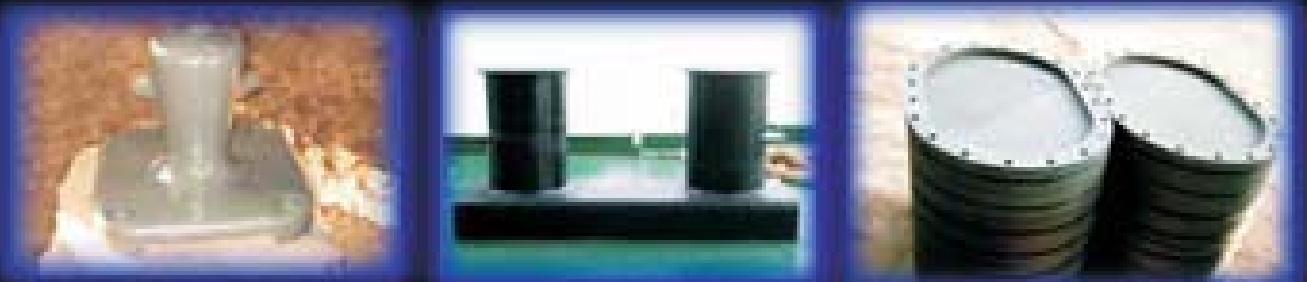


Bollards

Marine Systems



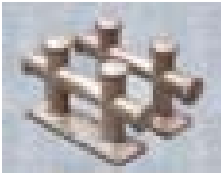
Kind Casting-forging Co., LTD





Contents

>> Dock Equipment



Cross Bitt/1



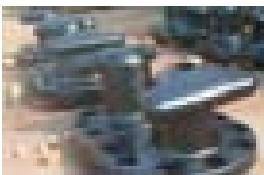
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Mooring Bollards Single Bollard/6



Double Bitt Bollard A type/8



Tee Head Bollard/11



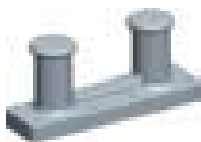
Tee Bollard/14



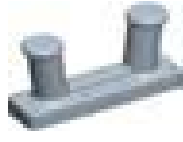
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Kidney Bollard/19



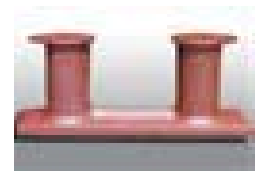
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Single Bitt Bollards B Type/26



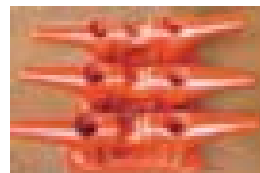
Cleat A Type/29



Cleat B Typ/31

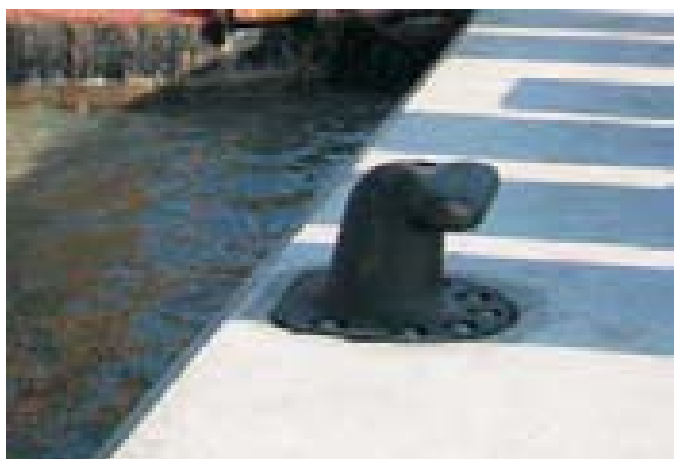


Cleat C Type/33



Cleat C Type/35

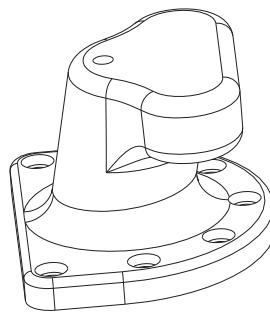
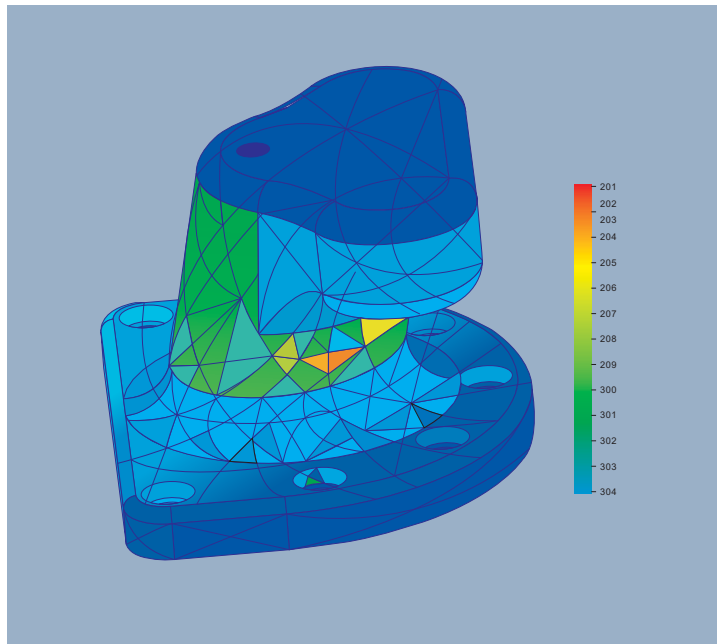
Dock Equipment

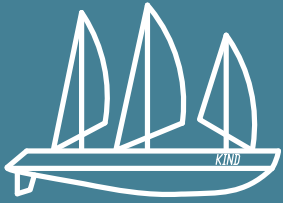


BOLLARDS

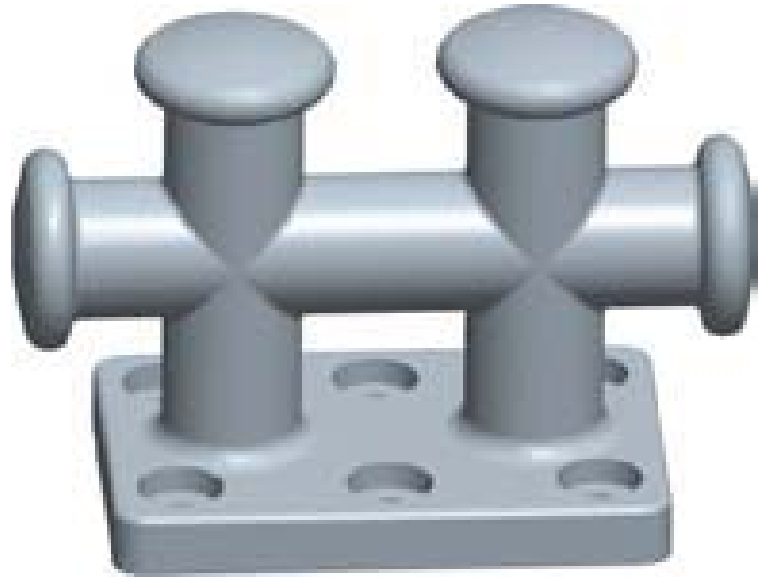
We are a professional manufacture of Dock Equipment、 Deck Fittings And Equipment、 Marine Door and HatchesBollard especially in casting,metal plate, welding which we havemany years producing experience. the fullinspection equipment provides the material inspection, mechanicalproperty inspection, metallographic examination inspection, paint film thickness test inour factory.

The products could provide the certification of China Classification society (C.C.S).If the customer requests to provide other authentication, such as A.B.S, L.R, D.N.V can also assist with.



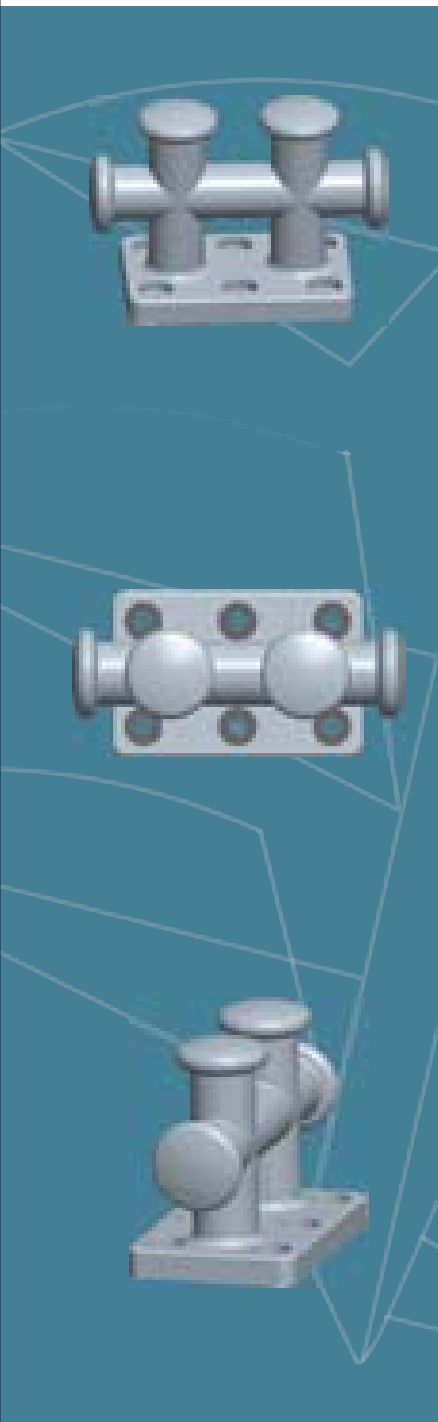
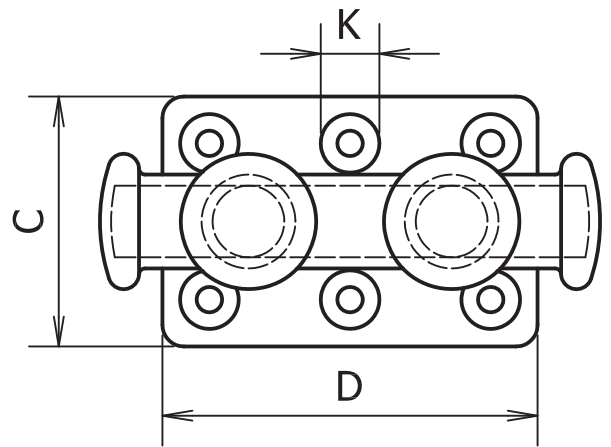
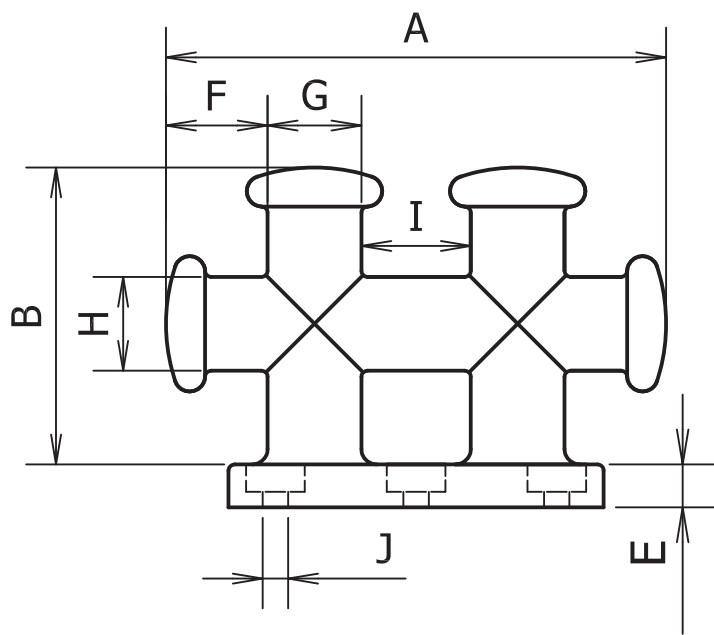


Cross Bitt



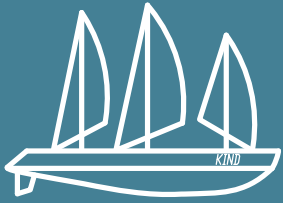
Load Angle Recommendations





Pull Tonnage	Type	A	B	C	D	E	F	G	H	Bolt No.
3	SXZ1-3	310	140	170	50	75	90	35	215	6
5-10	SXZ5-10	450	180	270	75	110	140	35	315	6
10-15	SXZ10-15	550	220	330	100	140	170	40	380	6
15-30	SXZ15-30	660	260	400	125	160	200	50	450	6
30-40	SXZ30-40	770	300	470	150	190	240	60	540	8
40-50	SXZ40-50	920	400	520	200	250	300	70	670	8

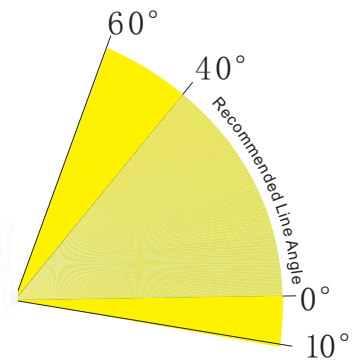


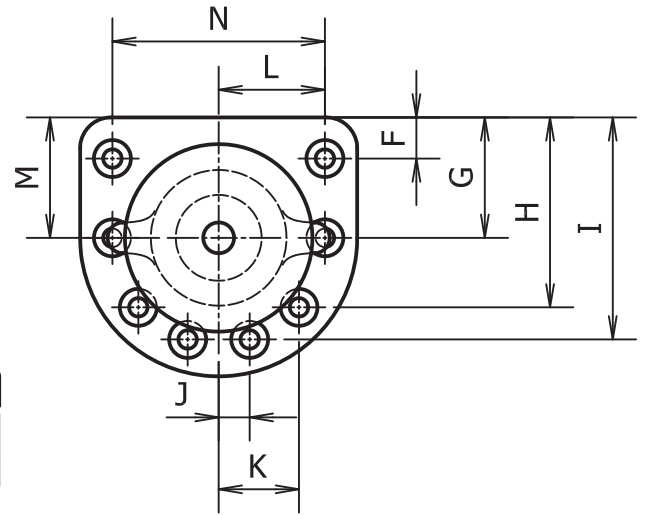
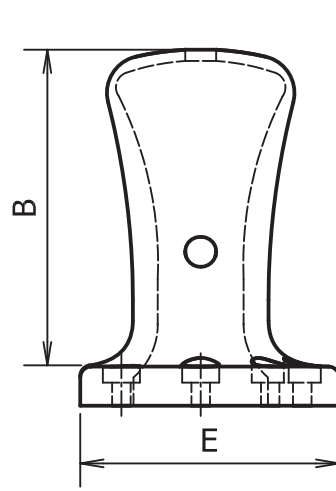
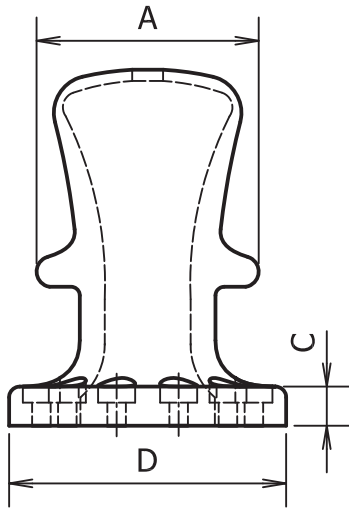


Single Bitt Bollards A Type



Load Angle Recommendations

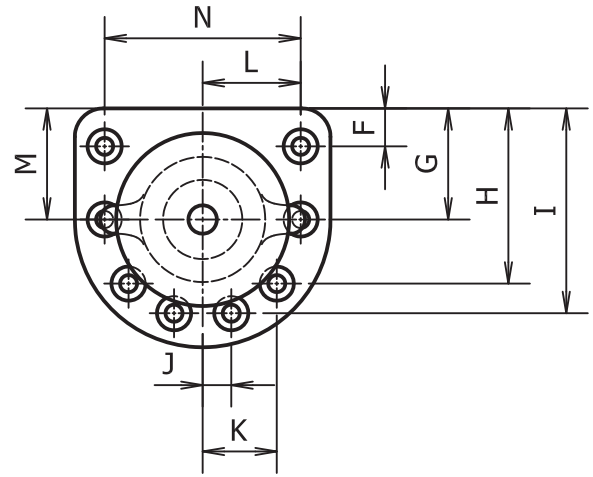
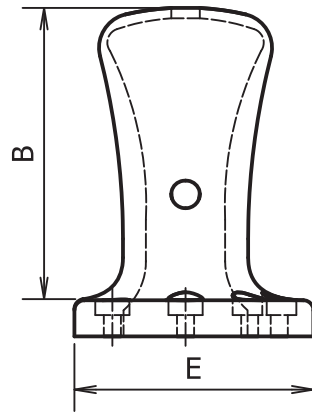
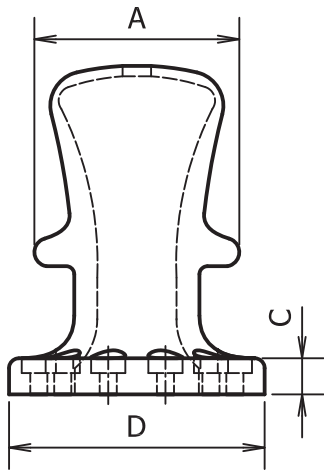




Standard Bollard Capacity(Metric Tonnes)

Imperial Dimensions (inches)	DDR 10	DDR 15	DDR 20	DDR 30	DDR 50	DDR 75	DDR 100	DDR 125	DDR 150	DDR 200
A	8-3/4	9-5/8	10-3/8	12-1/8	15-3/8	18-3/4	22	23-3/4	26	28-5/8
B	15-3/8	16-7/8	17-7/8	21-1/4	27	32-5/8	38-3/8	41-5/8	45-3/8	50
C	1-3/4	1-3/4	2-1/8	2-3/8	2-3/4	3-1/4	3-1/2	3-5/8	3-7/8	4-3/8
D	12-3/4	14-1/8	14-1/8	16-1/2	21	25-1/2	30	32-3/8	35-3/8	39
E	11-1/4	12-3/8	12-3/4	14-7/8	18-7/8	23	27	29-1/8	31-7/8	35-1/8
F	1-3/4	2	2-1/8	2-1/2	3-1/8	3-7/8	4-1/2	4-7/8	5-1/4	5-7/8
G	-	-	-	-	-	-	13	14	15-3/8	15-5/8
H	-	-	7-7/8	9-1/4	10-1/8	12-1/4	20-1/2	22-1/4	24-1/4	24-1/8
I	8	8-7/8	11	12-7/8	15-1/2	18-7/8	23-1/2	25-3/8	27-3/4	29-3/4
J	3-1/4	3-5/8	0	0	3-3/4	4-5/8	0	0	0	4-7/8
K	-	-	4-7/8	5-3/4	7-7/8	9-1/2	7-3/4	8-1/4	9-1/8	12-1/4
L	-	-	-	-	-	-	11-1/2	12-3/8	13-1/2	15
M	4-3/4	5-1/4	5-5/8	6-5/8	8-3/8	10-1/4	12	13	14-1/8	15-5/8
N	9-1/4	10-1/8	10-3/4	12-5/8	16-1/8	19-1/2	23	24-7/8	27-1/8	29-7/8
Bolt Size	1	1	1	1-1/4	1-3/8	1-3/4	1-3/4	2	2	2-1/4
Bolt Length	18	18	18	18	24	30	30	36	36	36
Bolt Qty	4	4	5	5	6	6	7	7	7	8

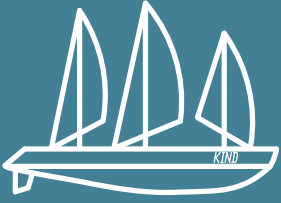




Standard Bollard Capacity(Metric Tonnes)

Imperial Dimensions (mm)	DDR 10	DDR 15	DDR 20	DDR 30	DDR 50	DDR 75	DDR 100	DDR 125	DDR 150	DDR 200
A	224	246	263	307	391	475	559	604	659	726
B	390	429	454	540	686	829	925	1057	1153	1270
C	44	44	54	60	70	82	89	92	98	111
D	325	358	358	419	533	648	762	823	899	991
E	284	313	322	377	480	583	686	741	809	892
F	46	50	54	63	80	97	114	123	135	149
G	-	-	-	-	-	-	330	357	390	396
H	-	-	201	236	256	311	522	564	616	614
I	205	225	281	328	394	478	597	645	704	755
J	83	91	0	0	96	117	0	0	0	124
K	-	-	124	146	200	243	195	211	231	311
L	-	-	-	-	-	-	291	314	343	380
M	122	134	143	168	213	259	305	329	360	396
N	234	257	275	321	409	497	584	631	689	759
Bolt Size	M23/4	M24	M24	M30	M36	M42	M48	M48	M56	M56
Bolt Length	450	450	450	450	600	600	750	750	915	915
Bolt Qty	4	4	5	5	6	6	7	7	7	8

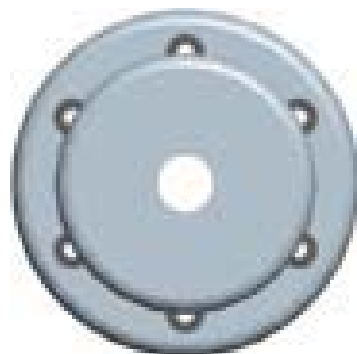


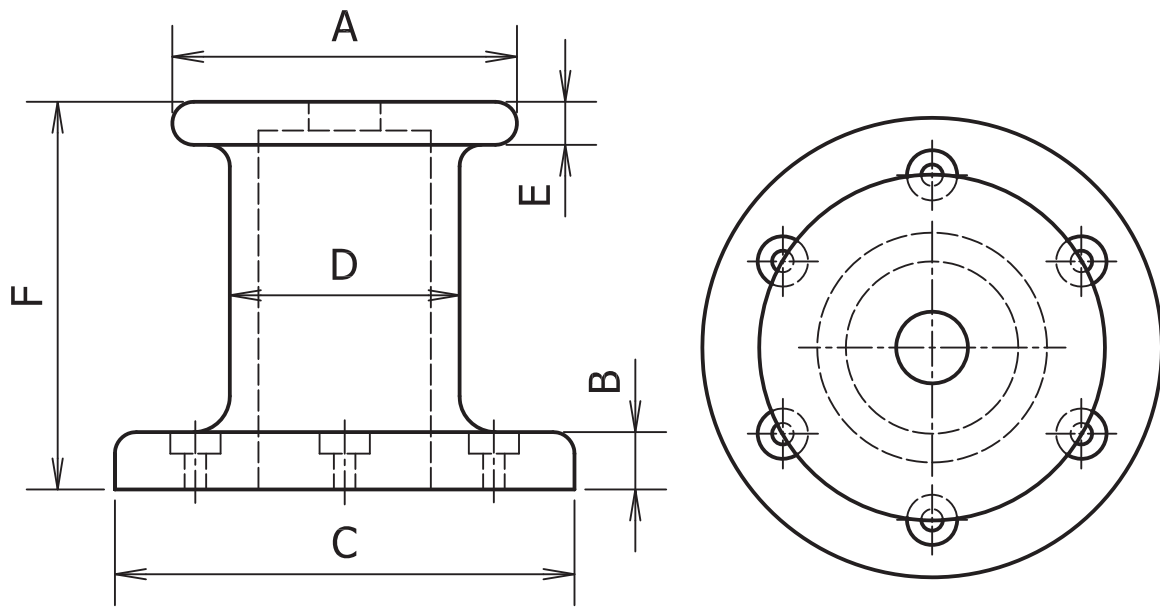


Mooring Bollards Single Bollard



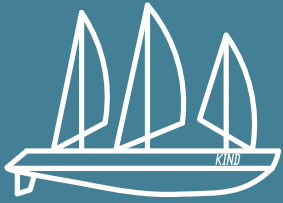
Load Angle Recommendations





Pull Tonnage	Type	A	B	C	D	E	F	Bolt No.
3-5	DBR3-5	150	35	200	100	25	200	4
5-10	DBR5-10	200	35	270	125	35	220	4
10-20	DBR10-20	240	40	320	160	40	280	5
20-30	DBR20-30	330	60	460	230	50	380	6
30-50	DBR30-50	330	60	460	230	50	380	6
50-75	DBR50-75	500	80	700	340	80	500	8
75-100	DBR75-100	500	90	700	340	90	540	8
100-125	DBR100-125	610	100	900	450	100	650	8
125-150	DBR125-150	610	100	900	450	100	650	8
150-200	DBR150-200	740	120	1000	500	130	750	8

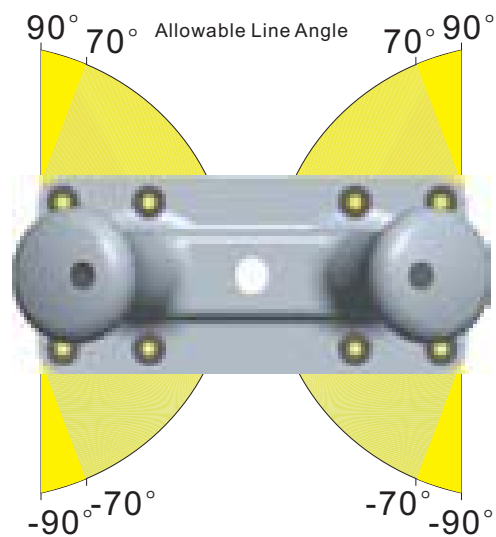
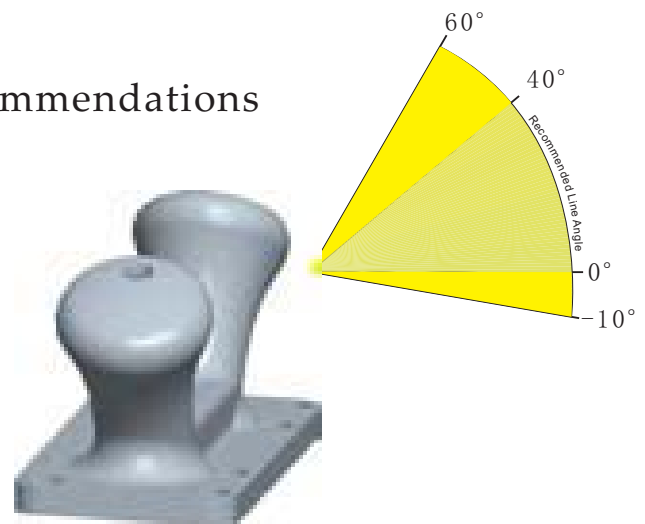


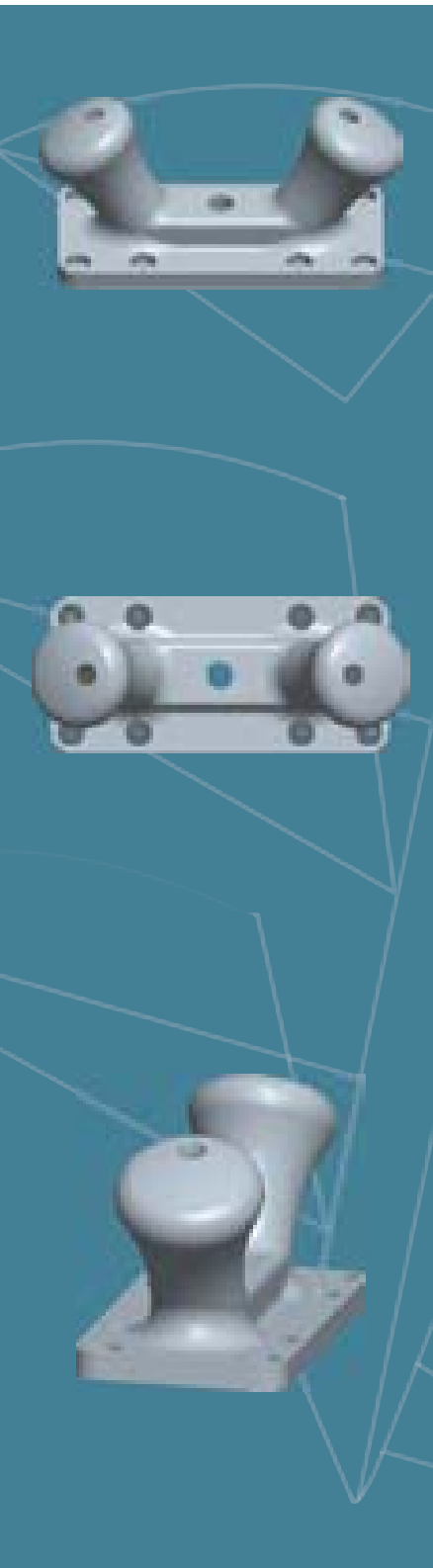
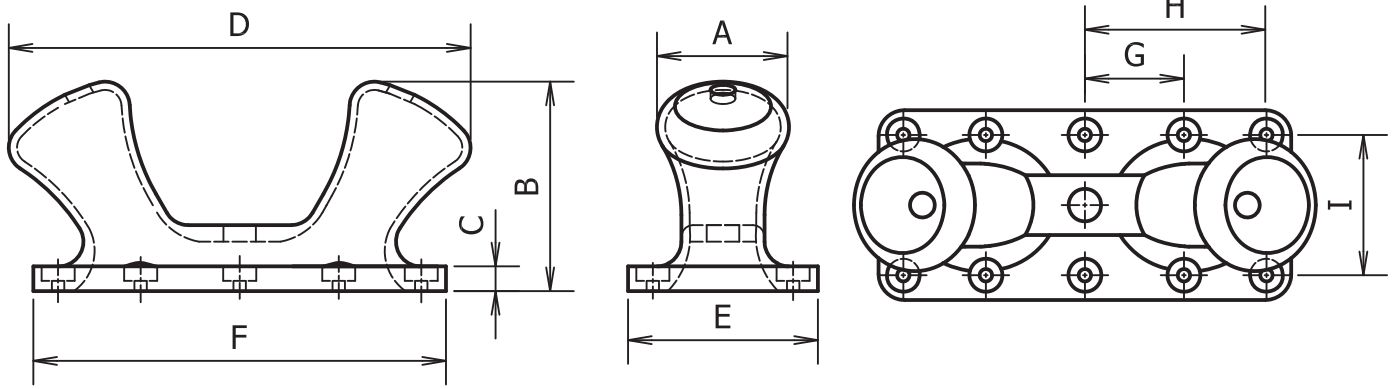


Double Bitt Bollard A type



Load Angle Recommendations

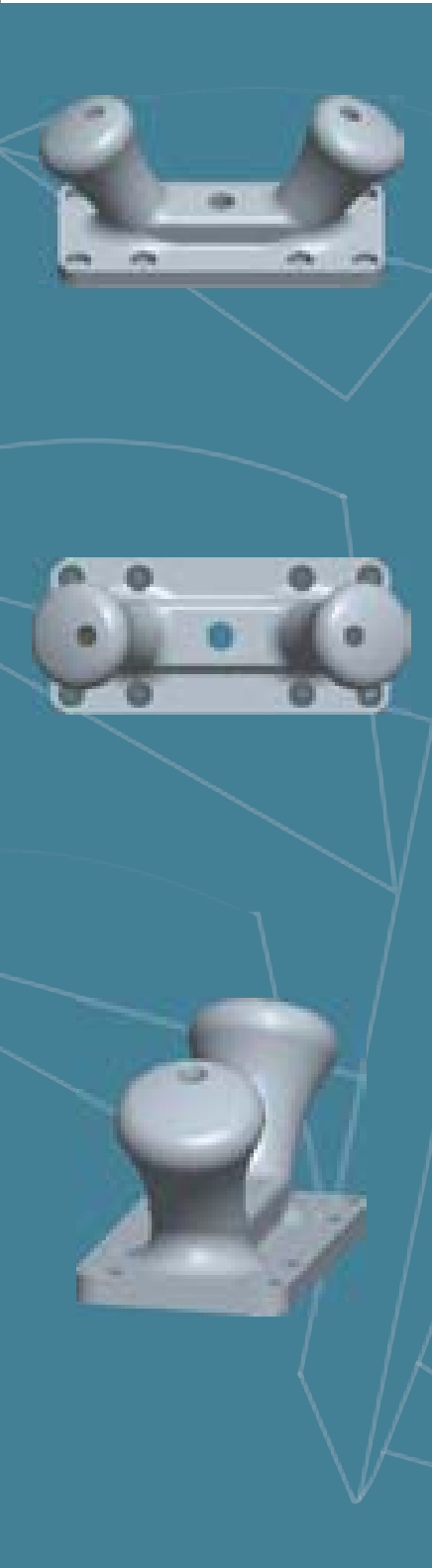
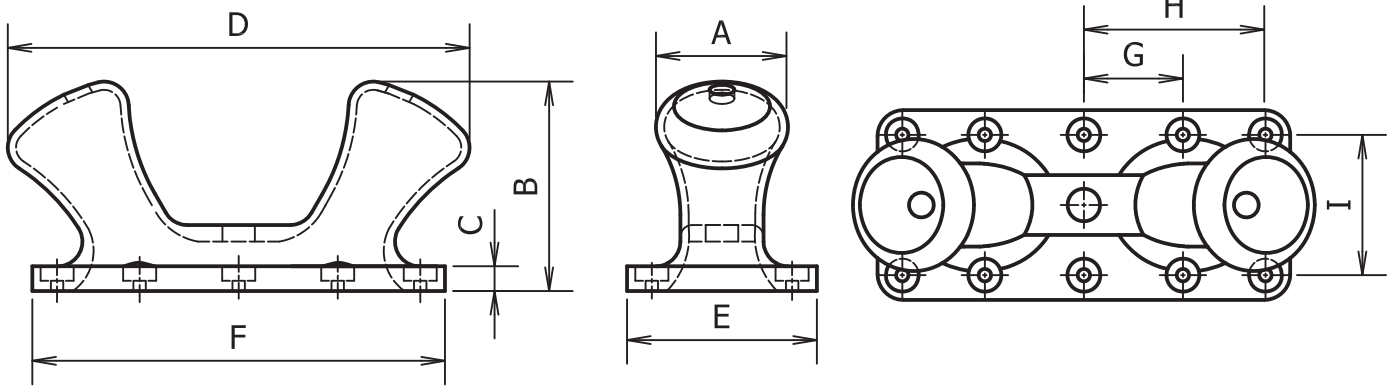




Standard Bollard Capacity(Metric Tonnes)

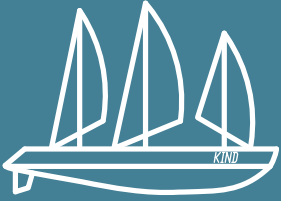
Imperial Dimensions (inches)	CJS 20	CJS 30	CJS 50	CJS 75	CJS 100	CJS 125	CJS 150	CJS 200
A	8	9-1/4	11-1/4	13-5/8	16	18-3/8	20	22-1/2
B	13-1/4	15-1/4	18-1/2	22-3/8	26-3/8	30-3/8	33	36-7/8
C	1-1/2	1-3/4	2-1/8	2-1/2	2-7/8	3-1/8	3-5/8	3-7/8
D	26-1/2	30-3/4	37-1/8	45	53	61	66-1/4	74-1/4
E	10-1/2	11-7/8	14	17	20	23	25	27-5/8
F	21	23-3/4	28	34	40	46	50	56
G	2-3/4	3-1/4	3-7/8	7-1/2	8-3/4	10-1/8	11	12-1/4
H	8-3/4	10-1/8	12-1/4	15	17-1/2	20-1/4	22	24-1/2
I	7-1/2	8-3/4	10-1/2	12-3/4	15	17-1/4	18-3/4	21
Bolt Size	3/4	7/8	1-1/8	1-1/4	1-1/2	1-3/4	2	2-1/4
Bolt Length	12	12	18	18	24	30	36	36
Bolt Qty	8	8	8	10	10	10	10	10





Standard Bollard Capacity(Metric Tonnes)								
Imperial Dimensions (mm)	CJS 20	CJS 30	CJS 50	CJS 75	CJS 100	CJS 125	CJS 150	CJS 200
A	204	236	285	346	407	468	509	570
B	335	389	469	570	670	771	838	938
C	38	46	56	62	73	80	91	98
D	673	781	942	1144	1346	1548	1683	1885
E	267	302	356	432	508	584	635	702
F	533	604	711	864	1016	1168	1270	1422
G	70	81	98	189	222	256	278	311
H	222	258	311	378	444	512	556	622
I	191	221	267	324	381	438	476	533
Bolt Size	M20	M22	M30	M36	M42	M42	M48	M56
Bolt Length	300	300	450	450	600	600	750	915
Bolt Qty	8	8	8	10	10	10	10	10

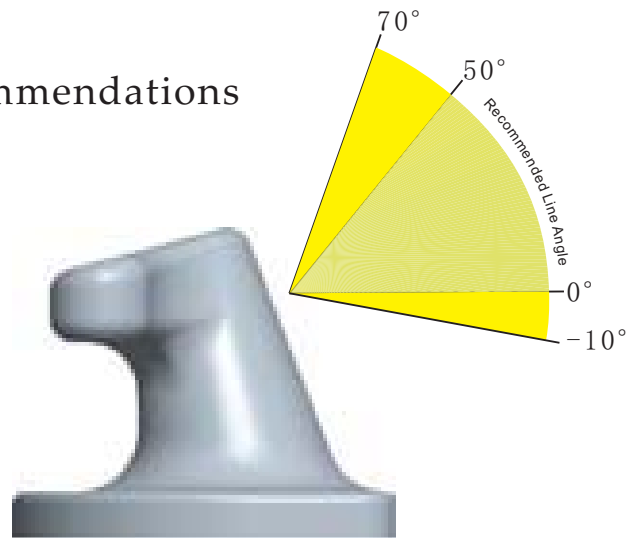


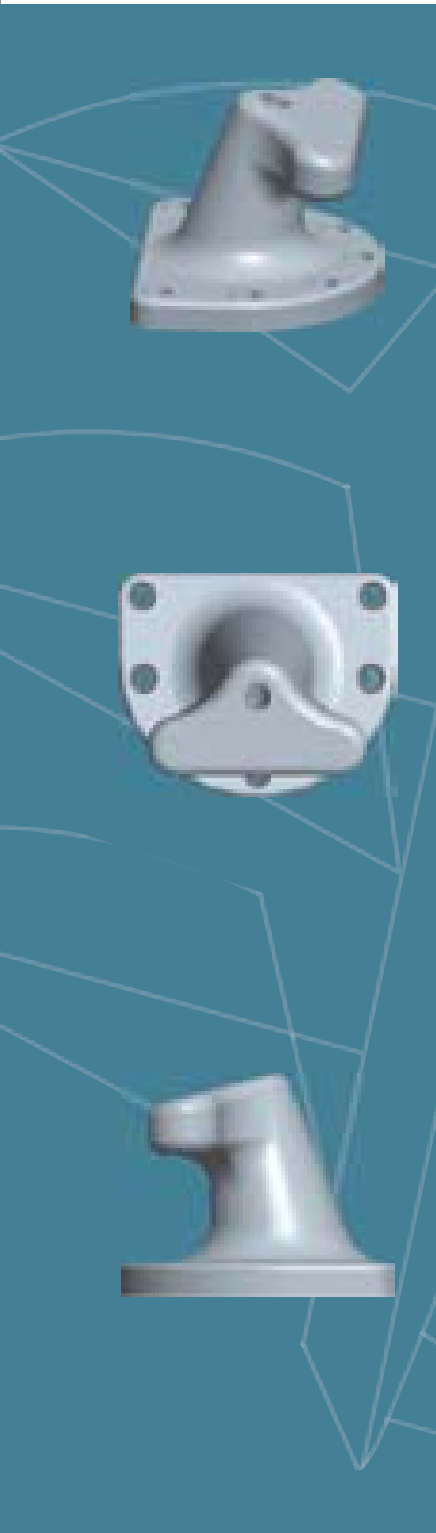
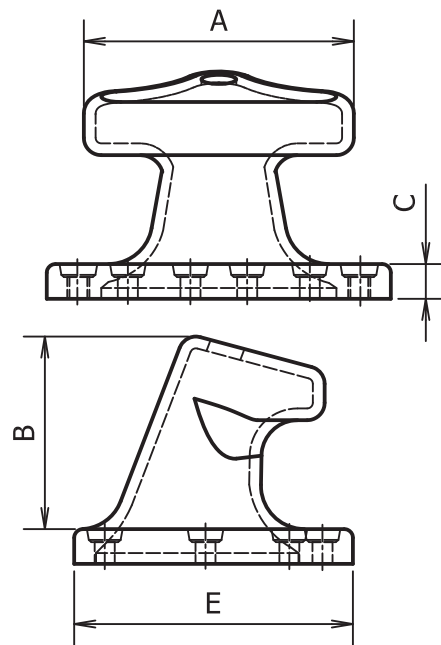
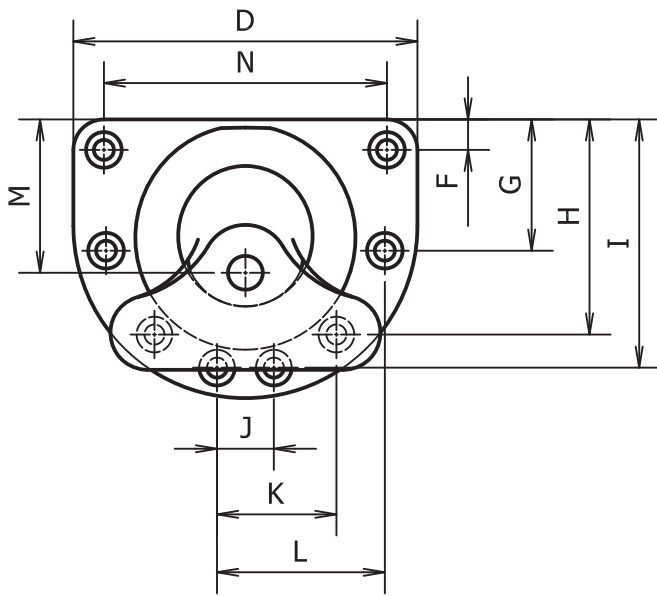


Tee Head Bollard



Load Angle Recommendations

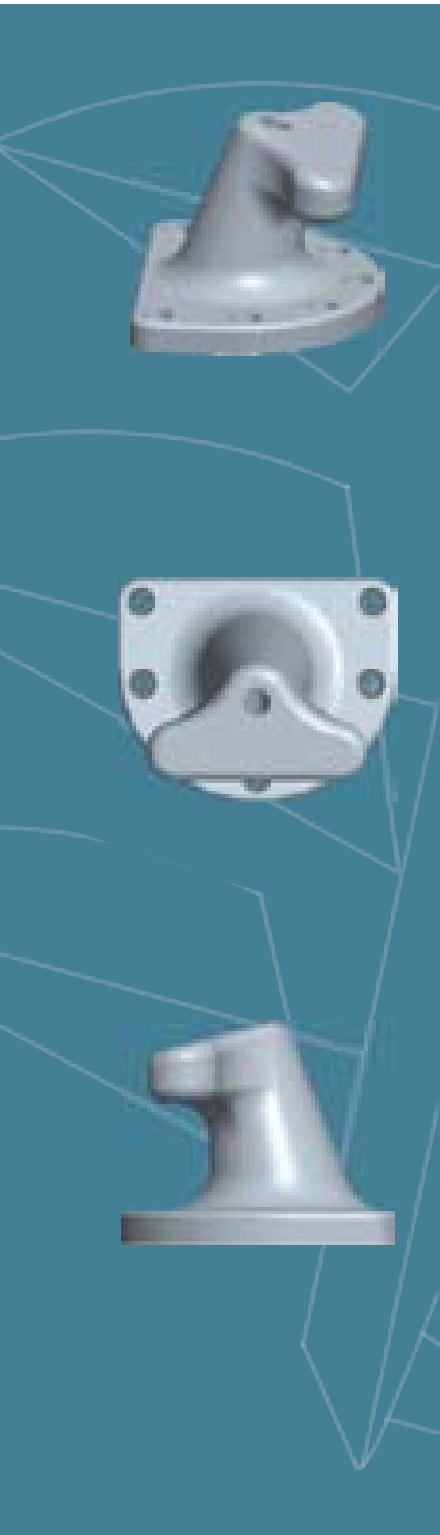
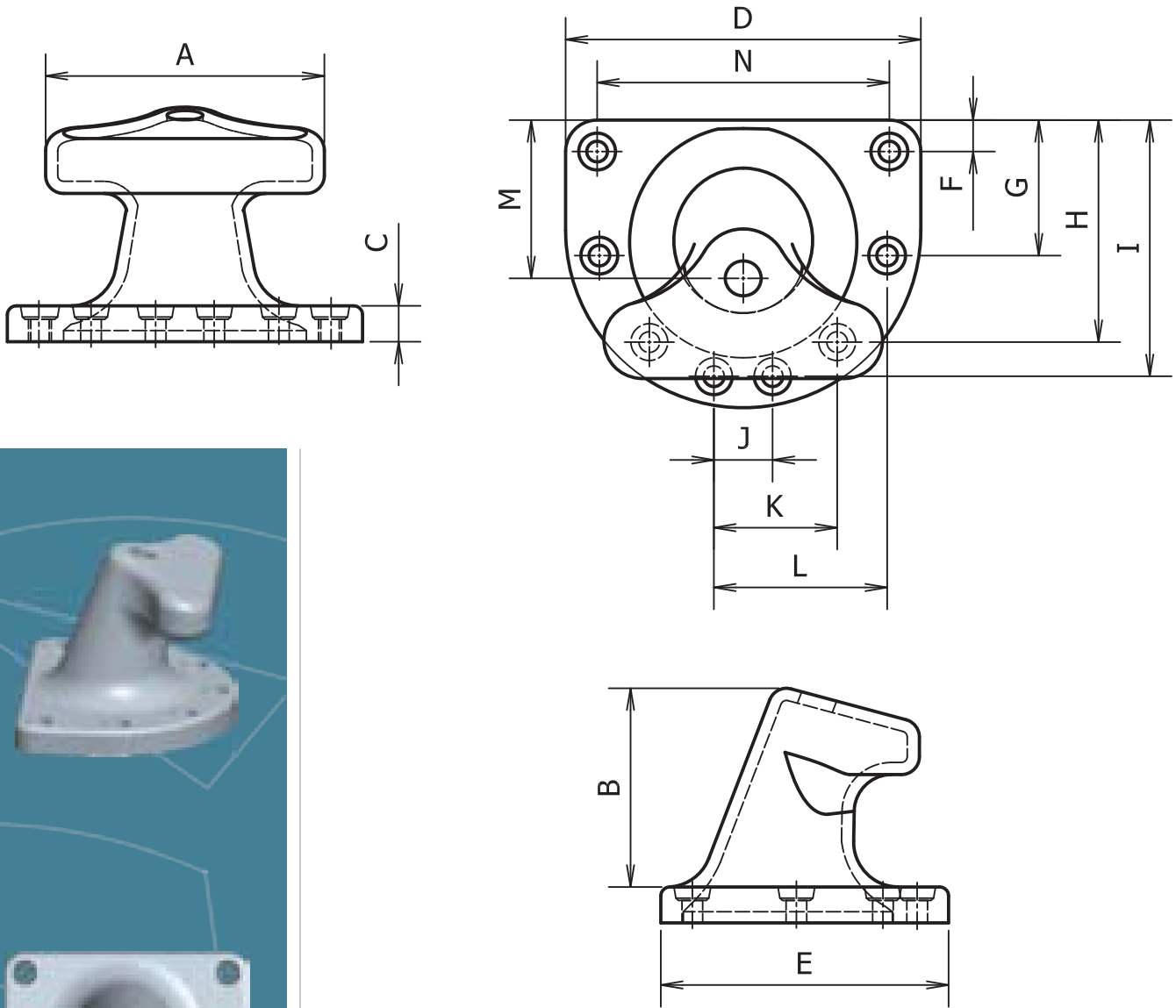




Standard Bollard Capacity(Metric Tonnes)

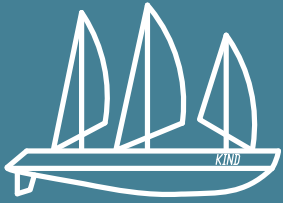
Imperial Dimensions (inches)	TXD 10	TXD 15	TXD 20	TXD 30	TXD 50	TXD 75	TXD 100	TXD 125	TXD 150	TXD 200
A	12	13-1/4	13-3/4	14-3/8	17-3/4	20-3/8	24	26-3/8	28-3/8	30
B	7-7/8	8-5/8	9-1/2	9-7/8	12-1/8	13-7/8	16-1/8	18	19-3/8	20-1/2
C	1-7/8	2	2-1/8	2-1/4	2-3/4	3-1/4	3-1/4	3-3/8	3-5/8	3-7/8
D	15	16-1/2	17-1/4	18	22-1/4	25-1/2	30	33	35-3/8	37-1/2
E	13	14-1/4	15	15-5/8	19-1/4	22-1/8	26	28-5/8	30-5/8	32-1/2
F	1-3/4	1-7/8	2	2-1/8	2-5/8	3	3-1/2	3-7/8	4-1/8	4-3/8
G	-	-	-	-	-	-	12	13-1/4	14-1/8	13-3/4
H	-	-	9-1/8	9-1/2	11-3/4	11-3/4	19-1/2	21-1/2	23-1/8	22
I	9-5/8	10-1/2	13	13-1/2	16-5/8	18-1/4	22-1/2	24-3/4	26-1/2	27-3/8
J	4-1/8	4-1/2	0	0	0	4-1/8	0	0	0	4-5/8
K	-	-	6	6-1/4	7-3/4	9-1/2	7-3/4	8-1/2	9-1/8	11-3/4
L	-	-	-	-	-	-	11-1/2	12-5/8	13-1/2	14-3/8
M	7-3/8	8-1/8	8-1/2	8-7/8	11	12-5/8	14-7/8	16-3/8	17-1/2	18-5/8
N	11-1/2	12-5/8	13-1/4	13-3/4	17	19-1/2	23	25-1/4	27-1/8	28-3/4
Bolt Size	1	1	1	1-1/8	1-3/8	1-1/2	1-3/4	1-3/4	2	2
Bolt Length	18	18	18	18	24	24	30	30	36	36
Bolt Qty	4	4	5	5	5	6	7	7	7	8





Standard Bollard Capacity(Metric Tonnes)

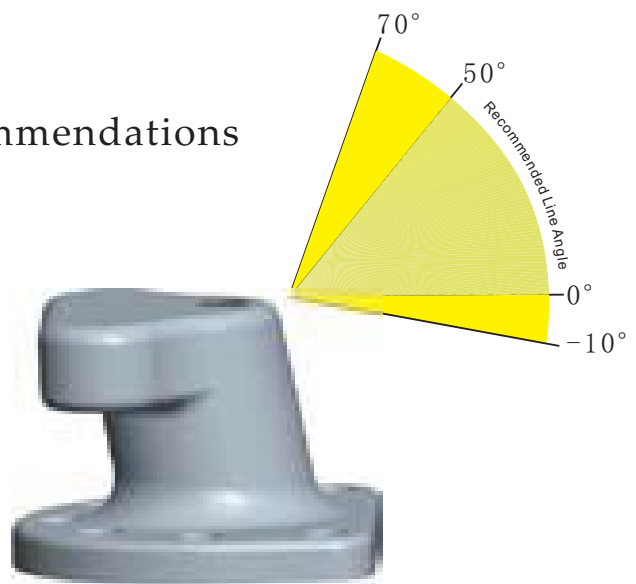
Imperial Dimensions (mm)	TXD 10	TXD 15	TXD 20	TXD 30	TXD 50	TXD 75	TXD 100	TXD 125	TXD 150	TXD 200
A	305	335	351	366	451	518	610	671	719	762
B	199	219	240	250	308	354	413	458	492	521
C	47	52	54	57	70	80	80	87	93	97
D	381	419	438	457	564	648	762	838	899	952
E	330	363	380	396	489	561	660	726	779	826
F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

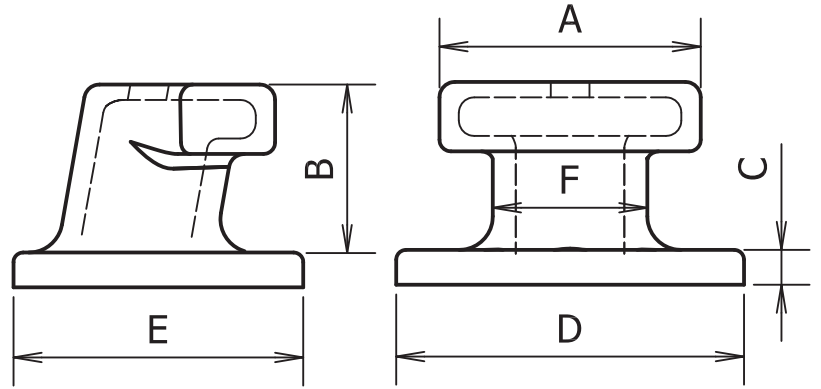
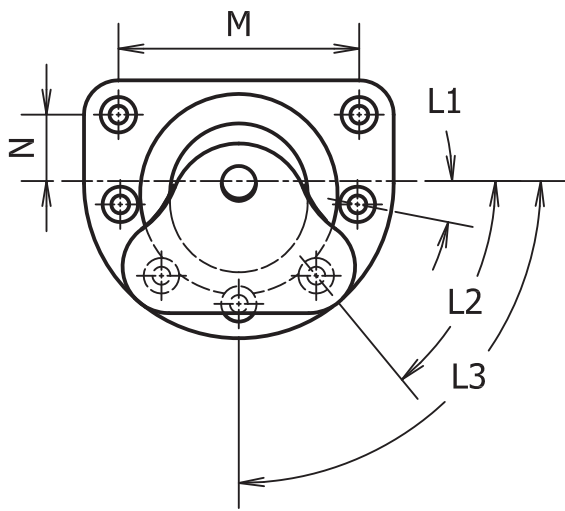


Tee Bollard



Load Angle Recommendations





Standard Bollard Capacity(Metric Tonnes)

Imperial Dimensions (mm)	TPD	TPD	TPD	TPD	TPD	TPD	TPD
	15	30	50	80	100	150	200
A	40	40	50	70	80	90	90
B	235	255	350	380	410	435	500
C	340	350	500	550	600	700	800
D	410	450	640	640	790	900	1000
E	335	375	540	550	640	750	850
F	80	100	150	160	175	200	225
G	155	175	250	250	325	350	375
I	160	200	260	280	350	400	450
J	205	225	320	320	395	450	500
K	130	150	220	230	245	300	350
L1°	30°	30°	30°	15°	10°	10°	0°
L2°	-	-	-	45°	40°	40°	36°
L3°	60°	60°	60°	N/A	80°	80°	72°
Bolts	M24	M30	M36	M42	M42	M48	M56
Bolt length	500	500	500	800	800	1000	1000
p	60	60	70	90	100	110	110
Qty	5	5	5	6	7	7	8

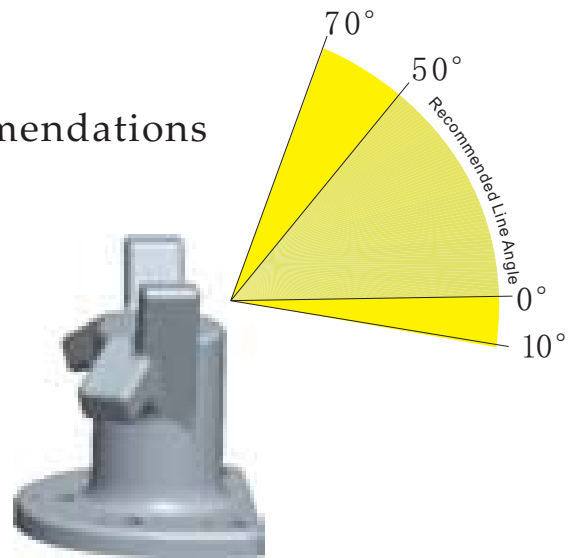


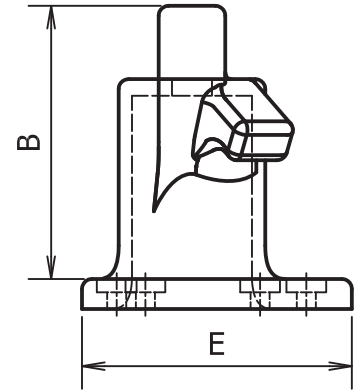
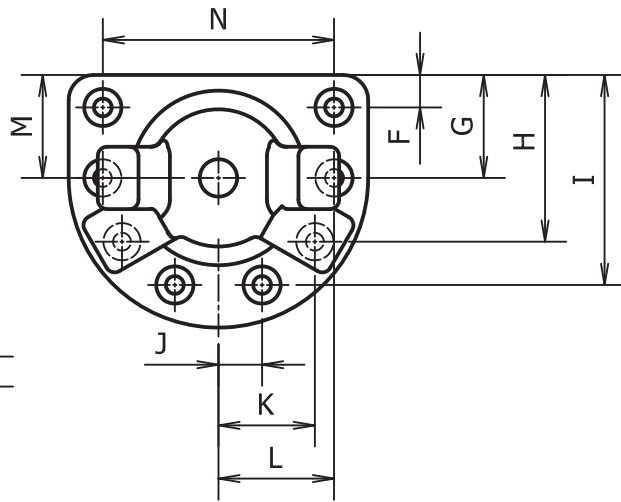
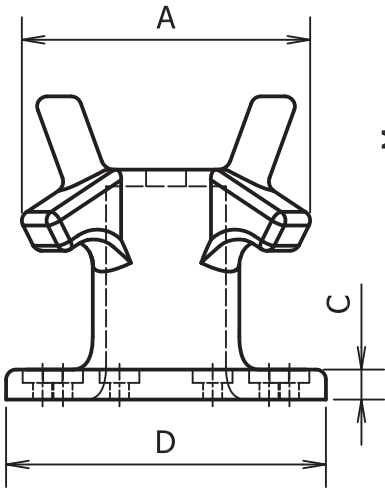


Staghorn/Horn Bollard



Load Angle Recommendations

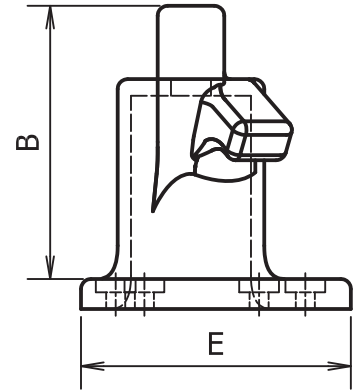
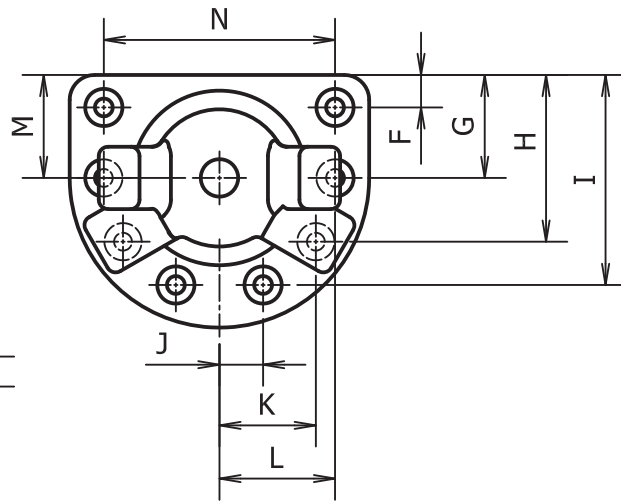
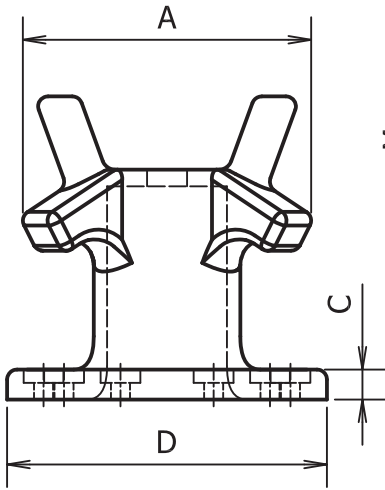




Standard Bollard Capacity(Metric Tonnes)

Imperial Dimensions (inches)	LXZ 10	LXZ 15	LXZ 20	LXZ 30	LXZ 50	LXZ 75	LXZ 100	LXZ 125	LXZ 150	LXZ 200
A	13-3/4	15-1/2	16-7/8	19	20-1/4	24-5/8	28-1/4	31	33-7/8	35-1/4
B	11-3/8	12-5/8	13-5/8	15-1/2	16-3/8	19-1/4	22	24-1/4	26-1/2	27-1/2
C	1-5/8	1-3/4	2	2-1/8	2-3/8	2-7/8	3-1/4	3-1/2	3-3/4	4
D	15	16-1/2	17-3/8	19-5/8	20-7/8	25-3/8	29	31-7/8	34-3/4	36-1/4
E	13	14-1/4	15	16-7/8	18	21-7/8	25	27-1/2	30	31-1/4
F	1-3/4	1-7/8	1-3/4	2	2-1/8	2-5/8	3	3-1/4	3-5/8	3-3/4
G	-	-	-	-	-	-	11-1/2	12-5/8	13-3/4	13-1/8
H	-	-	9-1/4	10-3/8	11	11-1/4	19	21	22-7/8	21-3/8
I	9-5/8	10-1/2	13-1/4	14-7/8	15-7/8	18-1/8	22	24-1/4	26-3/8	26-3/4
J	4-1/8	4-1/2	0	0	0	4-3/4	0	0	0	4-5/8
K	-	-	6-1/4	7	7-1/2	9-7/8	7-3/4	8-1/2	9-1/4	11-3/4
L	-	-	-	-	-	-	11-1/2	12-5/8	13-3/4	14-3/8
M	5-1/2	6	6-1/4	7-1/8	7-1/2	9-1/8	10-1/2	11-1/2	12-5/8	13-1/8
N	11-1/2	12-5/8	13-3/4	15-1/2	16-1/2	20	22-7/8	25-1/4	27-1/2	28-5/8
Bolt Size	1	1	1	1-1/8	1-3/8	1-1/2	1-3/4	1-3/4	2	2
Bolt Length	18	18	18	18	24	24	30	30	36	36
Bolt Qty	4	4	5	5	5	6	7	7	7	8

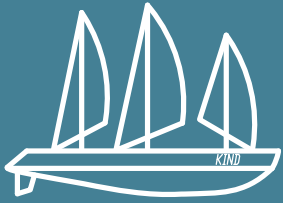




Standard Bollard Capacity(Metric Tonnes)

Imperial Dimensions (mm)	LXZ 10	LXZ 15	LXZ 20	LXZ 30	LXZ 50	LXZ 75	LXZ 100	LXZ 125	LXZ 150	LXZ 200
A	348	394	430	483	516	627	717	788	860	896
B	291	320	349	392	419	489	559	615	671	699
C	41	45	49	55	59	71	81	90	98	102
D	381	419	442	497	530	645	737	810	884	921
E	330	363	381	429	457	556	635	699	762	794
F	44	49	46	51	55	67	76	84	91	95
G	-	-	-	-	-	-	292	321	351	333
H	-	-	234	263	281	287	484	532	581	543
I	243	267	335	377	402	459	559	615	671	679
J	103	114	0	0	0	120	0	0	0	119
K	-	-	159	179	191	250	195	215	235	299
L	-	-	-	-	-	-	291	320	349	365
M	140	154	160	180	192	233	267	293	320	333
N	291	320	349	393	419	509	582	640	698	727
Bolt Size	M24	M24	M24	M30	M36	M42	M42	M48	M48	M56
Bolt Length	450	450	450	450	600	600	600	750	750	915
Bolt Qty	4	4	5	5	5	6	7	7	7	8

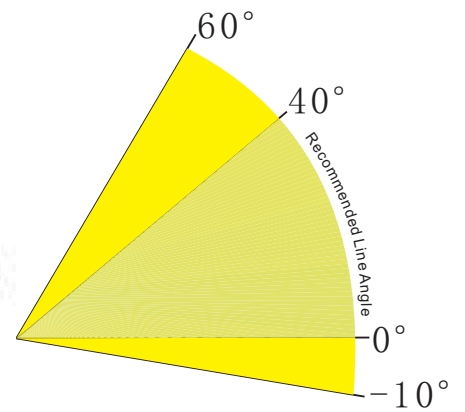


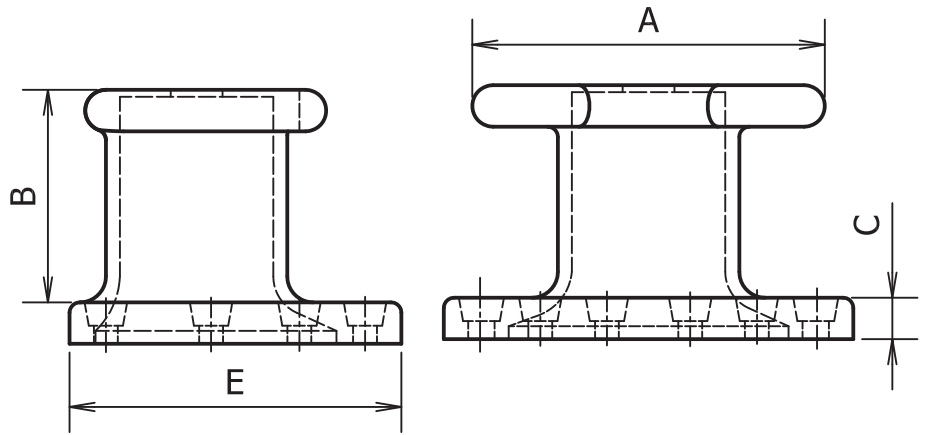
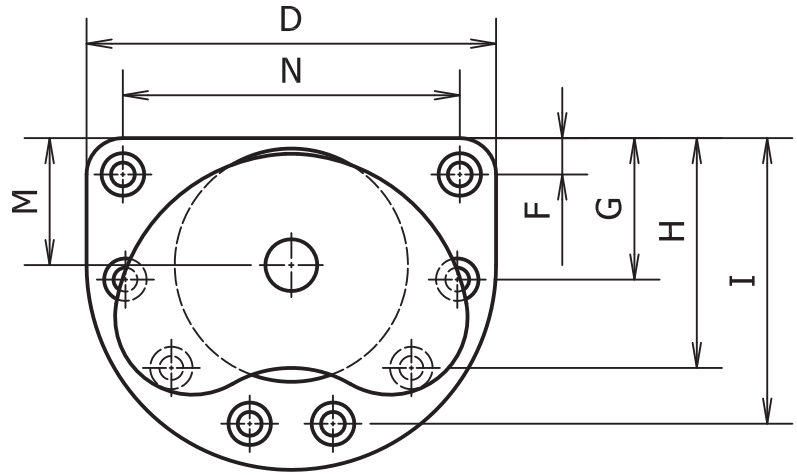
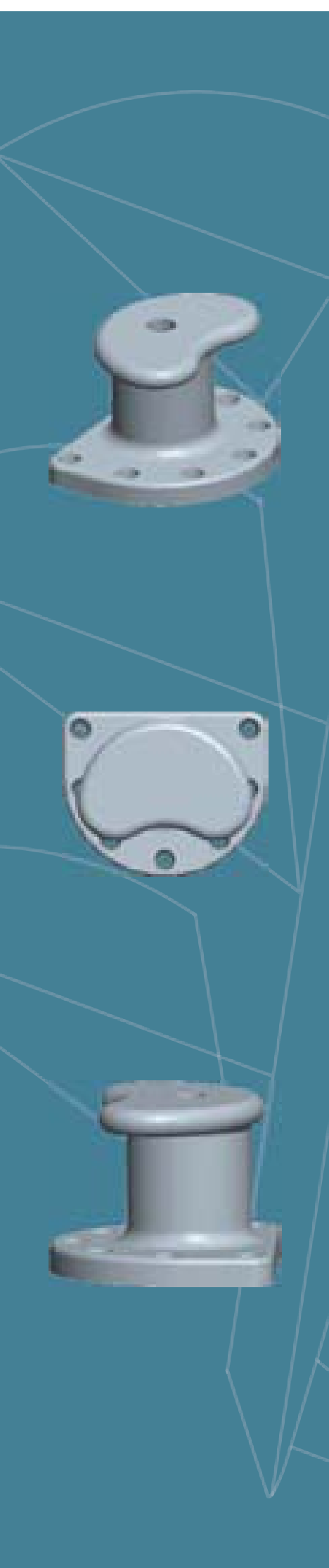


Kidney Bollard



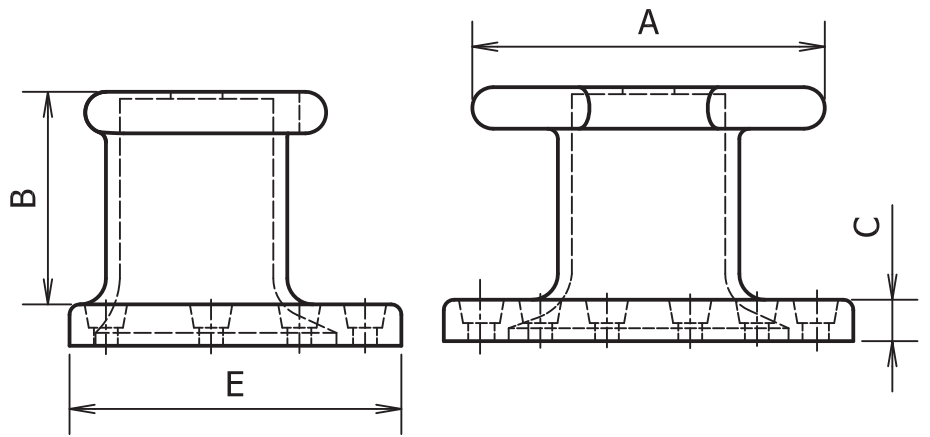
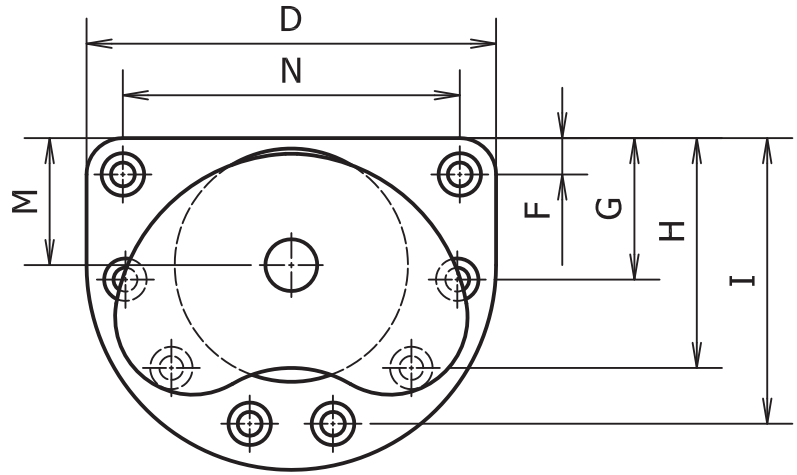
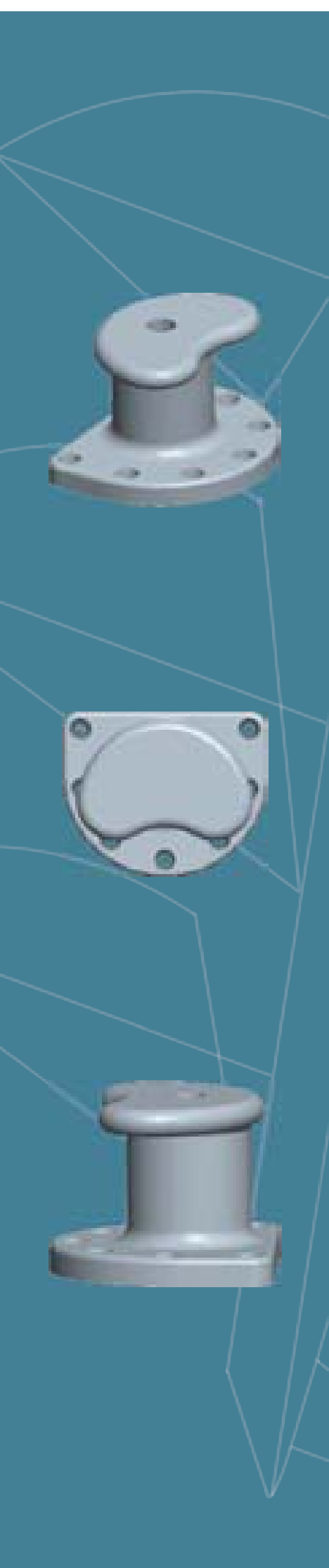
Load Angle Recommendations





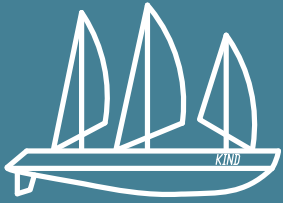
Standard Bollard Capacity(Metric Tonnes)

Imperial Dimensions (Inches)	SYX 15	SYX 20	SYX 30	SYX 50	SYX 75	SYX 100	SYX 125	SYX 150	SYX 200
A	10-7/8	13	15-1/8	16-1/4	19	21-5/8	23-7/8	26	29-7/8
B	7-5/8	8-1/2	10-1/8	10-3/8	11-3/4	13-3/8	14-3/4	16-1/8	18
C	1-5/8	2	2-1/8	2-3/8	2-3/4	3-1/8	3-1/2	3-3/4	4-3/8
D	12-3/4	15-3/8	17-7/8	19-1/4	22-3/8	25-5/8	28-1/8	30-3/4	35-3/8
E	11-3/8	13-5/8	15-7/8	17	19-3/4	22-5/8	24-7/8	27-1/8	31-1/4
F		2-3/8	2-3/4	3	3-1/2	3-7/8	4-3/8	4-3/4	5-3/8
G	-	-	-	-		10-3/4			
H	-	8-3/8	10-1/8	8-7/8	15	17-1/8	18-7/8	20-5/8	21-3/8
I	8-3/8	11-3/4	13-3/4	13-7/8	17-1/4	19-5/8	21-5/8	23-5/8	26-3/8
J	3-1/2	0	0	3-1/2	0	0	0	0	4-3/8
K	-	5-3/8	6	7-1/4	5-3/4	6-5/8	7-1/4	7-7/8	11-1/8
L	-	-	-	-	8-5/8	9-3/4	10-3/4	11-3/4	13-5/8
M	4-7/8	5-7/8	8-1/2	7-3/8	8-5/8	9-7/8	10-7/8	11-3/4	13-5/8
N	9-7/8	11-3/4	13-3/4	14-3/4	17-1/4	19-5/8	21-5/8	23-5/8	27-1/8
Bolt Size	1	1	1		1-1/2	1-3/4	2	2	
Bolt Length	18	18	18	24	24	30	36	36	36
Bolt Qty	4	5	5	6	7	7	7	7	8

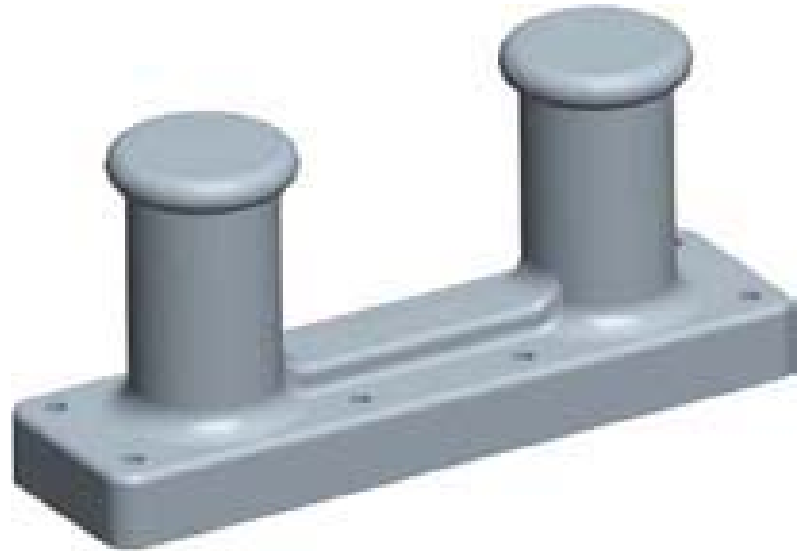


Standard Bollard Capacity(Metric Tonnes)

Imperial Dimensions (mm)	SYX 15	SYX 20	SYX 30	SYX 50	SYX 75	SYX 100	SYX 125	SYX 150	SYX 200
A	275	330	385	413	481	550	605	660	759
B	194	216	257	264	298	340	375	410	457
C	41	51	54	60	70	79	89	95	111
D	325	390	455	488	569	650	715	780	897
E	288	345	402	431	503	575	632	690	793
F	50	60	70	75	88	100	110	120	138
G	-	-	-	-	238	272	299	326	345
H	-	213	258	226	381	436	479	523	543
I	213	300	350	353	438	500	550	600	671
J	88	0	0	88	0	0	0	0	112
K	-	136	154	183	146	167	184	201	283
L	-	-	-	-	218	249	274	299	345
M	125	150	175	188	219	250	275	300	345
N	250	300	350	375	438	500	550	600	690
Bolt Size	M24	M24	M30	M36	M36	M42	M48	M56	M56
Bolt Length	450	450	450	600	600	600	750	915	915
Bolt Qty	4	5	5	6	7	7	7	7	8

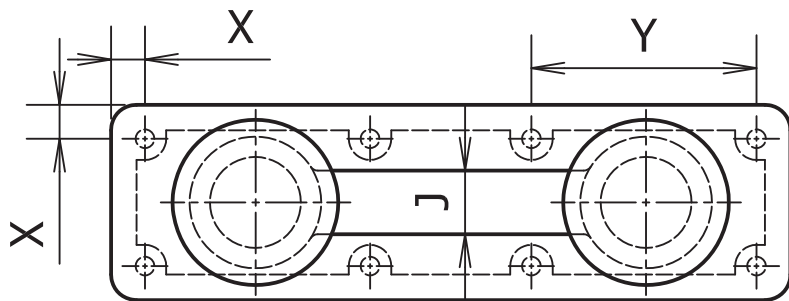
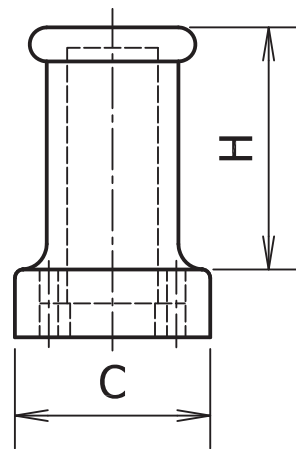
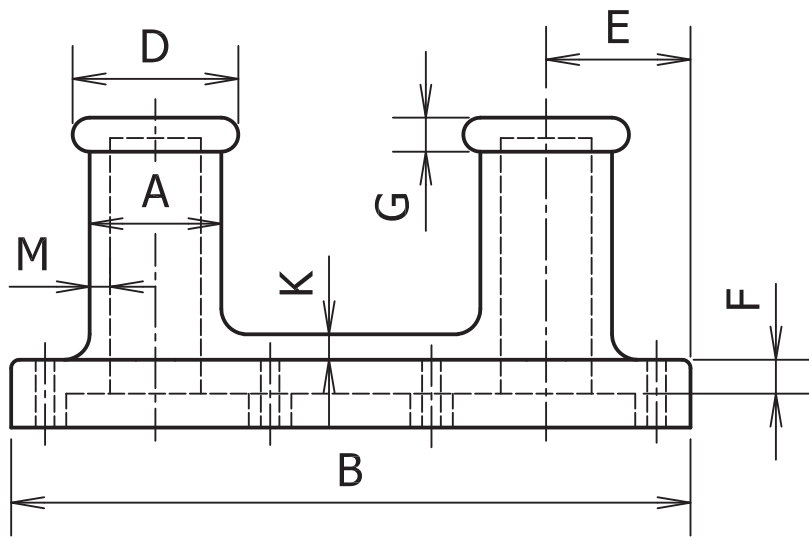


Double Bitt Straight Bollard



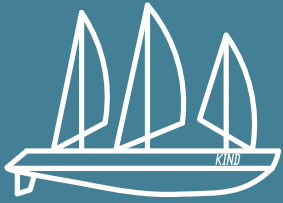
Load Angle Recommendations





DIIMENSIONS METRIC WITH DATA

Part No.	CHAIN CABLE	A	B	C	D	E	F	G	H	WEB			BOLT SPACING				
										J	K	M	NO.	O	X	Y	
ZSX-01		80	445	130	120	90	22	22	140	30	15	13	4	M20	25		
ZSX-02	18-21	105	535	155	130	115	25	25	190	50	20	16	4	M20	25		
ZSX-03	22-25	130	665	190	160	140	32	32	240	65	25	19	4	M22	32		
ZSX-04	27-30	155	800	230	190	170	40	40	285	75	30	25	6	M22	40	265	
ZSX-05	32-35	160	940	265	225	200	45	45	335	90	35	27	6	M22	45	310	
ZSX-06	37-40	205	1065	305	255	230	50	50	390	100	40	30	6	M24	50	355	
ZSX-07	41-45	230	1195	345	290	255	57	57	430	115	45	35	6	M24	57	400	
ZSX-08	46-49	255	1335	380	320	285	65	65	475	125	50	38	8	M27	65	445	
ZSX-09	50-54	280	1475	420	350	315	70	70	525	140	55	41	8	M27	70	490	
ZSX-10	55-62	305	1650	450	380	345	75	75	675	155	60	46	8	M33	75	535	
ZSX-11	64-70	360	1920	535	450	400	90	90	670	180	70	54	10	M36	90	625	
ZSX-12	71-79	410	2135	610	510	455	100	100	765	205	80	60	10	M39	100	710	
ZSX-13	80-89	460	2400	685	575	515	115	115	845	230	90	67	12	M42	115	800	
ZSX-14		510	2440	760	640	575	150	150	915	265	100	73	12	M45	125	900	

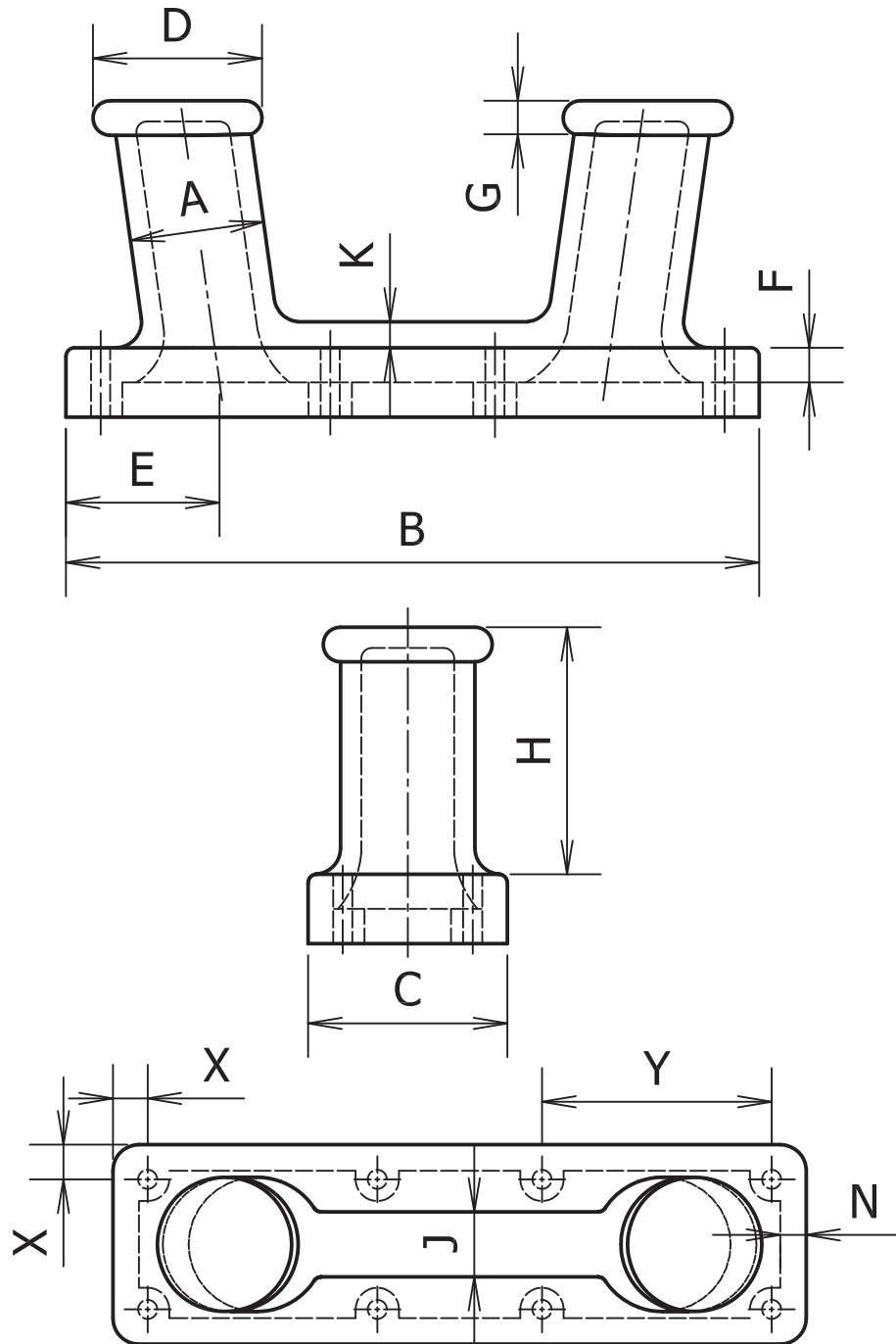


Double Bitt Raked Bollard



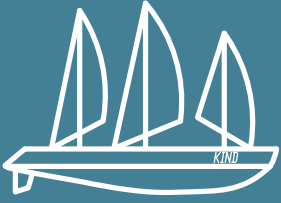
Load Angle Recommendations





DIIMENSIONS METRIC WITH DATA

Part No.	OCHAIN CABLE	A	B	C	D	E	F	G	H	WEB			BOLT SPACING		
										J	K	M	NO.	O	X
		80	445	130	120	90	22	22	140	30	15	13	4	M20	25
XSX-01	18-21	105	535	155	130	115	25	25	190	50	20	16	4	M20	25
XSX-02	22-25	130	665	190	160	140	32	32	240	65	25	19	4	M22	32
XSX-03	27-30	155	800	230	190	170	40	40	285	75	30	25	6	M22	40 265
XSX-04	32-35	160	940	265	225	200	45	45	335	90	35	27	6	M22	45 310
XSX-05	37-40	205	1065	305	255	230	50	50	390	100	40	30	6	M24	50 355
XSX-06	41-45	230	1195	345	290	255	57	57	430	115	45	35	6	M24	57 400
XSX-07	46-49	255	1335	380	320	285	65	65	475	125	50	38	8	M27	65 445
XSX-08	50-54	280	1475	420	350	315	70	70	525	140	55	41	8	M27	70 490
XSX-09	55-62	305	1650	450	380	345	75	75	675	155	60	46	8	M33	75 535
XSX-10	64-70	360	1920	535	450	400	90	90	670	180	70	54	10	M36	90 625
XSX-11	71-79	410	2135	610	510	455	100	100	765	205	80	60	10	M39	100 710
XSX-12	80-89	460	2400	685	575	515	115	115	845	230	90	67	12	M42	115 800
XSX-13		510	2440	760	640	575	150	150	915	265	100	73	12	M45	125 900

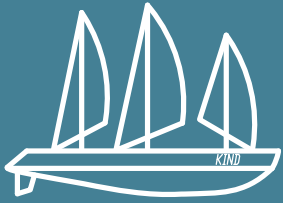


Single Bitt Bollards B Type



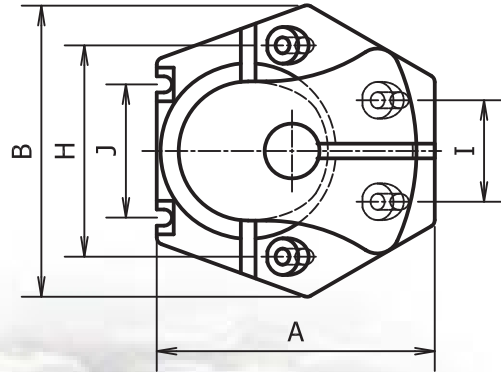
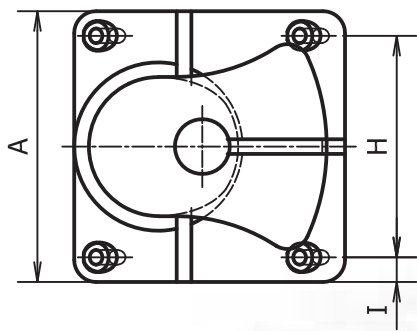
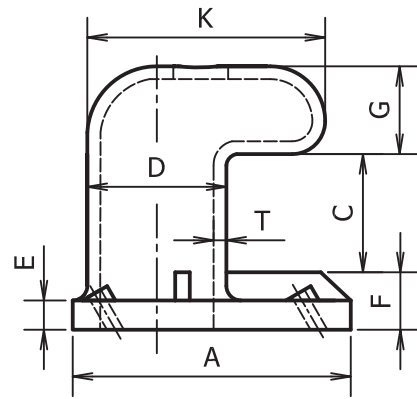
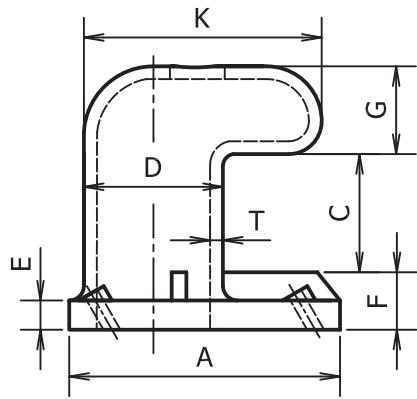
Load Angle Recommendations





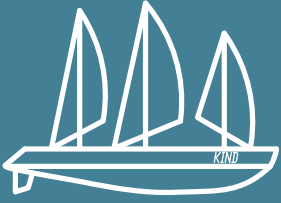
Single Bitt Bollards B Type





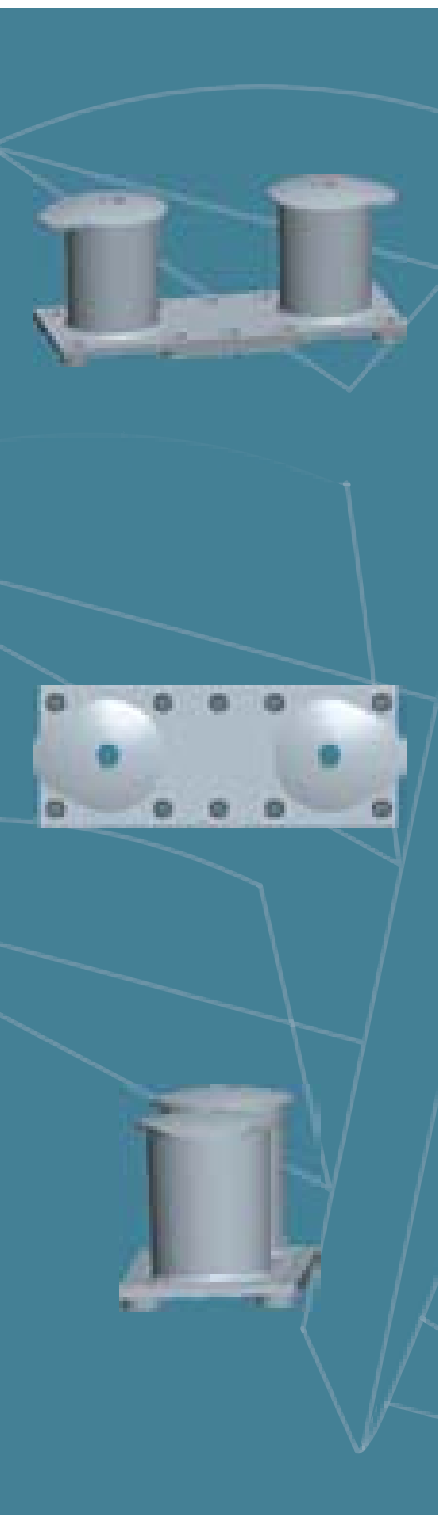
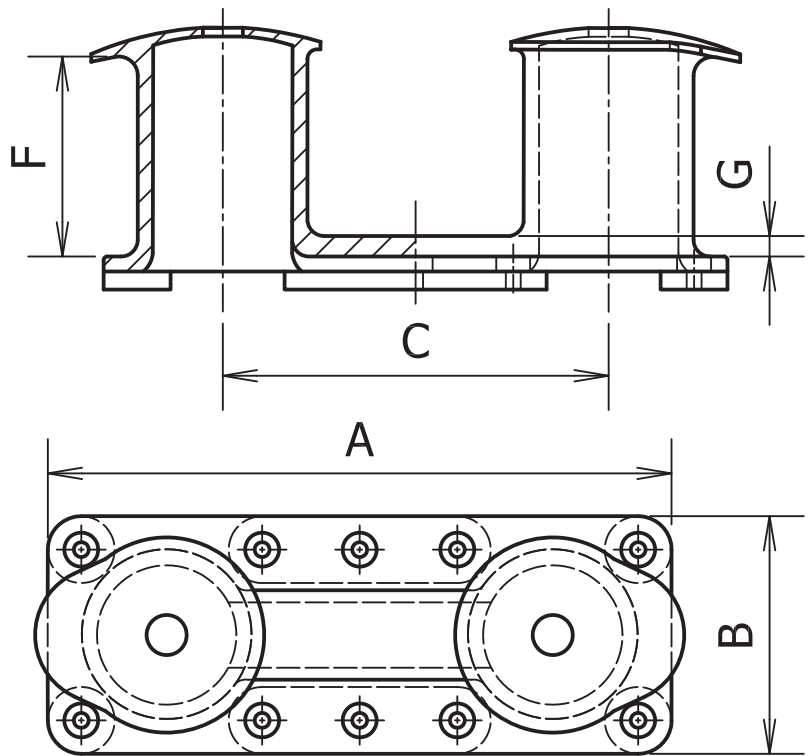
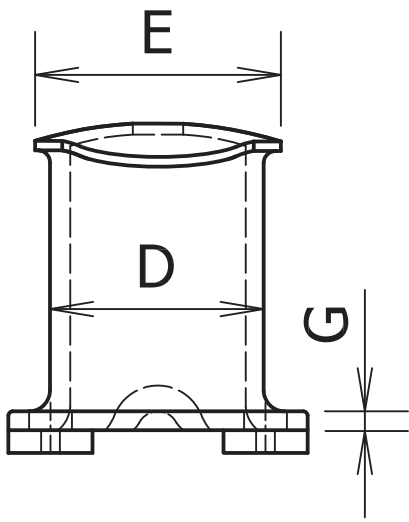
Part No.	SIGN TON	I BODY											2 ANCHOR BOLT					
		A	B	C	D	E	F	G	H	I	J	K	T	φD	L	T2	W	QTY
WBX-01	5	360		170	150	30	90	120	270	45		300	20	M20	450	16	80	4
WBX-02	10	480		210	200	40	110	160	360	60		400	20	M27	600	22	108	4
WBX-03	15	600		250	250	50	130	200	450	75		500	20	M33	700	25	132	4
WBX-04	25	720		290	300	65	160	240	540	90		600	21	M42	850	35	168	4

Part No.	SIGN TON	I BODY											2 ANCHOR BOLT					
		A	B	C	D	E	F	G	H	I	J	K	T	φD	L	T2	W	QTY
WBX-01	35	720	810	290	300	65	160	240	650	360	420	600	25	M42	850	35	168	6
WBX-02	50	840	945	330	350	70	170	280	770	420	490	700	29	M48	1000	40	192	6
WBX-03	70	1000		370	400	90	210	320	920	500	560	800	33	M56	1150	45	225	6
WBX-04	100	1200	1365	410	450	95	220	360	1150	600	630	900	39	M64	1300	55	256	6



Double Bitt B Type





Pull Tonnage	Type	A	B	C	D	E	F	G	H	I	A
YSS-01	DBB1-30	680	320	400	160	205	230	50	320	55	6
YSS-02	DBB1-40	870	400	500	200	250	270	60	380	65	8
YSS-03	DBB1-60	1060	450	630	250	310	340	70	470	85	8
YSS-04	DBB1-80	1330	520	800	320	390	450	80	600	100	8
YSS-05	DBB1-100	1500	600	890	360	440	480	90	650	115	10
YSS-06	DBB1-120	1680	650	1000	400	490	560	90	730	130	10
YSS-07	DBB1-150	1890	720	1130	450	540	640	100	830	140	10
YSS-08	DBB1-180	2110	780	1250	500	600	700	100	900	160	10



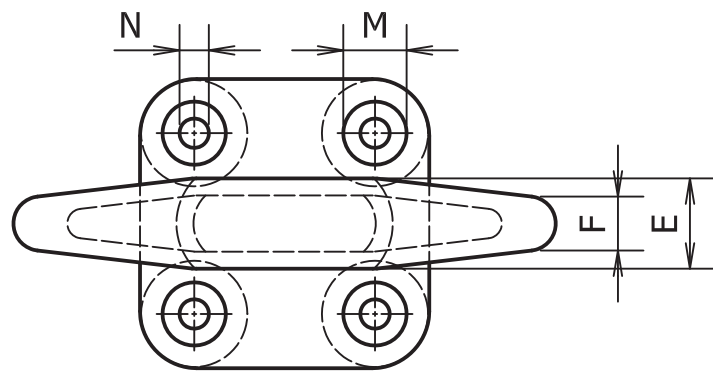
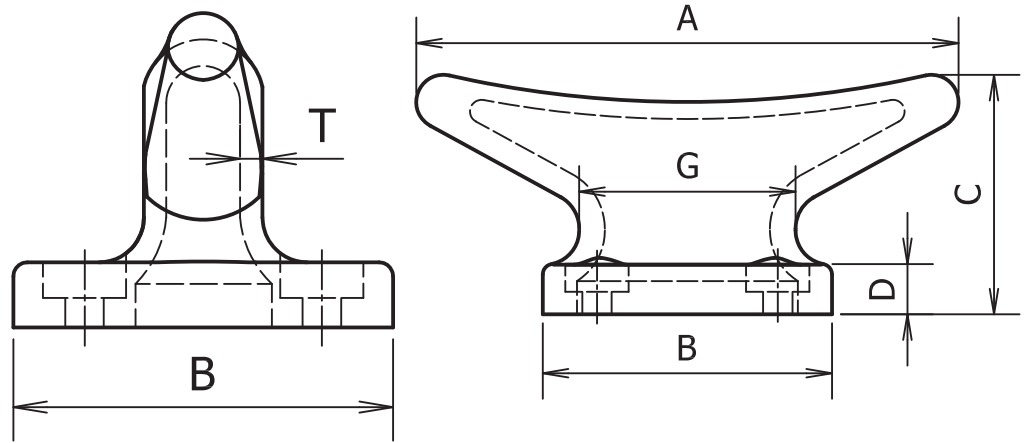
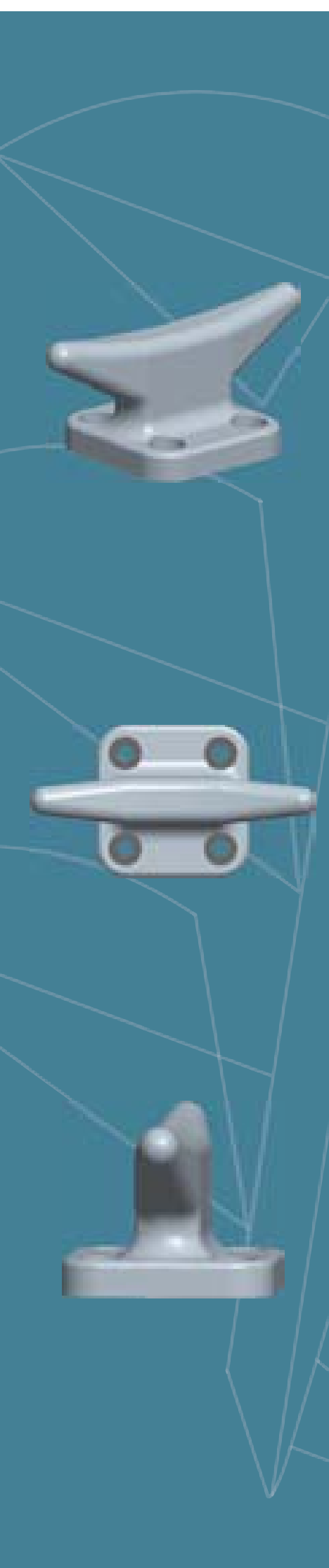


Cleat A Type



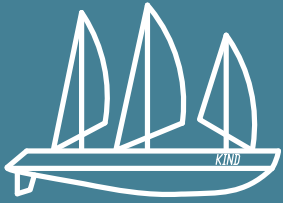
Load Angle Recommendations





MODEL NO.	PART NO.	SIZE	A	B	C	D	E	F	T	M	N	WT.(IBS.)
XYJ-01	XYJ-01	30	14	12	23/4	5	11/2	1	3 1/2	15/8	81	

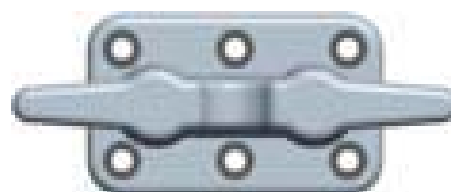


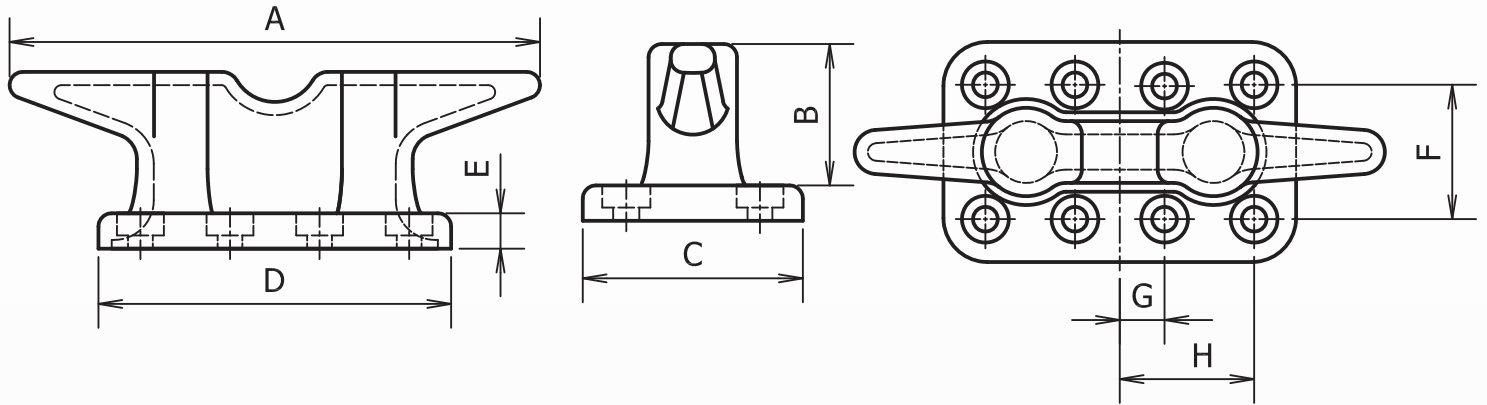


Cleat B Type



Load Angle Recommendations

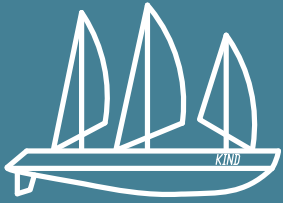




Cleats 1					
Metric Dimensions (mm)	YJX 24	YJX 30	YJX 36	YJX 42	YJX 54
A	610	762	914	1067	1371
B	159	178	203	229	292
C	216	267	305	305	406
D	406	508	610	660	838
E	44	51	51	51	64
F	140	178	209	216	279
G	-	-	-	95	121
H	165	203	254	285	362
Bolt Size	M20	M24	M24	M24	M30
Bolt Length	300	460	460	460	460
Qty	6	6	6	8	8

Cleats 1					
Metric Dimensions (mm)	YJX 24	YJX 30	YJX 36	YJX 42	YJX 54
A	24	30	36	42	54
B	6-1/4	7	8	9	11-1/2
C	8-1/2	10-1/2	12	12	16
D	16	20	24	26	33
E	8-1/2	10-1/2	12	12	16
F	5-1/2	7		8-1/2	11
G	-	-	-	3-3/4	4-3/4
H	6-1/2	8	10	11-1/4	14-1/4
Bolt Size	3/4	1	1	1	1-1/8
Bolt Length	12	18	18	18	18
Qty	6	6	6	8	8

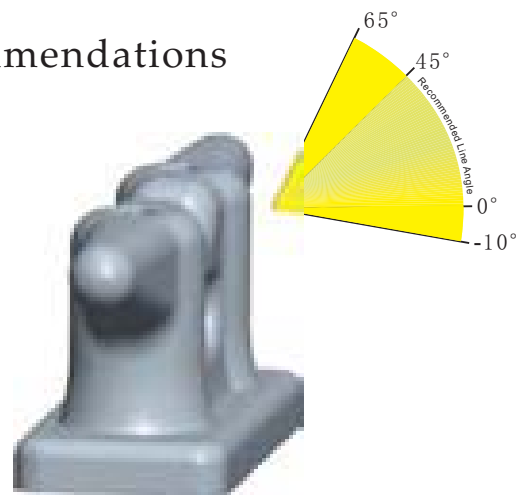


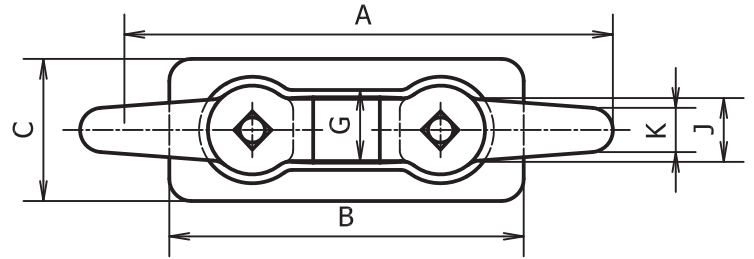
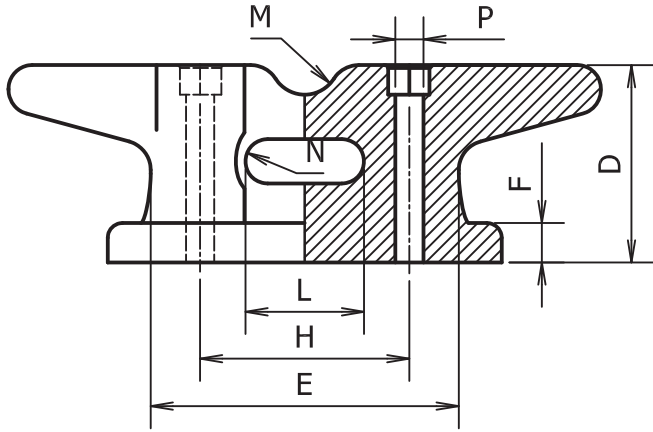
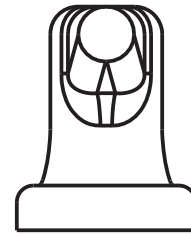
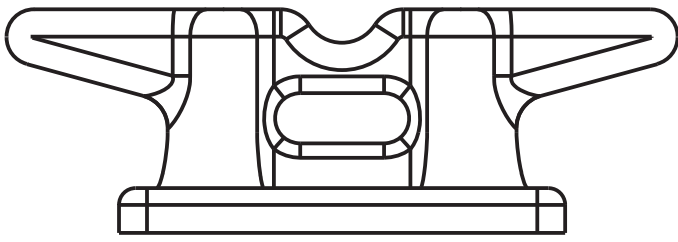


Cleat C Type



Load Angle Recommendations





DIIMENSIONS IN INCHES

MODEL NO.	A	B	C	D	E	F	G	N	H	J	K	L	M	P
YJT-01	16	9-1/2	3-5/8	4-1/8	8	5/8	2	1/2	5-1/4	1-3/4	7/8	2-1/2	3/4	3/4
YJT-02	20	11	4-1/2	5-3/8	10	3/4	2-1/2	3/4	6-5/8	1-1/4	1-1/8	3-1/4	7/8	7/8
YJT-03	24	13-1/2	5-3/8	6-3/8	12	7/8	3	1	8	2-3/4	1-3/8	4	1	1
YJT-04	27	15	6	7-3/8	13-1/2	1	3-3/8	1-1/4	9	3-1/8	1-9/16	4-1/2	1-1/8	1-1/8
YJT-05	30	17	6-3/4	8	15	1-1/8	3-3/4	1-1/2	10	3-1/2	1-3/4	5	1-1/4	1-1/4
YJT-06	33	19	7-5/8	9	16-1/2	1-1/4	4-7/8	1-3/4	11	3-3/4	1-7/8	5-1/2	1-3/8	1-3/8
YJT-07	36	21	8	9-7/8	18	1-3/8	4-1/2	2	12	4	2	6	1-1/2	1-1/2
YJT-08	42	24	9-3/8	11-5/8	21	1-1/2	5-1/4	2-1/4	14	4-3/4	2-3/8	7	1-3/4	1-3/4
YJT-09	48	27	10-3/4	13-1/8	24	1-5/8	6	2-1/2	16	5-1/2	2-3/4	8	2	2
YJT-10	54	30	12	14-3/4	27	1-3/4	6-3/4	2-3/4	18	6	3	9	2-1/4	2-1/4





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1. Axe Propeller/
Schraubenmutter Anode



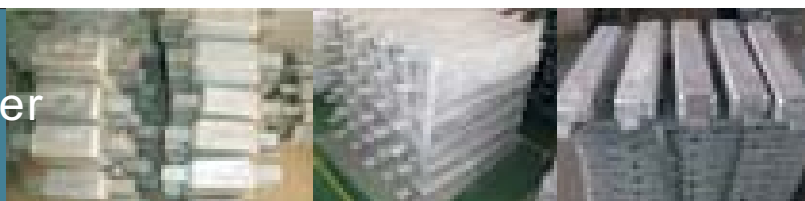
2. Ogive Axe Propeller



3. Anodes For Bolt Mounting



4. Zine Spelter



5. Aluminium Anode



6. Magnesium Anode





All carbon steel anchors and associated nuts and plate washers are supplied hot dip galvanized to ASTM A123 or A153

standards as required

Item	Standard Grades	ISO Grades
Anchors Bolts	ASTM F1554 Gr.105 ASTM A325	ISO 898 Gr.8.8 BS 3692 Gr.8.8
Nuts	ASTM A563 Gr.DH	ISO Gr.8
Washers	ASTM F436	ISO 887
Plate Washers	ASTM A36	ISO 630

Bollard Selection

Design

Specification to operate the order, the client have to provide confirmation drawing, our company didn't offer the design certification of drawing.

The pictures and information of samples are referenced to our customers. It proofs that we have many years mature experience to produce similar production.

Material

bollards are typically manufactured using the sand casting method with the materials of choice

being either cast steel or ductile iron.

Some valid technical characteristics that may influence the choice of steel versus iron follow.

The material of bollard : 1. Cast Steel 2. Ductile Cast Iron.

The following chart is the advantages and disadvantages.

	advantages	disadvantages
Ductile cast iron (spheroidal graphite)	Lowest service life cost High strength Good impact resistance High corrosion resistance	Foundry technique parameters should be required strict control
Cast steel	High strength Good impact resistance Good cost per weight	Regular maintenance to prevent corrosion

Material Specifications

Cast Steel ASTM Specifications

ASTM Grade	Tensile Strength Min Ksi(MPa)	Yield Strength Min Ksi(MPa)	Elongation In 2 in.or50mm,Min%	Reduction of Area Min.%
A27Gr.65-35	65(450)	35(240)	24	35
A27Gr.70-36	70(485)	36(250)	22	30
A148Gr.80-40	80(550)	40(275)	22	35

Cast Steel ISO Specifications

ISO Grade	Tensile Strength Min Ksi(MPa)	Yield Strength Min Ksi(MPa)	Elongation In 2 in.or50mm,Min%	Reduction of Area Min.%
3755Gr.230-450	65(450)	33(230)	22	31
3755Gr.270-480	70(480)	39(270)	18	25
3755Gr.340-550	80(550)	40(275)	15	21

Ductile Iron ASTM Specifications

ASTM Grade	Tensile Strength Min Ksi(MPa)	Yield Strength Min Ksi(MPa)	Elongation In 2 in.or50mm,Min%	Reduction of Area Min.%
A536Gr.65-45-12	65(450)	45(310)	12	N/A
A536Gr.80-55-06	80(550)	55(379)	6	N/A

ISO Grade	Tensile Strength Min Ksi(MPa)	Yield Strength Min Ksi(MPa)	Elongation In 2 in.or50mm,Min%	Reduction of Area Min.%
1083Gr.450-310	65(450)	45(310)	10	N/A
1083Gr.550-350	80(550)	51(350)	5	N/A

We are a professional manufacture of **Dock Equipment, Deck Fittings And Equipment, Marine Door and Hatches**

Bollard especially in casting, metal plate, welding which we have many years producing experience. the full inspection equipment provides the material inspection, mechanical property inspection, metallographic examination inspection, paint film thickness test in our factory.

The products could provide the certification of China Classification society

(C.C.S). If the customer requests to provide other authentication, such as A.B.S, L.R, D.N.V can also assist with.

Manufacturing Facility



1. Impact Test
2. tensile testing machine
3. paint density meter
4. chemistry analyzer
5. chemistry analyzer
6. tapping analysis.
7. analytical balance
8. metallographic test
9. Rockwell hardness
10. Spectrometer purchased



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