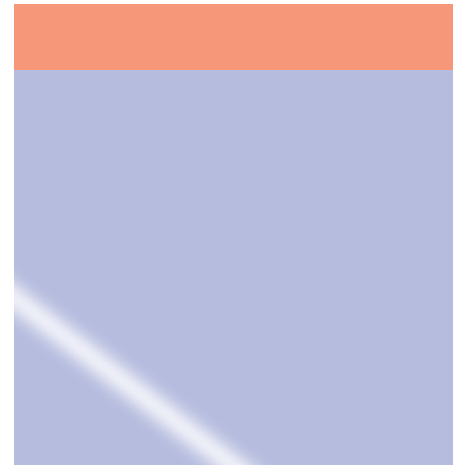


# CALENBERG

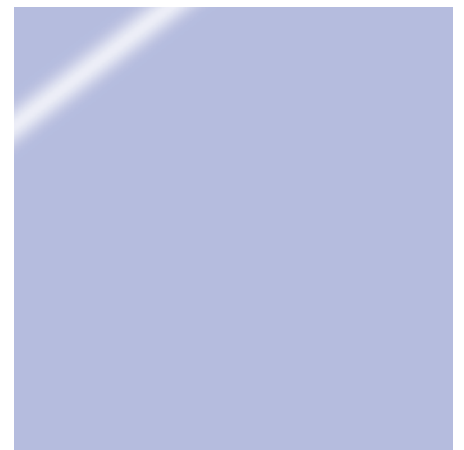
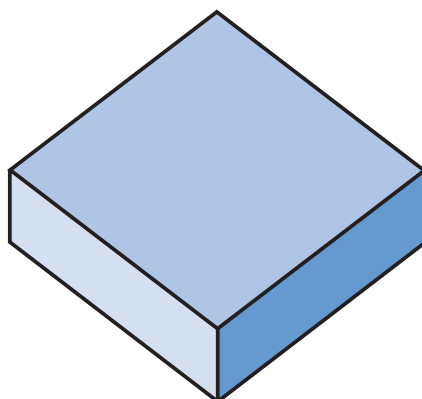
## COMPRESSION BEARING

**Unreinforced  
Elastomer Bearing**

**loadable up  
to 5 N/mm<sup>2</sup>**



**Official  
Certificate  
No. P-852.0290-6**



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## How to Specify

Supply Calenberg Compression Bearing, unreinforced homogeneous elastomer bearing according to DIN 4141 part 3, support class 2, format dependant loadable up to a mean compression stress of 5 N/mm<sup>2</sup>, Official Certificate No. P-852.0290-6.

### a) General

Length: ..... mm  
 Width: ..... mm  
 Thickness: ..... mm  
 Quantity: ..... piece(s)  
 Price: ..... €/piece

### b) Point bearing embedded in Polystyrene or Ciflamon fire protection plate

Total length: ..... mm  
 Total width: ..... mm  
 Length of elastomer core: ..... mm  
 Width of elastomer core: ..... mm  
 Thickness: ..... mm  
 Quantity: ..... piece(s)  
 Price: ..... €/piece

### c) Strip bearing embedded in Polystyrene or Ciflamon fire protection plate

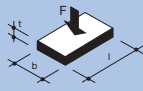
Total width: ..... mm  
 Width of elastomer core: ..... mm  
 Thickness: ..... mm  
 Quantity: ..... m  
 Price: ..... €/m

Supplier:  
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## Calculation Formulae Calenberg Compression Bearing

### Calculation for support class 2 according to DIN 4141 part 3

#### Permissible mean load



$$\text{perm. } \sigma_m = \frac{(S^2 + S + 1)}{2,0} \leq 5 \text{ N/mm}^2$$

condition:  $l \geq b \geq 5 \times t$

S = shape factor (see page 3)

#### Bearing deflection

see picture 1



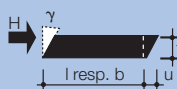
#### Permissible angle of distortion



$$\text{perm. } \alpha = \frac{200 \cdot t}{a} [\%]; \text{ rectangular bearing}$$

$$\text{perm. } \alpha = \frac{225 \cdot t}{a} [\%]; \text{ circular bearing}$$

#### Permissible horizontal shear deformation

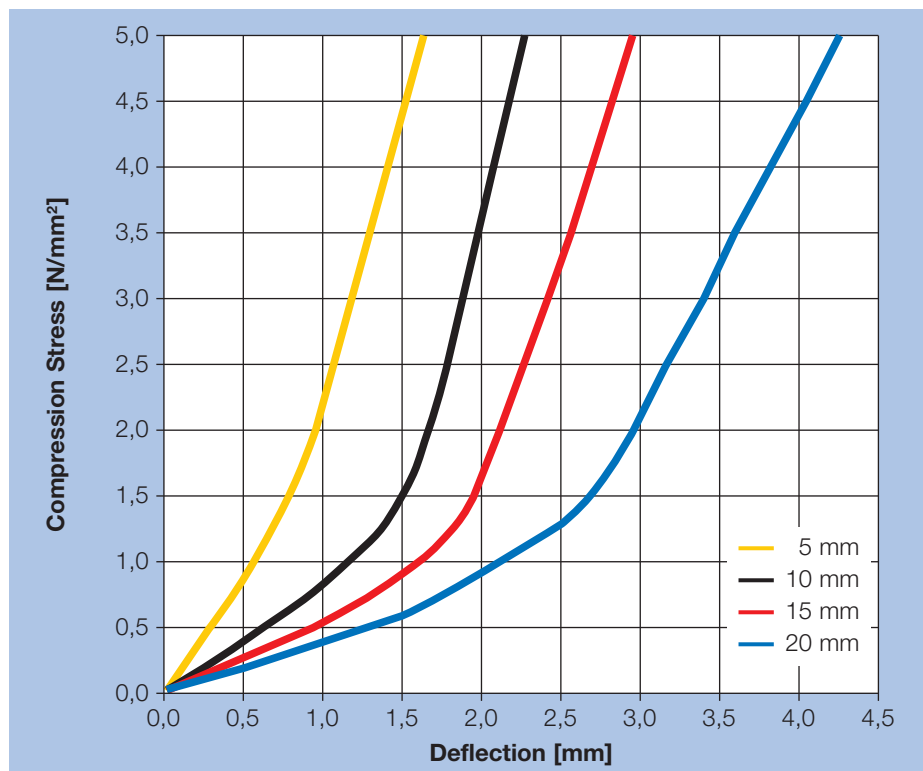


$$\text{perm. } u = 0,6 \cdot (t - 2) [\text{mm}]$$

Horizontal shear deformation caused by once working horizontal forces have not to be proven, because single minor sliding does not lead to any harmful changes of the support situation.

If a "pure" shear deformation is required, a vertical load of at least 1,0 N/mm<sup>2</sup> is necessary.

a, b, l, t in mm; α in ‰; σ<sub>m</sub> in N/mm<sup>2</sup>; S dimensionless



Picture 1: Deflection Δt depending on compression stress ( guideline diagram )

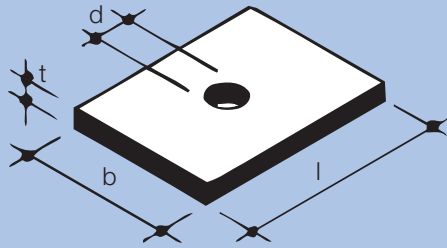
## Product Description

The Calenberg Compression bearing is an unreinforced elastomer bearing with smooth surfaces. It consists of tough elastic, ozone resistant elastomer and shows a hardness of 55 ± 8 Shore A.

To prove the classification into support class 2 of DIN 4141 part 3 corresponding tests have been carried out by the Testing Institute for Mechanical Engineering Materials and Plastics, University of Hannover.

## Shape Factors

### Bearing Format



### Shape Factor

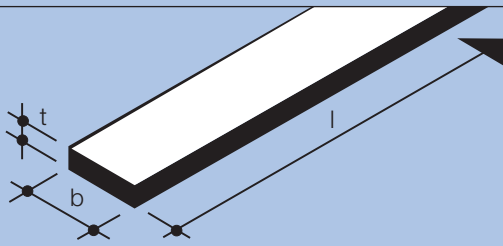
#### Rectangular bearing pad

- without hole:

$$S = \frac{l \cdot b}{2 \cdot t \cdot (l + b)}$$

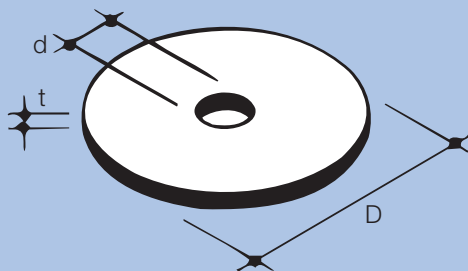
- with round hole:

$$S = \frac{4 \cdot l \cdot b - \pi \cdot d^2}{4 \cdot t \cdot (2 \cdot l + 2 \cdot b + \pi \cdot d)}$$



#### Rectangular bearing strip

$$S \approx \frac{b}{2 \cdot t}$$



#### Circular bearing pad

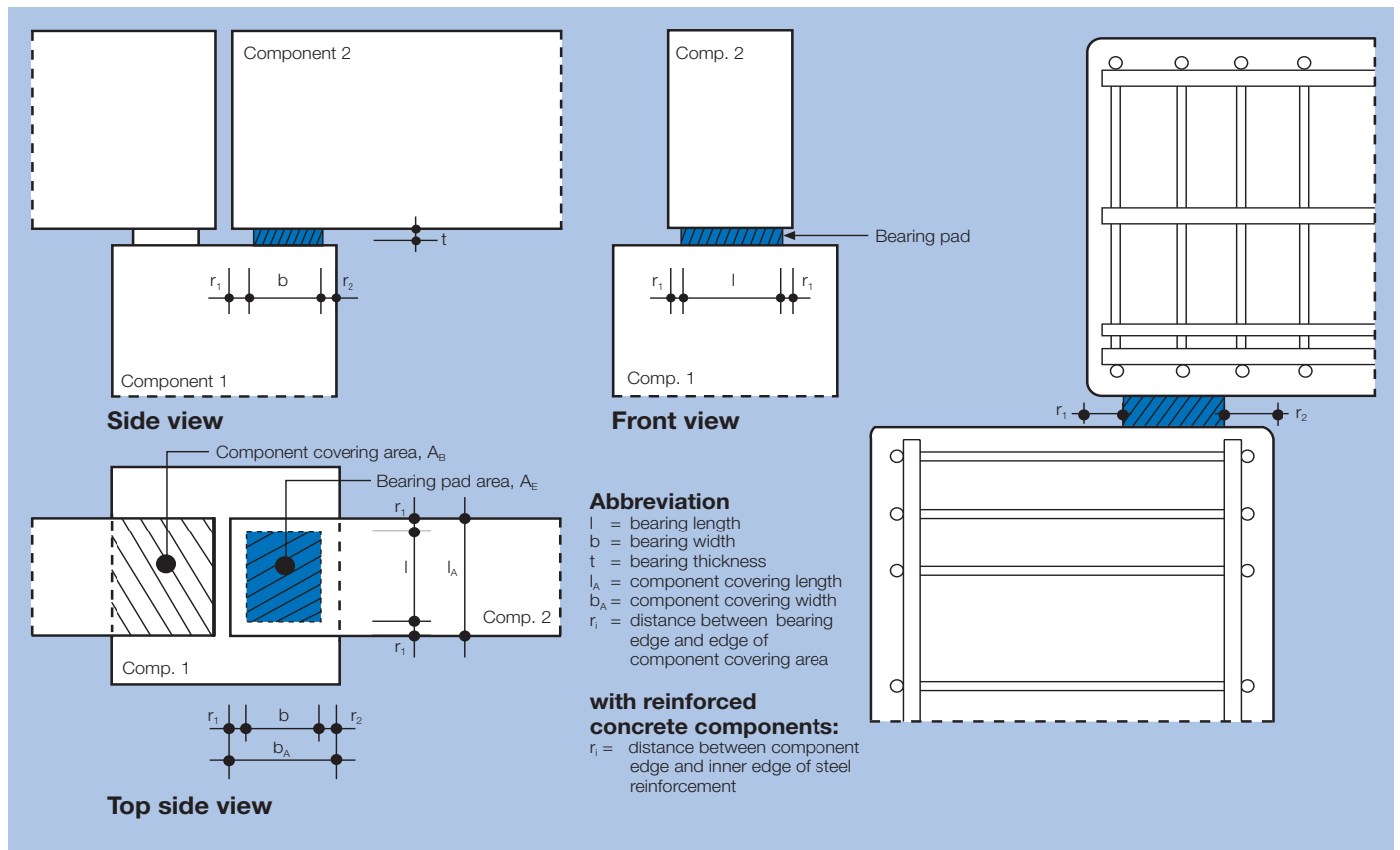
- without hole:

$$S = \frac{D}{4 \cdot t}$$

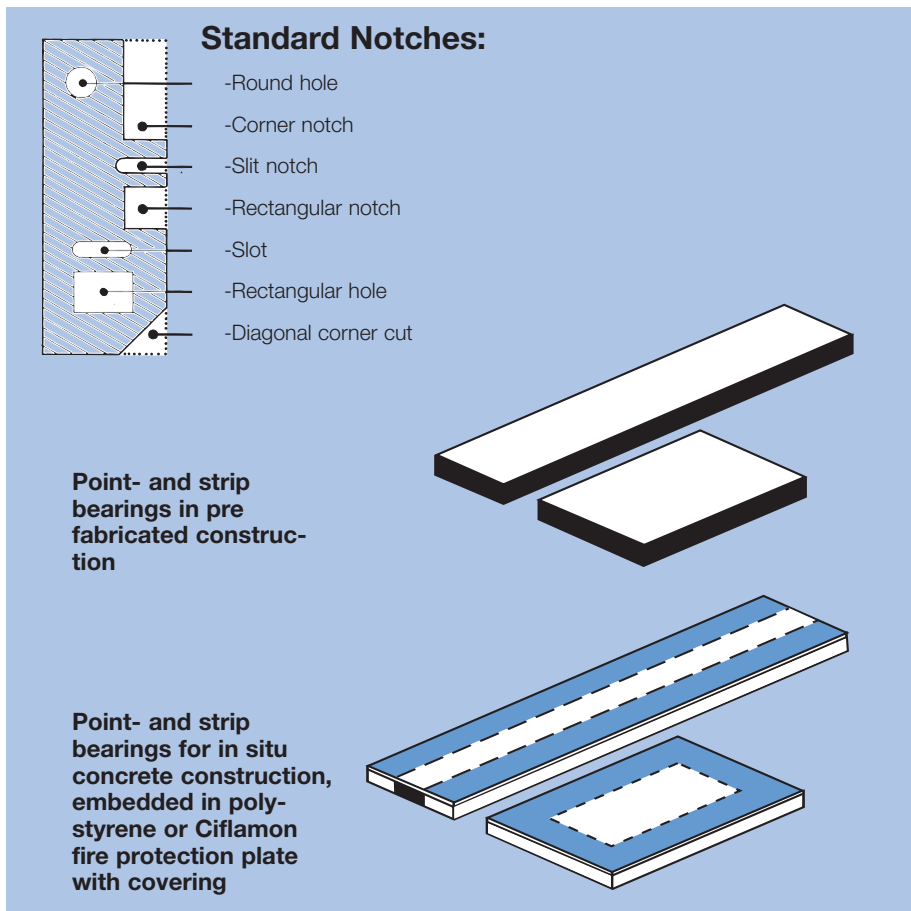
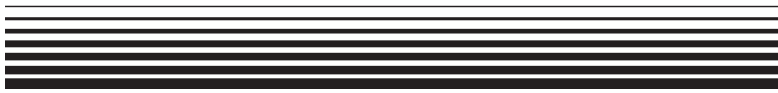
- with round hole:

$$S = \frac{D - d}{4 \cdot t}$$

Picture 2: Shape factors of different formats



Picture 3: Maximum area of elastomer bearing pad in reinforced concrete construction (edge distance). The elastomer bearing pad must be enclosed by the reinforcement. With timber or steel components the edge distance of the pad should be at least 3 cm.



## Design and Dimensions

Calenberg Compression Bearings are available cut to size as requested.

**In the case that bolts have to be put through a bearing, it can be provided with holes, notches, slots etc... For the use in construction of concrete cast in situ Compression Bearings are available embedded in Poly-styrene. For additional fire precaution reasons the bearings can be embedded in a Ciflamon fire protection plate which should be at least 30 mm wide (picture 4).**

### Dimensions:

- Bearing thickness:  
5, 10, 15, 20 mm
- Maximum cut to size:  
1200 mm x 1200 mm

Picture 4: Calenberg Compression Bearing, standard notches and types of bearings

## Area of Application

Calenberg Compression Bearings are used in all areas of building construction as permanent elastic and flexible joint elements. In most cases they are used as point bearings for the elastic support of girders and joists, in multi-story buildings also as strip bearings under plane load-bearing structures and wallboards.

## Mounting Instructions

In pre fabricated construction Compression Bearings are simply placed centrally to the support area without any additional measures. With reinforced concrete components the distance between bearing edge and component edge must be at least 3,0 cm, whereas the steel reinforcement has to enclose the bearing area. Chamfered component edges have to be considered as well when determining the edge distance. In situ concrete construction require a covering of gaps around the bearing pad, so that the support joint will not be affected by penetrating fresh concrete. A rigid connection must be avoided to ensure the resilient effect of the bearing.

## Fire Behaviour

The minimum bearing dimensions required for the classification into fire resistance class F 90 and F 120 according to DIN 4102 part 2 are listed in the "Fire Protection Table" (Brandschutztechnische Beurteilung) No. 3799/7357-AR. Bearings of smaller dimensions need an at least 30 mm wide jacketing of Ciflamon fire protection plate to meet the conditions of the F 120-classification.

## Certificate, Suitability Proof

- Official Certificate No. P-852.0290-6 of the Testing Institute for Mechanical Engineering Materials and Plastics, University of Hannover, October 2002
- Fire protection judgement No. 3799/7357-AR; Judgement of Calenberg elastomer bearings regarding a classification into fire resistance class F 90 resp. F 120 according to DIN 4102 part 2 ( edition 9/1977), Official Material Testing Institute of Civil Engineering and Building Construction, Institute for Building Materials, Massive Structure and Fire Protection, Technical University of Braunschweig, November 1997

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