

## Rubber-metal elements

### General description of rubber-metal elements

STENFLEX® rubber-metal elements have served with distinction for decades as anti-vibration elements in machine construction, engine manufacture and plant construction. Large-scale industrial manufacture in line with EN ISO 9001:2008, coupled with many years of experience in the development and production of rubber-metal elements guarantee our consistently high standard of output quality. Our products are used in a wide variety of applications and ensure trouble-free on-site operation.



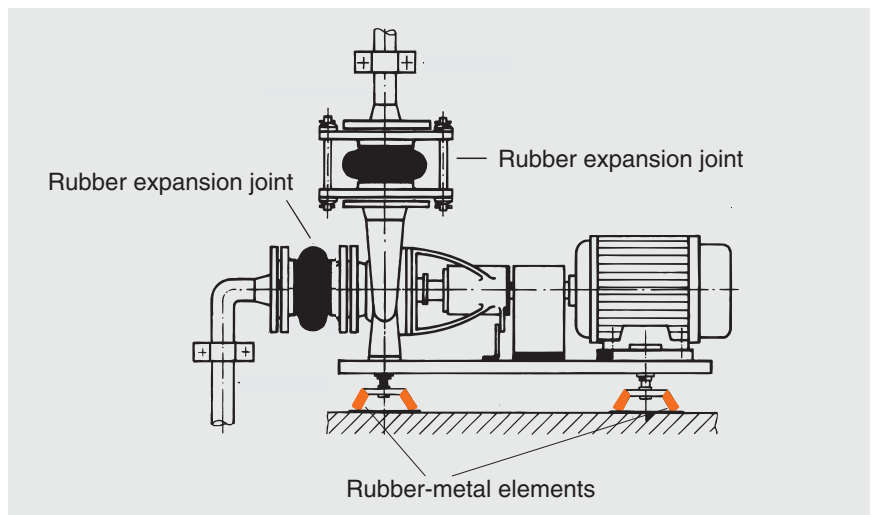
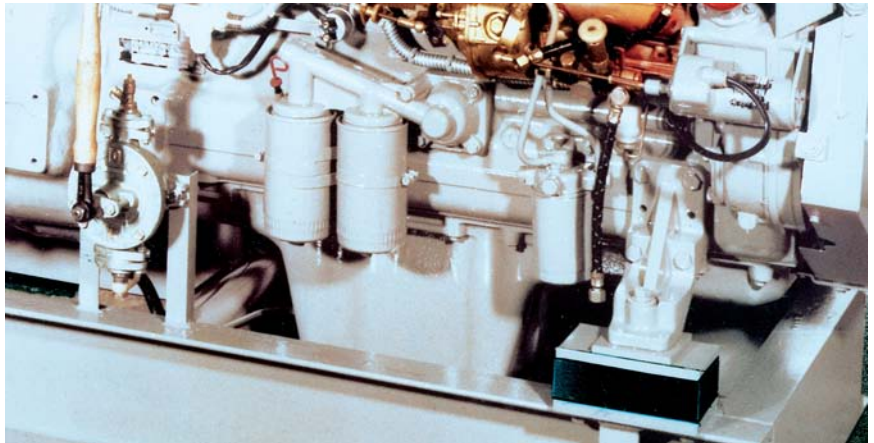
For optimum insulation of structure borne sound we recommend mounting appliances, machinery etc., on anti-vibration elements. This solution is a sensible addition to fitting pipes with sound-absorbing rubber expansion joints. Our highly qualified engineers are always ready to assist our customers in matters of technical consultation and to rate component elements.

#### Purpose

The natural properties of rubber are ideally suited to dampen vibration.

STENFLEX® rubber-metal elements are used as bearings to absorb

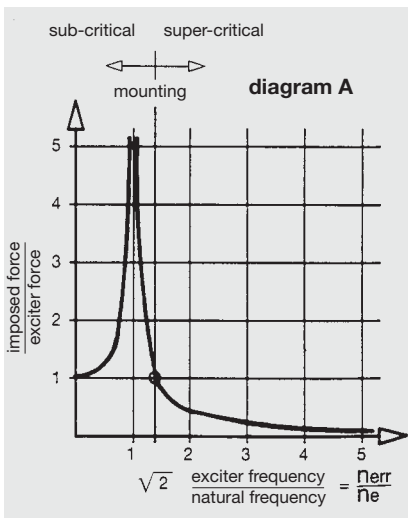
- vibration
  - shaking
- or for muffling sound at
- machines
  - measuring equipment
  - engines
  - pumps
  - appliances
  - rollers, etc.



## Development / Design / Rating

STENFLEX® rubber-metal elements are rated theoretically using state-of-the-art computing techniques and optimized under experimental and practical conditions.

Every elastically mounted machine loses equilibrium and vibrates when jolted or impacted. This system vibrates in a certain rhythm with a constant number of vibrations per time unit (natural frequency). If the elastically mounted machine is also subject to a periodic force, the system vibrates with forced vibrations (exciter frequency). Both factors are very important in elastic mounting as indicated by the curve shown in diagram A.



This indicates that vibration insulation is only given if the exciter frequency  $n_{err}$  is sufficiently superior to the natural frequency  $n_e$ . In any case the sympathetic resonance range must be passed through, i.e., the range in which exciter frequency and natural frequency become identical. Passing through the sympathetic resonance range must occur as quickly as possible. Otherwise vibrations can magnify each other, theoretically, to infinitely large amplitudes. The material attenuation in rubber-metal elements pre-

vents the amplitude from rising above and beyond a certain level.

In the interest of effective elastic bearing, the bearing system must be adequately super-critical for both active and passive interference suppression.

We recommend a ratio of  $n_{err} : n_e$  of at least 2 : 1 to guarantee an insulation degree of at least 60 %.

The spring constant  $C$  of the rubber-metal elements is indicated in the individual data sheets as  $C_D$  for purely compressive stress and as  $C_S$  for shearing stress.

For the sake of simplicity, the degrees of insulation can be read in percentages from diagram B without the need to calculate the natural frequency, given a certain exciter frequency and the static sag.

### Natural frequency

$$n_e = \frac{300}{\sqrt{f}}$$

$f$  = static sag

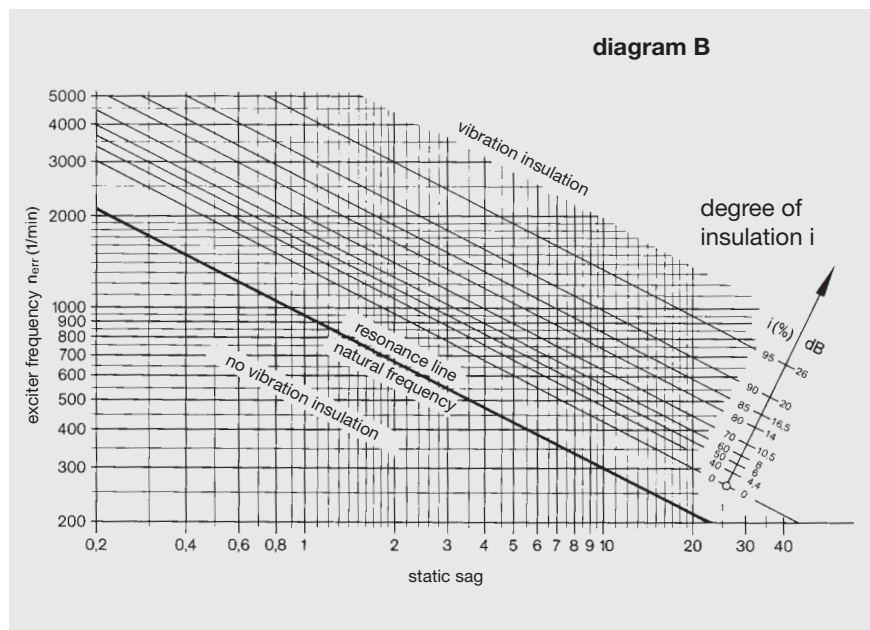
$n_e$  = natural frequency (1/min).

The values  $F_{tol}$  stated in the following data tables for rubber-metal elements indicate the tolerable permanent static loads onto which alternating dynamic loads can be superimposed. These values indicate approximate static load only. Where extremely high dynamic alternating loads or high frequencies occur, load data should be reduced accordingly.

### Degree of insulation

$$i = \frac{\left(\frac{n_{err}}{n_e}\right)^2 - 2}{\left(\frac{n_{err}}{n_e}\right)^2 - 1} \cdot 100$$

$i$  = degree of insulation (%)  
 $n_{err}$  = exciter frequency (1/min)



## Rubber-metal elements

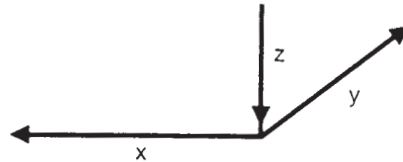
### General description of rubber-metal elements

#### Development / Design / Rating

In most cases the machine bearing must take differing spring rates into account in the various load directions.

The directions of the applying force and deformations are called x, y and z for unequivocal definition.

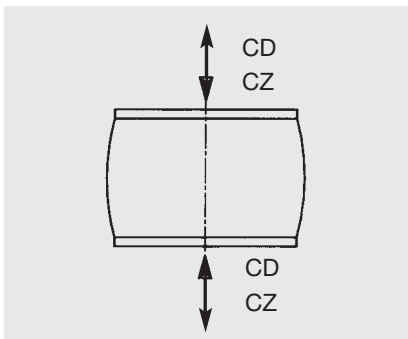
Accordingly, the spring rates for the corresponding directions are called  $c_x$ ,  $c_y$  and  $c_z$ .



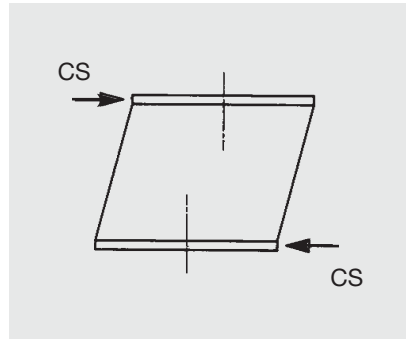
#### Spring rate

$$C = \frac{P}{f}$$

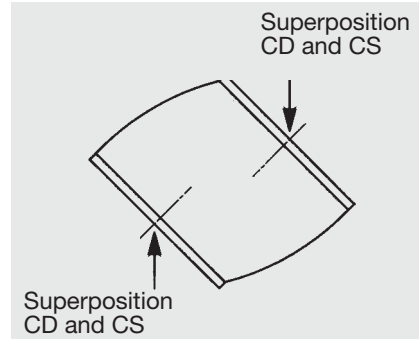
C = spring rate (N/mm)  
 P = force (N)  
 f = static sag of the spring element (mm)



For vertical force introduction  
 Compressive stress  
 Tensile stress

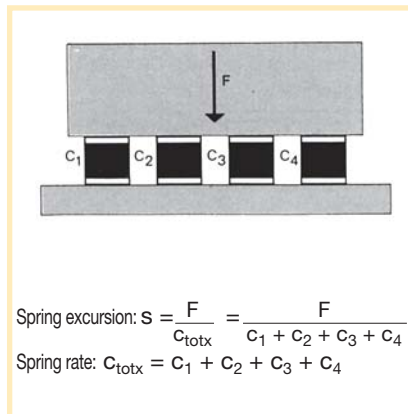


For lateral force introduction  
 Shearing stress

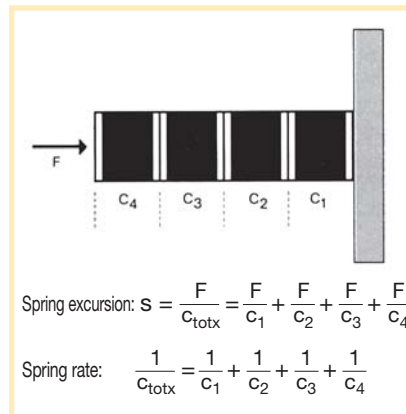


For oblique force introduction  
 Superimposed compressive/shearing stress

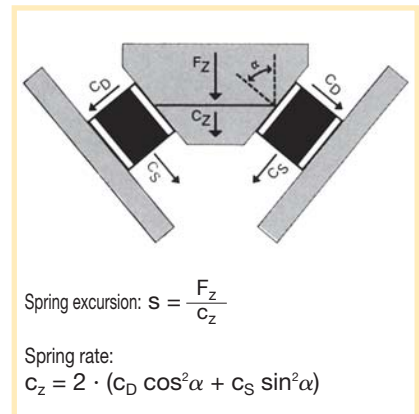
CD = spring rate – compressive stress (N/mm)  
 CZ = spring rate – tensile stress (N/mm)  
 CS = spring rate – shearing stress (N/mm)



Parallel arrangement



Successive arrangement



Superimposed stress

## Definitions

### Attenuation (damping)

Attenuation corresponds to the energy loss per vibration. In vibration technology, the mechanical loss angle is used as a measure of attenuation.

Attenuation is not a constant value. It depends on

- rubber grade
- temperature
- deformation speed
- shape
- kind of tension

In general, weakly attenuating compounds are used for vibration damping because they achieve a better insulating effect in the super-critical bearing range.

To attain good fatigue strength under compressive stress, generally static spring deflection of 10% – 15% of the original rubber height is allowed.

### Elasticity

Elasticity behaviour varies from one type of rubber to another.

Elasticity is stated as 'rebound resilience' as a percentage (DIN 53512). High elasticity corresponds with low attenuation.

### Ozone resistance

Ozone resistance is an important property which is also the basis for weathering resistance (DIN 53509).

Ozone is modified oxygen which occurs in varying concentrations in the atmosphere. Ozone can cause cracking in stretched rubber, running crosswise to the direction of tension. Before ozone cracking can occur the rubber must have exceeded a certain tension or extension limit. This is generally referred to as critical extension. The speed and extent of such damage depends on the exposure conditions and, to a great extent, on the rubber mixture itself.

### Deformation

Permanent deformation under load is unavoidable in rubber elements. Individual molecule chains 'slide off' each other under static load. This is referred to as 'flow' or 'creeping' (DIN 53444).

Under dynamic load the term used is 'settlement'. This permanent deformation is proportional to the logarithm of time and dependent on temperature; it is stated as a percentage of static spring deflection. Permanent deformation of around 25% is normal.

Elements of natural rubber usually behave much more favourably in terms of permanent deformation than comparable synthetic rubber elements.

### Hardness

This refers to the relative resistance of the surface to the impressions of a penetrating body of certain dimensions under a certain load. The hardness coefficients indicate either penetration depth or appropriate fractions derived from this, such as Shore hardness (DIN 53505).

### Adhesion

Two-ply adhesion primer systems are mainly used to bond the elastomers to the metal.

This system offers good adhesion and effective protection against subversive rust. The adhesion primers are applied to the clean, grease-free bonding surface (following mechanical and/or chemical pre-treatment) such as brushing, dipping or spraying. The vulcanization process then creates a permanent bond between the rubber mixture and the metal.

The resulting adhesion properties normally exceed the breaking strength of the elastomers being used.

Absolute tearing values are dependent on the strength of the rubber mixture and on the geometry or shape of the item. The finished parts can be subsequently galvanized without impairing the adhesive bond.

### Processing

After vulcanization rubber parts can be processed by grinding, cutting or puncturing, punching and also drilling. Please ensure that as little heat as possible is introduced to the adhesion zones.

### Tolerances

Dimensional tolerances refer to the pertinent DIN standards. Rubber dimensional tolerances are stipulated in DIN 7715.

The same applies to the material properties of the rubber elements. Hardness can fluctuate by  $\pm 5$  Shore points. The tolerance range for the spring rate is  $\pm 20\%$ .

It is possible to reduce the tolerance range for spring rate to  $\pm 10\%$ , to meet tough technical requirements. The procedure, however, is complex.

## Rubber-metal elements

### General description of rubber-metal elements

#### Versions

Rubber-metal elements vary according to the following criteria:

- Type (buffer, rail, ceiling elements, machine feet, bearing elements)
- Kind of connection (male thread, female thread, drilled mounting holes)
- Shore hardness (45, 60, 70 Shore A)
- Stress (compressive, shearing, simultaneous)

The rubber-metal elements are delivered ready for installation. Together with the standard versions featured in the catalogues special versions, designed and developed to operate under special conditions can be produced on request.



#### Stopper buffers

**Structure:**

Cylindrical or parabolic rubber buffers with highly progressive curve. Metal plate vulcanized onto one side, with threaded bolt (male thread) or with female thread.

**Stress:**

Compressive stress in axial direction. To absorb shock and impact force (limits spring excursion)



#### Buffer elements

**Structure:**

Cylindrical rubber buffers or buffers with retracted rubber edge. Metal plate vulcanized onto one or both sides with threaded bolt (male thread) or with female thread.

**Stress:**

Compressive and tensile stress in the axial direction. Shearing stress in lateral direction. To absorb shock and acceleration force.



#### Ceiling elements

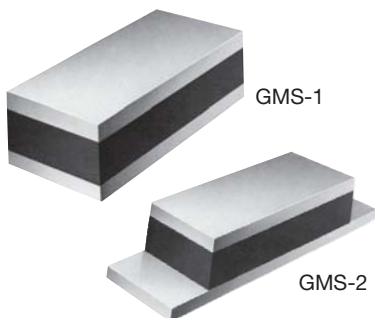
**Structure:**

Elastic hollow profile rubber body with safety bar. Threaded bolt vulcanized onto one side (male thread). U-metal profile drilled through for securing to the ceiling.

**Stress:**

Compressive and tensile stress in axial direction. To absorb shock and acceleration force.

## Versions



### Rails

#### Structure:

Flat rubber body for high loads. Metal rails vulcanized onto both sides. Drilled mounting holes can be applied to the metal rails, on-site.

#### Stress:

High compressive and shearing stress in constricted space.



### Machine feet

#### Structure:

Elastic rubber body encapsulated in a metal casing. Steel securing plate vulcanized onto one side (drilled mounting holes). Other side with threaded bolt (male thread) or with female thread.

#### Stress:

High compressive and tensile movement in axial direction (bottoming). Slight shearing movement in lateral direction.



### Bearing elements

#### Structure:

Highly elastic ring-shaped, U- or W-shaped rubber bodies. Metal securing plates vulcanized onto both sides, with threaded bolts (male thread) or with drilled mounting holes.

#### Stress:

Compressive and tensile stress in axial direction. Shearing stress in lateral direction. To absorb shock and acceleration force.

## Special versions



Rubber-metal machine foot



Rubber-metal cone



Rubber-metal socket

## Rubber-metal elements

### General description of rubber-metal elements

#### Rubber-metal elements

##### Structure

STENFLEX® rubber-metal elements have been optimized by calculation and verified by experimentation to produce highly elastic damping elements with very good adhesion between the rubber and metal components.

##### Material qualities

STENFLEX® rubber-metal elements are made of synthetic elastomers. Their wide range of industrial application is covered by combining three standard hardness categories:

soft = approx. 45 Shore A  
 medium = approx. 60 Shore A  
 hard = approx. 70 Shore A

Elastomers are basic materials to which sulphur, fillers, plasticizers and ageing protection agents are added to produce rubber compounds suitable for vulcanization. Under the influence of temperature and pressure, the vulcanization process (cross linkage) converts the rubber compounds into rubber grades with their inherent and typical elastic properties.

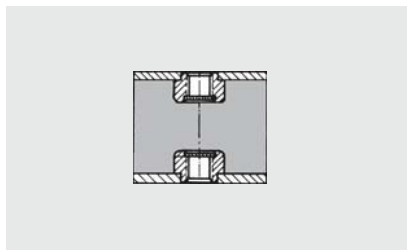
Material properties such as hardness, elasticity, tensile strength, temperature resistance etc., are rated to the corresponding application. Documents detailing media resistance of the rubber grades are available on request.

Rubber grade	Trade name	Properties	Applications
<b>NBR</b> Butadiene Acrylonitrile	Perbunan	Quality with excellent oil resistance, very resistant to swelling, e.g. even in contact with petrol/benzole mixture. Temperature resistance in continuous operation -30 °C to + 90 °C.	Water, gas, fuel oil, mineral oil

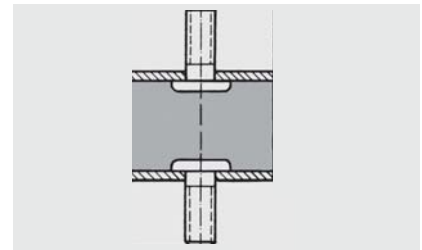
#### Connection parts

STENFLEX® rubber-metal elements are supplied ready for installation. They are connected with standard screwed unions. As a rule the elements are equipped with a male or female thread, in accordance with ISO 7-1 (DIN 2999). Some types are drilled through to be fitted with commercially available screws. Rubber-metal rails can be drilled for mounting on-site, as required.

The used metal pieces consist of unalloyed steel, oiled or electrogalvanized.



Type GMP-3 with female thread as per ISO 7-1



Type GMP-1 with male thread as per ISO 7-1

Material threaded part	Material No. as per DIN EN	Designation as per DIN EN (DIN) or strength class
<b>Unalloyed steel</b>	<b>1.0038</b>	<b>S235JR</b> <b>5.6, 8.8</b>

#### Symbols for a quick product selection

The easy-to-find list: symbols and their meaning. The colour bar indicates small symbols that illustrate the special features of the corresponding types, for easy pre-selection.

<p>Suitable for high compressive stress when hard bearing is required and large loads occur.</p>	<p>Suitable for combined compressive/shearing stress under high and medium loads, when simultaneous large spring excursion is required.</p>	<p>Available in hard rubber hardness</p>
<p>Constricted elements, with enlarged adhesion surface, suitable for tensile stress.</p>	<p>Available in soft rubber hardness</p>	<p>Suitable for sound and vibration damping</p>
<p>Suitable for medium shearing stress when large spring excursion is required.</p>	<p>Available in medium rubber hardness</p>	<p>Resistant to weathering/ozone</p>

## Applications / Properties / Possible uses / Industries

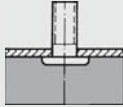
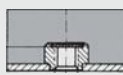
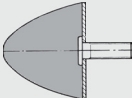
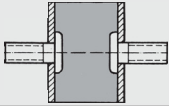
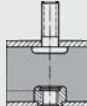

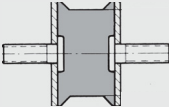
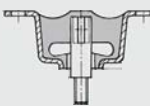
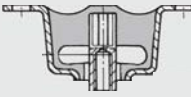
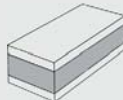
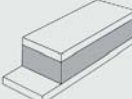
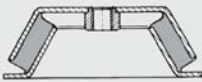

STENFLEX® rubber-metal element types		GMA-1/-2	GMA-3	GMP-1/-2/-3	GMP-4	GMS-1/-2	GMF-1/-2	GML-R	GML-U	GML-V/-W	GMD-1/-2
<b>Applications</b>	Shock absorption	■	■	■	■	■	■	■	■	■	■
	Sound and vibration absorption	■	■	■	■	■	■	■			■
	Protection from jarring	■	■	■	■	■	■	■	■	■	■
	Elastic bearing	■	■	■	■	■	■	■	■	■	■
	Compensation for installation inaccuracies	■	■	■	■		■	■			
<b>Properties</b>	Tensile stress				■			■			■
	Compressive stress	■	■	■	■	■	■	■	■	■	■
	Shearing stress			■	■			■		■	
	Compressive/shearing stress	■	■	■	■	■		■			
	High dynamic stress				■						
	Good fatigue strength				■						
<b>Possible uses</b>	Pipelines										■
	Air and gas ducts										■
	Machinery	■	■	■	■	■	■	■	■	■	
	Engines			■	■	■	■	■			
	Pumps			■	■	■	■	■			
	Compressors			■	■		■	■			
	Condensers					■					
	Measuring devices								■	■	
	Axles and vehicle frames	■	■	■	■			■			
<b>Industries</b>	Domestic industry										■
	Heating installation										■
	Ventilation and A/C technology			■	■	■	■	■			■
	Mechanical engineering	■	■	■	■	■	■	■	■	■	
	Shipbuilding			■	■	■	■	■			■
	Hydraulic systems			■	■	■	■	■			
	Chemical industry			■	■		■	■			
	Water supply/treatment			■	■		■	■			
	Power industry			■		■		■			
	Plant construction			■	■	■			■	■	■
	Mensuration and control techniques								■	■	
	Construction of vehicles	■	■	■	■			■			

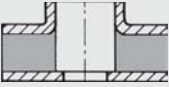
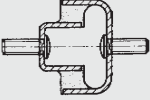


Table showing prime applications, properties, possible uses and industries.



## Rubber-metal elements

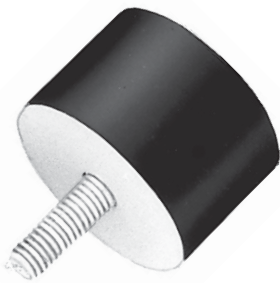
### Program summary

Stopper buffer					
	Type	Dimensions mm	Rubber hardness	Connections	Page
	<b>GMA-1</b>	Ø 18 - 100	60 Shore A	male thread on one side	5.11
	<b>GMA-2</b>	Ø 20 - 150	60 Shore A	female thread on one side	5.11
	<b>GMA-3</b>	Ø 50 - 95	60 Shore A	male thread on one side	5.12
Buffer elements					
	<b>GMP-1</b>	Ø 18 - 100	45 Shore A 60 Shore A 70 Shore A	male thread on both sides	5.13
	<b>GMP-2</b>	Ø 20 - 100	45 Shore A 60 Shore A 70 Shore A	male and female thread	5.14
	<b>GMP-3</b>	Ø 20 - 200	45 Shore A 60 Shore A 70 Shore A	female thread on both sides	5.15
	<b>GMP-4</b>	Ø 25 - 80	45 Shore A 60 Shore A 70 Shore A	male thread on both sides	5.16
Ceiling elements					
	<b>GMD-1</b>	95 x 32 x 53	45 Shore A 60 Shore A 70 Shore A	drilled mounting holes, male thread	5.17
	<b>GMD-2</b>	95 x 32 x 38	45 Shore A 60 Shore A 70 Shore A	drilled mounting holes, female thread	5.17
Rails					
	<b>GMS-1</b>	width 20 – 150 height 30 – 80 length max. 2000	60 Shore A	female thread or holes, to be drilled on-site	5.18
	<b>GMS-2</b>	width 50 – 100 height 40 – 60 length 200-480	60 Shore A	female thread or holes, to be drilled on-site	5.18
Machine feet					
	<b>GMF-1</b>	Ø 57 - 125	45 Shore A 60 Shore A 70 Shore A	drilled mounting holes, female thread	5.19
	<b>GMF-2</b>	Ø 88 - 125	45 Shore A 60 Shore A 70 Shore A	drilled mounting holes, male thread	5.19

Bearing elements					
	Type	Dimensions mm	Rubber hardness	Connections	Page
	<b>GML-R</b>	∅ 36 - 60	45 Shore A 60 Shore A 70 Shore A	drilled mounting holes	5.20
	<b>GML-U</b>	35 x 52 x 36 50 x 54 x 40	45 Shore A 60 Shore A 70 Shore A	male thread on both sides	5.21
	<b>GML-V</b>	25 x 67 x 30	45 Shore A 60 Shore A 70 Shore A	drilled mounting holes	5.22
	<b>GML-W</b>	25 x 135 x 30	45 Shore A 60 Shore A 70 Shore A	drilled mounting holes	5.22

## Rubber-metal element - Type GMA-1, GMA-2

Stopper buffer, cylindrical cross section



Type GMA-1



Type GMA-2

### Structure type GMA-1 / GMA-2

- Type GMA-1 one side with threaded bolt (male thread)
- Type GMA-2 one side with nut thread (female thread)

### Metal parts

- Material: 1.0038 (S235JR) / 8.8
- Corrosion protection: oiled or electrogalvanized

### Rubber element

- Cylindrical rubber element with metal plate vulcanized onto one side

Rubber grade	Rubber hardness	Possible uses
NBR	medium – 60 Shore A	Water, gas, fuel oil, mineral oil

### Dimensions/stress type GMA-1

ø D mm	H mm	h mm	s mm	G mm	l mm	Compressive stress		Art. No.	Pck. qty.
						Spring rate c <sub>z</sub> N/mm	Load F <sub>tol</sub> * N		
18	7.5	5.5	2	M 6	16.0	350	240	51873300-00	100
20	13.5	11.5	2	M 6	16.0	150	260	51873400-00	100
25	17.0	14.0	3	M 6	16.0	180	380	51873500-00	100
30	17.0	14.0	3	M 8	21.0	360	760	51883900-00	60
40	27.0	24.0	3	M 8	21.0	270	970	51884000-00	50
50	21.0	18.0	3	M 10	26.5	650	1760	51884100-00	20
75	25.0	22.0	3	M 12	39.0	1400	4620	51884200-00	8
100	40.0	37.0	3	M 16	44.0	1400	7770	51873600-00	4

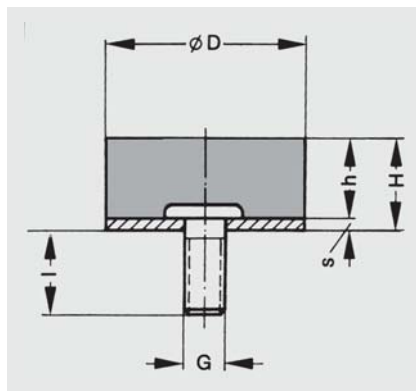
### Dimensions/stress type GMA-2

ø D mm	H mm	h mm	s mm	G mm	l mm	Compressive stress		Art. No.	Pck. qty.
						Spring rate c <sub>z</sub> N/mm	Load F <sub>tol</sub> * N		
20	13.5	12.0	1.5	M 6	9,5	220	230	51873700-00	100
30	17.0	14.0	3.0	M 8	9,5	550	620	51885400-00	80
40	27.0	24.0	3.0	M 8	9,5	350	920	51873800-00	40
50	21.0	18.0	3.0	M 10	10,5	700	1100	51885500-00	20
75	25.0	22.0	3.0	M 12	12,5	1700	3200	51885600-00	20
100	40.0	37.0	3.0	M 16	16,5	1400	4950	51885700-00	12
150	75.0	70.0	5.0	M 20	17,5	1350	11650	51873900-00	4

### Applications

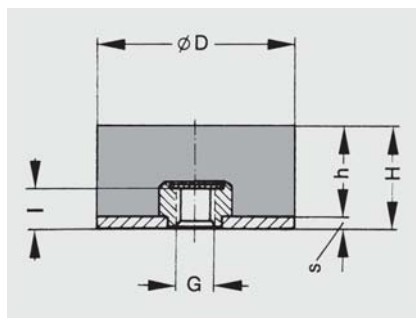
- as shock buffer stopper
- to limit impact in machinery on elastic bearings
- to limit spring excursion in vehicles
- for machines which are not firmly anchored on susceptible flooring
- for damping sound and vibration
- for compressive stress
- for superimposed compressive/shearing stress

### Versions



Type GMA-1

One side with male thread



Type GMA-2

One side with female thread

### Note

Please comply with general technical instructions. Subject to technical alterations and deviations resulting from the manufacturing process.

\* F<sub>tol</sub> is the **tolerable static permanent load**: a dynamic alternating load can be superimposed. The stated tolerable loads are only approximate indications for the static load. Delivery only possible in the stated packaging quantities (far-right column).

## Rubber-metal element - Type GMA-3

Stopper buffer, parabolic cross section



### Structure type GMA-3

- Stopper buffer with parabolic cross section and threaded bolt (male thread)

### Metal parts

- Material: 1.0038 (S235JR) / 8.8
- Corrosion protection: oiled or electrogalvanized

### Rubber element

- Parabolic rubber element with metal plate vulcanized onto one side

Rubber grade	Rubber hardness	Possible uses
NBR	medium - 60 Shore A	Water, gas, fuel oil, mineral oil

### Dimensions/stress

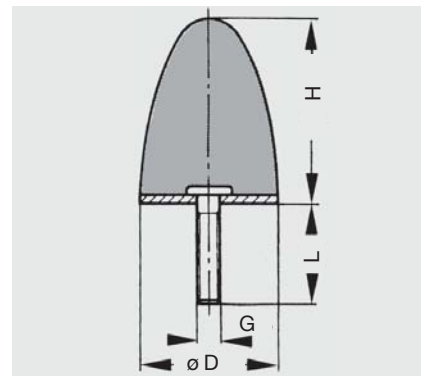
ø D mm	H mm	G mm	I mm	Rubber hardness Shore A	Compressive stress Spring excursion max. mm	Load $F_{tol}^*$ N	Art. No.	Pck. qty.
50	61	M 8	26	60	22	2500	51842300-00	10
50	67	M 8	36	60	25	1900	51842200-00	10
95	83	M 16	47	60	30	5000	51842100-00	10

\*  $F_{tol}$  is the **tolerable static permanent load**: a dynamic alternating load can be superimposed.  
The stated tolerable loads are only approximate indications for the static load.  
Delivery only possible in the stated packaging quantities (far-right column).

### Applications

- as shock buffer stopper
- to limit vibration deflection and spring excursion
- for soft absorption of impacts with progressive curves
- for damping sound and vibration
- for compressive stress
- for superimposed compressive/shearing stress

### Version



**Type GMA-3**  
One side with male thread

### Note

Please comply with general technical instructions. Subject to technical alterations and deviations resulting from the manufacturing process.



## Rubber-metal element - Type GMP-1

Buffer element, cylindrical cross section with male thread



### Rubber element

Cylindrical rubber element with metal plates vulcanized onto both sides

Rubber grade	Rubber hardness	Possible uses
<b>NBR</b>	<b>hard – 70 Shore A</b>	<b>Water, gas, fuel oil, mineral oil</b>
	<b>medium – 60 Shore A</b>	
	<b>soft – 45 Shore A</b>	

### Dimensions/stress

ø D mm	H mm	h mm	s mm	G mm	l mm	Rubber hardness Shore A	Compressive stress		Art. No.	Pck. qty.
							Spring rate C <sub>z</sub> N/mm	Load F <sub>tol</sub> * N		
18	8.5	4.5	2,0	M 6	11.0	70	800	540	00005938-00	100
18	8.5	4.5	2,0	M 6	11.0	60	500	340	00005939-00	100
18	8.5	4.5	2,0	M 6	11.0	45	300	200	00005940-00	100
18	8.5	4.5	2,0	M 6	16.0	70	800	540	51897600-00	100
20	15.0	11.0	2,0	M 6	16.0	60	180	300	51875800-00	100
20	15.0	11.0	2,0	M 6	16.0	45	110	180	51876600-00	100
25	20.0	14.0	3,0	M 6	16.0	70	350	740	51875100-00	60
25	20.0	14.0	3,0	M 6	16.0	60	220	460	51875900-00	60
25	20.0	14.0	3,0	M 6	16.0	45	130	270	51876700-00	60
30	15.0	10.0	2,5	M 8	21.0	60	590	880	51897700-00	60
30	20.0	14.0	3,0	M 8	21.0	70	570	1190	51875200-00	60
30	20.0	14.0	3,0	M 8	21.0	60	360	750	51876000-00	60
30	20.0	14.0	3,0	M 8	21.0	45	210	440	51876800-00	60
30	30.0	24.0	3,0	M 8	20.0	60	160	580	51897800-00	60
30	30.0	24.0	3,0	M 8	20.0	45	90	340	51898700-00	60
40	30.0	24.0	3,0	M 8	21.0	60	320	1150	51876100-00	20
40	40.0	34.0	3,0	M 8	21.0	70	320	1620	51875400-00	20
40	40.0	34.0	3,0	M 8	21.0	60	200	1020	51876200-00	20
50	20.0	14.0	3,0	M 10	18.5	70	2430	5100	51897000-00	12
50	20.0	14.0	3,0	M 10	18.5	60	1520	3190	51897900-00	12
50	20.0	14.0	3,0	M 10	18.5	45	890	1880	51898800-00	12
50	24.0	18.0	3,0	M 10	26.5	70	1490	4020	51897100-00	12
50	24.0	18.0	3,0	M 10	26.5	60	930	2510	51898000-00	12
50	30.0	24.0	3,0	M 10	26.5	70	900	3220	51875500-00	12
50	30.0	24.0	3,0	M 10	26.5	60	550	2010	51876300-00	12
50	30.0	24.0	3,0	M 10	26.5	45	330	1180	51877100-00	12
50	40.0	34.0	3,0	M 10	26.5	70	540	2770	51897200-00	12
50	40.0	34.0	3,0	M 10	26.5	60	340	1730	51898100-00	12
50	45.0	39.0	3,0	M 10	26.5	60	270	1580	51898200-00	12
50	45.0	39.0	3,0	M 10	26.5	45	160	930	51899100-00	12
75	55.0	49.0	3,0	M 12	39.0	70	640	4700	51897400-00	4
75	55.0	49.0	3,0	M 12	39.0	60	400	2940	51898300-00	4
75	55.0	49.0	3,0	M 12	39.0	45	235	1730	51899200-00	4
100	30.0	24.0	3,0	M 16	44.0	70	6160	22170	51897500-00	4
100	30.0	24.0	3,0	M 16	44.0	60	3850	13860	51898400-00	4
100	60.0	54.0	3,0	M 16	44.0	70	1360	11020	51875700-00	4
100	60.0	54.0	3,0	M 16	44.0	60	850	6890	51876500-00	4
100	60.0	54.0	3,0	M 16	44.0	45	500	4050	51877300-00	4

\* F<sub>tol</sub> is the tolerable static permanent load: a dynamic alternating load can be superimposed.  
The stated tolerable loads are only approximate indications for the static load.  
Delivery only possible in the stated packaging quantities (far-right column).

### Applications

- for simple elastic bearings
- highly versatile in e.g.
  - mechanical engineering
  - electrical industry
- for damping sound and vibration
- for compressive stress
- for shearing stress
- for superimposed compressive/shearing stress

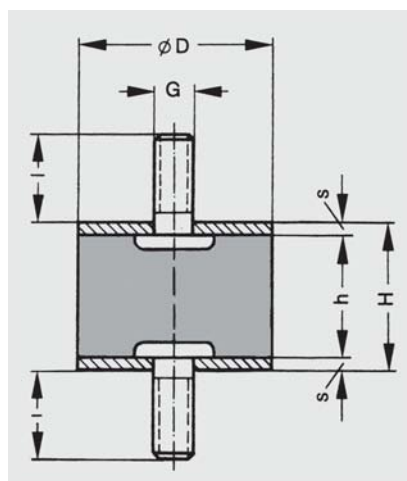
### Structure type GMP-1

Buffer element with threaded bolt (male thread) on both sides

### Metal parts

- Material: 1.0038 (S235JR) / 8.8
- Corrosion protection: oiled or electrogalvanized

### Version



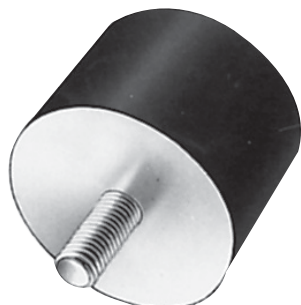
**Type GMP-1**  
Both sides with male thread

### Note

Please comply with general technical instructions. Subject to technical alterations and deviations resulting from the manufacturing process.

## Rubber-metal element - Typ GMP-2

Buffer element, cylindrical cross section with male and female thread



### Structure type GMP-2

- Buffer element, one side with threaded bolt (male thread), other side with nut thread (female thread)

### Metal parts

- Material: 1.0038 (S235JR) / 8.8
- Corrosion protection: oiled or electrogalvanized

### Rubber element

- Cylindrical rubber element with metal plates vulcanized onto both sides

Rubber grade	Rubber hardness	Possible uses
NBR	hard – 70 Shore A	Water, gas, fuel oil, mineral oil
	medium – 60 Shore A	
	soft – 45 Shore A	

### Dimensions/stress

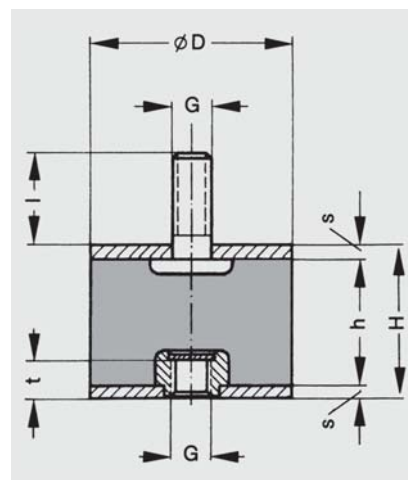
ø D mm	H mm	h mm	s mm	G mm	l mm	t mm	Rubber hardness Shore A	Compressive stress Spring rate c <sub>z</sub> N/mm	Load F <sub>tol</sub> * N	Art. No.	Pck. qty.
20	25	21.5	2/1.5	M 6	16.0	6,5	70	140	290	51870000-00	100
20	25	21.5	2/1.5	M 6	16.0	6,5	60	80	180	51870500-00	100
20	25	21.5	2/1.5	M 6	16.0	6,5	45	50	100	51871000-00	100
25	20	16.5	2/1.5	M 6	11.0	6,6	70	300	470	51870100-00	80
25	20	16.5	2/1.5	M 6	11.0	6,6	60	140	290	51870600-00	80
30	20	15.5	2.5/2	M 8	13.0	6,5	70	650	900	51870200-00	60
30	20	15.5	2.5/2	M 8	13.0	6,5	60	410	560	51870700-00	60
30	20	15.5	2.5/2	M 8	13.0	6,5	45	240	330	51871200-00	60
30	20	14.5	2.5/3	M 8	16.0	6,5	70	670	820	00005942-00	60
30	20	14.5	2.5/3	M 8	16.0	6,5	60	420	510	00005943-00	60
30	30	24.0	3	M 8	21.0	9,5	70	340	740	51878000-00	60
30	30	24.0	3	M 8	21.0	9,5	60	210	460	51878700-00	60
30	30	24.0	3	M 8	21.0	9,5	45	120	270	51879400-00	60
30	40	34.0	3	M 8	21.0	9,5	60	110	410	51870800-00	60
30	40	34.0	3	M 8	21.0	9,5	45	60	240	51871300-00	60
40	30	24.0	3	M 8	21.0	9,5	60	340	740	51870900-00	40
40	30	24.0	3	M 8	21.0	9,5	45	200	440	51871400-00	40
50	40	34.0	3	M 10	26.5	10,5	70	550	2000	51878200-00	20
50	40	34.0	3	M 10	26.5	10,5	60	350	1240	51878900-00	20
50	40	34.0	3	M 10	26.5	10,5	45	210	730	51879600-00	20
75	50	44.0	3	M 12	39.0	12,5	70	930	4600	51878400-00	12
75	50	44.0	3	M 12	39.0	12,5	60	600	2850	51879100-00	12
75	50	44.0	3	M 12	39.0	12,5	45	310	1680	51879800-00	12
100	40	34.0	3	M 16	44.0	16,5	70	3100	6700	51879300-00	4
100	40	34.0	3	M 16	44.0	16,5	60	1600	4200	51878600-00	4
100	40	34.0	3	M 16	44.0	16,5	45	1000	2500	51880000-00	4

\* F<sub>tol</sub> is the tolerable static permanent load: a dynamic alternating load can be superimposed. The stated tolerable loads are only approximate indications for the static load. Delivery only possible in the stated packaging quantities (far-right column).

### Applications

- for simple elastic bearings
- highly versatile in e.g.
  - mechanical engineering
  - electrical industry
- for damping sound and vibration
- for compressive stress
- for shearing stress
- for superimposed compressive/shearing stress

### Version



Type GMP-2  
With male and female thread

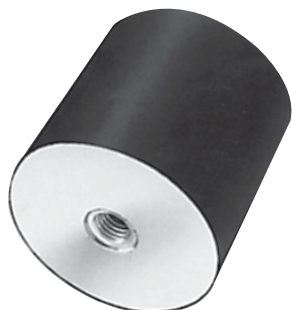
### Note

Please comply with general technical instructions. Subject to technical alterations and deviations resulting from the manufacturing process.



## Rubber-metal element - Type GMP-3

Buffer element, cylindrical cross section with female thread



### Structure type GMP-3

- Buffer element with nut thread (female thread) on both sides

### Metal parts

- Material: 1.0038 (S235JR) / 8.8
- Corrosion protection: oiled or electrogalvanized

### Rubber element

- Cylindrical rubber element with metal plates vulcanized onto both sides

Rubber grade	Rubber hardness	Possible uses
<b>NBR</b>	<b>hard – 70 Shore A</b> <b>medium – 60 Shore A</b> <b>soft – 45 Shore A</b>	<b>Water, gas, fuel oil, mineral oil</b>

### Applications

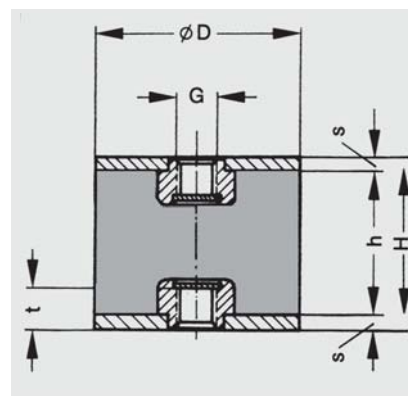
- for simple elastic bearings
- highly versatile in e.g.
  - mechanical engineering
  - electrical industry
- for damping sound and vibration
- for compressive stress
- for shearing stress
- for superimposed compressive/shearing stress

### Dimensions/stress

ø D mm	H mm	h mm	s mm	G mm	l mm	Rubber hardness Shore A	Compressive stress Spring rate C <sub>z</sub> N/mm	Load F <sub>tol</sub> * N	Art. No.	Pck. qty.
20	25	22	1.5	M 6	6.5	60	120	170	51872000-00	80
20	25	22	1.5	M 6	6.5	45	70	100	51872500-00	80
30	30	24	3.0	M 8	9.5	60	360	430	51880900-00	60
30	30	24	3.0	M 8	9.5	45	210	250	51881300-00	60
40	30	24	3.0	M 10	9.5	60	550	660	51881000-00	40
50	30	24	3.0	M 10	10.5	70	1680	1520	51871600-00	20
50	30	24	3.0	M 10	10.5	60	1050	950	51872100-00	20
50	30	24	3.0	M 10	10.5	45	620	560	51872600-00	20
50	40	34	3.0	M 10	10.5	70	660	1570	51880700-00	20
50	40	34	3.0	M 10	10.5	60	410	980	51881100-00	20
75	50	44	3.0	M 12	12.5	70	980	3620	51880800-00	12
75	50	44	3.0	M 12	12.5	60	610	2010	51881200-00	12
75	50	44	3.0	M 12	12.5	45	360	1180	51881600-00	12
100	60	54	3.0	M 16	16.5	70	1360	4900	51871700-00	4
100	60	54	3.0	M 16	16.5	60	850	3060	51872200-00	4
100	60	54	3.0	M 16	16.5	45	500	1800	51872700-00	4
150	75	65	5.0	M 20	17.5	60	1630	9050	51872300-00	4
150	75	65	5.0	M 20	17.5	45	960	5320	51872800-00	4
200	100	90	5.0	M 20	17.5	60	2030	18880	51872400-00	4

\* F<sub>tol</sub> is the **tolerable static permanent load**: a dynamic alternating load can be superimposed.  
The stated tolerable loads are only approximate indications for the static load.  
Delivery only possible in the stated packaging quantities (far-right column).

### Version



**Type GMP-3**  
With female thread

### Note

Please comply with general technical instructions. Subject to technical alterations and deviations resulting from the manufacturing process.

## Rubber-metal element - Type GMP-4

Buffer element, constricted cylindrical cross section with male thread



### Structure type GMP-4

- Buffer element with threaded bolt (male thread) on both sides

### Metal parts

- Material: 1.0038 (S235JR) / 8.8
- Corrosion protection: oiled or electrogalvanized

### Rubber element

- Cylindrical rubber element with constricted cross section and metal plates vulcanized onto both sides

Rubber grade	Rubber hardness	Possible uses
<b>NBR</b>	<b>hard – 70 Shore A</b> <b>medium – 60 Shore A</b> <b>soft – 45 Shore A</b>	<b>Water, gas, fuel oil, mineral oil</b>

### Dimensions/stress

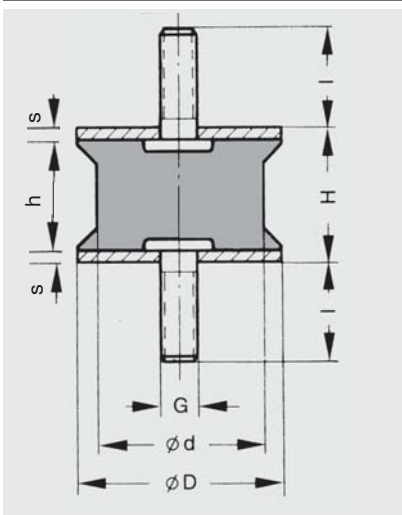
ø D mm	ø d mm	H mm	h mm	s mm	G mm	l mm	Rubber hardness Shore A	Compressive stress		Art. No.	Pck. qty.
								Spring rate C <sub>Z</sub> N/mm	Load F <sub>Tol</sub> * N		
25.0	22	22	16	3	M 8	21.0	70	320	770	51873000-00	60
25.0	22	22	16	3	M 8	21.0	60	200	480	51873100-00	60
25.0	22	22	16	3	M 8	21.0	45	120	280	51873200-00	60
40.0	35	28	22	3	M 10	16.5/21.5	60	330	1090	51882900-00	20
40.0	35	28	22	3	M 10	26.5	70	530	1740	51882000-00	20
40.0	35	28	22	3	M 10	26.5	60	330	1090	51882300-00	20
40.0	35	28	22	3	M 10	26.5	45	190	640	51882600-00	20
55.0	45	36	30	3	M 10	22.0	60	370	1670	00005945-00	8
60.0	50	60	54	3	M 10	26.5	70	340	2590	51882200-00	8
60.0	50	60	54	3	M 10	26.5	60	200	1620	51882500-00	8
60.0	50	60	54	3	M 10	26.5	45	110	950	51882800-00	8
80.0	70	70	64	4	M 14	37.0	70	540	5220	51882100-00	8
80.0	70	70	64	4	M 14	37.0	60	340	3260	51882400-00	8

\* F<sub>Tol</sub> is the **tolerable static permanent load**: a dynamic alternating load can be superimposed. The stated tolerable loads are only approximate indications for the static load. Delivery only possible in the stated packaging quantities (far-right column).

### Applications

- for high, dynamic peak stresses with good fatigue strength
- highly versatile in e.g.
  - mechanical engineering
  - electrical industry
- for damping sound and vibration
- for compressive stress
- for shearing stress
- for superimposed compressive/shearing stress
- less susceptible to tensile stress than types GMP-1, GMP-2 and GMP-3

### Version



**Type GMP-4**  
Both sides with male thread

### Note

Please comply with general technical instructions. Subject to technical alterations and deviations resulting from the manufacturing process.



## Rubber-metal element - Type GMD-1, GMD-2

Ceiling element with male or female thread



Type GMD-1

### Applications

- ideal for elastic suspension of appliances and pipes from ceilings and walls
- for damping sound and vibration
- for soft absorption of shock and acceleration force
- safe suspension of parts even under extreme impact stress
- for compressive stress
- for tensile stress

### Structure type GMD-1 / GMD-2

- Type GMD-1 with male threaded bolt vulcanized into the rubber
- Type GMD-2 with female threaded bolt vulcanized into the rubber

### Metal parts

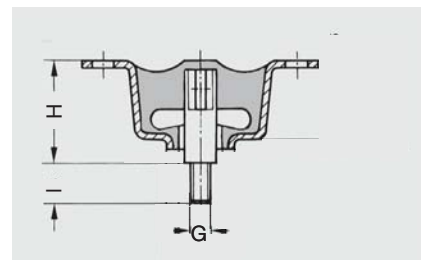
- Material: 1.0038 (S235JR) / 8.8
- Corrosion protection: oiled or electrogalvanized

### Rubber element

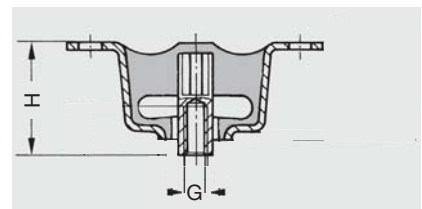
- Very elastic rubber element with safety bar and stopper. Vulcanized U-metal profil.

Rubber grade	Rubber hardness	Possible uses
<b>NBR</b>	<b>hard – 70 Shore A</b> <b>medium – 60 Shore A</b> <b>soft – 45 Shore A</b>	<b>Water, gas, fuel oil, mineral oil</b>

### Versions



**Type GMD-1**  
With male thread



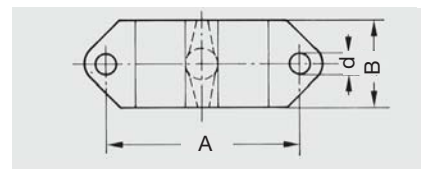
**Type GMD-2**  
With female thread

### Dimensions/stress type GMD-1

A mm	B mm	H mm	I mm	G mm	d mm	Rubber hardness Shore A	Tensile/compressive stress			Art. No.	Pck. qty.
							Spring excursion max. mm	Tol. dynamic load N	Tol. static load N		
72	32	38	15	M 8	8.5	70	9	1500	550	51893500-00	10
72	32	38	15	M 8	8.5	60	9	1000	350	51893600-00	10
72	32	38	15	M 8	8.5	45	9	600	200	51893700-00	10

### Dimensions/stress type GMD-2

A mm	B mm	H mm	I mm	G mm	d mm	Rubber hardness Shore A	Tensile/compressive stress			Art. No.	Pck. qty.
							Spring excursion max. mm	Tol. dynamic load N	Tol. static load N		
72	32	38	15	M 8	8.5	70	9	1500	550	51893800-00	10
72	32	38	15	M 8	8.5	60	9	1000	350	51893900-00	10
72	32	38	15	M 8	8.5	45	9	600	200	51894000-00	10



**Type GMD-1 and GMD-2**  
Top view

### Note

Please comply with general technical instructions. Subject to technical alterations and deviations resulting from the manufacturing process.

The stated tolerable loads are only approximate indications for the static load. Delivery only possible in the stated packaging quantities (far-right column).

## Rubber-metal element - Type GMS-1, GMS-2

Rail element, flush outside or with laterally protruding base rail



### Structure type GMS-1 / GMS-2

- Type GMS-1 with metal rails on both sides
- Type GMS-2 with metal rails on both sides, protruding on one side
- Drilled mounting holes can be applied to the metal rails, on-site

### Metal parts

- Material: 1.0038 (S235JR)
- Corrosion protection: oiled or electrogalvanized

### Rubber element

- Rail-shaped rubber element with metal rails as per DIN 1017, vulcanized onto both sides

Rubber grade	Rubber hardness	Possible uses
NBR	medium – 60 Shore A	Water, gas, fuel oil, mineral oil

### Dimensions/stress type GMS-1

B mm	H mm	h mm	s mm	Length max. L mm	Compressive stress Spring rate ref. to L = 100 mm $C_z$ N/mm	Art. No.
20	30	20	5	500	670	51888100-00
25	30	20	5	500	920	51888200-00
40	35	19	8	500	2340	51888300-00
50	40	20	10	2000	3500	51888000-00
50	50	30	10	2000	1500	51887300-00
60	60	40	10	2000	1170	51887500-00
70	50	30	10	2000	2840	51887600-00
100	60	30	15	2000	5400	51887800-00
100	80	50	15	2000	2000	51887900-00
150	65	35	15	2000	7750	51874600-00
150	80	50	15	2000	4170	51874700-00

### Dimensions/stress type GMS-2

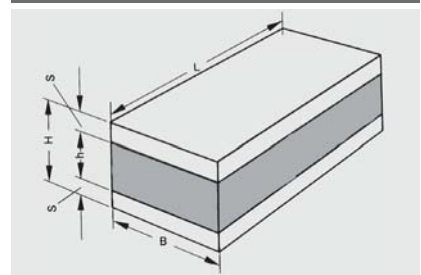
B mm	H mm	h mm	S <sub>1</sub> mm	S <sub>2</sub> mm	L mm	L <sub>1</sub> mm	Compressive stress Spring rate $C_z$ N/mm	Load $F_{tol}^*$ KN	Art. No.
50	40	20	12	8	200	150	4000	8	51899400-00
50	40	20	12	8	270	220	7100	15	51899500-00
100	60	30	15	15	480	360	18200	59	51899600-00

\*  $F_{tol}$  is the tolerable static permanent load: a dynamic alternating load can be superimposed. The stated tolerable loads are only approximate indications for the static load.

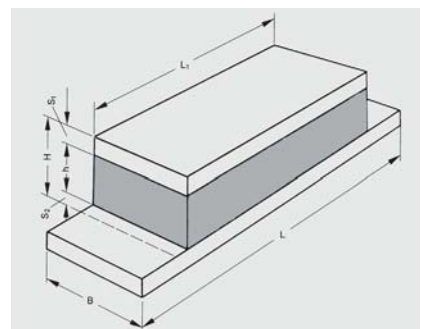
### Applications

- for extremely elastic bearing of heavy machines, e.g.
  - ship's engines
  - large stationary motors
  - lathes and milling machines
  - elevator motors
  - jolters and vibration machines
- for high loads
- for limited space
- for compressive stress
- for superimposed compressive/shearing stress
- for damping sound and vibration

### Versions



**Type GMS-1**  
Screwable rubber-metal rail element



**Type GMS-2**  
Screwable rubber-metal rail element - with protruding base rail at both ends

### Note

Rails with protruding base plate can be compressed under static load by approx. 10 % – 15 % of the rubber height h. Please comply with general technical instructions. Subject to technical alterations and deviations resulting from the manufacturing process.

## Rubber-metal element - Type GMF-1, GMF-2

Machine feet with male or female thread



Type GMF-1



Type GMF-2

### Structure type GMF-1 / GMF-2

- Type GMF-1 with female thread
- Type GMF-2 with threaded bolt (male thread), adjustable in height for exact levelling

### Metal parts

- Material: 1.0038 (S235JR) / 8.8
- Corrosion protection: oiled or electrogalvanized

### Rubber element

- Conical rubber element with vulcanized metal casing (bell-shape)
- Nut (female thread) or threaded bolt (male thread) attached to the metal casing

Rubber grade	Rubber hardness	Possible uses
<b>NBR</b>	<b>hard – 70 Shore A</b> <b>medium – 60 Shore A</b> <b>soft – 45 Shore A</b>	<b>Water, gas, fuel oil, mineral oil</b>

### Dimensions/stress type GMF-1

Form	ø D	A	K	ø L	H	G	Rubber hardness Shore A	Vertical stress Spring excursion max. mm	Load F <sub>tol</sub> * N	Art. No.	Pck. qty.
	mm	mm	mm	mm	mm	mm					
A	57.0	128	110	9.0	30	M 10	70	5	4400	51891400-00	8
A	57.0	128	110	9.0	30	M 10	60	5	3100	51891500-00	8
A	57.0	128	110	9.0	30	M 10	45	5	2200	51891600-00	8
A	88.5	170	140	13.0	39	M 12	70	5	7100	51890500-00	8
A	88.5	170	140	13.0	39	M 12	60	5	4600	51890800-00	8
A	88.5	170	140	13.0	39	M 12	45	5	2500	51891100-00	8
B	110.0	168	132	12.5	52	M 16	70	5	16000	51890600-00	4
B	110.0	168	132	12.5	52	M 16	60	5	11000	51890900-00	4
B	110.0	168	132	12.5	52	M 16	45	5	7000	51891200-00	4
B	125.0	184	150	13.0	63	M 20	70	4	24000	51890700-00	4
B	125.0	184	150	13.0	63	M 20	60	5	21000	51891000-00	4
B	125.0	184	150	13.0	63	M 20	45	5	12500	51891300-00	4

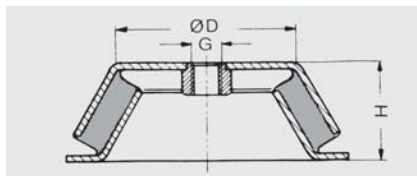
### Dimensions/stress type GMF-2

Form	A	K	ø L	R	S	F	Rubber hardness Shore A	Vertical stress Spring excursion max. mm	Load F <sub>tol</sub> * N	Art. No.	Pck. qty.
	mm	mm	mm	mm	mm	mm					
A	170	140	13.0	106	65	M 16 x 1.5	70	4,5	10000	51892000-00	8
A	170	140	13.0	106	65	M 16 x 1.5	60	5	7500	51892400-00	8
A	170	140	13.0	106	65	M 16 x 1.5	45	5	4500	51892700-00	8
B	168	132	12.5	135	80	M 20 x 2.0	70	5	17500	51892100-00	4
B	168	132	12.5	135	80	M 20 x 2.0	60	5	12000	51892500-00	4
B	168	132	12.5	135	80	M 20 x 2.0	45	5	7000	51892800-00	4

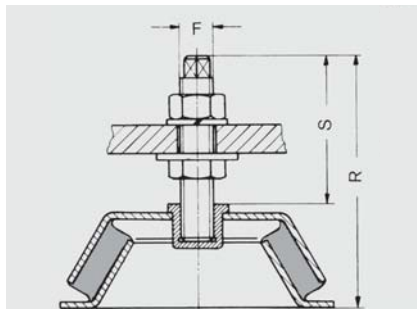
### Applications

- universal element for elastic bearing of machines of all kinds
- ideal for preventing horizontal movement of machine tools
- good, soft vertical elasticity with great horizontal stiffness
- for compressive stress
- for damping sound and vibration

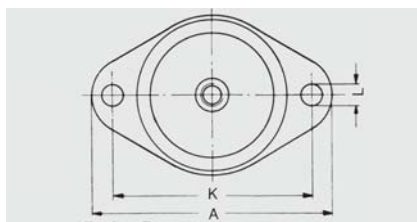
### Versions



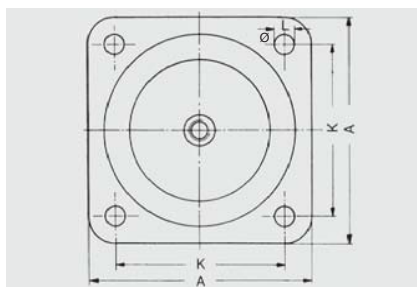
Type GMF-1 With female thread



Type GMF-2 With male thread



Form A



Form B

### Note

Please comply with general technical instructions. Subject to technical alterations and deviations resulting from the manufacturing process.

\* F<sub>tol</sub> is the **tolerable static permanent load**; a dynamic alternating load can be superimposed. The stated tolerable loads are only approximate indications for the static load. Delivery only possible in the stated packaging quantities (far-right column).



## Rubber-metal element - Type GML-R

Bearing element with through hole and centering collar



### Structure type GML-R

- Bearing element with through hole for fastening with through bolts

### Metal parts

- Material: 1.0038 (S235JR)
- Corrosion protection: oiled or electrogalvanized

### Rubber element

- Cylindrical rubber element with metal plates vulcanized onto both sides

Rubber grade	Rubber hardness	Possible uses
NBR	hard - 70 Shore A	Water, gas, fuel oil, mineral oil
	medium - 60 Shore A	
	soft - 45 Shore A	

### Dimensions/stress

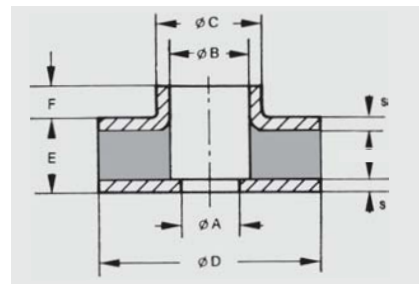
$\varnothing D$ mm	$\varnothing A$ mm	$\varnothing B$ mm	$\varnothing C$ mm	E mm	F mm	s mm	Rubber hardness Shore A	Compression stress Spring rate $c_z$ N/mm	Load $F_{tol}^*$ N	Art. No.	Pck. qty.
36	6.2	10	15	10	6.0	1.0	70	2000	2600	51895500-00	50
36	6.2	10	15	10	6.0	1.0	60	1350	1600	51895900-00	50
36	6.2	10	15	10	6.0	1.0	45	800	950	51896300-00	50
36	8.5	12	18	10	4.0	1.0	70	1550	1900	51895600-00	50
36	8.5	12	18	10	4.0	1.0	60	1000	1200	51896000-00	50
36	8.5	12	18	10	4.0	1.0	45	620	700	51896400-00	50
36	16.6	17	20	8	3.0	1.0	70	1900	1800	51874000-00	50
36	16.6	17	20	8	3.0	1.0	60	1250	1100	51874100-00	50
36	16.6	17	20	8	3.0	1.0	45	770	650	51874200-00	50
50	16.5	20	23	13	9.5	1.5	70	2200	3700	51895700-00	50
50	16.5	20	23	13	9.5	1.5	60	1500	2300	51896100-00	50
60	20.5	24	27	13	10.5	1.5	70	3000	6100	51895800-00	25
60	20.5	24	27	13	10.5	1.5	60	2000	3800	51896200-00	25
60	20.5	24	27	13	10.5	1.5	45	1050	2200	51896600-00	25

\*  $F_{tol}$  is the tolerable static permanent load: a dynamic alternating load can be superimposed. The stated tolerable loads are only approximate indications for the static load. Delivery only possible in the stated packaging quantities (far-right column).

### Applications

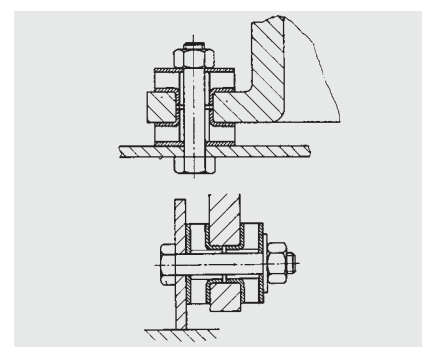
- highly versatile in e.g.
  - mechanical engineering
  - electrical industry
- for elastic bearing
- for compressive stress
- for shearing stress
- for superimposed compressive/shearing stress
- also for tensile stress (for pre-tensioned arrangement in pairs)
- for damping sound and vibration

### Version



### Type GML-R

With bore hole for through bolts



Arranged in pairs to interrupt structure-borne vibration

### Note

Please comply with general technical instructions. Subject to technical alterations and deviations resulting from the manufacturing process.

## Rubber-metal element - Type GML-U

Bearing element with male thread



### Applications

- for elastic bearing of sensitive measuring instruments
- for shock-reducing bearing of apparatus and equipment
- for shearing stress
- for damping sound and vibration

### Structure type GML-U

- Bearing element with U-profiles and attached threaded bolts (male thread)

### Metal parts

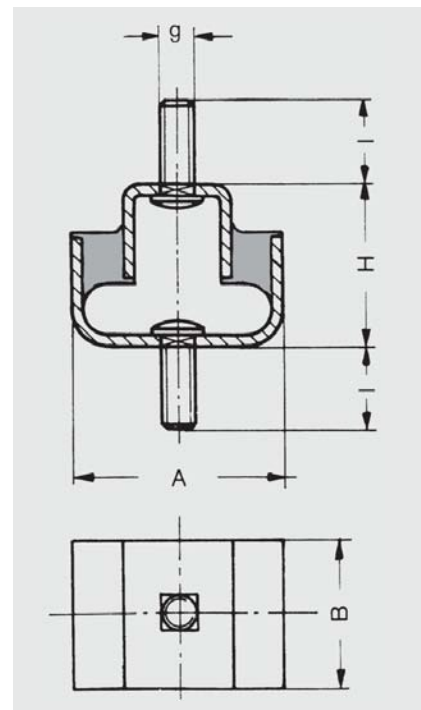
- Material: 1.0038 (S235JR) / 8.8
- Corrosion protection: oiled or electrogalvanized

### Rubber element

- Highly-elastic hollow rubber profile with vulcanized metal U-profiles

Rubber grade	Rubber hardness	Possible uses
<b>NBR</b>	<b>hard – 70 Shore A</b> <b>medium – 60 Shore A</b> <b>soft – 45 Shore A</b>	<b>Water, gas, fuel oil, mineral oil</b>

### Version



**Type GML-U**  
Both sides with male thread

### Dimensions/stress

A	B	H	g	l	Rubber hardness Shore A	Vertical stress		Art. No.	Pck. qty.
						Spring excursion max. mm	Load $F_{tol}^*$ N		
52	35	36	M 8	21	70	6	1600	51894500-00	12
52	35	36	M 8	21	60	6	1200	51894700-00	12
52	35	36	M 8	21	45	6	800	51894900-00	12
54	50	40	M 10	26	70	6	900	51894600-00	8
54	50	40	M 10	26	60	6	600	51894800-00	8
54	50	40	M 10	26	45	6	350	51895000-00	8

\*  $F_{tol}$  impact or exciter forces must remain small. Tolerable static load values should only be exceeded to a minimum extent.  
Delivery only possible in the stated packaging quantities (far-right column).

### Note

Stress only possible in the direction of the threaded bolts' axis, i.e. shearing stress on the rubber element.

Please comply with general technical instructions. Subject to technical alterations and deviations resulting from the manufacturing process.

## Rubber-metal element - Type GML-V, GML-W

Bearing element with V- or W-shaped rubber profile



Type GML-V



Type GML-W

### Structure type GML-V/GML-W

- Bearing element with metal rails and V- or W-shaped rubber profiles
- Through holes for fastening with through bolts

### Metal parts

- Material: 1.0038 (S235JR) / 8.8
- Corrosion protection: oiled or electrogalvanized

### Rubber element

- Highly-elastic hollow rubber profile with metal rails vulcanized onto both sides

Rubber grade	Rubber hardness	Possible uses
<b>NBR</b>	<b>hard – 70 Shore A</b>	<b>Water, gas, fuel oil, mineral oil</b>
	<b>medium – 60 Shore A</b>	
	<b>soft – 45 Shore A</b>	

### Dimensions/stress type GML-V

B mm	H mm	S mm	L mm	L <sub>1</sub> mm	d mm	Rubber hardness Shore A	Vertical stress Spring excursion max. amm	Load F <sub>tol</sub> * N	Art. No.	Pck. qty.
25	30	2.5	68	36	6.5	70	3,5	300000	51895300-00	20
25	30	2.5	68	36	6.5	60	3,5	200000	51895200-00	20
25	30	2.5	68	36	6.5	45	3,5	100000	51895100-00	20

### Dimensions/stress GML-W

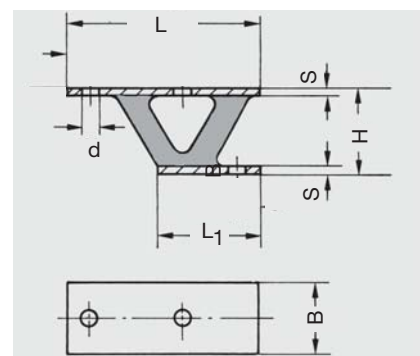
B mm	H mm	S mm	L mm	L <sub>1</sub> mm	d mm	d <sub>1</sub> mm	Rubber hardness Shore A	Vertical stress Spring excursion max. mm	Load F <sub>tol</sub> * N	Art. No.	Pck. qty.
25	30	2.5	135	72	6.5	8.5	70	3,5	600000	00002665-00	12
25	30	2.5	135	72	6.5	8.5	60	3,5	400000	00002572-00	12
25	30	2.5	135	72	6.5	8.5	45	3,5	200000	00002666-00	12

\* F<sub>tol</sub> is the **tolerable static permanent load**: a dynamic alternating load can be superimposed. The stated tolerable loads are only approximate indications for the static load. Delivery only possible in the stated packaging quantities (far-right column).

### Applications

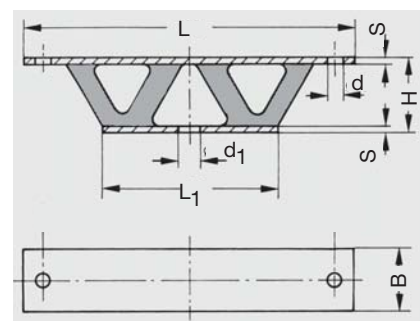
- highly versatile in use
- for elastic bearing of sensitive instruments
- special protection against shaking
- for compression stress
- for shearing stress
- for damping sound and vibration

### Versions



#### Type GML-V

Short version with V-shaped rubber profile



#### Type GML-W

Long version with W-shaped rubber profile

### Note

Please comply with general technical instructions. Subject to technical alterations and deviations resulting from the manufacturing process.