

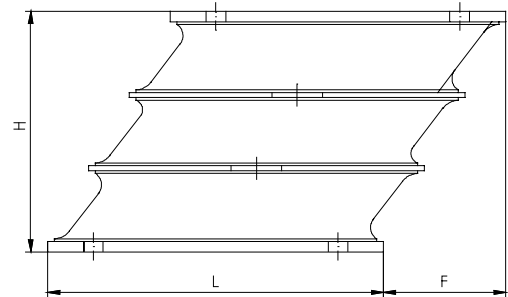
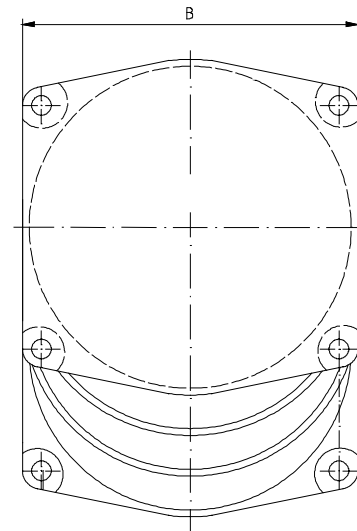
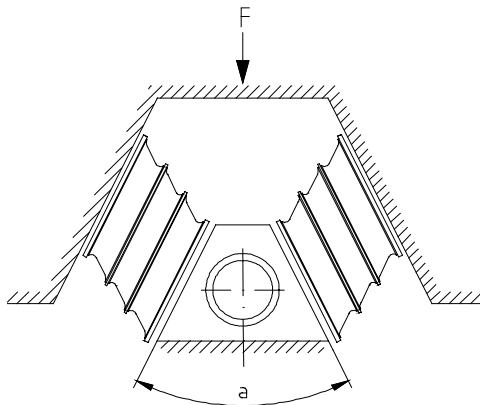
- **Description of parts and functions:**

GMT bolster springs are used for high pressure loads. Therefore, they are especially ideal for the bedding of stone crushers, tandem axles, and dollies. For these purposes, oil and age-resistant elastomers are used. As a rule, these bearings are built in in pairs, as you can see from the assembly diagram below.

- **Dimensions:**

Item number	B [mm]	H [mm]	L [mm]	F [mm]
633002	197	140	197	72
633003	216	148	216	79
633004	197	141	197	68,5

Possible assembly of bolster springs:



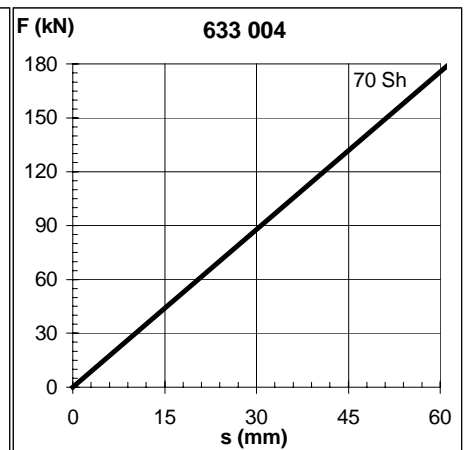
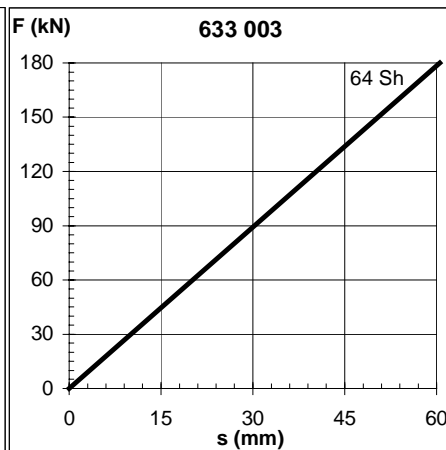
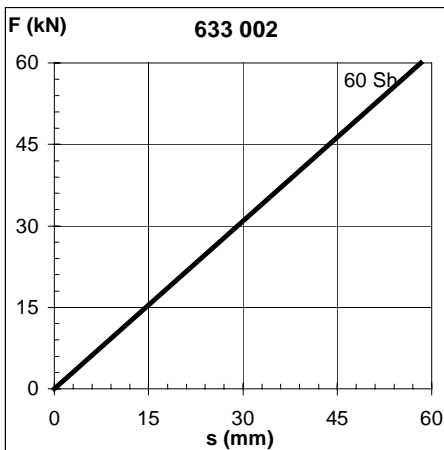
- **Spring characteristics:** *valid for pair of bolster springs according to the diagram; combined load of pressure and thrust*

Assembly angle of :

34°

53°

53°



There is a possible deviation of approx. +/-20% in the above values due to production and hardness tolerances.

- **Description of parts and functions:**

GMT hollow springs are among other things used for bearing and structure-borne noise insulation in equipment manufacture and terotechnology. They have vibration-insulating as well as shock-absorbing characteristics, which are also used in many different ways in the fields of vehicle construction and mechanical engineering. The range of application for these spring elements are, for example, skid or landing gear springing in aircraft construction, in whirlers and jolters, for the separation of vibrating masses, as a shock protector in vehicle construction or as an ejector in blanking coining and punching dies. The elements are attached and secured with liner and/or flanges.

- **Dimensions:**

Item Number	D (mm)	d (mm)	d1 (mm)	L (mm)	Figure
590003	130	40	42	220	1
590004	125	22	36	140	2
590005	130	22	30	90	4
590008	200	72	72	170	1
590012	85	20	30	92	3
590013	75	15	25	94	3
590014	120	44	44	100	5
590016	140	39	39	120	6
590017	155	39	39	150	6
590018	188	39	39	180	6
590019	110	20	30	132	7
590021	140	30	30	110	1
590023	85	20	30	92	3

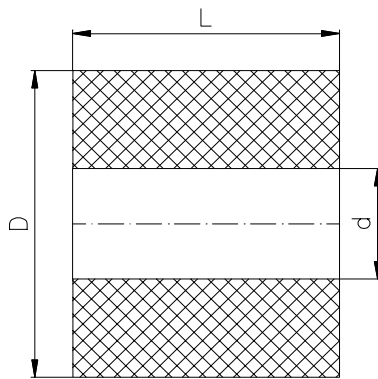


Figure 1

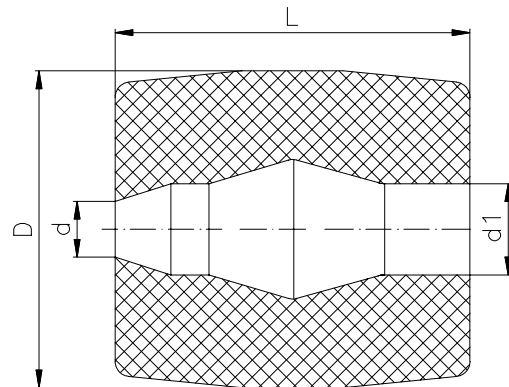


Figure 2

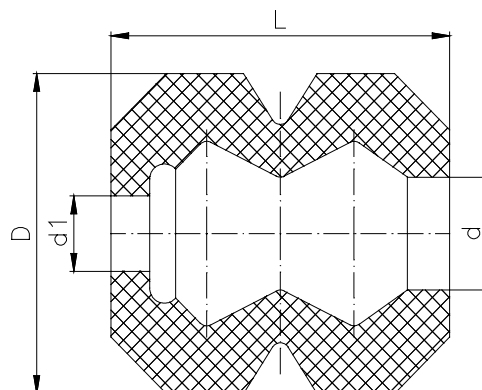


Figure 3

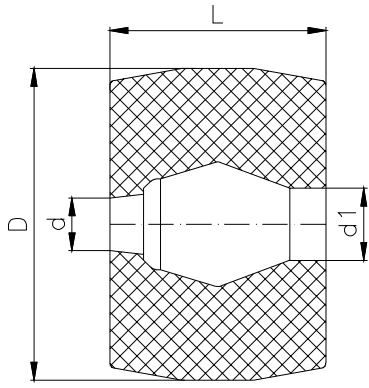


Figure 4

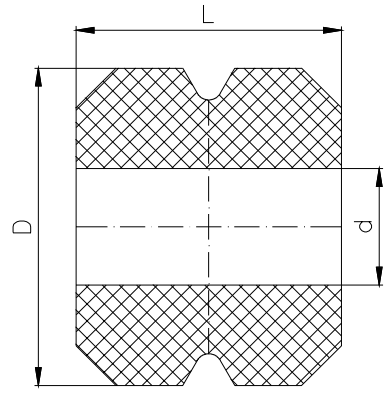


Figure 5

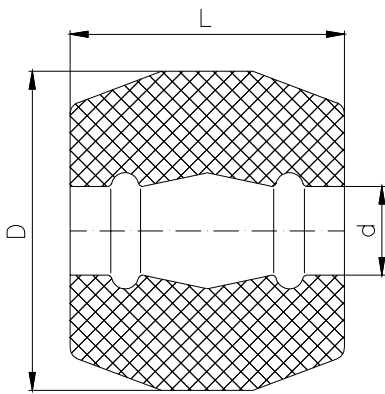


Figure 6

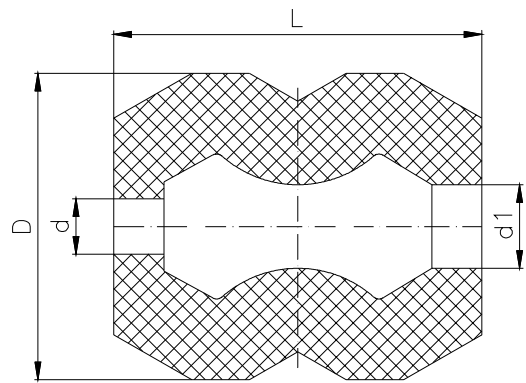
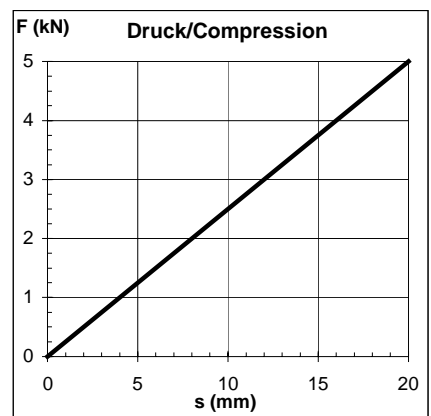
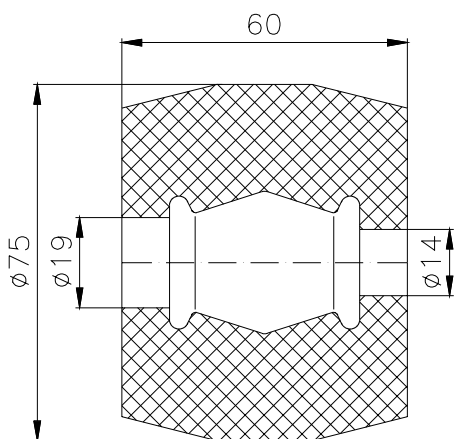


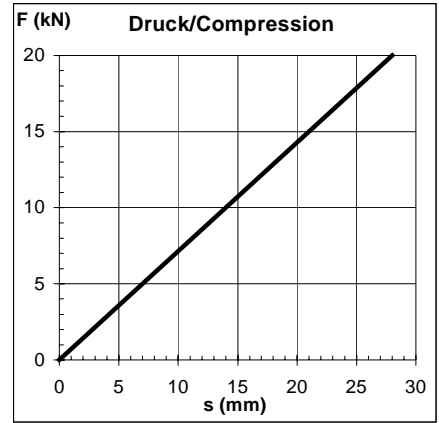
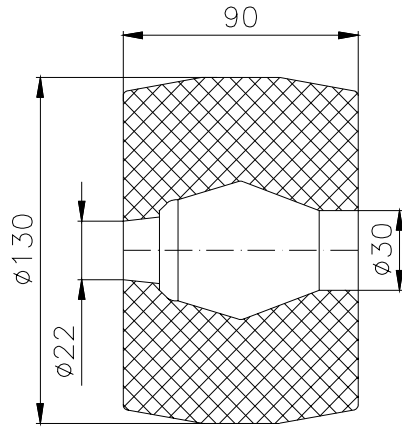
Figure 7

• **Spring characteristics :**

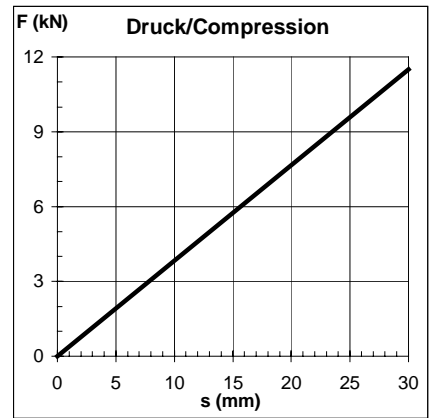
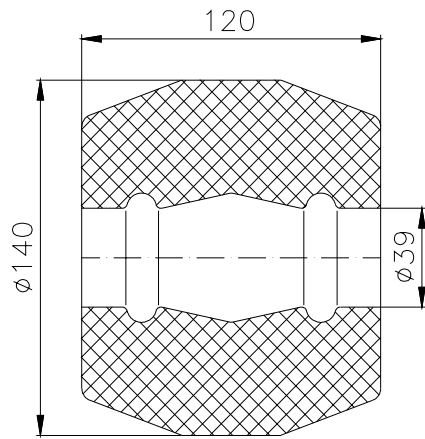
590 084



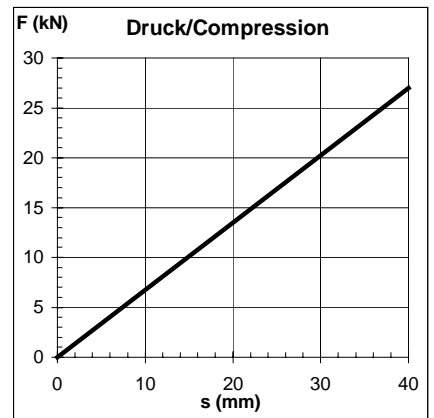
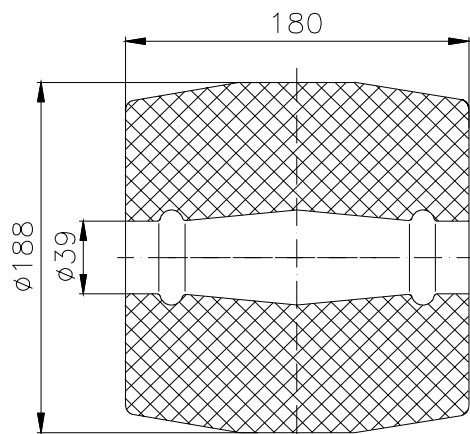
590 005



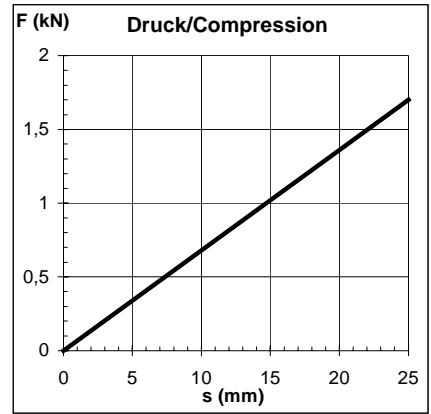
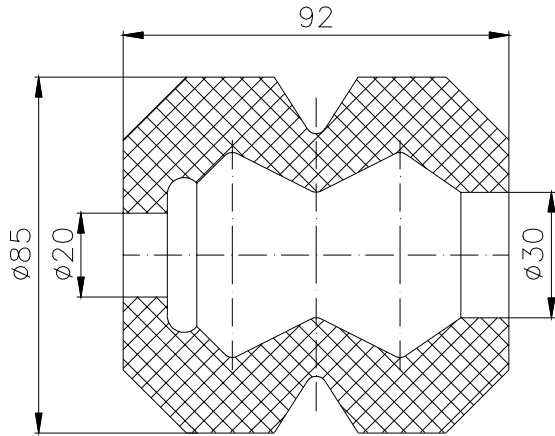
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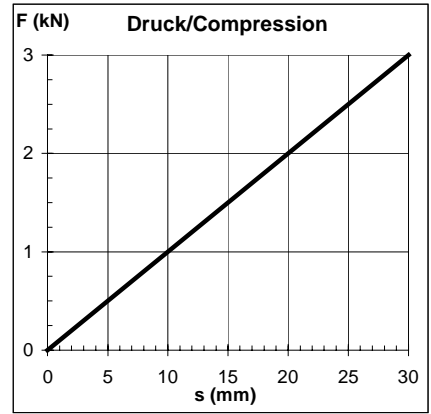
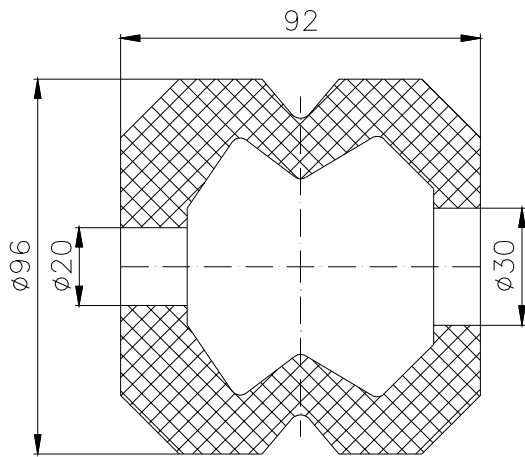
590 018



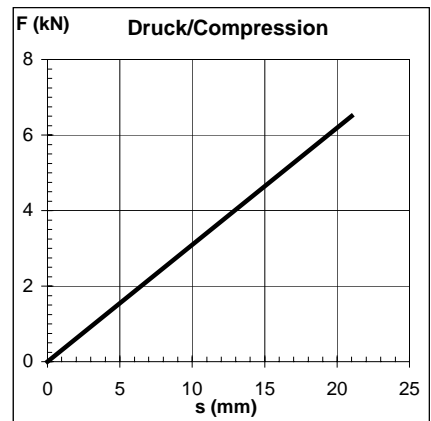
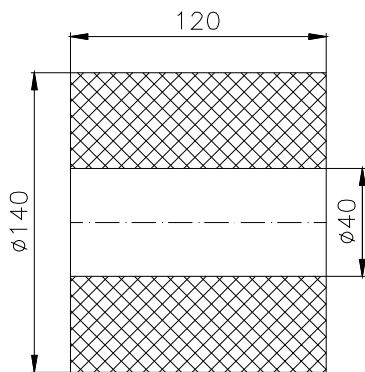
590 012



590 029



590 085



There is a possible deviation of approx. +/-20% in the above values due to production and hardness tolerances.

- **Description of parts and functions:**

GMT compound springs can be used in many different ways for the purpose of active and passive structure-borne noise and vibration insulation. These parts can withstand high pressure loads. They can be used, for example, as centre bearings or as bearings for jolters and sifting machinery.

- **Dimensions:**

Item number	H [mm]	D [mm]	d1 [mm]	d2 [mm]	d3 [mm]	h1 [mm]	h2 [mm]	b [mm]	Figure
629002	180	169	92	104	118	10	10	15	1
629003	195	204	111	122	147	15	10	15	1
629004	193	169,5	90,5	104	122	10	10	15	1
629006	429	260	120	-	-	-	-	-	2
629009	112	119	61	70	85	10	5	5	1

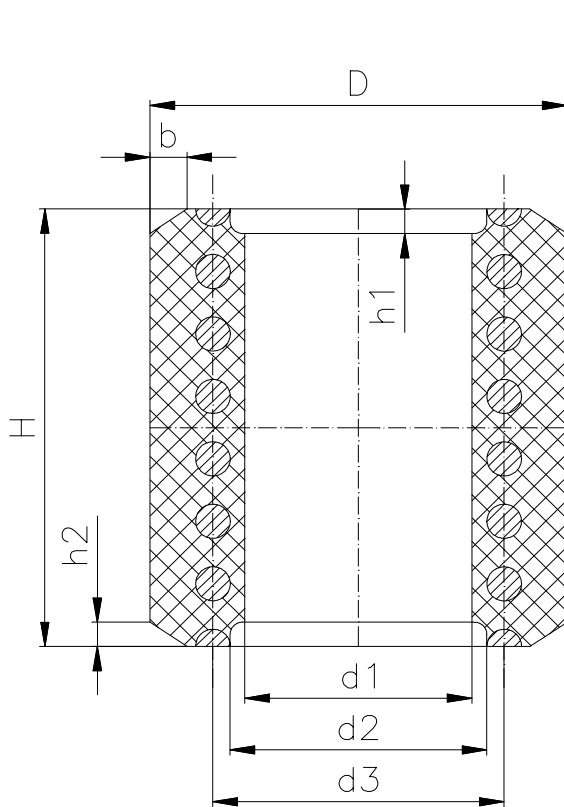


Figure 1

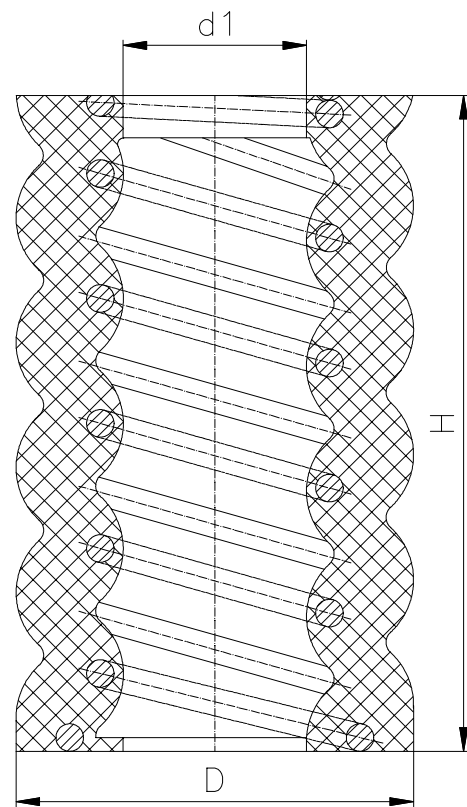
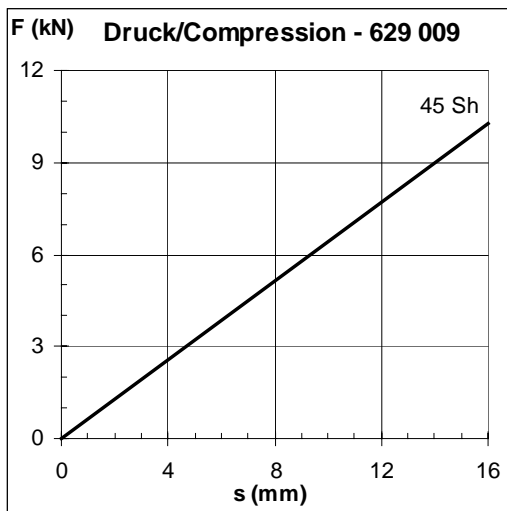
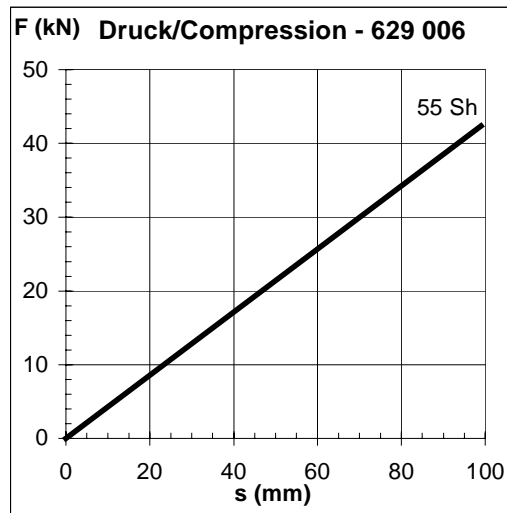
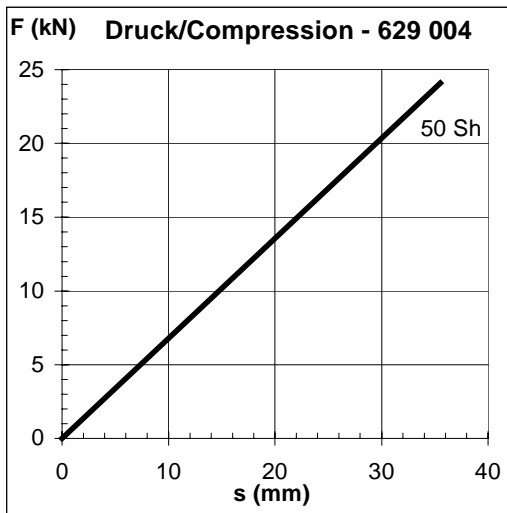
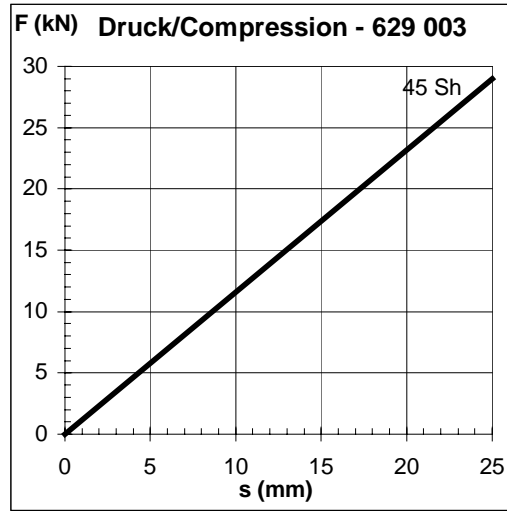
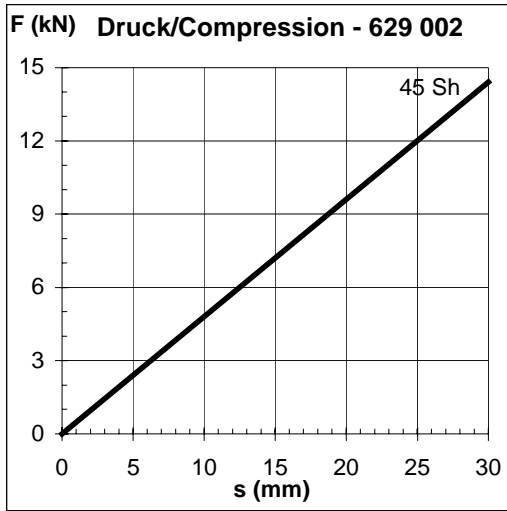


Figure 2

- Spring characteristics:**



There is a possible deviation of approx. +/-20% in the above values due to production and hardness tolerances.

- Description of parts and functions:**

GMT multi layer springs are damping elements for many different applications. Their different metals have been firmly bonded by way of vulcanized elastomer layers.

Multi layer springs are especially ideal for absorbing large pressure loads. These springs are e.g. used in lorries, trucks, buses, railway vehicles, coal, mining and concrete machines. It is possible to protect multi layer springs against sudden tensile loads by making them tear-proof – by fitting them with chain links, firmly integrated by means of vulcanization.

- Dimensions:**

Item number	H [mm]	a [mm]	b [mm]	d [mm]	D [mm]	G	L [mm]	i [mm]	Figure
611001	150	140	170	14	165	-	-	32	1
611002	150	140	170	14	165	-	-	32	1
611003	175	175	210	17	app.190	-	-	40	1
612001	157	140	170	14,5	160	-	-	-	2
612002	180	150	185	18	180	-	-	-	2
612003	190	165	200	17,5	200	-	-	-	2
613001	196	-	-	61	260	-	-	-	3
613002	162	-	-	-	90	-	-	-	5
613003	186	-	-	52	150	-	-	-	4
613004	107	-	-	51	115	-	-	-	3
613006	25	-	-	20	57,5	-	-	-	7
613007	95	-	-	-	100	M16	45	-	6

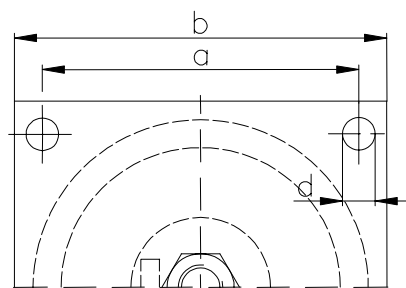
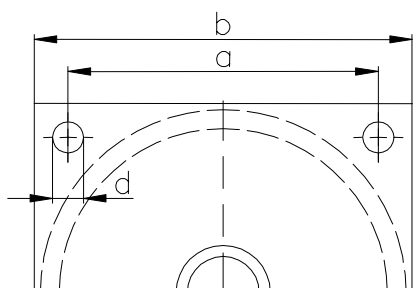
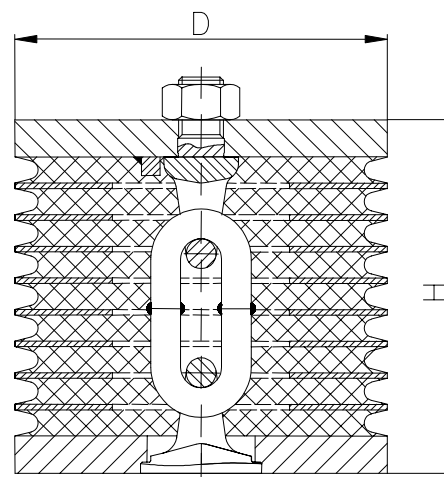
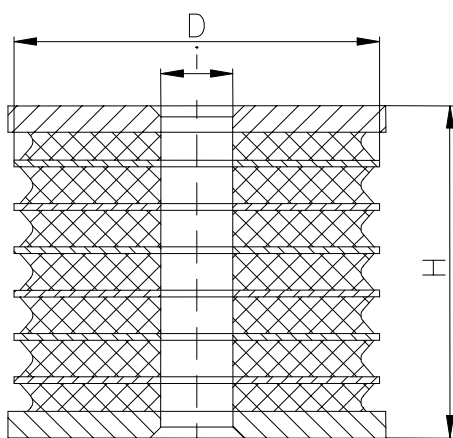


Figure 1

Figure 2

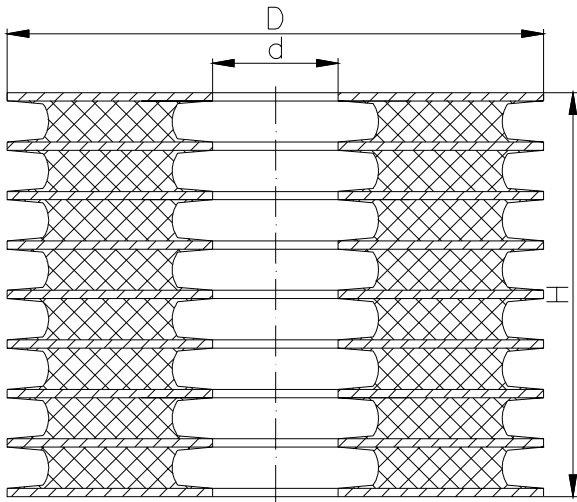


Figure 3

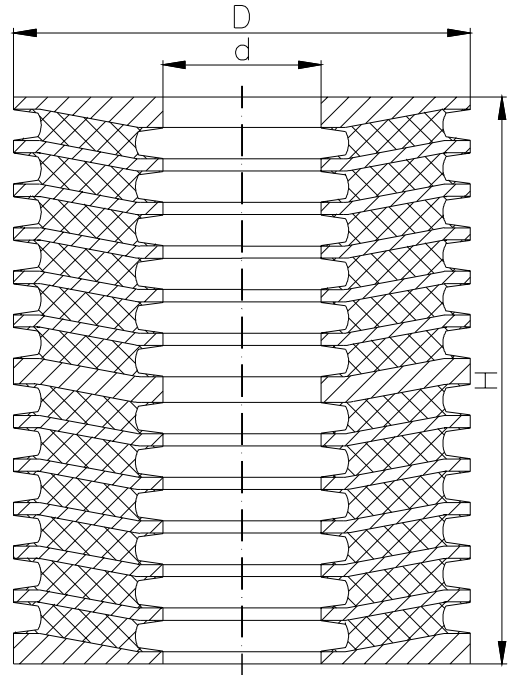


Figure 4

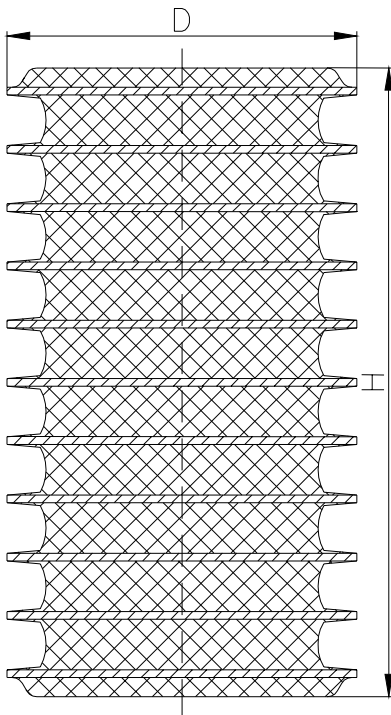


Figure 5

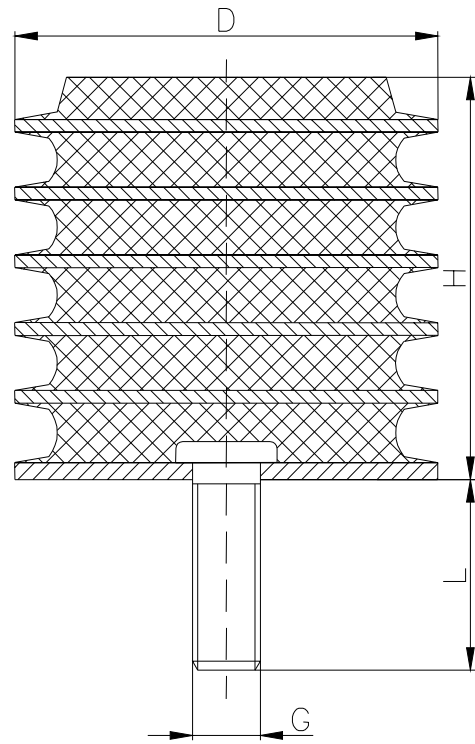


Figure 6

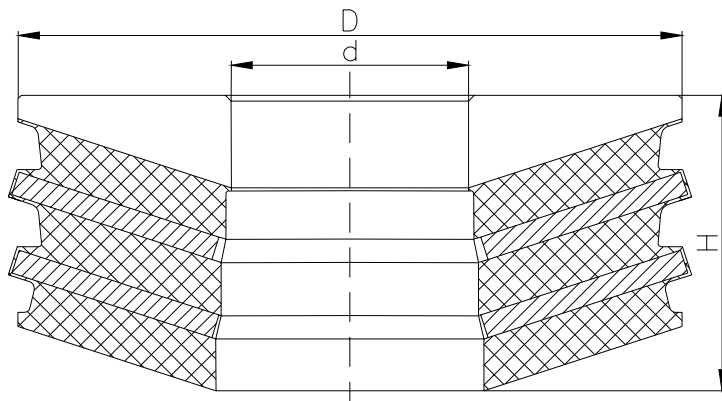


Figure 7

- Description of parts and functions:**

GMT spring washers consist of an inner and an outer metal ring, which are held together by means of a layer of elastomer firmly vulcanized into the gap. They are suitable for use in torque converter bearings, for buffering pendulum supports, leaf spring ends as well as for tension and shock devices.

- Dimensions:**

Item Number	H (mm)	Da (mm)	Di (mm)	Ds (mm)	W (mm)	Figure
623 002	38	260	62	-	-	1B
623 005	16	210/164	56	-	140	A
623 032	30	240	67	-	-	2B
624 001	10	95	45	70	-	3B
624 002	27,5	100	35	64	44	3C
624 003	50	170	60	115	-	4B
624 004	52,5	190	50	120	90	3C
624 005	49	230	105	154	120,5	5C
624 006	50	247	70	160	-	4B
624 007	27,8	265	78	166	-	3B
624 008	60	350	125	240	-	4B

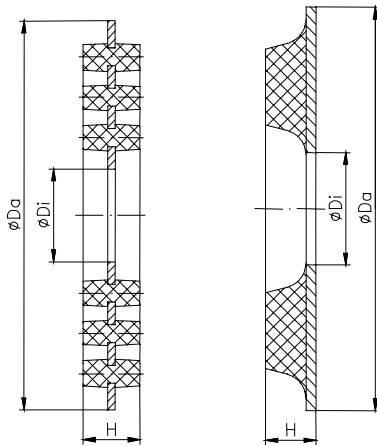


Figure 1

Figure 2

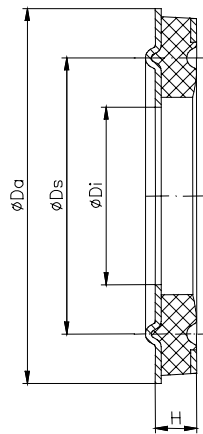


Figure 3

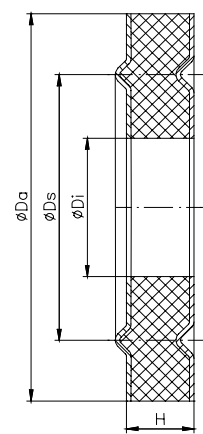


Figure 4

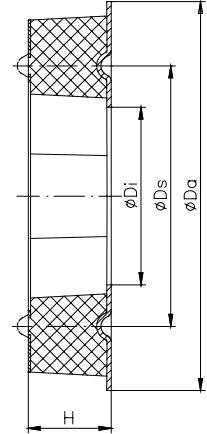


Figure 5

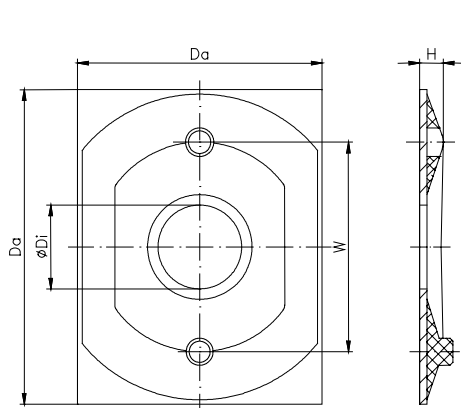


Figure A

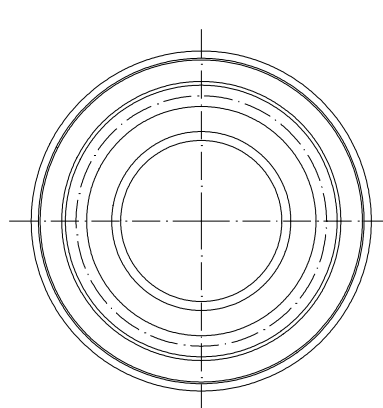


Figure B

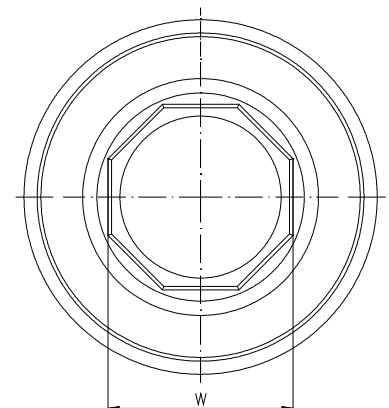
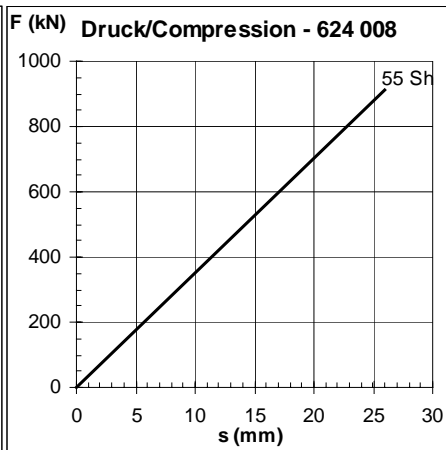
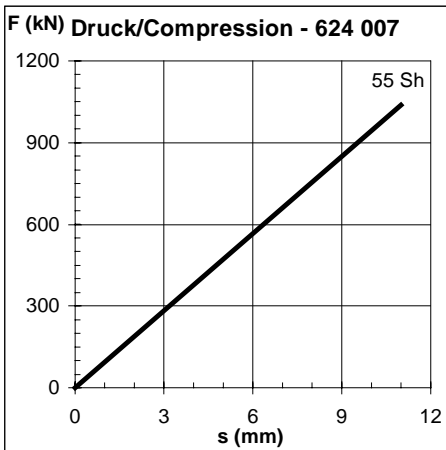
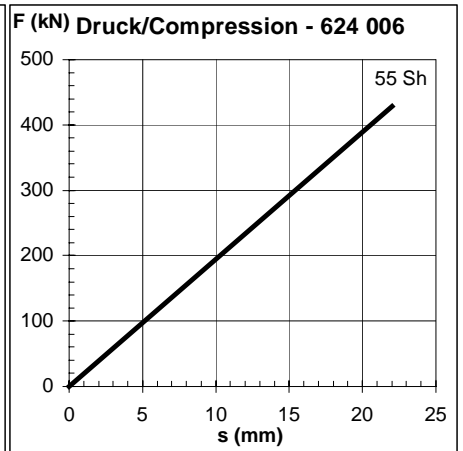
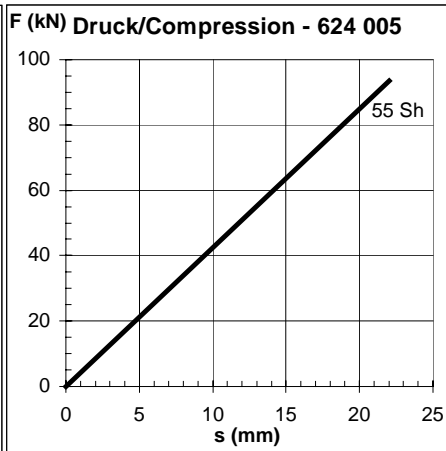
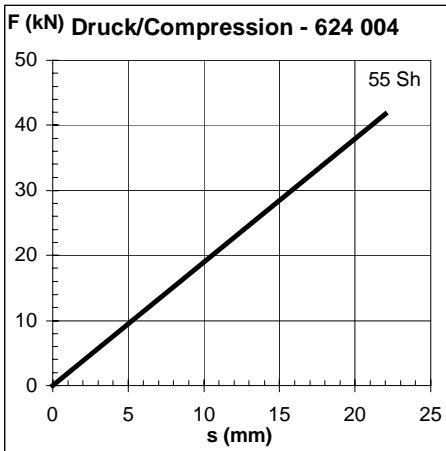
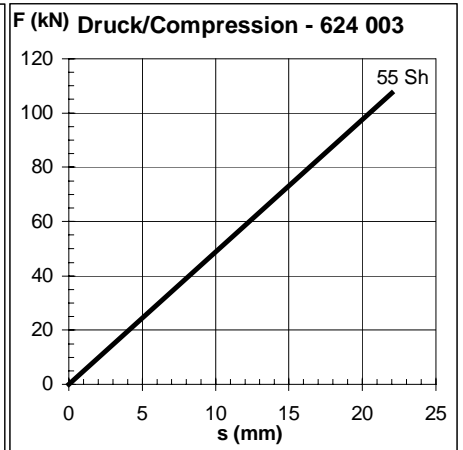
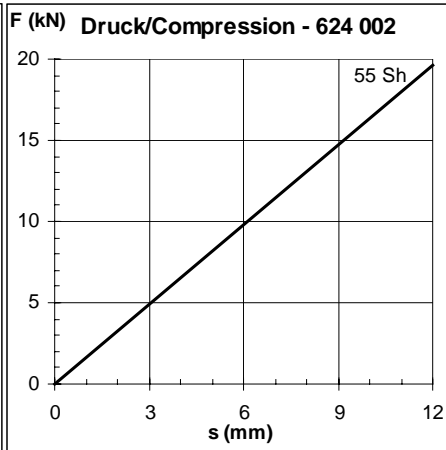
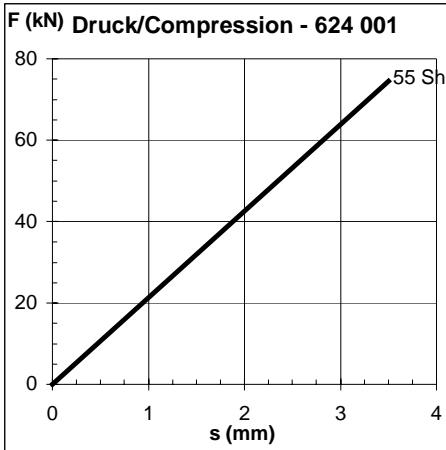


Figure C

- Spring characteristics:**



There is a possible deviation of approx. +/-20% in the above values due to production and hardness tolerances.

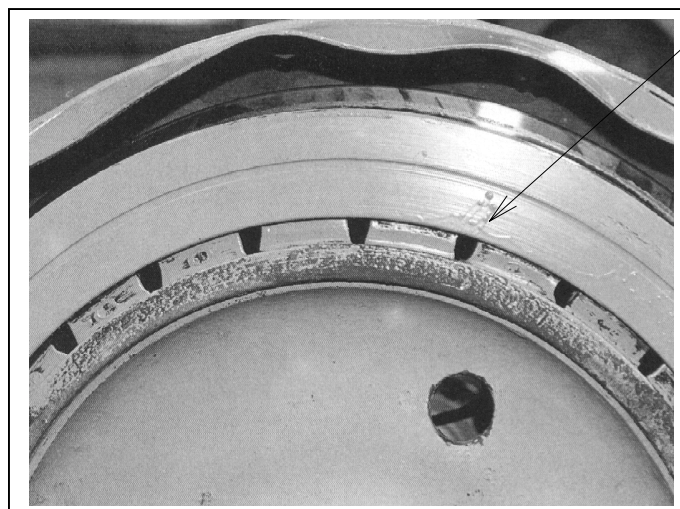
- **Description of parts and functions:**

Rubber blocks are used for structure-borne noise insulation, for example in wheels of rail vehicles, funicular railways or bearings of roller tables. They have vibration-insulating as well as shock-absorbing characteristics, which, referring to use in LRV-wheels, lead to a decrease in the level of noise and an improvement in passenger comfort. A further advantage of using rubber blocks lies in the increased life span of the chassis, since, compared to rigid bearings, there is a reduction of shock loads and a decrease in abrasive wear and tear.

A 100% control of the restoring forces takes place. Based on the results, a division into different categories is carried out. By doing so, it is possible to use rubber blocks of the same category, so that there are no deviations between the different bearing points.

- **Dimensions:**

Item number	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Radius (mm)	H (mm)	J (mm)	Figure No.	with/without current bridge
984071	71,8	44	10	-	-	-	15	53	47	1	without
984078	71,8	44	10	10	18	18	15	53	47	2	with
984101	101,8	44	10	-	-	-	15	66	60	1	without
984102	101,8	44	10	13	27	27	15	66	60	2	with
984103	81,8	44	10	-	-	-	15	53	47	1	without
984104	81,8	44	10	10	20	20	15	53	47	2	with
984107	71,8	44	-	-	-	-	-	47	47	3	without
984108	71,8	44	-	10	20	20	-	47	47	4	with
984127	81,8	44	10	10	20	18	15	53	47	6	with
984128	96,8	44	10	-	-	-	15	56	50	1	without
984132	96,8	44	10	13	27	27	15	56	50	2	with
984134	81	34,87	39	-	26	-	35	41,67	49	5	without
984135	81	34,87	39	-	26	-	35	42,36	49	7	with



Rubber-blocks in LRV-wheels

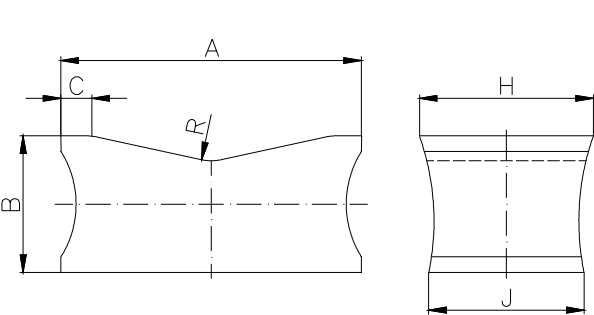


Figure 1

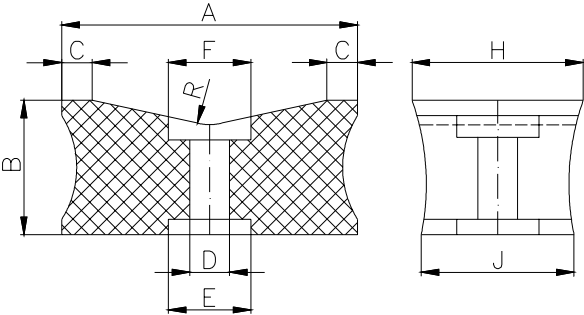


Figure 2

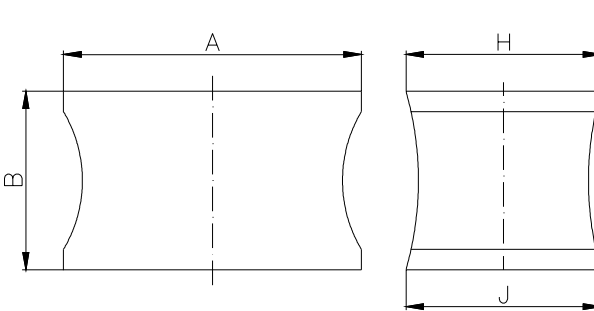


Figure 3

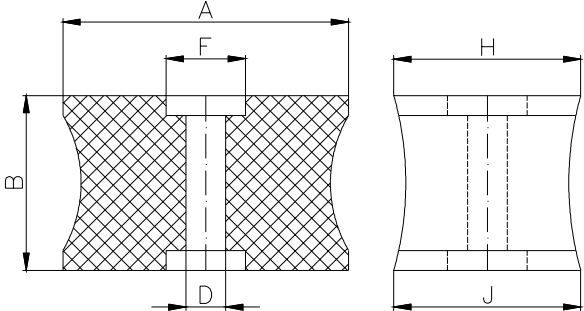


Figure 4

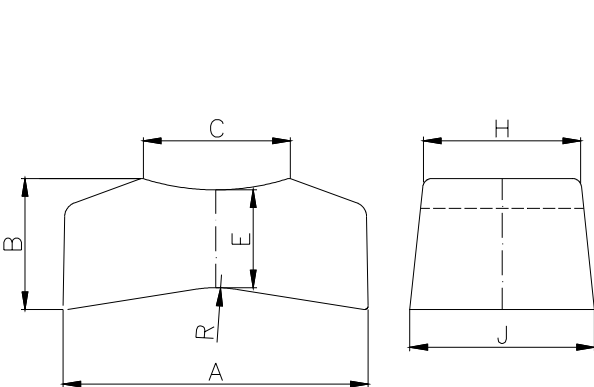


Figure 5

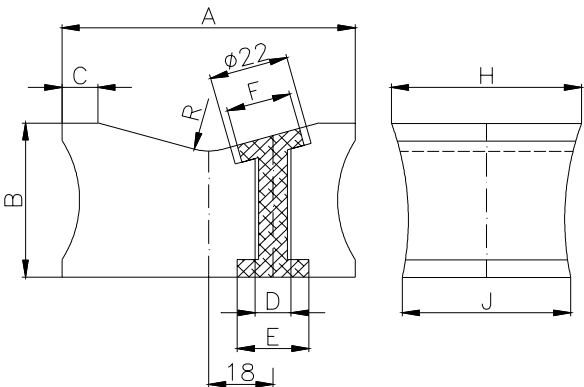


Figure 6

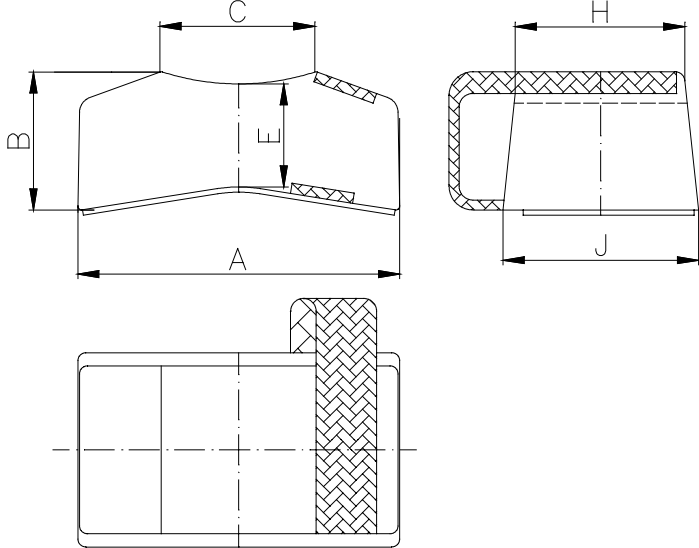


Figure 7

- **Description of parts and functions:**

GMT axle springs are multi-purpose vibration-reducing elements, the individual metals are firmly held together with vulcanized layers of elastomer.

Due to their simple installation and long lifespan, axle springs are ideal for use in all types of rail vehicles.

By selecting the angles and the number of intermediate spring links as well as the angles of the axle bearings to each other, three different spring stiffnesses can be produced, depending on the direction. Furthermore, the degree of stiffness can also be varied by selecting the geometric dimensions of the individual layers and the corresponding rubber quality.

- **Dimensions:**

Item Number	B [mm]	B1 [mm]	H [mm]	L [mm]	L1 [mm]	L2 [mm]	Number of steel layers	Figure
601001	100	100	54	205	186	186	3	1
601002	80	80	43,5	208	176	176	3	1
601003	100	100	54	250	216	216	3	1
601004	100	100	57,5	340	310	310	3	1
601005	186,5	146	60	197	177	152	3	4
601008	158	-	55	232	209	181	3	5
602001	62,5	62,5	49,5	152	125	125	4	1
602002	80	80	77	214	182	152	4	3
602003	120	120	94,5	263	213	213	4	1
602004	145	145	93	307	246	246	4	1
602005	125	125	94,5	329	248	248	4	1
602007	252	169	133	340	308	216	4	2
602008	252	167	133	340	308	216	4	4
602009	231	160	88,75	282,3	235,5	197,5	4	4
603002	220	220	150	370	296	296	5	-
603004	176	137	115	286	248	194	5	-
604001	230	192	150	365	303	258	6	-
604002	270	184	179	331	292	203	6	-
605001	260	160	193	363	268	234	7	-

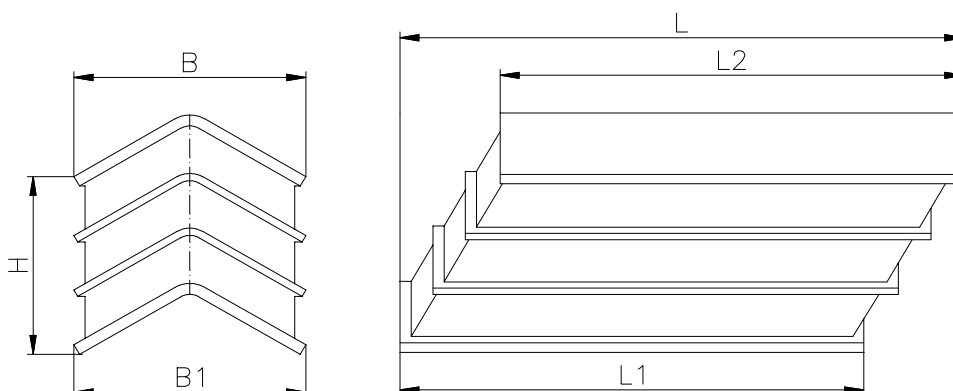


Figure 1

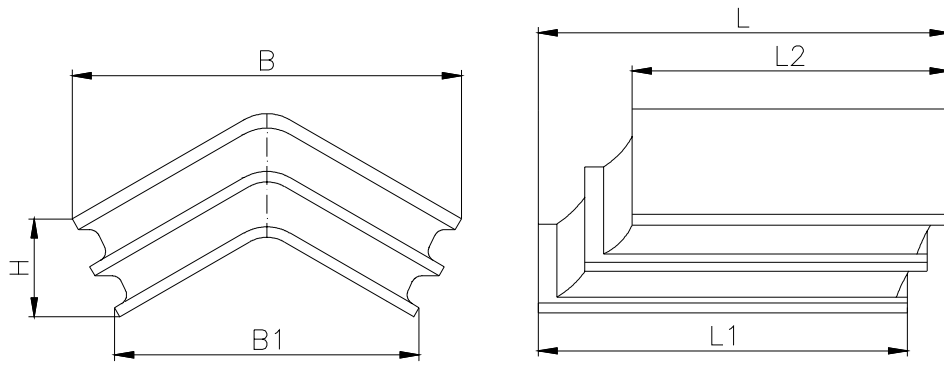


Figure 2

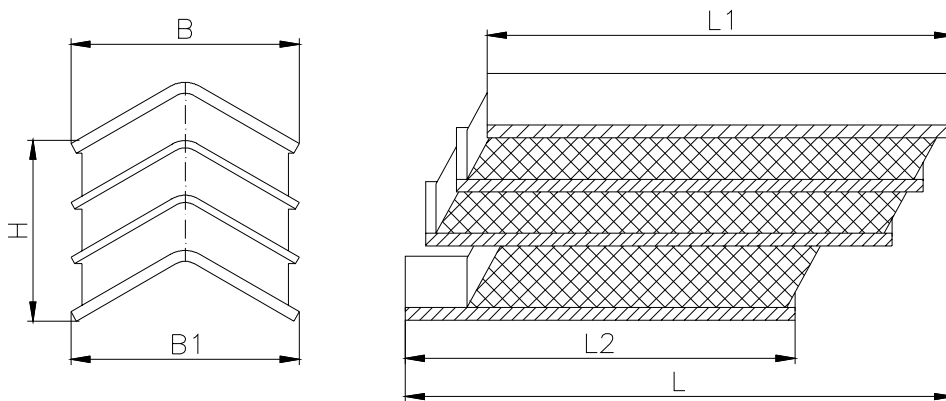


Figure 3

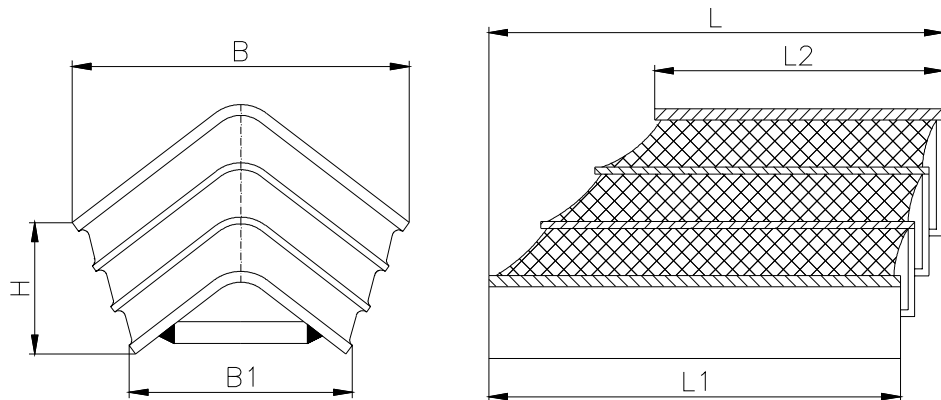


Figure 4

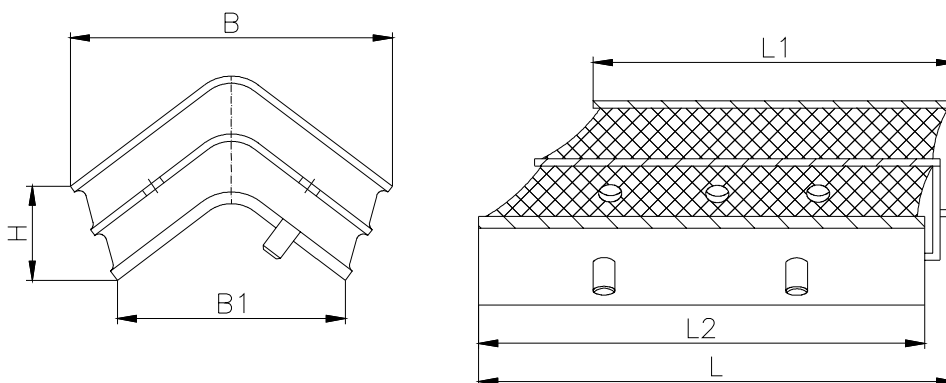


Figure 5

- Spring parameters:**

Values for a pair of axle bearings for an angle of installation of 10°, 12°, 14° and 16° vertically

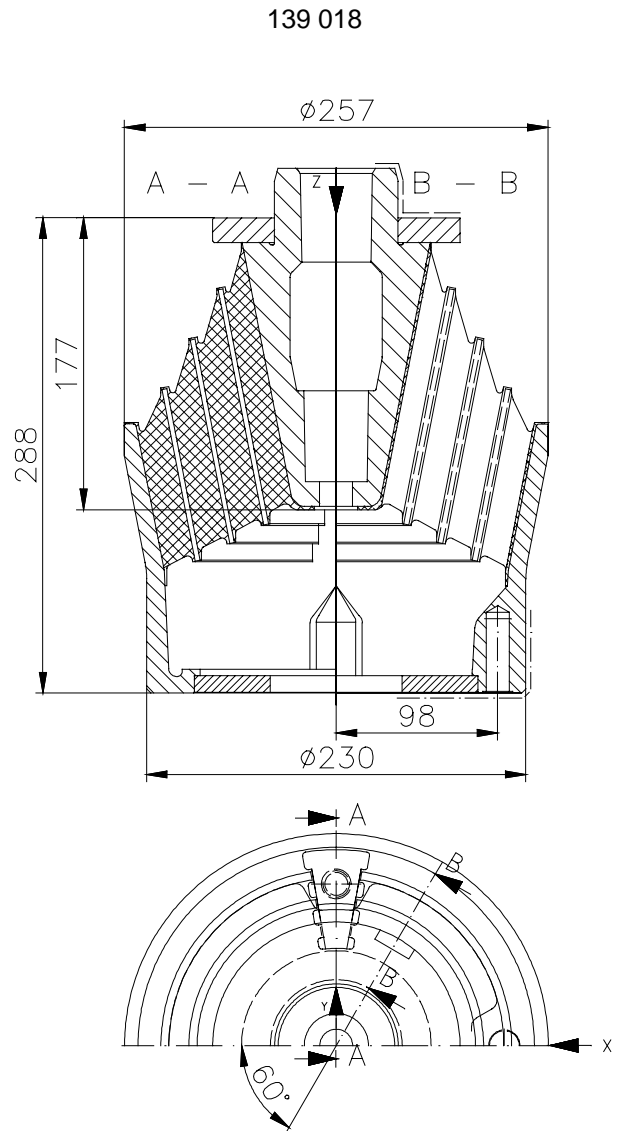
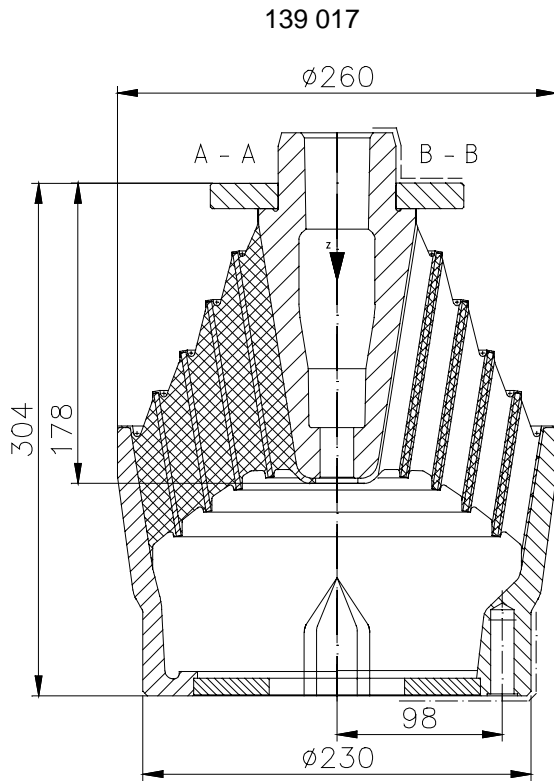
Item Number	Angle [°]	Values					
		40 Sh-A		50 Sh-A		60 Sh-A	
		Cv [kN/mm]	Fv [kN]	Cv [kN/mm]	Fv [kN]	Cv [kN/mm]	Fv [kN]
601001	10	0.849	14.72	1.138	19.62	1.422	21.47
	12	0.976	15.45	1.305	20.60	1.638	22.66
	14	1.113	16.19	1.491	21.58	1.864	23.74
	16	1.275	16.92	1.707	22.56	2.139	24.81
601002	10	0.759	10.79	1.045	14.22	1.189	15.70
	12	0.917	11.28	1.236	15.21	1.502	16.68
	14	1.070	11.77	1.395	16.19	1.731	17.66
	16	1.203	12.75	1.612	17.17	2.026	18.64
601003	10	0.981	16.19	1.319	22.07	1.687	24.53
	12	1.118	17.17	1.501	23.05	1.884	25.50
	14	1.290	18.15	1.727	24.03	2.168	26.49
	16	1.319	19.13	1.991	25.51	2.497	27.96
601004	10	1.570	26.49	2.099	35.32	2.634	39.24
	12	1.805	27.96	2.418	37.28	3.026	41.20
	14	2.080	29.43	2.786	39.24	3.492	43.16
	16	2.399	30.90	3.213	41.20	4.022	45.13
602001	10	0.310	5.15	0.410	6.85	0.515	7.55
	12	0.345	5.35	0.460	7.15	0.580	7.85
	14	0.390	5.55	0.530	7.45	0.660	8.20
	16	0.445	5.80	0.600	7.75	0.750	8.55
602002	10	0.360	4.00	0.533	5.90	0.794	7.35
	12	0.407	4.40	0.603	6.55	0.898	8.15
	14	0.461	4.95	0.683	7.30	1.018	9.10
	16	0.523	5.55	0.774	8.20	1.154	10.20
602003	10	0.680	21.10	0.910	27.95	1.135	30.90
	12	0.775	22.10	1.035	29.45	1.295	32.35
	14	0.895	23.05	1.185	30.90	1.485	33.85
	16	1.010	24.55	1.345	32.35	1.680	35.80
602004	10	1.120	32.85	1.495	44.15	1.875	48.55
	12	1.325	35.80	1.765	47.60	2.210	52.50
	14	1.560	38.75	2.080	52.00	2.600	57.40
	16	1.825	42.20	2.430	56.40	3.050	62.30
602005	10	0.790	24.05	1.050	31.90	1.315	35.30
	12	0.925	25.50	1.235	34.35	1.545	37.75
	14	1.080	27.45	1.440	36.80	1.805	40.20
	16	1.265	29.45	1.685	39.25	2.110	43.15
603001	10	0.427	4.70	0.628	6.90	0.940	8.60
	12	0.500	5.55	0.735	8.10	1.100	10.15
	14	0.584	6.55	0.861	9.60	1.288	11.95
	16	0.680	7.65	1.005	11.30	1.501	14.05
603002	10	1.120	56.50	1.500	75.50	1.875	83.00
	12	1.330	61.00	1.780	81.50	2.225	89.50
	14	1.570	65.50	2.100	87.50	2.625	96.00
	16	1.850	70.00	2.475	94.00	3.095	103.50
603004	10	0.980	41.00	1.300	54.00	1.625	59.50
	12	1.120	42.50	1.490	57.50	1.860	63.30
	14	1.280	45.00	1.700	60.20	2.130	66.50
	16	1.450	48.00	1.940	64.00	2.420	70.50
604001	10	1.214	68.00	1.636	90.00	2.302	99.00
	12	1.440	72.00	1.892	96.50	2.523	106.00
	14	1.681	76.50	2.241	102.00	3.055	110.00
	16	1.849	79.50	2.650	106.00	3.594	115.00

There is a possible deviation of approx. +/-20% in the above values due to production and hardness tolerances.

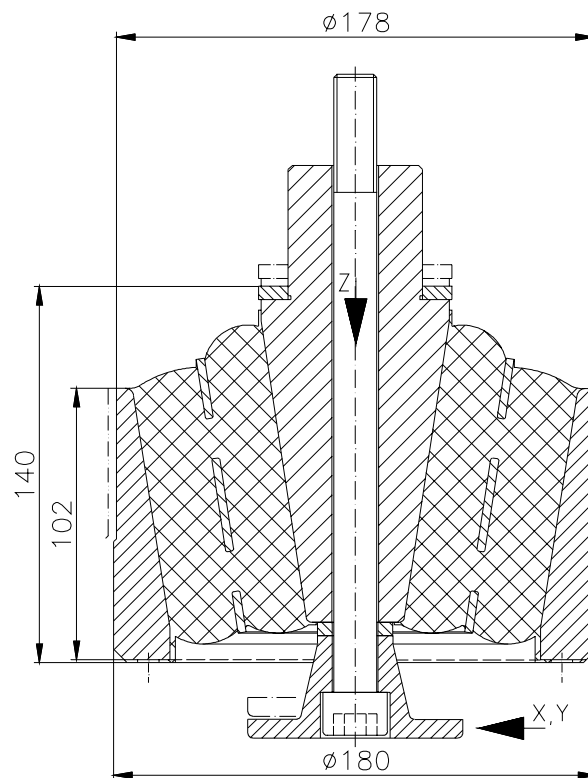
- **Description of parts and functions:**

GMT cone springs are used, among other things, in body manufacturing for the bedding and suspension of the engine in the chassis frame. Being vibration insulators and dampers, cone springs allow for relatively considerable spring excursion and have a progressive characteristic curve. Buffers also help to absorb shock loads without causing irreparable damage to the part. If different degrees of stiffness are required in X and Y directions, use models with kidney-shaped recesses.

- **Dimensions :**



636 021 (under regular load)



• **Spring characteristics :**

Item number	Shore hardness [Sh-A]	Force Fz empty [kN]	Path Fz empty [mm]	Force Fz buffer [kN]	Path Fz buffer [mm]	Stiffness [N/mm]		
						Fz empty/buffer Cz	with Fz empty Cx	Cy
139017	45	31	50,6	44	82,1	550	4700	2500
139018	45	40	34,9	56	67,4	850	5300	2800
636021	50	21,1	23,3	26,4	43,9	656	2600	2600

There is a possible deviation of approx. +/-20% in the above values due to production and hardness tolerances.

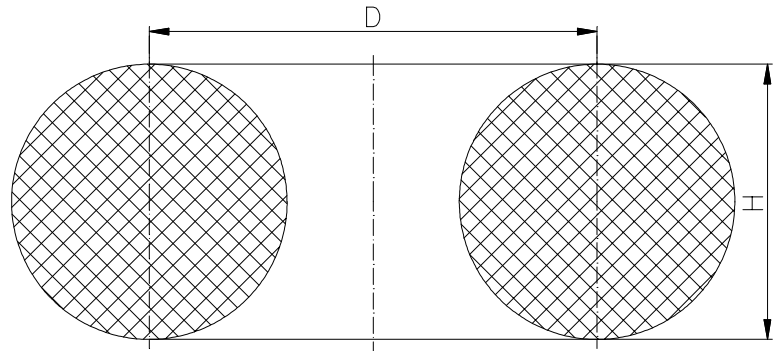
- **Description of parts and functions:**

GMT-roller-springs are vibration damping elements consisting of a rubber ring, a tapering metal pin and a metal housing. Their metal parts and the rubber ring are not bonded together by vulcanisation.

roller-springs are used for damping vibrations in rail vehicles. The characteristics of roller-springs can be varied as required within their permissible capacity.

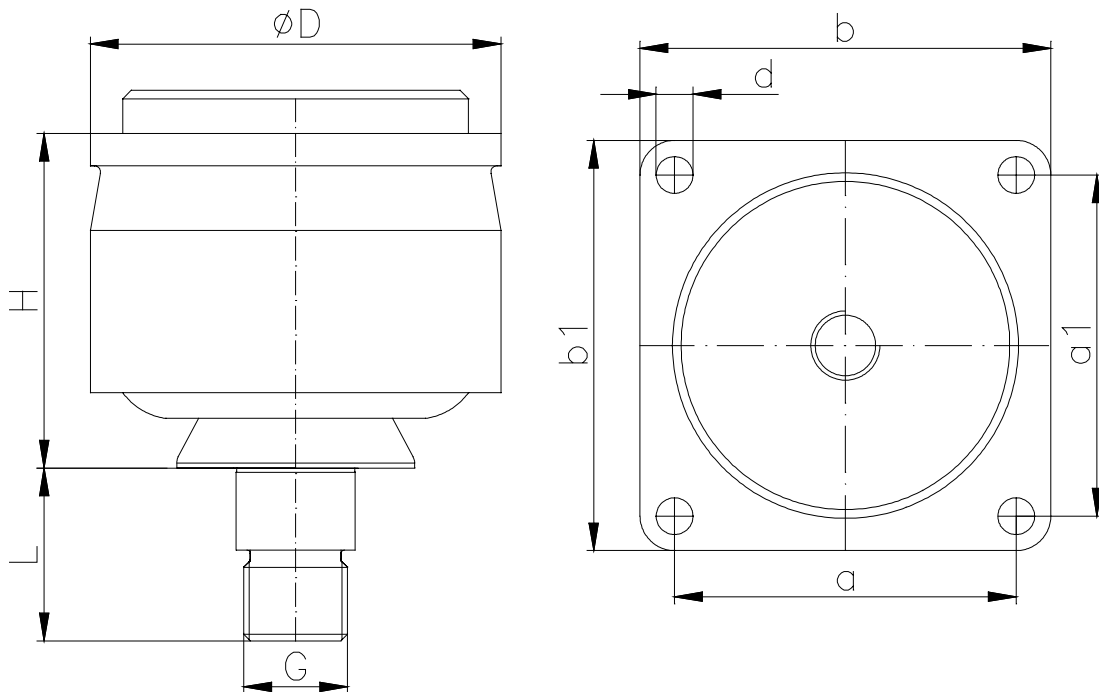
- **Dimensions:** only rubber-rings

Height [mm]	Diameter [mm]
80	130
95	135
110	150
120	190
120	220
130	185
150	230
150	300



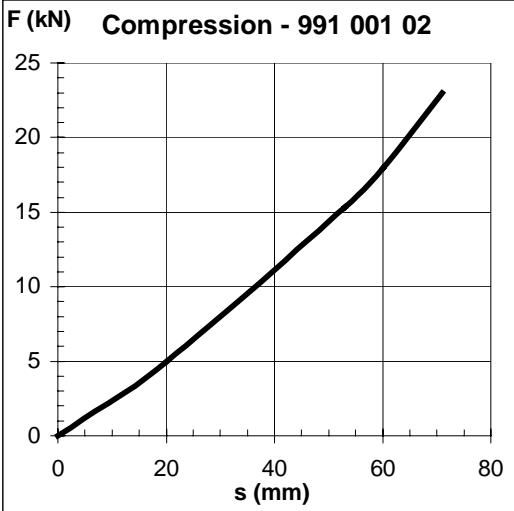
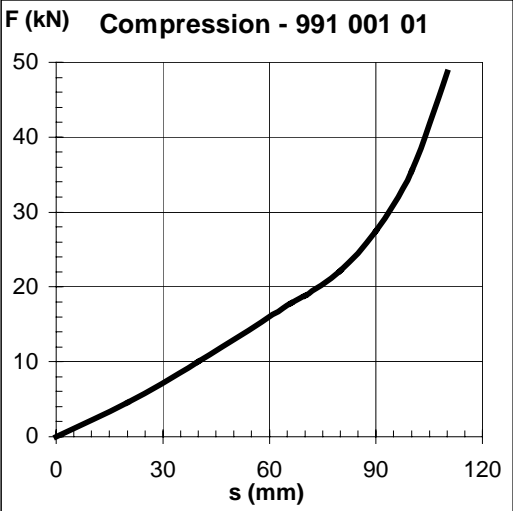
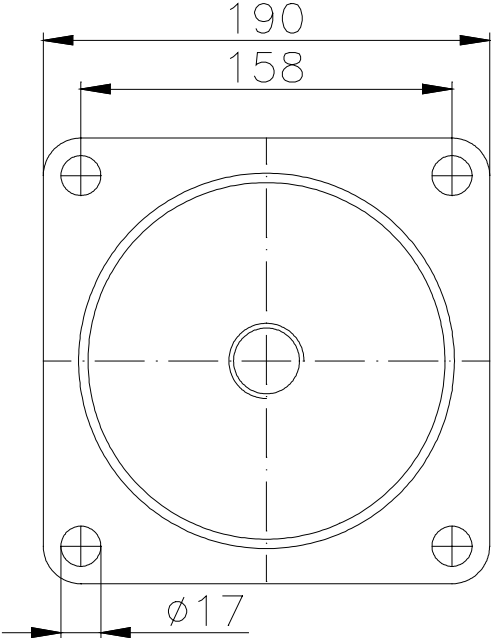
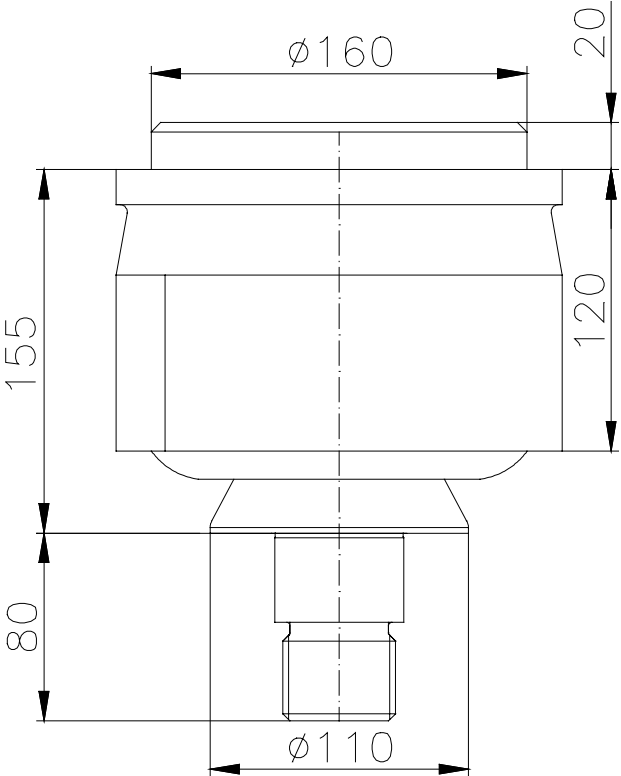
- **Dimensions:** roller-springs

Item number	H [mm] before setting	D [mm]	d [mm]	G [mm]	L [mm]	a [mm]	b [mm]	a1 [mm]	b1 [mm]
991 001	ca. 155	ca. 190	17	M48x2	80	158	190	158	190
991 002	ca. 158	225	18	75	78	200	245	200	245
991 003	ca. 246	199	17	60	65,4	150	182	150	182
991 005	ca. 266	225	-	124	23	-	-	-	-
991 006	ca. 205	210	18	M24	95	155	190	175	210
991 007	ca. 220	220	18	M24	100	155	200	175	220
991 008	ca. 260	225	18	70	20	160	200	160	200
991 009	ca. 152	225	15	M48x2	128	158	188	158	188
991 010	ca. 275	228,5	17	M42	150	160	200	160	200

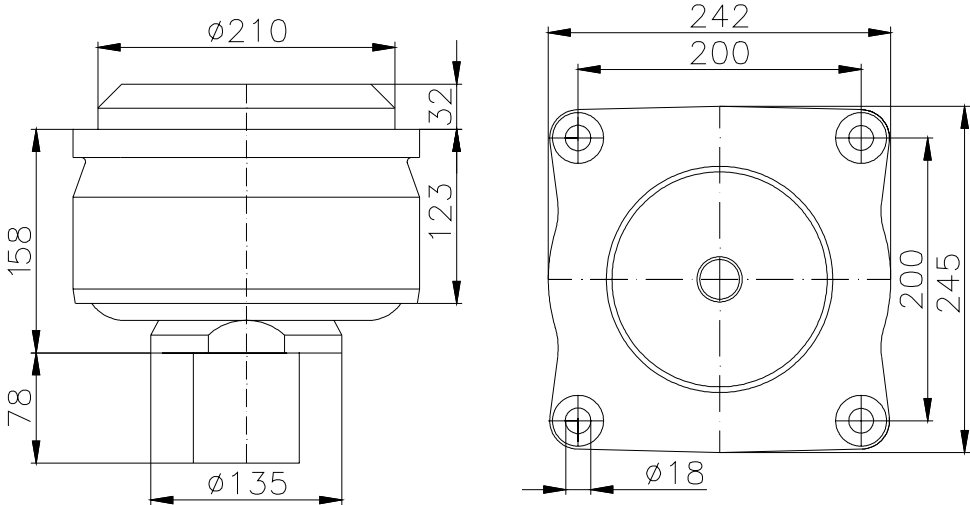


• Dimensions/Spring characteristics :

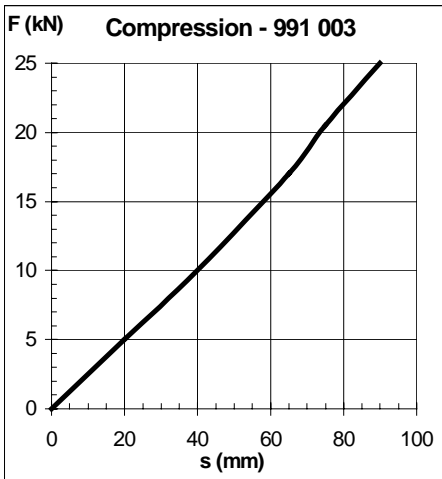
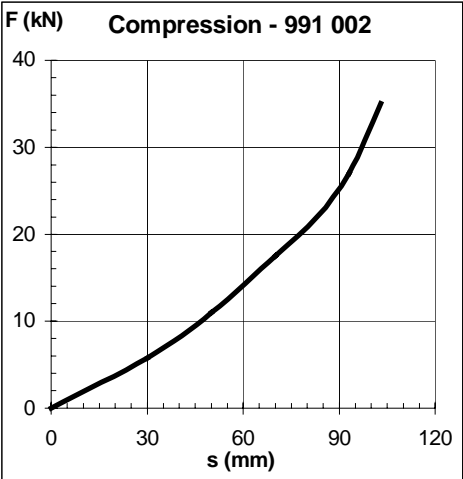
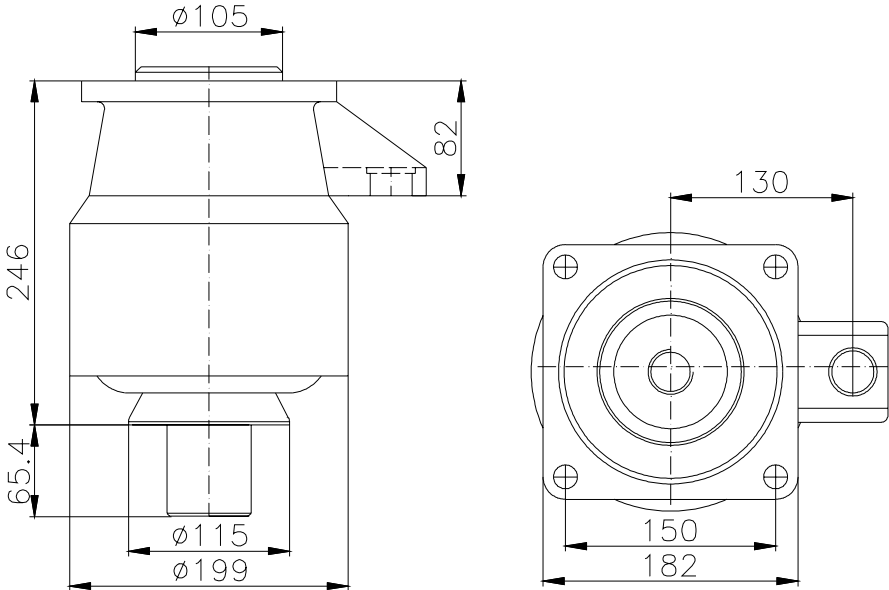
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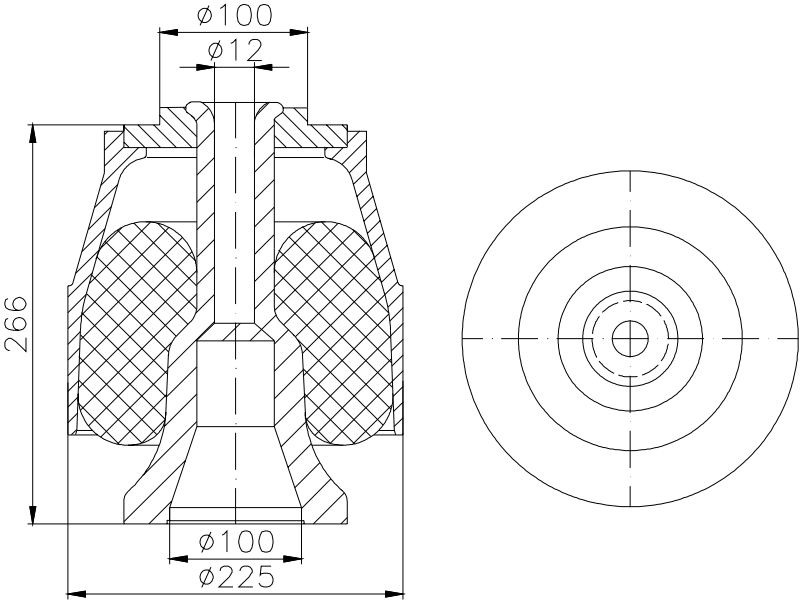
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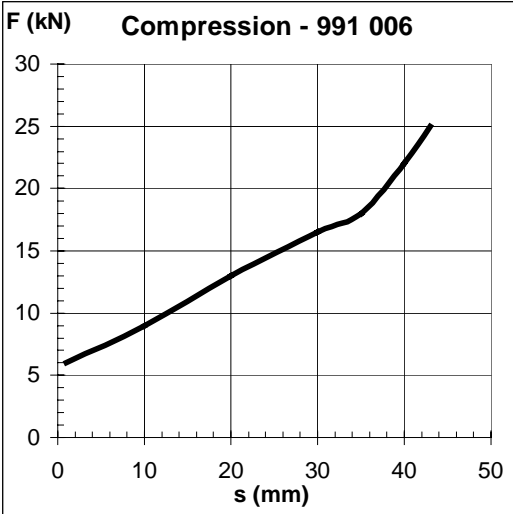
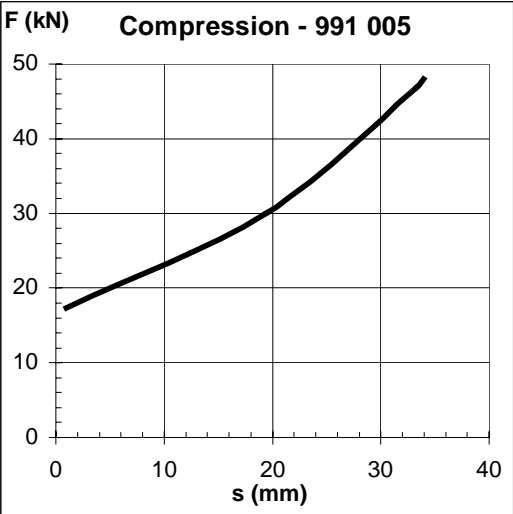
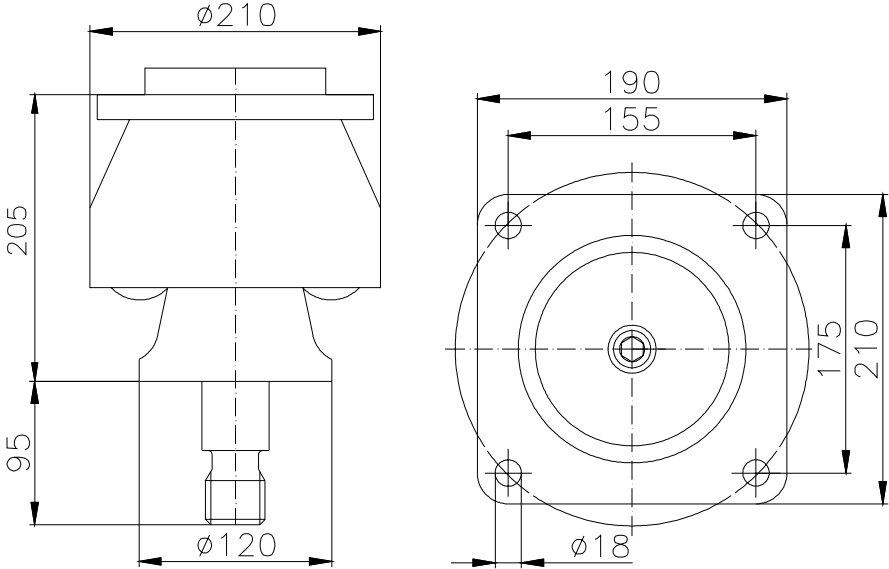
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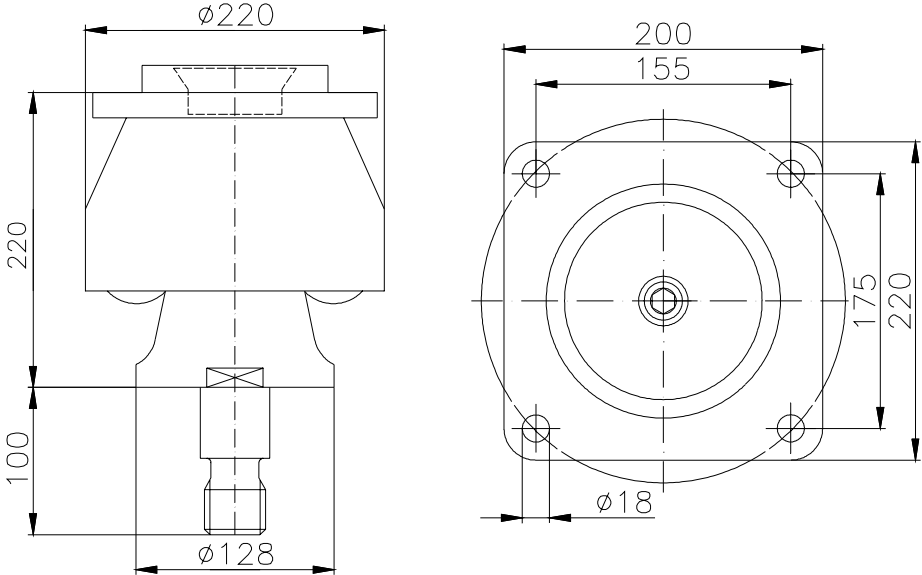
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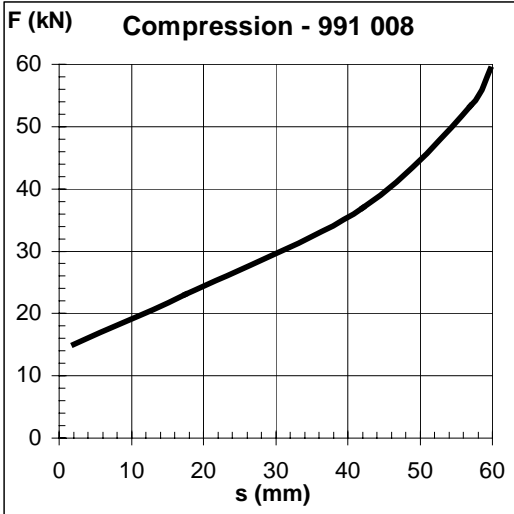
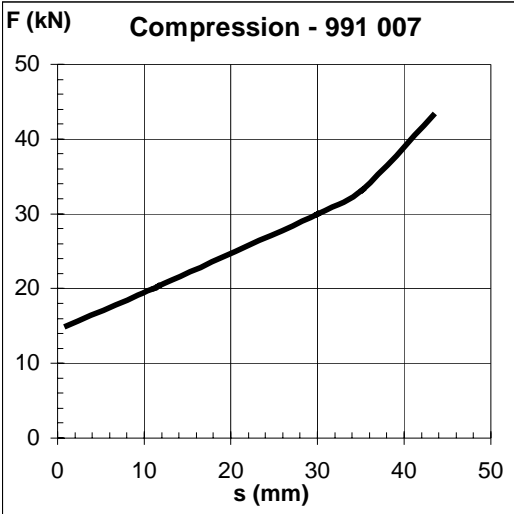
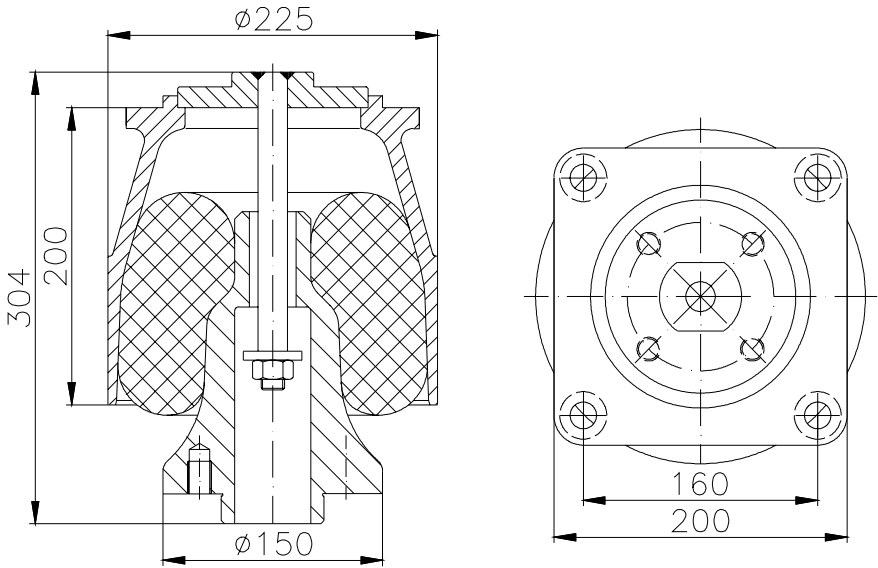
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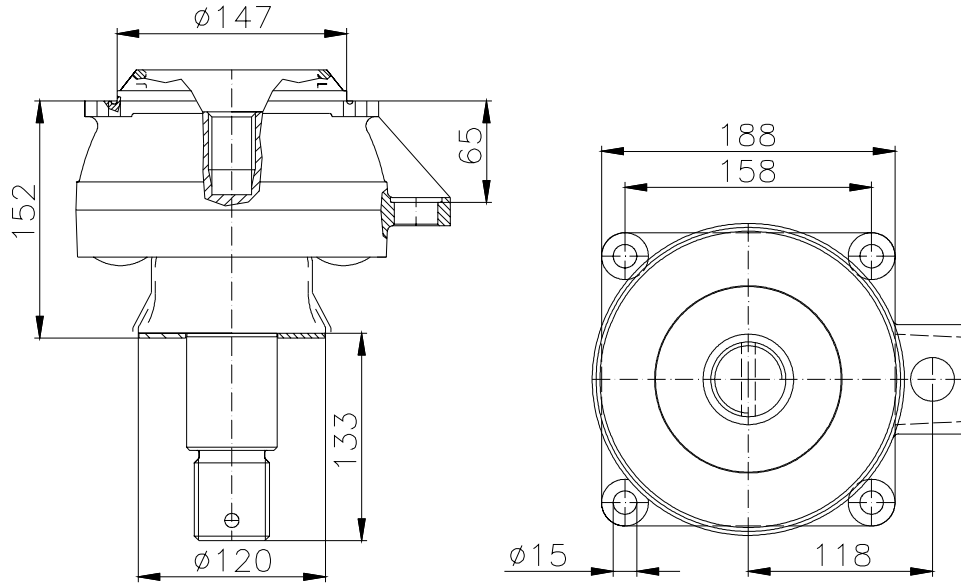
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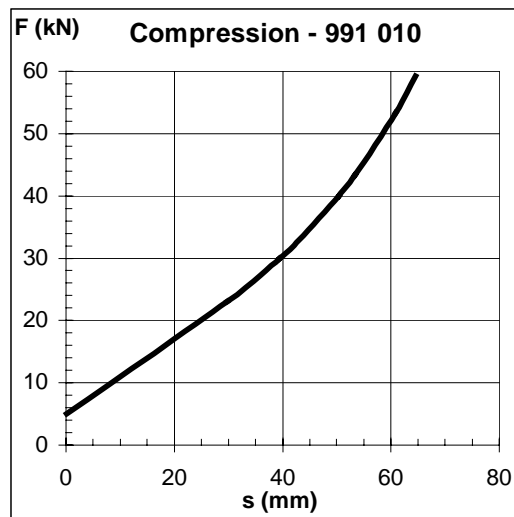
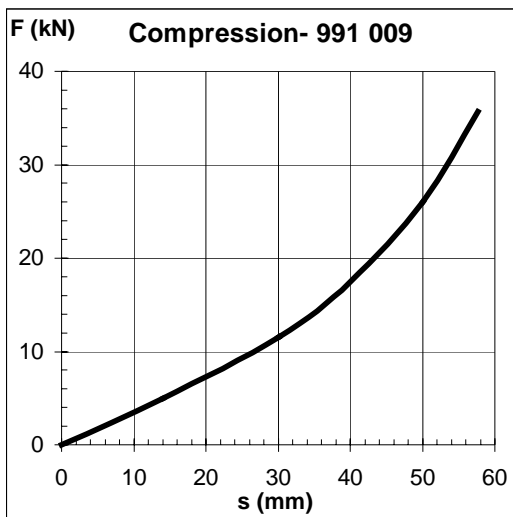
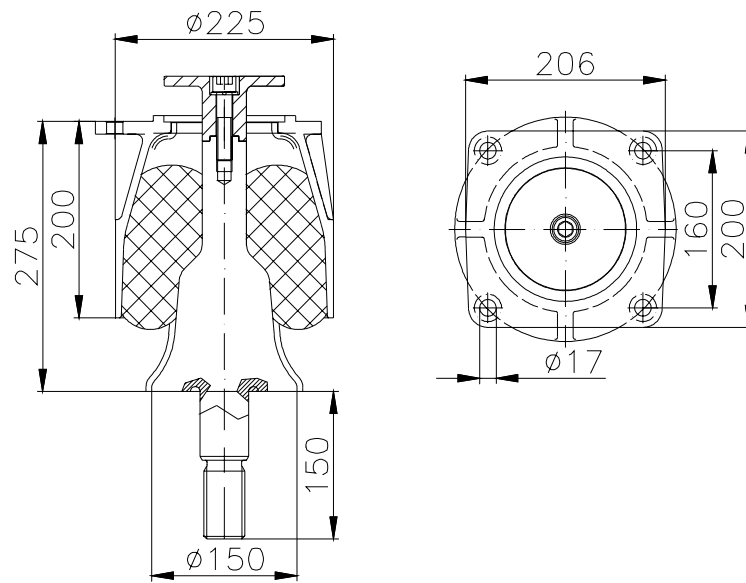
991 008



991 009



991 010



There is a possible deviation of approx. +/-20% in the above values due to production and hardness tolerances.