

**Do It Right The First Time, Every
Time And On Time**



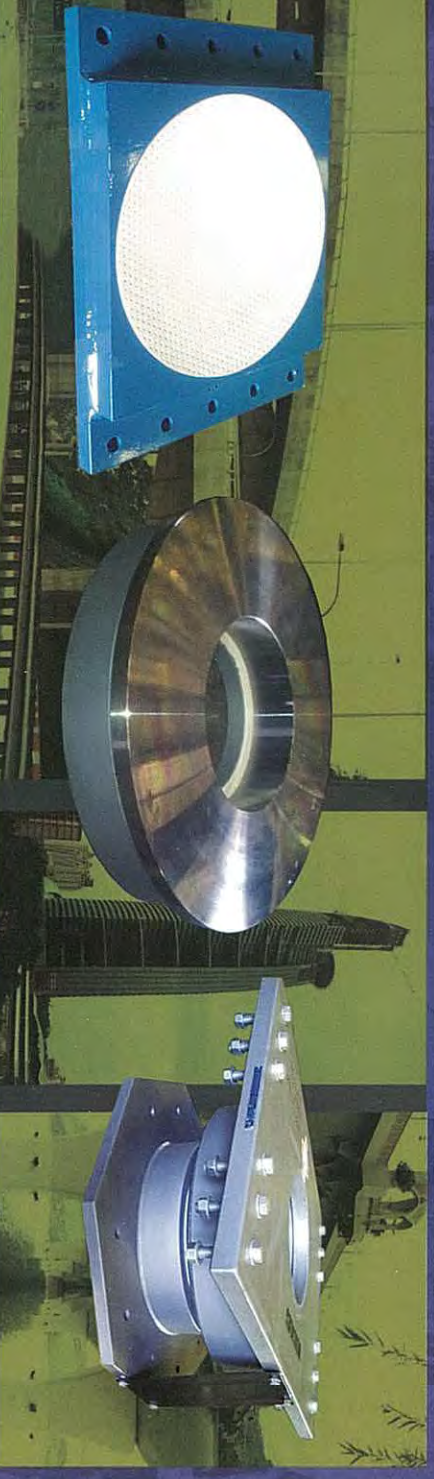
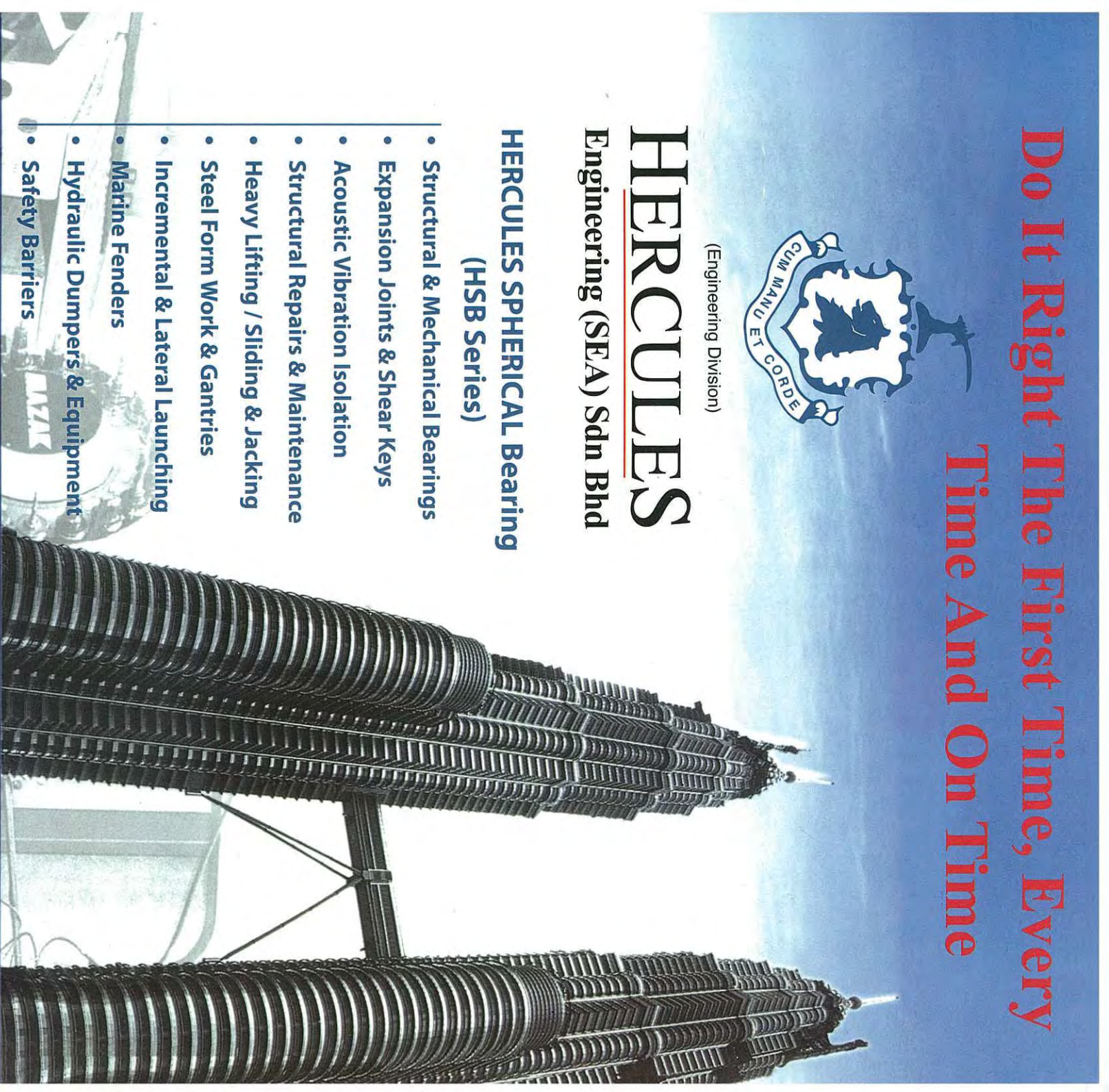
(Engineering Division)

HERCULES

Engineering (SEA) Sdn Bhd

HERCULES SPHERICAL Bearing (HSB Series)

- Structural & Mechanical Bearings
- Expansion Joints & Shear Keys
- Acoustic Vibration Isolation
- Structural Repairs & Maintenance
- Heavy Lifting / Sliding & Jacking
- Steel Form Work & Gantries
- Incremental & Lateral Launching
- Marine Fenders
- Hydraulic Dumpers & Equipment
- Safety Barriers



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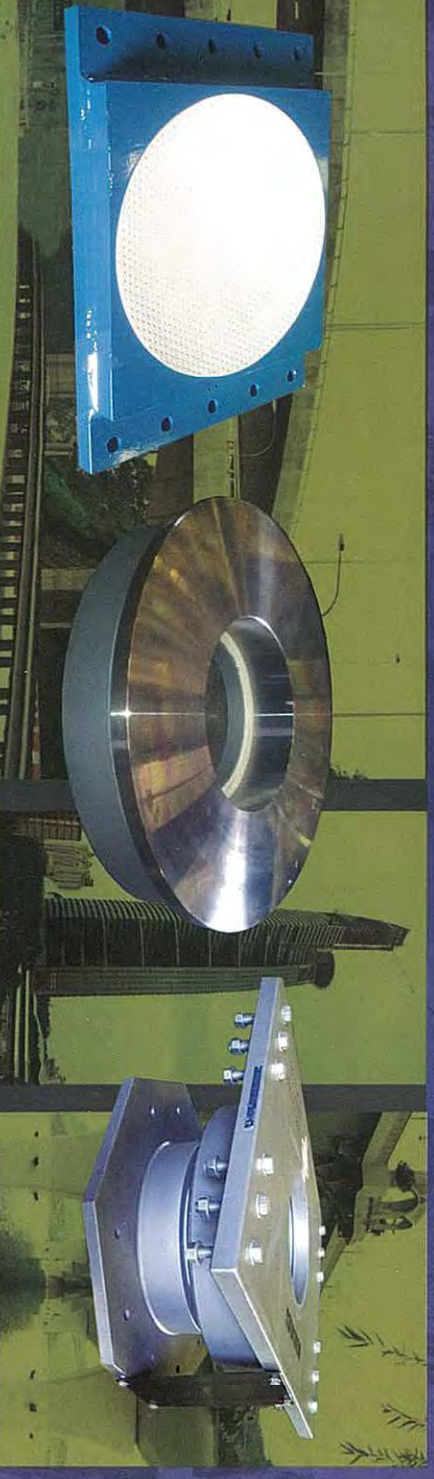
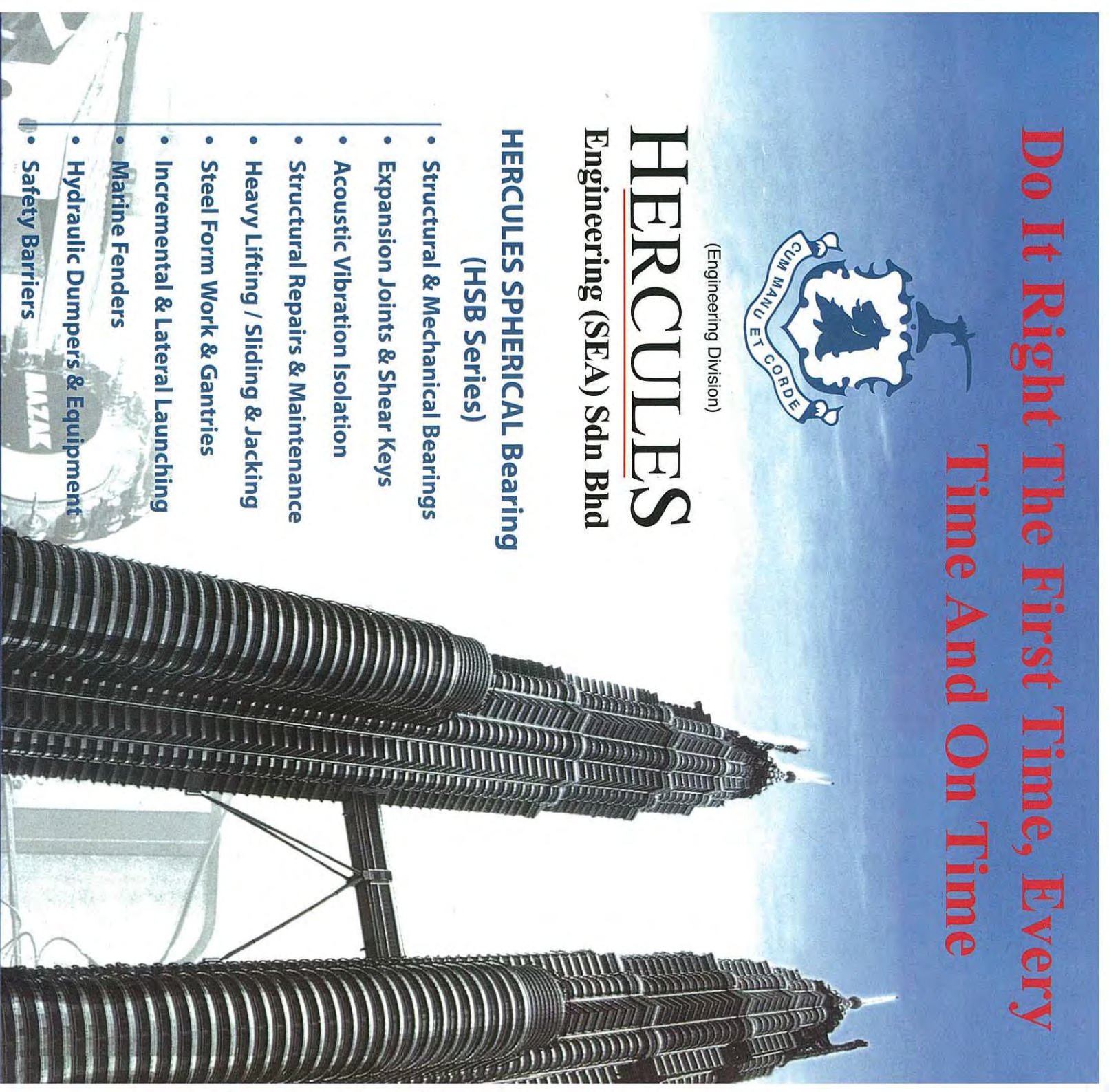
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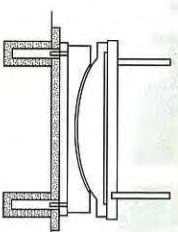


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HERCULES SPHERICAL BEARINGS (HSB) SERIES

ISO 9001:2008

Structural Spherical Bearings



INTRODUCTION

The **HERCULES** Structural Spherical Bridge Bearings are designed according to BS5400, EN1337 or AASHTO as per project specifications. The **HERCULES** Spherical Bearings typically consists of concave & convex interfaces which accommodate large rotation with very little resistance to the application of moment. The spherical interface shall consist of stainless steel & high compressive & low friction PTFE or special modified polymers. Spherical bearings can be incorporated with top sliding plates & guides to accommodate horizontal movement in one or all direction. Therefore, the spherical bearings can further be categorized as Fixed, Guided & Free Sliding.

MATERIAL SPECIFICATION

The Spherical Bearings shall consist of the following components which the materials comply with the ASTM/EN1337 or other international specification. The structural steel, stainless steel & Polytetrafluorethylene (PTFE) shall comply with following materials specification or otherwise to comply with special project specifications;

Material Specification Table 1:-

Material	Specification
Structural Steel	ASTM A588M, ASTM A572M Grade 345, ASTM A 36M
Stainless Steel	ASTM A 240 Type 304 / Type 316
Polytetrafluorethylene (PTFE)	100% virgin & conform to AASHTO LRFD/EN1337
Bolts & Nuts	AASHTO M164 & AASHTO M298 (Galvanising)

DESIGN CONCEPT & CALCULATIONS



The detail design concept & calculations show the design capacities of bearing components and the recommended max permissible bearing pressure on concrete structures. We highlight the bearing components as follows:

Curved Sliding Surfaces

The hard mating sliding surface will be welded all round [T.I.G.] against a backing plate to accommodate translation and sliding across a dimpled PTFE surface.

(a) Stainless steel

Stainless steel sliding surface shall completely cover the PTFE surface in all operating positions of the bearings.

(b) PTFE Sliding Surfaces

PTFE sliding surfaces that are designed to max average stress as per project specification.

Rotation

Note that the max design rotation capacity to be designed as per the design parameters in the Consultant shop drawings. Please advise if it is otherwise.



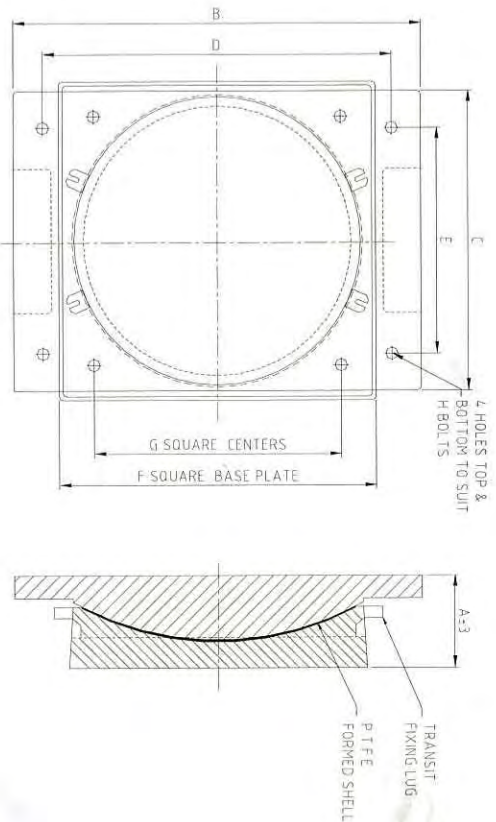
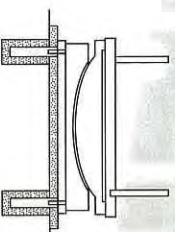
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HERCULES SPHERICAL BEARINGS (HSB) SERIES

ISO9001:2008

Structural Spherical Bearings
HERCULES FIXED TYPE (FX)
STRUCTURAL SPHERICAL BEARINGS



• **Schematic Layout ONLY**

BEARING TYPE	PRINCIPAL DIMENSIONS (mm)								WORKING STRESS (kN)		SERVICEABILITY LIMIT STATE		ULTIMATE LIMIT STATE	
	A	B	C	D	E	F	G	H	MAX. VERTICAL LOAD	MAX. HORIZONTAL LOAD	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL
HSB-FX 70	70	400	215	340	145	230	180	M12	700	65	700	65	900	110
HSB-FX 150	100	475	305	410	235	305	240	M20	1500	150	1500	150	2000	210
HSB-FX 250	105	510	360	435	280	375	300	M20	2500	250	2500	250	3000	300
HSB-FX 300	115	570	400	490	310	420	335	M20	3000	280	3000	280	3800	400
HSB-FX 350	130	600	440	515	335	465	365	M24	3500	300	3500	300	4500	500
HSB-FX 400	140	660	485	565	365	500	400	M24	4000	360	4000	360	5000	600
HSB-FX 500	145	685	510	585	375	535	415	M30	5000	450	5000	450	6300	650
HSB-FX 600	155	760	565	640	430	600	465	M30	6000	500	6000	500	7500	710
HSB-FX 750	180	930	660	795	500	705	550	M30	7500	600	7500	600	9500	900
HSB-FX 1000	195	970	710	830	535	755	585	M30	10000	750	10000	750	12500	1100
HSB-FX 1200	215	1080	790	925	585	840	655	M30	12000	900	12000	900	15000	1300

- The dimensions given are only for reference. Bearings can be custom designed to suit the requirements of the projects. Separate top & bottom attachment plates can be incorporated accordingly.

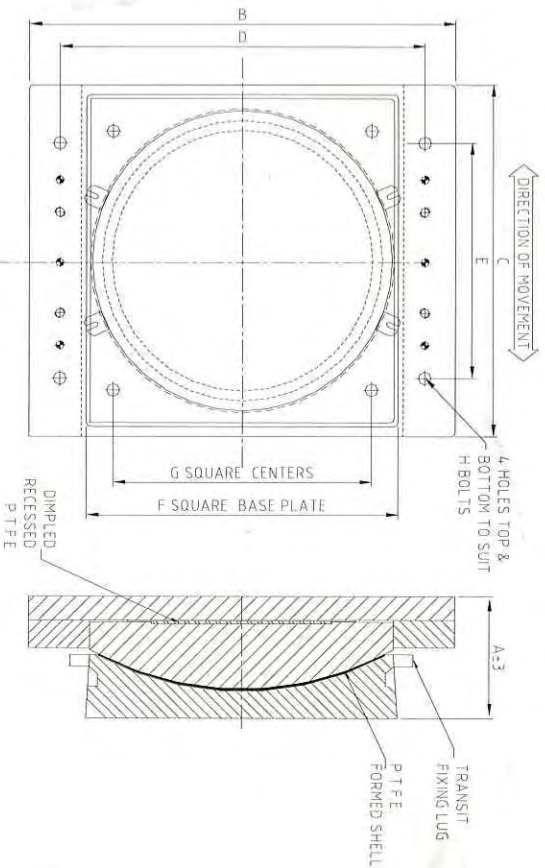
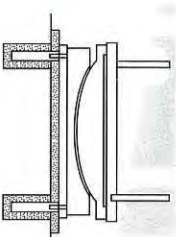
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Structural Spherical Bearings
 HERCULES GUIDED TYPE (SGL/SGT)
 STRUCTURAL SPHERICAL BEARING



• Schematic Layout ONLY

BEARING TYPE	PRINCIPAL DIMENSIONS (mm)								WORKING STRESS (kN)		SERVICEABILITY LIMIT STATE		ULTIMATE LIMIT STATE	
	A	B	C	D	E	F	G	H	MAX. VERTICAL	MAX. HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL
HSB-SGL 70	100	350	270	290	190	220	180	M12	700	65	700	65	900	110
HSB-SGL 150	130	495	360	430	280	305	240	M20	1500	150	1500	150	2000	210
HSB-SGL 250	135	540	420	475	340	375	300	M20	2500	250	2500	250	3000	300
HSB-SGL 300	145	635	460	545	360	420	335	M24	3000	280	3000	280	3800	400
HSB-SGL 350	155	680	480	590	400	465	365	M24	3500	300	3500	300	4500	500
HSB-SGL 400	170	715	540	630	460	500	400	M24	4000	360	4000	360	5000	600
HSB-SGL 500	175	750	570	660	470	535	415	M30	5000	450	5000	450	6300	660
HSB-SGL 600	190	815	625	725	525	600	465	M30	6000	500	6000	500	7500	710
HSB-SGL 750	225	920	720	830	620	705	550	M30	7500	600	7500	600	9500	900
HSB-SGL 1000	240	970	770	880	670	735	585	M30	10000	750	10000	750	12500	1100
HSB-SGL 1200	285	1055	860	965	760	840	655	M30	12000	900	12000	900	15000	1300

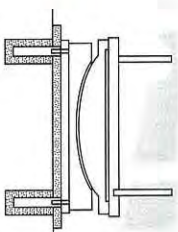
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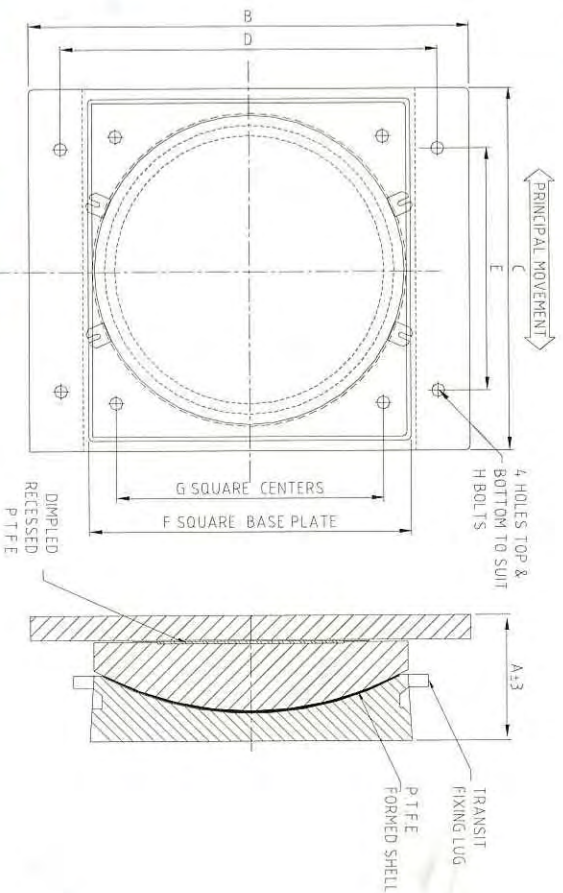
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HERCULES SPHERICAL BEARINGS (HSB) SERIES

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Structural Spherical Bearings HERCULES FREE TYPE (FF) STRUCTURAL SPHERICAL BEARING



• Schematic Layout ONLY

BEARING TYPE	PRINCIPAL DIMENSIONS (mm)								WORKING STRESS (kN)		SERVICEABILITY LIMIT STATE		ULTIMATE LIMIT STATE	
	A	B	C	D	E	F	G	H	MAX. VERTICAL	MAX. HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL
HSB-FF 70	90	340	265	280	205	230	175	M12	700	-	700	-	900	-
HSB-FF 150	110	395	325	335	285	305	240	M20	1500	-	1500	-	2000	-
HSB-FF 250	120	485	385	410	315	375	300	M20	2500	-	2500	-	3000	-
HSB-FF 300	125	555	420	495	360	420	335	M20	3000	-	3000	-	3800	-
HSB-FF 350	140	620	460	560	400	465	365	M20	3500	-	3500	-	4500	-
HSB-FF 400	145	675	490	615	430	500	400	M20	4000	-	4000	-	5000	-
HSB-FF 500	150	710	520	650	480	535	415	M20	5000	-	5000	-	6300	-
HSB-FF 600	180	740	575	690	515	600	465	M20	6000	-	6000	-	7500	-
HSB-FF 750	190	815	660	755	600	705	550	M20	7500	-	7500	-	9500	-
HSB-FF 1000	200	910	720	840	650	755	585	M20	10000	-	10000	-	12500	-
HSB-FF 1200	220	1000	800	925	725	840	655	M20	12000	-	12000	-	15000	-

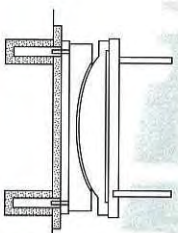
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Structural Spherical Bearings

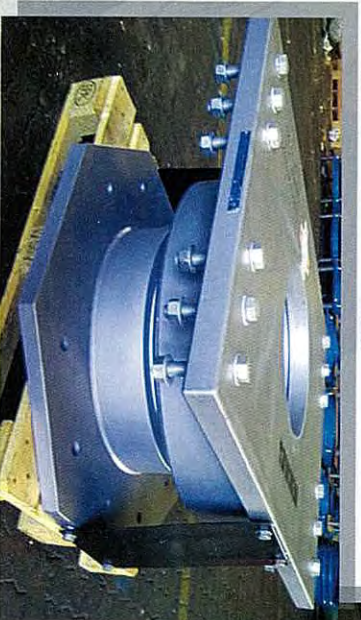


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GUIDED SPHERICAL BEARINGS



FIXED SPHERICAL BEARINGS



SPECIAL DESIGNED SPHERICAL BEARINGS WITH UPLIFT RESTRAINT



CONCAVE PLATE WITH STAINLESS STEEL



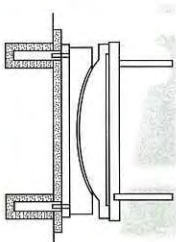
HERCULES STRUCTURAL SPHERICAL BEARINGS



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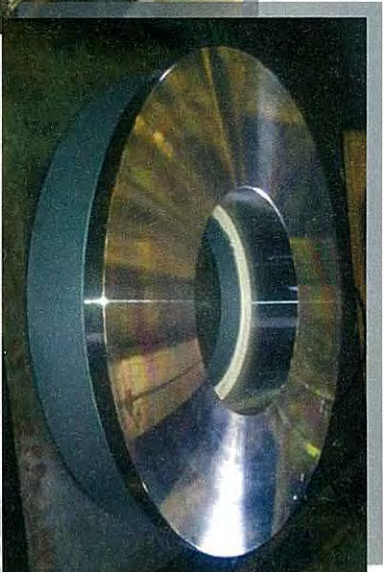
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Structural Spherical Bearings

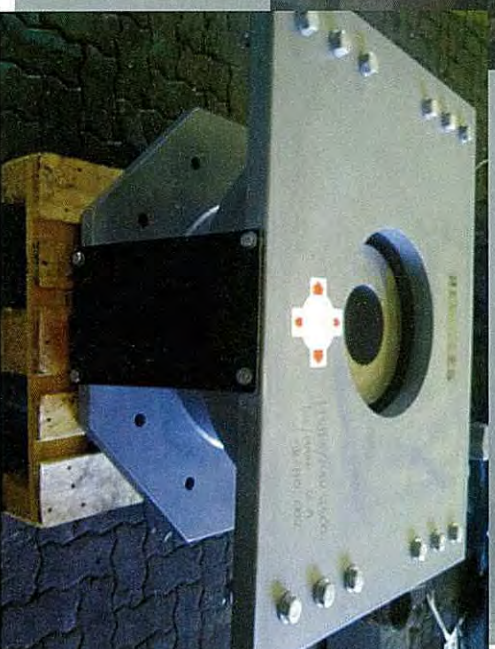


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