

Technical information for rubber-metal buffers

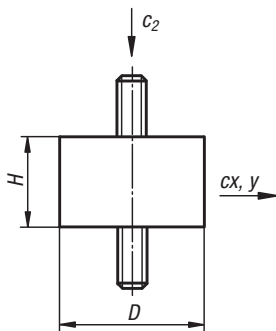


Note:

Our rubber-metal buffers are simple and cost-efficient standard units for elastic mounting. They are ideally suited for compressive and axial loads of the most diverse ranges of application. In the case of shear stress, however, they are substantially less resilient than in compressive stress. The adjacent tables provide an overview of the guide values for static load. In the case of high dynamic alternating loads or that of high frequencies, the load indices are to be reduced proportionately.

Guide values for static load

Type	D	H	Compressive loads						Shear stresses					
			Spring rate c ₂ in N/mm			Permissible load F in N			Spring rate c _{x, y} in N/mm			Permissible load F in N		
			hard	medium	soft	hard	medium	soft	hard	medium	soft	hard	medium	soft
A	20	15	300	190	120	500	320	200	60	40	30	190	120	70
A	30	15	670	410	250	1100	700	400	90	60	40	350	210	130
A	30	30	240	150	100	900	570	340	50	30	20	430	280	170
A	40	30	480	300	170	1800	1110	670	90	60	30	770	500	250
A	50	20	240	1500	90	5000	3190	1870	240	160	100	1200	770	460
A	50	40	600	280	220	2800	1750	1050	120	80	50	1280	800	460
A	75	25	5000	2900	1700	8000	5000	3300	410	260	160	2800	1750	1030
A	75	55	650	400	240	4700	3000	1750	130	80	50	2100	1300	800
B	25	20	320	160	120	490	320	190	70	45	25	230	160	90
B	30	20	660	430	260	830	520	310	100	75	50	330	210	130
B	40	30	550	350	210	1250	750	450	110	70	40	520	330	200
B	40	30	550	350	210	1250	750	450	110	70	40	520	330	200
B	50	40	560	370	220	2100	1270	760	120	80	45	930	580	350
B	50	50	350	220	130	1750	1100	650	80	50	30	800	510	310
B	75	50	950	630	330	4700	2910	1720	180	120	80	1900	1200	710
C	20	25	200	130	80	300	190	120	50	30	20	150	90	60
C	30	30	590	380	220	720	450	270	90	60	50	260	170	110
C	40	30	900	570	340	1080	680	410	150	90	60	380	240	140
C	50	30	1700	1090	650	2500	1750	950	210	150	70	470	290	170
C	50	50	360	220	140	1390	870	520	80	40	30	610	390	230
C	75	50	1010	630	370	3650	2050	1200	200	130	80	1560	980	580



Type	D	H	Compressive loads	
			Spring rate c ₂ in N/mm medium	Permissible load F in N medium
D	25	20	150	260
D	30	20	330	730
D	40	30	250	950
D	50	20	660	1750
D	75	25	1430	4650

Rubber hardness:

hard = 70° Shore medium = 55° Shore soft = 45° Shore

For general guidance natural rubber is ca. 55° Shore.

static compression load: $F(\text{max.}) = \text{ca. } 6.5 \text{ kg/cm}^2 (63.77 \text{ N/cm}^2)$

static axial load: $F(\text{max.}) = \text{ca. } 1.5 \text{ kg/cm}^2 (14.72 \text{ N/cm}^2)$

by 10 % spring displacement, or transverse travel during axial load.

Naturally, much higher loads are possible without damage. However, these considerably effect the rubber-metal buffer in its primary purpose. Tensile loads are possible but should be avoided on account of the peak stress at the contact edges and the notch sensitivity of rubber.

Tolerances for rubber-metal buffers:

Permissible dimensional deviations per DIN 7751 Part 2. Permissible hardness deviation ±5 Shore A.

Synoptical Table - Properties of the Individual Material

Rubber material		Main Characteristics - Resistance to									
Abbreviation	Polymer	Temperature	Tensile strength	Fracture strain	Aging	Ozone	Petrol	Oil	Acid	Alkalis	Tensile strain
NR (NK)	Natural	-30 °C – +80 °C	1	1	3	4	6	6	3	3	600%
SBR	Styrene-butadiene rubber	-30 °C – +80 °C	5	2	3	4	4	5	3	3	450%
CR	Chloroprene rubber	-20 °C – +110 °C	3	2	2	2	2	2	2	2	450%
NBR	Acrylonitrile-butadiene rubber	-30 °C – +120 °C	5	2	3	3	1	1	4	3	450%
EPDM	Ethylene propylene terpolymer	-30 °C – +130 °C	5	3	1	1	5	4	1	2	450%
SI	Silicone rubber	-60 °C – +200 °C	6	4	1	1	5	4	5	5	500%

1 = excellent 2 = very good 3 = good 4 = moderate 5 = low 6 = insufficient