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European technical approval

ETA-13/0039

(English translation, the original version is in German)

Handelsbezeichnung
Trade name

mageba Topflager RESTON®POT HP

Zulassungsinhaber
Holder of approval

**mageba SA
Solistrasse 68
CH-8180 Bülach
Switzerland**

Zulassungsgegenstand
und Verwendungszweck

**Topflager (Topflager der Typen TA, TE, TF) mit spezieller In-
nendichtung für erhöhte Beanspruchungen**

*Generic type and use
of construction product*

*Pot bearing (pot bearing types TA, TE, TF) with special internal
sealing for increased action effects*

Geltungsdauer vom
Validity from
bis zum
to

01.04.2013

31.03.2018

Herstellwerke
Manufacturing plants

**Auflistung der Herstellwerke festgelegt in der technischen
Dokumentation**
*Comprehensive list of manufacturing plants laid down in
technical documentation*

Diese Europäische technische
Zulassung umfasst
*This European technical
approval contains*

11 Seiten einschließlich Anhang A

11 pages including Annex A



European Organisation for Technical Approvals
Europäische Organisation für Technische Zulassungen
Organisation Européenne pour l'Agrément Technique

I LEGAL BASES AND GENERAL CONDITIONS

- 1 This European technical approval is issued by the Österreichisches Institut für Bautechnik in accordance with:
 - Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products¹, modified by the Council Directive 93/68/EEC of 22 July 1993²;
 - Wiener Bauprodukte- und Akkreditierungsgesetz – WBAG. LGBl. Nr. 30/1996, zuletzt geändert durch das Gesetz LGBl. für Wien Nr. 24/2008;
 - Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex of Commission Decision 94/23/EC³;
- 2 The Österreichisches Institut für Bautechnik is authorised to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant(s). Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.
- 3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those laid down in the context of this European technical approval.
- 4 This European technical approval may be withdrawn by the Österreichisches Institut für Bautechnik, in particular after information by the Commission on the basis of Article 5 (1) of Council Directive 89/106/EEC.
- 5 Reproduction of this European technical approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of the Österreichisches Institut für Bautechnik. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European technical approval.
- 6 The European technical approval is issued by the approval body in its official language. This version corresponds to the version circulated within EOTA. Translations into other languages have to be designated as such.

¹ Official Journal of the European Communities N° L 40, 11.2.1989, p. 12

² Official Journal of the European Communities N° L 220, 30.8.1993, p. 1

³ Official Journal of the European Communities N° L 17, 20.1.1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product and intended use

1.1 Definition of product

The mageba Topflager RESTON®POT HP is a sliding, guided or fixed pot bearing, types TA, TE, TF. It consists of components according to EN 1337-5, but using a special internal seal, defined in cl. 2.1.2.4 in this ETA. The characteristic contact strength of the elastomeric pad is limited to 120 N/mm². The mageba Topflager RESTON®POT HP applies for an accumulated sliding path of the internal seal up to 3200 m.

The subject of this ETA is the complete pot bearing, assembled in the factory, whereas the principles for pot bearings according to EN 1337-5 are used.

The mageba Topflager RESTON®POT HP is designed for the support of bridges or building works, where the requirements on the individual bearings are critical.

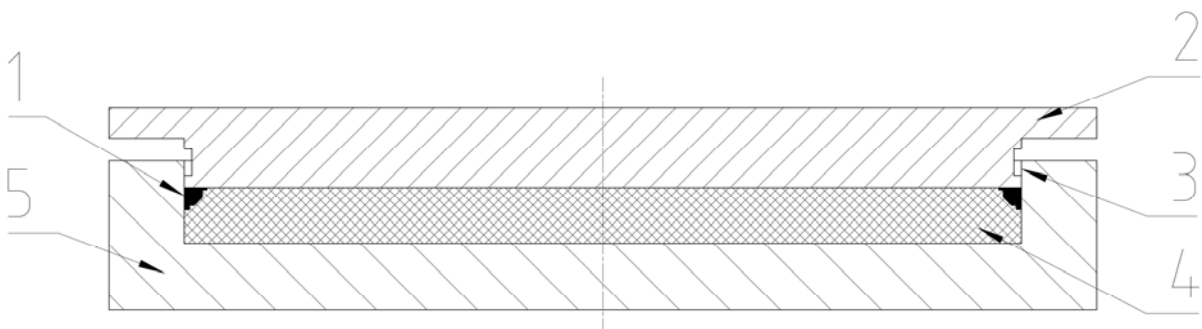


Figure 1: Components of the mageba Topflager RESTON®POT HP

Key

- 1 Special internal seal
- 2 Piston
- 3 Protection by external seal
- 4 Elastomeric pad
- 5 Pot

Functional principle of the mageba RESTON®POT HP bearing:

An elastomeric pad (4), made of natural rubber according to EN 1337-5, is placed in a steel pot (5), and a steel piston (2) is placed on top. The elasticity of the elastomeric pad enables rotational movements of the piston (2) about any horizontal axis. The special internal seal (1) prevents the extrusion of the elastomeric pad (4) under pressure and/or rotation.

Depending on whether it is a fixed, guided or sliding bearing, the mageba Topflager RESTON®POT HP can accommodate horizontal forces and movements (longitudinal/transverse) as well as vertical forces.

The components and materials which constitute the mageba Topflager RESTON®POT HP are specified in clause 2.1 and in Annex A.1 in this ETA.

1.2 Intended use

The mageba Topflager RESTON®POT HP is in principle to be used for the intended use according to EN 1337-5, taking into account the extended application stated above regarding loads and increased accumulated sliding path of the internal seal in respect to the one given in EN 1337-5.

This means, mageba Topflager RESTON®POT HP may be used for structures related to high traffic volume resulting in high rotations at the bearing and, therefore, having high wear requirements of the internal seal. They are also especially suitable for the use in bridges that, due to their geometry, have limited space for bearings, as these bearings can be designed with smaller dimensions in comparison to pot bearings according to EN 1337-5.

Pot bearings which are subjected to rotation α_d greater than 0,030 rad (see Figure 2 in EN 1337-5) under the characteristic combination of actions or which incorporate elastomeric pads larger than 1500 mm in diameter are beyond the scope of this ETA.

The relationship between the permanent and variable rotation angles is shown in Figure 2.

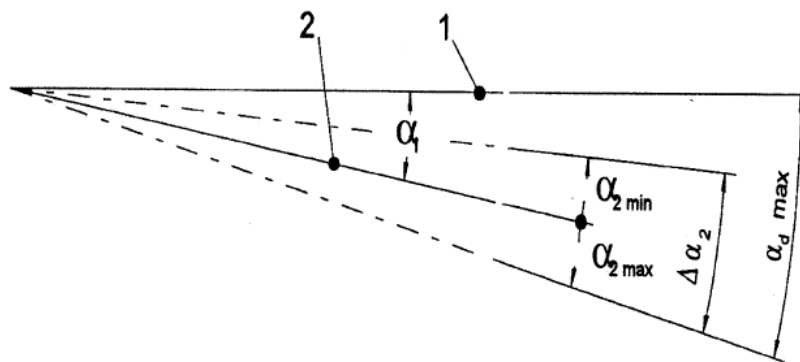


Figure 2: Diagrammatic representation of rotation angles

Key

1 Starting position (after installation)

2 Position due to rotation α_1 caused by permanent actions

$\alpha_{2\min}$, $\alpha_{2\max}$ negative and positive rotation angles due to variable loads

$\Delta\alpha_2$ range of rotation angles due to extreme positions of variable loads

$\alpha_{d\max} = \alpha_1 + \alpha_{2\max}$

Rotation limitation

Under the characteristic combination of actions the maximum rotation $\alpha_{d\max}$ shall not exceed 0,03 rad.

Under the frequent combination of actions the difference in rotation $\Delta\alpha_{d2}$ shall not exceed 0,005 rad.

The mageba Topflager RESTON®POT HP applies for operating temperatures between $-40\text{ }^\circ\text{C}$ and $+50\text{ }^\circ\text{C}$, whereas for the use in combination with a sliding element operating temperatures between $-35\text{ }^\circ\text{C}$ and $+48\text{ }^\circ\text{C}$ according to EN 1337-2 apply.

The provisions made in this European technical approval are based on an assumed intended working life of the pot bearing for the intended use of 10 to 25 years when installed in the works, provided that the pot bearing is subject to appropriate installation, use and maintenance (see clauses 4.2 and 5.2 in this ETA). 10 to 25 years are related to the equivalent approach in EN 1337-5 with reference to category 2 in EN 1990, Table 2.1.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or the approval body, but are to be regarded only as a means for choosing the appropriate product in relation to the expected, economically reasonable working life of the works.

2 Characteristics of product and methods of verification

2.1 Characteristics of product

2.1.1 General

If aspects are not specified in detail in this ETA, EN 1337-5 applies.

The mageba Topflager RESTON®POT HP may be equipped with an additional load measuring device, if this load measuring device does not influence the performance of the pot bearing regarding the requirements according to this ETA.

2.1.2 Components

2.1.2.1 Pot

For the pot EN 1337-5 applies. The type (a) of pot construction, defined in EN 1337-5, Figure 5, is used for products according to this ETA.

For the design requirements EN 1337-5 applies, including the use of the simplified formulas given in EN 1337-5, clause 6.2.2, for the verification of the pot in order to cover the concerned characteristic contact strength of the elastomeric pad, defined in clause 1.1 in this ETA.

2.1.2.2 Piston

For the piston EN 1337-5 applies. For the design requirements EN 1337-5 applies.

2.1.2.3 External seal

The design and material for the external seal according to EN 1337-5, clause 7.6, is defined in the technical documentation deposited with the approval body Österreichisches Institut für Bautechnik.

2.1.2.4 Internal seal

The internal seal is made of polyoxymethylene (POM), whereas its geometry and related tolerances and configuration are in line with in EN 1337-5, Annex A, cl. A.2.2. The internal seal is defined by its identification number POM HP.

The material characteristics are confidential⁴ and are deposited with the approval body Österreichisches Institut für Bautechnik.

Compared to the accumulated sliding path of the internal seal and related applicability according to EN 1337-5, Annex G, the following accumulated sliding path of the internal seal is declared: 3200 m.

2.1.2.5 Elastomeric pad

The used elastomeric pad, made of natural rubber and defined by its compound number H880006A, is in accordance with EN 1337-5, whereas for the design calculation the characteristic contact strength of the elastomeric pad is 120 N/mm² and a partial safety factor $\gamma_M = 1,3$ is to be used.

For a characteristic contact strength up to 60 N/mm² for the minimum thickness of the elastomeric pad t_{min} EN 1337-5, cl. 6.2.1.2, applies.

For a characteristic contact strength of 120 N/mm² the minimum thickness of $t_{min} * 1,1$ applies.

The minimum thickness of the elastomeric pad between a characteristic contact strength of 60 N/mm² and 120 N/mm² shall be determined by means of linear interpolation.

⁴ The technical documentation to this European technical approval is deposited with Österreichisches Institut für Bautechnik and, as far as relevant for the tasks of the notified bodies involved in the attestation of conformity procedure, handed over to the notified bodies.

2.1.2.6 Lubricant

The silicon grease used as lubricant is identified by the requirements stated in EN 1337-2, clause 5.8.2, Table 8, and meets the requirements according to EN 1337-5, clause 5. The lubricants to be used are deposited with the approval body Österreichisches Institut für Bautechnik.

2.1.2.7 Sliding elements

In case of design of the mageba Topflager RESTON®POT HP with sliding elements, for the sliding elements EN 1337-5 applies.

2.1.3 Assembled kit

2.1.3.1 Mechanical resistance and stability (ER 1)

For the mageba Topflager RESTON®POT HP a characteristic contact strength of the elastomeric pad up to $f_{e,k} = 120 \text{ N/mm}^2$ is used for the assessment.

For the verification of the adjacent structural parts the maximum value of the restraint moment M_{emax} , defined in EN 1337-5, clause 6.1.3.1, and referred to a maximum characteristic contact strength of the elastomeric pad of $f_{e,k} = 120 \text{ N/mm}^2$, is to be calculated taking into account the factors $F_0 = 0,01$, $F_1 = 0,30$ and $F_2 = 2,65$, determined at -20 °C according to EN 1337-5, clause D.4, for the elastomeric pad.

2.1.3.2 Hygiene, health and environment (ER 3)

Release and content of dangerous substances

The mageba Topflager RESTON®POT HP comply with the provisions European Council Directive 67/548/EEC-Dangerous Substances Directive und Regulation (EC) No 1272/2008. A declaration of conformity in this respect was made by the manufacturer.

In addition to the specific clauses relating to dangerous substances contained in this European technical approval, there may be other requirements applicable to the kit falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

2.1.3.3 Durability

The assumed intended working life as stated in clause 1.2 requires regular maintenance as specified by the manufacturer in the maintenance instructions which follow every delivered mageba Topflager RESTON®POT HP (see clause 5.2 in this ETA).

2.2 Methods of verification

The assessment of the fitness of mageba Topflager RESTON®POT HP for the intended use was undertaken according to the CUAP (Common Understanding of Assessment Procedure) for "Pot bearing with special sealing", ETA request No 03.01/81, version June 2012.

3 Evaluation of conformity and CE marking

3.1 Attestation of conformity system

The system of conformity attestation applied to this product shall be that laid down in the Council Directive 89/106/EEC of 21 December 1988, Annex III (2) (i), referred to as system 1 without audit-testing of samples, and is detailed as follows:

1 according to Council Directive 89/106/EEC, Annex III, section 2 (i), without audit-testing of samples, and is detailed as follows:

(a) Tasks for the manufacturer

(1) Factory production control

(2) Further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan

(b) Tasks for the approved body

(3) Initial type-testing of the product

(4) Initial inspection of factory and of factory production control

(5) Continuous surveillance, assessment and approval of factory production control

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures. This production control system shall insure that the product is in conformity with this European technical approval.

The manufacturer shall use materials stated in the technical documentation⁵ of this European technical approval only.

In the framework of factory production control the manufacturer carries out controls in accordance with the control plan⁶ which is fixed with this European technical approval.

Details of the extent, nature and frequency of controls to be performed within the factory production control correspond to this control plan which is part of the technical documentation of this European technical approval.

The results of factory production control shall be recorded in checklists signed by the person responsible and are evaluated. The records shall be presented to the notified body involved in continuous surveillance. On request the records must be presented to the Österreichisches Institut für Bautechnik.

⁵ The technical documentation of this European technical approval has been deposited at the Österreichisches Institut für Bautechnik and, as far as relevant for the tasks of the approved body involved in the attestation of conformity procedure, is handed over to the approved body.

⁶ The control plan has been deposited at Österreichisches Institut für Bautechnik and is handed over only to the approved body involved in the attestation of conformity procedure.

3.2.1.2 Other tasks of manufacturer

3.2.1.2.1 Testing of samples taken at the factory

Testing of samples taken at the factory by the manufacturer as laid down in the control plan.

3.2.1.2.2 Declaration of conformity

If all the criteria of the conformity attestation are satisfied the manufacturer shall make a declaration of conformity.

3.2.2 Tasks of notified bodies

3.2.2.1 Initial type-testing of the product

For initial type-testing the results of the tests performed as part of the assessment for the European technical approval may be used unless there are changes in the manufacture production process or manufacturing plant. In such cases the necessary initial type-testing has to be agreed between the Österreichisches Institut für Bautechnik and the notified body involved.

3.2.2.2 Initial inspection of factory and of factory production control

The notified body shall ascertain that, in accordance with the control plan, the manufacturing plants, in particular personnel and equipment, and the factory production control are suitable to ensure a continuous and orderly manufacturing of the mageba Topflager RESTON®POT HP according to the specifications given in clause 2 and the Annex of the European technical approval.

3.2.2.3 Continuous surveillance, assessment and approval of factory production control

The notified body shall visit the factory at least twice a year for surveillance of the manufacturer.

It has to be verified that the system of factory production control and the specified manufacturing process are maintained taking into account the control plan.

Continuous surveillance and assessment of factory production control have to be performed according to the control plan.

The results of continuous surveillance shall be made available on demand by the notified body or the approval body Österreichisches Institut für Bautechnik. In cases where the provisions of the European technical approval and the control plan are no longer fulfilled, the certificate of conformity shall be withdrawn.

3.2.2.4 Certification

If all criteria for conformity attestation are fulfilled the notified body shall issue certification of conformity of the product.

3.3 CE marking

The letters "CE" shall correspond to the Council Directive 93/68/EEC. The CE conformity symbol shall be affixed on the lift control pot bearing (or when not possible it may be affixed on the accompanying label, the package or on the accompanying commercial documents).

The CE marking of the pot bearing shall be accompanied by the following information:

- Identification number of the notified certification body
- Name and address or identifying mark of the producer
- Last two digits of the year in which the CE marking was affixed
- Number of the EC certificate of conformity
- Number of the European technical approval
- Indication to clarify the intended use
- Mandated characteristics for application of CE marking according to EN 1337-5, ZA.3
- Statement on the presence of dangerous substances, including concentration, if any

3.4 Identification of the kit

A permanent label of identification shall be provided with the pot bearing. For the information contained on it EN 1337-1, clause 7.3, applies.

In addition, the following information shall be included:

- Number of the European technical approval;

4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1 Manufacturing

The mageba Topflager RESTON®POT HP is manufactured in accordance with the provisions of this European technical approval, using the manufacturing process as identified in the inspection of the manufacturing plants by the approval body and laid down in the technical documentation and related manufacturer files.

The European technical approval is issued for mageba Topflager RESTON®POT HP on the basis of agreed data, deposited with the Österreichisches Institut für Bautechnik, which identifies mageba Topflager RESTON®POT HP that has been assessed and judged. Changes to mageba Topflager RESTON®POT HP production process, which could result in this deposited data being incorrect, shall be notified to the Österreichisches Institut für Bautechnik before the changes are introduced. The Österreichisches Institut für Bautechnik will decide whether or not such changes affect the European technical approval and consequently the validity of the CE marking on the basis of the European technical approval and if so whether further assessment/alterations to the European technical approval, shall be necessary.

4.2 Installation

EN 1337-11 applies.

5 Recommendations for the manufacturer

5.1 Recommendations on packaging, transport and storage

EN 1337-11 applies.

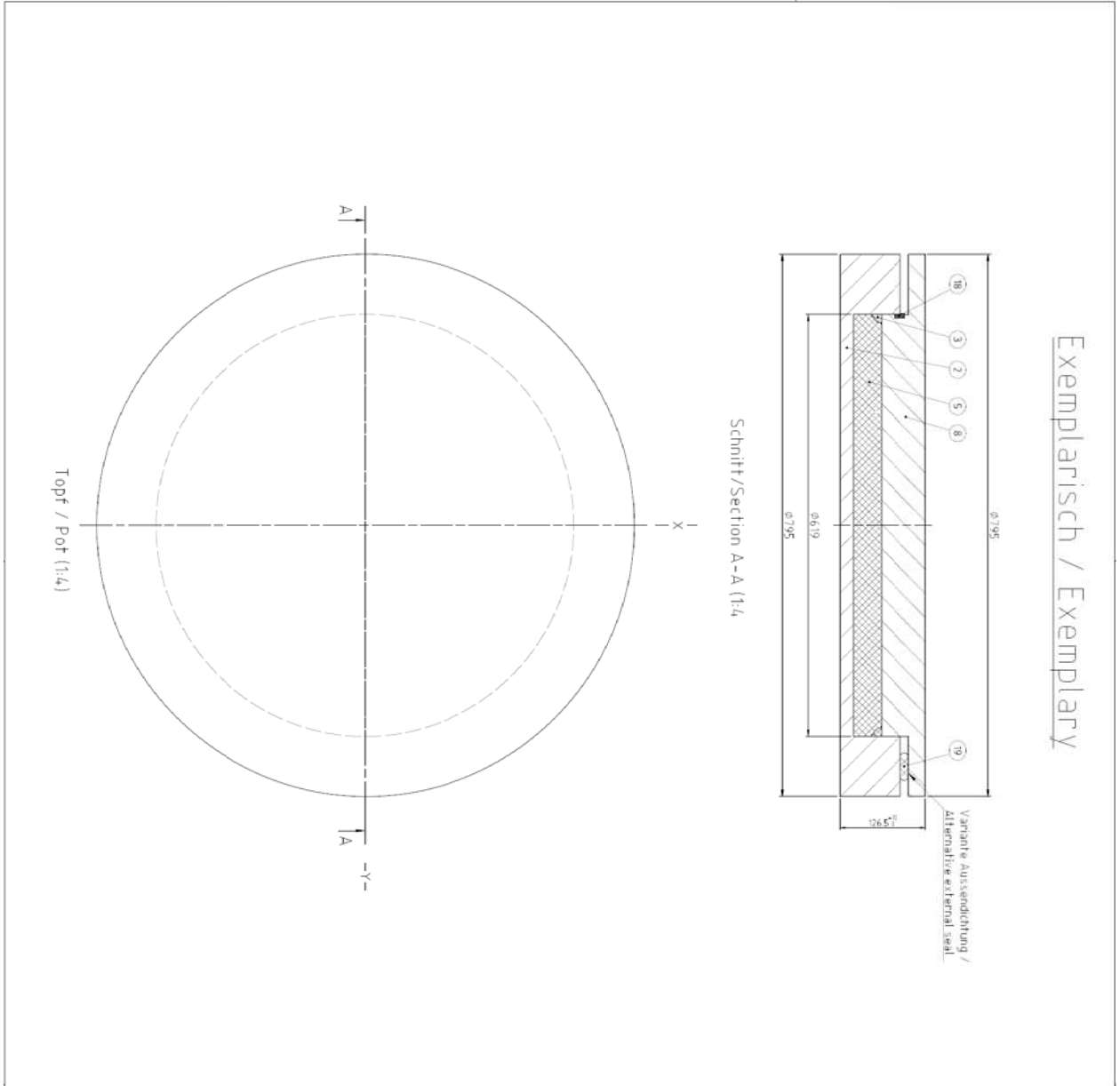
5.2 Recommendations on use, maintenance, repair

It is the responsibility of the manufacturer to ensure that each delivery contains proper information for the use of the mageba Topflager RESTON®POT HP including general guidance on the basis of this European technical approval. For in-service inspection the conditions given in EN 1337-5 apply.

On behalf of Österreichisches Institut für Bautechnik

The original document is signed by:

Rainer Mikulits
Managing Director



Beispielbezeichnung für ANGEWANDTE NORM / APPLIED STANDARD
Ladennorm / Load according to EN 1993-1 / EC 1
MAX. MÖGLICHE BEWEGUNG / MAX. POSSIBLE MOVEMENT
One-way bearing surcharge max. / Excessive axial movement according to EN 1993-1
Verformung / Deformation $\alpha = +10 \%$
MÖGLICHE LASTFÄLLE / POSSIBLE LOADING CASES
Vertikal / Vertical load $N_{Ed} = 100000 \text{ N}$ Horizontal / Horizontal load $N_{Ed} = 27000 \text{ N}$

The characteristic contact strength of the elastomeric pads is limited to 120 N/mm²

1	Piston	8	S355J2+N	
1	Rubber pad	5	NR	
1	Internal seal HP	3	POR HP	
1	Pot	2	S355J2+N	
1	External seal (Alternative)	19	Compo	
1	External seal	18	Silikon	
ANZ	BENENNUNG	POS.	MATERIAL	ARTIKEL
00	02112077 zur Genehmigung	001	0101	1

Technische Daten

Produkt	Skizze	Material	Verfahren	Inspektion
mageba		SAUBERHEIT REINHEIT magnetisch magnetisch		

Allgemeinwissen
nach ISO 2768-c

Einheit	maximaler Wert	minimale Wert
mm	±0,15	±0,15
mm	±0,15	±0,15

Bezeichnung: mageba Topflager RESTON@POT HP
Artikelnummer: T8-Ahhang A ETA

Details regarding dimensions and related tolerances are laid down in technical documentation

