



Infrastructure

# High-end products for infrastructure

engineering connections®

**Governor Mario M. Cuomo Bridge, New York, USA**  
Equipped with 23 TENSA®MODULAR expansion joints, with up to 54 inches of longitudinal movement capacity, and 16 RESTON®STU shock transmission units, with 800 kips lock-up capacity.

structural bearings | expansion joints | seismic devices | structural monitoring

**mageba**



## Structural bearings

# mageba structural bearings

### Support you can depend on

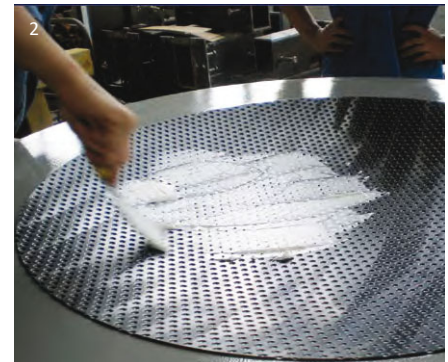
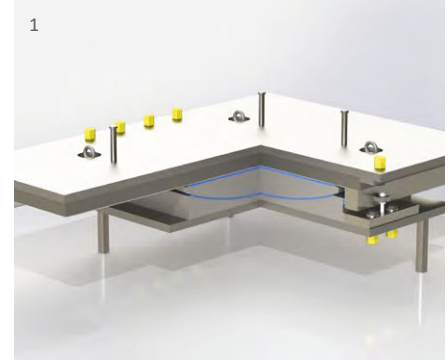
Bridge bearings transfer forces from the bridge deck to its support pillars or abutments. They can be designed as fixed, guided sliding or free sliding, to suit the movement requirements of the bridge deck.

### Wide range of high-quality bearings

mageba offers many types of bearing to satisfy bridge-specific requirements: Pot bearings, spherical bearings, elastomeric bearings, horizontal force bearings, linear rocker bearings, lifting and measuring bearings, pendulum bearings, incremental launch bearings and seismic bearings. In the production of these bearings, only high-quality materials are used. These include ROBO®SLIDE, a sliding material with exceptional qualities, and the POM sealing chain which has proven its worth over several decades in sealing the elastomeric pad at the heart of a pot bearing.

### Highlights - mageba structural bearings

- RESTON®POT bearings are among mageba's core products, with over 50,000 delivered to date.
- RESTON®SPHERICAL is a spherical bearing which, especially together with ROBO®SLIDE high-grade sliding material, offers exceptional durability and strength. It is particularly suitable for large rotations and low temperatures.
- RESTON®POT LIFT-CONTROL is a pot bearing which allows the load from a structure to be monitored. It can also be used as a jack to lift the structure if necessary.
- LASTO®BLOCK reinforced elastomeric bearings are made of chloroprene rubber or natural rubber. They can be equipped with horizontal restrainers or up-lift clamps.



- 1 Cut view of a guided RESTON®SPHERICAL bearing.
- 2 Application of virgin silicone grease on mageba's high grade sliding material ROBO®SLIDE.
- 3 Installation of a LASTO®BLOCK bearing.
- 4 Assembly of a spherical bearing designed and manufactured to resist uplift forces.



## Expansion joints

# mageba expansion joints

### Ensuring a smooth driving surface

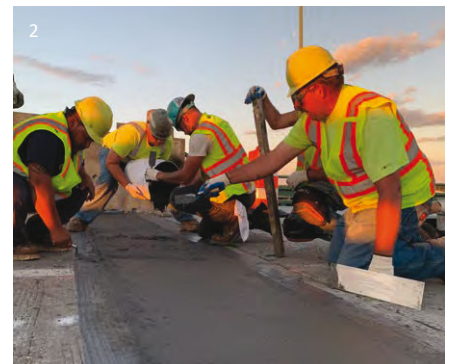
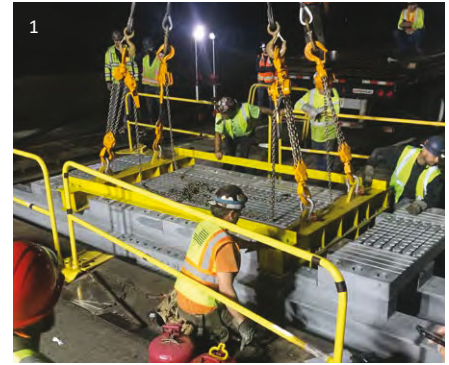
Expansion joints play a vital role on almost any bridge, because the bridge deck moves as a result of temperature and other influences. The movement gap at each end of the bridge deck must be bridged with a flat and even driving surface: the expansion joint. As bridge technology improves, and the spans of new bridges continue to increase, the demands on bridge expansion joints also increase.

### Wide and well-proven range

mageba supplies a wide range of expansion joint types, including single gap joints, modular joints, cantilever finger joints, sliding finger joints, mat joints, railway joints and sliding plate joints. Worthy of special mention is the modular expansion joint, which was invented by mageba several decades ago and has been continually developed ever since.

### Highlights – mageba expansion joints

- TENSA®MODULAR (Type LR) is an exceptionally flexible and durable joint with optional features such as noise-reducing surface plates, special sliding material, anti-skid coating and earthquake protection.
- TENSA®FINGER (Type RSFD) is a cantilever finger joint which offers high driving comfort.
- TENSA®POLYFLEX®RapidCure RC is a flexible plug joint system, based on elastic polymers. Its key benefits include driver comfort, no additional noise emissions and watertightness.
- TENSA®CRETE (Type RE) is a single gap joint consisting of steel edge profiles anchored in high-strength polymer concrete, requiring minimum break-out of existing structure when replacing another joint.



- 1 Installation of a TENSA®FINGER (Type GF) sliding finger joint with 52 inches (1.3 m) movement capacity.
- 2 Installation of a TENSA®POLYFLEX RC flexible plug expansion joint.
- 3 Installation of a TENSA®MODULAR expansion joint type LR18 which accommodate total longitudinal movements of up to 54 inches (1.4 m).



## Seismic devices

# mageba seismic devices

### Growing demand for seismic protection

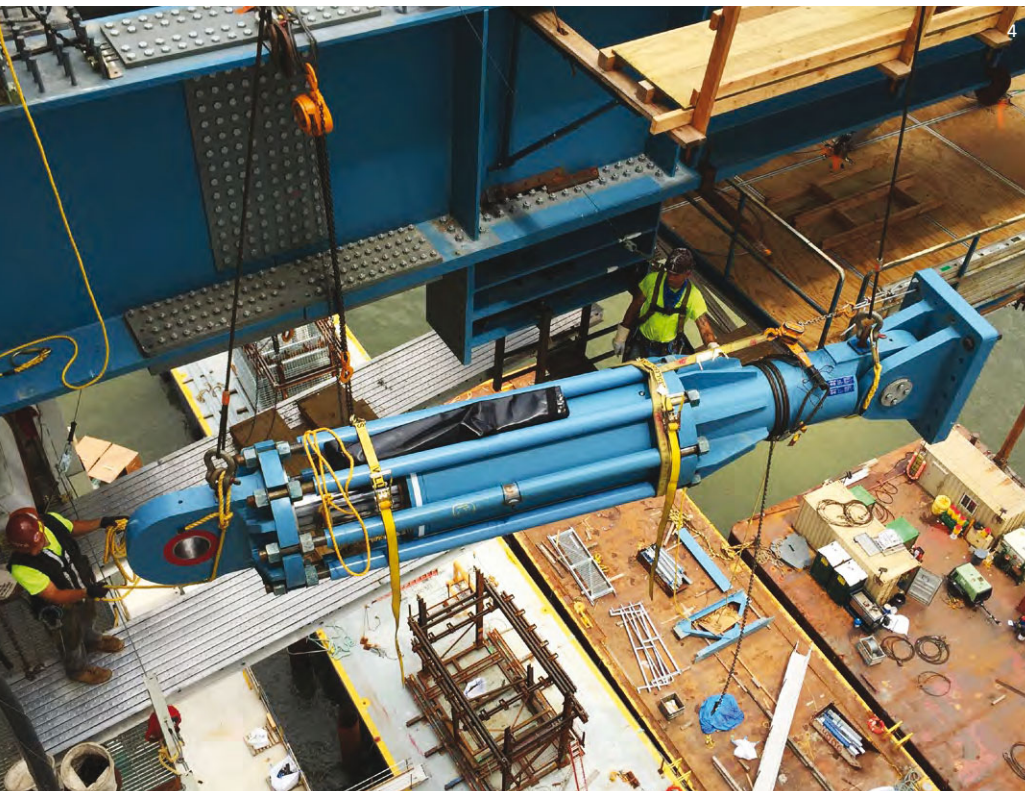
Bridges and other structures can be subjected to extreme movements and vibrations during an earthquake. This can cause a structure to fail if suitable protection has not been detailed. The demand for seismic protection features, especially for key buildings and transportation routes, continues to grow strongly.

### Protecting bridges and buildings

mageba supplies a wide range of products which can be used to protect important structures from the effects of earthquakes or to reduce the impact of other types of loading. The range of products includes seismic isolation products such as pendulum isolators, lead rubber bearings and high-density rubber bearings, and energy dissipating and temporary strengthening devices such as hydraulic and spring dampers and shock absorbers.

### Highlights – mageba seismic protection

- RESTON®PENDULUM isolators are based on the working principle of a pendulum. The isolators allow temporary horizontal displacement of the structure, while providing the necessary natural period shifting required by the seismic isolation system.
- RESTON®SA, STU and PSD hydraulic dampers and preloaded spring dampers absorb and dissipate excessive energy during dynamic events such as earthquakes.
- LASTO®LRB constitute the world's most widespread solution for the protection of bridges and buildings during earthquakes.
- Spring disc dampers are particularly valued for their reliability and durability.



- 1 RESTON®PENDULUM isolators have satisfied all testing requirements of EN15129.
- 2 RESTON® hydraulic dampers offer an economical means of strengthening a structure, and can be expected to function for well over 50 years.
- 3 Testing of a mageba lead rubber bearing (LRB) to prove resistance to a 2,475 year seismic event.
- 4 Installation of RESTON®STU with lock-up capacities of up to 800 kips (3,550 kN).



**Structural monitoring**

# mageba structural monitoring

**The increasing need for control**

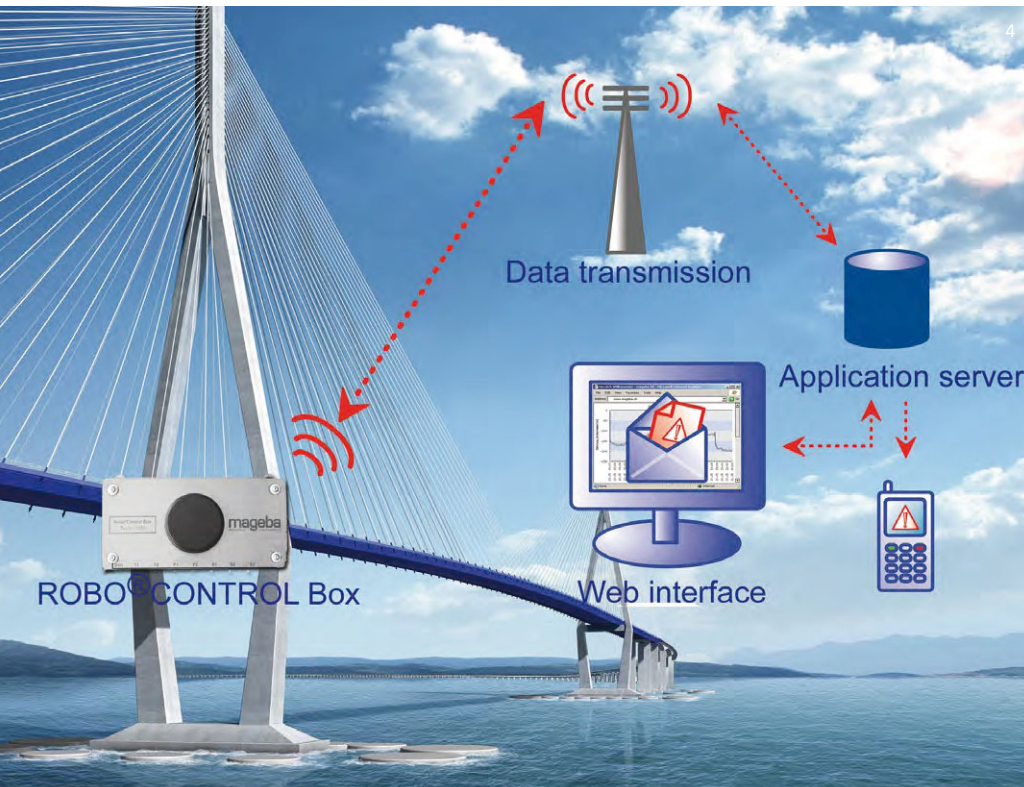
The ability of engineers to design and construct structures, with greater spans but using less materials, has greatly improved in recent decades. The importance of inspections and testing, and the need for structural health monitoring, have also grown accordingly.

**Real-time monitoring**

mageba monitoring systems provide real-time information on any desired characteristic of a structure – such as forces, movements, vibrations, crack widths or temperature. This can offer many benefits, e.g. increasing confidence in the structural integrity of a structure, and ensuring that safety measures can be implemented in a timely manner, if necessary.

**Highlights – mageba structural monitoring**

- ROBO®CONTROL – a modern and flexible system which offers quick, efficient and inexpensive health checking of any type of structure.
- Inspections – a vital part of any structure’s maintenance plan. Done properly and professionally, they can ensure that possible problems are identified in good time.
- mageba can provide complete testing of any bridge product.



- 1 Graphical presentation of all data in real-time, here using the mageba iPad application.
- 2 A ROBO®CONTROL Box - the heart of mageba’s structural health monitoring system.
- 3 mageba has over 40 years of experience in the conventional inspection of structures.
- 4 ROBO®CONTROL is a fully automated monitoring system that makes measured data available via the Internet.



# Project References – North America



## Tappan Zee Bridge, USA

### mageba products:

Type: TENSA®MODULAR LR expansion joints  
RESTON®STU shock transmission units

Installed: 2015–2018



## New Champlain Bridge, Canada

### mageba products:

Type: TENSA®MODULAR LR expansion joints  
ROBO®CONTROL permanent monitoring system

Installed: 2016–2018



## George Washington Bridge, USA

### mageba products:

Type: TENSA®FINGER GF sliding finger joints

Installed: 2021–2022



## Pattullo Bridge Replacement, Canada

### mageba products:

Type: LASTO®LRB lead rubber bearings and  
RESTON®SPHERICAL bearings

Installed: 2022–2023

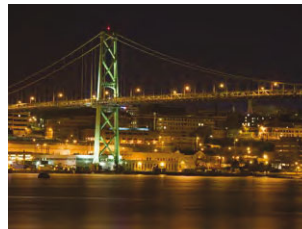


## Delaware Memorial Bridge, USA

### mageba products:

Type: TENSA®POLYFLEX® Advanced and RapidCure flexible plug expansion joints and  
RESTON®SPHERICAL bearings with up-lift control

Installed: 2019–2023



## McDonald and McKay Bridges, Canada

### mageba products:

Type: TENSA®MODULAR LR expansion joints and  
ROBO®CONTROL structural health monitoring system

Installed: 2009



## SR520 West Bridge, USA

### mageba products:

Type: TENSA®MODULAR LR-LS expansion joints with noise-reducing “sinus plates”  
ROBO®MUTE noise damping panels

Installed: 2017–2023



## Deh Cho Bridge, Canada

### mageba products:

Type: TENSA®MODULAR LR expansion joints

Installed: 2012

### mageba North America

mageba North America Corp.  
1384 Broadway, 5th Floor  
New York, NY 10018  
USA  
T 212-644 3335  
info.us@mageba-group.com

### mageba on the internet

Visit us on [www.mageba-group.com](http://www.mageba-group.com) for more information, watch our videos on [www.youtube.com/magebagroup](http://www.youtube.com/magebagroup) or read the latest stories on our social channel [ch.linkedin.com/company/mageba-sa](http://ch.linkedin.com/company/mageba-sa).



### mageba infrastructure products



Structural bearings



Expansion joints



Seismic devices



Structural monitoring



engineering connections®