

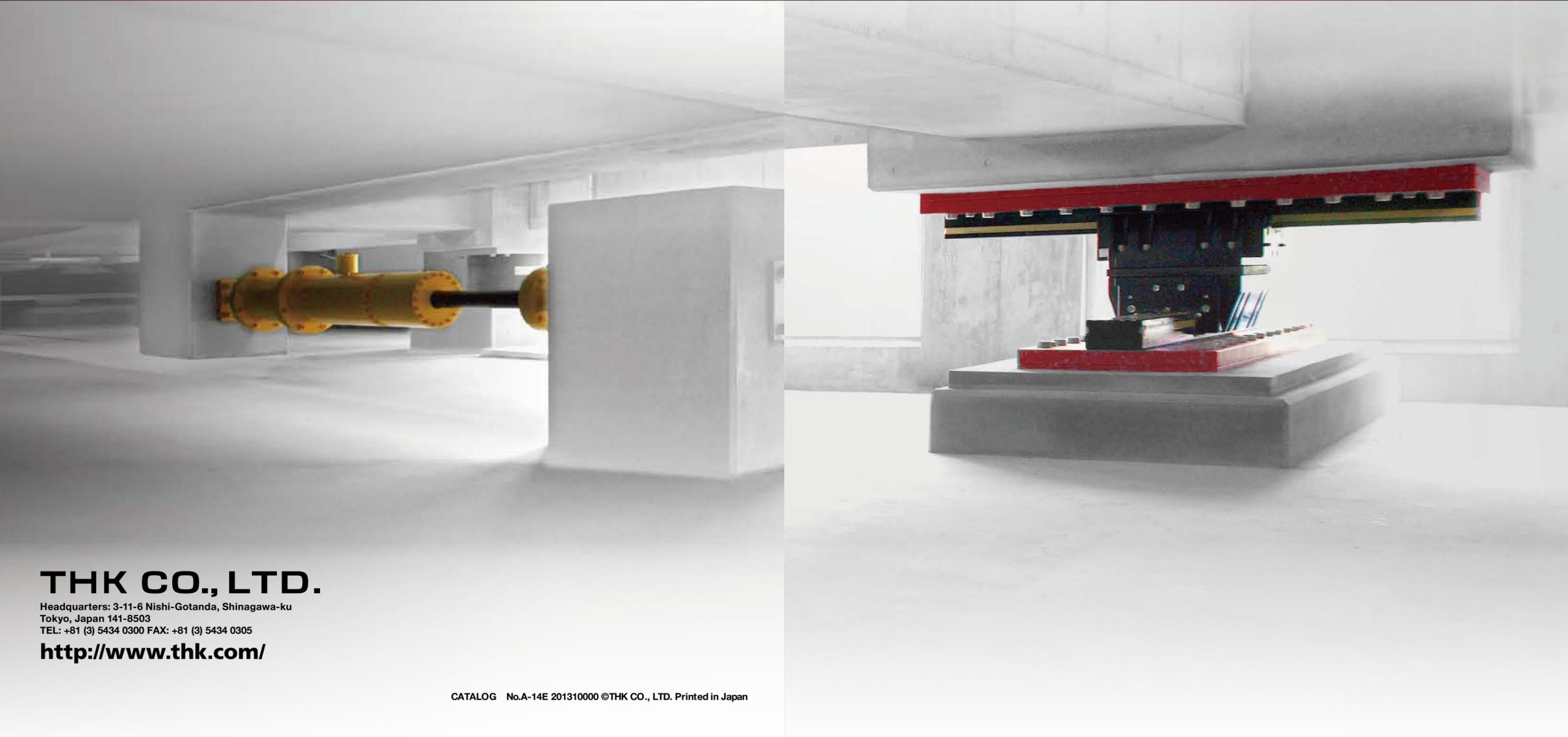


Seismic isolation and vibration control
for buildings and other large structures
Seismic isolation for key equipment
and other vital assets

Basic Guide to Seismic Isolation and Vibration Control

Amenity Creation Engineering

Keeping your assets safe and secure,
now and in the future.



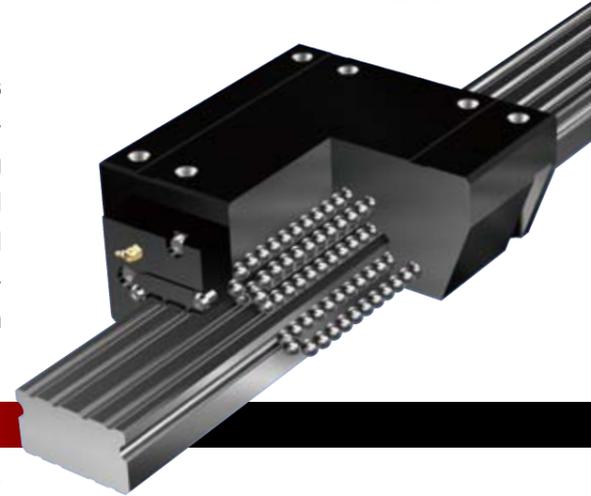
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To safeguard the most valuable assets, deploy the most advanced technology.

The LM Guide, originally developed by THK and now regarded as the de facto worldwide standard for linear motion in many key industries, including machine tools, semiconductor manufacturing equipment, and industrial robots. The THK Ball Screw, recognized around the world for high reliability, thanks to its long record of solid performance in a host of industrial uses. These two versatile components provide the core technology for THK's seismic isolation and vibration control devices.



World leaders: The THK LM Guide and Ball Screw. This seminal technology lies at the heart of THK's seismic isolation and vibration control devices.



LM Guide

The LM Guide is incorporated into THK's Cross LM Guide Model CLB, which provides seismic isolation for buildings and other large structures, as well as the Seismic Isolation Table Model TSD and Seismic Isolation Module Model TGS, which protect key equipment and other vital assets.



Cross LM Guide Model CLB



TGS Seismic Isolation Module



TSD Seismic Isolation Table



Testing performance



LM Guide Rail grinding process (1)



LM Guide Rail grinding process (2)

Ball Screw

The Ball Screw, which deftly converts rotary motion into linear motion and linear motion into rotary motion, is incorporated into the Rotary Damping Tube Model RDT and Inertial Rotary Damping Tube Model iRDT.



Rotary Damping Tube (seismic isolation)



Rotary Damping Tubes (vibration control)



Inertial Rotary Damping Tubes



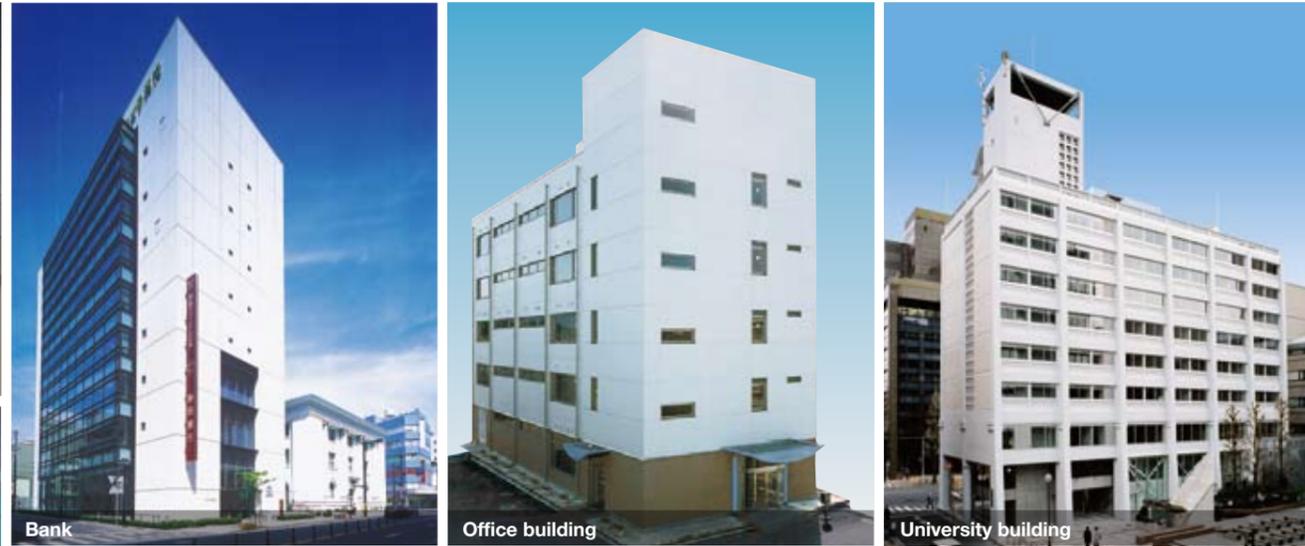
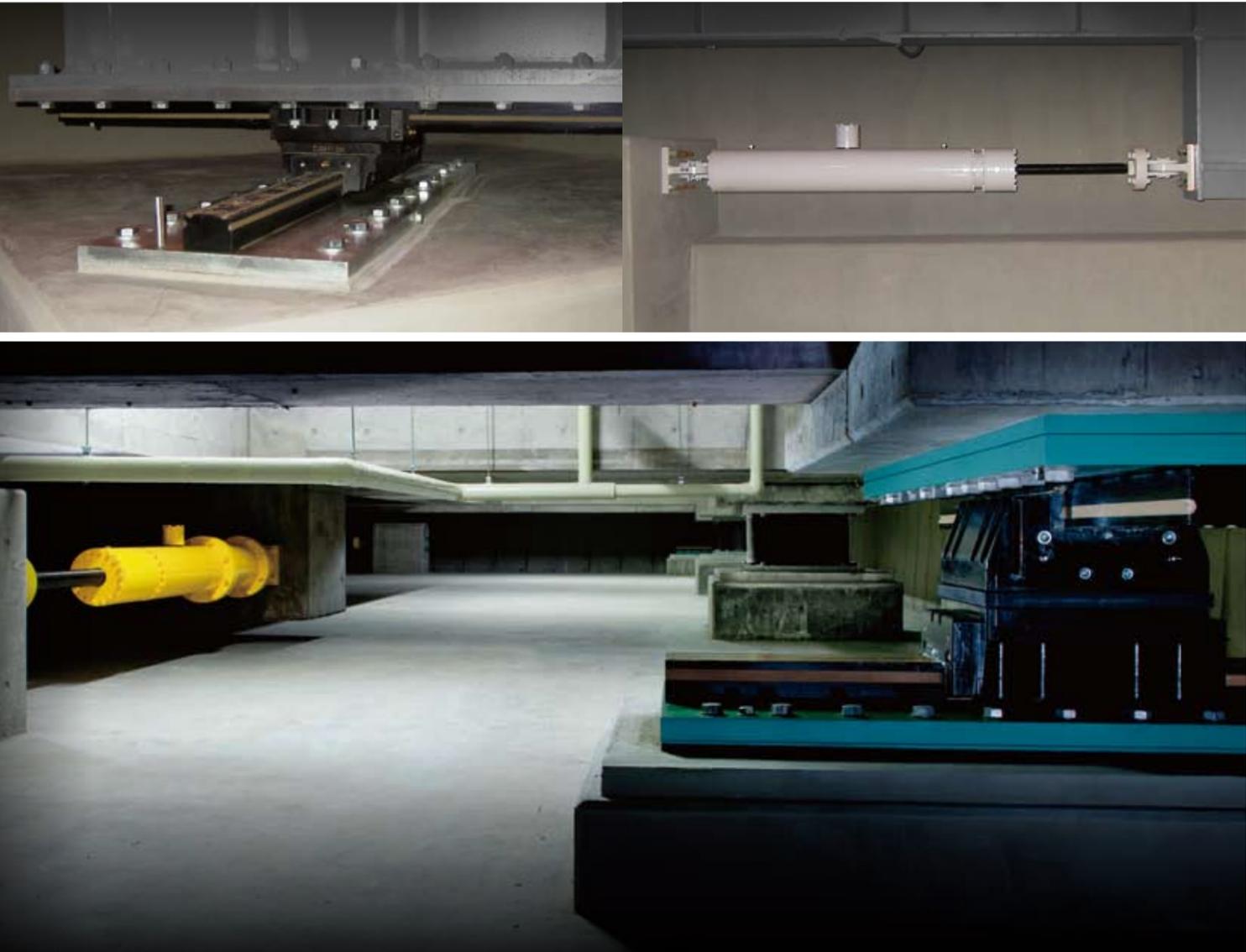
Large-scale multitasking Machine



Ball Screw shaft grinder



Testing Rotary Damping Tubes



Seismic isolation systems for buildings
Supports the building and protects it, by deflecting earthquake vibrations.

The Cross LM Guide Model CLB employs LM Guides to isolate seismic motion and smoothly direct it away from the building, while the Rotary Damping Tube utilizes a Ball Screw to absorb seismic energy. THK systems can handle bearing loads from 11 to 3,120 tons and damping loads from 0.5 to 140 tons, enabling them to accommodate everything from residential homes to high-rise buildings.



Seismic isolation systems for houses deflect earthquake vibrations.

Seismic Isolation Systems

A technology entirely devoted to safety and security

Rotary Damping Tube Model RDT



The Ball Screw converts seismic vibrations into rolling motion, and shear resistance provided by the viscous material inside the tube enables it to absorb the vibrations.

Inertial Rotary Damping Tube Model iRDT



The tube is equipped with a damper combining the mass effect of rotary inertia with the damping effect of shear resistance supplied by viscous matter, as well as a revolving slider mechanism that limits axial force, preventing the total force exerted from becoming excessive. Compared to conventional damping devices, fewer tubes are needed to achieve the same effect. The iRDT is an effective countermeasure against long-period vibrations affecting high-rise buildings. It can be installed in existing buildings as well as newly built structures.



Office building



Office building



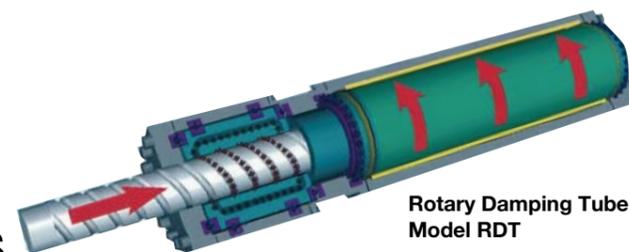
Rotary Damping Tube



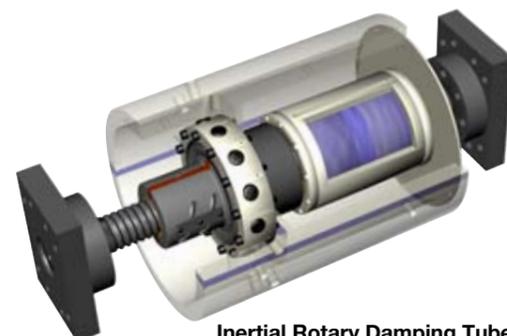
Rotary Damping Tube



Factory



Rotary Damping Tube Model RDT



Inertial Rotary Damping Tube Model iRDT

Vibration control systems for buildings

Protecting buildings by absorbing seismic waves

The Rotary Damping Tube Model RDT and Inertial Rotary Damping Tube Model iRDT employ a Ball Screw to absorb the seismic energy transmitted to buildings, inhibiting shaking on the upper floors. THK's vibration control systems can protect everything from houses to high-rise buildings.

Seismic Isolation Module Model TGS



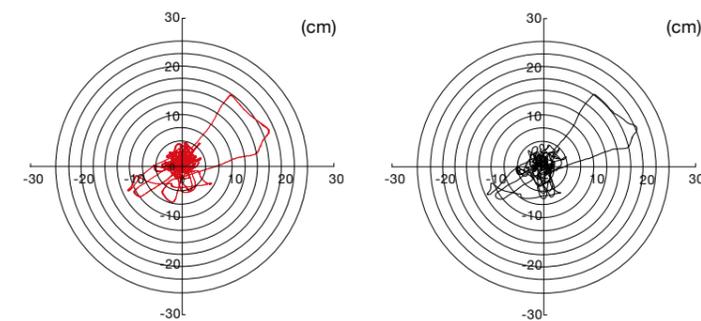
Seismic Isolation Module Model TGS



Server racks resting atop TGS modules installed in data center

Optimal seismic isolation

Seismic response analysis and shaking test results



Seismic response analysis and the shaking test produced nearly identical results.

Seismic wave used: Taft 1952 (EW), generated at 4:52 a.m., July 21, 1952. Magnitude 7.7. Standardized wave, based on 50cm per sec.

TGS modules installed in data center

Seismic isolation for machines and other vital devices

Securing key equipment to ensure business continuity

The versatile TGS offers a broad range of seismic isolation options. Use it to isolate the entire floor of a data center, server room, or operations center, or simply to secure the area under a manufacturing machine, measuring instrument, or other key equipment.

- TGS modules can be configured to accommodate loads of almost any size or shape.
- Aided by seismic response analysis, THK can offer guidance on the optimal installation location for the floor and area to be protected.
- TGS modules can handle even heavy loads, up to a maximum 3,000 kgf per square meter.

Note: The above remarks apply to evenly distributed loads. When dealing with a more concentrated load, consult THK in advance.



Seismic Isolation Module Model TGS
Semiconductor manufacturing device, weight 2 tons



Seismic Isolation Module Model TGS
Carl Zeiss-made coordinate measuring Machine atop TGS module configuration installed at Tokyo Seimitsu Co., Ltd.

Seismic Isolation Table Model TSD



Server computers atop TSD tables set up in data center



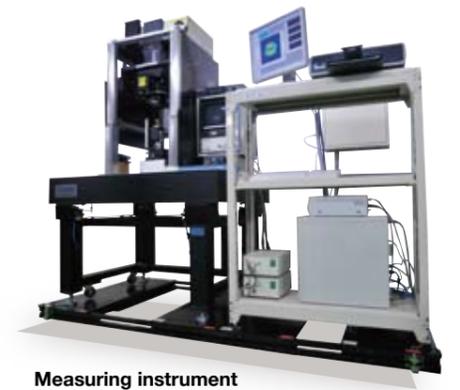
Dialysis machines



Server



Measuring instrument



Measuring instrument

Easy-setup **seismic isolation** for machines and other assets
Simple setup, effective protection: Keep vital assets safe from earthquakes



Seismic Isolation Table Model TSD

TSD tables protect smaller-scale server racks and measuring devices as well as statues religious sculptures, and other works of art. Multiples tables can be connected in almost any configuration, and setup is simple: just place the tables on the floor.

- No special construction is required—tables can simply be placed on the floor.
- Almost any configuration can be expanded by connecting more tables.
- Accommodates loads from 30 to 1,200kgf.



Artwork



Display at art gallery



Buddhist sculpture (designated a national treasure of Japan)



Buddhist sculpture (designated a national treasure of Japan)