HORN-P BOLLARD DATA SHEET

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Rev.	Date	Description	Prepared	Checked	Approved
0	27/12/2013	First Issue	BFA	DBL	GEB
1	12/03/2015	General Revision	BFA	DBL	GEB
2	29/04/2015	General Revision	BFA		GEB

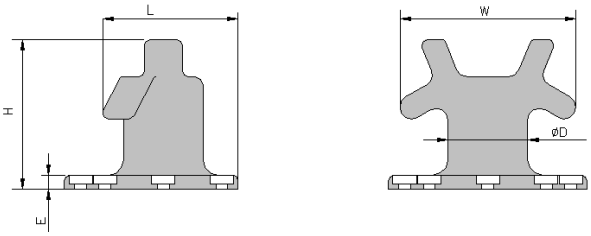
1.BOLLARD HORN-P

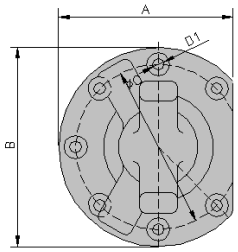
High quality casting material

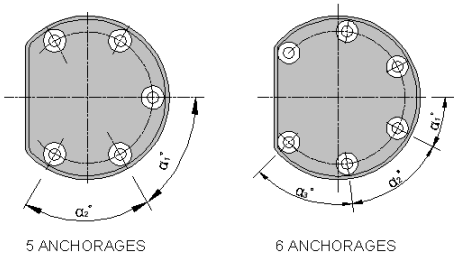
Strong and durable design

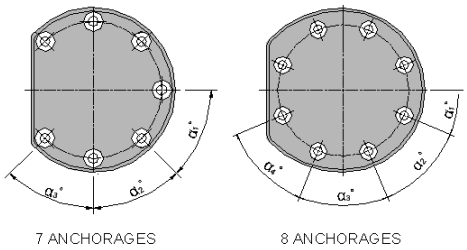
Low maintenance

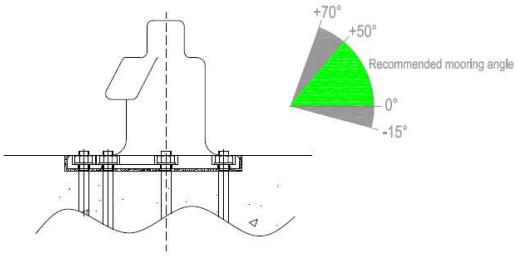
Large mooring range angle

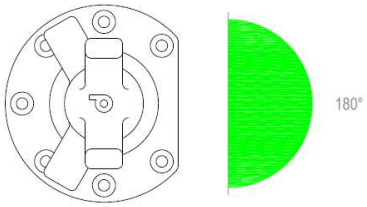












Bollard summary		
Type:	HORN-P	
Safety Work Load:	See Table Below	
Mooring Range:	Vertical: -15º to +70º	
	Horizontal: 180º	
Structure		
Material:	Ductile Iron	Cast steel
Quality:	ASTM A-536. GRADE 80-55-06 **	BS 3100. Gr A 5
Properties	Yield Strength : >379 MPa	Yield Strength : >370 MPa
	Tensile Strength: >552 MPa	Tensile Strength: >620 MPa
	Elongation: > 6 %	Elongation: > 13 %
Anticorrosive Treatment		
Treatment:	Pianted	
Scheme:	Abrasive Blasting. Degree of cleanliness Sa 2 ½ (ISO 8501.1) Surface roughness of 30-75µ (EN ISO 8503)	
	2 Coats of epoxy polyamide HEMPADUR 45143**	
Dry Film Thickness:	≥ 320 µ	
Colour:	Black, RAL 9005	
Quality Control		
Material Certificate:	3.1,Acc EN 10204	

Anchorages summary		
Type:	New Concrete/Old Concrete/Through	
Metric:	See Table Below	
Structure		
Material:	Steel	
Quality:	C45E. EN10083 **	
Properties	Yield Strength : ≥ 305 MPa	
	Tensile Strength: 580 MPa	
	Elongation: ≥ 16 %	
Anticorrosive Treatment		
Treatment:	Hot Dip Galvanized, Acc ISO 1461	Without anticorrosive treatment
Thickness:	≥ 85 µ	
Quality Control		
Material Certificate:	3.1,Acc EN 10204	

** Or equivalents

Dimension (mm)		Bollard Capacity (Tn)								
		15	**30**	**50**	**75**	**100**	**150**	**200**	**250**	**300**
Weight(kg):		45	75	168	240	310	515	870	1255	1720
A:		395	425	575	660	744	878	1113	1280	1475
B:		450	490	650	750	850	1020	1150	1325	1520
C:		360	380	530	610	705	830	954	1100	1260
C1:		60º	60º	60º	55º	45º	45º	45º	45º	45º
D		165	195	270	310	340	390	440	500	580
D1:		32	38	45	50	53	68	74	76	85
E:		28	36	50	55	60	70	80	85	90
H:		314	380	526	590	640	715	800	930	1060
L:		295	327	450	530	578	684	890	1000	1160
W:		364	430	596	684	750	860	970	1100	1276
Anchorages										
Metric:		M24	M30	M39	M42	M45	M56	M60	M64	M72
New concrete	**Length (mm):**	≥450	≥500	≥550	≥600	≥650	≥700	≥750	≥800	≥850
	Length Embedded(mm):	405	445	485	555	575	605	645	685	725
	Weight(kg):	2.3	4.6	8	12	13	22	29	38	45
Old concrete	**Length (mm):**	≥450	≥500	≥550	≥630	≥650	≥790	≥860	≥980	≥1080
	Length Embedded(mm):	405	445	485	555	575	695	755	865	955
	Weight(kg):	1.8	3.3	5.5	8	9	17	22	28	38
Number of anchorages:		5	5	5	6	7	7	8	8	8
α1:		60º	60º	60º	27.5º	45º	45º	22º	22º	22º
α2:		60º	60º	60º	55º	45º	45º	45º	45º	45º
α3:		-	-	-	55º	45º	45º	45º	45º	45º
α4:		-	-	-	-	-	-	45º	45º	45º