



Structural bearings

Infraestructura | Edificaciones | Estructuras industriales

# mageba structural bearings – mastering loads and movements



## RESTON® POT LIFT-CONTROL Lifting and Measuring Bearings

cleverly developed, safe, internationally approved



**mageba**



# Principle and Functions

## Principle

mageba RESTON®POT LIFT-CONTROL lifting and measuring bearings (with European Technical Approval ETA-11/0453) are based in their design on the RESTON®POT bearing, and have the following functions:

- support of the structure, like a conventional bearing; and
- measurement of the load carried by the bearing; and/or
- controlled lifting of the superstructure.

RESTON®POT LIFT-CONTROL can be delivered as either lifting or measuring bearings, or combined as both lifting and measuring bearings.

## Structural Support

RESTON®POT LIFT-CONTROL bearings serve the primary purpose of providing structural support. Like conventional pot bearings, they can be designed as fixed, guided sliding or free sliding. They can also be designed for special applications with high horizontal loading, and for use on railway bridges.

## Force Measurement

RESTON®POT LIFT-CONTROL measuring bearings enable the load acting on the bearing to be precisely determined at any time using a mobile WIGAmeter reader.

A measuring cell inside the bearing transmits the appropriate values to the reader, which is attached to the bearing at a standardized connection point. The connection point is well protected against external influences, and can be located away from the bearing to improve access, if required.

## Combination with ROBO®CONTROL

Thanks to the use of special digital measuring cells, RESTON®POT LIFT-CONTROL bearings can also be used in conjunction with mageba's automated monitoring system, ROBO®CONTROL. This enables bearing loads to be permanently remotely monitored, with many features available - such as graphic presentation of data and the sending of an automatic alarm message should pre-defined boundary values be exceeded.

## Force measurement with ROBO®CONTROL

RESTON®POT LIFT-CONTROL measuring bearings enable the load acting on the bearing to be precisely determined at any time using a ROBO®CONTROL Portable or Permanent Unit.

A measuring cell inside the bearing transmits the appropriate values to the reader, which can be connected to the bearing via a dedicated connector. The connection point is well protected against external influences, and can be located away from the bearing to improve access, if required.

ROBO®CONTROL Permanent enables bearing loads to be monitored remotely, with many features available - such as graphic presentation of data and the sending of an automatic alarm message should pre-defined boundary values be exceeded



- 1 ROBO®CONTROL Portable Unit
- 2 RESTON®POT LIFT-CONTROL bearing
- 3 Injection process

# Applications and Benefits

## Ground Settlements

Structures on slopes and in areas with poor ground conditions may be at risk of ground settlements. If such a structure is supported by conventional bearings, the compensation of such settlements requires lifting of the structure to insert packing plates and a great deal of effort. RESTON®POT LIFT-CONTROL bearings are designed to themselves lift the superstructure by the required amount, without the need for additional hydraulic jacks. Their integrated load measuring capability can also be used to confirm the proper distribution of loads.

## Structural Adjustment

Unwanted movements and deformations, such as those resulting from creep and shrinkage in new concrete structures, must be compensated. In high-speed railway bridges, precise adjustments are required following ground settlements. In arch bridges, loads must be distributed in accordance with the structure's design to avoid unwanted long-term stresses and resulting damage to the structure.

RESTON®POT LIFT-CONTROL bearings enable such structural adjustments to be undertaken without the need for packing plates and costly additional lifting equipment.

## Safe Lifting

With RESTON®POT LIFT-CONTROL bearings, the need to stabilize and secure the structure during lifting operations does not arise. The bearings retain their full ability to support and secure the superstructure during the entire lifting process, even continuing to accommodate movements. Lifting can thus be carried out without restrictions and under service conditions.

## Replacement of Bridge Bearings

RESTON®POT LIFT-CONTROL bearings offer an interesting option for the rehabilitation and modernization of bridges as may be required, for example, by capacity increases or new standards.

## Application Example

Weyermannshaus highway viaduct, Berne, Switzerland:

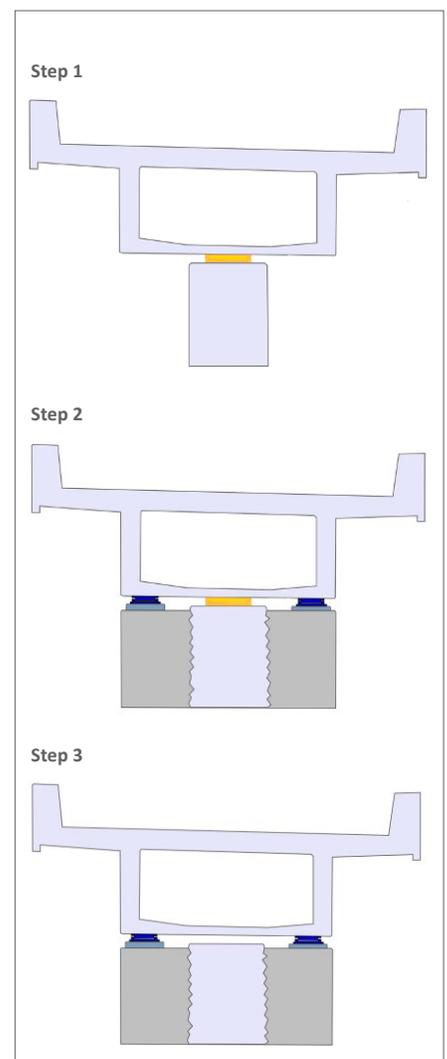
After widening the viaduct's piers, the support of the deck was adapted to include two bearings on each pier instead of a single central one. The tender documentation assumed the use of hydraulic jacks to lift the superstructure. However, a proposal to use mageba RESTON®POT LIFT-CONTROL bearings as an alternative enabled the successful bidding contractor to significantly reduce construction costs, easily compensating for the additional bearing costs.

The construction method was as follows:

**Step 1:** Widening of the piers and carrying out of structural repair works

**Step 2:** Installation of the RESTON®POT LIFT-CONTROL bearings and use of these to lift the superstructure

**Step 3:** Removal of the existing bearings; the newly installed bearings take on the function of supporting the superstructure in the future



- 1 A bridge with RESTON®POT LIFT-CONTROL bearings to compensate ground settlements
- 2 Construction process at the Weyermannshaus highway viaduct



## Structural bearings

# Quality & Support

### Quality

Over the past five decades, mageba has supplied over 50,000 structural bearings for projects all around the world. The quality and durability of mageba bearings is thus ensured not only by their well-proven product properties, but also by the extensive experience of our personnel.

mageba has a process-orientated quality system. In addition, its quality is regularly inspected by independent testing institutes. mageba factories are AISC certified for Major Bridges (CPT, STD, SPE) and also maintain AWS certifications for D1.1 and D1.5.

### CE Conformity

mageba RESTON®POT LIFT-CONTROL bearings are designed and manufactured in accordance with "AASHTO LRFD Bridge Construction Specifications".

Alternatively, RESTON®POT LIFT-CONTROL bearings can also be designed and manufactured in accordance with European Standard EN 1337 and the product specific European approval (ETA-11/0453). Bearings are then marked with the CE mark of conformity, which confirms that they satisfy all requirements of this standard, without exception.

All necessary type testing performed on RESTON®POT LIFT-CONTROL devices are carried out at an independent testing facility and fully supervised by a certified body.

### Dimensions

The dimensions of RESTON®POT LIFT-CONTROL bearings are roughly equivalent to those of standard mageba RESTON®POT bearings, but with increased height. The lifting capacity can be specified to suit needs. In most circumstances, a capacity of +1" (+25 mm) is adequate. In such a case, the bearing can be expected to be approximately 2.8 in (270 mm) higher than a conventional pot bearing. The precise dimensions of RESTON®POT LIFT-CONTROL bearings are determined by mageba on a project by project basis.

### Materials

RESTON®POT LIFT-CONTROL bearings are manufactured using the same high-quality materials as RESTON®POT bearings. Details are provided in the RESTON®POT bearing brochure.

### Support

Our experienced product specialists are always ready to provide you with further information and to advise you in selecting the optimal solution for your project.

You can also find further product information, including data sheets with standard bearing dimensions and reference lists, at [mageba-group.com](http://mageba-group.com).

### Project References – RESTON®POT LIFT-CONTROL Lifting and Measuring Bearings



Val da Pila (CH)



Gleisbogen Bridge (CH)



Weyermannshaus (CH)



Theiss Power Plant (AT)



La Réunion (FR)



Maas Waalkanaal (NL)

### mageba Structural Bearings



Pot Bearings



Spherical Bearings



Deformation Bearings



ILM Bearing

**mageba**  
mageba-group.com

engineering connections®