

FENDERING AND BERTHING SYSTEM



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FENDERING AND BERTHING SYSTEM

BSB offers the widest range of fenders to suit almost all types of berthing applications in various climatic and site conditions. We manufacture the entire range of fender. Our fenders are renowned for their long and trouble-free service life without deterioration in its performance and characteristics. They are last word in reliability and safety and, are preferred worldwide where critical applications are envisaged.

Custom-made designs of “BSB” fenders offer great economy while conforming to the international specifications and operational requirements.

“BSB” fenders are manufactured by compression moulding process at very high pressure of 1000 to 2000 tons load, which is much better and advanced technology than the ancient extrusion process, resulting in zero porosity / bubble free moulding of fenders.

“BSB” fenders are manufactured from different type of rubber compound according to the requirements of site conditions. These compounds are made of purest form of natural rubber or high abrasion resistant synthetic rubbers like Neoprene, SBR, EPDM, Butyl and Polyurethane having excellent U.V resistance, resistance to ozone aging, resistance to sea water and extreme climate conditions from very low ambient temperature to very high ambient temperature prevailing in global berthing locations.

Specification:

. Adequate Energy Absorption Capacity

Reduced risk damage

. Ensure Fender System Quality

Fender tested to recognized standard

Material certificates where required

. Adequate of Components

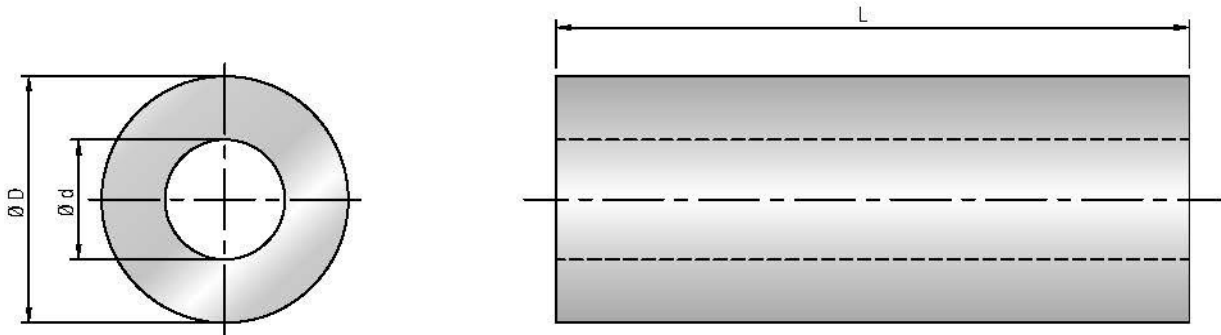
Designed to recognized standard (BS5950 , AS4140)

Designed with appropriate material

. Design life of system

Material adequate to meet expected design life

CYLINDRICAL FENDERS CY SERIES



DIMENSION TABLE

ALL DIMENSIONS ARE IN MM.

MODEL NO.	ØD	Ød	APPROX. WEIGHT Kgs/Mtr.
DCY 150	150	75	18
DCY 200	200	100	31
DCY 250 / DCY 256	250 / 256	125	48 / 50
DCY 300 / DCY 380	300 / 380	150 / 150	69 / 115
DCY 350 / DCY 380	350 / 380	175 / 190	112 / 117
DCY 400 / DCY 390	400 / 390	200 / 190	123 / 120
DCY 500 / DCY 485	500 / 485	250 / 245	192 / 180
DCY 600	600	300	276
DCY 700	700	350	375
DCY 800	800	400 / 500	490 / 417
DCY 900	900	450	620
DCY 1000	1000	500	766
DCY 1100	1100	550	927
DCY 1200	1200	600	1103
DCY 1300	1300	650	1295
DCY 1400	1400	700 / 800	1501 / 1319
DCY 1500	1500	750 / 850	1725 / 1825
DCY 1600	1600	800	1960
DCY 1700	1700	850	2212
DCY 1800	1800	900	2480
DCY 1900	1900	950	2764
DCY 2000	2000	1000	3062
DCY 2100	2100	1050	3376
DCY 2200	2200	1100	3705
DCY 2300	2300	1150	4050
DCY 2400	2400	1200	4409
DCY 2500	2500	1250	4784
DCY 2600	2600	1300	5174
DCY 2700	2700	1350	5580
DCY 2800	2800	1400	6001
DCY 2900	2900	1450	6437
DCY 3000	3000	1500	6890

THE PERFORMANCE AND WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

CYLINDRICAL FENDERS CY SERIES



PERFORMANCE TABLE

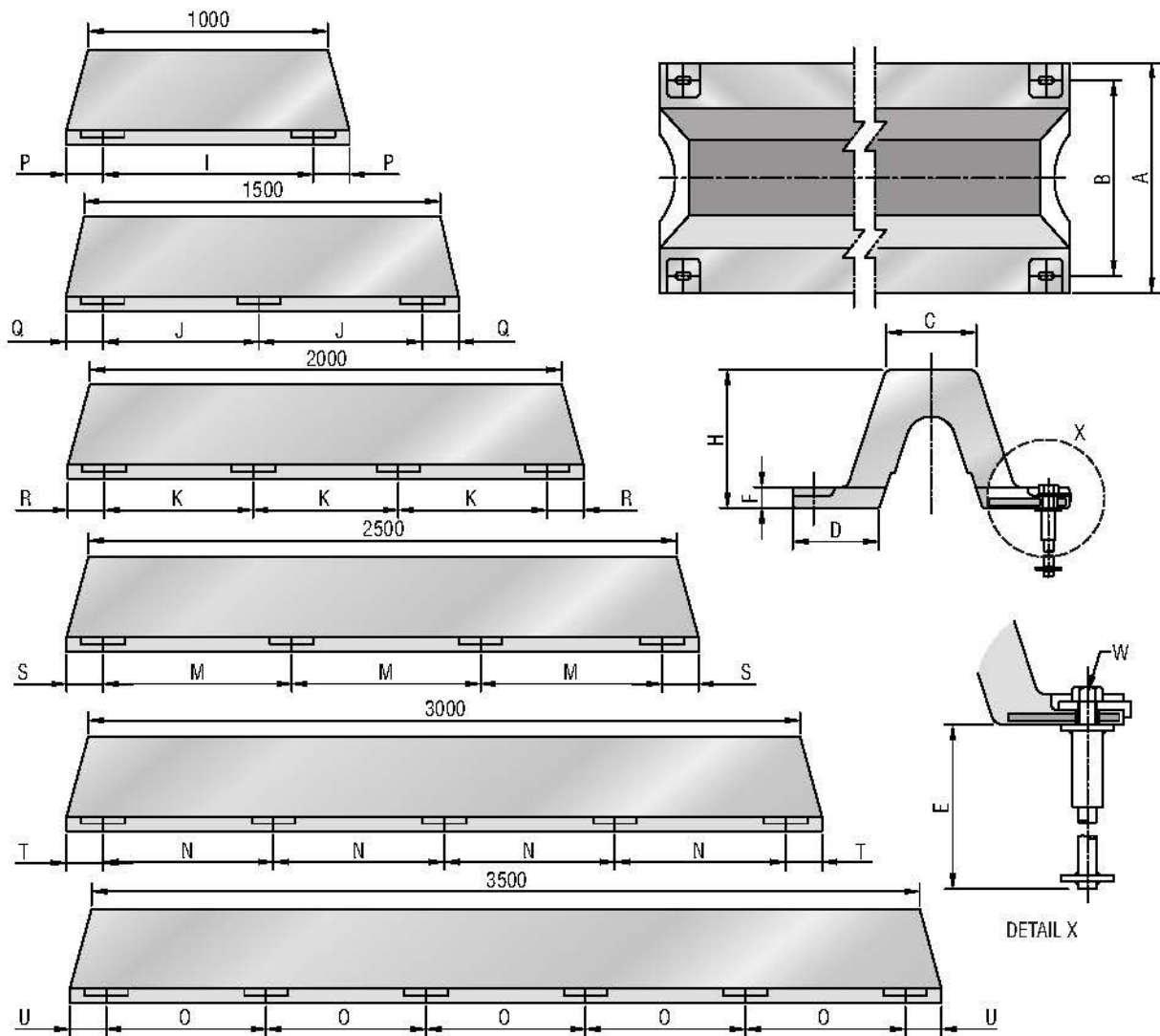
GRADE	R1				R2				R3			
	50%		55%		50%		55%		50%		55%	
DEFLECTION	R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)
CY 150	10.3	0.26	19.8	0.37	8.4	0.23	16.5	0.32	4.1	0.14	9.3	0.19
CY 200	13.8	0.47	26.4	0.66	11.2	0.41	22.0	0.57	5.4	0.26	12.4	0.34
CY 250	17.2	0.74	33.0	1.04	14.0	0.65	27.5	0.90	6.8	0.41	15.5	0.53
CY 300	20.7	1.07	39.6	1.50	16.8	0.93	33.0	1.29	8.1	0.60	18.6	0.77
CY 350	24.1	1.46	46.2	2.04	19.6	1.27	38.5	1.76	9.5	0.80	21.7	1.05
CY 400	27.5	1.96	53	2.67	22.4	1.66	44.0	2.30	10.8	1.06	24.8	1.37
CY 500	34.4	2.98	66	4.17	28.0	2.60	55	3.60	13.5	1.65	31.0	2.14
CY 600	41.3	4.28	80	6.01	33.6	3.74	66	5.18	16.2	2.38	37.2	3.08
CY 700	48.1	5.38	93	8.18	39.2	5.09	77	7.05	18.9	3.23	43.4	4.20
CY 800	55	7.62	106	10.6	44.8	6.85	88	9.21	21.6	4.22	49.6	5.49
CY 900	62	9.64	119	13.5	51	8.42	99	11.6	24.3	5.35	56	6.94
CY 1000	69	11.9	132	16.7	56	10.4	110	14.4	27.0	6.60	62	8.58
CY 1100	76	14.4	145	20.2	62	12.5	121	17.4	29.7	7.99	68	10.4
CY 1200	83	17.1	159	24.0	68	14.9	132	20.7	32.4	9.50	75	12.3
CY 1300	90	20.1	172	28.2	73	17.5	143	24.3	35.1	11.2	81	14.5
CY 1400	97	23.3	185	32.7	79	20.3	154	28.2	37.8	12.9	87	16.8
CY 1500	103	26.8	198	37.6	84	23.6	165	32.4	40.5	14.9	93	19.3
CY 1600	110	30.5	212	42.7	90	26.6	176	36.8	43.2	16.9	100	21.9
CY 1700	117	34.4	224	48.3	96	30.0	187	41.6	45.9	19.1	105	24.8
CY 1800	124	38.6	238	54	101	33.6	198	46.6	48.6	21.4	112	27.7
CY 1900	130	43.0	251	60	107	37.5	209	52	52	23.8	118	30.9
CY 2000	138	47.6	264	66	112	41.6	220	57	54	26.4	124	34.3
CY 2100	144	52	277	74	118	45.8	231	64	57	29.1	130	37.8
CY 2200	151	57	291	80	124	50	242	69	60	31.9	137	41.5
CY 2300	158	63	304	88	129	55	253	76	63	34.9	143	45.4
CY 2400	165	68	317	96	135	59	264	82	65	38.0	149	49.4
CY 2500	172	74	330	104	140	65	275	90	68	41.3	155	54
CY 2600	179	80	344	112	146	70	286	97	71	44.6	162	58
CY 2700	185	86	356	122	152	75	297	105	73	48.1	167	63
CY 2800	194	93	370	130	157	81	308	112	76	51	174	67
CY 2900	199	100	383	140	163	87	319	121	79	55	180	72
CY 3000	206	107	396	150	168	93	330	129	81	59	186	77

PERFORMANCE VALUES ARE FOR 1000 MM. LENGTH

(R : REACTION FORCE E : ENERGY ABSORPTION TOLERANCE ± 10%)

NOTE: INTERMEDIATE PERFORMANCE WITH SIMILAR E/R RATIO ARE AVAILABLE IN BETWEEN GRADES WITH GRADIENT OF 10% AS DOCUMENTED ELSEWHERE IN THE SPECIFICATION.

ARCH FENDERS DA SERIES



DIMENSIONS TABLE

ALL DIMENSIONS ARE IN MM

MODEL NO.	H	A	B	C	D	E	F	W	P	Q	R	S	T	U	I	J	K	M	N	O	APPROX WEIGHT Kgs/Mtr
DA 150H	150	300	240	98	96	170	22.5	M22	110	112.5	107.5	110	107.5	110	855	675	620	785	715	671	40
DA 200H	200	400	320	131	128	175	30	M24	120	120	120	122.5	120	120	860	680	620	785	715	672	65
DA 250H	250	500	410	164	160	200	37.5	M27	130	132.5	132.5	127.5	132.5	130	865	680	620	790	715	673	100
DA 300H	300	600	490	197	192	225	45	M30	140	140	137.5	140	145	140	870	685	625	790	715	674	130
DA 400H	400	800	670	262	256	275	60	M36	150	150	147.5	150	150	-	900	700	635	800	725	-	230
DA 500H	500	1000	840	328	320	325	75	M42	160	160	157.5	160	165	-	930	715	645	810	730	-	355
DA 600H	600	1200	1010	393	384	375	90	M48	170	170	167.5	170	170	-	960	730	655	820	740	-	520
DA 800H	800	1600	1340	524	501	475	120	M64	180	180	180	182.5	180	-	1040	770	680	845	760	-	932
DA 1000H	1000	2000	1680	655	626	475	150	M64	200	200	200	202.5	200	200	1100	800	700	865	775	900	1490

THE PERFORMANCE AND WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

ARCH FENDERS DA SERIES



PERFORMANCE TABLE

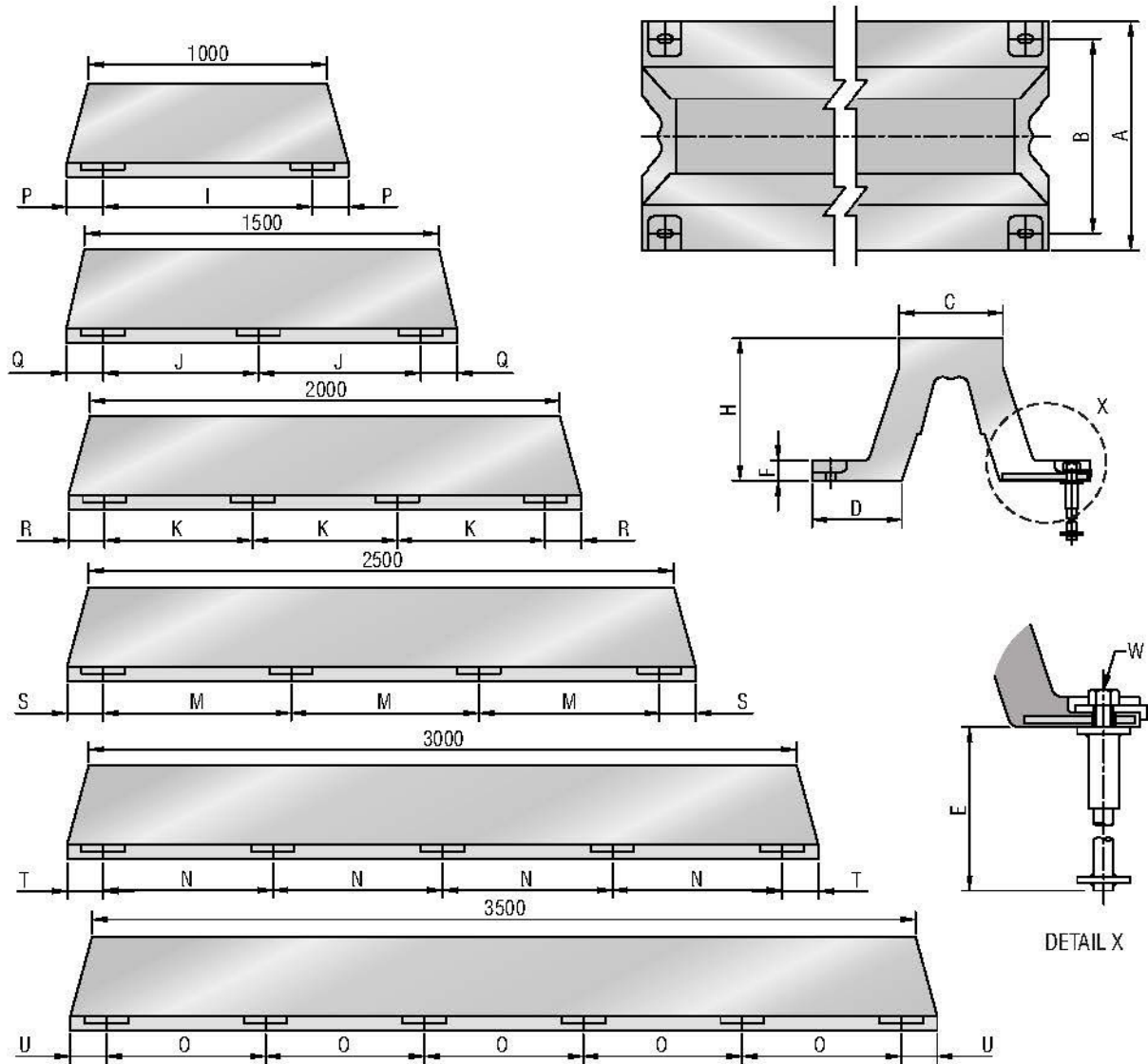
RUBBER GRADE	R1				R2				R3				R4			
	45%		50%		45%		50%		45%		50%		45%		50%	
DEFLECTION	R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)
DA 150H	12.8	0.7	17.2	0.9	11	0.55	14.8	0.75	8.2	0.45	11	0.52	5.5	0.3	7.5	0.35
DA 200H	17.3	1.5	22.8	1.7	15.2	1.3	19.8	1.5	11.2	0.90	15.1	1.1	7.4	0.6	10	0.7
DA 250H	21.3	1.9	28.9	2.2	18.4	1.7	24.8	2	13.9	1.30	18.8	1.5	9.3	0.9	12.5	1.1
DA 300H	25.5	2.7	34.4	3.2	22	2.5	30.1	2.9	16.5	1.90	22.6	2.2	11.4	1.3	15.4	1.5
DA 400H	34.4	4.4	46.5	5.5	29.7	4.3	40.1	4.8	22.3	3.20	30.1	3.9	15.2	2.3	20.5	2.7
DA 500H	42.7	7.1	57.9	8.7	37.2	6.9	50.2	7.7	27.8	5.00	37.4	5.9	18.4	3.2	25.2	3.8
DA 600H	51.2	10.3	69.3	12	44.5	9.2	60.5	10.7	33.8	7.10	45.7	8.2	22.3	4.7	30.2	5.4
DA 800H	68.5	18.7	92.5	21.4	59.5	16.3	80.6	19.3	45.2	12.3	60.7	14.4	29.7	8.3	40.6	9.6
DA 1000H	85.8	28.6	116	37.7	74.6	25.7	101	29.8	56.2	19.1	75.7	23.1	37.3	13.8	50.5	16.2

PERFORMANCE VALUES ARE FOR 1000 MM. LENGTH

(R : REACTION FORCE E : ENERGY ABSORPTION TOLERANCE ± 10%)

NOTE: INTERMEDIATE PERFORMANCE WITH SIMILAR E/R RATIO ARE AVAILABLE IN BETWEEN GRADES WITH GRADIENT OF 10% AS DOCUMENTED ELSEWHERE IN THE ACHIEVE.

DYNA ARCH FENDERS DYA SERIES



DIMENSIONS TABLE

ALL DIMENSIONS ARE IN MM

MODEL NO.	H	A	B	C	D	E	F	W	P	Q	R	S	T	U	I	J	K	M	N	O	APPROX WEIGHT Kgs/Mtr.
DYA 250H	250	500	410	164	160	200	33	M27	130	132.5	132.5	127.5	132.5	130	865	680	620	790	715	673	85
DYA 300H	300	600	490	225	195	225	37.5	M30	140	140	137.5	140	145	140	870	685	625	790	715	674	120
DYA 400H	400	800	670	300	260	275	40	M36	150	150	147.5	150	150	150	900	700	635	800	725	680	208
DYA 500H	500	1000	840	375	325	325	45	M42	160	160	157.5	160	165	160	930	715	645	810	730	686	325
DYA 600H	600	1200	1010	450	390	375	54	M48	170	170	167.5	170	170	170	960	730	655	820	740	692	480
DYA 800H	800	1600	1340	600	520	475	72	M64	180	180	180	182.5	180	-	1040	770	680	845	760	-	875
DYA 1000H	1000	2000	1680	750	650	475	90	M64	200	200	200	-	-	-	1100	800	700	-	-	-	1395

THE PERFORMANCE AND WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

DYNA ARCH FENDERS DYA SERIES



PERFORMANCE TABLE

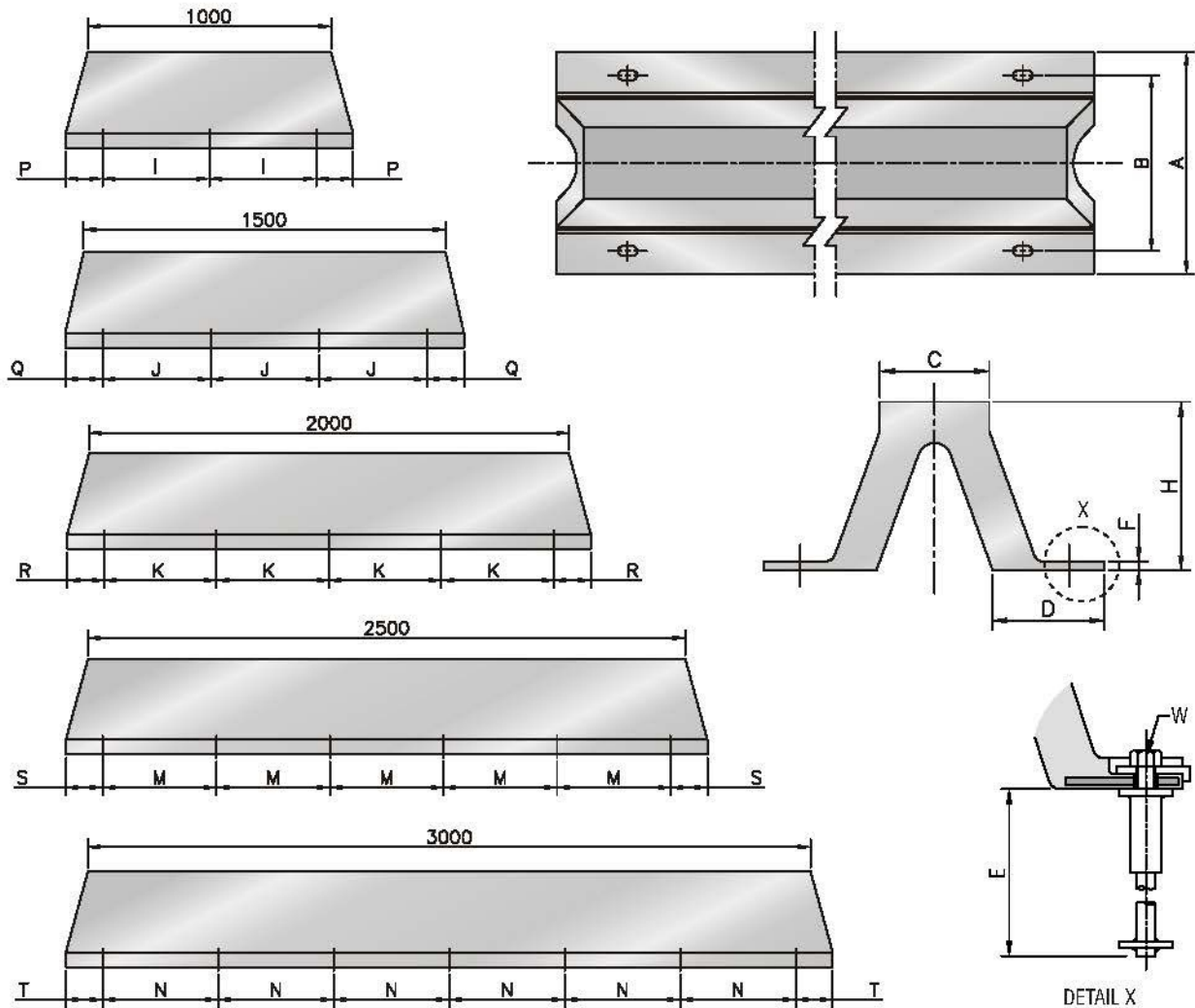
RUBBER GRADE	R1				R2				R3				R4			
	52%		55%		52%		55%		52%		55%		52%		55%	
DEFLECTION	R(T)	E(T-M)	R(T)	E(T-M)	R(T)	E(T-M)	R(T)	E(T-M)	R(T)	E(T-M)	R(T)	E(T-M)	R(T)	E(T-M)	R(T)	E(T-M)
DYA 250H	27.0	2.8	37.5	3.0	20.8	2.2	28.8	2.3	17.2	1.8	23.9	1.9	14.8	1.6	20.5	1.7
DYA 300H	32.4	4.1	45.0	4.4	24.9	3.1	34.6	3.3	20.6	2.6	28.6	2.8	17.7	2.2	24.6	2.4
DYA 400H	43.2	7.3	60.0	7.8	33.2	5.6	46.1	6.0	27.5	4.6	38.2	4.9	23.6	4.0	32.8	4.3
DYA 500H	54.0	11.3	75.0	12.1	41.5	8.7	57.6	9.3	34.4	7.2	47.8	7.7	29.5	6.2	41.0	6.6
DYA 600H	64.7	16.3	89.9	17.5	49.8	12.6	69.2	13.5	41.2	10.4	57.2	11.1	35.4	8.9	49.2	9.5
DYA 800H	86.4	29.0	120	31.1	66.4	22.3	92.2	23.9	55.0	18.5	76.4	19.8	47.2	15.9	65.6	17.0
DYA 1000H	108	45.4	150	48.6	83.0	34.9	115.3	37.4	68.8	28.9	95.6	31.0	59.0	24.8	82.0	26.6

PERFORMANCE VALUES ARE FOR 1000 MM. LENGTH

(R : REACTION FORCE E : ENERGY ABSORPTION TOLERANCE $\pm 10\%$)

NOTE: INTERMEDIATE PERFORMANCE WITH SIMILAR E/R RATIO ARE AVAILABLE IN BETWEEN GRADES WITH GRADIENT OF 10% AS DOCUMENTED ELSEWHERE IN THE SPECIFICATION.

ARCH FENDERS DAV SERIES



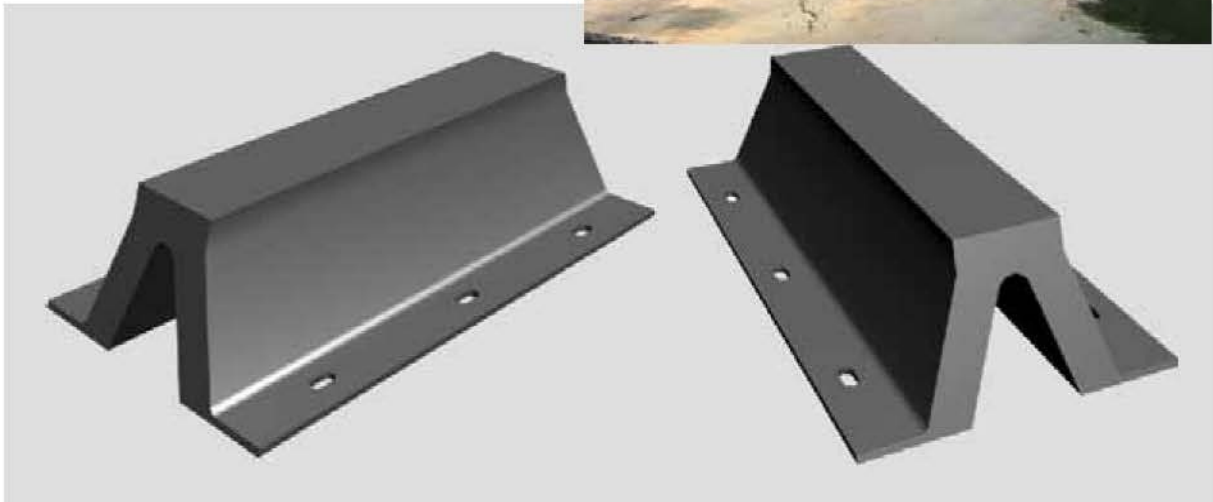
DIMENSIONS TABLE

ALL DIMENSIONS ARE IN MM

MODEL NO.	H	A	B	C	D	E	F	P	Q	R	S	T	I	J	K	M	N	W	WEIGHT (Kg/Mtr)
DAV 150H	150	326	240	98	108	150	16	50	50	50	50	50	500	500	500	500	500	M16	30
DAV 200H	200	422	320	130	142	150	18	50	50	50	50	50	500	500	500	500	500	M20	48
DAV 250H	250	500	400	163	164	175	20	62.50	62.50	62.50	62.50	62.50	500	500	500	500	500	M24	70
DAV 300H	300	595	480	195	194	175	24	75	75	75	75	75	500	500	500	500	500	M24	108
DAV 400H	400	808	640	260	266	225	26	100	100	100	100	100	500	500	500	500	500	M30	186
DAV 500H	500	981	800	325	318	275	26	125	125	125	125	125	500	500	500	500	500	M36	280
DAV 600H	600	1160	960	390	373	325	28	150	150	150	150	150	500	500	500	500	500	M42	412
DAV 800H	800	1550	1300	520	499	375	41	200	200	200	200	200	500	500	500	500	500	M48	770
DAV 1000H	1000	1850	1550	650	580	375	52	250	250	250	250	250	500	500	500	500	500	M48	1300

THE PERFORMANCE AND WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

ARCH FENDERS DAV SERIES



PERFORMANCE TABLE

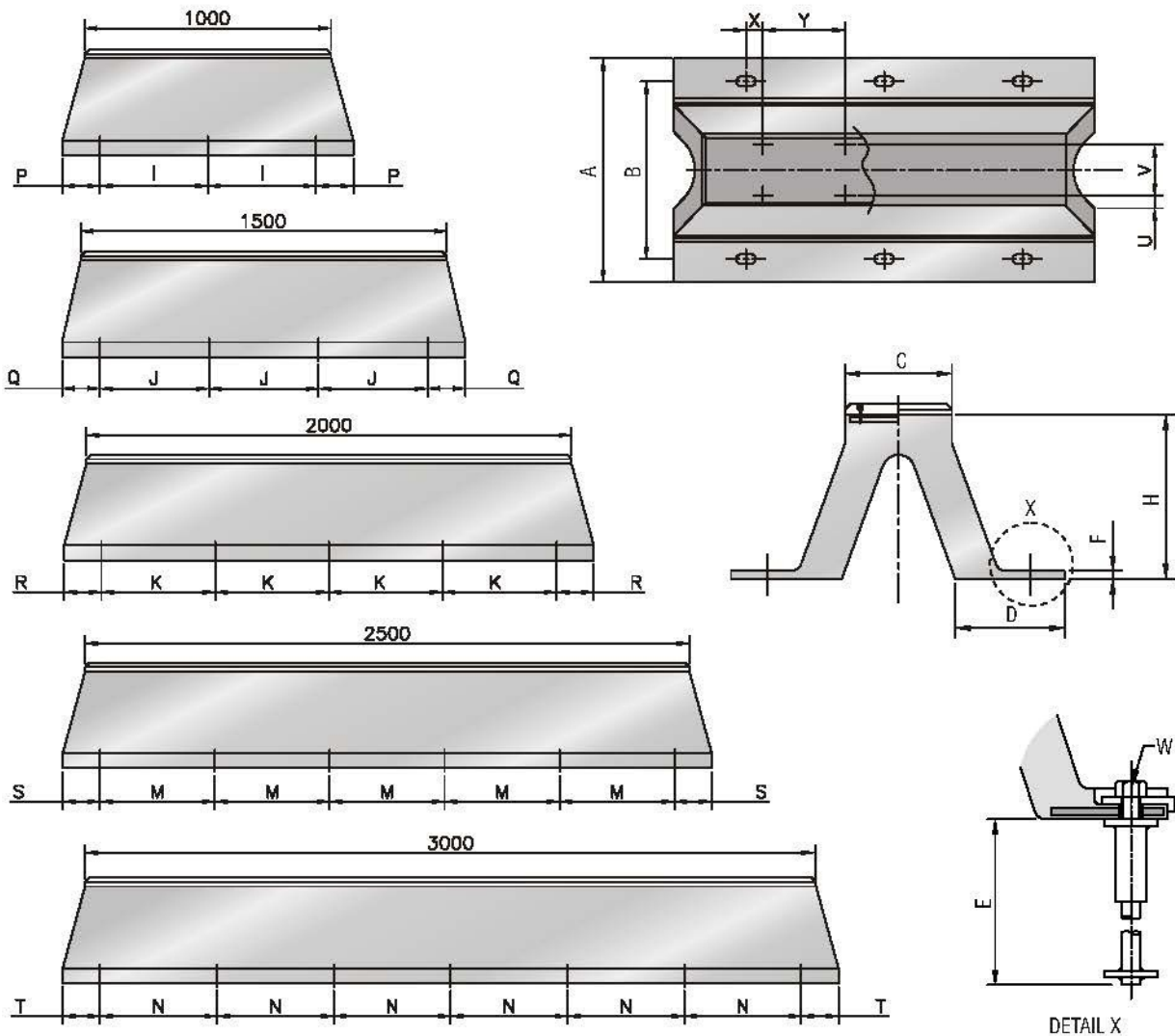
RUBBER GRADE	R1		R2		R3	
DEFLECTION	51.5%					
MODEL	R(T)	E(T-M)	R(T)	E(T-M)	R(T)	E(T-M)
DAV 150H	12.7	0.74	9.6	0.56	7.4	0.43
DAV 200H	16.9	1.31	12.8	1.0	9.9	0.76
DAV 250H	21.1	2.05	16.0	1.56	12.3	1.19
DAV 300H	25.3	2.95	19.2	2.25	14.8	1.71
DAV 400H	33.9	5.25	25.6	4.0	19.7	3.05
DAV 500H	42.2	8.20	32.1	6.24	24.7	4.76
DAV 600H	50.7	11.6	38.5	8.99	29.6	6.86
DAV 800H	67.5	21.0	51.3	16.0	39.4	12.2
DAV 1000H	84.4	32.8	64.1	25.0	49.3	19.1

PERFORMANCE VALUES ARE FOR 1000 MM. LENGTH

(R : REACTION FORCE E : ENERGY ABSORPTION TOLERANCE ± 10%)

NOTE: INTERMEDIATE PERFORMANCE WITH SIMILAR E/R RATIO ARE AVAILABLE IN BETWEEN GRADES WITH GRADIENT OF 10% AS DOCUMENTED ELSEWHERE IN THE SPECIFICATION.

ARCH FENDERS DAVP SERIES



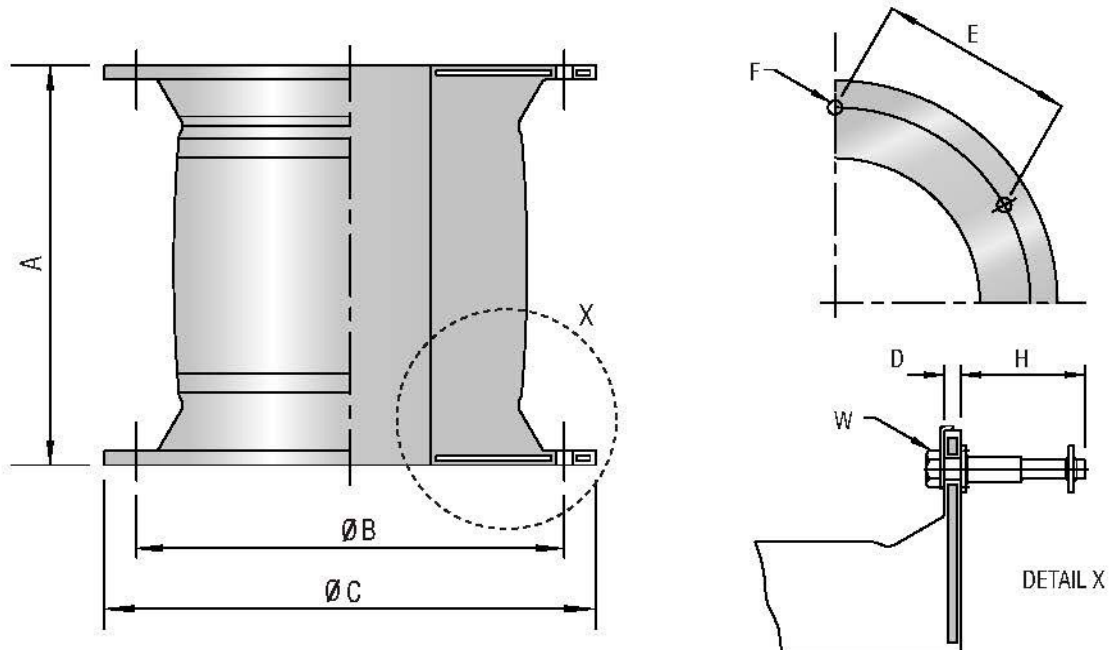
DIMENSIONS TABLE

ALL DIMENSIONS ARE IN MM

MODEL NO.	H	A	B	C	D	E	F	P	Q	R	S	T	I	J	K	M	N	W	WEIGHT (Kg/Mtr)
DAV 150H	150	326	240	98	108	150	16	50	50	50	50	50	500	500	500	500	500	M16	30
DAV 200H	200	422	320	130	142	150	18	50	50	50	50	50	500	500	500	500	500	M20	48
DAV 250H	250	500	400	163	164	175	26	62.50	62.50	62.50	62.50	62.50	500	500	500	500	500	M24	70
DAV 300H	300	595	480	195	194	175	24	75	75	75	75	75	500	500	500	500	500	M24	108
DAV 400H	400	808	640	260	266	225	20	100	100	100	100	100	500	500	500	500	500	M30	186
DAV 500H	500	981	800	325	318	275	26	125	125	125	125	125	500	500	500	500	500	M36	280
DAV 600H	600	1160	960	390	373	325	28	150	150	150	150	150	500	500	500	500	500	M42	412
DAV 800H	800	1550	1300	520	499	375	41	200	200	200	200	200	500	500	500	500	500	M48	770
DAV 1000H	1000	1850	1550	650	580	375	52	250	250	250	250	250	500	500	500	500	500	M48	1300

THE PERFORMANCE AND WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

CELL FENDERS



DIMENSION TABLE

ALL DIMENSIONS ARE IN MM.

MODEL NO.	A	ØB	ØC	D	E	F	H	W	APPROX WEIGHT IN KG.
SUC 400H	400	550	650	25	390	4 X Ø30	165	M 22	75
SUC 500H	500	550	650	25	390	4 X Ø32	175	M 24	95
SUC 630H	630	700	840	25	495	4 X Ø39	200	M 27	220
SUC 800H	800	900	1050	30	450	6 X Ø40	225	M 30	400
SUC 1000H	1000	1100	1300	35	550	6 X Ø47	270	M 36	790
SUC 1150H	1150	1300	1500	37	650	6 X Ø50	325	M 42	1200
SUC 1250H	1250	1450	1650	40	725	6 X Ø53	325	M 42	1500
SUC 1450H	1450	1650	1850	42	825	6 X Ø61	360	M 48	2300
SUC 1600H	1600	1800	2000	45	689	8 X Ø61	360	M 48	3000
SUC 1700H	1700	1900	2100	50	727	8 X Ø66	435	M 56	3700
SUC 2000H	2000	2000	2200	50	765	8 X Ø74	475	M 64	5000
SUC 2250H	2250	2300	2550	57	710	10 X Ø74	475	M 64	7400
SUC 2500H	2500	2700	2950	70	834	10 X Ø74	475	M 64	10700
SUC 3000H	3000	3150	3350	75	815	12 X Ø90	550	M 76	18500

THE PERFORMANCE AND WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

CELL FENDERS



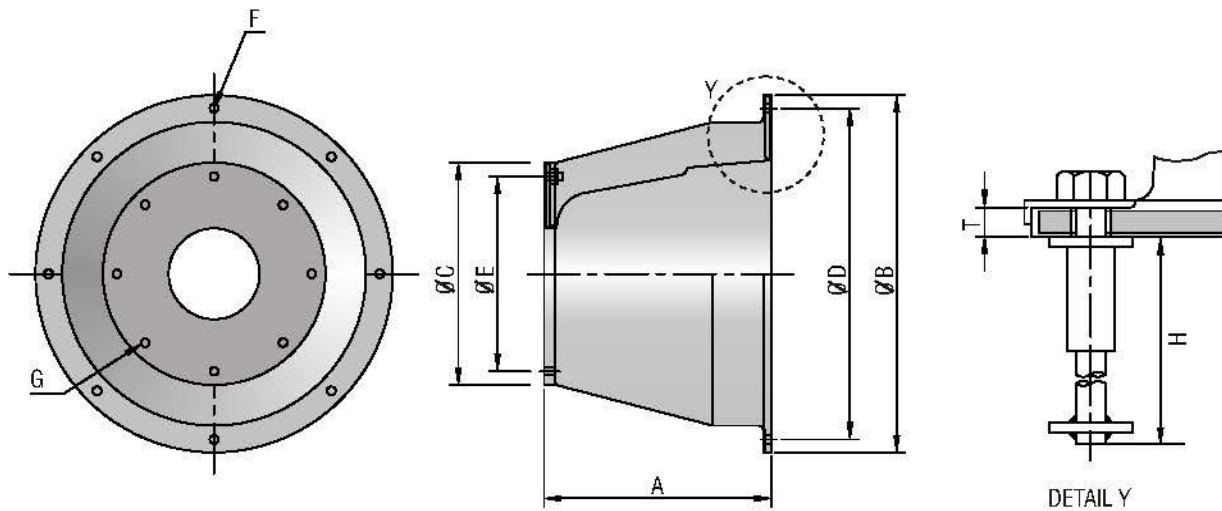
PERFORMANCE TABLE

MODEL NO.	DEFLECTION	RE		RS		RH		RO		R1	
		R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)
SUC 400H	52.5%	12.0	2.1	10.7	1.8	9.3	1.6	7.1	1.2	5.7	1.0
	55%	12.8	2.2	11.4	2.0	9.8	1.7	7.6	1.3	6.1	1.1
SUC 500H	52.5%	18.8	4.0	16.7	3.6	14.5	3.1	11.1	2.4	8.9	1.9
	55%	20.0	4.4	17.7	3.9	15.4	3.4	11.8	2.6	9.5	2.1
SUC 630H	52.5%	29.6	8.2	26.3	7.3	22.8	6.3	17.5	4.8	14.0	3.9
	55%	31.5	8.7	28.0	7.7	24.2	6.7	18.6	5.1	14.9	4.1
SUC 800H	52.5%	47.3	16.6	42.0	14.8	36.2	12.7	28.0	9.8	21.5	7.6
	55%	50.3	17.6	44.6	15.6	38.5	13.5	29.8	10.4	22.9	8.0
SUC 1000H	52.5%	75.2	33.0	66.8	29.3	57.9	25.4	44.5	19.5	35.6	15.6
	55%	80.0	35.0	71.0	31.0	61.5	26.9	47.3	20.7	37.9	16.6
SUC 1150H	52.5%	99.5	50.2	88.3	44.6	76.5	38.7	58.9	29.7	47.1	23.8
	55%	105.8	53.2	93.9	47.2	81.4	40.9	62.6	31.5	50.1	25.2
SUC 1250H	52.5%	117.6	64.5	104.3	57.3	90.4	49.6	69.6	38.2	55.6	30.5
	55%	125.0	68.3	110.9	60.6	96.1	52.6	73.9	40.4	59.2	32.3
SUC 1450H	52.5%	158.2	100.7	140.4	89.4	121.7	77.5	93.6	59.6	74.9	47.7
	55%	168.2	106.6	149.3	94.7	129.4	82.0	99.5	63.1	79.6	50.5
SUC 1600H	52.5%	192.6	135.3	171.0	120.1	148.2	104.1	114.0	80.1	91.2	64.1
	55%	204.7	143.3	181.7	127.2	157.5	110.2	121.2	84.4	96.9	67.8
SUC 1700H	52.5%	217.4	162.3	193.0	144.1	167.3	124.9	128.7	96.0	102.9	76.8
	55%	231.1	171.9	205.2	152.5	177.8	132.2	136.8	101.7	109.4	81.4
SUC 2000H	52.5%	300.0	264.3	267.1	234.6	231.5	203.3	178.1	156.4	142.5	125.1
	55%	319.9	279.8	283.9	248.4	246.1	215.3	189.3	165.6	151.4	132.5
SUC 2250H	52.5%	422.8	417.7	375.2	370.0	325.2	321.3	250.2	247.2	212.6	210.1
	55%	449.4	442.3	398.9	392.5	345.7	340.2	265.9	261.7	226.0	222.4
SUC 2500H	52.5%	522.0	573.0	463.3	508.6	401.5	440.8	308.8	339.1	262.5	288.2
	55%	554.9	606.7	492.5	538.5	426.8	466.7	328.3	359.0	279.1	305.1
SUC 3000H	52.5%	720.0	850.0	680.0	732.0	580.0	670.0	440.0	510.0	375.0	430.0
	55%	750.0	900.0	700.0	800.0	675.0	720.0	520.0	545.0	440.0	465.0

(R : REACTION FORCE E : ENERGY ABSORPTION TOLERANCE ± 10%)

NOTE: INTERMEDIATE PERFORMANCE WITH SIMILAR E/R RATIO ARE AVAILABLE IN BETWEEN GRADES WITH GRADIENT OF 10% AS DOCUMENTED ELSEWHERE IN THE SPECIFICATION.

CONE FENDERS DCN SERIES



DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

MODEL NO.	A	ØB	ØC	ØD	ØE	F	G	H	T	APPROX WEIGHT IN Kg.
DCN 300H	300	500	295	440	255	4 X M20	4 X M20	150	15	35
DCN 350H	350	570	330	510	275	4 X M20	4 X M20	150	15	45
DCN 400H	400	650	390	585	340	4 X M24	4 X M24	175	20	75
DCN 500H	500	800	490	730	425	4 X M24	4 X M24	175	25	145
DCN 550H	550	880	540	790	470	4 X M24	4 X M24	175	25	195
DCN 600H	600	960	590	875	515	4 X M30	4 X M30	225	30	250
DCN 700H	700	1120	685	1020	600	4 X M30	4 X M30	225	35	400
DCN 800H	800	1280	785	1165	685	6 X M30	6 X M30	225	35	610
DCN 900H	900	1440	885	1313	770	6 X M30	6 X M30	225	35	850
DCN 1000H	1000	1600	980	1460	855	6 X M36	6 X M36	275	35	1125
DCN 1050H	1050	1680	1030	1530	900	6 X M36	6 X M36	275	40	1365
DCN 1100H	1100	1760	1080	1605	940	8 X M36	8 X M36	275	40	1550
DCN 1200H	1200	1920	1175	1750	1025	8 X M42	8 X M42	325	40	1975
DCN 1300H	1300	2080	1275	1900	1100	8 X M48	8 X M48	375	40	2460
DCN 1400H	1400	2240	1370	2040	1195	8 X M48	8 X M48	375	50	3110
DCN 1600H	1600	2560	1570	2335	1365	8 X M48	8 X M48	375	60	4650
DCN 1800H	1800	2880	1765	2625	1540	10 X M56	10 X M56	440	60	6620
DCN 2000H	2000	3200	1955	2920	1710	10 X M56	10 X M56	440	90	9560

THE PERFORMANCE AND WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

CONE FENDERS DCN SERIES



PERFORMANCE TABLE

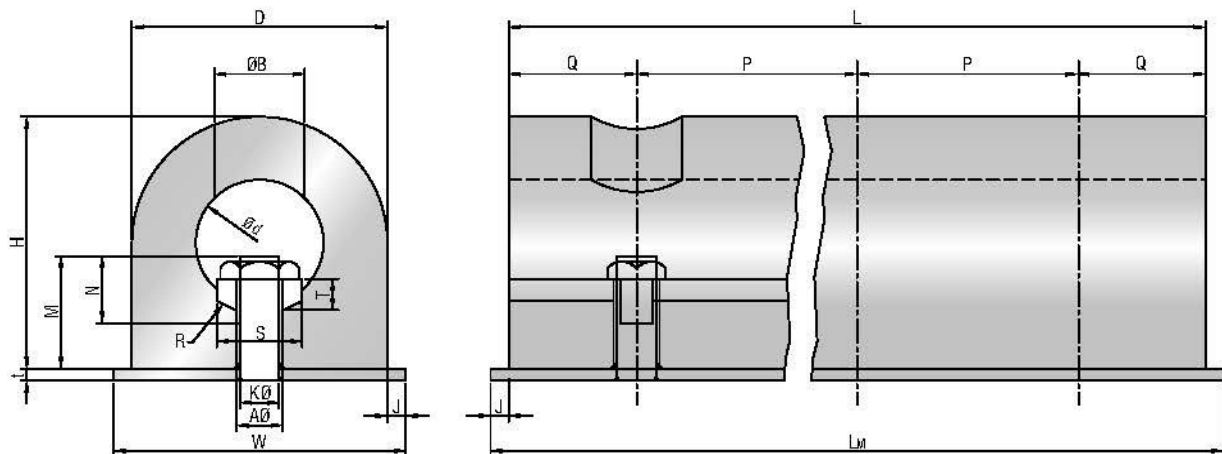
MODEL NO.	DEFLECTION	R1		R2		R3		R4	
		R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)	R (T)	E (T-M)
DCN 300H	72 %	11.4	1.5	9.1	1.2	7.5	1.0	5.9	0.7
DCN 350H	72 %	15.5	2.5	12.3	2.0	10.2	1.6	8.0	1.2
DCN 400H	72 %	20.4	3.8	16.1	3.0	13.3	2.4	10.4	1.8
DCN 500H	72 %	31.8	7.4	25.2	5.9	20.9	4.8	16.4	3.6
DCN 550H	72 %	38.5	9.9	30.5	7.9	25.3	6.5	19.8	4.9
DCN 600H	72 %	44.0	13.2	34.9	10.2	28.9	8.2	22.5	6.3
DCN 700H	72 %	62.7	22.6	49.8	18.1	41.2	15.1	32.0	11.7
DCN 800H	72 %	82.0	34.1	65.2	27.1	54.0	22.3	41.9	17.1
DCN 900H	72 %	104.0	48.4	82.5	38.3	68.1	31.7	52.7	24.8
DCN 1000H	72 %	128.2	66.6	101.8	52.7	84.2	43.5	65.3	33.8
DCN 1050H	72 %	141.4	77.0	112.3	61.0	92.9	50.4	72.0	39.2
DCN 1100H	72 %	151.1	88.6	123.8	70.3	101.9	58.1	78.8	45.0
DCN 1200H	72 %	184.8	115.0	146.7	91.3	121.3	75.5	94.1	58.5
DCN 1300H	72 %	216.7	146.3	172.1	115.9	142.3	95.7	110.3	74.3
DCN 1400H	72 %	251.4	182.6	199.7	144.7	165.1	119.5	127.8	92.7
DCN 1600H	72 %	327.8	272.8	260.5	216.2	215.5	178.4	167.0	138.2
DCN 1800H	72 %	415.3	388.3	329.8	307.7	272.8	253.9	211.5	196.7
DCN 2000H	72 %	512.6	532.4	407.2	421.6	336.8	348.0	261.0	270.0

(R : REACTION FORCE E : ENERGY ABSORPTION TOLERANCE ± 10%)

NOTE: INTERMEDIATE PERFORMANCE WITH SIMILAR E/R RATIO ARE AVAILABLE IN BETWEEN GRADES WITH GRADIENT OF 10% AS DOCUMENTED ELSEWHERE IN THE SPECIFICATION.

D-FENDERS DDA SERIES

FENDER INSTALLATION (VERTICAL WITH BACK PLATE)

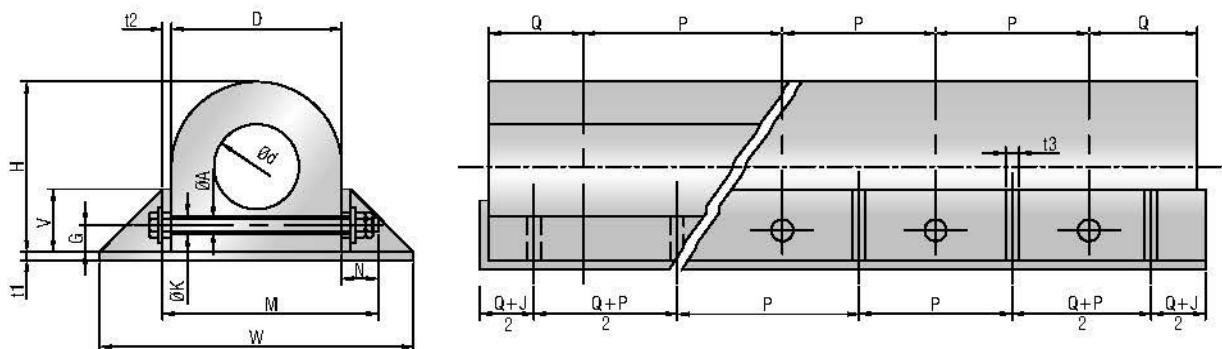


DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

H	D	Ød	ØA	B	J	ØK	LM	M	N	P	Q	R	S	T	t	W
150	150	75	22	53	10	19	L+20	67	40	250 300 (350)	125 150 (175)	38	50	16	10	170
200	200	100	25	60	10	22	L+20	85	50			50	65	19	10	220
250	250	125	29	65	15	25	L+30	100	55			63	80	22	12	280
300	300	150	29	65	15	25	L+30	120	70			75	100	25	12	330
400	400	200	32	75	15	28	L+30	150	80			100	120	28	16	430

FENDER INSTALLATION (HORIZONTAL WITH PARALLEL BOLTS)



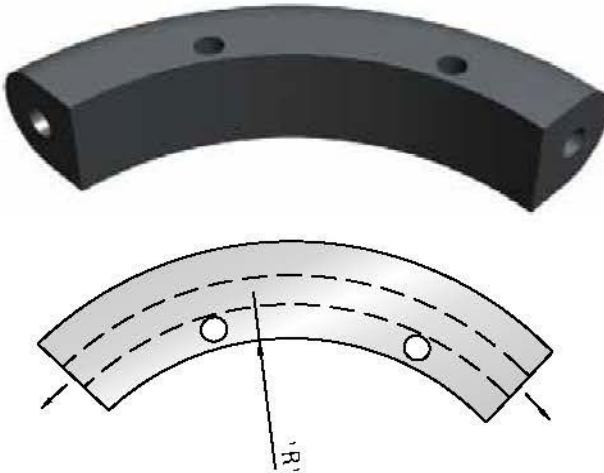
DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

H	D	Ød	ØA	G	J	ØK	LM	M	N	P	Q	t1	t2	t3	V	W
150	150	75	22	26	10	19	L+20	232	70	250 300 (350)	125 150 (175)	10	12	10	60	280
200	200	100	25	35	10	22	L+20	292	80			10	12	10	75	370
250	250	125	29	43	15	25	L+30	352	90			12	12	12	100	470
300	300	150	29	52	15	25	L+30	412	100			12	16	12	125	580
400	400	200	32	70	15	28	L+30	516	100			16	16	16	150	730

THE PERFORMANCE VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

D-FENDERS DDA SERIES



DIMENSION TABLE

H	R
400	800
300	600
250	475
200	400
150	350

PERFORMANCE TABLE

FENDER SIZE H X d	DEFLECTION 45%		WEIGHT(kg/m)
	R(T)	E(T-M)	
150 x 75	9.6	0.25	21
200 x 100	12.8	0.44	36
250 x 125	16.0	0.68	56
300 x 150	19.2	0.98	81
400 x 200	25.6	1.74	145

PERFORMANCE VALUES ARE FOR 1000 MM. LENGTH

(R : REACTION FORCE, E : ENERGY ABSORPTION TOLERANCE \pm 10%)

NOTE: INTERMEDIATE PERFORMANCE WITH SIMILAR E/R RATIO ARE AVAILABLE IN BETWEEN GRADES WITH GRADIENT OF 10% AS DOCUMENTED ELSEWHERE IN THE ACHIEVE.

D FENDERS

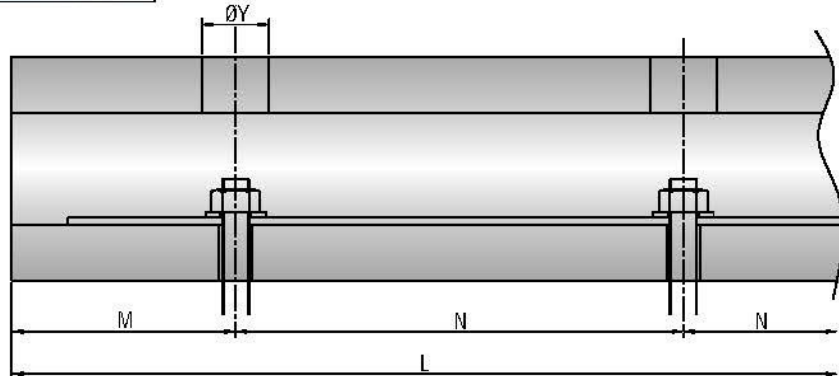
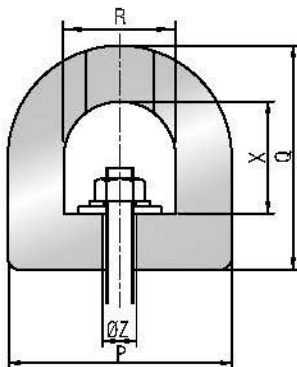
PERFORMANCE TABLE

DEFLECTION 50%

SIZE	R(T)	E (T-M)
100	7.70	0.14
150	11.6	0.32
200	15.5	0.57
250	19.2	0.89
300	22.8	1.30
350	26.6	1.78
400	30.4	2.30
500	38.2	3.60

TOLERANCE : $\pm 10\%$

LENGTH AVAILABLE AS PER REQUIREMENT



DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

P	Q	R	X	ØY	ØZ	M	N	FLAT BAR	BOLT	WEIGHT Kg/Mt
80	70	45	30	30	15	90 ~130	200 ~300	35 X 5	M12	4.5
100	100	50	45	30	15	90 ~130	200 ~300	40 X 5	M12	8.2
125	125	60	60	40	20	110 ~150	250 ~350	50 X 6	M16	12.6
150	150	75	75	40	20	110 ~150	250 ~350	60 X 8	M16	17.8
200	150	100	80	50	25	130 ~180	300 ~400	80 X 10	M20	22.0
200	200	100	100	50	25	130 ~180	300 ~400	80 X 10	M20	31.3
250	200	125	100	60	30	140 ~200	350 ~450	90 X 12	M24	37.9
250	250	125	125	60	30	140 ~200	350 ~450	90 X 12	M24	48.8
300	300	150	150	60	30	140 ~200	350 ~450	110 X 12	M24	70.4
350	350	175	175	75	35	140 ~200	350 ~450	130 X 15	M30	95.5
380	380	190	190	75	35	140 ~200	350 ~450	140 X 15	M30	112.8
400	300	175	150	75	35	140 ~200	350 ~450	130 X 15	M30	93.2
400	400	200	200	75	35	140 ~200	350 ~450	150 X 15	M30	125.0
500	500	250	250	90	45	160 ~230	400 ~500	180 X 20	M36	196.0

THE PERFORMANCE AND WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

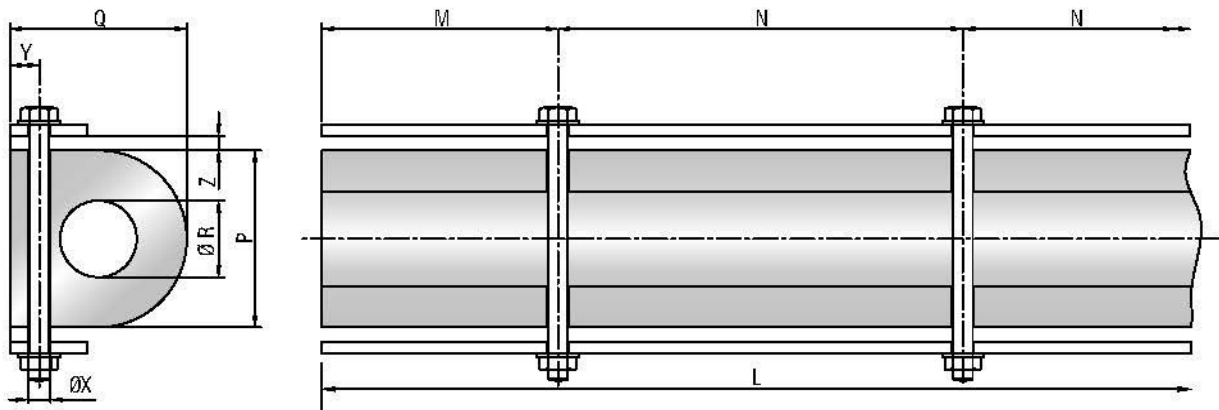
D FENDERS

PERFORMANCE TABLE
DEFLECTION 50%

SIZE	R(T)	E (T-M)
100	15.8	0.20
150	23.5	0.43
200	31.5	0.75
250	39.2	1.20
300	47.1	1.70
350	54.9	2.30
400	62.8	2.95
500	78.5	4.60
TOLERANCE: $\pm 10\%$		
LENGTH AVAILABLE AS PER REQUIREMENT		



"Dipti" DDC series D fenders are used on tugs, vessels, boats ect. "Dipti" d fender also find extensive application on small jetties and fishery harbour too. They are compression moulded fenders generally used on tugs, boats and ships. Easy to install and replace. Do have excellent sea water resistance and resistance to ozone aging and ultra violet rays.


DIMENSION TABLE
ALL DIMENSIONS ARE IN MM

P	Q	ØR	ØX	Y	Z	M	N	FLAT BAR	BOLT	WEIGHT Kg/Mt
100	100	30	15	25	10	90 ~130	200 ~300	50 X 6	M12	9.6
150	150	65	20	30	12	110 ~150	250 ~350	60 X 8	M16	19.5
200	200	75	25	45	15	130 ~180	300 ~400	80 X10	M20	36.5
250	250	100	30	50	20	140 ~200	350 ~450	100 X10	M24	55.8
300	300	125	30	60	25	140 ~200	350 ~450	110 X12	M24	79.3
350	350	150	35	70	25	140 ~200	350 ~450	120 X12	M30	106.8
400	400	175	35	80	30	140 ~200	350 ~450	130 X15	M30	138.4
400	400	200	35	80	30	140 ~200	350 ~450	130 X15	M30	129.8
500	500	250	45	90	40	150 ~230	400 ~500	150 X 20	M36	202.8

PERFORMANCE VALUES ARE FOR 1000 MM. LENGTH

(R : REACTION FORCE, E : ENERGY ABSORPTION TOLERANCE $\pm 10\%$)

NOTE: INTERMEDIATE PERFORMANCE WITH SIMILAR E/R RATIO ARE AVAILABLE IN BETWEEN GRADES WITH GRADIENT OF 10% AS DOCUMENTED ELSEWHERE IN THE ACHIEVE.

SQUARE FENDERS SQ-A SERIES

PERFORMANCE TABLE

DEFLECTION 50%

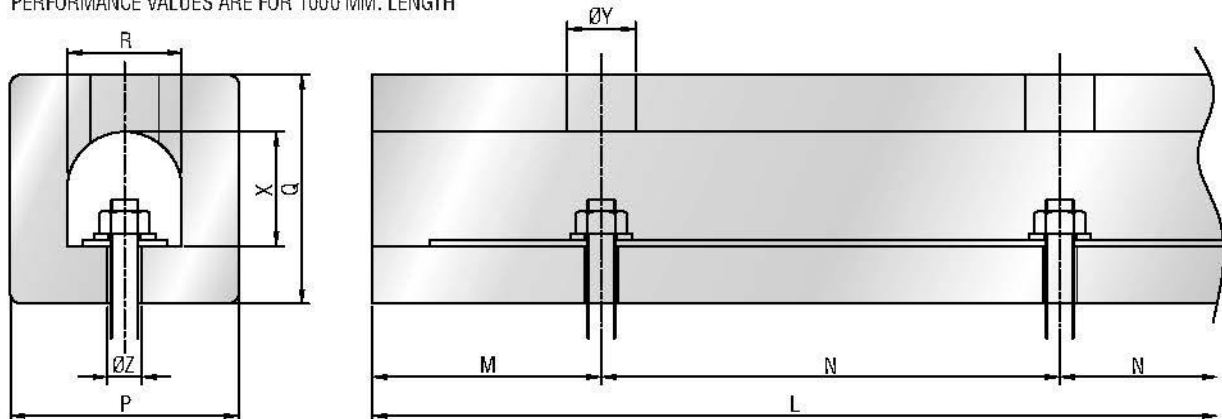
SIZE	R (T)	E (T-M)
100	13.6	0.27
150	20.6	0.64
200	27.5	1.13
250	34.5	1.76
300	41.0	2.55
350	47.5	3.44
400	58.9	4.50
500	73.5	7.05

TOLERANCE: $\pm 10\%$

LENGTH AVAILABLE AS PER REQUIREMENT



PERFORMANCE VALUES ARE FOR 1000 MM. LENGTH



DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

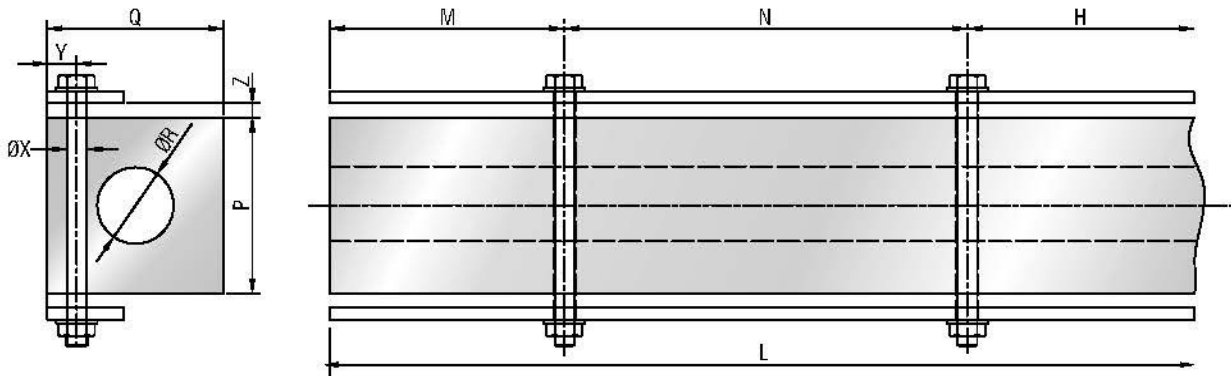
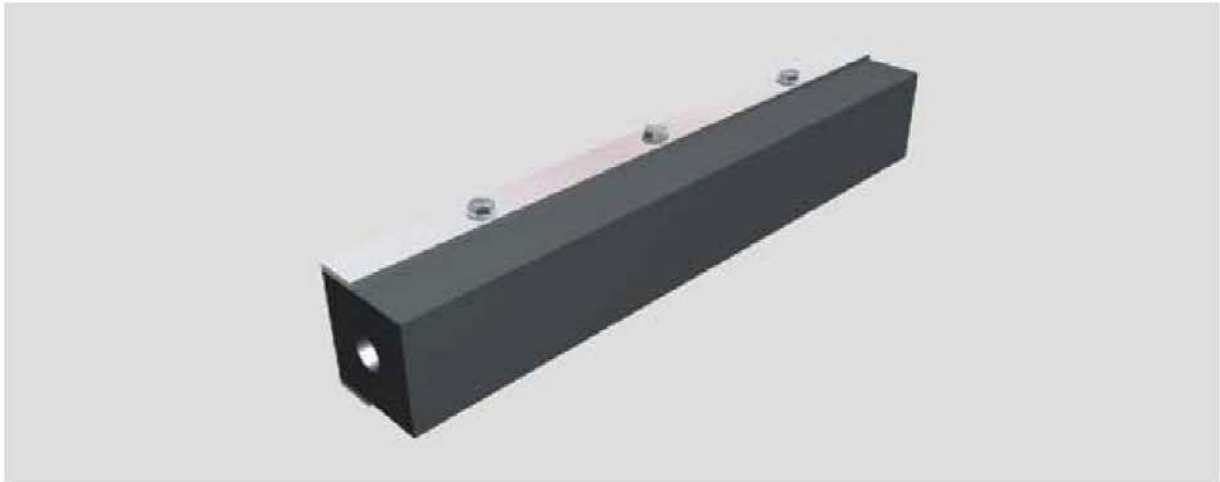
P	Q	R	X	ØY	ØZ	M	N	FLAT BAR	BOLT	WEIGHT Kg/Mt
100	100	50	45	30	15	90 ~130	200 ~300	40 X 5	M12	9.5
150	150	70	65	40	20	110 ~150	250 ~350	50 X 8	M16	21.7
165	125	80	60	40	20	110 ~150	250 ~350	60 X 8	M16	19.5
200	150	90	65	50	25	130 ~180	300 ~400	70 X 10	M20	29.0
200	200	90	85	50	25	130 ~180	300 ~400	70 X 10	M20	38.0
250	200	120	115	60	30	140 ~200	350 ~450	90 X 12	M24	47.0
250	250	120	120	60	30	140 ~200	350 ~450	90 X 12	M24	58.0
300	250	140	115	60	30	140 ~200	350 ~450	100 X 12	M24	71.0
300	300	125	135	60	30	140 ~200	350 ~450	100 X 12	M24	87.0
400	400	200	200	75	35	140 ~200	350 ~450	150 X 15	M30	145.0
500	500	250	250	90	45	160 ~230	400 ~500	180 X 20	M36	226.6

(R : REACTION FORCE E : ENERGY ABSORPTION TOLERANCE $\pm 10\%$)

THE PERFORMANCE AND WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: INTERMEDIATE PERFORMANCE WITH SIMILAR E/R RATIO ARE AVAILABLE IN BETWEEN GRADES WITH GRADIENT OF 10% AS DOCUMENTED ELSEWHERE IN THE SPECIFICATION.

SQUARE FENDERS SQ-B SERIES



DIMENSION TABLE

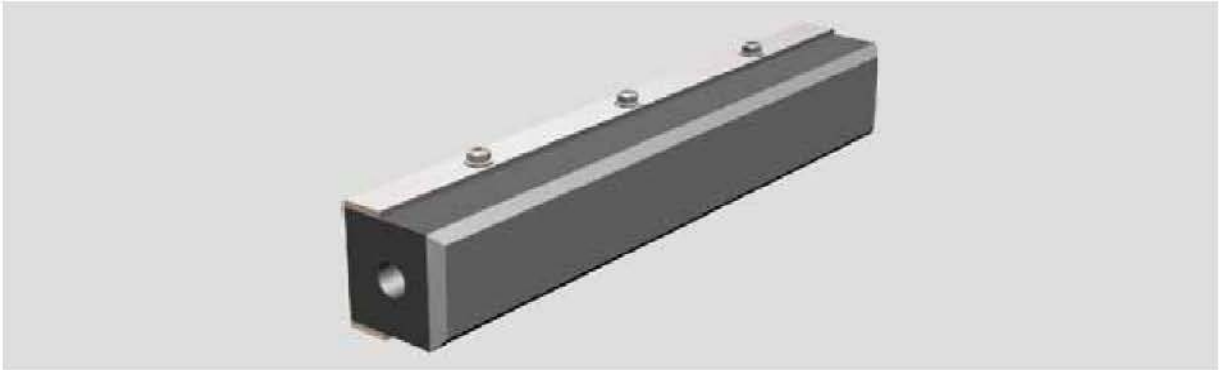
ALL DIMENSIONS ARE IN MM

P	Q	ØR	ØX	Y	Z	M	N	FLAT BAR	BOLT	WEIGHT Kg/Mt
100	100	30	15	25	10	90 ~ 130	200 ~ 300	50 X 6	M12	11.0
150	150	65	20	30	12	110 ~ 150	250 ~ 350	60 X 8	M16	22.5
165	125	65	20	30	15	110 ~ 150	300 ~ 400	60 X 8	M16	20.5
200	200	75	25	45	15	130 ~ 180	300 ~ 400	80 X10	M20	42.0
200	200	100	25	40	15	130 ~ 180	300 ~ 400	80 X10	M20	37.8
250	200	80	30	45	20	140 ~ 200	350 ~ 450	90 X10	M24	52.6
250	250	100	30	50	20	140 ~ 200	350 ~ 450	100 X10	M24	64.0
300	250	100	30	50	25	140 ~ 200	350 ~ 450	100 X10	M24	78.6
300	300	125	30	60	25	140 ~ 200	350 ~ 450	110 X12	M24	90.8
350	350	175	35	70	25	140 ~ 200	350 ~ 450	120 X12	M30	115.0
400	400	200	35	80	30	140 ~ 200	350 ~ 450	130 X15	M30	150.0
500	500	250	45	90	40	150 ~ 230	400 ~ 500	150 X 20	M36	234.5

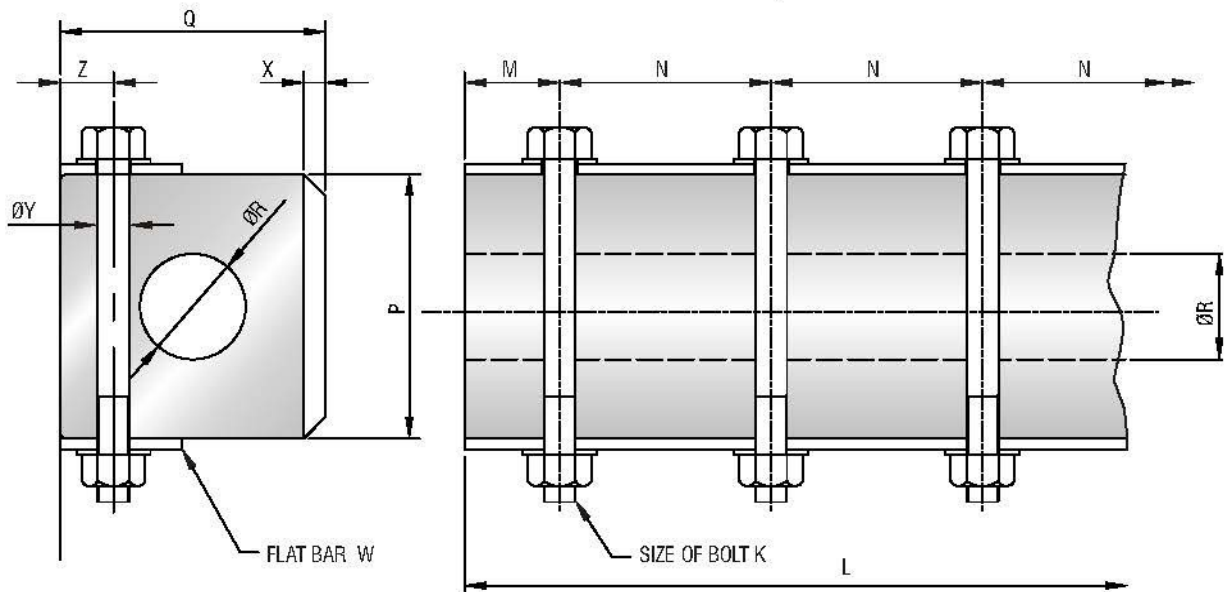
THE WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

SQUARE FENDERS

FITTED WITH ANTI-FRICATION SYNTHETIC RESIN PADS



VARIOUS LENGTHS ARE AVAILABLE ON SPECIFIC REQUIREMENT



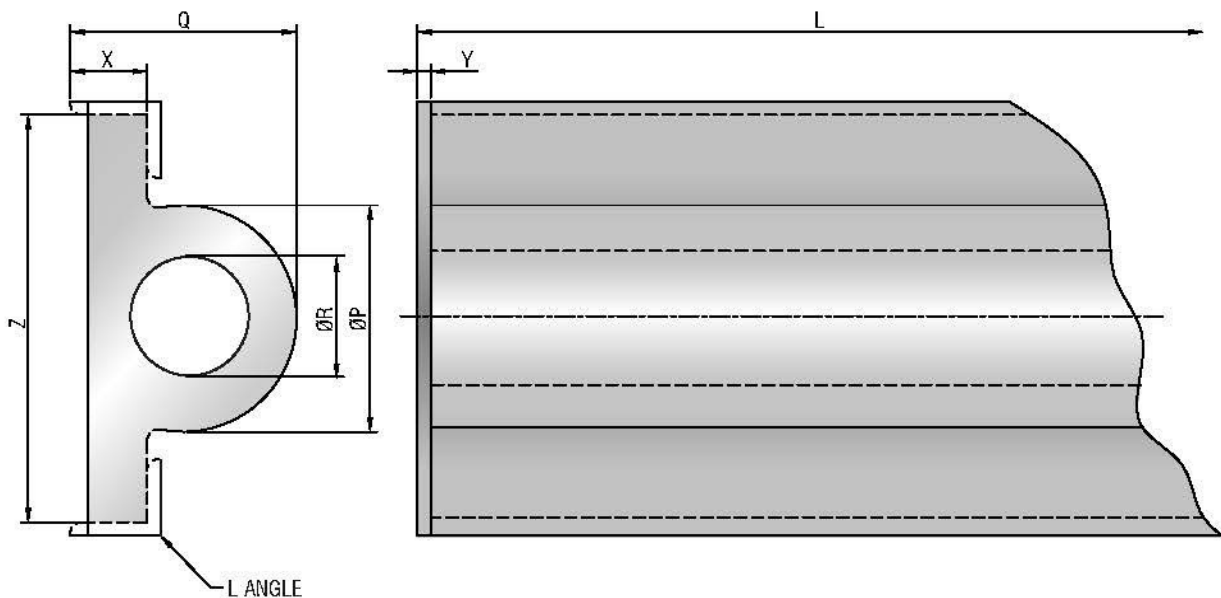
DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

P	Q	ØR	X	ØY	Z	M	N	W	K	LENGTH	WEIGHT Kg/M
100	100	30	20	15	25	90 ~ 130	200 ~ 300	50 x 6	M12	2000 TO 5000	10.5
150	150	65	20	20	30	110 ~ 150	250 ~ 350	60 x 8	M16	2000 TO 5000	22.0
165	125	65	20	20	35	110 ~ 150	250 ~ 350	60 x 8	M16	2000 TO 5000	20.0
200	200	75	25	25	45	130 ~ 180	300 ~ 400	80 x 10	M20	2000 TO 5000	41.0
200	200	100	25	25	45	130 ~ 180	300 ~ 400	80 x 10	M20	2000 TO 5000	37.0
250	250	100	30	30	50	140 ~ 200	350 ~ 450	100x 10	M24	2000 TO 5000	61.0
300	300	125	30	30	60	140 ~ 200	350 ~ 450	110x 12	M24	2000 TO 5000	93.0

THE WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

WING FENDERS



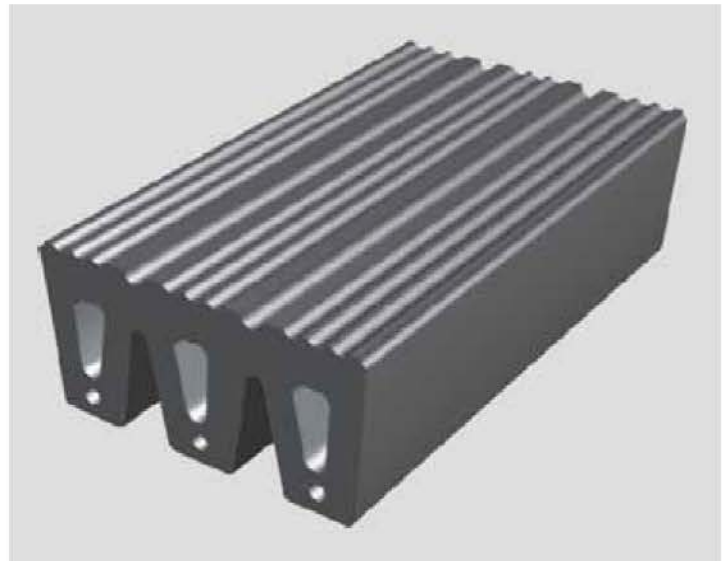
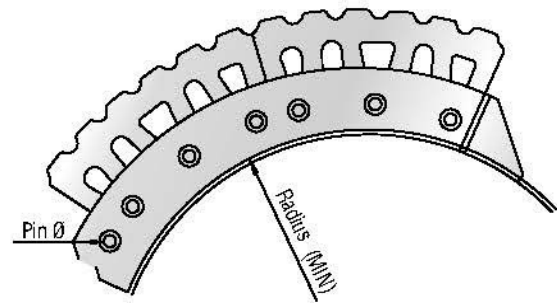
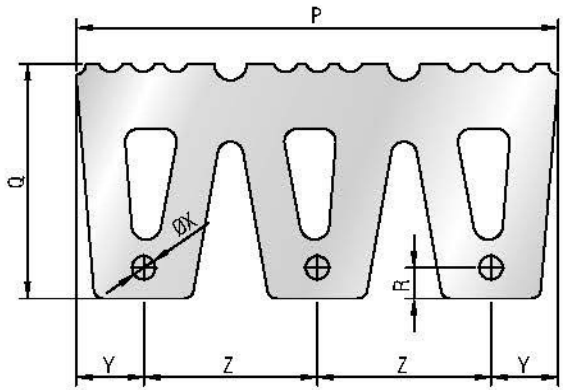
DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

Z	ØP	Q	ØR	X	Y	L ANGLE	WEIGHT Kg/Mt.
180	100	100	50	25	6	40X40X6	11
215	150	150	75	30	6	40X40X6	21
245	150	150	75	30	8	40X40X8	22
280	200	200	100	40	8	50X50X8	36.5
320	200	200	100	40	8	50X50X8	38.5
370	250	250	125	50	10	60X60X8	58
410	250	250	125	50	10	60X60X8	60

THE WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

KEY HOLE FENDERS KH-A SERIES



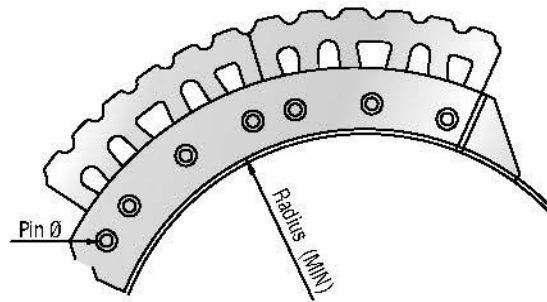
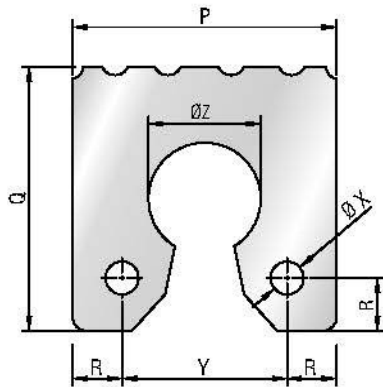
DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

P	Q	R	ØX	Y	Z	PIN Ø	L	Radius (MIN)	WEIGHT (Kg/Mt)
300	200	40	23	30	120	20	2000	425	54
400	200	40	23	50	150	20	2000	450	58
500	250	50	27	60	190	24	2000	550	90
600	300	60	33	70	230	30	2000	650	133

THE WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

KEY HOLE FENDERS KH-B SERIES



DIMENSION TABLE

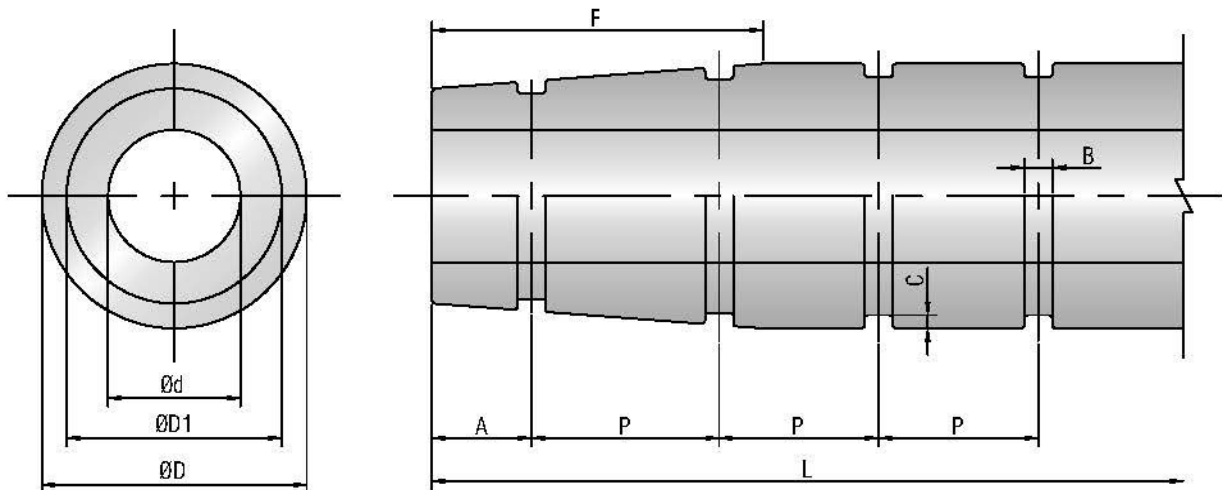
ALL DIMENSIONS ARE IN MM

P	Q	R	ØX	Y	ØZ	PIN Ø	L	Radius(MIN)	WEIGHT (kg/Mt.)
200	200	35	28	130	90	25	2000	450	33
250	250	50	33	150	100	30	2000	600	54
300	300	60	33	180	115	30	1750	800	80
350	350	70	33	210	125	30	2000	1000	114

THE WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

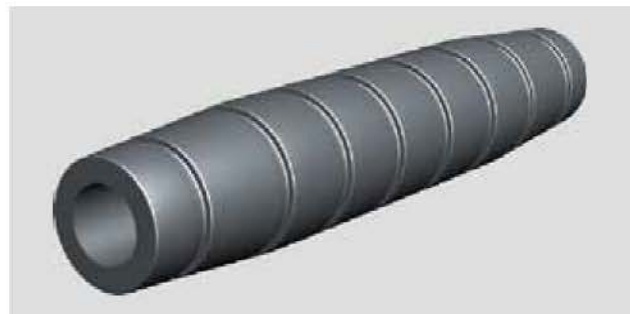
NON STANDARD SIZES AND LENGTHS ARE AVAILABLE AS PER SPECIFIC REQUIREMENTS

TUG BOAT FENDERS TF-A SERIES



DIMENSION TABLE ALL DIMENSIONS ARE IN MM

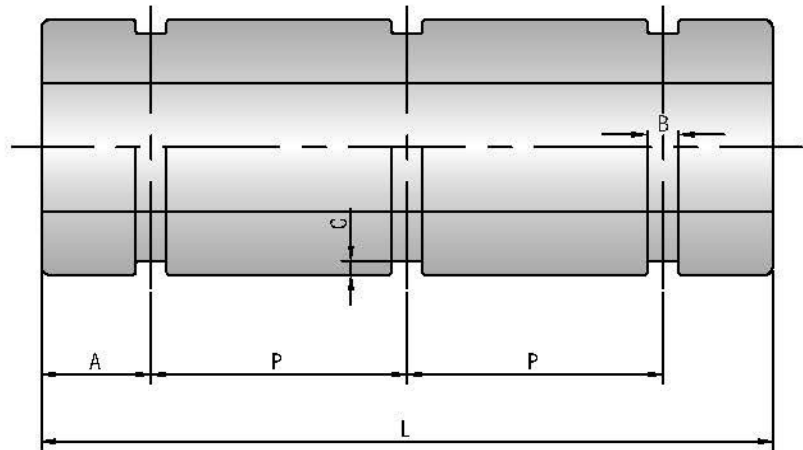
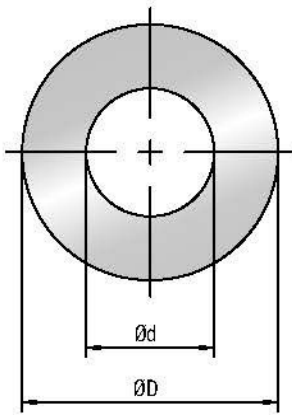
D	D1	d	A	F	B	C
200	150	75	150	500	75	10
250	190	100	200	500	75	20
300	225	125	225	700	75	20
350	260	150	250	800	75	20
400	300	200	250	850	75	20
500	375	250	300	900	75	20
600	450	300	300	900	85	40
700	525	350	300	1000	85	40
800	650	400	300	1000	85	40



D \ L	P													
	2000	2500	3000	3500	4000	4500	5000	6000	7000	8000	9000	10000	11000	12000
200	567	733	900	640	740	840	940	814	957	856	967	882	973	975
250	533	700	867	620	720	820	920	800	943	844	956	873	964	967
300	517	683	850	610	710	810	910	793	936	839	950	868	959	963
350	500	667	833	1000	700	800	900	786	929	833	944	864	955	958
400	500	667	833	1000	700	800	900	786	929	833	944	864	955	958
500	700	633	800	967	680	780	880	771	915	822	933	855	945	954
600	700	633	800	967	680	780	880	771	914	822	933	855	945	950
700	700	633	800	967	680	780	880	771	914	822	933	855	945	950
800	700	633	800	967	680	780	880	771	914	822	933	855	945	950

NON STANDARD SIZES AND LENGTHS ARE AVAILABLE AS PER SPECIFIC REQUIREMENTS

TUG BOAT FENDERS TF-B SERIES



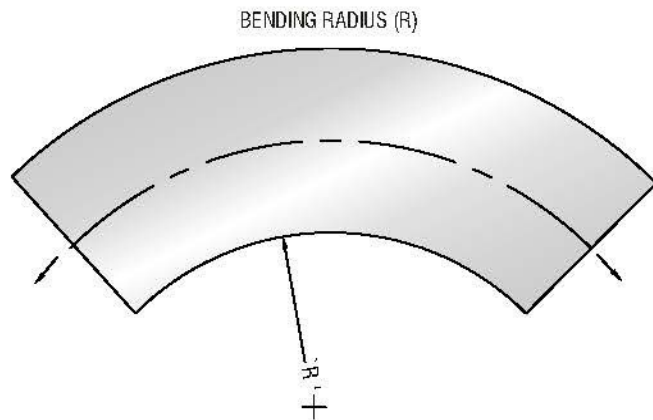
ALL DIMENSIONS ARE IN MM

PERFORMANCE TABLE

D	d	A	B	C	D	P									
						1000	1500	2000	2500	3000	3500	4000	4500	5000	6000
100	50	150	75	10	100	700	600	850	733	900	800	740	840	940	814
150	75	150	75	10	150	700	600	850	733	900	800	740	840	940	814
200	100	150	75	10	200	700	600	850	733	900	800	740	840	940	814
250	125	200	75	20	250	600	550	800	700	867	775	900	820	767	800
300	150	225	75	20	300	550	525	775	683	850	763	888	810	910	925
350	175	250	75	20	350	500	500	750	1000	833	1000	875	1000	900	917
400	200	250	75	20	400	500	500	750	1000	833	1000	875	1000	900	917
500	250	300	75	20	500	400	450	700	950	800	967	850	974	880	900
600	300	300	85	40	600	400	450	700	950	800	967	850	975	880	900
700	350	300	85	40	700	400	450	700	950	800	967	850	975	880	900

NON STANDARD SIZES AND LENGTHS ARE AVAILABLE AS PER SPECIFIC REQUIREMENTS

TUG BOAT FENDERS TF-C SERIES



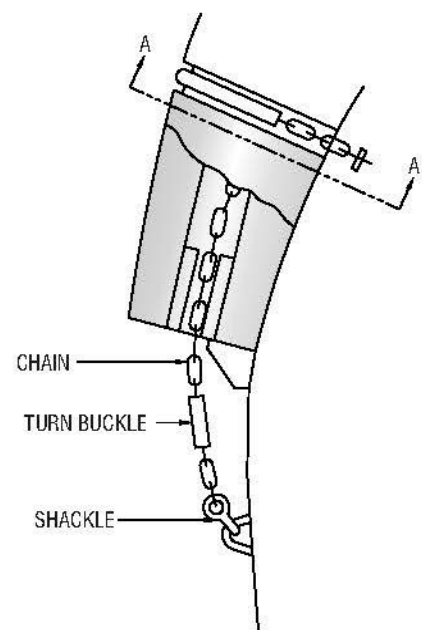
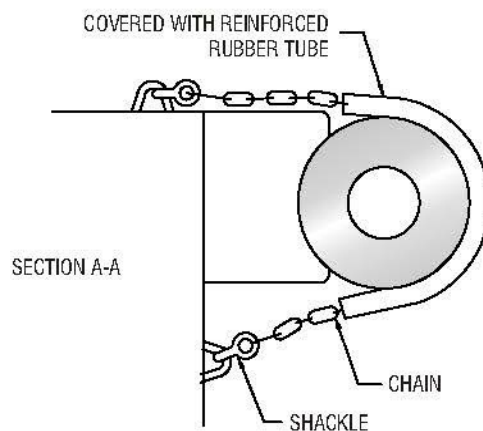
DIMENSION TABLE

I.D OF FENDER	O.D OF FENDER	PERMISSIBLE BENDING RADIUS (R)	I.D OF SOCKET	LENGTH OF SOCKET
200	400	800	100	300
250	500	1000	100	350
300	600	1200	150	400
350	700	1400	150	400
400	800	1600	150	400

ALL DIMENSIONS ARE IN MM

SIZE	CHAIN		SHACKLE	TURN BUCKLE
	FOR INSIDE	FOR GROOVE		
LESS THAN 0600	16Ø	16Ø	SC-16	19Ø
INCLUDING AND OVER	19Ø	19Ø	SC-20	22Ø

ALL DIMENSIONS ARE IN MM

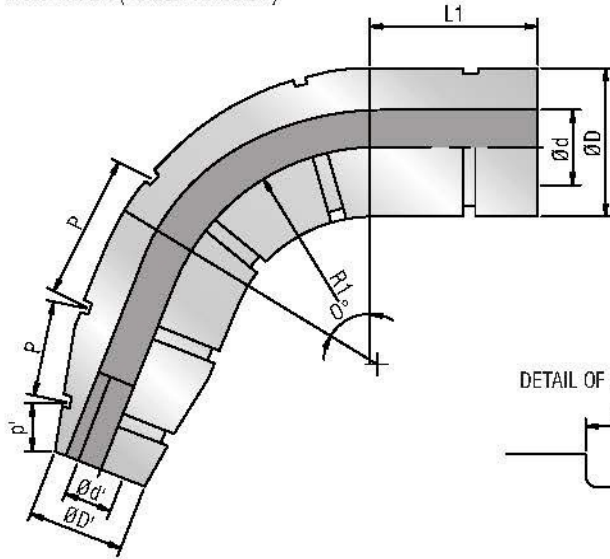


INSTALLATION AND FITTINGS

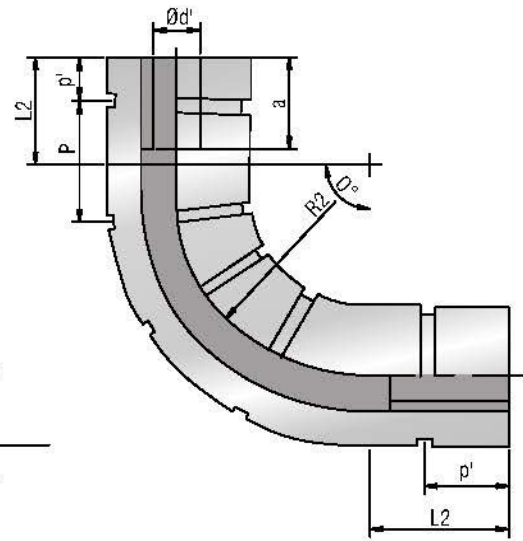
NON STANDARD SIZES AND LENGTHS ARE AVAILABLE AS PER SPECIFIC REQUIREMENTS

TUG BOAT FENDERS TF-D SERIES

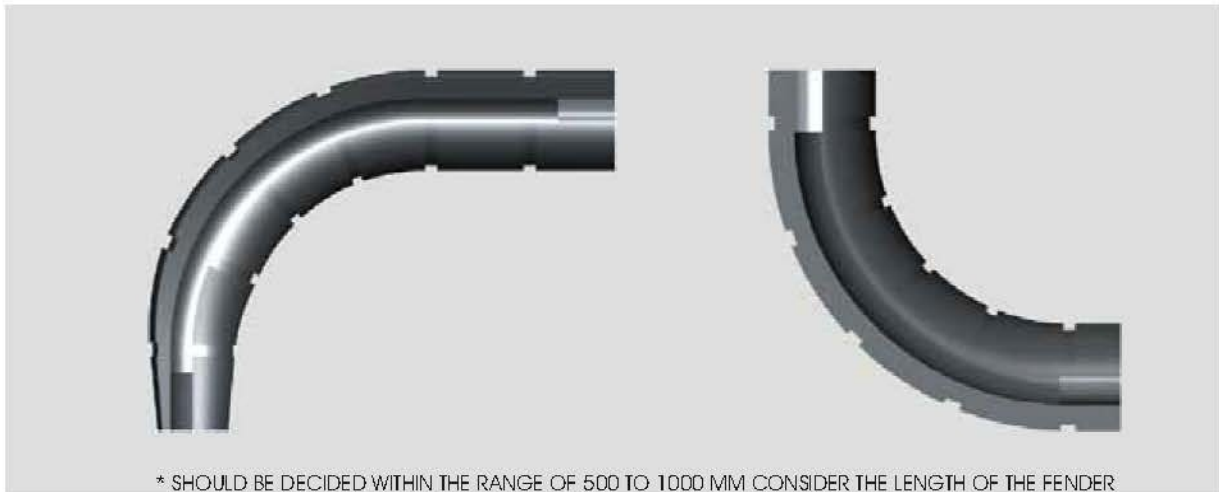
WITH TAPER (MAINLY FOR BOW)



WITHOUT TAPER (MAINLY FOR STERN)



"Dipti" Tug boat fender are available in different size, shapes. They are compression moulded in high pressure thermic fluid heated moulds and do some excellent sea water resistance. They also offer excellent resistant to ozone aging and ultra violet rays. These fender are easy to install and dismantle using users friendly fixtures to oil tackles. They are very popular with small port craft owners and tug owners.



DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

D	D'	d	d'	f	b	c	a	p'
500	375	250	125	900	75	20	400	300
600	450	300	150	900	85	40	400	300
700	525	360	175	1000	85	40	400	300
800	650	400	200	1000	85	40	400	300
850	700	425	200	1100	85	40	400	300

Fender panel design "Frontal frame"

Fender panels (or 'frontal frames') are used to distribute the reaction forces from the rubber fender units into the ship's hull. They are generally of fabricated steel composite beam construction and are designed to suit each individual berth. The loads and stresses applied to the panels will depend on many factors - the type of ship, berthing mode, characteristics of the rubber fender unit, tidal range, positioning of restraint chains and many other variables.

Detail design is generally carried out using limit state design codes in conjunction with finite element and other computer modelling software which needs to be specifically adapted for fender panels. Irrespective of the project, the general design requirements remain the same in each case:

- Resistance to bending moments and shear forces
- Resistance to local buckling of internal member and webs
- Stability of the front/back plates when in compression
- Distribution of loads and stresses across panel members
- Adequate weld types and sizes
- Suitable corrosion protection for the intended environment

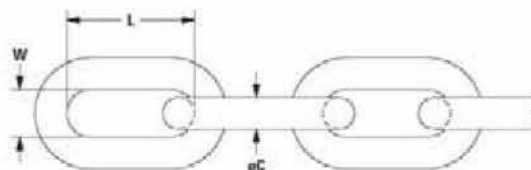


Accessories and fixings

High quality accessories and fixings to assemble and install fenders are a vital part of each fender solution. Supplies include:

- Cast-in and resin anchors in different material grades to comply with specifications and local corrosion environments.
- Bolts, nuts and washers in mild steel and various grades of stainless steel
- Chains and shackles
- Tensioners and chain anchors

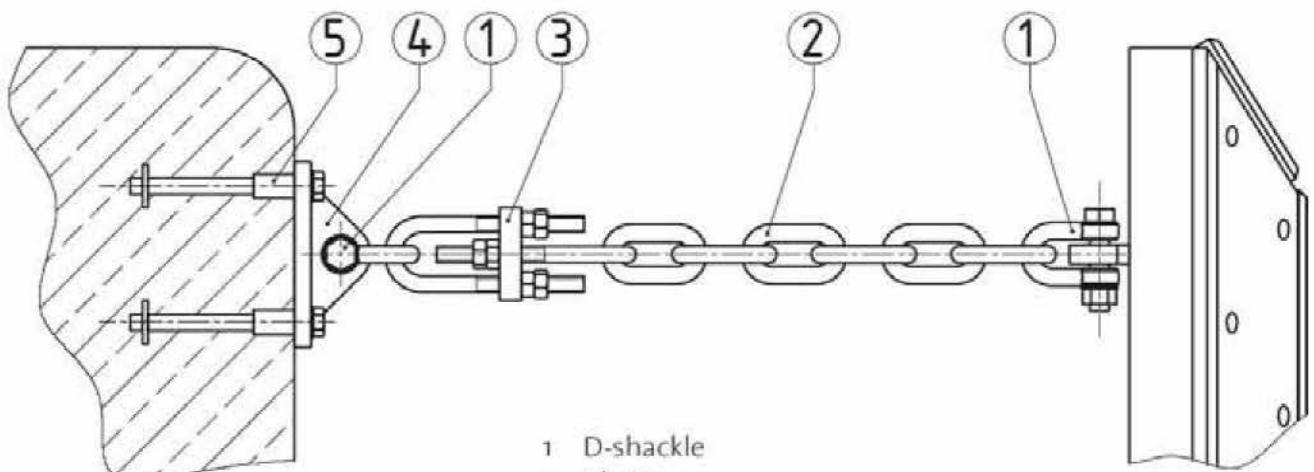
To ensure a trouble free and smooth installation on site, all components are checked prior to delivery.



Size	3.0D Links			3.5D Links			4.0D Links			5.0D Links			SL2 MBL kN
	L mm	W mm	Weight kg/link	L mm	W mm	Weight kg/link	L mm	W mm	Weight kg/link	L mm	W mm	Weight kg/link	
18	54	23	0.4	63	25	0.4	72	25	0.5	90	25	0.5	192
20	60	26	0.5	70	28	0.6	80	28	0.6	100	28	0.7	264
22	66	29	0.7	77	31	0.8	88	31	0.8	110	31	1.0	304
24	72	31	0.9	84	34	1.0	96	34	1.1	120	34	1.3	362
26	78	34	1.2	91	36	1.3	104	36	1.4	130	36	1.6	424
28	84	36	1.4	98	39	1.6	112	39	1.7	140	39	2.0	492
30	90	39	1.8	105	42	2.0	120	42	2.1	150	42	2.5	566
32	96	42	2.2	112	45	2.4	128	45	2.6	160	45	3.0	644
34	102	44	2.6	119	48	2.9	136	48	3.1	170	48	3.6	726
36	108	47	3.1	126	50	3.4	144	50	3.7	180	50	4.2	814
38	114	49	3.6	133	53	4.0	152	53	4.3	190	53	5.0	900
40	120	52	4.2	140	56	4.6	160	56	5.0	200	56	5.8	1010
42	126	55	4.9	147	59	5.4	168	59	5.8	210	59	6.8	1110
44	132	57	5.6	154	62	6.2	176	62	6.7	220	62	7.8	1220
46	138	60	6.4	161	64	7.1	184	64	7.7	230	64	8.9	1330
48	144	62	7.3	168	67	8.0	192	67	8.7	240	67	10.1	1450
50	150	65	8.2	175	70	9.1	200	70	9.8	250	70	11.4	1570

All dimensions in millimetres.

Accessories and fixings



- 1 D-shackle
- 2 Chain
- 3 Chain tensioner
- 4 Bracket
- 5 Cast-in-anchor for new concrete



Accessories and fixings

The SUC fender system (below) consists of 2 x weight chains and 2 x shear/tension chains with shock-load cells for shock absorption.

In the event of an abnormal berthing scenario the s/t chains & cells prevent any major damage to the rubber fender element.

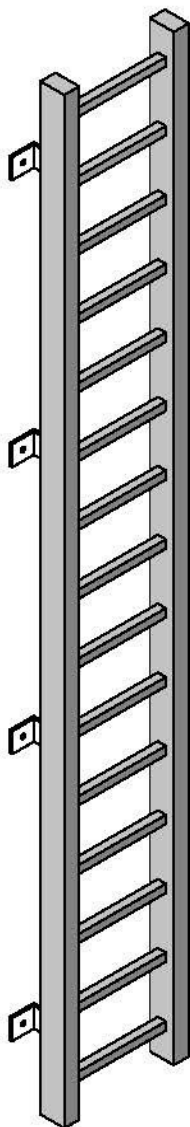


TYPE 1

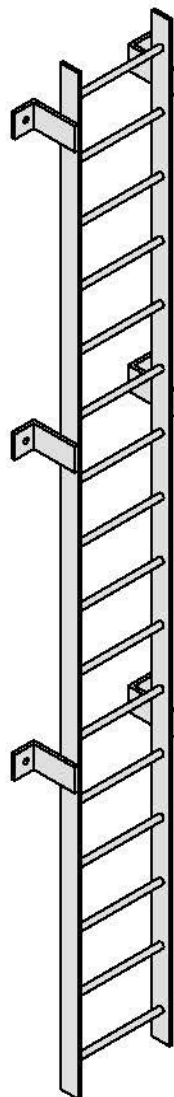


TYPE 2

LADDERS



RUBBER LADDER



S. S. LADDER



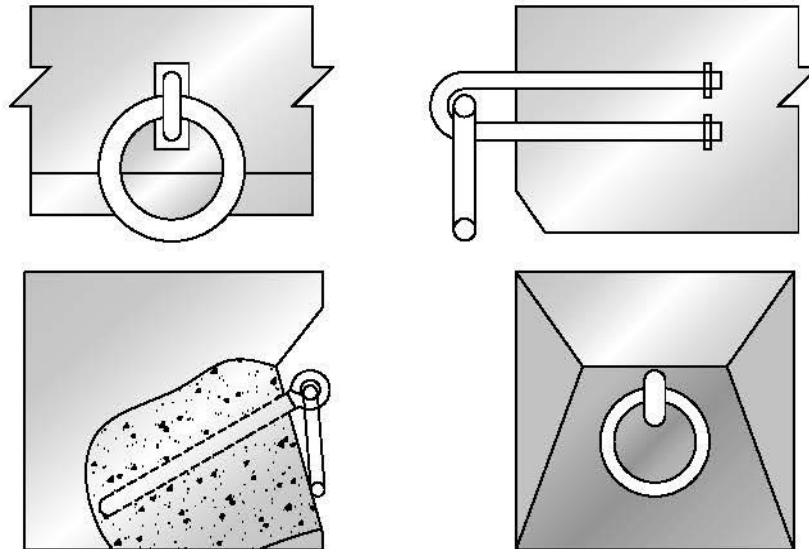
FENDER LADDER



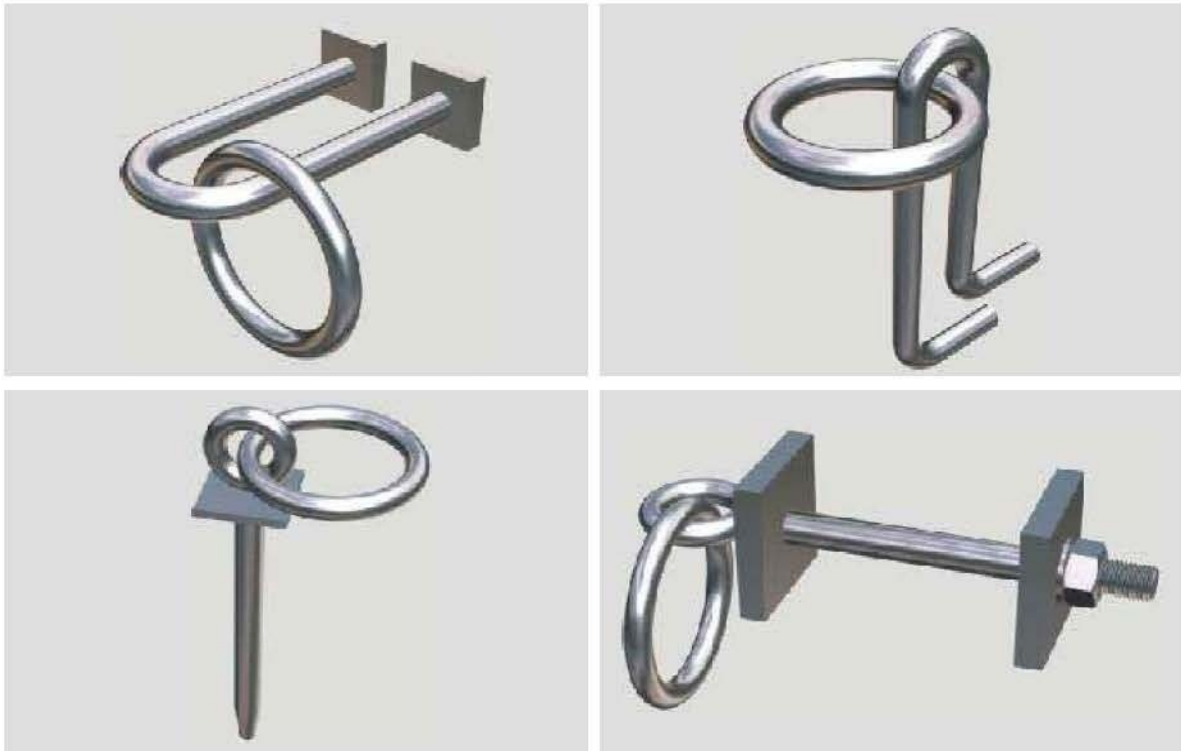
FENDER LADDER

"BSB" Ladders are available both in Stainless Steel / Moulded Rubber as per customers requirement.. Unique dual application Fender Ladders are also available, which can be used as Fender for small boats as well as Ladder. We offer Different types of "BSB" Ladders from 2 meter length to 10/ 12 Meter length as per customer's requirement. Dimensional drawing and specifications can be provided on request.

MOORING RINGS

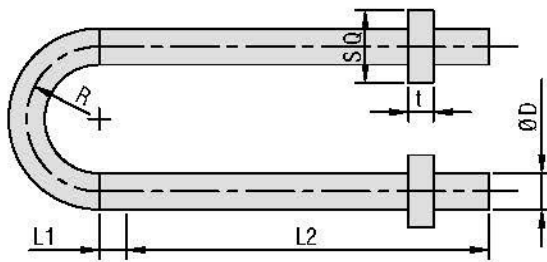


"BSB" Mooring Rings are available both in MS and SS in different grades. These Rings are used for maneuvering or fastening small Boats and Crafts. "BSB" Mooring Rings are available from 12 mm Diameter to 100 mm Diameter as per requirement.



AVAILABLE IN 1 TO 100 TONS. PULL CAPACITY IN DIFFERENT MATERIAL BOTH MS AND SS, DIFFERENT GRADES AND SPECIFICATION

U HOOKS



DIMENSION TABLE

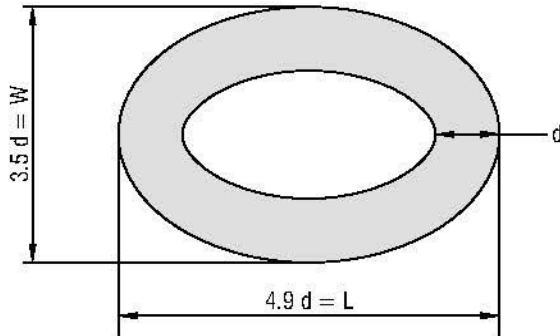
ALL DIMENSIONS ARE IN MM.

Sr.No.	ØD	R	L1	L2	SQ	t	Total Weight
1	13	26	10	130	26	9	0.42
2	16	32	11	160	32	9	0.76
3	19	38	13	190	38	12	1.28
4	22	44	17	220	44	12	1.94
5	25	50	18	250	50	16	2.93
6	28	56	18	280	56	16	4.05
7	30	60	18	300	60	16	4.94
8	32	64	18	320	64	16	5.96
9	34	68	23	340	68	19	7.26
10	36	72	25	360	72	19	8.39
11	38	76	27	380	76	19	10.08
12	40	80	27	400	80	22	11.81
13	42	84	31	420	84	22	13.68
14	44	88	33	440	88	22	15.69
15	46	92	33	460	92	25	17.99
16	48	96	34	480	96	25	20.37
17	50	100	36	500	100	25	22.97
18	55	110	37	550	110	32	30.82
19	60	120	38	600	120	32	39.65
20	65	130	42	650	130	36	50.59
21	70	140	42	700	140	36	62.65
22	75	150	51	750	150	40	77.68
23	80	160	55	800	160	40	93.89
24	85	170	55	850	170	45	112.76
25	90	180	58	900	180	45	133.29
26	95	190	58	950	190	50	156.98
27	100	200	58	1000	200	55	183.31
28	100	210	58	1100	210	55	203.17

AVAILABLE IN DIFFERENT GRADES BOTH IN SS/MS/ALLOY STEEL.

THE WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE

ELECTRICALLY WELDED COMMON LINK



DIMENSION TABLE

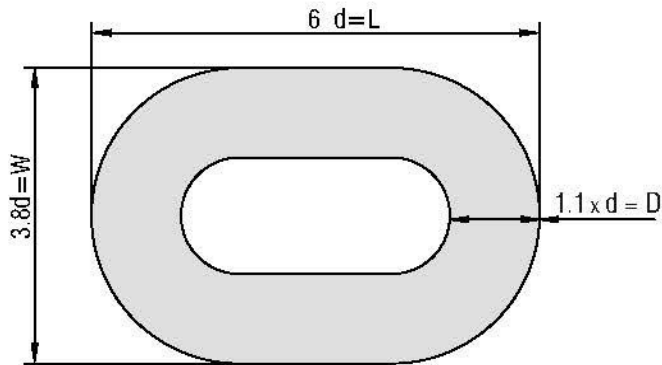
ALL DIMENSIONS ARE IN MM.

CHAIN DIA		LENGTH L	WIDTH W	BREAKING TEST LOAD(TON)	PROOF TEST LOAD(TON)	MIN.Wt. Kg/Mt.
MM	INCH					
6	1/4	29.4	21.0	1.40	0.70	0.80
7	9/32	34.3	24.5	1.90	0.90	1.10
8	5/16	39.2	28.0	2.40	1.20	1.40
9	3/8	44.1	31.5	3.10	1.50	1.80
10	13/32	49.0	35.0	3.80	1.90	2.20
11	7/16	53.9	38.5	4.60	2.30	2.60
12.5	1/2	61.25	43.75	5.90	2.90	3.40
14	9/16	68.6	49.0	7.40	3.70	4.30
16	5/8	78.4	56.0	9.70	4.80	5.60
17.5	11/16	85.75	61.25	11.60	5.80	6.30
19	3/4	93.1	66.5	13.60	6.80	7.80
20.5	13/16	100.45	71.75	15.90	7.90	9.10
22	7/8	107.8	77.0	18.20	9.00	10.50
24	15/16	117.6	84.0	21.70	10.90	12.50
26	1	127.4	91.0	25.50	12.70	14.70
28	1-1/8	137.2	98.0	39.60	14.80	17.10
30	1-3/16	147.0	105.0	33.90	17.00	19.60
32	1-1/4	156.8	112.0	38.60	19.30	22.30
34	1-3/8	166.6	119.0	43.60	21.80	25.20
36	1-13/32	176.4	126.0	48.90	24.40	28.20
38	1-1/2	186.2	133.0	54.40	27.20	31.50
40	1-5/8	196.0	140.0	60.30	30.20	34.80
42	1-11/16	205.8	147.0	66.50	33.30	38.40
44	1-3/4	215.6	154.0	73.00	36.50	42.00
46	1-13/16	225.4	161.0	79.80	39.90	46.00
48	1-7/8	235.2	168.0	86.90	43.40	50.00
50	2	245.0	175.0	94.30	47.10	54.00

AVAILABLE IN DIFFERENT GRADES BOTH IN SS/MS/ALLOY STEEL.

THE WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

ELECTRICALLY WELDED END LINK



DIMENSION TABLE

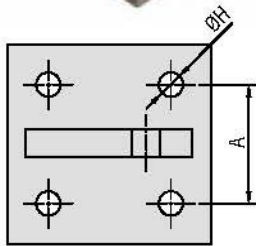
ALL DIMENSIONS ARE IN MM.

CHAIN DIA d	CHAIN DIA D	LENGTH L	WIDTH W	BREAKING TEST LOAD(TON)	PROOF TEST LOAD(TON)	WEIGHT Kg/Mt.
6.0	6.60	36.00	22.80	1.36	0.67	0.79
7.0	7.70	42.00	26.60	1.85	0.92	1.07
8.0	8.80	48.00	30.40	2.41	1.20	1.39
9.0	9.90	54.00	34.20	3.06	1.52	1.76
10.0	11.00	60.00	38.00	3.77	1.88	2.17
11.00	12.10	66.00	41.80	4.56	2.28	2.63
12.50	13.75	75.00	47.50	5.89	2.55	3.40
14.00	15.40	84.00	53.20	7.39	3.79	4.26
16.00	17.60	96.00	60.80	9.65	4.83	5.56
17.50	19.25	105.00	67.50	11.55	5.78	6.27
19.00	20.90	114.00	72.20	13.60	6.80	7.84
20.50	22.55	123.00	77.90	15.85	7.93	9.12
22.00	24.20	132.00	83.60	18.20	9.12	10.52
24.00	26.40	144.00	91.20	21.70	10.90	12.52
26.00	28.60	156.00	98.80	25.50	12.70	14.52
28.00	30.80	168.00	106.40	29.60	14.80	17.80
30.00	33.00	180.00	114.00	33.90	17.00	19.60
32.00	35.20	192.00	121.60	38.60	19.30	22.28
34.00	37.40	204.00	129.20	43.60	21.80	25.16
36.00	39.60	216.00	136.80	48.90	24.40	28.20
38.00	41.80	228.00	144.40	54.40	27.20	31.44
40.00	44.00	240.00	152.00	60.30	30.20	34.80
42.00	46.20	252.00	159.60	66.50	33.30	38.40
44.00	48.40	264.00	167.20	73.00	36.50	42.00
46.00	50.60	276.00	174.80	79.80	39.90	46.00
48.00	52.80	288.00	182.40	86.90	43.40	50.00
50.00	55.00	300.00	190.00	94.30	47.10	54.40

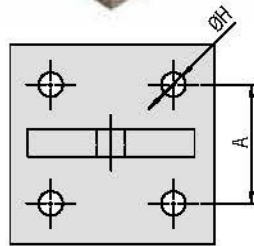
AVAILABLE IN DIFFERENT GRADES BOTH IN SS/MS/ALLOY STEEL.

THE WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

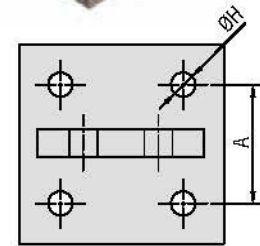
CHAIN BRACKETS



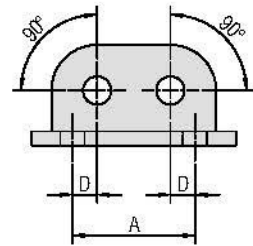
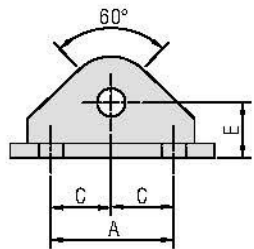
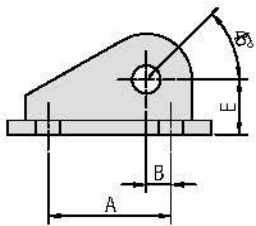
DCB-A



DCB-B



DCB-C



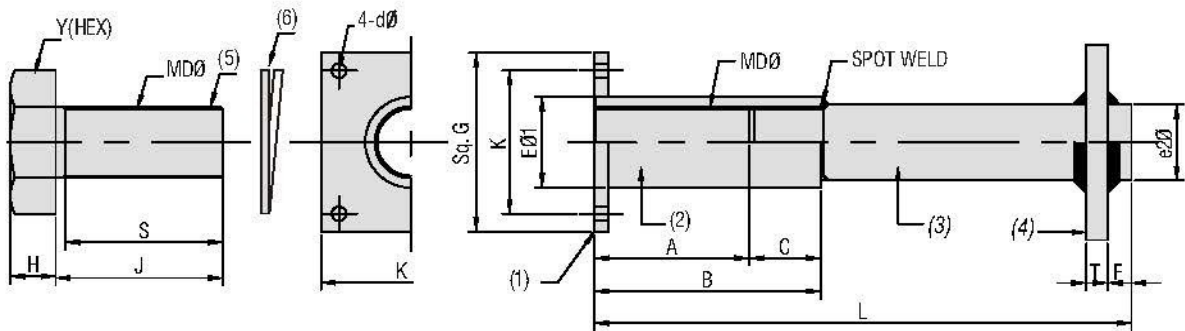
DIMENSION TABLE

ALL DIMENSIONS ARE IN MM.

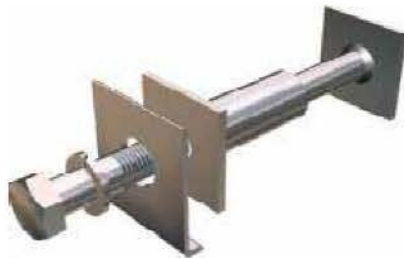
ØH	A	B	C	D	E	BOLTS	Approx Weight	
							DCB A - B	DCB C
18	110	15	55	15	55	M16	7	8
20	110	15	55	15	55	M16	7	8
22	130	20	65	20	60	M20	10	12
24	130	20	65	20	60	M20	10	12
26	150	25	75	25	70	M24	15	18
28	160	25	80	25	80	M24	20	24
30	160	25	80	25	80	M24	20	24
32	190	35	95	35	90	M30	32	34
34	190	35	95	35	90	M30	32	34
36	210	35	105	35	95	M30	35	42
38	220	35	110	35	110	M36	50	55
40	220	35	110	35	110	M36	50	55
42	250	40	125	40	115	M36	62	72
44	260	40	130	40	120	M36	70	80
46	260	40	130	40	120	M42	70	80

THE WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

ANCHOR BOLT



WASHER WOULD BE PROVIDED TO SUIT THE TYPE OF FENDER



	PART	MATERIAL
1	FLANGE	AVAILABLE IN DIFFERENT GRADE BOTH S.S./M.S
2	SLEEVE	
3	ANCHOR ROD	
4	ANCHOR PLATE	
5	BOLT	
6	SPRING WASHER	
7	L WASHER (OPTIONAL)	

DIMENSION TABLE

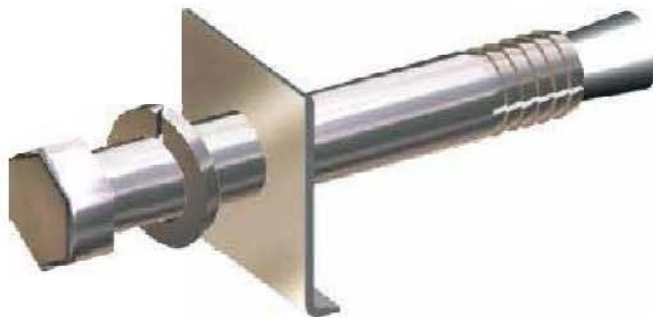
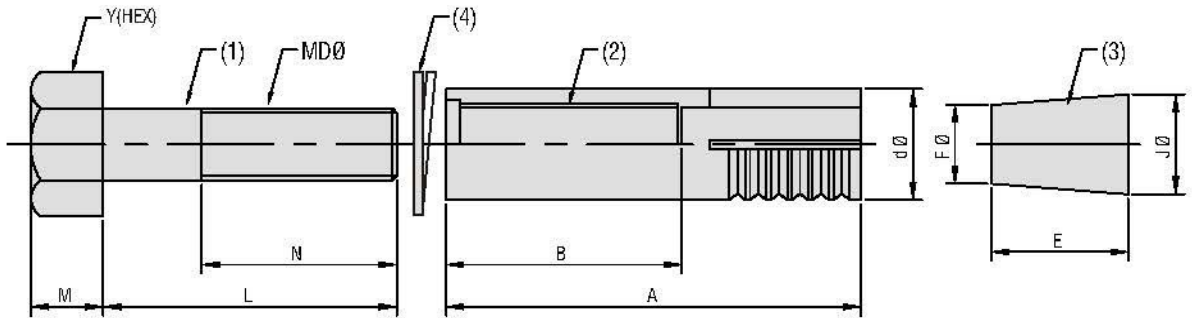
ALL DIMENSIONS ARE IN MM

MDØ	EMBEDDED PORTION											Wt. (Kg.)	BOLT				Wt. (Kg.)
	A	B	C	dØ	e1Ø	Sq.G	K	T	F	L	e2Ø		H	Y	J	S	
M20	45	65	20	6	26	65	50	6	10	150 ~ 200	20	0.6	13	30	55	46	0.2
M22	50	75	25	6	28	65	50	6	10	170 ~ 230	22	0.8	14	32	55	50	0.3
M24	55	80	25	6	32	70	55	6	10	175 ~ 230	24	0.9	15	36	60	54	0.4
M27	60	90	30	6	34	75	60	9	10	200 ~ 250	28	1.3	17	41	65	60	0.5
M30	65	95	30	6	38	75	60	9	10	225 ~ 275	32	1.6	19	46	70	66	0.7
M36	70	105	35	6	46	85	70	9	10	275 ~ 325	38	2.7	23	55	85	78	1.1
M42	75	115	40	6	55	90	75	12	15	325 ~ 375	42	4.4	26	65	90	82	1.7
M48	85	130	45	8	65	120	95	12	15	375 ~ 425	48	6.4	30	75	105	102	2.6
M56	90	145	55	8	75	125	100	16	15	440 ~ 475	60	10.1	35	85	120	115	4.0
M64	100	160	60	8	85	130	105	16	15	475 ~ 550	65	13.9	40	95	125	120	5.6
M76	120	195	75	8	100	155	120	19	20	550 ~ 600	80	28.8	48	110	165	160	11.0

IN DIFFERENT CASES DIMENSION 'L' SHOULD BE VARY AS PER FENDER PROFILE.

THE WEIGHT VALUES MENTIONED ARE SUBJECT TO CHANGE WITHOUT NOTICE.

WEDGE BOLT



ALL DIMENSIONS ARE IN MM

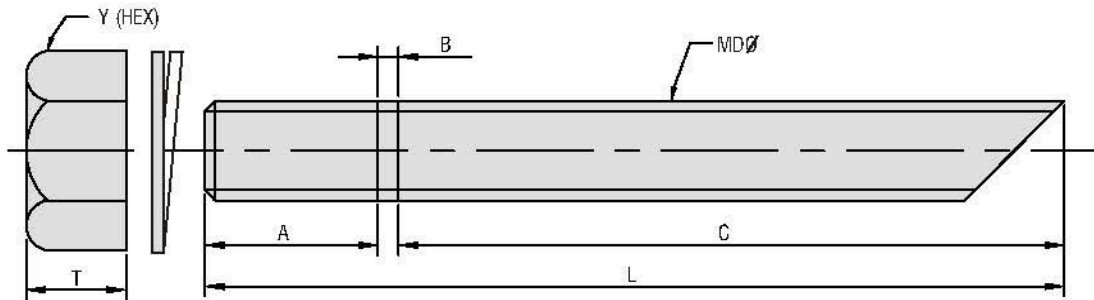
NO.	PART	MATERIAL
1	ANCHOR BOLT	
2	SLEEVE	AVAILABLE IN DIFFERENT GRADE BOTH S.S/M.S
3	TAPER IN	
4	SPRING WASHER	
5	L WASHER (OPTIONAL)	

SIZE AND DIMENSION OF L WASHER CAN BE DESIGNED AS PER TYPE OF THE FENDER

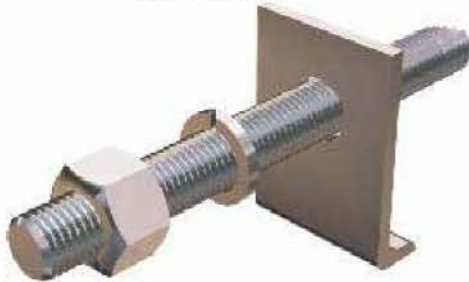
DIMENSION TABLE

MØ	SLEEVE			BOLT				TAPER IN		
	A	B	dØ	L	M	N	Y(HEX)	E	FØ	JØ
M20	85	45	25.4	55	13	46	30	36	14	20
M22	95	50	28	55	14	50	32	38	17	23
M24	110	55	32	60	15	54	36	41	18	26
M27	125	70	35	65	17	60	41	43	22	30
M30	140	80	38	70	19	66	46	45	24	31
M36	170	95	45	85	23	78	55	48	27	37
M42	190	110	50.8	90	26	82	65	50	33	42
M48	215	115	60.5	105	30	102	75	62	39	50
M64	280	145	80	125	40	120	95	80	54	66

RESIN ANCHOR BOLT



RESIN CAPSULE



PART	MATERIAL
ANCHOR BOLT	AVAILABLE IN DIFFERENT GRADE BOTH S.S./M.S.
NUT	
SPRING WASHER	
L WASHER (OPTIONAL)	
RESIN CAPSULE	TO SUIT THE BOLT SIZE HILTI, BOSCH OR CUSTOM MAKE.

DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

MDØ	Y	T	A	B	C	L
M8	13	6.5	20	10	70	100 ~ 150
M10	17	8	25	10	80	115 ~ 175
M12	19	10	30	10	110	150 ~ 200
M16	24	13	35	10	140	185 ~ 225
M20	30	16	45	10	170	225 ~ 250
M22	32	18	45	10	145	200 ~ 250
M24	36	19	50	10	175	235 ~ 275
M27	41	22	50	10	210	270 ~ 300
M30	46	24	55	10	210	275 ~ 360
M33	50	26	55	10	235	300 ~ 400
M36	55	29	65	10	250	325 ~ 420
M39	60	31	65	10	300	375 ~ 430
M42	65	34	75	10	320	405 ~ 500
M48	75	38	80	10	320	410 ~ 580
M56	85	45	100	10	500	610 ~ 600
M64	95	51	125	10	515	650 ~ 600
M76	110	64	150	10	650	810 ~ 900

IN DIFFERENT CASES DIMENSION ' L ' SHOULD BE VARY AS PER FENDER PROFILE.

TECHNICAL SPECIFICATION

UHMW PE PAD

Special Characteristics of Pads:

- High abrasion resistance.
- Ability to withstand sub-zero temperature.
- Excellent impact strength.
- Slippery Surface.
- Self Lubricating.
- Antistick Properties.
- Good Chemical Resistance.
- No Water absorption.
- Non Toxic.
- Good Machinability.

PHYSICAL PROPERTIES OF OUR "DIPTI" UHMW PE PADS.

Item	Requirement	Testing Method
Density	0.9-1.0 g/cm ³	DIN 53 479
Tensile Strength	13 N/mm ² min.	DIN 53 455
Breaking strength	33 N/mm ² min.	DIN 53 455
Elongation at break	100% min.	DIN 53 455
Compression strength	20 N/mm ² min.	DIN 53 445
Bending strength	20 N/mm ² min.	DIN 53 455
Temperature range	-30°C to +80°C	-
Torsional strength	+23°C 250 N/mm ² min.	DIN 53 477
Impact strength	120 mJ/mm ² min.	DIN 53 453
Abrasion resistance	90 (virgin UHMW PE = 100)	Sand slurry
Shore hardness	55 - 65°	DIN 53505
Coefficient of friction	0.15 max.	DIN 53 375

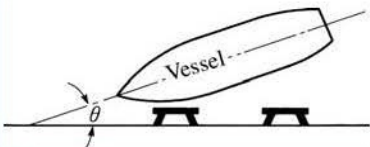
Standard Colour of the "DIPTI" UHMW PE Pads will be Sky-Blue or Black or Orange. Pads in other colour can also be manufactured to suite specific requirements.

STANDARD CONVERSION TABLE

LENGTH	
FEET x 0.3048 = METERS	METERS x 3.281 = FEET
INCHES x 25.4 = MILLIMETERS	MILLIMETERS x 0.0394 = INCHES
YARDS x 0.914 = METERS	METERS x 1.094 = YARDS
MILES x 1.609 = KILOMETERS	KILOMETERS x 0.621 = MILES
WEIGHT	
POUNDS x 0.4536 = KILOGRAMS	KILOGRAMS x 2.205 = POUNDS
AREA	
SQ. INCHES x 6.5 = SQ. CENTIMETERS	SQ. CENTIMETERS x 0.158 = SQ. INC.
SQ. FEET x 0.093 = SQ. METERS	SQ. METERS x 10.764 = SQ. FEET
ENERGY	
FT.-KIPS. x 0.1383 = TON-M	TON-M x 7.235 = FT.-KIPS.
REACTION FORCE	
KIPS x 0.454 = TONS	KILONEWTONS x 0.102 = TONS
KILONEWTONS x 0.102 = TONS	TONS x 2.205 = KIPS
SPEED	
KNOT x 0.515 = METER/SECOND	METER/SECOND x 1.94 = KNOT
MISCELLANEOUS	
(F-32) x 5/9 = C*	C* x 9/5 + 32 = F
BARREL x 0.11924 = KILOLITER	KILOLITER x 8.33 = BARREL
Lb/IN x 0.179 = KG/CM	KG/CM x 5.6 = Lb/IN
Lb/IN ² (PSI) x 0.07 = KG/CM ²	KG/CM ² x 14.22 = Lb/IN ² (PSI)
Lb./FT x 1.489 = KG/M	KG/M x 0.672 = Lb./FT
Lb/FT ³ x 0.016 = G/CM ³	G/CM ³ x 62.5 = Lb./FT ³
KIPS/FT ² x 4.878 = TON/M ²	TON/M ² x 0.205 = KIPS/FT ²
KIPS/FT x 1.489 = TON/M	TON/M x 0.672 = KIPS/FT
NEWTON x 0.102 = KG	
PASCAL = NEWTON/M ²	

Required Information for Designing Fender System

The following tables indicate the basic technical information required for the design of a fender system. Although it is possible to propose a provisional system for budgetary purposes based on more limited information, the information as detailed as required below would enable us to propose the most suitable fender system for your berth :

Item	Information		Remarks	
GENERAL	Project			
	Port Country Contractor Consultant			
VESSELS	Kind	Cargo Vessel, Tanker, Ore Carrier, Ro/Ro Vessel, Container, Ferry		
	Weight	Min.	Max.	
	Gross Tonnage Deadweight T Displacement T		GT DWT DT	at least one of the three
	Length Width Depth Load Draft Hull Pressure		m m m m ton/m ²	
BERTHING CONDITIONS	Berthing Speed		m/sec	
	Angle (θ) Method	1/4 point or	degree	
				
EFFECTIVE BERTHING ENERGY		ton-m	Your requirement	
BERTH	Type	Solid (Gravity, Sheet-pile, Cell type, etc) Flexible (Pier, Dolphin, etc) or ()	Drawing of the berth would be appreciated.	
	Length		m	
	Depth of Water		m	
	Tide H.W.L. L.W.L.		m m	
Fender Fixing Area	Height (H) Width (W)	m m	To decide type, size and length of the rubbing panel of the fender or fender itself	
Vertical Location	Top (T) Bottom (B)	m m	To decide the type and size of the fender	
Fender Installation Pitch/Spacing (P)		m		
Allowable Reaction Force		ton	