

SEISMIC PROTECTION / VIBRATION CONTROL

BASE ISOLATION

Isolation bearings for resilient structures

Substantially reduce earthquake forces and damage.

Potentially no increase in total project cost.

Hospital interiors after the same earthquake

Lushan County People's Hospital, China, following the 2013 Lushan earthquake

Conventional inpatient building



Damage and disruption

Base-isolated outpatient building



Intact interior

15-40%

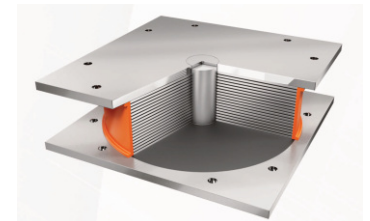
Indicative earthquake force relative to a comparable fixed-base structure¹

LRB / HDRB / LNR / FPS

Lead rubber, high-damping rubber, natural rubber and friction pendulum bearings

A “Safe Haven” during and after earthquakes

Laminated rubber bearings provide flexibility and restoring force. Damping controls isolation movement and energy transmission.



Lead rubber bearing cutaway

Why engineers consider base isolation

Lower earthquake demands

Period lengthening and damping reduce forces, drift and floor accelerations.

Potential cost savings

Lower superstructure demands can offset isolation costs in suitable new projects.

Protection during and after shaking

Coordinated protection of the structure, contents and services supports functional recovery.

Resilience to strong shaking

Deformation reserves and cyclic dissipation help manage strong shaking, aftershocks and multiple earthquakes.

Buildings, bridges and industrial structures

Seismic isolation is used in tens of thousands of structures worldwide.²

¹ Indicative project target, not a guaranteed response. Site hazard, soil, building period and bearing properties govern reductions.

² ASSISI: Japan earthquake performance (2024), China development status (2025).

Engineered for the application

Cost-effective products from highly qualified manufacturers, with high performance and short lead times. Engineering support tailored to your project.

G = 0.392-0.70 MPa

Rubber shear modulus range

D = 150-1,600 mm

Rubber bearing family range

Up to 550%

Ultimate shear strain³

Model	D (mm)	Total rubber (mm)	Post-yield Kd (kN/mm)	Qd (kN)	Damping (%)
LRB600-II	600	110	0.98	63	23
LRB800-II	800	148	1.30	106	22
LRB1000-II	1000	184	1.62	203	24
LRB1200-II	1200	220	1.94	250	23

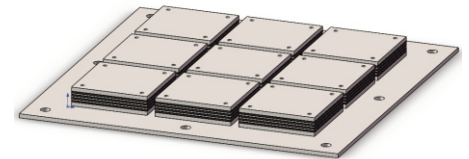
Sample LRB Type II properties: G = 0.392 MPa. Nominal values for preliminary selection.

³ Up to 550% applies to selected qualified bearings. Capacity depends on model and test conditions. Ultimate values are not design allowables.

Dual earthquake and vibration isolation

Specialized/patented 3D systems combine horizontal seismic isolation with vertical vibration isolation for buildings over or near rail lines.

Conventional seismic rubber bearings primarily isolate horizontal earthquake motion. Vertical vibration control requires a dedicated 3D system. Reported vibration reductions of 60-80% in proven applications.



Selected isolation applications



Beijing Daxing Airport

Rubber and sliding bearings, dampers



Kunming residential towers

390 rubber bearings across 15 buildings



Tianjin LNG tanks

LRB isolation under storage tanks



Beijing Tonghui Jiayuan

3D isolation above a metro hub



Shenzhen Lixiang Centre

3D earthquake and vibration isolation



Guangzhou Pazhou South TOD

3D isolation for an 80 m building

Testing, documentation and supply

Factory material, compression and shear testing. ISO, EN, BS, AASHTO, GB and JG qualification as applicable. Expansion joints and flexible connections available. Short production lead times confirmed per order.