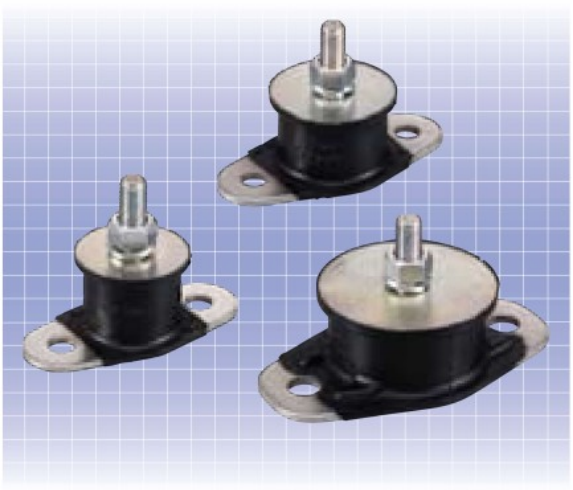
SB *Anti-vibration rubber mounts with internal stopper for earthquake protection*



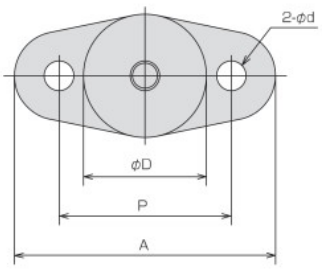
Features

1.Require no external stoppers for earthquake protection
Able to reduce a parts count and production costs.

2.Simple and compact design
Makes possible space-effective.

3.Design lateral seismic factor about 1.5
Satisfying earthquake-resistant class A
(based on a guide for the earthquake-resistant design and construction of building equipment)

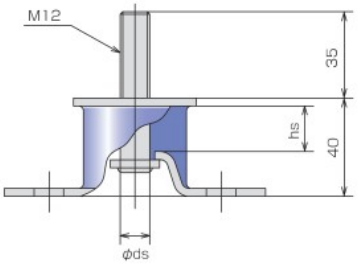
An earthquake-resisting capacity depends on the center of gravity and the mounting spacing, of machinery.

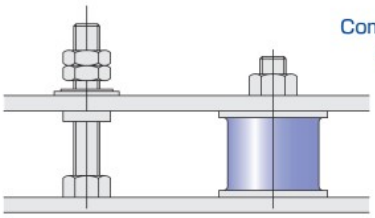


Typical applications

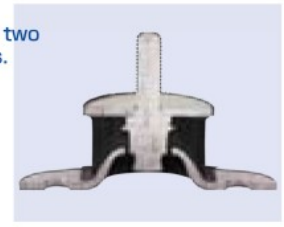
Transformer, Switchboard, Uninterruptible Power Supply (UPS), Pipe hanger, Air conditioner

Note: Not usable for largely swinging machinery (e.g. engine, compressor, etc.)





Combine the two functions.

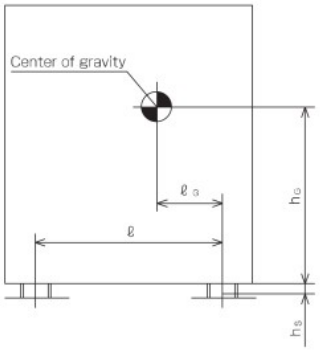


Cross-section photograph

Product number	Standard dimensions mm				Permissible load N {kgf}	Spring constant N/mm {kgf/cm}	Stopper specifications					
	D	A	P	d			Tensile strength N {kgf}	Shear strength N {kgf}	ds (cm)	Ae (cm²)	hs (cm)	Z (cm³)
SB-50	50	106	70	12	800{ 82}	250{ 250}	3200{ 330}	1600{160}	1.2	1.13	1.9	0.17
SB-60	60	121	85	12	2000{200}	800{ 820}	8000{ 820}	4000{410}	1.7	2.27	1.5	0.48
SB-80	80	141	105	14.5	4000{410}	1600{1630}	16000{1630}	8000{820}	1.9	2.84	1.2	0.67

The elastomer is natural rubber.
This type is provided with 1 hexagon nut and 1 spring washer.

Calculation formula for seismic performance



Tensile force $T=\dfrac{m\cdot g\{K_H\cdot h_G-(1-K_V)\cdot \ell_G\}}{\ell\cdot n_t}$

Shear force $S=\dfrac{K_H\cdot m\cdot g}{n}$

Shear stress $\tau=\dfrac{S}{Ae}$

Combined stress $\sigma tb=\dfrac{T}{Ae}+\dfrac{S\cdot h_S}{n}$

Criterion formula $\tau\leqq f_s$ (Allowable shear stress for temporary loading:135N/mm²)
$\sigma tb\leqq f_b$ (Allowable bending stress for temporary loading:235N/mm²)

m : Machinery mass(kg)
K_H : Design lateral seismic factor
K_V : Design vertical seismic factor
n_t : One side number of stoppers
n : Total number of stoppers
A_e : Effective cross section of stopper(cm²)
h_s : Height of stopper(cm)
Z : Section modulus of stopper(cm³)
g : Gravitational acceleration(m/s²)