



Structural bearings

LASTO[®]BLOCK elastomeric bearings

Selection of bearings

mageba LASTO[®]BLOCK elastomeric bearings accommodate the following demands:

- Vertical loads
- Transient external horizontal forces
- Horizontal movements in all directions (by shear deformation)
- Rotation about all axes

In order to determine bearing dimensions, the following parameters must be known:

- Vertical loads: N_{dmax} and N_{dmin}
- Displacements: v_{xyd}
- Rotations: α_{ab}
- Bearing shape (round or rectangular) and maximum dimensions (if space is limited)
- Contact surfaces (steel or concrete)

Basis of design

The following verifications must be performed for elastomeric bearings:

- Maximum strain (strain resulting from vertical loading, shear strain from horizontal displacement, and strain from rotation)
- Thickness of internal and external reinforcing plates
- Limiting condition for rotation
- Stability in terms of sliding

The load bearing capacity of a bearing depends on several factors. The suitability of a bearing must be verified on a case by case basis, with consideration of all relevant factors.

Load tables according to AS5100.4

mageba provides elastomeric bearings according to standard sizes as given in Appendix A of AS5100.4, which are shown on the following pages. Tailor-made designs to meet specific customer requirements can be provided upon request.

Support

Our product specialists are always ready to advise you in selecting the optimal solution for your project, and to provide you with quotations for supply.

You can also find further information at mageba-group.com and in the relevant product brochure





Rectangular Plan

Plan Size	Number of internal rubber layers	Internal rubber thickness	Overall height	Calculated compressive stiffness at zero shear	Mean shear stiffness	Calculated rotational stiffness	Shear deflection capacity	Rated load at zero rotation		Rated load at max. rotation	
								At max. shear	At zero shear	At max. shear	At zero shear
[mm]		[mm]	[mm]	[10 ³ kN/m]	[10 ³ kN/m]	[kNm/rad]	[mm]	[kN]	[kN]	[kN]	[kN]
230 x 150	2	6	35	307	1.19	147	10.0	360	451	204	253
	4		57	189	0.74	90	16.0	343	420	197	251
	6		79	136	0.54	65	22.0	257	306	190	250
	8		101	107	0.43	51	27.6	192	240	185	240
	1	9	27	229	1.40	108	8.5	246	312	158	196
	2		41	133	0.92	62	13.0	237	312	148	187
	4		69	72	0.54	34	22.0	171	204	137	181
	6		97	50	0.38	23	27.6	116	145	116	145
230 x 200	2	6	35	580	1.59	605	10.0	597	615	311	381
	4		57	357	0.99	371	16.0	576	615	303	378
	6		79	258	0.72	268	22.0	556	615	296	376
	9		112	182	0.51	189	31.0	402	481	287	375
	1	9	27	440	1.87	441	8.5	405	504	246	301
	2		41	257	1.22	255	13.0	394	504	231	287
	4		69	140	0.72	138	22.0	374	452	217	277
	6		97	96	0.51	95	31.0	268	321	207	273
8	125	73	0.40	72	37.6	199	248	199	248		
350 x 170	2	6	35	775	2.05	464	10.0	801	801	457	564
	4		57	477	1.28	285	16.0	786	801	443	559
	6		79	344	0.93	205	22.0	681	791	431	557
	9		112	243	0.66	145	31.0	451	562	413	556
	2	9	41	344	1.58	196	13.0	539	700	336	422
	4		69	187	0.93	106	22.0	454	528	313	408
	6		97	129	0.66	73	31.0	301	374	297	374
	8		129	96	0.51	96	37.6	268	321	207	273
350 x 280	2	9	45	755	2.25	1 430	15.0	1 194	1 287	639	785
	4		73	464	1.41	877	24.0	1 151	1 287	622	779
	6		101	335	1.02	633	33.0	1 097	1 256	606	776
	8		129	262	0.81	495	42.0	828	987	592	774
	10		157	215	0.66	406	51.0	653	813	577	773
	2	12	51	433	1.88	794	18.0	890	1 138	522	647
	4		85	243	1.13	442	30.0	846	1 036	492	628
	6		119	168	0.81	307	42.0	621	740	472	620
	8		153	129	0.63	235	52.0	461	576	459	576
	2	15	57	257	1.61	466	21.0	709	917	430	538
	4		97	137	0.94	248	36.0	595	691	399	518
	6		137	94	0.66	169	51.0	392	488	378	488
480 x 250	2	9	45	953	2.76	1 216	15.0	1 539	1 587	862	1 065
	4		73	586	1.73	746	24.0	1 475	1 587	836	1 057
	6		101	423	1.25	538	33.0	1 237	1 445	812	1 054
	8		129	331	0.99	421	42.0	928	1 135	789	1 052
	2	12	51	548	2.30	676	18.0	1 145	1 478	700	875
	4		85	307	1.38	377	30.0	1 036	1 192	658	850
	6		119	213	0.99	261	42.0	696	851	626	840
	2	15	57	326	1.97	398	21.0	909	1 190	575	726
	4		97	174	1.15	212	36.0	670	795	531	701
	6		137	119	0.81	144	46.0	449	561	449	561



Rectangular Plan

Plan Size	Number of internal rubber layers	Internal rubber thickness	Overall height	Calculated compressive stiffness at zero shear	Mean shear stiffness	Calculated rotational stiffness	Shear deflection capacity	Rated load at zero rotation		Rated load at max. rotation	
								At max. shear	At zero shear	At max. shear	At zero shear
[mm]		[mm]	[mm]	[10 ³ kN/m]	[10 ³ kN/m]	[kNm/rad]	[mm]	[kN]	[kN]	[kN]	[kN]
480 x 300	3	9	59	1 115	2.55	2 308	19.5	1 932	1 932	1 135	1 403
	5		87	755	1.74	1 561	28.5	1 932	1 932	1 108	1 396
	7		115	571	1.32	1 179	37.5	1 852	1 932	1 084	1 393
	9		143	459	1.07	947	46.5	1 438	1 725	1 060	1 391
	2	12	51	855	2.76	1 689	18.0	1 601	1 932	946	1 171
	4		85	480	1.66	942	30.0	1 528	1 932	896	1 138
	6		119	334	1.18	653	42.0	1 217	1 432	861	1 124
	8		153	256	0.92	500	54.0	899	1 114	830	1 114
	2	15	57	514	2.37	991	21.0	1 273	1 638	782	976
	4		97	275	1.38	527	36.0	1 165	1 337	730	942
6	137		188	0.97	359	51.0	772	944	693	928	
4	73		1 484	2.62	5 860	24.0	2 484	2 484	1 570	1 933	
480 x 380	6	9	101	1 072	1.91	4 228	33.0	2 484	2 484	1 544	1 927
	8		129	840	1.50	3 307	42.0	2 484	2 484	1 520	1 923
	10		157	690	1.23	2 715	51.0	2 484	2 484	1 496	1 921
	3		68	1 040	2.62	3 836	24.0	2 377	2 484	1 310	1 618
	5	12	102	667	1.75	2 448	36.0	2 292	2 484	1 262	1 589
	7		136	491	1.31	1 797	48.0	2 083	2 404	1 226	1 575
	10		187	352	0.95	1 285	66.0	1 428	1 748	1 178	1 564
	3		77	616	2.21	2 185	28.5	1 883	2 434	1 086	1 355
	5	15	117	385	1.45	1 357	43.5	1 798	2 122	1 036	1 325
	7		157	279	1.08	984	58.5	1 321	1 578	998	1 311
9	197		220	0.86	772	72.0	1 005	1 256	970	1 256	
5	87		1 293	2.40	3 291	28.5	2 697	2 697	1 766	2 210	
600 x 330	7	9	115	978	1.82	2 486	37.5	2 697	2 697	1 732	2 204
	9		143	786	1.47	1 998	46.5	2 630	2 697	1 699	2 201
	11		171	657	1.23	1 669	55.5	2 128	2 592	1 665	2 199
	3		68	1 074	2.85	2 559	24.0	2 552	2 697	1 476	1 839
	5	12	102	689	1.90	1 632	36.0	2 445	2 697	1 417	1 807
	7		136	507	1.42	1 198	48.0	1 900	2 248	1 369	1 792
	9		170	401	1.14	947	60.0	1 450	1 799	1 326	1 783
	2		57	909	3.25	2 097	21.0	2 071	2 644	1 263	1 568
	4	15	97	488	1.90	1 116	36.0	1 963	2 398	1 183	1 514
	6		137	333	1.34	761	51.0	1 414	1 693	1 129	1 493
8	177		253	1.03	577	62.0	1 046	1 308	1 046	1 308	
3	68		2 117	3.88	11 527	24.0	3 741	3 741	2 339	2 869	
600 x 450	5	12	102	1 363	2.59	7 363	36.0	3 741	3 741	2 265	2 821
	7		136	1 005	1.94	5 409	48.0	3 741	3 741	2 211	2 797
	9		170	796	1.55	4 275	60.0	3 639	3 741	2 163	2 783
	11		204	659	1.29	3 534	72.0	2 935	3 525	2 118	2 774
	3		77	1 287	3.27	6 606	28.5	3 504	3 741	1 968	2 432
	5	15	117	806	2.14	4 106	43.5	3 373	3 741	1 888	2 382
	7		157	586	1.59	2 979	58.5	2 998	3 470	1 829	2 358
	9		197	461	1.27	2 337	73.5	2 290	2 762	1 777	2 344
	11		237	380	1.05	1 923	86.0	1 835	2 294	1 744	2 294
	3		86	822	2.82	4 072	33.0	2 897	3 734	1 676	2 088
5	18	132	506	1.83	2 497	51.0	2 765	3 317	1 599	2 043	
7		178	366	1.35	1 800	69.0	2 059	2 452	1 540	2 022	
9		224	286	1.07	1 408	86.0	1 556	1 945	1 492	1 945	



Rectangular Plan

Plan Size	Number of internal rubber layers	Internal rubber thickness	Overall height	Calculated compressive stiffness at zero shear	Mean shear stiffness	Calculated rotational stiffness	Shear deflection capacity	Rated load at zero rotation		Rated load at max. rotation	
								At max. shear	At zero shear	At max. shear	At zero shear
[mm]		[mm]	[mm]	[10 ³ kN/m]	[10 ³ kN/m]	[kNm/rad]	[mm]	[kN]	[kN]	[kN]	[kN]
600 x 600	4	15	97	1 730	3.45	19 417	36.0	5 046	5 046	2 803	3 444
	6		137	1 187	2.44	13 225	51.0	5 046	5 046	2 725	3 394
	8		177	904	1.88	10 061	66.0	5 046	5 046	2 666	3 367
	10		217	729	1.53	8 108	81.0	4 608	5 046	2 614	3 351
	13		277	566	1.20	6 279	103.5	3 443	4 191	2 542	3 335
	4	18	109	1 113	2.96	11 953	42.0	4 597	5 046	2 415	2 987
	6		155	756	2.07	8 085	60.0	4 443	5 046	2 338	2 943
	8		201	572	1.59	6 109	78.0	4 011	4 635	2 278	2 919
	10		247	460	1.29	4 909	96.0	3 142	3 766	2 224	2 905
	12		293	385	1.09	4 103	114.0	2 548	3 171	2 172	2 895



Circular Plan

Plan Size	Number of internal rubber layers	Internal rubber thickness	Overall height	Calculated compressive stiffness at zero shear	Mean shear stiffness	Calculated rotational stiffness	Shear deflection capacity	Rated load at zero rotation		Rated load at max. rotation		
								At max. shear	At zero shear	At max. shear	At zero shear	
[mm]		[mm]	[mm]	[10 ³ kN/m]	[10 ³ kN/m]	[kNm/rad]	[mm]	[kN]	[kN]	[kN]	[kN]	
240 Ø	2	6	35	641	1.56	815	10.0	612	612	314	384	
	4		57	394	0.98	500	16.0	612	612	306	380	
	6		79	285	0.71	361	22.0	612	612	299	379	
	8		101	223	0.56	282	28.0	597	612	293	378	
	10		123	183	0.46	232	34.0	485	598	287	377	
	2	9	41	286	1.20	345	13.0	441	565	238	294	
	4		69	156	0.71	187	22.0	417	565	222	283	
	6		97	107	0.50	128	31.0	362	437	212	278	
	8		125	82	0.39	98	35.8	271	339	211	276	
	10		153	66	0.32	79	35.8	221	277	216	275	
	2	12	47	141	0.98	166	16.0	328	428	183	229	
	4		81	73	0.56	86	28.0	303	363	168	220	
	6		115	50	0.39	58	35.8	203	254	164	216	
	8		149	37	0.30	44	35.8	156	196	156	196	
	330 Ø	3	9	59	564	1.51	1 370	19.5	1 181	1 191	567	701
		5		87	382	1.04	926	28.5	1 135	1 191	553	697
7		115		289	0.79	699	37.5	1 089	1 191	541	695	
10		157		211	0.58	512	50.0	805	1 006	525	694	
2		12	51	426	1.64	1 001	18.0	896	1 149	476	589	
4			85	239	0.98	558	30.0	850	1 149	448	569	
6			119	166	0.70	387	42.0	762	916	429	561	
8			153	127	0.55	296	50.0	570	713	423	557	
2		15	57	254	1.41	586	21.0	712	925	394	492	
4			97	136	0.82	312	36.0	665	855	365	471	
6			137	93	0.58	213	50.0	483	604	348	464	
400 Ø		4	9	73	860	1.81	3 108	24.0	1 701	1 701	924	1 142
	7	115		545	1.16	1 968	37.5	1 701	1 701	898	1 136	
	10	157		399	0.85	1 440	51.0	1 701	1 701	874	1 134	
	2	12	51	822	2.41	2 833	18.0	1 543	1 701	795	976	
	4		85	462	1.45	1 581	30.0	1 477	1 701	753	944	
	6		119	321	1.03	1 096	42.0	1 411	1 701	726	931	
	8		153	246	0.80	839	54.0	1 190	1 453	703	924	
	9		170	221	0.72	751	59.7	1 046	1 308	693	922	
	2	15	57	497	2.06	1 662	21.0	1 227	1 571	663	820	
	4		97	226	1.20	885	36.0	1 161	1 571	619	787	
	6		137	182	0.85	603	51.0	1 021	1 231	590	774	
	8		177	138	0.66	457	59.7	761	951	585	767	
	2		18	63	315	1.81	1 039	24.0	1 017	1 316	562	700
	4	109		164	1.03	540	42.0	950	1 246	520	670	
	6	155		111	0.72	365	59.7	698	872	492	659	



Circular Plan

Plan Size	Number of internal rubber layers	Internal rubber thickness	Overall height	Calculated compressive stiffness at zero shear	Mean shear stiffness	Calculated rotational stiffness	Shear deflection capacity	Rated load at zero rotation		Rated load at max. rotation	
								At max. shear	At zero shear	At max. shear	At zero shear
[mm]		[mm]	[mm]	[10 ³ kN/m]	[10 ³ kN/m]	[kNm/rad]	[mm]	[kN]	[kN]	[kN]	[kN]
480 Ø	4	12	85	921	2.08	4 804	30.0	2 493	2 493	1 297	1 608
	6		119	641	1.49	3 334	42.0	2 493	2 493	1 258	1 587
	8		153	492	1.16	2 553	54.0	2 472	2 493	1 226	1 575
	10		187	399	0.95	2 068	66.0	2 087	2 493	1 196	1 568
	3	15	77	704	2.19	3 526	28.5	2 148	2 493	1 109	1 376
	5		117	450	1.44	2 191	43.5	2 051	2 493	1 058	1 343
	7		157	320	1.07	1 590	58.5	1 931	2 304	1 021	1 327
	9		197	251	0.85	1 247	72.3	1 467	1 834	993	1 318
	2	18	63	646	2.60	3 173	24.0	1 821	2 321	981	1 211
	4		109	338	1.49	1 651	42.0	1 724	2 321	915	1 161
	6		155	229	1.04	1 116	60.0	1 561	1 872	874	1 142
	8		201	173	0.80	842	72.3	1 152	1 440	859	1 132
530 Ø	3	12	68	1 689	3.17	11 190	24.0	3 064	3 064	1 761	2 157
	6		119	923	1.81	6 058	42.0	3 064	3 064	1 680	2 105
	9		170	635	1.27	4 153	60.0	3 064	3 064	1 625	2 084
	12		221	484	0.98	3 160	78.0	2 628	3 064	1 575	2 074
	3	15	77	1 024	2.67	6 432	28.5	2 947	3 064	1 489	1 838
	5		117	641	1.75	4 000	43.5	2 828	3 064	1 426	1 795
	7		157	466	1.30	2 902	58.5	2 709	3 064	1 380	1 775
	9		197	367	1.04	2 278	73.5	2 263	2 771	1 341	1 763
	11		237	302	0.86	1 874	80.1	1 841	2 301	1 345	1 755
	2	18	63	947	3.17	5 797	24.0	2 493	3 064	1 322	1 625
	4		109	497	1.81	3 018	42.0	2 374	3 064	1 238	1 558
	6		155	337	1.27	2 040	60.0	2 255	2 829	1 186	1 533
8	201		255	0.98	1 541	78.0	1 752	2 176	1 144	1 520	
590 Ø	3	12	68	2 471	3.93	21 195	24.0	3 828	3 828	2 382	2 906
	6		119	1 354	2.25	11 490	42.0	3 828	3 828	2 282	2 837
	9		170	932	1.57	7 881	60.0	3 828	3 828	2 215	2 811
	12		221	711	1.21	5 997	78.0	3 828	3 828	2 156	2 797
	3	15	77	1 524	3.31	12 268	28.5	3 828	3 828	2 037	2 503
	5		117	956	2.17	7 636	43.5	3 828	3 828	1 957	2 445
	7		157	696	1.61	5 543	58.5	3 828	3 828	1 900	2 418
	9		197	547	1.28	4 350	73.5	3 614	3 828	1 852	2 402
	2	18	63	1 424	3.93	11 088	24.0	3 497	3 828	1 817	2 225
	4		109	749	2.25	5 779	42.0	3 349	3 828	1 708	2 135
	6		155	509	1.57	3 908	60.0	3 200	3 828	1 644	2 101
	8		201	385	1.21	2 952	78.0	2 804	3 395	1 591	2 083
10		247	310	0.98	2 372	89.5	2 207	2 759	1 577	2 072	
650 Ø	3	15	77	2 164	4.02	21 874	28.5	4 676	4 676	2 688	3 290
	5		117	1 360	2.63	13 626	43.5	4 676	4 676	2 589	3 216
	7		157	991	1.96	9 895	58.5	4 676	4 676	2 521	3 181
	9		197	780	1.56	7 768	73.5	4 676	4 676	2 464	3 161
	11		237	643	1.29	6 394	88.5	4 401	4 676	2 412	3 147
	3	18	86	1 411	3.47	13 604	33.0	4 650	4 676	2 329	2 867
	5		132	872	2.24	8 354	51.0	4 469	4 676	2 231	2 799
	7		178	631	1.66	6 028	69.0	4 287	4 676	2 162	2 768
9	224		494	1.32	4 715	87.0	3 744	4 543	2 103	2 750	



Circular Plan

Plan Size	Number of internal rubber layers	Internal rubber thickness	Overall height	Calculated compressive stiffness at zero shear	Mean shear stiffness	Calculated rotational stiffness	Shear deflection capacity	Rated load at zero rotation		Rated load at max. rotation	
								At max. shear	At zero shear	At max. shear	At zero shear
[mm]		[mm]	[mm]	[10 ³ kN/m]	[10 ³ kN/m]	[kNm/rad]	[mm]	[kN]	[kN]	[kN]	[kN]
750 Ø	3	18	92	2 152	4.23	28 822	36.0	6 278	6 278	3 482	4 273
	5		138	1 384	2.82	18 413	54.0	6 278	6 278	3 362	4 191
	7		184	1 020	2.12	13 528	72.0	6 278	6 278	3 276	4 151
	9		230	808	1.69	10 691	90.0	6 278	6 278	3 201	4 128
	11		276	668	1.41	8 838	108.0	5 354	6 278	3 131	4 112
	3	21	101	1 527	3.76	19 729	40.5	6 175	6 278	3 103	3 829
	5		153	962	2.48	12 352	61.5	5 932	6 278	2 975	3 741
	7		205	702	1.85	8 990	82.5	5 688	6 278	2 882	3 700
9	257		553	1.47	7 067	103.5	4 835	5 901	2 802	3 676	
810 Ø	3	18	92	2 831	4.94	45 446	36.0	7 353	7 353	4 327	5 293
	5		138	1 823	3.29	29 052	54.0	7 353	7 353	4 186	5 193
	7		184	1 345	2.47	21 350	72.0	7 353	7 353	4 086	5 145
	9		230	1 065	1.98	16 876	90.0	7 353	7 353	4 001	5 116
	11		276	882	1.65	13 593	108.0	7 353	7 353	3 922	5 097
	3	21	101	2 024	4.39	31 206	40.5	7 353	7 353	3 876	4 766
	5		153	1 277	2.89	19 548	61.5	7 353	7 353	3 724	4 659
	7		205	933	2.15	14 231	82.5	7 294	7 353	3 616	4 608
9	257		735	1.72	11 188	103.5	6 743	7 353	3 524	4 578	
880 Ø	4	18	115	2 965	4.66	57 712	45.0	8 713	8 713	5 350	6 566
	7		184	1 800	2.91	34 786	72.0	8 713	8 713	5 162	6 458
	10		253	1 292	2.12	24 896	99.0	8 713	8 713	5 019	6 411
	12		299	1 088	1.79	20 930	117.0	8 713	8 713	4 931	6 391
	3	21	101	2 729	5.18	50 991	40.5	8 713	8 713	4 907	6 014
	5		153	1 724	3.41	31 965	61.5	8 713	8 713	4 726	5 881
	7		205	1 260	2.54	23 279	82.5	8 713	8 713	4 600	5 818
	9		257	993	2.03	18 305	103.5	8 713	8 713	4 494	5 782
11		309	819	1.69	15 082	124.5	7 707	8 713	4 395	5 758	