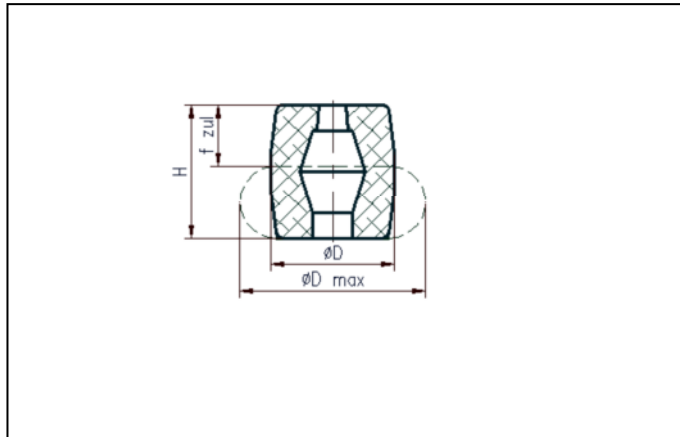


HOLLOW SPRINGS



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Properties:

Due to their spherical shape, VIBRAGOM® hollow springs exhibit a progressive spring line along with a large deformation trajectory. The progression in the force-displacement curve is influenced by the structural design.

VIBRAGOM® hollow springs are maintenance-free and have excellent anti-friction properties. They have a high energy absorption capacity along with effective self-damping properties.

The most commonly used forms are listed in this catalogue as the standard programme. This standard programme is available in several hardness levels. As a highly elastic material, aging-resistant natural rubber is used.

Types of loads:

In their main direction of loading – i.e. the axis direction – hollow springs only absorb centric compressional loads. Shear and tensile loads should be avoided.

BATEGU determines spring constants with testing machines that correspond to Test Category 1. Finished dimensions and tolerances correspond to the relevant ISO standard DIN ISO 3302.

Types of loads:

VIBRAGOM® hollow springs are used primarily to absorb single shocks or low frequency, periodic loads. With these types of loads, the hollow spring is subjected to static loads. The entire travel of the spring is used to absorb dynamic loads.

If subjected to static and dynamic loads at the same time, a maximum of one third of the spring travel is used by the static load, the remaining two thirds by the dynamic load.

As for barrel springs (HIA and HIB series), which are used for self-deflection, the maximum permissible deflection from static loads should exceed 20% of the unloaded height.

Numerical tables:

The progression of the force-displacement curve is characterised by three numerical values in the tables, measured at $\frac{1}{3} f_{zul}$, $\frac{2}{3} f_{zul}$ and f_{zul} , with a tolerance of +/- 15%. The coloured printed figures are points on the release curve.

On request, we will send you the load-displacement diagram of the selected VIBRAGOM[®] hollow spring.

HIA and HIB series – barrel springs

This is the most commonly used spring type. It is characterised by high end forces at moderate progression.

Dimensions Hollow spring Series HIA

Dimensions		Load daN	Deflection f zul.mm	Outer - Ø at f zul.	Article ID	Coil	Hard ness	Fixing Part
H	D							
272	222	7600	70	265	HIA 1773a	C	170	
272	222	6500	80	270	HIA 1773a	C	165	
272	222	4700	80	270	HIA 1773a	C	155	
237	190	5000	57	217	HIA 1772a	A	170	
237	190	3000	61	222	HIA 1772a	A	160	
237	190	2200	61	225	HIA 1772a	A	150	
216	190	3900	55	220	HIA 1883	A	165	
216	190	2650	55	220	HIA 1883	A	155	
216	190	2350	55	220	HIA 1883	A	145	
180	250	24000	88	347	HIA 2216	B	365	
180	250	20000	88	345	HIA 2216	B	360	
180	250	13000	88	345	HIA 2216	B	355	
180	188	15000	95	267	HIA 1849	A	365	HB 1849 A
180	188	8000	98	268	HIA 1849	A	357	HB 1849 A
180	188	7200	98	269	HIA 1849	A	355	HB 1849 A
180	188	10000	91	261	HIA 1849	B	365	
180	188	8000	91	260	HIA 1849	B	360	
180	188	5600	91	259	HIA 1849	B	355	
180	188	10000	88	255	HIA 1849	M	365	HB 1849 M
180	188	10000	95	263	HIA 1849	M	360	HB 1849 M
180	188	6200	100	273	HIA 1849	M	355	HB 1849 M
180	175	10000	80	240	HIA 1850	B	365	
180	175	7500	87	246	HIA 1850	B	357	
180	175	4500	87	246	HIA 1850	B	350	
170	138	700	40	157	HIA 1906	A	365	
170	138	600	55	168	HIA 1906	A	355	
170	138	550	55	168	HIA 1906	A	350	
156	138	850	50	167	HIA 1905	A	365	

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Dimensions Hollow spring Series HIA

Dimensions		Load daN	Deflection at zul.mm	Outer - Ø at f zul.	Article ID	Core	Hard ness	Fixing Part
H	D							
156	138	730	50	167	HIA 1905	A	357	
156	138	560	50	167	HIA 1905	A	355	
150	155	6500	75	216	HIA 1689	A+B	365	HB 1689 B
150	155	5000	75	216	HIA 1689	A+B	360	HB 1689 B
150	155	3500	75	213	HIA 1689	A+B	355	HB 1689 B
150	155	6200	71	211	HIA 1689	M	365	HB 1689 M
150	155	3100	71	210	HIA 1689	M	360	HB 1689 M
150	155	2300	71	210	HIA 1689	M	350	HB 1689 M
140	125	5500	72	177	HIA 1808	A+B	365	HB 1808 B(A)
140	125	3350	72	180	HIA 1808	A+B	360	HB 1808 B(A)
140	125	2400	72	180	HIA 1808	A+B	355	HB 1808 B(A)
120	140	2800	62	185	HIA 1734	A	365	HB 1734 A
120	140	2500	62	184	HIA 1734	A	360	HB 1734 A
120	140	1600	62	187	HIA 1734	A	355	HB 1734 A
120	140	4400	64	187	HIA 1734	B	370	HB 1734 B
120	140	4400	74	204	HIA 1734	B	350	HB 1734 B
120	140	4300	80	217	HIA 1734	B	345	HB 1734 B
120	140	3800	62	186	HIA 1734	C	365	
120	140	3000	62	190	HIA 1734	C	360	
120	140	2100	62	187	HIA 1734	C	355	
120	140	1400	56	180	HIA 1734	M	365	HB 1734 M
120	140	1250	56	178	HIA 1734	M	360	HB 1734 M
120	140	1000	56	178	HIA 1734	M	355	HB 1734 M
110	120	1900	60	160	HIA 1681	A	365	HB 1681 A
110	120	1200	60	160	HIA 1681	A	360	HB 1681 A
110	120	1100	60	161	HIA 1681	A	355	HB 1681 A
110	102	550	36	127	HIA 1806	A	365	HB 1806 A
110	102	490	36	127	HIA 1806	A	360	HB 1806 A
110	102	400	36	126	HIA 1806	A	355	HB 1806 A
110	102	1300	62	143	HIA 1806	M	365	HB 1806 M
110	102	900	62	142	HIA 1806	M	360	HB 1806 M
110	102	840	62	142	HIA 1806	M	355	HB 1806 M
103	95	2600	62	143	HIA 1810	A	365	HB 1810 A
103	95	1400	60	140	HIA 1810	A	360	HB 1810 A
103	95	1150	62	144	HIA 1810	A	355	HB 1810 A
102	74	820	42	101	HIA 2192	A	365	HB 2192 A
102	74	670	42	102	HIA 2192	A	360	HB 2192 A
102	74	500	42	101	HIA 2192	A	355	HB 2192 A
101	85	560	34	110	HIA 2044	A	365	HB 2044 A
101	85	400	34	111	HIA 2044	A	357	HB 2044 A
101	85	320	34	110	HIA 2044	A	350	HB 2044 A

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Dimensions Hollow spring Series HIB

Dimension		Load daN	Deflection f zul.mm	Outer - Ø at f zul.	Article ID	Core Core	Hard ness	Fixing Part
H	D							
95	140	6800	48	190	HIB 1847	D	365	HB 1847 D
95	140	4500	48	189	HIB 1847	D	360	HB 1847 D
95	140	3300	48	189	HIB 1847	D	355	HB 1847 D
95	140	2800	45	185	HIB 1847	E	170	
95	140	2000	45	184	HIB 1847	E	360	
95	140	1500	45	184	HIB 1847	E	355	
95	98	1500	54	135	HIB 1801	A	365	HB 1801 A
95	98	1250	54	135	HIB 1801	A	360	HB 1801 A
95	98	700	54	135	HIB 1801	A	350	HB 1801 A
95	92	140	25	110	HIB 2058	A	360	HB 2058 A
95	92	125	25	110	HIB 2058	A	355	HB 2058 A
95	92	100	25	110	HIB 2058	A	350	HB 2058 A
93	65	600	42	93	HIB 1690	C	365	HB 1690 C
93	65	660	48	97	HIB 1690	C	360	HB 1690 C
93	65	300	33	87	HIB 1690	C	355	HB 1690 C
90	108	2000	44	145	HIB 1680	A	365	HB 1680 A
90	108	1400	44	143	HIB 1680	A	360	HB 1680 A
90	108	900	44	145	HIB 1680	A	355	HB 1680 A
90	108	2300	51	152	HIB 1680	C	365	
90	108	2100	51	150	HIB 1680	C	360	
90	108	1400	51	153	HIB 1680	C	355	
90	108	2250	50	146	HIB 1680	D	365	HB 1680 D
90	108	2600	54		HIB 1680	D	360	HB 1680 D
90	108	2400	55	153	HIB 1680	D	355	HB 1680 D
90	108	2500	50	148	HIB 1680	V	170	HB 1680 V
90	108	1650	50	149	HIB 1680	V	360	HB 1680 V
90	108	3000	55	157	HIB 1680	V	355	HB 1680 V
90	95	500	48	125	HIB 1805	A	365	HB 1805 A
90	95	450	48	122	HIB 1805	A	360	HB 1805 A
90	95	350	48	125	HIB 1805	A	355	HB 1805 A
90	95	800	51	125	HIB 1805	M	365	HB 1805 M
90	95	400	51	122	HIB 1805	M	360	HB 1805 M
90	95	250	51	126	HIB 1805	M	355	HB 1805 M
70	85	400	33	104	HIB 1803	B	365	HB 1803 B
70	85	350	33	104	HIB 1803	B	360	HB 1803 B
70	85	280	33	102	HIB 1803	B	355	HB 1803 B
70	85	1300	41	113	HIB 1803	G	365	HB 1803 G
70	85	1460	48	126	HIB 1803	G	350	HB 1803 G
70	50	120	24	65	HIB 1735	A	360	HB 1735 A
70	50	100	24	64	HIB 1735	A	355	HB 1735 A
70	50	75	24	66	HIB 1735	A	350	HB 1735 A

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Dimensions Hollow spring Series HIB

Dimension		Load daN	Deflection f zul.mm	Outer - Ø at f zul.	Article ID	Core	Hard ness	Fixing Part
H	D							
60	75	1560	32	106	HIB 1809	A	360	HB 1809 A
60	75	850	30	102	HIB 1809	A	355	HB 1809 A
60	75	620	28	100	HIB 1809	A	350	HB 1809 A
55	68	113	15	78	HIB 2046	A	365	HB 2046 A
55	68	98	15	78	HIB 2046	A	360	HB 2046 A
55	68	76	15	77	HIB 2046	A	355	HB 2046 A
55	55	360	30	75	HIB 1679	A	365	HB 1679 A
55	55	280	30	75	HIB 1679	A	360	HB 1679 A
55	55	140	20	70	HIB 1679	A	355	HB 1679 A
55	55	275	33	79	HIB 1679	B	355	HB 1679 B
55	55	200	32	76	HIB 1679	M	357	HB 1679 M
55	55	180	30	75	HIB 1679	M	355	HB 1679 M
55	55	165	30	75	HIB 1679	M	350	HB 1679 M
55	40	30	6	42	HIB 1843	A	365	HB 1843 A
55	40	27	6	42	HIB 1843	A	360	HB 1843 A
55	40	23	6	42	HIB 1843	A	355	HB 1843 A
55	40	76	28	57	HIB 1843	M	360	HB 1843 M
55	40	60	25	55	HIB 1843	M	355	HB 1843 M
55	40	50	25	55	HIB 1843	M	350	HB 1843 M
50	50	360	24	67	HIB 2009	A	365	
50	50	300	24	68	HIB 2009	A	360	
50	50	200	24	67	HIB 2009	A	355	
45	40	450	25	57	HIB 6118	B	365	
45	40	300	25	57	HIB 6118	B	360	
45	40	175	25	57	HIB 6118	B	355	
45	33	35	7	37	HIB 2066	A	365	HB 2066 A
45	33	30	7	37	HIB 2066	A	360	HB 2066 A
45	33	25	7	37	HIB 2066	A	355	HB 2066 A
30	25	43	6	27	HIB 2189	B	170	
30	25	30	6	28	HIB 2189	B	360	
30	25	25	6	28	HIB 2189	B	355	
25	34	40	8	39	HIB 1842	A	170	HB 1842 A
25	34	42	10	42	HIB 1842	A	360	HB 1842 A
25	34	27	10	42	HIB 1842	A	350	HB 1842 A
25	34	60	12	41	HIB 1842	M	365	HB 1842 M
25	34	50	13	43	HIB 1842	M	357	HB 1842 M
25	34	25	13	40	HIB 1842	M	350	HB 1842 M

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Dimensions Hollow spring Series HIB

Dimension		Load daN	Deflection f zul.mm	Outer - Ø at f zul.	Article ID	Core	Hard ness	Fixing Part
H	D							
23	43	150	10	50	HIB 1926	A	365	HB 1926 A
23	43	240	12	53	HIB 1926	A	360	HB 1926 A
23	43	210	12	53	HIB 1926	A	355	HB 1926 A
23	43	120	12	55	HIB 1926	B	365	HB 1926 B
23	43	100	12	55	HIB 1926	B	360	HB 1926 B
23	43	80	12	55	HIB 1926	B	355	HB 1926 B
18	23	19	6	27	HIB 1841	A	365	HB 1841 A
18	23	14	7	28	HIB 1841	A	360	HB 1841 A
18	23	10	6	28	HIB 1841	A	350	HB 1841 A
18	23	12	6	27	HIB 1841	B	365	HB 1841 B
18	23	10	6	27	HIB 1841	B	360	HB 1841 B
18	23	9	6	27	HIB 1841	B	350	HB 1841 B
18	23	11	7	28	HIB 1841	M	365	HB 1841 M

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Dimensions Hollow spring Series HIIA

Dimension		Load daN	Deflection f zul.mm	Outer - Ø at f zul.	Article ID	Core	Hard ness	Fixing Part
H	D							
143	130	4700	77	177	HIIA 1807	A	365	HB 1807 A
143	130	3700	77	176	HIIA 1807	A	357	HB 1807 A
143	130	3200	80	179	HIIA 1807	A	355	HB 1807 A
132	110	3400	75	158	HIIA 1750	A	365	HB 1750 A
132	110	2500	76	155	HIIA 1750	A	360	HB 1750 A
132	110	1700	76	151	HIIA 1750	A	355	HB 1750 A
132	110	3500	72	156	HIIA 1750	B	370	HB 1750 B
132	110	4400	84	165	HIIA 1750	B	360	HB 1750 B
132	110	3500	72	152	HIIA 1750	C	365	HB 1750 C
132	110	3500	75	155	HIIA 1750	M	365	HB 1750 M
132	110	2800	75	154	HIIA 1750	M	360	HB 1750 M
132	110	1800	75	152	HIIA 1750	M	355	HB 1750 M
130	100	2500	78	144	HIIA 1688	A	365	HB 1688 A
130	100	2700	86	154	HIIA 1688	A	355	HB 1688 A
130	100	3340	78	145	HIIA 1688	B	365	HB 1688 B
130	100	2040	78	145	HIIA 1688	B	357	HB 1688 B
130	100	1440	80	154	HIIA 1688	B	350	HB 1688 B
130	100	1650	80	142	HIIA 1688	C	365	HB 1688 C
130	100	1300	80	143	HIIA 1688	C	360	HB 1688 C
130	100	850	80	144	HIIA 1688	C	355	HB 1688 C
130	100	4400	87	153	HIIA 1688	M	360	HB 1688 M
130	100	2500	87	155	HIIA 1688	M	355	HB 1688 M
130	100	1750	87	157	HIIA 1688	M	350	HB 1688 M
125	92	1500	66	126	HIIA 1682	A	365	HB 1682 A
125	92	810	66	125	HIIA 1682	A	355	HB 1682 A
125	92	650	66	127	HIIA 1682	A	350	HB 1682 A
125	92	1500	66	125	HIIA 1682	C	365	HB 1682 C
125	92	810	66	124	HIIA 1682	C	355	HB 1682 C
125	92	650	66	126	HIIA 1682	C	350	HB 1682 C
120	85	400	66	110	HIIA 1658	A	365	HB 1658 A
120	85	350	66	108	HIIA 1658	A	360	HB 1658 A
120	85	300	66	109	HIIA 1658	A	350	HB 1658 A
120	85	650	56	105	HIIA 1658	B	365	HB 1658 B
120	85	600	56	105	HIIA 1658	B	360	HB 1658 B
120	85	500	56	106	HIIA 1658	B	355	HB 1658 B
120	85	1380	70	113	HIIA 1658	C	360	HB 1658 C
120	85	830	68	114	HIIA 1658	C	355	HB 1658 C

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Dimensions Hollow spring Series HIIA

Dimension		Load daN	Deflection f zul.mm	Outer - Ø at f zul.	Article ID	Core	Hard ness	Fixing Part
H	D							
120	85	720	70	116	HIIA 1658	C	350	HB 1658 C
120	85	1300	70	115	HIIA 1658	D	360	
120	85	750	68	113	HIIA 1658	D	355	
120	85	650	70	115	HIIA 1658	D	350	
120	85	1400	77	113	HIIA 1658	E	365	HB 1658 E
120	85	1400	90	157	HIIA 1658	E	345	HB 1658 E
120	85	1400	73	120	HIIA 1658	F	360	HB 1658 F
120	85	1400	78	125	HIIA 1658	F	350	HB 1658 F
120	85	3200	80	125	HIIA 1658	M	365	HB 1658 M
120	85	1600	78	125	HIIA 1658	M	360	HB 1658 M
120	85	1300	80	127	HIIA 1658	M	350	HB 1658 M
100	120	4500	52	165	HIIA 1800	B	365	HB 1800 B
100	120	3000	52	164	HIIA 1800	B	360	HB 1800 B
100	120	2500	52	161	HIIA 1800	B	355	HB 1800 B
100	60	700	55	84	HIIA 1845	B	365	HB 1845 B
100	60	630	60	87	HIIA 1845	B	360	HB 1845 B
100	60	450	54	80	HIIA 1845	C	365	HB 1845 C
100	60	400	54	83	HIIA 1845	C	360	HB 1845 C
100	60	300	54	83	HIIA 1845	C	355	HB 1845 C
100	60	1000	62	90	HIIA 1845	M	365	HB 1845 M
100	60	600	60	90	HIIA 1845	M	357	HB 1845 M
100	60	500	62	90	HIIA 1845	M	350	HB 1845 M
96	96	3000	50	128	HIIA 1726	B	170	HB 1726 B
96	96	2900	55	135	HIIA 1726	B	360	HB 1726 B
96	96	1400	50	129	HIIA 1726	B	355	HB 1726 B
96	96	3600	60	139	HIIA 1726	C	370	HB 1726 C
96	96	2900	64	146	HIIA 1726	C	355	HB 1726 C
96	86	700	50	106	HIIA 1866	A	365	HB 1866 A
96	86	600	50	107	HIIA 1866	A	360	HB 1866 A
96	86	500	52	111	HIIA 1866	A	355	HB 1866 A
96	86	700	52	111	HIIA 1866	B	350	HB 1866 B
96	86	1700	52	109	HIIA 1866	D	365	HB 1866 D
96	86	1100	52	111	HIIA 1866	D	360	HB 1866 D
96	86	750	52	111	HIIA 1866	D	355	HB 1866 D
96	86	2700	56	117	HIIA 6667	H	370	HB 6667 H
95	75	750	45	93	HIIA 1720	B	365	HB 1720 B
95	75	500	45	93	HIIA 1720	B	357	HB 1720 B
95	75	360	45	95	HIIA 1720	B	350	HB 1720 B
95	65	200	45	77	HIIA 2190	A	365	HB 2190 A
95	65	150	45	78	HIIA 2190	A	360	HB 2190 A
95	65	120	45	80	HIIA 2190	A	355	HB 2190 A
93	65	400	35	82	HIIA 1846	A	365	HB 1846 A
93	65	300	35	82	HIIA 1846	A	360	HB 1846 A
93	65	240	35	82	HIIA 1846	A	355	HB 1846 A

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Dimensions Hollow spring Series HIIA

Dimension		Load daN	Deflection f zul.mm	Outer - Ø at f zul.	Article ID	Core	Hard ness	Fixing Part
H	D							
90	68	550	55	93	HIIA 1725	A	355	HB 1725 A
90	58	200	50	70	HIIA 1536	B	365	HB 1536 B
90	58	150	50	70	HIIA 1536	B	360	HB 1536 B
90	58	100	50	70	HIIA 1536	B	350	HB 1536 B
80	64	850	50	86	HIIA 2045	A	365	HB 2045 A
80	64	300	45	80	HIIA 2045	A	357	HB 2045 A
80	64	470	50	89	HIIA 2045	A	355	HB 2045 A
80	64	500	48	84	HIIA 2045	B	360	HB 2045 B
78	56	250	41	70	HIIA 2076	D	365	HB 2076 D
78	56	210	41	69	HIIA 2076	D	360	HB 2076 D
78	56	150	41	70	HIIA 2076	D	355	HB 2076 D
70	80	1450	33	101	HIIA 1910	B	365	HB 1910 B
70	80	1100	33	101	HIIA 1910	B	360	HB 1910 B
70	80	600	33	106	HIIA 1910	B	355	HB 1910 B
78	56	150	41	70	HIIA 2076	D	355	HB 2076 D
70	80	1450	33	101	HIIA 1910	B	365	HB 1910 B
70	80	1100	33	101	HIIA 1910	B	360	HB 1910 B
70	80	600	33	106	HIIA 1910	B	355	HB 1910 B

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