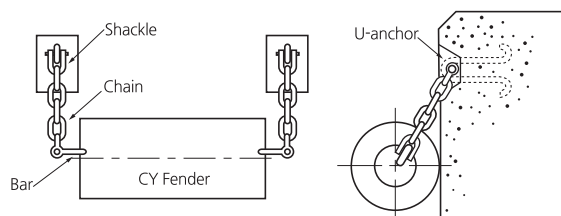
Feature

1. A simple and an economical design
2. Outside diameter : 150 - 1600mm
3. The best abrasion resistance, long-term use
4. The most commonly available used fender

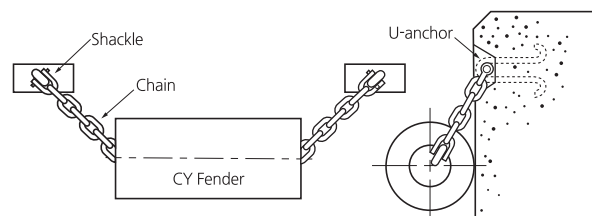


I Drawing I

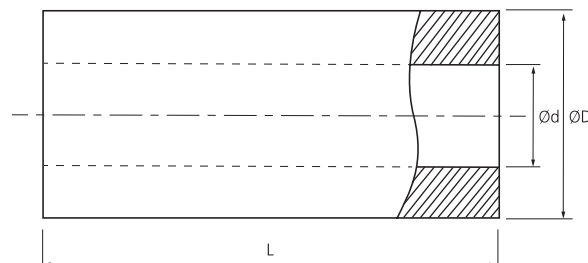
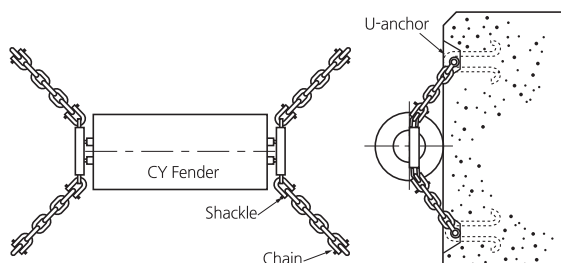
Fitting Chain and bar



Fitting Chain



Ladder



I Dimension I

Unit : mm

Size	YCYØ150 xØ75	YCYØ200 xØ100	YCYØ300 xØ150	YCYØ400 xØ200	YCYØ500 xØ250	YCYØ600 xØ300	YCYØ800 xØ400	YCYØ1000 xØ500	YCYØ1200 xØ600	YCYØ1400 xØ700	YCYØ1600 xØ800
ØD	150	200	300	400	500	600	800	1,000	1,200	1,400	1,600
Ød	75	100	150	200	250	300	400	500	600	700	800
L(m)	15	15	15	15	15	12	12	10	8	8	5

- Notes**
- Above detail dimension of components can be changed depending on owner specification and local environment condition.
 - Detail dimension will be guided by our drawing and specification.

I Performance Table I

•Tolerance : ±10%

Size	Rubber Grade Performance	R _H		R _M		R _L	
		R·F(kN)	E·A(kN·m)	R·F(kN)	E·A(kN·m)	R·F(kN)	E·A(kN·m)
YCY Ø150 x Ø75		73.5	1.96	58.8	1.96	40.18	0.98
YCY Ø200 x Ø100		98	3.92	75.46	2.94	52.92	1.96
YCY Ø300 x Ø150		147	8.82	117.6	6.86	78.4	4.9
YCY Ø400 x Ø200		196	15.68	156.8	12.74	107.8	7.84
YCY Ø500 x Ø250		245	24.5	186.2	19.6	127.4	12.74
YCY Ø600 x Ø300		294	35.28	225.4	28.42	156.8	18.62
YCY Ø800 x Ø400		392	62.72	294	50.96	205.8	33.32
YCY Ø1000 x Ø500		490	98	372.4	80.36	254.8	51.94
YCY Ø1200 x Ø600		588	137.2	450.8	117.6	313.6	74.48
YCY Ø1400 x Ø700		686	196	529.2	156.8	362.6	98
YCY Ø1600 x Ø800		784	254.8	597.8	205.8	411.6	137.2

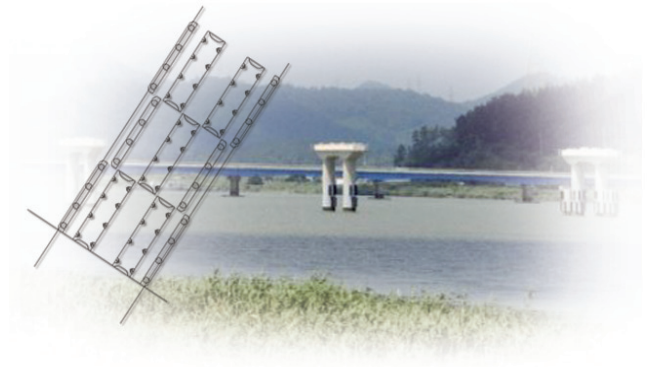
- R·F=Reaction Force - E·A=Energy Absorption - Specialsize on request

[Deflection 50%, Per 1m Length]

- Notes**
- Above detail performance of components can be changed depending on owner specification and local environment condition.
 - Detail performance will be guided by our drawing and specification.

Solid Fender

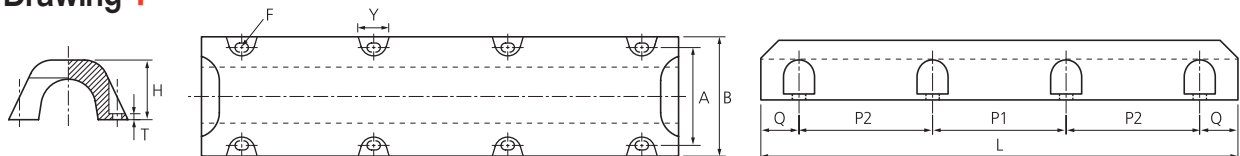
SBP Fender(YSBP)



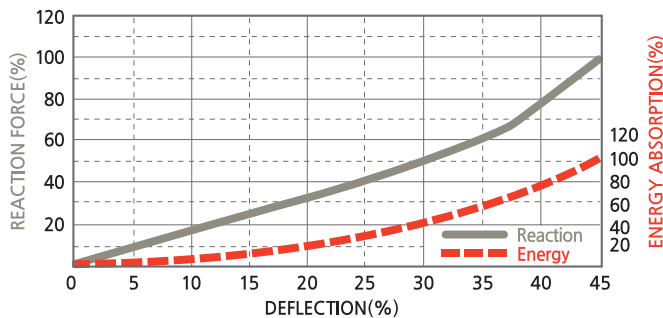
Feature

1. Improved from existing Bumper type.
2. Specialized to minimize damages
3. Superior E.A capacity with outstanding compression deformation ratio of the fender body.
4. Can be installed on any curved surface of the bridges.

Drawing



Performance Curve



Performance of Intermediate Deflection

Deflection (%)	0%	5%	10%	15%	20%	25%	30%	35%	40%	45%
Reaction (%)	0%	9%	17%	25%	33%	41%	49%	61%	77%	100%
Energy (%)	0%	1%	5%	11%	19%	29%	42%	57%	76%	100%

Dimension

Unit : mm

Size Height	F	A	B	T	Y	R		1000L		1500L		2000L		2500L		3000L		
						4°	8°	P2	Q	P2	Q	P2	Q	P2	Q	P1	P2	Q
YSBP 250H	M30(1 1/4")	410	500	25	130	over 3m	under 3m	560	220	560X2	190	560X3	160	700X2	200	700X2	560X2	240
YSBP 300H	M36(1 1/2")	490	600	30	140	over 3m	under 3m	560	220	560X2	190	560X3	160	700X2	200	700X2	560X2	240
YSBP 400H	M36(1 1/2")	660	800	40	140	over 4m	under 4m	560	220	560X2	190	560X3	160	700X2	200	700X2	560X2	240
YSBP 500H	M30(1 3/4")	820	1000	50	170	over 4m	under 4m	560	220	560X2	190	560X3	160	700X2	200	700X2	560X2	240
YSBP 600H	M48(2")	990	1200	60	180	over 5m	under 5m	560	220	560X2	190	560X3	160	700X2	200	700X2	560X2	240

Performance Table

Size Performance	150(H)	200(H)	250(H)	300(H)	400(H)	500(H)
R·F[kN]	427.3	513.5	684.0	769.3	855.5	1026
E·A[kN-m]	19.4	27.9	49.7	62.9	77.6	111.8

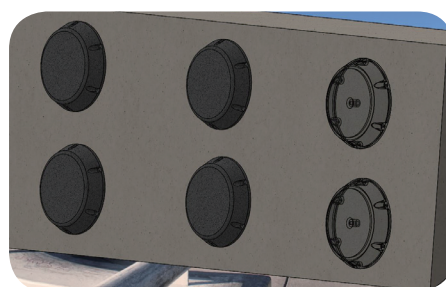
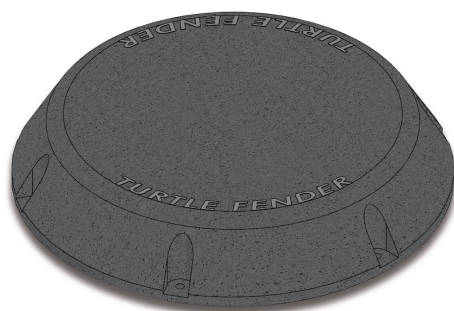
- R · F : Reaction Force[kN]
- E · A : Energy Absorption[kN-m]
- Tolerance : $\pm 5\%$ or $\pm 10\%$
- Deflection : 45%

[1m Length]

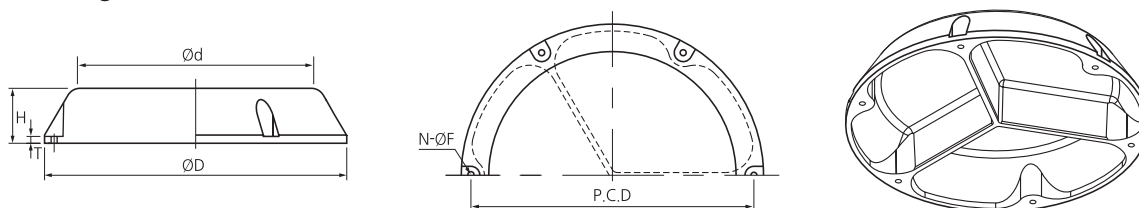
Turtle Fender(YTF)

Feature

1. This is developed for berthing at small size vessel.
2. Applied instead of secondhand tires for small size vessel.
3. Low price and it has high durability.



Drawing

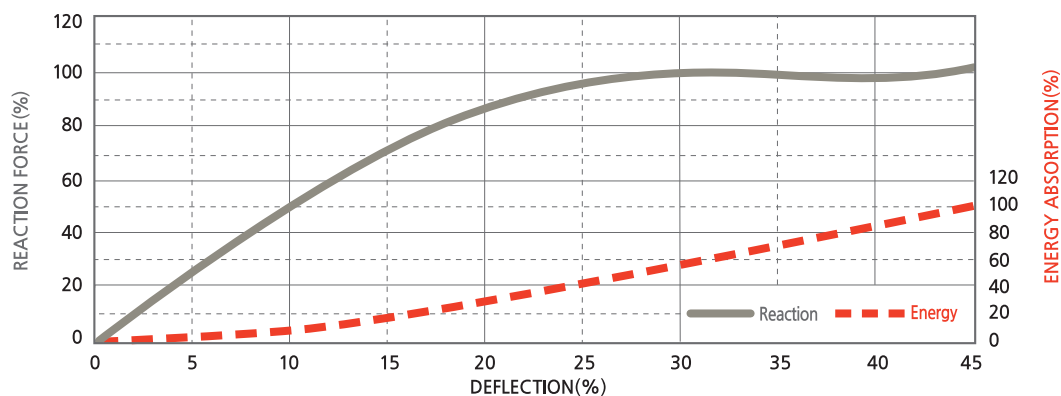


Dimension

Unit : mm

Height	F	N	H	T	ØD	Ød	P.C.D
YTF 200H	22	6	200	25	110	900	1030

Performance Curve



Performance of Intermediate Deflection

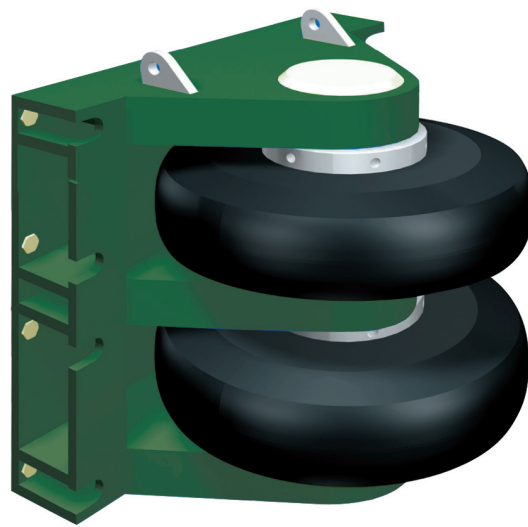
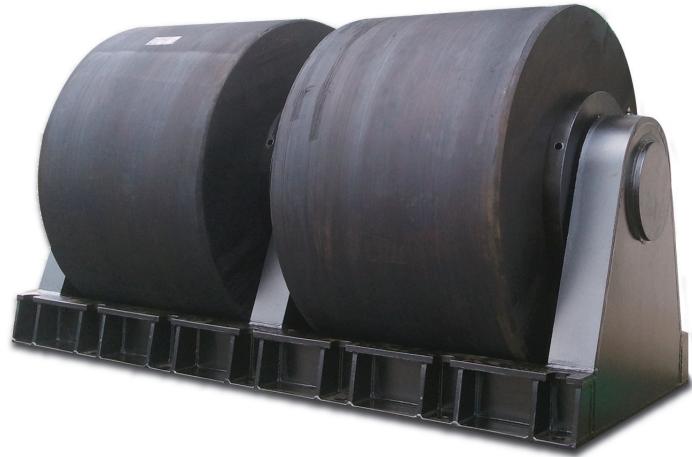
Deflection(%)	0%	5%	10%	15%	20%	25%	30%	35%	40%	45%
Reaction(%)	0%	26%	50%	69%	85%	96%	100%	97%	96%	100%
Energy(%)	0%	2%	8%	17%	28%	42%	56%	71%	85%	100%

Performance Table

Size	200H
Performance	
R·F[kN]	156.8
E·A[kN·m]	5.9

Solid Fender

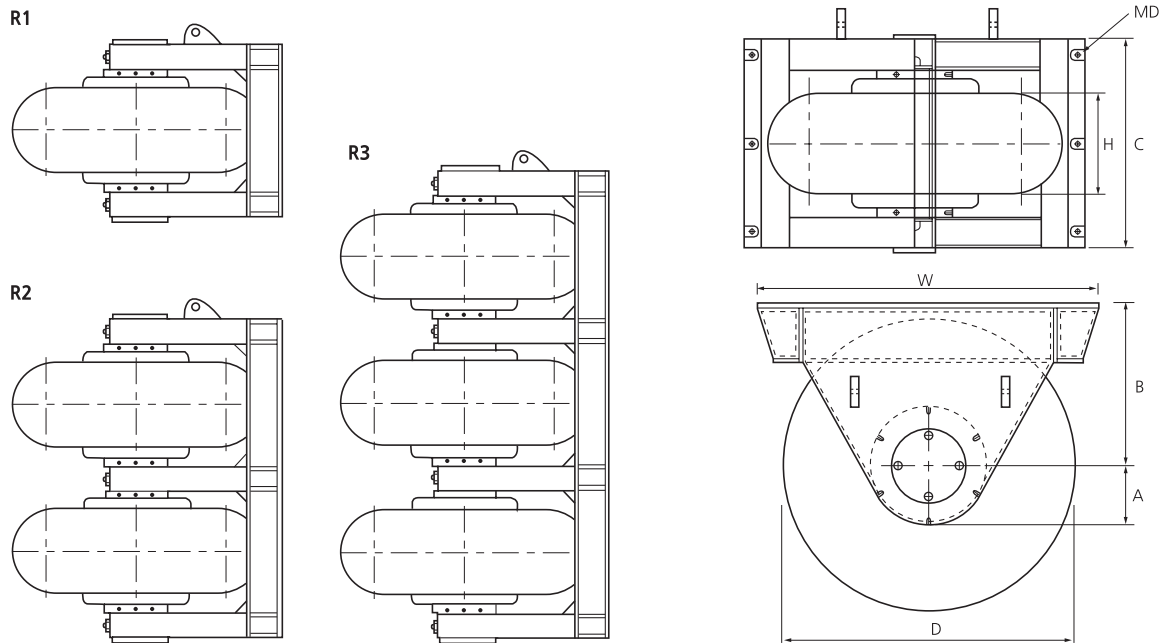
Roller Fender(YRF)



Feature

1. The fixed axle roller is an effective fender suitable for high reactive loads with moderated deflection, and limited kinetic energy absorption characteristics.
2. It is designed specifically for assisting in maneuvering vessels in confined spaces such as dry docks and pontoon.
3. Units of this type are installed in building and dry docks which are in exposed conditions.
4. With a pattern of simple rollers, the ships are allowed to positively contact one fenders, and the ship can then be rolled out safely with very little friction resistance.

| Drawing |



| Dimension |

Unit : mm

Type	MD	Roller Fender		Frame					
Size		D	H	A	B	W	R1-C	R2-C	R3-C
YRF R600	M22(7/8")	600	200	110	320	695	420	770	1120
YRF R750	M22(7/8")	750	250	140	400	870	510	935	1360
YRF R900	M24(1")	900	300	165	480	1040	610	1120	1630
YRF R1200	M27(1 1/8")	1200	400	220	640	1380	820	1500	2180
YRF R1500	M30(1 1/4")	1500	500	275	800	1740	1010	1850	2690
YRF R1800	M36(1 1/2")	1800	600	330	960	2080	1210	2215	3220
YRF R2100	M42(1 3/4")	2100	700	385	1155	2440	1410	2590	3770
YRF R2400	M48(2")	2400	800	440	1280	2770	1610	2950	4290
YRF R2700	M56(2 1/4")	2700	900	495	1440	3130	1810	3300	4790
YRF R3000	M64(2 1/2")	3000	1000	550	1600	3480	2010	3660	5310

Notes

- Above detail dimension of components can be changed depending on owner specification and local environment condition.
- Detail dimension will be guided by our drawing and specification.

| Performance Table |

·Tolerance : ±10%

Size		R600	R750	R900	R1200	R1500	R1800	R2100	R2400	R2700	R3000
Deflection(mm)		125	157	185	260	325	390	455	510	578	640
Performance											
R1	R-F(kN)	68.6	107.8	147	264.6	421.4	607.6	823.2	1078	1362.2	1675.8
	E-A(kN-m)	2.94	4.9	7.84	19.6	38.22	66.64	107.8	156.8	225.4	303.8
R2	R-F(kN)	137.2	215.6	294	529.2	842.8	1215.2	1646.4	2156	2724.4	3351.6
	E-A(kN-m)	4.9	9.8	16.66	39.2	76.44	137.2	205.8	313.6	450.8	607.6
R3	R-F(kN)	205.8	323.4	441	793.8	1264.2	1822.8	2469.6	3234	4086.6	5027.4
	E-A(kN-m)	7.84	14.7	24.5	58.8	117.6	196	313.6	470.4	666.4	921.2

Notes

- Above detail performance of components can be changed depending on owner specification and local environment condition.
- Detail performance will be guided by our drawing and specification.

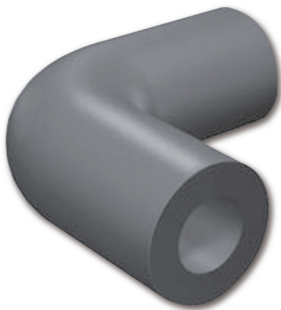
Solid Fender

Corner Fender(YCF)

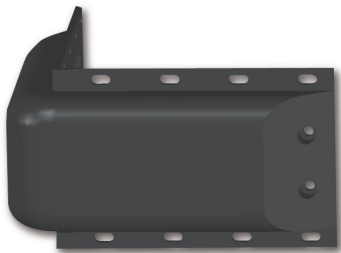
Feature

1. It is used for at the corner of the berthing facility.
2. Steel plate is embedded in the whole bottom of fender for reinforcement.

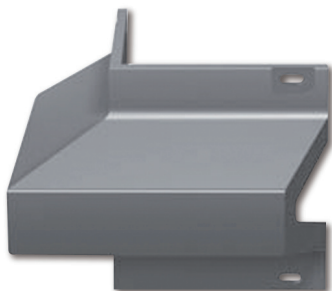
CYL-TYPE



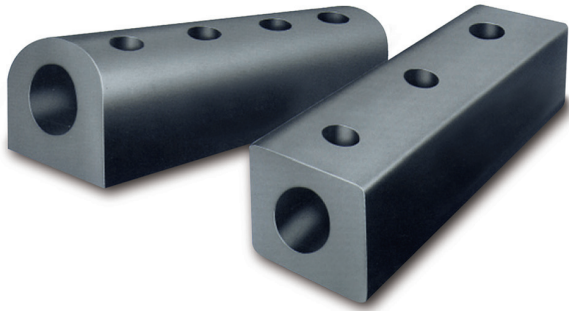
BP- TYPE



YOV- TYPE



Ship Fender



DC & RC Type Fender



D & DA Type Fender



BC Type Fender



Feature

1. Inland water ways
2. Work boats and service craft
3. The smaller jetty and wharf
4. Easy and quick installation

Ship Fender

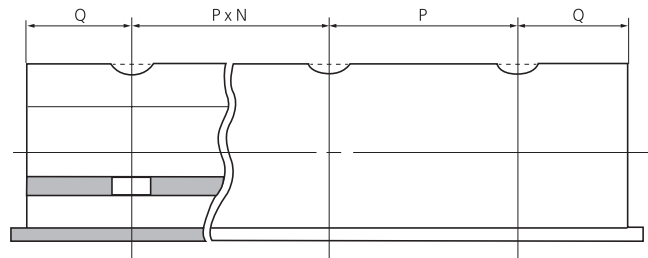
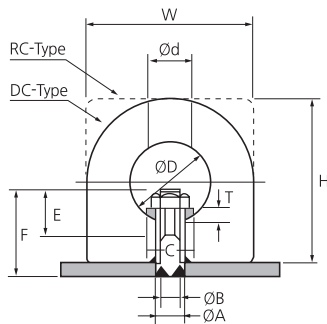
DC Type & RC Type Fender

Feature

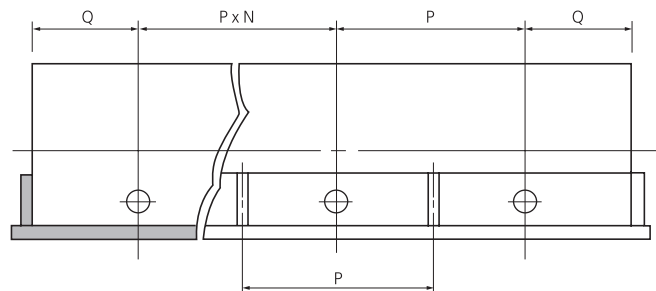
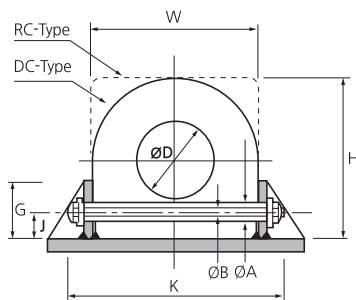
The fenders are commonly used on floating pontoons and inland waterways for lock protection.



Vertical Fitting Bolts Method



Cross Fitting Bolts Method



Dimension

Unit : mm

Size	ØA	ØB	C	ØD	Ød	E	F	G	H	J	K	P	Q	T	W
150H×Ø75	22	19	50	75	60	40	80	60	150	26	220	250 ~ 350	150 ~ 200	16	150
200H×Ø100	25	22	65	100	65	50	95	75	200	35	280	250 ~ 350	150 ~ 200	19	200
250H×Ø125	28	25	80	125	70	60	112	100	250	43	350	250 ~ 350	150 ~ 200	22	250
300H×Ø150	32	28	90	150	80	70	132	125	300	52	400	250 ~ 350	150 ~ 200	25	300
400H×Ø200	36	32	100	200	90	80	180	150	400	70	520	250 ~ 350	150 ~ 200	28	400
500H×Ø250	42	38	120	250	100	90	210	175	500	88	640	250 ~ 350	150 ~ 200	32	500

Notes • Above detail dimension of components can be changed depending on owner specification and local environment condition.
• Detail dimension will be guided by our drawing and specification.

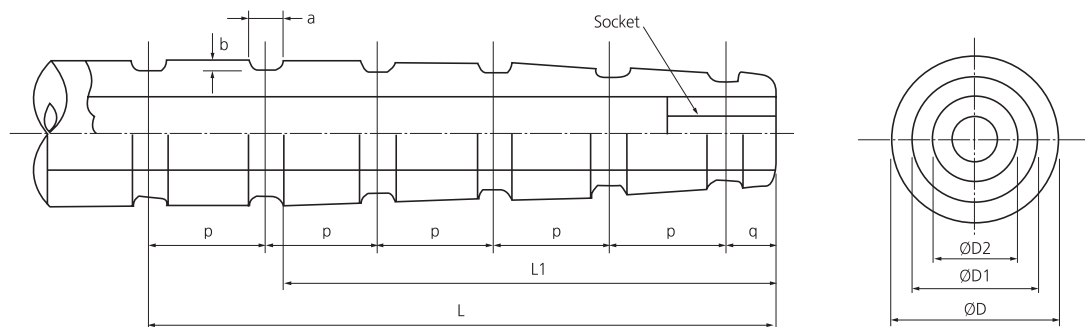
BC Type Fender

Feature

This is mainly for tug boat. BC fender is more 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



I Type A For Use of Bow And Stern Of Vessels I



L : Maximum length available is 16m

I Dimension I

Unit : mm

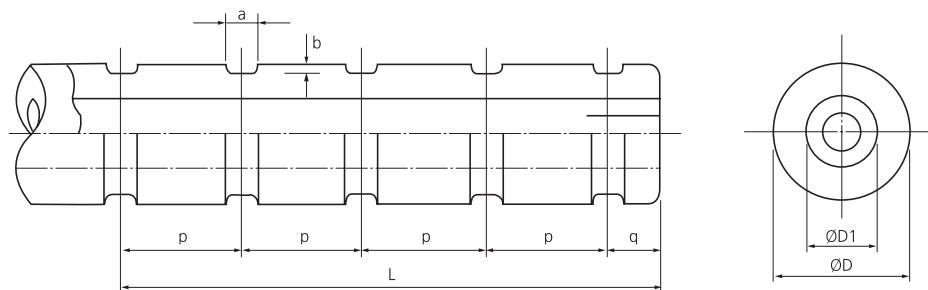
Size	$\varnothing D$	$\varnothing D_1$	$\varnothing D_2$	a	b	L_1	p	q	Socket		
									I.D	O.D	Length
YBC $\varnothing 200 \times \varnothing 100$	200	150	100	50	15	500	600 ~ 900	150	-	-	-
YBC $\varnothing 250 \times \varnothing 125$	250	190	125	50	15	500	600 ~ 900	150	-	-	-
YBC $\varnothing 300 \times \varnothing 150$	300	225	150	50	15	700	600 ~ 900	200	-	-	-
YBC $\varnothing 350 \times \varnothing 175$	350	260	175	70	20	800	600 ~ 900	200	-	-	-
YBC $\varnothing 400 \times \varnothing 200$	400	300	200	70	20	850	600 ~ 900	200	100	202	300
YBC $\varnothing 500 \times \varnothing 250$	500	375	250	70	30	900	600 ~ 900	250	100	252	350
YBC $\varnothing 600 \times \varnothing 300$	600	450	300	85	30	900	600 ~ 900	250	150	303	400
YBC $\varnothing 700 \times \varnothing 350$	700	525	350	85	40	1000	600 ~ 900	300	150	354	400
YBC $\varnothing 800 \times \varnothing 400$	800	600	400	85	40	1000	600 ~ 900	300	150	404	400
YBC $\varnothing 1000 \times \varnothing 500$	1000	790	500	85	40	1100	600 ~ 900	350	200	504	500
YBC $\varnothing 1200 \times \varnothing 600$	1200	980	600	95	50	1100	600 ~ 900	350	200	504	500

Notes

- Above detail dimension of components can be changed depending on owner specification and local environment condition.
- Detail dimension will be guided by our drawing and specification.

Ship Fender

I Type B For Use of Flat Sided Vessels I



L : Maximum length available is 18m

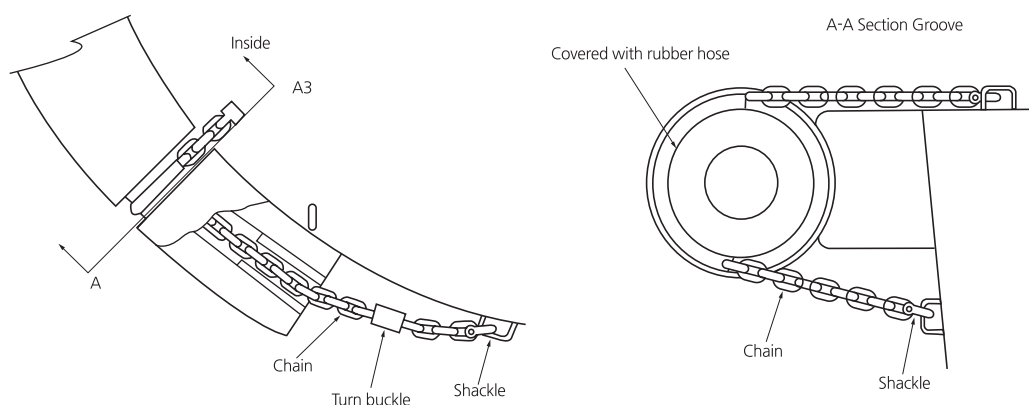
I Dimension I

Unit : mm

Size	ØD	ØD ₁	a	b	p	q
YBC Ø100×Ø50	100	50	30	10	600 ~ 900	100
YBC Ø150×Ø75	150	75	30	10	600 ~ 900	100
YBC Ø200×Ø100	200	100	50	15	600 ~ 900	150
YBC Ø250×Ø125	250	125	50	15	600 ~ 900	150
YBC Ø300×Ø150	300	150	50	15	600 ~ 900	200
YBC Ø350×Ø175	350	175	70	20	600 ~ 900	200
YBC Ø400×Ø200	400	200	70	20	600 ~ 900	200
YBC Ø500×Ø250	500	250	70	30	600 ~ 900	250
YBC Ø600×Ø300	600	300	85	30	600 ~ 900	250
YBC Ø700×Ø350	700	350	85	40	600 ~ 900	350
YBC Ø800×Ø400	800	400	85	40	600 ~ 900	350
YBC Ø1000×Ø500	1000	500	85	40	600 ~ 900	350

- Notes**
- Above detail dimension of components can be changed depending on owner specification and local environment condition.
 - Detail dimension will be guided by our drawing and specification.

I Method of Installation I



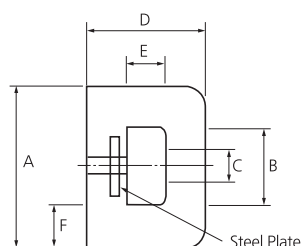
I Dimension I

Size of Fender	Chain		Shackle	Turnbuckle
	For Inside	For Groove		
LESS THAN Ø600	Ø16	Ø16	SC-16	Ø19
INCLUDING AND OVER Ø600	Ø19	Ø19	SC-20	Ø22

- Notes**
- Above detail dimension of components can be changed depending on owner specification and local environment condition.
 - Detail dimension will be guided by our drawing and specification.

D & DA Type Fender

| Drawing |



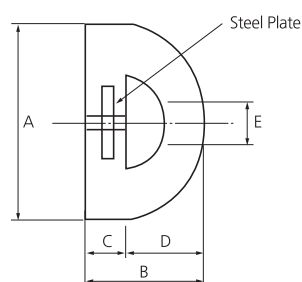
| Dimension |

Unit : mm

Size	A	B	C	D	E	F
YD 50×100	100	70	Ø30	50	15	17.5

- Notes**
- Above detail dimension of components can be changed depending on owner specification and local environment condition.
 - Detail dimension will be guided by our drawing and specification.

| Drawing |



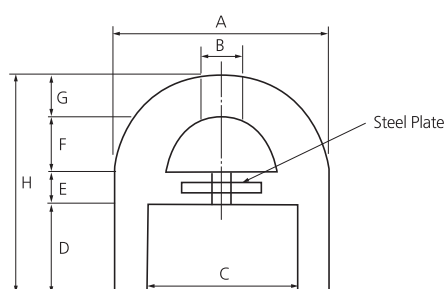
| Dimension |

Unit : mm

Size	A	B	C	D	E
YD 50×70	70	50	15	35	Ø30
YD 80×150	150	80	25	55	Ø60

- Notes**
- Above detail dimension of components can be changed depending on owner specification and local environment condition.
 - Detail dimension will be guided by our drawing and specification.

| Drawing |



| Dimension |

Unit : mm

Size	A	B	C	D	E	F	G	H
YDA 150-1	150	Ø60	100	65	20	30	35	150
YDA 150-2	150	Ø60	100	50	35	30	35	150
YDA 200	200	Ø60	150	90	30	40	40	200

- Notes**
- Above detail dimension of components can be changed depending on owner specification and local environment condition.
 - Detail dimension will be guided by our drawing and specification.



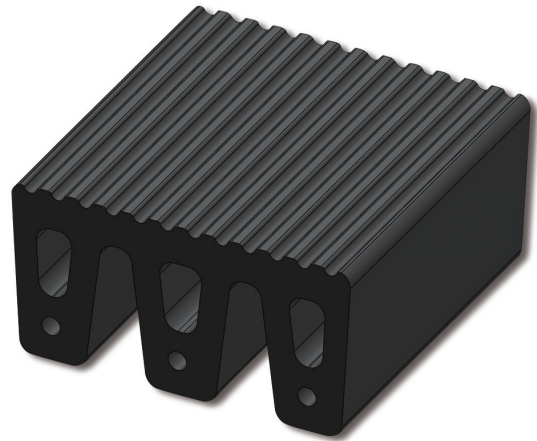
Ship Fender

W-Fender

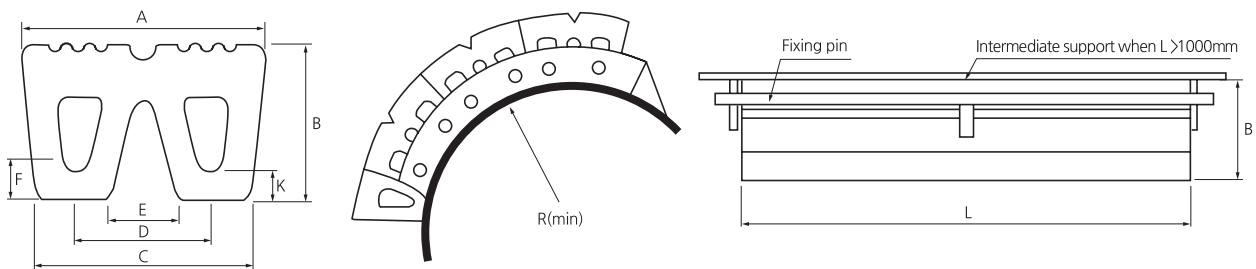
This is mainly for tug boat. W fenders offer an excellent alternative to square fenders. A complete “ready to install” fender kit including connecting plugs, end plugs, drill holes as well as numbered stern and bow fender sets are available.

Feature

1. Extreme-duty design
2. Twin-leg attachment
3. Open bore for easy installation
4. Grooved for extra grip
5. Fits around tight bends



Drawing



Dimension

Units : mm, kg/m

Type	A	B	C	D	E	F	K	L	Weight
W32-20	320	200	280	180	100	67	50	2000	51
W40-25	400	250	350	220	110	75	55	2000	81
W48-30	480	300	426	269	135	90	65	2000	120
W50-45	500	450	420	255	90	100	75	2000	180

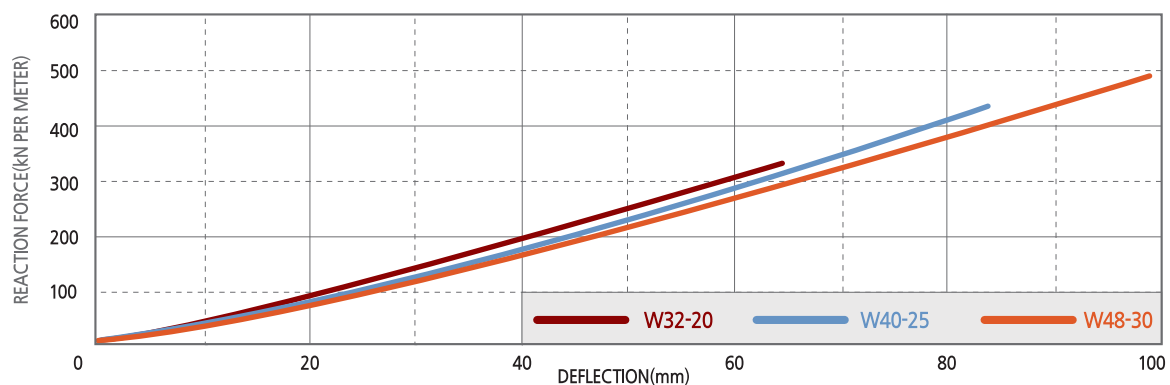
Fixings

Unit : mm

Pin	Flat bar	Rmin
Ø25	100 X 20	600
Ø30	120 X 20	800
Ø40	140 X 20	900
Ø40	150 X 20	1000

Notes • M-Fenders and W-Fenders are not interchangeable.

Performance Curve



Key Hole Fender

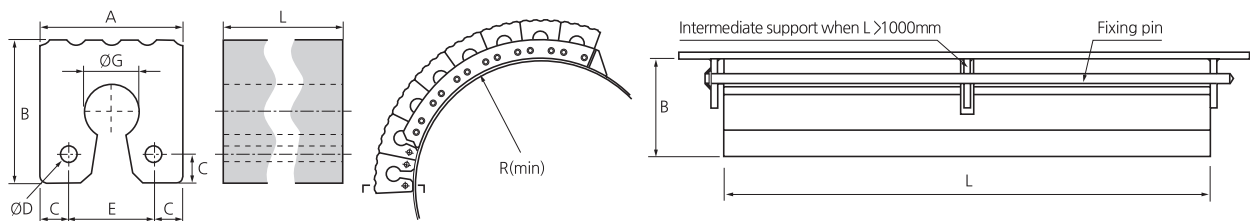
Block Fender has a key hole shape which is strong and ideal for heavy-duty applications. Valleculate or flat face fenders are a option depending on the required coefficient of friction. If very low friction is needed, block and cube fenders is able to be made as composite fenders with integral UHMW-PE faces. This is suitable for tug boat that operate in unfavorable bad conditions on the sea.

Feature

1. Heavy-duty design
2. Traditional, proven shape
3. Grooved or smooth face
4. Optional UHMW-PE face



Drawing



Block Fender Dimensions

Units : mm, kg/m

Size	A	B	C	ØD	E	ØG	L _{max}	Weight
200	200	200	35	28	130	90	2000	33
250	250	250	50	33	150	100	2000	54
300	300	300	60	33	180	115	1750	80
350	350	350	70	33	210	125	2000	114

Fixings

Unit : mm

Pin	Flat bar	R _{min}
Ø25	100 X 15	450
Ø30	125 X 20	600
Ø30	150 X 20	800
Ø30	175 X 25	1000

Cube Fender Dimensions

Units : mm, kg

Size	A	B	C	ØD	E	ØG	L	Weight
250	250	250	50	33*	150	100	250	13
300	300	300	60	33*	180	115	200	16

* Optional 28mm and 25mm pin.

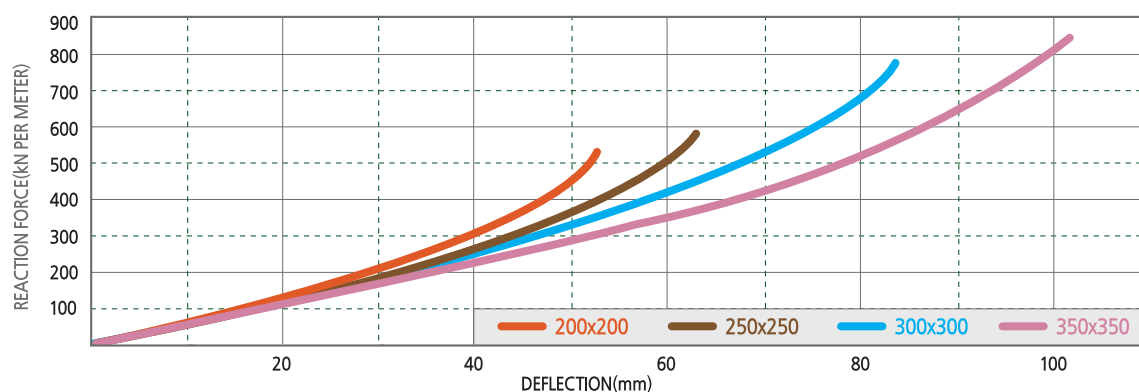
Fixings

Unit : mm

Pin	Flat bar	R _{min}
Ø30*	125 × 20	600
Ø30*	150 × 25	800

Notes • M-, W-, Block and Cube fenders are not interchangeable.

Performance Curve



Ship Fender

EVA Fender

Feature

It is mainly used for small size fishing boat, and small size fender can be applied by binding a string of fenders.
It is convenient to use because of light-weight



Dimension

Model Number	Specification : (±)5%			Q'ty in 20FT Container
	L x OD x ID(mm)	WT(g)	Buoyancy(g)	
SK - 100	285 x 260 x 50	1,546	10,000	1,344pcs
SK - 85	270 x 248 x 48	1,358	8,500	1,632pcs
SK - 70	250 x 220 x 42	1,005	7,000	2,304pcs
SK - 50	225 x 203 x 40	800	5,000	3,000pcs
SK - 40	200 x 185 x 37	630	4,000	3,960pcs
SK - 30	190 x 160 x 33	440	3,000	5,400pcs
SK - 25	180 x 147 x 28	380	2,500	6,720pcs
SK - 20	173 x 136 x 28	285	2,000	8,040pcs
SK - 6	145 x 93 x 20	110	600	22,400pcs

Notes

- Above detail dimension of components can be changed depending on owner specification and local environment condition.
- Detail dimension will be guided by our drawing and specification.

Y-EVA Fender

Feature

1. It has high durability because inner material is E.V.A and outer cover is P.U.
2. There is various colors, It is convenient to use because of light-weight.



Dimension

Size	Type	Performance 60% deflection		Foam Density (kg/m³)	Weight(Kg)	
		Reaction Force(kN)	Energy Absorption(kN-m)		Body	Net
Ø500 x 1000L	Sling Type	48	9	80~100	33	-
Ø1000 x 2000L	Net type	254	68	80~100	263	171
Ø1200 x 2000L	Net type	280	91	80~100	378	248
Ø1500 x 3000L	Net type	578	232	80~100	890	490
Ø2000 x 3500L	Net type	845	454	80~100	1845	890
Ø2000 x 4000L	Net type	1005	540	80~100	2100	1000
Ø2500 x 4000L	Net type	1197	818	80~100	3297	1180
Ø2500 x 5500L	Net type	1666	1128	80~100	3866	1200
Ø3300 x 6500L	Net type	2528	2133	80~100	7668	2889
Ø3500 x 6000L	Net type	2777	2333	80~100	7968	3000

Notes

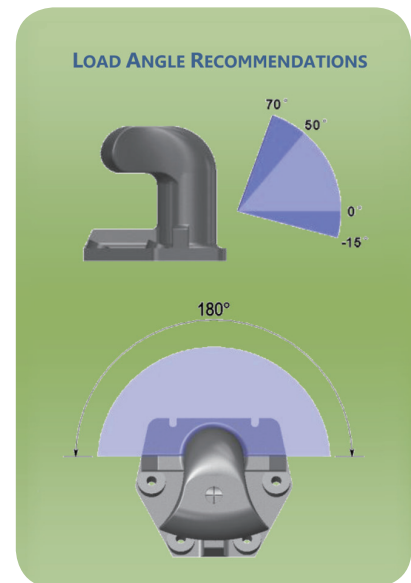
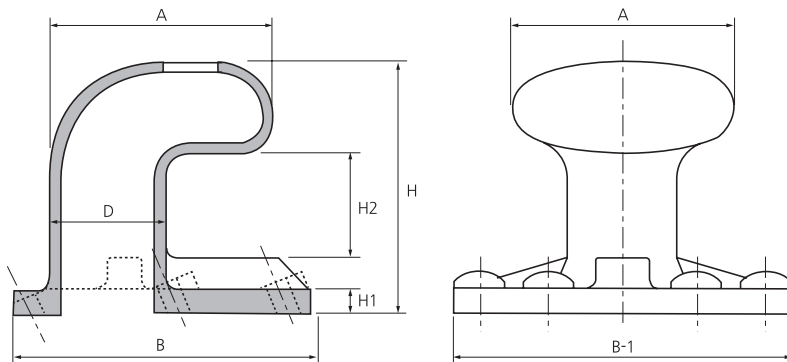
- Above detail dimension of components can be changed depending on owner specification and local environment condition.
- Detail dimension will be guided by our drawing and specification.

Misc & Accessories

Bollard



| Drawing |



| Dimension |

	A	B	B-1	D	H	H1	H2	Anchor DIA.	Bolt Length
5 Ton	300	360	360	150	380	30	60	20	450
10 Ton	400	480	480	200	480	40	70	27	600
15 Ton	500	600	600	250	580	50	80	33	700
25 Ton	600	720	720	300	690	65	95	42	850
35 Ton	600	720	810	300	690	65	95	42	850
50 Ton	700	840	945	350	780	70	100	48	1000
70 Ton	800	1000	1130	400	900	90	120	55	1150
100 Ton	900	1200	1365	450	990	95	125	64	1300
150 Ton	1100	1600	1765	550	1260	120	145	80	1450
200 Ton	1350	2100	2250	700	1550	150	160	120	1800

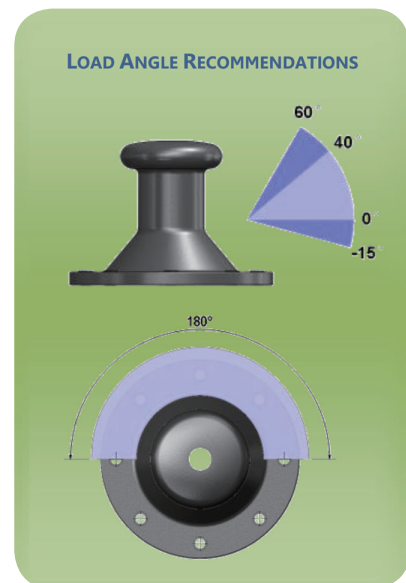
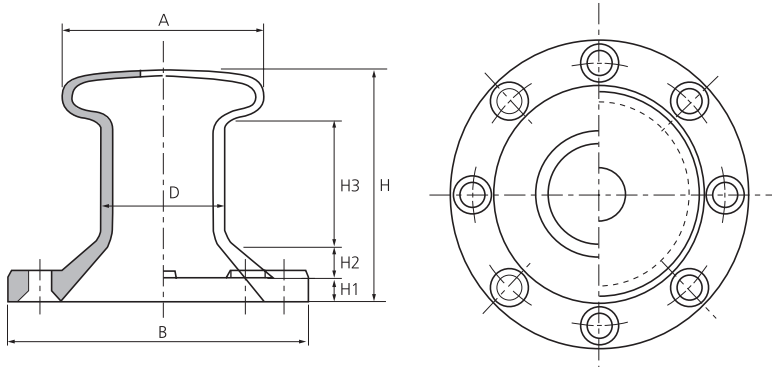
- Notes**
- All Dimensions are in mm.
 - Drawings & Pictures are for illustration purposes only & subject to change.

Misc & Accessories

Post



| Drawing |



| Dimension |

	A	B	D	H	H1	H2	H3	Anchor DIA.	Bolt Length
15 Ton	400	600	250	438	45	55	250	36	750
35 Ton	480	720	300	585	60	70	290	48	1000
50 Ton	580	840	350	613	70	90	328	58	1150
70 Ton	640	890	400	700	80	110	370	64	1300
100 Ton	720	1180	450	838	80	190	405	64	1300
150 Ton	880	1440	550	1018	100	240	485	80	1600
200 Ton	1040	1700	650	1203	110	300	565	90	1800

Notes

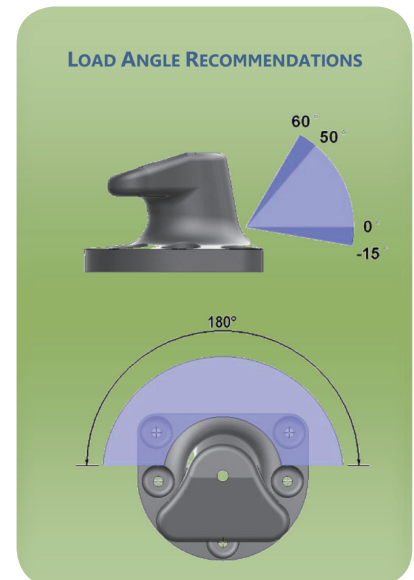
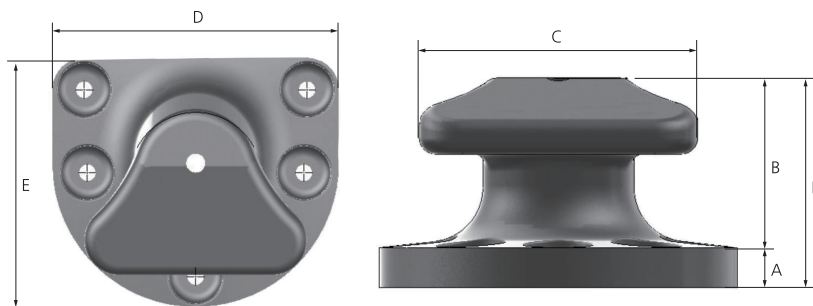
- All Dimensions are in mm.
- Drawings & Pictures are for illustration purposes only & subject to change.

Tee bollard



1. Suitable for Steeper rope angles.
2. Design & safety factors can be adjusted to user requirements.

Drawing



Dimension

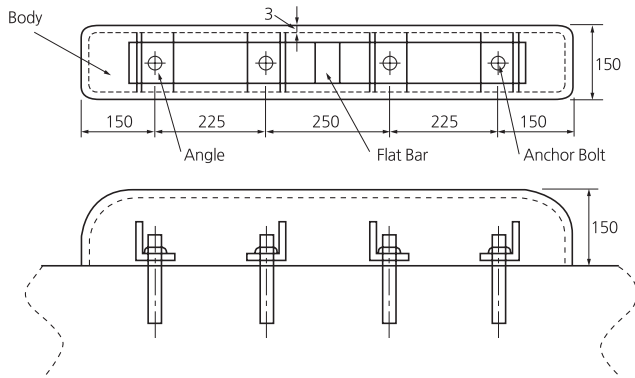
	A	B	C	D	E	H	Bolt Size	Bolt Length	QTY
10 Ton	45	205	300	410	335	250	M24	400	04
15 Ton	50	215	320	420	360	265	M24	500	04
20 Ton	50	240	350	430	380	290	M24	500	05
30T on	55	250	365	455	400	305	M30	500	05
50 Ton	70	315	450	560	490	385	M36	650	05
75 Ton	80	350	515	650	565	430	M42	650	06
100 Ton	90	400	605	785	640	490	M42	650	07
125 Ton	90	450	670	840	730	535	M48	800	07
150 Ton	100	425	700	900	780	525	M48	800	07
200 Ton	100	520	760	950	830	620	M56	950	08

- Notes**
- Standard Bollard Capacity are in Tonnes.
 - Drawings & Pictures are for illustration purposes only & subject to change.

Misc & Accessories

Stainless Car stopper

| Drawing |



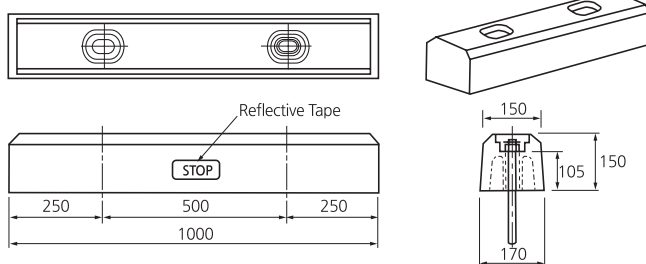
| Dimension |

Size	Description	MAT'L	Q'ty				
			1.0m	1.5m	2.0m	2.5m	3.0m
150HWx3T	Body	STS304	10	1	8	3	10
75x75x6T	Angle	SS400	4	6	8	12	12
80x50x3T	Flat Bar	STS304	1	2	3	4	5
M20x250L	Anchor Bolt	SS400	4	6	8	10	12

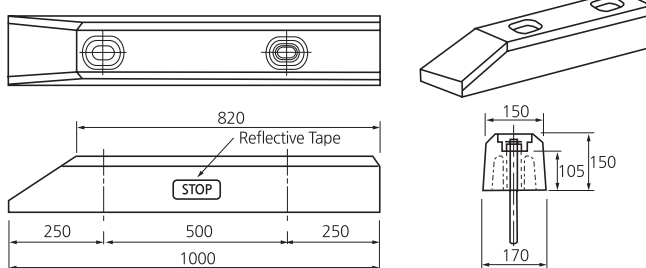
P.E Car Stopper

| Drawing |

TYPE-A



TYPE-B



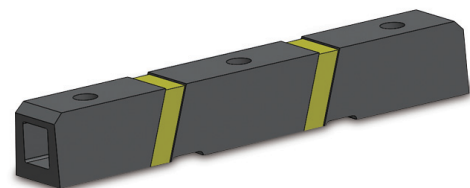
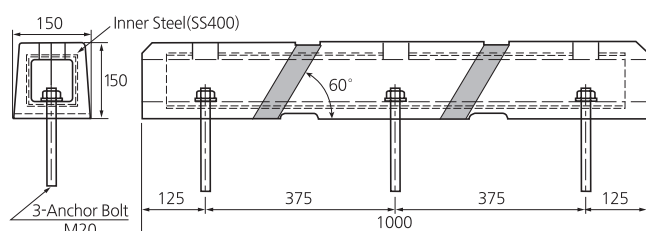
| Dimension |

Size	Description	MAT'L	Type-A		Type-B	
			Q'ty	Color	Q'ty	Color
150Hx170Wx1000L	Body	P.E	1	Black, Yellow	1	Black, Yellow
M20	Anchor Bolt	STS304	2	-	2	-
-	CAP	P.E	2	-	2	-

- Notes**
- Tolerance
 - Length, width, height : (+)4%, (-)2%
 - Thickness : (+)4%, (-)2%
 - Bolt hole : (±)2mm, Bolt P.C.D : (±)2mm

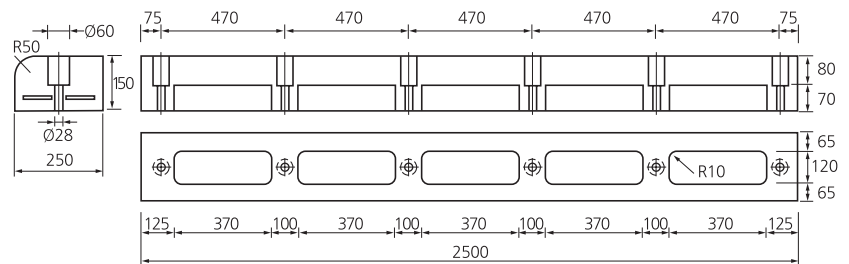
Rubber Car Stopper

| Drawing |



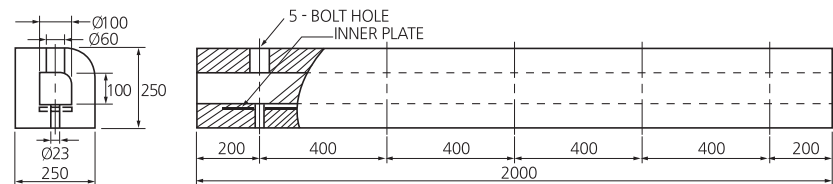
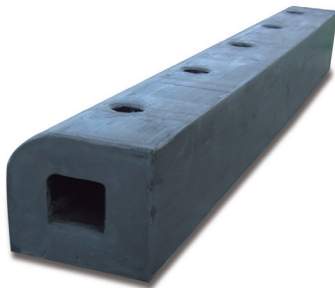
R - Rubber Edge Protector

| Drawing |



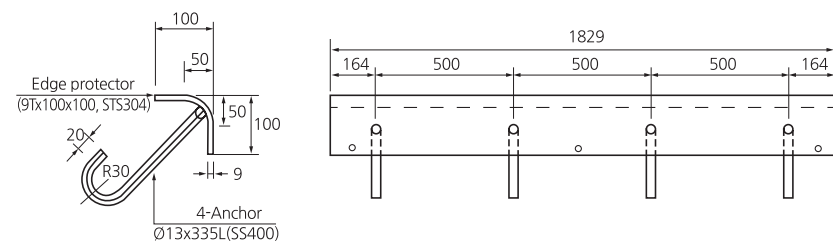
S - Rubber Edge Protector

| Drawing |



Stainless Edge Protector

| Drawing |



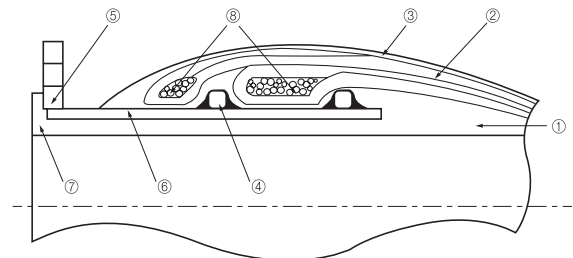
| Dimension |

Size	Description	MAT'L	Q'ty
9Tx100x100	Edge protector	STS304	1
D13x300L	Anchor bolt	SS400	4

Dredging Hose



| Drawing |



- | | |
|----------------------------------|----------------|
| ① Inner Rubber(Synthetic Rubber) | ⑤ Flange |
| ② Reinforcement(Wire, Textile) | ⑥ Nipple |
| ③ Cover(Synthetic Rubber) | ⑦ Sealing Part |
| ④ Ring | ⑧ Banding Wire |

The Flange and the Body part are manufactured by anti-wearing, seawater-resistance, and ozon-resistance with the same quality and designed to be correspondent with in diameter of the pipe.

As the metal flange is attached in the both inlets of hose, you can finish the connection just with flange parts of the pipe and bolting work. Moreover as the flange part is consisted to be restrained in the both ends or be restrained and be free, it is a distinctive feature that the bolting work is very easy. This is widely used in large dredger needed high pressure or in the place with severe working condition.

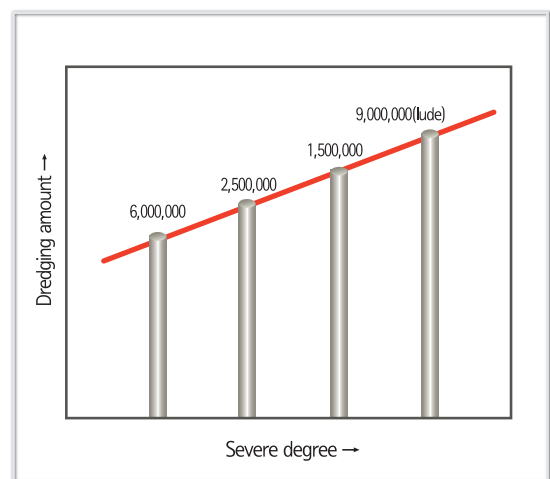
| Dimension |

Unit : mm

Pipe		Hose	PLY VS. Working Pressure					Unit
In DIA.	In DIA.	Total Length	8	10	15	20	30	kgf/cm ²
410	410	1200	10	-	-	-	-	PLY
460	460	1300	10	-	-	-	-	PLY
510	510	1400	10	-	-	-	-	PLY
560	560	1500	12	15	-	-	-	PLY
600	600	1500	13	18	-	-	-	PLY
650	650	1600	15	18	-	-	-	PLY
700	700	1700	16	20	22	-	-	PLY
760	760	1900	-	20	24	26	-	PLY
800	800	1900	-	-	25	28	33	PLY
860	860	2000	-	-	27	30	36	PLY
900	900	2000	-	-	30	33	38	PLY

- Notes**
1. The specifications except the upper table will be designed and manufactured by the order's conditions.
 2. Above detail dimension of components can be changed depending on owner specification and local environment condition. Detail dimension will be guided by our drawing and specification.

| Wearing Degree |



| Design Pressure |

Metal Flange Type	DP=WP×5 and over
Band Type	DP=WP×5 and over

- DP : Design Pressure
- WP : Working Pressure

| Critical Bending Degree(10°×L/D) |

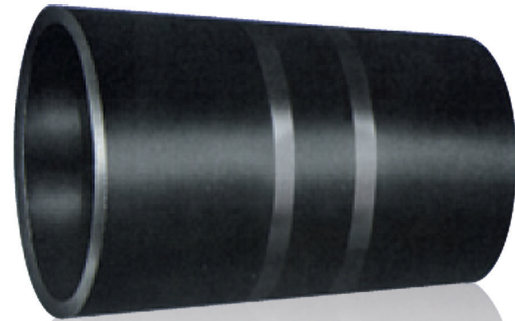
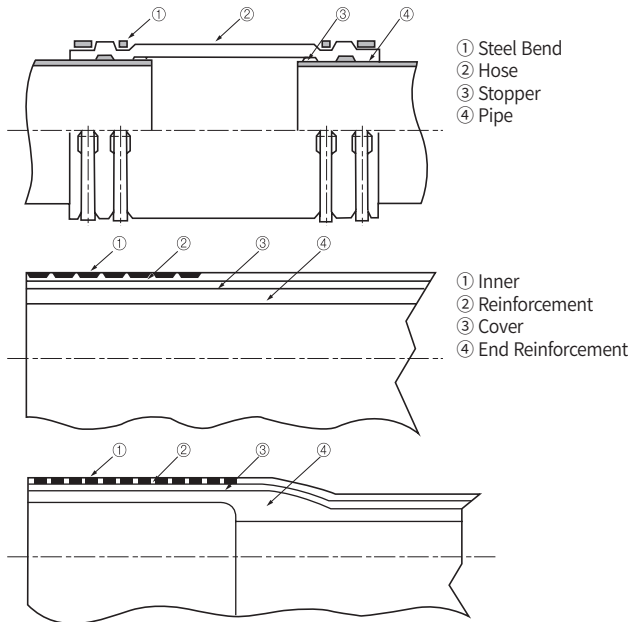
Metal Flange Type	1	2	3
Band Type	10°	20°	30°

- L : The Effective Body Length in Center of Hose
- WP : Indiameter of Hose

Misc & Accessories

Straight Type-Band Type

| Drawing |

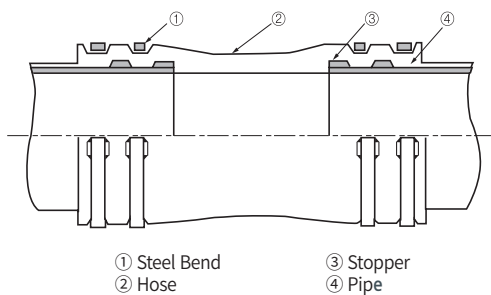


This is shaped as the typical cylinder of bandtype and is cheap price, so will be widely used for small dredger of low pressure.

As the indiameter of sleeve hose is the same with outdiameter of stopper, you must fix by metal band and use when you conjoin them

Enlarged Type-Band Type

| Drawing |



This is reformed from the straight type. As the both ends of the sleeve hose are wide, the indiameters of the pipe and hose are agreed. So the fluid stream will be smooth and state of excessive wear partly appeared in the sleeve hose and pipe will be prevented.

| Dimension |

Unit : mm

Pipe				Hose				PLY VS. Working pressure								Unit
Nominal Size		In DIA.	Out DIA.	Stopper Out DIA.	In DIA	Overlap Length	Total Length	4	5	6	7	8	10	12	14	kgf/cm ²
Inch	Mim															
14B	350	360	378	390	395	200	800	5	6	6	8					PLY
16B	400	410	428	440	445	200	900	5	6	8	10	10				PLY
18B	450	460	478	490	495	200	1000		8	8	10	12				PLY
20B	500	510	528	540	545	250	1100			10	12	14	17			PLY
22B	550	560	578	590	595	250	1200				12	14	17			PLY
24B	600	610	634	652	657	300	1300					16	19	23		PLY
26B	650	660	684	702	707	300	1400					18	21	25		PLY
28B	700	710	734	754	760	400	1600						23	29	35	PLY

Notes

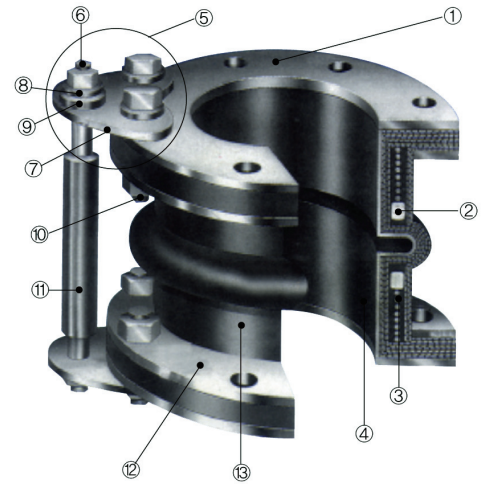
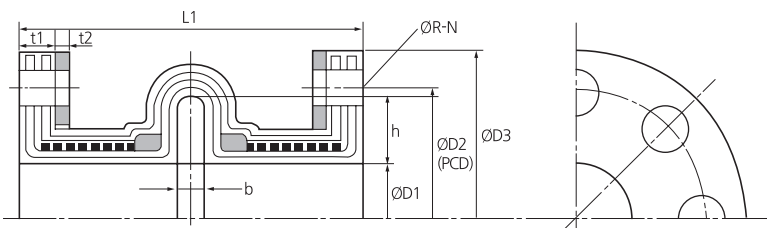
1. The specifications except the upper table will be designed and manufactured by the order's conditions.
2. Above detail dimension of components can be changed depending on owner specification and local environment condition. Detail dimension will be guided by our drawing and specification.

Expansion Joint

All kinds of Expansion Joint will be used for the variation temperature in the piping line, the ground subside flexibility and stress absorption and preventing vibration and noise from transmitting occurred in driving the pump compressor.

Drawing

- ① Std. pipe flange ② Steel ring ③ Duct ply ④ Tube rubber
- ⑤ Control units ⑥ Control bolt ⑦ Control plate ⑧ Steel washer
- ⑨ Rubber washer ⑩ Fitting bolts ⑪ Pipe sleeve ⑫ Split metal retaining ring
- ⑬ Cover rubber



Dimension

Unit : mm

Nominal Size	ØD ₁	ØD ₂		ØD ₃		ØR		N		L ₁	t ₁	t ₂	b	h
		5kgf/cm ²	10kgf/cm ²	5kgf/cm ²	10kgf/cm ²	5kgf/cm ²	10kgf/cm ²	5kgf/cm ²	10kgf/cm ²					
50	51	105	120	130	155	4	4	15	19	150	14	9.5	16	20
65	64	130	140	155	175	4	4	15	19	150	14	9.5	16	20
75	76	145	150	180	185	4	8	19	19	150	14	9.5	16	20
100	102	165	175	200	210	8	8	19	19	150	14	9.5	18	25
125	127	200	210	235	250	8	8	19	23	150	14	9.5	18	25
150	152	230	240	265	280	8	8	19	23	200	16	9.5	18	25
200	203	280	290	320	330	8	12	23	23	200	20	9.5	20	30
250	254	345	355	385	400	12	12	23	25	200	20	9.5	20	30
300	304	390	400	430	445	12	16	23	25	200	20	9.5	20	35
350	355	435	445	480	490	12	16	25	25	250	22	9.5	25	35
400	405	495	510	540	560	16	16	25	27	250	22	9.5	25	35
450	450	555	565	605	620	16	20	25	27	250	22	9.5	25	35
500	500	605	620	655	675	20	20	25	27	250	25	9.5	25	45
600	600	715	730	770	795	20	24	27	33	250	25	9.5	28	45
700	700	820	840	875	905	24	24	27	33	250	25	9.5	28	45
800	800	930	950	995	1020	24	28	33	33	250	25	9.5	28	45
850	865	980	1000	1045	1070	24	28	33	33	250	25	9.5	28	45
900	900	1030	1050	1095	1120	24	28	33	33	250	25	9.5	28	45
1000	1000	1130	1160	1195	1235	28	28	33	39	250	28	12	30	45
1100	1100	1240	1270	1305	1345	28	28	33	39	300	28	12	30	55
1200	1200	1350	1380	1420	1465	32	32	33	39	300	30	12	34	55
1300	1300	1450	1480	1520	1575	32	36	33	46	300	30	12	34	55
1350	1350	1505	1540	1575	1630	32	36	33	46	300	30	12	34	55
1500	1500	1660	1700	1730	1795	36	40	33	46	300	34	12	38	60

- The material of standard rubber is neoprene-rubber.
- If you specify the kinds of the fluid, common tension, and the others when you order, we can provide the more suitable material and design.

- Flange spec. is the standard specification of KS and JIS. The standard spec of ANSI is separate produced.
- We can manufacture by the 4000mm diameter.

Notes

- Above detail dimension of components can be changed depending on owner specification and local environment condition.
- Detail dimension will be guided by our drawing and specification.

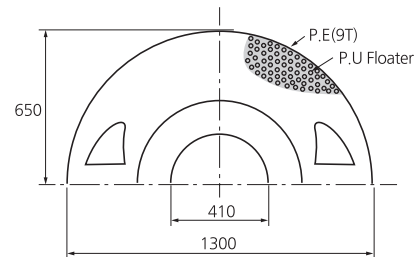
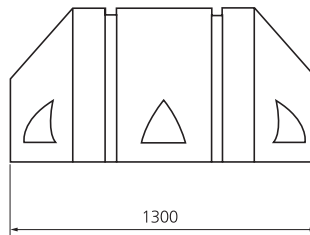
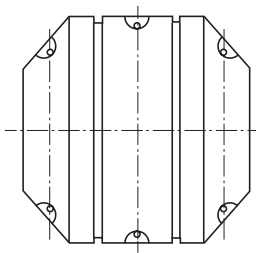
Misc & Accessories

P.E Float

1. Lighter weight, easy for transportation, installing and uninstalling
2. Color for warning at night and daytime (Conspicuous and highlighted color)
3. Anti-waves, wear resistance, impact resistance, corrosion resistance
4. Good price compared to performance



| Drawing |



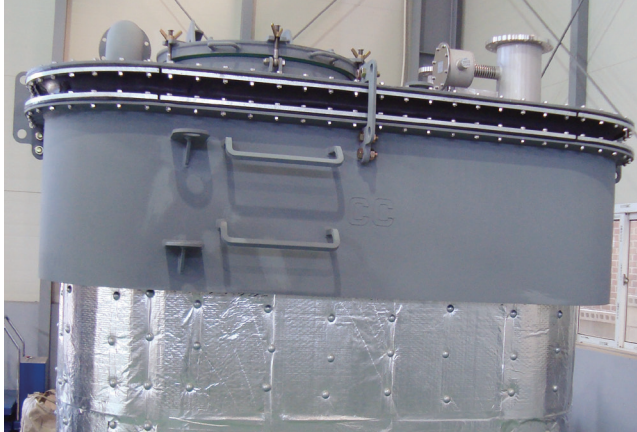
| Dimension |

Pipe I.D.	Thickness Pipe	Floater I.D.	Floater O.D.	Floater Length	Hull Thickness	Net Buoyance
mm	mm	mm	mm	mm	mm	kg
200	6	220	500	800	7	200
285	6	300	700	1200	7	420
350	6	375	1100	1100	7	920
400	8	414	1100	1200	8	1020
414	8	430	1200	1200	8	1200
450	8	480	1300	1300	8	1500
500	10	580	1400	1500	9	2219
600	10	630	1400	1700	11	2400
650	10	680	1480	1800	11.5	2930
700	12	730	1600	1900	12	3593
750	12	780	1600	2000	13	3800
800	15	830	1800	2000	14	4800
850	15	880	1800	2200	15	5140
900	18	940	2200	2500	16	8180

Remark

1. 2pcs per completer floater
2. Floaters under the size of 4m(O.D.)x4m(L) are all available

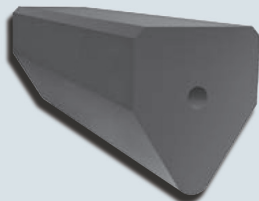
Seals



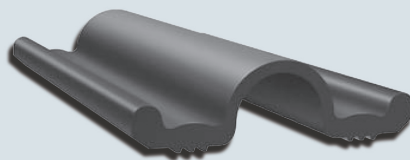
Cargo Tank Dome Seal



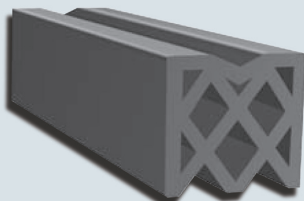
P - Type Seal



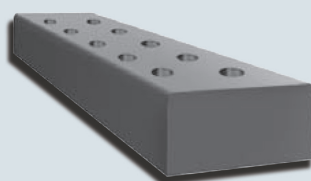
Bottom Seal



Omega Seal

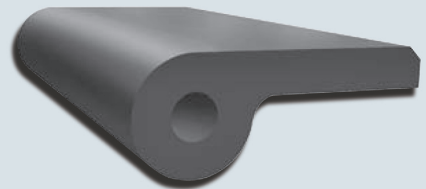


Water Seal

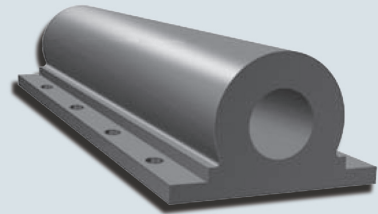


Bearing Pad

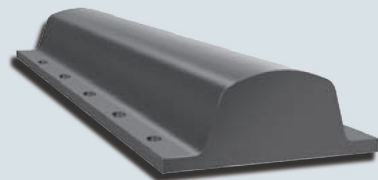
Gate Seal



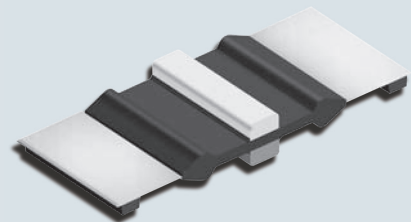
P-Type Seal



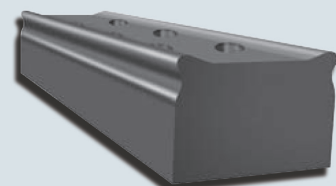
D Shaped Seal



Soft Type Seal



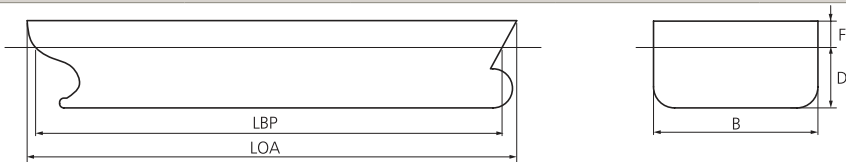
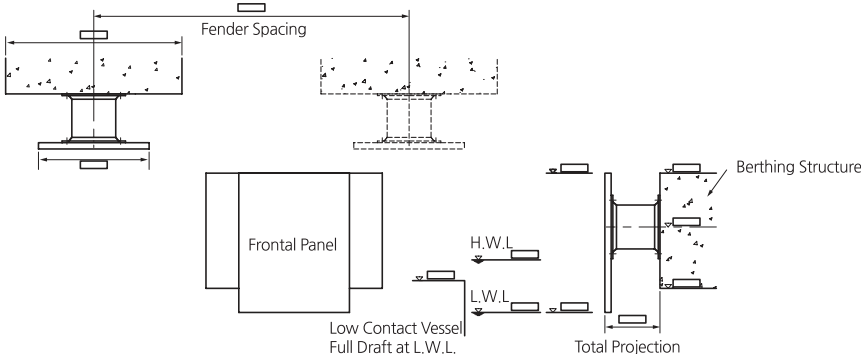
Water Stop

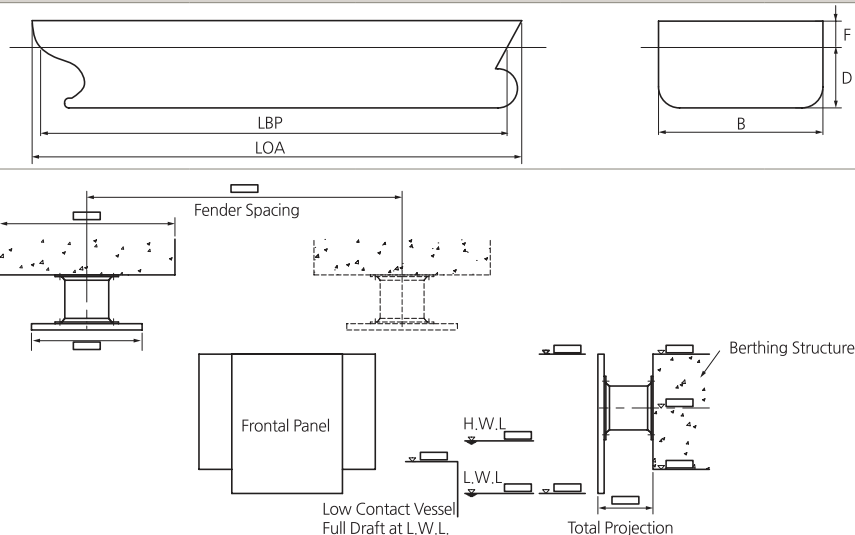


Meeting Face

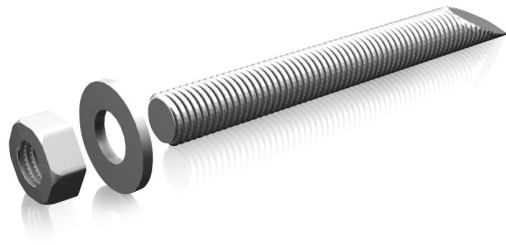
Misc & Accessories

Criteria for Designing Fender System

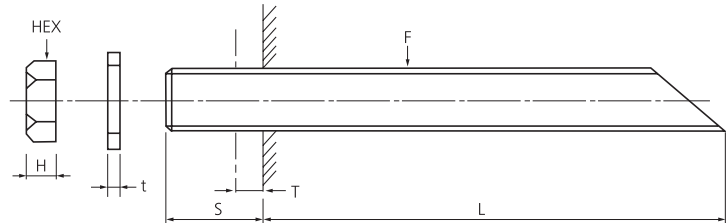
Item		Design Criteria				
General	Project					
	Consultant and / or Contractor					
	Port & Country					
Vessel	Type	☐ General Cargo Ship			☐ Bulk Carrier	☐ Container Ship
		☐ Oil Tanker			☐ Ro / Ro	☐ Passenger Ship
		☐ Ferry			☐ Gas Carrier	☐ Other()
	Weight : DeadWeight Tonnage (D.W.T)	Largest			Smallest	
	Displacement Tonnage (D.T)	Largest			Smallest	
	Dimension : Length Overall (m) (LOA)	Largest			Smallest	
	Length Between Perps (m) (LBP)	Largest			Smallest	
	Breadth (m) (B)	Largest			Smallest	
	Maximum Draft (m) (D)	Largest			Smallest	
	Freeboard (m) (F)	Largest			Smallest	
	Hull Pressure (Ton/m ² or kN/m ²) (P)					
Berthing Conditions	Speed (m/s)					
	Angle(degree)					
	Berthing Method		1/4 point or others()			
	Abnomal Impact Factor					
	Effective Berthing Energy (Ton-m or kN-m)					
	Berth	Structure		☐ Wharf	☐ Dolphin	☐ Gravity structure
		☐ Flexible pile	☐ New	☐ Existing		
		☐ Concrete	☐ Steel structure			
Length(m)						
Depth of Water(m)						
Tidal Level :		H.W.L(m)				
		L.W.L(m)				
Area for installing Fender :		Height(m)				
		Width(m)				
Elevation for installing Fender :		Top(m)	(+ or -)			
	Bottom(m)	(+ or -)				
Spacing of Fender(m)						
Allowable Reaction Force(Ton or kN)						
Other Special Requirements						
Vessel Layout						
Berth Layout						



Chemical Anchor Bolt



Drawing



Dimension

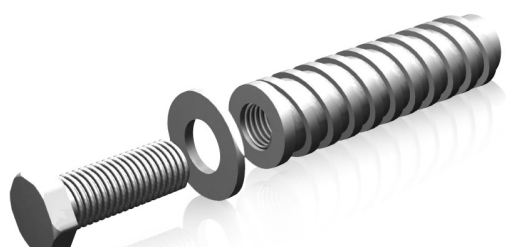
Unit : mm

F	Nut	Anchor Bolt	
	K	L	S
M22 (7/8")	8	145	H+t+T+K [rounded up to nearest 5mm]
M24 (1")	10	175	
M27 (1 1/8")	10	210	
M30 (1 1/4")	11	210	
M36 (1 1/2")	12	250	
M42 (1 3/4")	13	320	
M48 (2")	15	320	
M56 (2 1/4")	18	400	
M64 (2 1/2")	20	450	
M76 (3")	20	550	

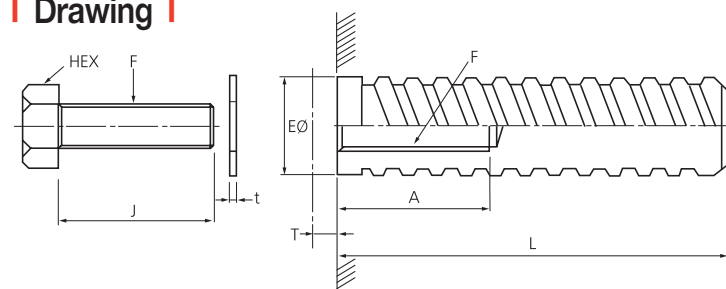
• T : Clamping Thickness of Fender or Bracket

• t : See page 60

Chemical Anchor Bolt [Box Type]



Drawing



Dimension

Unit : mm

F	Anchor Bolt		Box		
	K	J	A	E	L
M22 (7/8")	30	t+T+K [round up to nearest 5mm]	100	32	200
M24 (1")	35		100	35	250
M27 (1 1/8")	37		100	40	250
M30 (1 1/4")	40		100	45	250
M36 (1 1/2")	45		120	55	350
M42 (1 3/4")	50		120	60	400
M48 (2")	60		120	65	450
M64 (2 1/2")	75		120	80	450

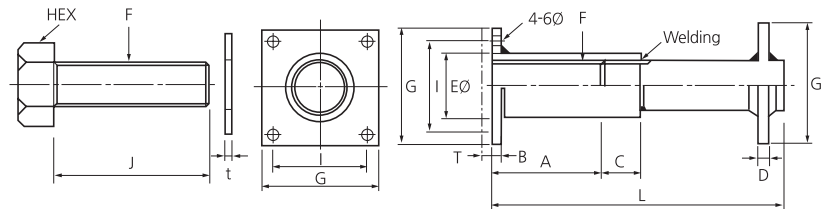
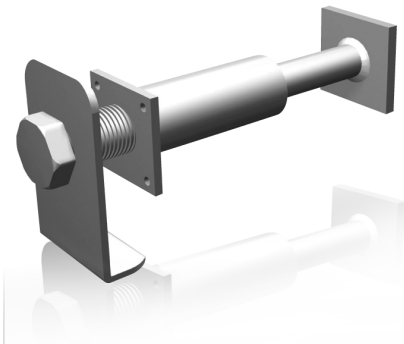
• T : Clamping Thickness of Fender or Bracket

• t : See page 60

Misc & Accessories

I-Anchor Bolt

| Drawing |



| Dimension |

Unit : mm

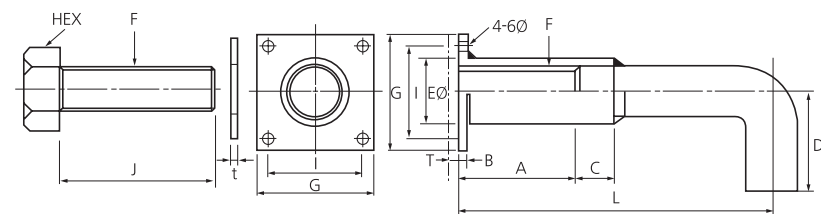
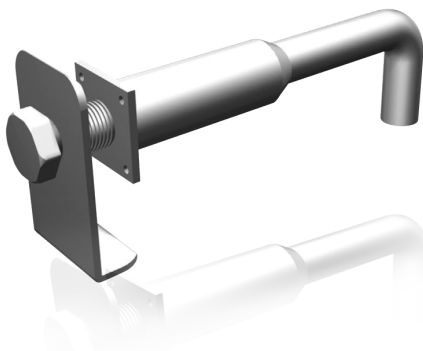
F	Anchor Bolt		Flange, Box, Flush, Bolt							
	K	J	A	B	C	D	EØ	G	I	L
M22 (7/8")	30	t+T+K [round up to nearest 5mm]	50	6	25	6	28	65	50	165
M24 (1")	35		55	6	25	6	32	70	55	175
M27 (1 1/8")	37		60	6	30	9	35	75	60	200
M30 (1 1/4")	40		65	6	30	9	38	75	60	225
M36 (1 1/2")	45		70	6	35	9	45	85	70	270
M42 (1 3/4")	50		75	6	40	12	55	90	75	325
M48 (2")	60		85	6	45	12	65	120	95	360
M56 (2 1/4")	70		90	6	55	16	75	125	100	435
M64 (2 1/2")	75		100	6	60	16	80	130	105	475
M76 (3")	80		120	6	75	19	95	155	120	550

• T : Clamping Thickness of Fender or Bracket

• t : See page 60

J-Anchor Bolt

| Drawing |



| Dimension |

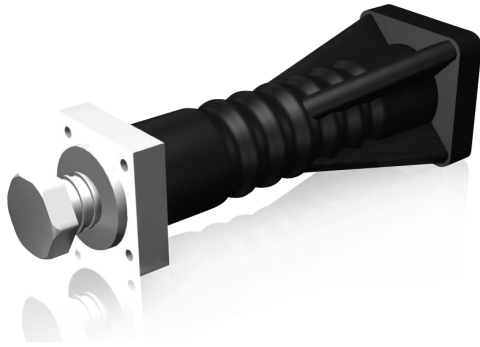
Unit : mm

F	Anchor Bolt		Flange, Box, Flush, Bolt							
	K	J	A	B	C	D	EØ	G	I	L
M22 (7/8")	30	t+T+K [round up to nearest 5mm]	50	6	25	50	28	65	50	175
M24 (1")	35		55	6	25	50	32	70	55	185
M27 (1 1/8")	37		60	6	30	75	35	75	60	210
M30 (1 1/4")	40		65	6	30	85	38	75	60	230
M36 (1 1/2")	45		70	6	35	100	45	85	70	255
M42 (1 3/4")	50		75	6	40	100	55	90	75	290
M48 (2")	60		85	6	45	120	65	120	95	325
M56 (2 1/4")	70		90	6	55	160	75	125	100	375
M64 (2 1/2")	75		100	6	60	160	80	130	105	375

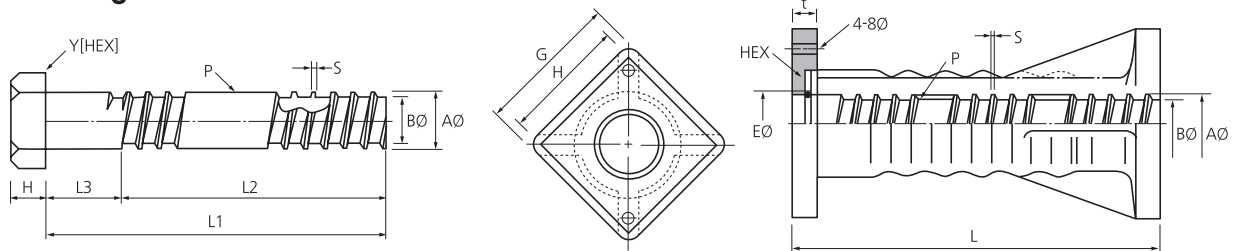
• T : Clamping Thickness of Fender or Bracket

• t : See page 60

Resin Anchor Bolt / Resin Plug



Drawing



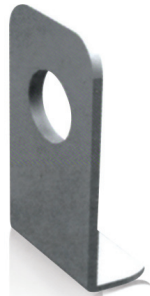
Dimension

Unit : mm

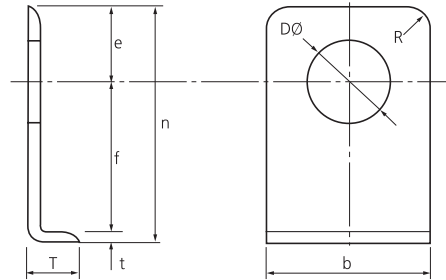
Anchor Bolt	F	H	Y	L1	L2	L3	AØ	BØ	S	P [pitches / inch]
	M22 (7/8")	13	32	160	105	55	19	14	2.0	2¾
	M24 (1")	18	41	210	145	65	25	18	2.0	2½
	M30 (1 1/4")	22	50	270	185	85	32	24	2.5	2
	M36 (1 1/2")	27	58	330	235	95	38	30	2.5	2
	M42 (1 3/4")	32	67	330	235	95	44	35	3.0	1¾
	M48 (2")	36	77	395	265	130	50	40	3.5	1½
	M64 (2 1/2")	45	95	410	275	135	65	53	4.0	1¼
	M76 (3")	55	110	440	305	135	76	62	4.5	1
Resin Plug	F	EØ	G	H	t	L	AØ	BØ	S	P [pitches / inch]
	M22 (7/8")	27.0	60	55	25	150	21	16	3	2¾
	M24 (1")	35.5	63	75	25	200	26	19	3	2½
	M30 (1 1/4")	42.5	100	80	30	250	33	25	3	2
	M36 (1 1/2")	50.0	120	110	30	300	40	31	3.5	2
	M42 (1 3/4")	57.0	120	110	30	300	46	36	3.5	1¾
	M48 (2")	63.0	160	150	30	360	53	41.5	4	1½
	M64 (2 1/2")	78.0	160	150	30	360	68	54.5	4.5	1¼
	M76 (3")	88.0	180	170	30	400	79	64	5	1

Misc & Accessories

L-Type Washer



| Drawing |



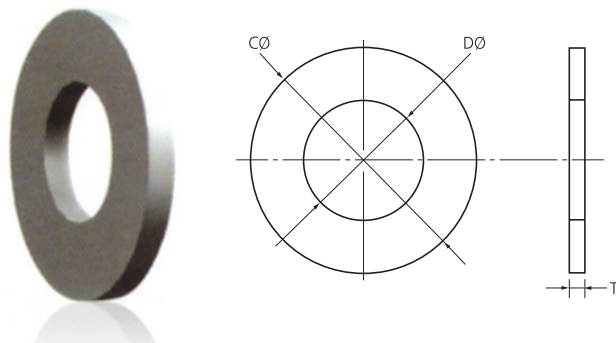
Unit : mm

| Dimension |

F	YOY, YNV Fender									Spool Fender								
	Size	b	D	e	f	n	R	T	t	Size	b	D	e	f	n	R	T	t
M22 (7/8")	150H	68	25	23	32	59.5	10	12	4.5	-	-	-	-	-	-	-	-	-
M24 (1")	200H	74	29	33	42	79.5	10	14	4.5	500H	48	29	24	52	80.5	15	18.5	4.5
M27 (1 1/8")	250H	88	34	42	48	94.5	10	16	4.5	630H-650H	60	34	30	72	106.5	15	19.5	4.5
M30 (1 1/4")	300H	100	37	47	58	109.5	10	19	4.5	800H-900H	60	37	30	77	111.5	15	24.5	4.5
M36 (1 1/2")	400H	119	43	52	68	126	10	22	6	1000H	68	43	34	102	142	25	26.0	6
M42 (1 3/4")	500H	127	49	56	83	145	10	25	6	1150H-1250H	78	49	39	102	147	30	31.0	6
M48 (2")	600H	139	56	61	98	165	10	28	6	1400H-1600H	92	56	46	102	154	30	34.0	6
M56 (2 1/4")	-	-	-	-	-	-	-	-	-	1700H	106	63	53	102	161	30	40.0	6
M64 (2 1/2")	800H	195	70	100	134	242	10	32	8	2000H	116	70	58	102	168	40	38.0	8
	1000H	215	70	110	164	282	10	36	8	2250H	116	70	58	127	193	40	43.0	8
	-	-	-	-	-	-	-	-	-	2500H	116	70	58	127	193	40	50.0	8

Round Washer

| Drawing |



| Dimension |

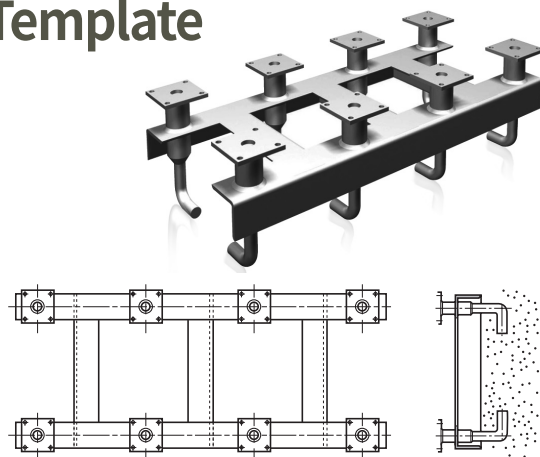
Unit : mm

F	YBP Fender			YCV, YTR Fender		
	C	D	t	C	D	t
M22 (7/8")	44	25	4.5	-	-	-
M24 (1")	52	29	4.5	90	28	6
M27 (1 1/8")	58	34	4.5	-	-	-
M30 (1 1/4")	62	37	4.5	90	34	6
M36 (1 1/2")	72	43	6	130	42	9
M42 (1 3/4")	82	49	6	140	47	9
M48 (2")	95	56	6	160	54	12
M64 (2 1/2")	115	70	8	180	68	12
M76 (3")	135	82	10	180	79	12

Chain & U-Anchor



Template



Conversion Tables

	m	ft	in
m	1	3.281	39.37
ft	0.3048	1	12
in	0.0245	0.0833	1

Length

	m ²	ft ²	in ²
m ²	1	10.764	1550
ft ²	0.0929	1	144
in ²	645.2X10 ⁻⁶	6.944X10 ⁻³	1

Area

	m ³	ft ³	in ³
m ³	1	35.315	61024
ft ³	0.0283	1	1728
in ³	16.387X10 ⁻⁶	578.7X10 ⁻⁶	1

Volume

	tonne	kip
tonne	1	2.2046
kip	0.4536	1

Mass

	kN	tonne-f	kip-f
kN	1	0.102	0.225
tonne-f	9.81	1	2.2046
kip-f	4.45	0.454	1

Force

	kNm	tf-m	kip-ft
kNm	1	0.102	0.7376
tf-m	9.81	1	0.205
kip-ft	1.36	4.88	1

Energy

	kN/m ²	t/m ²	kip/ft ²
kN/m ²	1	0.102	0.0209
t/m ²	9.81	1	0.205
kip/ft ²	47.9	4.88	1

Pressure

	tonne/m ³	kip/ft ³
tonne/m ³	1	0.0624
kip/ft ³	16.018	1

Density

	N/mm ²	psi
N/mm ²	1	145.04
psi	6.895X10 ⁻³	1

Stress

	m/s	ft/s	km/h	mph	knot
m/s	1	3.2808	3.600	2.2369	1.9438
ft/s	0.3048	1	1.0973	0.6818	0.5925
km/h	0.2778	0.9113	1	0.6214	0.5400
mph	0.4470	1.4667	1.6093	1	0.8690
knot	0.5144	1.6878	1.8520	1.1508	1

Velocity

	g	m/s ²	ft/s ²
g	1	9.807	32.17
m/s ²	0.102	1	3.281
ft/s ²	6.895X10 ⁻³	0.3048	1

Acceleration

	degree	radian
degree	1	17.45X10 ⁻³
radian	57.3	1

Angle

Standard Size of Vessel and Berthing Energy

Confidence Limit : 75%												
Type	Dead Weight Tonnage (t)	Displacement (t)	Length Overall (m)	Length P.P (m)	Breadth (m)	Depth (m)	Maximum Draft (m)	Wind Lateral Area (㎡)		Wind Front Area (㎡)		Berthing Energy (KJ)
								Full Load Condition	Ballast Condition	Full Load Condition	Ballast Condition	0.15m/sec
Genera Cargo Ship	1,000	1,690	67	62	10.8	5.8	3.9	278	342	63	93	1.67
	2,000	3,250	83	77	13.1	7.2	4.9	426	541	101	142	3.26
	3,000	4,750	95	88	14.7	8.1	5.6	547	708	132	182	4.80
	5,000	7,690	111	104	16.9	9.4	6.6	750	993	185	249	7.86
	7,000	10,600	123	115	18.6	10.4	7.4	922	1,240	232	307	10.93
	10,000	14,800	137	129	20.5	11.6	8.3	1,150	1,570	294	382	15.37
	15,000	21,600	156	147	23.0	13.1	9.5	1,480	2,060	385	490	22.64
	20,000	28,400	170	161	24.9	14.3	10.4	1,760	2,490	466	585	29.92
	30,000	41,600	193	183	27.8	16.2	11.9	2,260	3,250	611	750	44.32
	40,000	54,500	211	200	30.2	17.6	13.0	2,700	3,940	740	895	58.21
Bulk Carrier *	5,000	6,920	109	101	15.5	8.6	6.2	689	910	221	245	7.15
	7,000	9,520	120	111	17.2	9.5	6.9	795	1,090	250	287	9.85
	10,000	13,300	132	124	19.2	10.6	7.7	930	1,320	286	340	13.76
	15,000	19,600	149	140	21.8	11.9	8.6	1,100	1,630	332	411	20.13
	20,000	25,700	161	152	23.8	13.0	9.4	1,240	1,900	369	470	26.40
	30,000	37,700	181	172	27.0	14.7	10.6	1,480	2,360	428	569	38.63
	50,000	61,100	209	200	32.3	17.1	12.4	1,830	3,090	518	723	62.00
	70,000	84,000	231	221	32.3	18.9	13.7	2,110	3,690	586	846	89.11
	100,000	118,000	255	246	39.2	21.1	15.2	2,460	4,460	669	1,000	120.25
	150,000	173,000	287	278	44.5	23.8	17.1	2,920	5,520	777	1,210	175.61
	200,000	227,000	311	303	48.7	25.9	18.6	3,300	6,430	864	1,380	229.82
	250,000	280,000	332	324	52.2	27.7	19.9	3,630	7,240	938	1,540	283.25
Container Ship **	7,000	10,700	123	115	20.3	9.8	7.2	1,460	1,590	330	444	10.50
	10,000	15,100	141	132	22.4	11.3	8.0	1,880	1,990	410	535	14.86
	15,000	22,200	166	156	25.0	13.3	9.0	2,490	2,560	524	663	21.92
	20,000	29,200	186	175	27.1	14.9	9.9	3,050	3,070	625	771	29.01
	25,000	36,100	203	191	28.8	16.3	10.6	3,570	3,520	716	870	35.97
	30,000	43,000	218	205	30.2	17.5	11.1	4,060	3,950	800	950	42.82
	40,000	56,500	244	231	32.3	19.6	12.2	4,970	4,730	950	1,110	56.93
	50,000	69,900	266	252	32.3	21.4	13.0	5,810	5,430	1,090	1,250	72.42
	60,000	83,200	286	271	36.5	23.0	13.8	6,610	6,090	1,220	1,370	83.87
Oil Tanker	1,000	1,580	61	58	10.2	4.5	4.0	190	280	86	85	1.62
	2,000	3,070	76	72	12.6	5.7	4.9	280	422	119	125	3.13
	3,000	4,520	87	82	14.3	6.6	5.5	351	536	144	156	4.59
	5,000	7,360	102	97	16.8	7.9	6.4	467	726	184	207	7.44
	7,000	10,200	114	108	18.6	8.9	7.1	564	885	216	249	10.32
	10,000	14,300	127	121	20.8	10.0	7.9	688	1,090	255	303	14.44
	15,000	21,000	144	138	23.6	11.6	8.9	860	1,390	309	378	21.14
	20,000	27,700	158	151	25.8	12.8	9.6	1,010	1,650	355	443	27.73
	30,000	40,800	180	173	29.2	14.8	10.9	1,270	2,090	430	554	40.90
	50,000	66,400	211	204	32.3	17.6	12.6	1,690	2,830	548	734	67.85
	70,000	91,600	235	227	38.0	19.9	13.9	2,040	3,460	642	884	91.04
	100,000	129,000	263	254	42.5	22.5	15.4	2,490	4,270	761	1,080	127.70
	150,000	190,000	298	290	48.1	25.9	17.4	3,120	5,430	920	1,340	187.96
	200,000	250,000	327	318	52.6	28.7	18.9	3,670	6,430	1,060	1,570	246.61
	300,000	368,000	371	363	59.7	33.1	21.2	4,600	8,180	1,280	1,970	361.24

Confidence Limit : 75%												
Type	Dead Weight Tonnage (t)	Displacement (t)	Length Overall (m)	Length P.P (m)	Breadth (m)	Depth (m)	Maximum Draft (m)	Wind Lateral Area (m ²)		Wind Front Area (m ²)		Berthing Energy (KJ) 0.15m/sec
								Full Load Condition	Ballast Condition	Full Load Condition	Ballast Condition	
RoRo Ship	1,000	2,190	73	66	14.0	6.2	3.5	880	970	232	232	1.89
	2,000	4,150	94	86	16.6	8.4	4.5	1,210	1,320	314	323	3.67
	3,000	6,030	109	99	18.3	10.0	5.3	1,460	1,590	374	391	5.47
	5,000	9,670	131	120	20.7	12.5	6.4	1,850	2,010	467	497	8.98
	7,000	13,200	148	136	22.5	14.5	7.2	2,170	2,350	541	583	12.43
	10,000	18,300	169	155	24.6	17.0	8.2	2,560	2,760	632	690	17.51
	15,000	26,700	196	180	27.2	20.3	9.6	3,090	3,320	754	836	26.14
	20,000	34,800	218	201	29.1	23.1	10.7	3,530	3,780	854	960	34.66
Passenger Ship	30,000	50,600	252	233	32.2	27.6	12.4	4,260	4,550	1,020	1,160	51.41
	1,000	1,030	64	60	12.1	4.9	2.6	464	486	187	197	0.85
	2,000	1,910	81	75	14.4	6.3	3.4	744	770	251	263	1.61
	3,000	2,740	93	86	16.0	7.4	4.0	980	1,010	298	311	2.36
	5,000	4,320	112	102	18.2	9.0	4.8	1,390	1,420	371	386	3.79
	7,000	5,830	125	114	19.8	10.2	5.5	1,740	1,780	428	444	5.21
	10,000	8,010	142	128	21.6	11.7	6.4	2,220	2,250	498	516	7.32
	15,000	11,500	163	146	23.9	13.7	7.5	2,930	2,950	592	611	10.74
	20,000	14,900	180	160	25.7	15.3	8.0	3,560	3,570	669	690	13.88
	30,000	21,300	207	183	28.4	17.8	8.0	4,690	4,680	795	818	19.11
	50,000	33,600	248	217	32.3	21.7	8.0	6,640	6,580	990	1,010	28.84
	70,000	45,300	278	243	35.2	24.6	8.0	8,350	8,230	1,140	1,170	37.82
Ferry	1,000	1,230	67	61	14.3	5.5	3.4	411	428	154	158	1.04
	2,000	2,430	86	78	17.0	6.8	4.2	656	685	214	221	2.08
	3,000	3,620	99	91	18.8	7.7	4.8	862	903	259	269	3.14
	5,000	5,970	119	110	21.4	9.0	5.5	1,220	1,280	330	344	5.19
	7,000	8,310	134	124	23.2	10.0	6.1	1,530	1,600	387	405	7.28
	10,000	11,800	153	142	25.4	11.1	6.8	1,940	2,040	458	482	10.40
	15,000	17,500	177	164	28.1	12.6	7.6	2,550	2,690	555	586	15.48
	20,000	23,300	196	183	30.2	13.8	8.3	3,100	3,270	636	673	20.72
	30,000	34,600	227	212	33.4	15.6	9.4	4,070	4,310	771	819	31.04
	40,000	45,900	252	236	35.9	17.1	10.2	4,950	5,240	880	940	41.32
Gas Carrier	1,000	2,480	71	66	11.7	5.7	4.6	390	465	133	150	2.54
	2,000	4,560	88	82	14.3	7.2	5.7	597	707	195	219	4.70
	3,000	6,530	100	93	16.1	8.4	6.4	765	903	244	273	6.73
	5,000	10,200	117	109	18.8	10.0	7.4	1,050	1,230	323	361	10.46
	7,000	13,800	129	121	20.8	11.3	8.1	1,290	1,510	389	434	14.09
	10,000	18,900	144	136	23.1	12.9	9.0	1,600	1,870	474	527	19.30
	15,000	27,000	164	154	26.0	14.9	10.1	2,050	2,390	593	658	27.54
	20,000	34,800	179	169	28.4	16.5	11.0	2,450	2,840	696	770	35.45
	30,000	49,700	203	192	32.0	19.0	12.3	3,140	3,630	870	961	50.46
	50,000	78,000	237	226	37.2	22.8	12.3	4,290	4,940	1,150	1,270	74.38
	70,000	105,000	263	251	41.2	25.7	12.3	5,270	6,050	1,390	1,530	96.25
	100,000	144,000	294	281	45.8	29.2	12.3	6,560	7,510	1,690	1,860	127.05

* Full Load Condition of Wind Lateral / Front Areas of log carrier don't include the areas of logs on deck

** Full Load Condition of Wind Lateral / Front Areas of Container Ships include the areas of containers on deck



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