

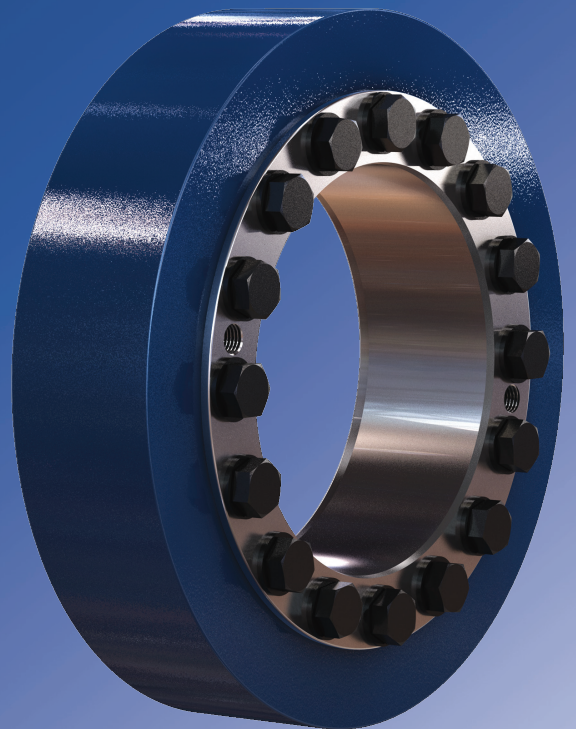
In-house development

Own manufacturing

Sole distributor in Germany

Working with distributors worldwide

**TAS**  
**SCHÄFER**



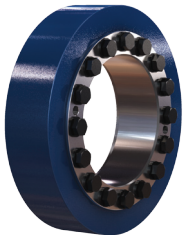
**External**  
Clamping devices

# Overview



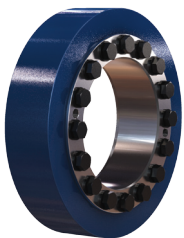
## 3173 Mini-Range

For very low torque transmission  
Very small profile  
Very light weight



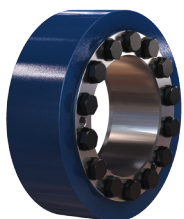
## 3171 Standard-Range

For Medium torque transmission  
Average profile  
Average weight



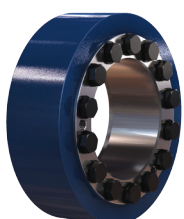
## 3181 Standard-Range strengthened

Like 3171, but with screws class 12.9  
For higher quality shaft and hub materials  
Higher transmissible torque than 3171



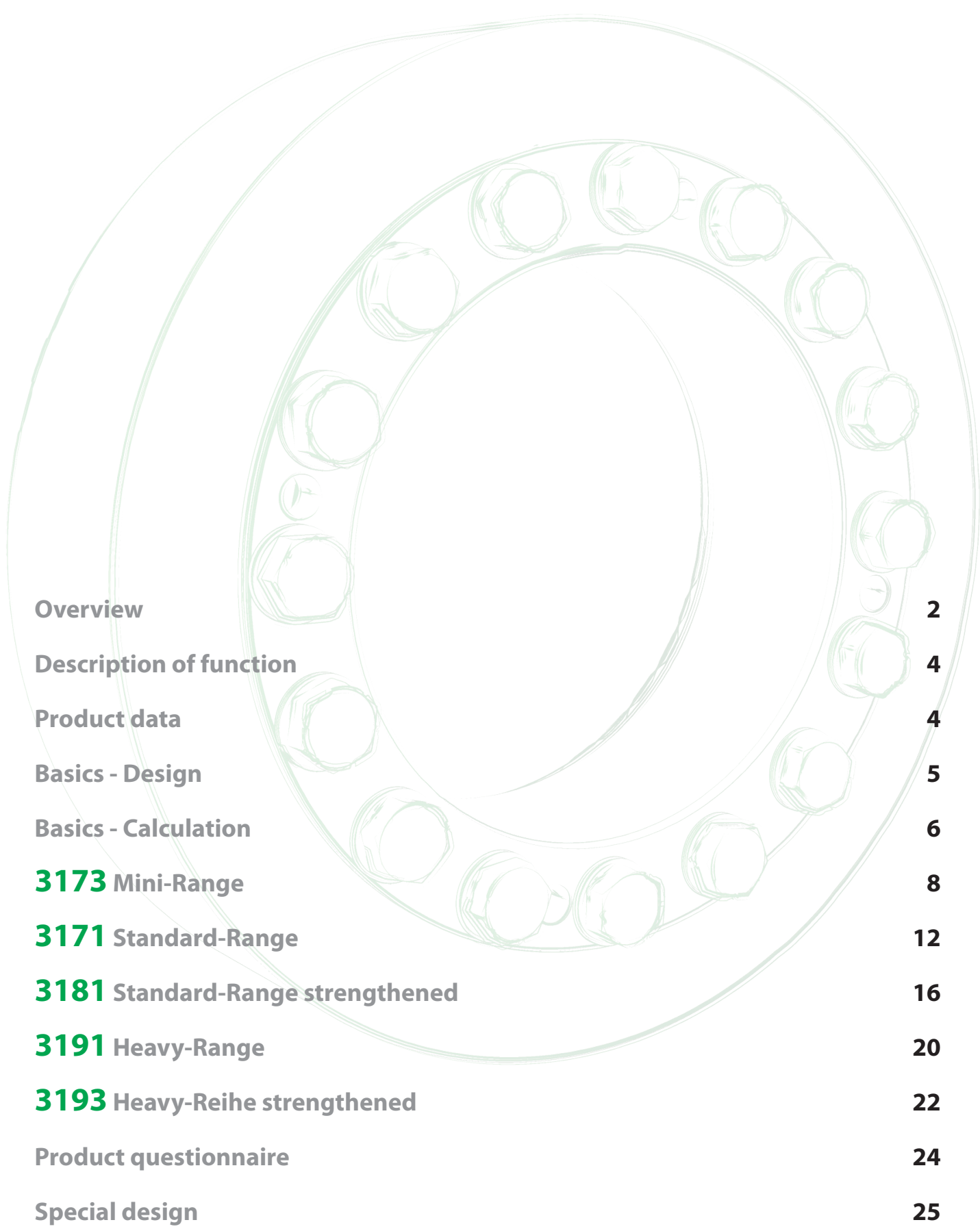
## 3191 Heavy-Range

For high torque transmission  
Heavy duty construction



## 3193 Heavy-Range strengthened

Like 3191, but with screws class 12.9  
For very high transmissible torque  
Heavy duty construction



|   |           |
|---|-----------|
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# Description of function

## Zweiteilige Schrumpfscheibe des Typs TAS 31..

The main function of a shrink disc is the safe connection of a shaft with a hub by means of friction. For example, between a drive shaft and a transmission hollow shaft. The shrink disc generates a backlash-free connection by pressing the hub onto the shaft. This connection is mainly used to transmit torque.

The shrink disc only provides the required forces, and transfers no forces or moments between shaft and hub by itself. Therefore, the force flow does not pass through it.

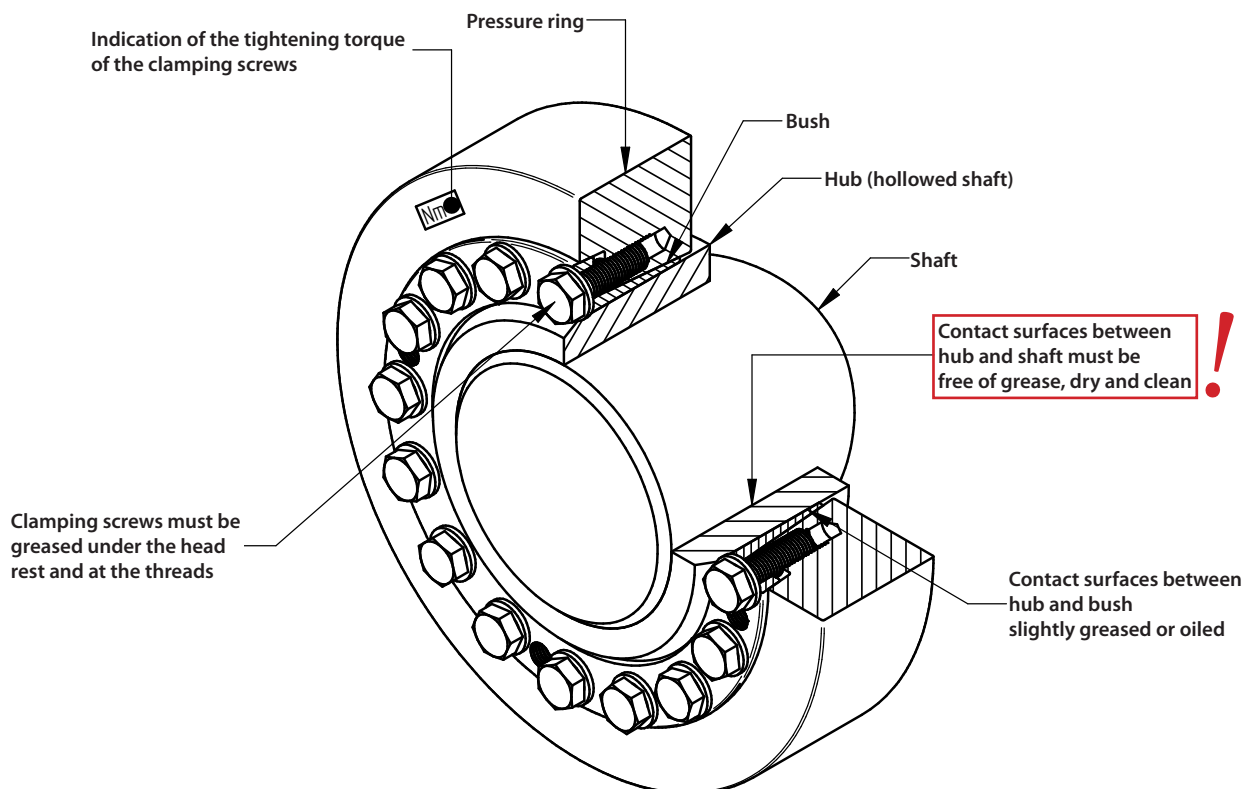
It is installed by sliding the shrink disc onto the hollow shaft and the subsequent tightening of the screws. By using conical surfaces the inner diameter reduces and the radial pressure is built up. The 31xx range of shrink discs are self-locking. The clamping forces are provided and controlled through the screws (force controlled). This allows the direct compensation of the clearance between the shaft and hub, without an overload that may occur on path controlled shrink discs, due to small or over sized clearance.

This does not include the shrink disc type 3173, they are controlled by path (front faces are flush).

The supplied shrink discs are ready for installation.

To achieve proper operation with a sufficiently high coefficient of friction, the contact surfaces between shaft and hub must be dry, clean and free of grease. The functional surfaces of the shrink disc, the thread and head rests of the screws, are equipped at the factory with lubricant. The contact surfaces between the hub and shrink disc must be provided with grease before installation.

A detailed installation manual is available on the Internet.



## Product data

### Data sheets

- Contact us if a data sheet for an individual product is required.

### CAD data

- We provide CAD data for our products in various formats. These can be found online at [www.traceparts.com](http://www.traceparts.com). If the desired product is not available, please contact us directly.

# Basics - Design

## Clamping length for shrink discs

The clamping length  $l$  of the shrink disk at the junction  $l_K$  (between shaft and hub), should be chosen to be somewhat wider to minimize the stress concentration at this point. An excessively wide connection increases the tendency to fretting corrosion, because the pressure decreases outward. The pressure is distributed approximately at an angle between  $15^\circ - 20^\circ$  through the hub. This is largely dependent on the hub wall thickness and stiffness of the shaft. A good approximation can be made from the following equation:

$$\text{Clamping length of the contact area: } l_K = 0,316(d - d_w) + l$$

The cylindrical surfaces should be located symmetrically under the shrink disc! With a slightly different clamping length the transmissible torque  $M$  will not change, because a smaller contact surface results in a higher pressure - ergo a larger contact surface causes lower pressure.

## Tightening torque of the clamping screws

The given tightening torque values in the tables for the screws are based on a friction coefficient  $\mu_{ges} = 0,1$ . In principle, the specified tightening torque  $M_A$  can be reduced to  $M_{Agew}$  to reduce stresses in the components. This may be necessary for soft materials and bored shafts. The reduction of  $M_A$  also reduced the pressure  $p_N$  and transmissible torque  $M$ . The ratio is approximately proportional and can be calculated according to:

$$M_{gew} = \frac{M_{Agew}}{M_A} M \quad \text{also} \quad p_{Ngew} = \frac{M_{Agew}}{M_A} p_N$$

The tightening torques can not be reduced arbitrary, therefore apply the following limits:

$$M_{Agew} \geq \begin{pmatrix} \text{Class 8.8 : } 0,85 M_A \\ \text{Class 10.9 : } 0,70 M_A \\ \text{Class 12.9 : } 0,60 M_A \end{pmatrix} \leq M_A$$

A further reduction requires additional screw locks!

## Tolerances and surfaces

The values found in the product data based on surface quality and tolerances according to the table below. These values are given as recommendations.

Higher values for the surface roughness reduces the transmissible torque and promote unwanted settling. Larger clearance also reduces the transmissible torque and heightened tensions in the hub.

In the case of significantly different values, please contact us!

| Recommended tolerances and surface roughness |      |                         |                        |          |
|--|------|-------------------------|------------------------|----------|
| >  | ≤    | FS <sub>max</sub><br>mm | Clearance<br>Hub/Shaft | Rz<br>µm |
| 9  | 18   | 0,022                   | H6/h6                  | 10       |
| 18   | 30   | 0,026                   | H6/h6                  | 10       |
| 30   | 50   | 0,032                   | H6/h6                  | 10       |
| 50   | 80   | 0,049                   | H7/h6                  | 10       |
| 80   | 120  | 0,057                   | H7/h6                  | 16       |
| 120  | 150  | 0,065                   | H7/h6                  | 16       |
| 150  | 180  | 0,079                   | H7/g6                  | 16       |
| 180  | 250  | 0,090                   | H7/g6                  | 16       |
| 250  | 315  | 0,101                   | H7/g6                  | 16       |
| 315  | 400  | 0,111                   | H7/g6                  | 16       |
| 400  | 500  | 0,123                   | H7/g6                  | 25       |
| 500  | 630  | 0,136                   | H7/g6                  | 25       |
| 630  | 800  | 0,154                   | H7/g6                  | 25       |
| 800  | 1000 | 0,172                   | H7/g6                  | 25       |

Technical drawing showing a shrink disc assembly with various parameters and a data table. The drawing includes dimensions, material specifications, and a table of properties.

Parameters from the drawing:

- DIN 931
- $M_{Amax} = 250 \text{ Nm}$
- $M_{Agew} = 250 \text{ Nm}$
- Tolerance<sub>hub</sub> = -7%
- $T_{WIN} = H7/g6$
- $S_{max} = 0,079$
- $S_{min} = 0,014$

Table of properties:

| Property   | Value                      |
|------------|----------------------------|
| $E_N$      | 210 000 N/mm <sup>2</sup>  |
| $E_W$      | 210 000 N/mm <sup>2</sup>  |
| $\mu_s$    | 0,10                       |
| $\mu_k$    | 0,05                       |
| $\mu_w$    | 0,15                       |
| SF         | 1,1                        |
| $M_{tmax}$ | 81 700 Nm                  |
| $U_{max}$  | 1 600 min <sup>-1</sup>    |
| $I$        | 0,7921875 kgm <sup>2</sup> |
| $U_W$      | 0,191 mm                   |
| $P_W$      | 224 N/mm <sup>2</sup>      |
| $P_N$      | 252 N/mm <sup>2</sup>      |

Additional text from the drawing:

- Alle Werte beziehen sich auf  $M_{Agew}$ !
- Alle values refer to  $M_{Agew}$ !
- Zeichnung ist unmaßstäblich!
- Drawing is not to scale!
- W = Welle / shaft
- H = Nabe / hub

Customer information:

- Kunde / Customer: TAS SCHÄFER
- Leistung-Nr. / Drawing no.: 3071-200
- Bemerkung / Description: Schrumpfscheibe / Shrink disc
- Gewicht / Weight: 39 kg

# Basics - Calculation

The calculation of the values, given in the catalogue, are based on the following assumptions and simplifications:

## Transmissible torque

A shrink disc connection is capable of transmitting torque, bending moment and axial force. Alternatively, the transmissible torque  $M_{max}$  is specified in the product data. If such loads occur simultaneously then they must be added vectorially to the resultant moment  $M_{res}$ . The formula below applies to the resulting moment:

$$M_{res} \leq M_{max}$$

At different load cases, these are individually checked against  $M_{max}$ !

$M_{res}$  is determined for combined loads as follows:

$$M_{res} = \sqrt{M_T^2 + M_B^2 + (F_{AX} \frac{d_W}{2})^2}$$

with  $M_B \leq 0,3 M_T$  as the limit\* for the the bending moment

\*In principle, the maximum bending moment corresponds to the maximum transmittable torque. The limitation to  $0,3 M_T$  is due to the change of the surface pressure at the edges of the connection. (see also „Bending moment“)

This results in the following relationships:

Torque only:

The maximum torque is equivalent to  $M_{max}$ .

Bending moment only:

The maximum bending moment corresponds to  $0,3 M_T$ .

Axial force only:

The maximum axial force is  $M_{max} \frac{2}{d_W}$ .

A different equation applies for very small shrink discs (3073):

$$M_B \leq 0,2 M_T$$

Depending on the application, additional safety factors need to be considered for the individual loads!

## Calculation of transmissible torques and forces

The catalogue data relates to specific shaft diameters which we recommend using. If the shaft diameter is between two sizes, the larger shrink disc should be selected. A deviation is possible within certain limits but the predetermined tolerances and surface roughness should be considered.

The shaft diameter and transmissible torque behave approximately proportional to each other. The transmissible torque increases with greater shaft diameter and vice versa. In contrast, the transmissible axial force changes only slightly. This is not due to the shaft diameter but because of the change in stiffness of the hub when the inner diameter changes.

Within certain limits, the changes can be linearly approximated. Information about the range of the respective shaft diameter can be found in the product data.

The determination of the deviating values is explained below. Please contact us if the shaft diameter must be outside the indicated range.

The formula below calculates the torque for specific shaft diameters:

$$M = M_{max(Catalog)} \frac{d_W(target)}{d_W(Catalog)}$$

The corresponding axial force which is transmitted instead of the torque, results as follows:

$$F_{ax} = M \frac{2}{d_W(table)}$$

## Radial force

Radial forces cause a change in pressure at the contact surface. In the force direction, the pressure increases on the one side and is reduced accordingly on the other side. This depends on the amount of radial force and the rigidity of the parts.

The following equation can be used to approximate the pressure change:

$$\Delta p_W = 0,75 \frac{F_{AX}}{d_W I_K}$$

The modified pressures  $p_{Wmin,max}$  results from the following equation:

$$p_{Wmin,max} = p_W \pm \Delta p_W$$

The minimum pressure  $p_{Wmin}$  should be at least 50 N/mm<sup>2</sup> to avoid gap corrosion. In addition, the material must be designed for a maximum pressure  $p_{Wmax}$ .

# Basics - Calculation

## Bending moment

Here the situation is similar to the radial forces. However the pressure is greatest at the ends of the connection in this case. Again, the amount and stiffness are important. This leads to the following approximation:

$$\Delta p_w = 4,5 \frac{M_B}{d_w l_K^2}$$

As before, the modified pressures results from:

$$p_{wmin,max} = p_w \pm \Delta p_w$$

The conditions for minimum and maximum pressure are the same as before. It should be noted that there could be a change in pressure due to radial force!

## Shaft and hub calculation

The catalogue contains information on the generated surface pressure for each shrink disc. The hub will be deformed due to the applied radial force. In addition to the clearance between shaft and hub, shaft stiffness and surface finish should be considered. For solid shafts the flexibility can be ignored, but with hollow shafts (see „Bore in the shaft (hollow shaft)“) there is greater deformation and thus greater stresses in the components. This must be considered in addition to other loads.

The stresses in the hub can be determined by various hypotheses, such as GEH. We will not make a presentation and analyse results at this point because we would only be able to cover a very limited range of static applications. Various calculation methods for different cases can be found in engineering literature or using specialised software. However, for complex geometry often only a calculation by FEM gives reliable results.

The information on the minimum yield strength of shafts and hubs are suggested recommendations, based on typical values for such applications. They are provided as guidelines and are not a replacement for a proper calculation for a given application!

## Notch effect

Generally there is a notch effect on the components, caused by the radial pressure of the shrink disc. This depends mainly on the applied pressure. The notch effect is generally higher on the hub than on the shaft, because here the inner ring of the shrink disc is directly pressed onto the hub, while the stresses are distributed through the hub before reaching the shaft. The notch factors range from 2,5 to 3,5 for the hub and it is between 1,5 and 2 for the shaft. This can be mitigated by suitable design features, such as relief notches.

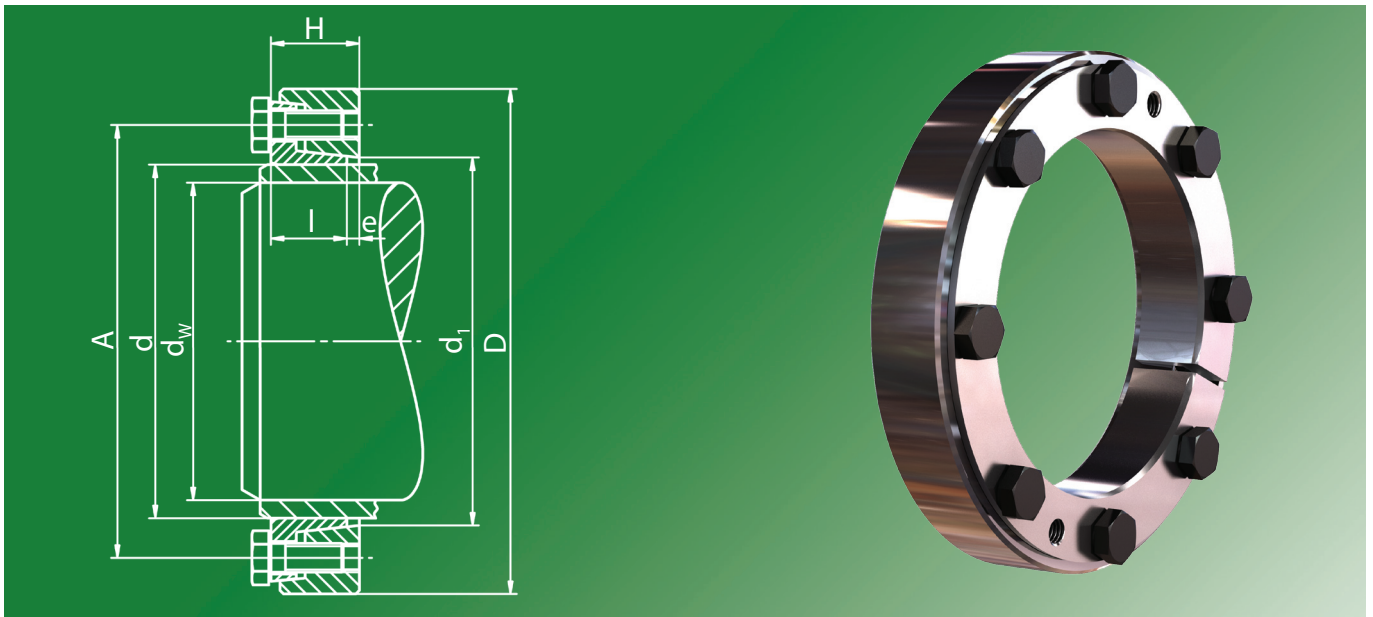
Some standards provide the possibility of a notch factor to be determined by a fit pairing for a shrink-connection. A similar method also can be used for a shrink disc connection. To this end an oversize can be calculated from the applied surface pressures. As a result, a matching fit pair can be determine and thus a resultant notch factor found.

## Bore in the shaft (hollow shaft)

A large bore  $d_b$  in the shaft or the use of a hollow shaft, reduces the stiffness of this component against radial pressure. This leads to a decrease in pressure  $p_w$ , a reduced transmissible torque  $M$ , a contraction  $\Delta d_b$  within the shaft and an increase of stresses in these components. Basically, a bore should not be greater than  $0,3 d_w$ .

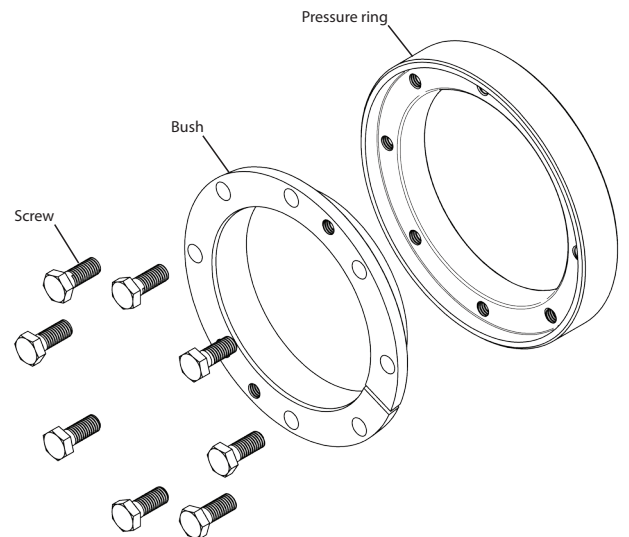
The screenshot displays the TAS SCHÄFER software interface, which includes a technical drawing of a shaft and hub assembly on the left and a detailed data table on the right. The drawing shows a shaft with diameter  $d_w = 200$  mm and length  $l = 71$  mm, and a hub with inner diameter  $d_h = 224$  mm and outer diameter  $d_a = 224$  mm. The software interface includes various input fields and calculation results for parameters such as pressure, torque, and safety factors.

| Parameter                        | Value     | Unit              |
|----------------------------------|-----------|-------------------|
| E-modulus hub                    | 210000    | N/mm <sup>2</sup> |
| E-modulus shaft                  | 210000    | N/mm <sup>2</sup> |
| Friction coefficient screw       | 0.1       |                   |
| Friction coefficient cone        | 0.05      |                   |
| Friction coefficient hub/shaft   | 0.15      |                   |
| Safety factor                    | 1.1       |                   |
| Max. transmittable torque        | 81700     | Nm                |
| Max. RPM                         | 1600      | min <sup>-1</sup> |
| Moment of inertia                | 0.7921875 | kgm <sup>2</sup>  |
| Oversize according to DIN 7190   | 0.191     | mm                |
| Contact pressure hub/shaft       | 224       | N/mm <sup>2</sup> |
| Contact pressure shrink disc/hub | 252       | N/mm <sup>2</sup> |
| Weight                           | 39        | kg                |



### Used symbols

|           |                      |  |
|-----------|----------------------|--|
| $d$       | [mm]                 | Nominal diameter of the shrink disc      |
| $d_w$     | [mm]                 | Shaft diameter                           |
| $M_{max}$ | [Nm]                 | Maximal transmittable torque             |
| $D$       | [mm]                 | Outer diameter                           |
| $l$       | [mm]                 | Length of the bush                       |
| $e$       | [mm]                 | Excess length                            |
| $H$       | [mm]                 | Width of the shrink disc                 |
| $A$       | [mm]                 | Pitch circle diameter                    |
| $d_1$     | [mm]                 | Attachment size                          |
| $M_A$     | [Nm]                 | Tightening torque of the clamping screws |
| $Z$       |                      | Number of clamping screws                |
| $S$       |                      | Size of the clamping screws              |
| $n_{max}$ | [min <sup>-1</sup> ] | Permitted rotational frequency           |
| $p_N$     | [N/mm <sup>2</sup> ] | Moderate pressure to the hub             |
| $I$       | [kgm <sup>2</sup> ]  | Moment of inertia                        |



### Design of the shrink disc

Discs galvanized

Without washers

Bush complete slit

Dimensions  $H$  &  $e$  in unlocked position

### Variation from the standard shaft diameter $d_w$

| > mm | ≤ mm | minimal - mm | maximal + mm |
|------|------|--------------|--------------|
| 20   | 60   | -2           | 1            |
| 60   | 100  | -2           | 2            |
| 100  | 160  | -3           | 2            |
| 160  | 220  | -4           | 2            |
| 220  | 300  | -5           | 2            |

$$M = M_{max(Catalog)} \frac{d_w(target)}{d_w(Catalog)}$$

(see Basics - Calculation)

| min. yield strength $R_{p0,2}$ | N/mm <sup>2</sup> |
|--------------------------------|-------------------|
| Solid shaft                    | 290               |
| Hub                            | 350               |

Ordering information: TAS 3173-d (e.g.: TAS 3173-100 ... further sizes on request)



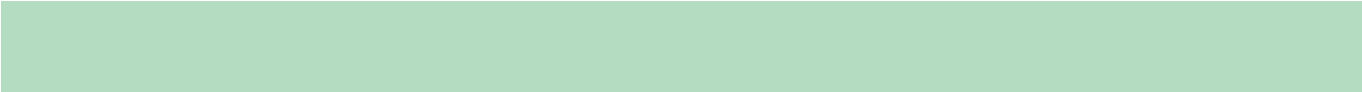
# 3173 Mini-Range

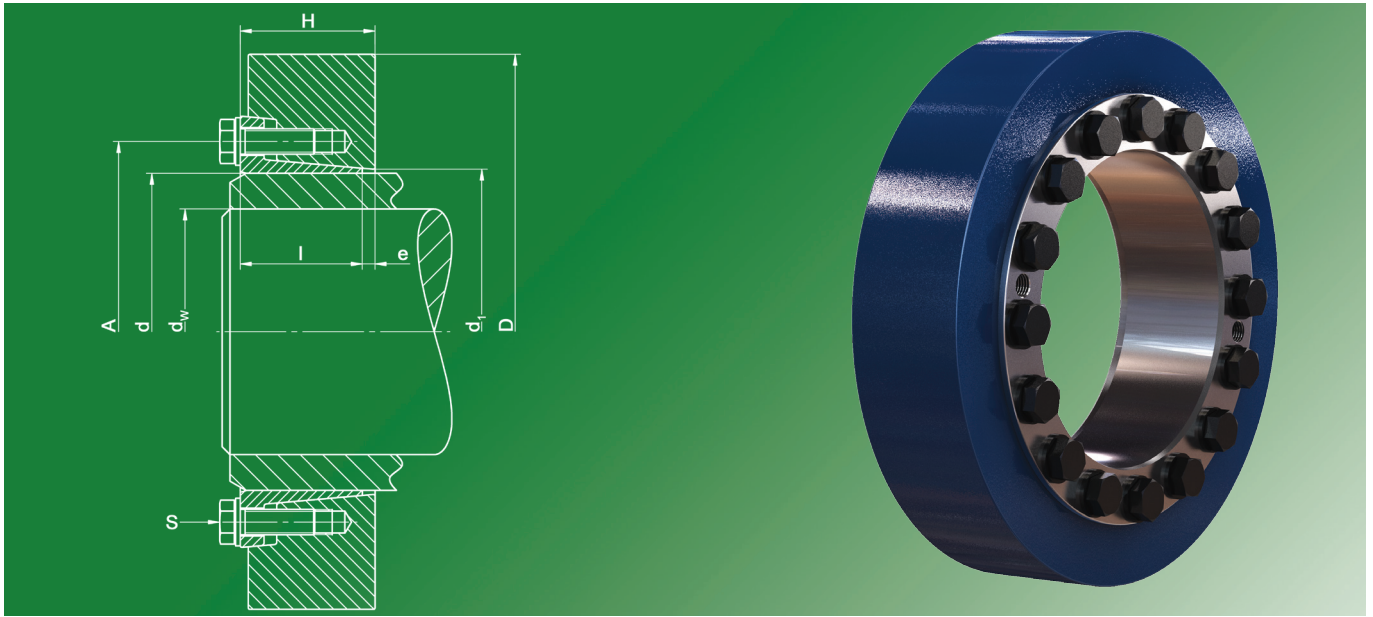
| <b>d</b><br>mm | <b>d<sub>w</sub></b><br>mm | <b>M<sub>max</sub></b><br>Nm | <b>D</b><br>mm | <b>l</b><br>mm | <b>e</b><br>mm | <b>H</b><br>mm | <b>A</b><br>mm | <b>d<sub>1</sub></b><br>mm | <b>M<sub>A</sub></b><br>Nm | <b>Z</b><br>Stk | <b>S</b> | <b>DIN</b> | <b>Class</b> | <b>n<sub>max</sub></b><br>min <sup>-1</sup> | <b>p<sub>N</sub></b><br>N/mm <sup>2</sup> | <b>I</b><br>kgm <sup>2</sup> | <b>Weight</b><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|--------------|---|---|------------------------------|---------------------|
| 24             | 20                         | 150                          | 50             | 11             | 2,5            | 13,5           | 38             | 25                         | 12                         | 6               | M 6 x 12 | 933        | 10.9         | 11400                                       | 252                                       | 0,0000538                    | 0,14                |
| 29             | 25                         | 220                          | 58             | 11             | 2,5            | 13,5           | 44             | 32                         | 12                         | 6               | M 6 x 12 | 933        | 10.9         | 9800  | 227                                       | 0,0000964                    | 0,18                |
| 34             | 29                         | 220                          | 64             | 11             | 2,5            | 13,5           | 50             | 38                         | 12                         | 6               | M 6 x 12 | 933        | 10.9         | 8900  | 180                                       | 0,0001402                    | 0,21                |
| 35             | 29                         | 220                          | 64             | 11             | 2,5            | 13,5           | 50             | 38                         | 12                         | 6               | M 6 x 12 | 933        | 10.9         | 8900  | 186                                       | 0,0001387                    | 0,21                |
| 38             | 34                         | 280                          | 69             | 11             | 2,5            | 13,5           | 55             | 43                         | 12                         | 6               | M 6 x 12 | 933        | 10.9         | 8300  | 153                                       | 0,0001869                    | 0,24                |
| 40             | 35                         | 310                          | 69             | 11             | 2,5            | 13,5           | 55             | 43                         | 12                         | 6               | M 6 x 12 | 933        | 10.9         | 8300  | 162                                       | 0,0001826                    | 0,23                |
| 44             | 36                         | 380                          | 80             | 15             | 3              | 18             | 62             | 49                         | 12                         | 6               | M 6 x 16 | 933        | 10.9         | 7100  | 191                                       | 0,0004609                    | 0,44                |
| 46             | 38                         | 410                          | 80             | 15             | 3              | 18             | 62             | 49                         | 12                         | 6               | M 6 x 16 | 933        | 10.9         | 7100  | 190                                       | 0,0004518                    | 0,42                |
| 47             | 40                         | 500                          | 80             | 15             | 3              | 18             | 62             | 49                         | 12                         | 6               | M 6 x 16 | 933        | 10.9         | 7100  | 196                                       | 0,0004469                    | 0,42                |
| 51             | 44                         | 550                          | 85             | 15             | 3              | 18             | 67             | 54                         | 12                         | 6               | M 6 x 16 | 933        | 10.9         | 6700  | 143                                       | 0,0005627                    | 0,46                |
| 55             | 48                         | 570                          | 90             | 15             | 3              | 18             | 72             | 59                         | 12                         | 8               | M 6 x 16 | 933        | 10.9         | 6300  | 135                                       | 0,0006993                    | 0,50                |
| 56             | 48                         | 570                          | 90             | 15             | 3              | 18             | 72             | 59                         | 12                         | 8               | M 6 x 16 | 933        | 10.9         | 6300  | 132                                       | 0,0006908                    | 0,49                |
| 57             | 48                         | 570                          | 90             | 15             | 3              | 18             | 72             | 59                         | 12                         | 8               | M 6 x 16 | 933        | 10.9         | 6300  | 130                                       | 0,0006818                    | 0,48                |
| 61             | 53                         | 680                          | 95             | 15             | 3              | 18             | 76             | 64                         | 12                         | 8               | M 6 x 16 | 933        | 10.9         | 6000  | 122                                       | 0,0008373                    | 0,53                |
| 65             | 58                         | 740                          | 100            | 15             | 3              | 18             | 82             | 69                         | 12                         | 8               | M 6 x 16 | 933        | 10.9         | 5700  | 108                                       | 0,0010174                    | 0,57                |
| 66             | 58                         | 740                          | 100            | 15             | 3              | 18             | 82             | 69                         | 12                         | 8               | M 6 x 16 | 933        | 10.9         | 5700  | 110                                       | 0,0010035                    | 0,56                |
| 70             | 62                         | 910                          | 115            | 21             | 3              | 24             | 94             | 77                         | 29                         | 6               | M 8 x 20 | 933        | 10.9         | 4900  | 106                                       | 0,0026163                    | 1,15                |
| 72             | 63                         | 940                          | 115            | 21             | 3              | 24             | 94             | 77                         | 29                         | 6               | M 8 x 20 | 933        | 10.9         | 4900  | 107                                       | 0,0025666                    | 1,12                |
| 73             | 63                         | 940                          | 115            | 21             | 3              | 24             | 94             | 77                         | 29                         | 6               | M 8 x 20 | 933        | 10.9         | 4900  | 111                                       | 0,0025402                    | 1,10                |
| 75             | 67                         | 1140                         | 120            | 21             | 3              | 24             | 100            | 82                         | 29                         | 6               | M 8 x 20 | 933        | 10.9         | 4700  | 101                                       | 0,0030441                    | 1,21                |
| 76             | 68                         | 1210                         | 120            | 21             | 3              | 24             | 100            | 82                         | 29                         | 6               | M 8 x 20 | 933        | 10.9         | 4700  | 103                                       | 0,0030170                    | 1,20                |
| 78             | 68                         | 1210                         | 120            | 21             | 3              | 24             | 100            | 82                         | 29                         | 6               | M 8 x 20 | 933        | 10.9         | 4700  | 102                                       | 0,0029536                    | 1,15                |
| 81             | 73                         | 1240                         | 125            | 21             | 3              | 24             | 104            | 87                         | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 4500  | 92  | 0,0034868                    | 1,26                |
| 83             | 75                         | 1380                         | 125            | 21             | 3              | 24             | 104            | 87                         | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 4500  | 95  | 0,0034103                    | 1,21                |
| 85             | 77                         | 1420                         | 130            | 21             | 3              | 24             | 110            | 92                         | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 4400  | 92  | 0,0040762                    | 1,35                |
| 86             | 78                         | 1470                         | 130            | 21             | 3              | 24             | 110            | 92                         | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 4400  | 92  | 0,0040037                    | 1,32                |
| 88             | 80                         | 1470                         | 130            | 21             | 3              | 24             | 110            | 92                         | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 4400  | 95  | 0,0039124                    | 1,27                |
| 93             | 83                         | 1630                         | 135            | 21             | 3,5            | 24,5           | 114            | 97                         | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 4200  | 92  | 0,0044621                    | 1,33                |
| 94             | 85                         | 1800                         | 135            | 21             | 3,5            | 24,5           | 114            | 97                         | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 4200  | 94  | 0,0044054                    | 1,30                |
| 96             | 88                         | 1730                         | 140            | 21             | 3,5            | 24,5           | 120            | 102                        | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 4000  | 83  | 0,0051883                    | 1,44                |
| 98             | 90                         | 1900                         | 140            | 21             | 3,5            | 24,5           | 120            | 102                        | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 4000  | 86  | 0,0050617                    | 1,39                |
| 100            | 92                         | 2140                         | 145            | 21             | 3,5            | 24,5           | 124            | 107                        | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 3900  | 91  | 0,0059567                    | 1,53                |
| 103            | 95                         | 2310                         | 145            | 21             | 3,5            | 24,5           | 124            | 107                        | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 3900  | 92  | 0,0057132                    | 1,44                |
| 106            | 98                         | 2160                         | 150            | 21             | 3,5            | 24,5           | 128            | 112                        | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 3800  | 82  | 0,0065889                    | 1,56                |
| 108            | 100                        | 2340                         | 150            | 21             | 3,5            | 24,5           | 128            | 112                        | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 3800  | 84  | 0,0064189                    | 1,50                |
| 112            | 103                        | 2340                         | 160            | 25             | 4              | 29             | 134            | 119                        | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 3500  | 87  | 0,0102798                    | 2,16                |
| 115            | 105                        | 2540                         | 160            | 25             | 4              | 29             | 134            | 119                        | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 3500  | 91  | 0,0099175                    | 2,04                |
| 120            | 110                        | 3030                         | 164            | 25             | 4              | 29             | 140            | 124                        | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 3400  | 98  | 0,0106519                    | 2,06                |
| 123            | 113                        | 2910                         | 169            | 25             | 4              | 29             | 144            | 129                        | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 3300  | 90  | 0,0121135                    | 2,22                |
| 125            | 115                        | 3160                         | 169            | 25             | 4              | 29             | 144            | 129                        | 29                         | 8               | M 8 x 20 | 933        | 10.9         | 3300  | 93  | 0,0117986                    | 2,14                |
| 130            | 120                        | 3370                         | 174            | 25             | 4              | 29             | 150            | 134                        | 29                         | 12              | M 8 x 20 | 933        | 10.9         | 3200  | 89  | 0,0130255                    | 2,21                |
| 135            | 125                        | 3810                         | 179            | 25             | 4              | 29             | 154            | 139                        | 29                         | 12              | M 8 x 20 | 933        | 10.9         | 3200  | 92  | 0,0143352                    | 2,28                |
| 138            | 128                        | 3930                         | 184            | 25             | 4              | 29             | 160            | 144                        | 29                         | 9               | M 8 x 20 | 933        | 10.9         | 3100  | 92  | 0,0161739                    | 2,45                |
| 140            | 130                        | 4180                         | 184            | 25             | 4              | 29             | 160            | 144                        | 29                         | 9               | M 8 x 20 | 933        | 10.9         | 3100  | 94  | 0,0157304                    | 2,35                |
| 145            | 135                        | 4650                         | 189            | 25             | 4              | 29             | 164            | 149                        | 29                         | 12              | M 8 x 20 | 933        | 10.9         | 3000  | 87  | 0,0172140                    | 2,43                |
| 150            | 140                        | 5160                         | 194            | 25             | 4,5            | 29,5           | 170            | 154                        | 29                         | 12              | M 8 x 20 | 933        | 10.9         | 2900  | 89  | 0,0187885                    | 2,50                |

# 3173

Mini-Range

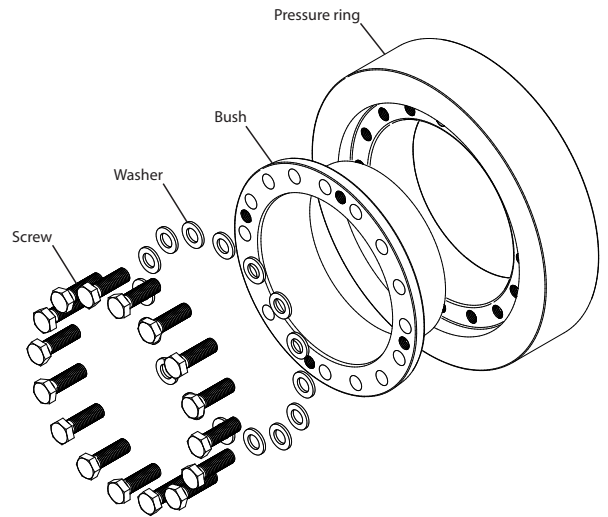
| <b>d</b><br>mm | <b>d<sub>w</sub></b><br>mm | <b>M<sub>max</sub></b><br>Nm | <b>D</b><br>mm | <b>l</b><br>mm | <b>e</b><br>mm | <b>H</b><br>mm | <b>A</b><br>mm | <b>d<sub>1</sub></b><br>mm | <b>M<sub>A</sub></b><br>Nm | <b>Z</b><br>Stk | <b>S</b> | <b>DIN</b> | <b>Class</b> | <b>n<sub>max</sub></b><br>min <sup>-1</sup> | <b>p<sub>N</sub></b><br>N/mm <sup>2</sup> | <b>I</b><br>kgm <sup>2</sup> | <b>Weight</b><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|--------------|---|---|------------------------------|---------------------|
| 160            | 150                        | 5390                         | 204            | 25             | 4,5            | 29,5           | 180            | 164                        | 29                         | 12              | M 8 x 20 | 933        | 10.9         | 2800  | 81  | 0,0222215                    | 2,64                |
| 166            | 156                        | 5200                         | 214            | 25             | 4,5            | 29,5           | 190            | 174                        | 29                         | 12              | M 8 x 20 | 933        | 10.9         | 2600  | 73  | 0,0276174                    | 3,01                |
| 170            | 160                        | 5730                         | 214            | 25             | 4,5            | 29,5           | 190            | 174                        | 29                         | 12              | M 8 x 20 | 933        | 10.9         | 2600  | 76  | 0,0260512                    | 2,79                |
| 182            | 170                        | 8350                         | 230            | 28             | 5              | 33             | 206            | 186                        | 29                         | 16              | M 8 x 20 | 933        | 10.9         | 2400  | 57  | 0,0393299                    | 3,66                |
| 189            | 177                        | 8800                         | 240            | 28             | 5              | 33             | 216            | 198                        | 29                         | 16              | M 8 x 20 | 933        | 10.9         | 2300  | 54  | 0,0472032                    | 4,05                |
| 192            | 180                        | 9090                         | 240            | 28             | 5              | 33             | 216            | 198                        | 29                         | 16              | M 8 x 20 | 933        | 10.9         | 2300  | 54  | 0,0452851                    | 3,84                |
| 202            | 190                        | 9670                         | 250            | 28             | 5              | 33             | 224            | 206                        | 29                         | 16              | M 8 x 20 | 933        | 10.9         | 2200  | 51  | 0,0518157                    | 4,01                |
| 212            | 200                        | 10560                        | 260            | 28             | 5,5            | 33,5           | 234            | 216                        | 29                         | 16              | M 8 x 20 | 933        | 10.9         | 2200  | 50  | 0,0589481                    | 4,19                |
| 222            | 210                        | 11660                        | 270            | 28             | 5,5            | 33,5           | 244            | 226                        | 29                         | 16              | M 8 x 20 | 933        | 10.9         | 2100  | 50  | 0,0667091                    | 4,37                |
| 232            | 220                        | 15450                        | 280            | 28             | 6              | 34             | 254            | 236                        | 29                         | 16              | M 8 x 20 | 933        | 10.9         | 2000  | 56  | 0,0751252                    | 4,55                |
| 242            | 230                        | 16220                        | 290            | 28             | 6              | 34             | 264            | 246                        | 29                         | 16              | M 8 x 20 | 933        | 10.9         | 1900  | 54  | 0,0842232                    | 4,72                |
| 252            | 240                        | 17440                        | 300            | 28             | 6              | 34             | 274            | 256                        | 29                         | 18              | M 8 x 20 | 933        | 10.9         | 1900  | 53  | 0,0940295                    | 4,90                |
| 260            | 248                        | 18100                        | 310            | 28             | 6,5            | 34,5           | 284            | 266                        | 29                         | 18              | M 8 x 20 | 933        | 10.9         | 1800  | 51  | 0,1078593                    | 5,27                |
| 262            | 250                        | 18500                        | 310            | 28             | 6,5            | 34,5           | 284            | 266                        | 29                         | 18              | M 8 x 20 | 933        | 10.9         | 1800  | 53  | 0,1045710                    | 5,08                |





### Used symbols

|           |                      |  |
|-----------|----------------------|--|
| $d$       | [mm]                 | Nominal diameter of the shrink disc      |
| $d_w$     | [mm]                 | Shaft diameter                           |
| $M_{max}$ | [mm]                 | Maximal transmittable torque             |
| $D$       | [mm]                 | Outer diameter                           |
| $I$       | [mm]                 | Length of the bush                       |
| $e$       | [mm]                 | Excess length                            |
| $H$       | [mm]                 | Width of the shrink disc                 |
| $A$       | [mm]                 | Pitch circle diameter                    |
| $d_t$     | [mm]                 | Attachment size                          |
| $M_A$     | [Nm]                 | Tightening torque of the clamping screws |
| $Z$       |                      | Number of clamping screws                |
| $S$       |                      | Size of the clamping screws              |
| $n_{max}$ | [min <sup>-1</sup> ] | Permitted rotational frequency           |
| $p_N$     | [N/mm <sup>2</sup> ] | Moderate pressure to the hub             |
| $I$       | [kgm <sup>2</sup> ]  | Moment of inertia                        |



### Design of the shrink disc

$d < 120$  - Discs galvanized - without washers

$d \geq 120$  - Discs painted - with washers

$d \geq 220$  - Cone of bush not slit

Dimensions  $H$  &  $e$  in unlocked position

| min. yield strength $R_{p0,2}$ | N/mm <sup>2</sup> |
|--------------------------------|-------------------|
| Solid shaft                    | 290               |
| Hub                            | 350               |

### Variation from the standard shaft diameter $d_w$

| > mm | ≤ mm | minimal - mm | maximal + mm |
|------|------|--------------|--------------|
| 10   | 30   | -1           | 1            |
| 30   | 50   | -3           | 2            |
| 50   | 140  | -5           | 5            |
| 140  | 180  | -10          | 5            |
| 180  | 320  | -15          | 10           |
| 320  | 500  | -20          | 10           |
| 500  | 700  | -30          | 20           |

$$M = M_{max(Katalog)} \frac{d_w(soll)}{d_w(Katalog)}$$

(see Basics - Calculation)

Ordering information: TAS 3171-d (e.g.: TAS 3171-200 ... further sizes on request)

# 3171 Standard-Range

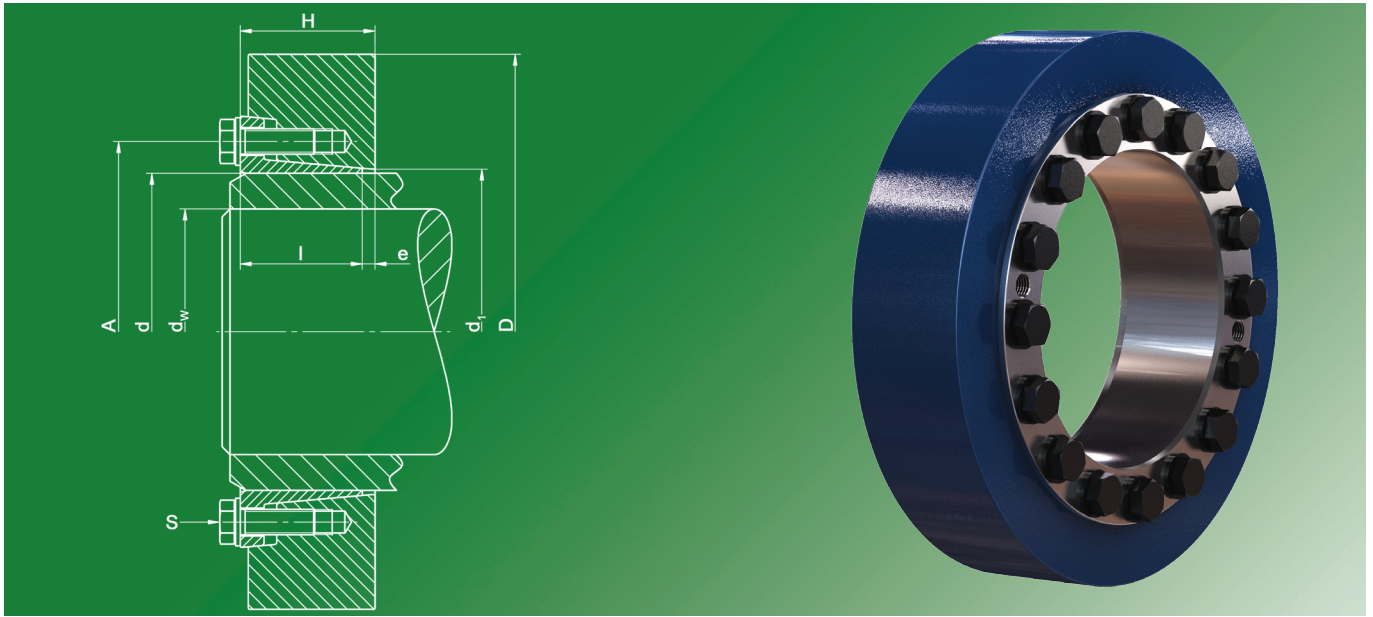
| <b>d</b><br>mm | <b>d<sub>w</sub></b><br>mm | <b>M<sub>max</sub></b><br>Nm | <b>D</b><br>mm | <b>l</b><br>mm | <b>e</b><br>mm | <b>H</b><br>mm | <b>A</b><br>mm | <b>d<sub>1</sub></b><br>mm | <b>M<sub>A</sub></b><br>Nm | <b>Z</b><br>Stk | <b>S</b>  | <b>DIN</b> | <b>Class</b> | <b>n<sub>max</sub></b><br>min <sup>-1</sup> | <b>p<sub>N</sub></b><br>N/mm <sup>2</sup> | <b>I</b><br>kgm <sup>2</sup> | <b>Weight</b><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|-----------|------------|--------------|---|---|------------------------------|---------------------|
| 14             | 11                         | 36                           | 38             | 10             | 1              | 11             | 26             | 15                         | 12                         | 3               | M 6 x 10  | 933        | 10.9         | 15078                                       | 386                                       | 0,0000154                    | 0,08                |
| 16             | 13                         | 75                           | 41             | 13,5           | 1,5            | 15             | 28             | 17                         | 12                         | 3               | M 6 x 12  | 933        | 10.9         | 13975                                       | 431                                       | 0,0000285                    | 0,12                |
| 18             | 15                         | 100                          | 44             | 13,5           | 1,5            | 15             | 30             | 19                         | 12                         | 3               | M 6 x 12  | 933        | 10.9         | 13022                                       | 389                                       | 0,0000376                    | 0,13                |
| 20             | 17                         | 150                          | 47             | 13,5           | 1,5            | 15             | 32             | 22                         | 12                         | 3               | M 6 x 12  | 933        | 10.9         | 12191                                       | 342                                       | 0,0000488                    | 0,15                |
| 24             | 20                         | 215                          | 50             | 16             | 2              | 18             | 36             | 26                         | 12                         | 4               | M 6 x 16  | 933        | 10.9         | 11459                                       | 329                                       | 0,0000734                    | 0,19                |
| 30             | 25                         | 430                          | 60             | 18             | 2              | 20             | 44             | 32                         | 12                         | 6               | M 6 x 16  | 933        | 10.9         | 9549  | 341                                       | 0,0001689                    | 0,30                |
| 36             | 30                         | 740                          | 72             | 20             | 2              | 22             | 52             | 38                         | 30                         | 5               | M 8 x 20  | 933        | 10.9         | 7958  | 483                                       | 0,0003786                    | 0,47                |
| 38             | 32                         | 760                          | 72             | 20             | 2              | 22             | 53             | 40                         | 30                         | 5               | M 8 x 20  | 933        | 10.9         | 7958  | 460                                       | 0,0003725                    | 0,45                |
| 44             | 35                         | 790                          | 80             | 22             | 2              | 24             | 61             | 47                         | 30                         | 5               | M 8 x 20  | 933        | 10.9         | 7162  | 341                                       | 0,0006151                    | 0,59                |
| 50             | 40                         | 1370                         | 90             | 23,5           | 2,5            | 26             | 68             | 53                         | 30                         | 7               | M 8 x 20  | 933        | 10.9         | 6366  | 386                                       | 0,0010705                    | 0,81                |
| 55             | 45                         | 1840                         | 100            | 26             | 3              | 29             | 72             | 58                         | 30                         | 8               | M 8 x 20  | 933        | 10.9         | 5730  | 360                                       | 0,0018431                    | 1,13                |
| 62             | 50                         | 1990                         | 110            | 26             | 3              | 29             | 80             | 66                         | 30                         | 8               | M 8 x 20  | 933        | 10.9         | 5209  | 318                                       | 0,0026706                    | 1,34                |
| 68             | 55                         | 2460                         | 115            | 26             | 3              | 29             | 86             | 72                         | 30                         | 9               | M 8 x 20  | 933        | 10.9         | 4982  | 329                                       | 0,0031146                    | 1,40                |
| 75             | 60                         | 3830                         | 138            | 27             | 4              | 31             | 100            | 79                         | 59                         | 8               | M 10 x 25 | 933        | 10.9         | 4152  | 424                                       | 0,0070393                    | 2,28                |
| 80             | 65                         | 4240                         | 138            | 27             | 4              | 31             | 104            | 84                         | 59                         | 8               | M 10 x 25 | 933        | 10.9         | 4152  | 399                                       | 0,0068412                    | 2,15                |
| 85             | 68                         | 6000                         | 155            | 34             | 4              | 38             | 114            | 94                         | 59                         | 10              | M 10 x 30 | 933        | 10.9         | 3697  | 338                                       | 0,0138071                    | 3,53                |
| 90             | 70                         | 5830                         | 155            | 34             | 4              | 38             | 114            | 94                         | 59                         | 10              | M 10 x 30 | 933        | 10.9         | 3697  | 338                                       | 0,0134544                    | 3,35                |
| 100            | 75                         | 7400                         | 170            | 39             | 4              | 43             | 124            | 104                        | 59                         | 12              | M 10 x 30 | 933        | 10.9         | 3370  | 305                                       | 0,0220976                    | 4,54                |
| 105            | 80                         | 10000                        | 185            | 44             | 5              | 49             | 136            | 114                        | 100                        | 10              | M 12 x 30 | 933        | 10.9         | 3097  | 308                                       | 0,0362860                    | 6,42                |
| 110            | 85                         | 11700                        | 185            | 44             | 5              | 49             | 136            | 114                        | 100                        | 10              | M 12 x 30 | 933        | 10.9         | 3097  | 308                                       | 0,0354267                    | 6,12                |
| 125            | 95                         | 14900                        | 215            | 47,5           | 5,5            | 53             | 160            | 134                        | 100                        | 12              | M 12 x 35 | 933        | 10.9         | 2665  | 284                                       | 0,0703948                    | 9,11                |
| 130            | 100                        | 19600                        | 215            | 47,5           | 5,5            | 53             | 160            | 134                        | 100                        | 12              | M 12 x 35 | 933        | 10.9         | 2665  | 284                                       | 0,0688524                    | 8,73                |
| 135            | 100                        | 20400                        | 230            | 52             | 6              | 58             | 173            | 145                        | 160                        | 10              | M 14 x 40 | 933        | 10.9         | 2491  | 284                                       | 0,1009972                    | 11,4                |
| 140            | 105                        | 19000                        | 230            | 52             | 6              | 58             | 173            | 145                        | 160                        | 10              | M 14 x 40 | 933        | 10.9         | 2491  | 284                                       | 0,0988674                    | 10,9                |
| 150            | 110                        | 26400                        | 263            | 56             | 6              | 62             | 190            | 164                        | 160                        | 12              | M 14 x 40 | 933        | 10.9         | 2179  | 274                                       | 0,1864460                    | 16,3                |
| 155            | 115                        | 27200                        | 263            | 56             | 6              | 62             | 190            | 164                        | 160                        | 12              | M 14 x 40 | 933        | 10.9         | 2179  | 274                                       | 0,1833539                    | 15,7                |
| 160            | 120                        | 32000                        | 263            | 56             | 6              | 62             | 190            | 164                        | 160                        | 12              | M 14 x 40 | 933        | 10.9         | 2179  | 274                                       | 0,1799476                    | 15,2                |
| 165            | 125                        | 38200                        | 290            | 61             | 7              | 68             | 204            | 175                        | 250                        | 10              | M 16 x 45 | 933        | 10.9         | 1976  | 297                                       | 0,3044866                    | 21,9                |
| 175            | 135                        | 46000                        | 300            | 60             | 8              | 68             | 214            | 185                        | 250                        | 12              | M 16 x 50 | 933        | 10.9         | 1910  | 345                                       | 0,3444253                    | 22,8                |
| 185            | 145                        | 66700                        | 330            | 77             | 8              | 85             | 226            | 194                        | 250                        | 14              | M 16 x 50 | 933        | 10.9         | 1736  | 278                                       | 0,6464885                    | 36,1                |
| 195            | 150                        | 82000                        | 350            | 77             | 8              | 85             | 240            | 205                        | 290                        | 16              | M 16 x 50 | 933        | 12.9         | 1637  | 353                                       | 0,8151453                    | 40,6                |
| 200            | 155                        | 83600                        | 350            | 77             | 8              | 85             | 240            | 205                        | 250                        | 16              | M 16 x 50 | 933        | 10.9         | 1637  | 300                                       | 0,8058820                    | 39,7                |
| 220            | 165                        | 109000                       | 370            | 94             | 10             | 104            | 270            | 226                        | 490                        | 16              | M 20 x 60 | 933        | 10.9         | 1549  | 342                                       | 1,2075884                    | 52,1                |
| 240            | 180                        | 140000                       | 405            | 97             | 10             | 107            | 296            | 246                        | 490                        | 18              | M 20 x 60 | 933        | 10.9         | 1415  | 342                                       | 1,8077432                    | 65,3                |
| 260            | 200                        | 184000                       | 430            | 109            | 10             | 119            | 318            | 266                        | 490                        | 21              | M 20 x 60 | 933        | 10.9         | 1332  | 319                                       | 2,5259772                    | 80,0                |
| 280            | 220                        | 240000                       | 460            | 124            | 10             | 134            | 340            | 287                        | 490                        | 22              | M 20 x 60 | 933        | 10.9         | 1246  | 269                                       | 3,6716977                    | 101                 |
| 300            | 230                        | 300000                       | 485            | 132            | 10             | 142            | 360            | 307                        | 840                        | 20              | M 24 x 70 | 933        | 10.9         | 1181  | 323                                       | 4,7555885                    | 117                 |
| 320            | 250                        | 332000                       | 520            | 133            | 10             | 143            | 380            | 327                        | 840                        | 21              | M 24 x 70 | 933        | 10.9         | 1102  | 319                                       | 6,2826175                    | 135                 |
| 340            | 260                        | 427000                       | 570            | 146            | 12             | 158            | 402            | 348                        | 840                        | 22              | M 24 x 80 | 931        | 10.9         | 1005  | 278                                       | 10,2530016                   | 186                 |
| 360            | 280                        | 539000                       | 590            | 150            | 12             | 162            | 424            | 368                        | 840                        | 24              | M 24 x 80 | 931        | 10.9         | 971   | 278                                       | 11,9213225                   | 200                 |
| 380            | 290                        | 536000                       | 635            | 149            | 14             | 163            | 448            | 388                        | 1250                       | 18              | M 27 x 80 | 933        | 10.9         | 902   | 258                                       | 16,5612857                   | 242                 |
| 390            | 300                        | 561000                       | 650            | 152            | 14             | 166            | 458            | 398                        | 1250                       | 18              | M 27 x 80 | 933        | 10.9         | 881   | 252                                       | 18,1541897                   | 253                 |
| 400            | 310                        | 648000                       | 660            | 158            | 15             | 173            | 475            | 410                        | 1250                       | 20              | M 27 x 80 | 931        | 10.9         | 868   | 255                                       | 20,3512933                   | 273                 |
| 420            | 330                        | 731300                       | 690            | 171            | 15             | 186            | 495            | 430                        | 1250                       | 21              | M 27 x 80 | 931        | 10.9         | 830   | 236                                       | 25,7145823                   | 315                 |
| 440            | 350                        | 912000                       | 740            | 181            | 15             | 196            | 516            | 448                        | 1250                       | 24              | M 27 x 80 | 931        | 10.9         | 774   | 243                                       | 36,3755200                   | 393                 |
| 460            | 370                        | 1026000                      | 770            | 181            | 15             | 196            | 536            | 468                        | 1250                       | 25              | M 27 x 80 | 933        | 10.9         | 744   | 243                                       | 42,5268672                   | 423                 |

# 3171

Standard-Range

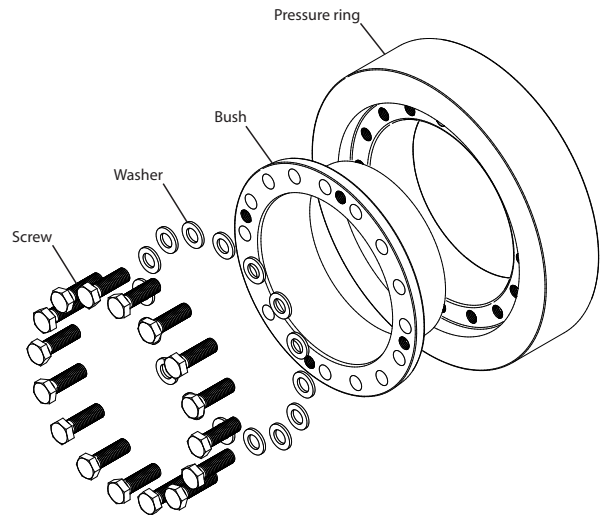
| <b>d</b><br>mm | <b>d<sub>w</sub></b><br>mm | <b>M<sub>max</sub></b><br>Nm | <b>D</b><br>mm | <b>l</b><br>mm | <b>e</b><br>mm | <b>H</b><br>mm | <b>A</b><br>mm | <b>d<sub>1</sub></b><br>mm | <b>M<sub>A</sub></b><br>Nm | <b>Z</b><br>Stk | <b>S</b>   | <b>DIN</b> | <b>Class</b> | <b>n<sub>max</sub></b><br>min <sup>-1</sup> | <b>p<sub>N</sub></b><br>N/mm <sup>2</sup> | <b>I</b><br>kgm <sup>2</sup> | <b>Weight</b><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|------------|------------|--------------|---|---|------------------------------|---------------------|
| 480            | 390                        | 1177000                      | 800            | 201            | 15             | 216            | 556            | 488                        | 1250                       | 27              | M 27 x 80  | 933        | 10.9         | 716   | 223                                       | 54,3812311                   | 500                 |
| 500            | 410                        | 1288000                      | 850            | 201            | 15             | 216            | 580            | 510                        | 1250                       | 28              | M 27 x 80  | 933        | 10.9         | 674   | 222                                       | 70,0908985                   | 577                 |
| 530            | 440                        | 1660000                      | 910            | 223            | 15             | 238            | 616            | 538                        | 1700                       | 27              | M 30 x 90  | 931        | 10.9         | 630   | 219                                       | 102,5969192                  | 740                 |
| 560            | 460                        | 2083000                      | 940            | 223            | 22             | 245            | 646            | 568                        | 1700                       | 28              | M 30 x 90  | 931        | 10.9         | 610   | 250                                       | 115,3714229                  | 771                 |
| 590            | 480                        | 2140000                      | 960            | 240            | 23             | 263            | 670            | 598                        | 1700                       | 28              | M 30 x 100 | 931        | 10.9         | 597   | 219                                       | 132,9581557                  | 838                 |
| 620            | 510                        | 2560000                      | 1020           | 268            | 23             | 291            | 716            | 630                        | 1700                       | 28              | M 30 x 100 | 931        | 10.9         | 562   | 206                                       | 189,6250362                  | 1065                |
| 640            | 530                        | 2372000                      | 1020           | 269            | 18             | 287            | 736            | 650                        | 1700                       | 28              | M 30 x 100 | 931        | 10.9         | 562   | 178                                       | 185,5656631                  | 1024                |
| 660            | 550                        | 2830000                      | 1070           | 270            | 22             | 292            | 770            | 670                        | 2200                       | 28              | M 33 x 110 | 931        | 10.9         | 535   | 195                                       | 229,1223900                  | 1160                |





### Used symbols

|           |                      |  |
|-----------|----------------------|--|
| $d$       | [mm]                 | Nominal diameter of the shrink disc      |
| $d_w$     | [mm]                 | Shaft diameter                           |
| $M_{max}$ | [mm]                 | Maximal transmittable torque             |
| $D$       | [mm]                 | Outer diameter                           |
| $l$       | [mm]                 | Length of the bush                       |
| $e$       | [mm]                 | Excess length                            |
| $H$       | [mm]                 | Width of the shrink disc                 |
| $A$       | [mm]                 | Pitch circle diameter                    |
| $d_t$     | [mm]                 | Attachment size                          |
| $M_A$     | [Nm]                 | Tightening torque of the clamping screws |
| $Z$       |                      | Number of clamping screws                |
| $S$       |                      | Size of the clamping screws              |
| $n_{max}$ | [min <sup>-1</sup> ] | Permitted rotational frequency           |
| $p_N$     | [N/mm <sup>2</sup> ] | Moderate pressure to the hub             |
| $I$       | [kgm <sup>2</sup> ]  | Moment of inertia                        |



### Design of the shrink disc

$d < 120$  - Discs galvanized - without washers

$d \geq 120$  - Discs painted - with washers

$d \geq 220$  - Cone of bush not slit

Dimensions  $H$  &  $e$  in unlocked position

| min. yield strength $R_{p0,2}$ | N/mm <sup>2</sup> |
|--------------------------------|-------------------|
| Solid shaft                    | 350               |
| Hub                            | 450               |

### Variation from the standard shaft diameter $d_w$

| > mm | ≤ mm | minimal - mm | maximal + mm |
|------|------|--------------|--------------|
| 10   | 30   | -1           | 1            |
| 30   | 50   | -3           | 2            |
| 50   | 140  | -5           | 5            |
| 140  | 180  | -10          | 5            |
| 180  | 320  | -15          | 10           |
| 320  | 500  | -20          | 10           |
| 500  | 700  | -30          | 20           |

$$M = M_{max(Katalog)} \frac{d_w(soll)}{d_w(Katalog)}$$

(see Basics - Calculation)

Ordering information: TAS 3181-d (e.g.: TAS 3181-200 ... further sizes on request)

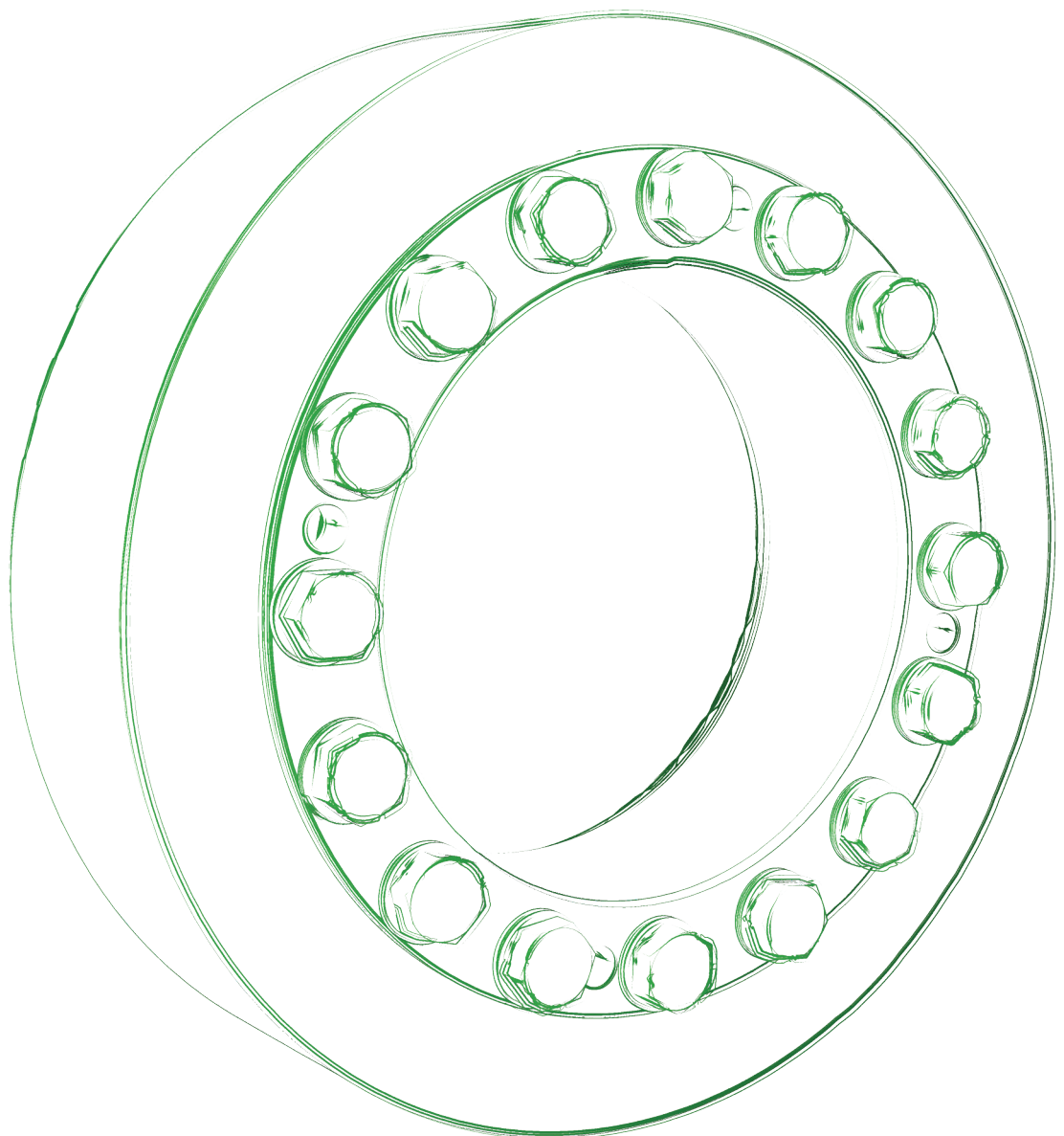


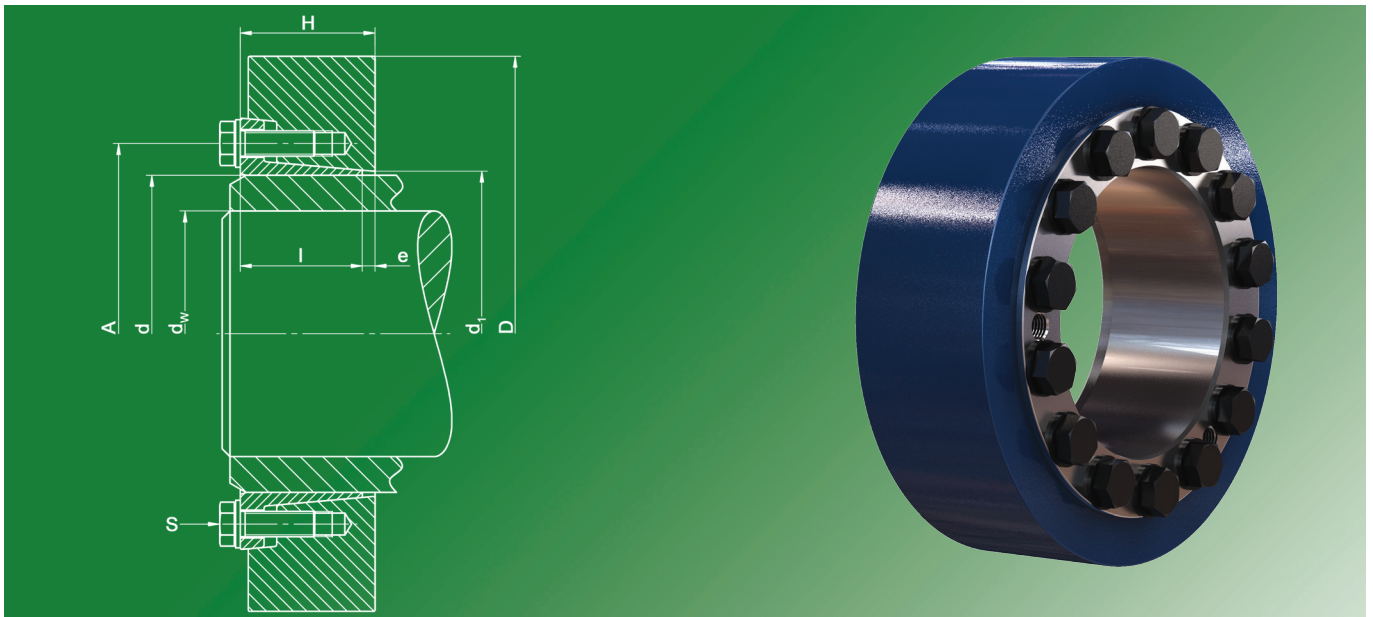
| <b>d</b><br>mm | <b>d<sub>w</sub></b><br>mm | <b>M<sub>max</sub></b><br>Nm | <b>D</b><br>mm | <b>l</b><br>mm | <b>e</b><br>mm | <b>H</b><br>mm | <b>A</b><br>mm | <b>d<sub>1</sub></b><br>mm | <b>M<sub>A</sub></b><br>Nm | <b>Z</b><br>Stk | <b>S</b>  | <b>DIN</b> | <b>Class</b> | <b>n<sub>max</sub></b><br>min <sup>-1</sup> | <b>p<sub>N</sub></b><br>N/mm <sup>2</sup> | <b>I</b><br>kgm <sup>2</sup> | <b>Weight</b><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|-----------|------------|--------------|---|---|------------------------------|---------------------|
| 24             | 20                         | 275                          | 50             | 16             | 2              | 18             | 36             | 26                         | 14                         | 4               | M 6 x 16  | 933        | 12.9         | 11459                                       | 387                                       | 0,0000734                    | 0,19                |
| 30             | 25                         | 570                          | 60             | 18             | 2              | 20             | 44             | 32                         | 14                         | 6               | M 6 x 16  | 933        | 12.9         | 9549  | 400                                       | 0,0001689                    | 0,30                |
| 36             | 30                         | 880                          | 72             | 20             | 2              | 22             | 52             | 38                         | 35                         | 5               | M 8 x 20  | 933        | 12.9         | 7958  | 564                                       | 0,0003786                    | 0,47                |
| 38             | 32                         | 910                          | 72             | 20             | 2              | 22             | 53             | 40                         | 35                         | 5               | M 8 x 20  | 933        | 12.9         | 7958  | 536                                       | 0,0003725                    | 0,45                |
| 44             | 35                         | 960                          | 80             | 22             | 2              | 24             | 61             | 47                         | 35                         | 5               | M 8 x 20  | 933        | 12.9         | 7162  | 398                                       | 0,0006151                    | 0,59                |
| 50             | 40                         | 1700                         | 90             | 23,5           | 2,5            | 26             | 68             | 53                         | 35                         | 7               | M 8 x 20  | 933        | 12.9         | 6366  | 451                                       | 0,0010705                    | 0,81                |
| 55             | 45                         | 2000                         | 99,3           | 26             | 3              | 29             | 72             | 58                         | 35                         | 6               | M 8 x 20  | 933        | 12.9         | 5770  | 316                                       | 0,0017869                    | 1,11                |
| 62             | 50                         | 2400                         | 110            | 26             | 3              | 29             | 80             | 66                         | 35                         | 8               | M 8 x 20  | 933        | 12.9         | 5209  | 371                                       | 0,0026706                    | 1,34                |
| 68             | 55                         | 3000                         | 115            | 26             | 3              | 29             | 86             | 72                         | 35                         | 9               | M 8 x 20  | 933        | 12.9         | 4982  | 384                                       | 0,0031146                    | 1,40                |
| 75             | 60                         | 4600                         | 138            | 27             | 4              | 31             | 100            | 79                         | 69                         | 8               | M 10 x 25 | 933        | 12.9         | 4152  | 496                                       | 0,0070393                    | 2,28                |
| 80             | 65                         | 5200                         | 138            | 27             | 4              | 31             | 104            | 84                         | 69                         | 8               | M 10 x 25 | 933        | 12.9         | 4152  | 467                                       | 0,0068412                    | 2,15                |
| 85             | 68                         | 6700                         | 155            | 34             | 4              | 38             | 114            | 94                         | 69                         | 10              | M 10 x 30 | 933        | 12.9         | 3697  | 396                                       | 0,0138071                    | 3,53                |
| 90             | 70                         | 7100                         | 155            | 34             | 4              | 38             | 114            | 94                         | 69                         | 10              | M 10 x 30 | 933        | 12.9         | 3697  | 396                                       | 0,0134544                    | 3,35                |
| 100            | 75                         | 8800                         | 170            | 39             | 4              | 43             | 124            | 104                        | 69                         | 12              | M 10 x 30 | 933        | 12.9         | 3370  | 357                                       | 0,0220976                    | 4,54                |
| 105            | 80                         | 12600                        | 185            | 44             | 5              | 49             | 136            | 114                        | 120                        | 10              | M 12 x 30 | 933        | 12.9         | 3097  | 360                                       | 0,0362860                    | 6,42                |
| 110            | 85                         | 14600                        | 185            | 44             | 5              | 49             | 136            | 114                        | 120                        | 10              | M 12 x 30 | 933        | 12.9         | 3097  | 360                                       | 0,0354267                    | 6,12                |
| 125            | 95                         | 18700                        | 215            | 47,5           | 5,5            | 53             | 160            | 134                        | 120                        | 12              | M 12 x 35 | 933        | 12.9         | 2665  | 333                                       | 0,0703948                    | 9,11                |
| 130            | 100                        | 22900                        | 215            | 47,5           | 5,5            | 53             | 160            | 134                        | 120                        | 12              | M 12 x 35 | 933        | 12.9         | 2665  | 333                                       | 0,0688524                    | 8,73                |
| 135            | 100                        | 23400                        | 230            | 52             | 6              | 58             | 173            | 145                        | 190                        | 10              | M 14 x 40 | 933        | 12.9         | 2491  | 334                                       | 0,1009972                    | 11,4                |
| 140            | 105                        | 23500                        | 230            | 52             | 6              | 58             | 173            | 145                        | 190                        | 10              | M 14 x 40 | 933        | 12.9         | 2491  | 334                                       | 0,0988674                    | 10,9                |
| 150            | 110                        | 31300                        | 263            | 56             | 6              | 62             | 190            | 164                        | 190                        | 12              | M 14 x 40 | 933        | 12.9         | 2179  | 321                                       | 0,1864460                    | 16,3                |
| 155            | 115                        | 34200                        | 263            | 56             | 6              | 62             | 190            | 164                        | 190                        | 12              | M 14 x 40 | 933        | 12.9         | 2179  | 321                                       | 0,1833539                    | 15,7                |
| 160            | 120                        | 38300                        | 263            | 56             | 6              | 62             | 190            | 164                        | 190                        | 12              | M 14 x 40 | 933        | 12.9         | 2179  | 321                                       | 0,1799476                    | 15,2                |
| 165            | 125                        | 48300                        | 290            | 61             | 7              | 68             | 204            | 175                        | 290                        | 10              | M 16 x 45 | 933        | 12.9         | 1976  | 349                                       | 0,3044866                    | 21,9                |
| 175            | 135                        | 58200                        | 300            | 60             | 8              | 68             | 214            | 185                        | 290                        | 12              | M 16 x 50 | 933        | 12.9         | 1910  | 405                                       | 0,3444253                    | 22,8                |
| 185            | 145                        | 82000                        | 330            | 77             | 8              | 85             | 224            | 194                        | 290                        | 14              | M 16 x 50 | 933        | 12.9         | 1736  | 326                                       | 0,6464885                    | 36,1                |
| 195            | 150                        | 98200                        | 350            | 77             | 8              | 85             | 240            | 205                        | 290                        | 16              | M 16 x 50 | 933        | 12.9         | 1637  | 353                                       | 0,8151453                    | 40,6                |
| 200            | 155                        | 102000                       | 350            | 77             | 8              | 85             | 240            | 205                        | 290                        | 16              | M 16 x 50 | 933        | 12.9         | 1637  | 353                                       | 0,8058820                    | 39,7                |
| 220            | 165                        | 134000                       | 370            | 94             | 10             | 104            | 270            | 226                        | 570                        | 16              | M 20 x 60 | 933        | 12.9         | 1549  | 401                                       | 1,2075884                    | 52,1                |
| 240            | 180                        | 172000                       | 405            | 97             | 10             | 107            | 296            | 246                        | 570                        | 18              | M 20 x 60 | 933        | 12.9         | 1415  | 400                                       | 1,8077432                    | 65,3                |
| 260            | 200                        | 226000                       | 430            | 109            | 10             | 119            | 318            | 266                        | 570                        | 21              | M 20 x 60 | 933        | 12.9         | 1332  | 373                                       | 2,5259772                    | 80,0                |
| 280            | 220                        | 295000                       | 460            | 124            | 10             | 134            | 340            | 287                        | 570                        | 22              | M 20 x 60 | 933        | 12.9         | 1246  | 315                                       | 3,6716977                    | 101                 |
| 300            | 230                        | 367000                       | 485            | 132            | 10             | 142            | 360            | 307                        | 980                        | 20              | M 24 x 70 | 933        | 12.9         | 1181  | 379                                       | 4,7555885                    | 117                 |
| 320            | 250                        | 410000                       | 520            | 133            | 10             | 143            | 380            | 327                        | 980                        | 21              | M 24 x 70 | 933        | 12.9         | 1102  | 374                                       | 6,2826175                    | 135                 |
| 340            | 260                        | 525000                       | 570            | 146            | 12             | 158            | 402            | 348                        | 980                        | 22              | M 24 x 80 | 931        | 12.9         | 1005  | 327                                       | 10,2530016                   | 186                 |
| 360            | 280                        | 553000                       | 590            | 150            | 12             | 162            | 424            | 368                        | 980                        | 21              | M 24 x 80 | 931        | 12.9         | 971   | 285                                       | 11,9213225                   | 200                 |
| 380            | 290                        | 636000                       | 635            | 149            | 14             | 163            | 448            | 388                        | 1450                       | 18              | M 27 x 80 | 933        | 12.9         | 902   | 303                                       | 16,5612857                   | 242                 |
| 390            | 300                        | 666700                       | 650            | 152            | 14             | 166            | 458            | 398                        | 1450                       | 18              | M 27 x 80 | 933        | 12.9         | 881   | 296                                       | 18,1541897                   | 253                 |
| 400            | 310                        | 769000                       | 660            | 158            | 15             | 173            | 475            | 410                        | 1450                       | 20              | M 27 x 80 | 931        | 12.9         | 868   | 299                                       | 20,3512933                   | 273                 |
| 420            | 330                        | 868000                       | 690            | 171            | 15             | 186            | 495            | 430                        | 1450                       | 21              | M 27 x 80 | 931        | 12.9         | 830   | 278                                       | 25,7145823                   | 315                 |
| 440            | 350                        | 1081000                      | 740            | 181            | 15             | 196            | 516            | 448                        | 1450                       | 24              | M 27 x 80 | 931        | 12.9         | 774   | 285                                       | 36,3755200                   | 393                 |
| 460            | 370                        | 1214000                      | 770            | 181            | 15             | 196            | 536            | 468                        | 1450                       | 25              | M 27 x 80 | 933        | 12.9         | 744   | 285                                       | 42,5268672                   | 423                 |
| 480            | 390                        | 1393000                      | 800            | 201            | 15             | 216            | 556            | 488                        | 1450                       | 27              | M 27 x 80 | 933        | 12.9         | 716   | 262                                       | 54,3812311                   | 500                 |
| 500            | 410                        | 1525000                      | 850            | 201            | 15             | 216            | 580            | 510                        | 1450                       | 28              | M 27 x 80 | 933        | 12.9         | 674   | 260                                       | 70,0908985                   | 577                 |
| 530            | 440                        | 1960000                      | 910            | 226            | 15             | 241            | 616            | 538                        | 1950                       | 27              | M 30 x 90 | 931        | 12.9         | 630   | 257                                       | 102,5969192                  | 740                 |
| 560            | 460                        | 2457000                      | 940            | 223            | 22             | 245            | 646            | 568                        | 1950                       | 28              | M 30 x 90 | 931        | 12.9         | 610   | 293                                       | 115,3714229                  | 771                 |

# 3181

Standard-Range strengthened

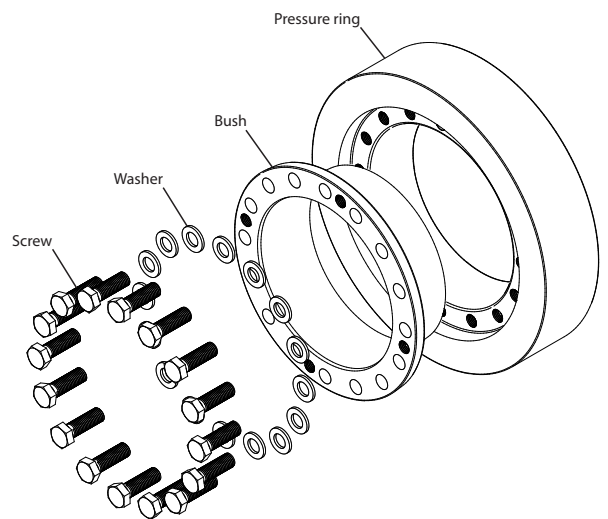
| <b>d</b><br>mm | <b>d<sub>w</sub></b><br>mm | <b>M<sub>max</sub></b><br>Nm | <b>D</b><br>mm | <b>l</b><br>mm | <b>e</b><br>mm | <b>H</b><br>mm | <b>A</b><br>mm | <b>d<sub>1</sub></b><br>mm | <b>M<sub>A</sub></b><br>Nm | <b>Z</b><br>Stk | <b>S</b>   | <b>DIN</b> | <b>Class</b> | <b>n<sub>max</sub></b><br>min <sup>-1</sup> | <b>p<sub>N</sub></b><br>N/mm <sup>2</sup> | <b>I</b><br>kgm <sup>2</sup> | <b>Weight</b><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|------------|------------|--------------|---|---|------------------------------|---------------------|
| 590            | 480                        | 2524000                      | 960            | 240            | 23             | 263            | 670            | 598                        | 1950                       | 28              | M 30 x 100 | 931        | 12.9         | 597   | 257                                       | 132,9581557                  | 838                 |
| 620            | 510                        | 3018000                      | 1020           | 268            | 28             | 296            | 716            | 630                        | 1950                       | 28              | M 30 x 100 | 931        | 12.9         | 562   | 241                                       | 189,6250362                  | 1065                |
| 640            | 530                        | 2805000                      | 1020           | 269            | 18             | 287            | 736            | 650                        | 1950                       | 28              | M 30 x 100 | 931        | 12.9         | 562   | 208                                       | 185,5656631                  | 1024                |
| 660            | 550                        | 3356000                      | 1070           | 270            | 22             | 292            | 770            | 670                        | 2600                       | 28              | M 33 x 110 | 931        | 12.9         | 535   | 230                                       | 229,1223900                  | 1160                |





## Used symbols

|           |                      |  |
|-----------|----------------------|--|
| $d$       | [mm]                 | Nominal diameter of the shrink disc      |
| $d_w$     | [mm]                 | Shaft diameter                           |
| $M_{max}$ | [mm]                 | Maximal transmittable torque             |
| $D$       | [mm]                 | Outer diameter                           |
| $I$       | [mm]                 | Length of the bush                       |
| $e$       | [mm]                 | Excess length                            |
| $H$       | [mm]                 | Width of the shrink disc                 |
| $A$       | [mm]                 | Pitch circle diameter                    |
| $d_t$     | [mm]                 | Attachment size                          |
| $M_A$     | [Nm]                 | Tightening torque of the clamping screws |
| $Z$       |                      | Number of clamping screws                |
| $S$       |                      | Size of the clamping screws              |
| $n_{max}$ | [min <sup>-1</sup> ] | Permitted rotational frequency           |
| $p_N$     | [N/mm <sup>2</sup> ] | Moderate pressure to the hub             |
| $I$       | [kgm <sup>2</sup> ]  | Moment of inertia                        |



## Design of the shrink disc

$d < 120$  - Discs galvanized - without washers

$d \geq 120$  - Discs painted - with washers

$d \geq 220$  - Cone of bush not slit

Dimensions  $H$  &  $e$  in unlocked position

| min. yield strength $R_{p0,2}$ | N/mm <sup>2</sup> |
|--------------------------------|-------------------|
| Solid shaft                    | 290               |
| Hub                            | 350               |

## Variation from the standard shaft diameter $d_w$

| > mm | ≤ mm | minimal - mm | maximal + mm |
|------|------|--------------|--------------|
| 40   | 50   | -3           | 2            |
| 50   | 140  | -5           | 5            |
| 140  | 180  | -10          | 5            |
| 180  | 320  | -15          | 10           |
| 320  | 440  | -20          | 10           |
| 440  | 600  | -30          | 10           |

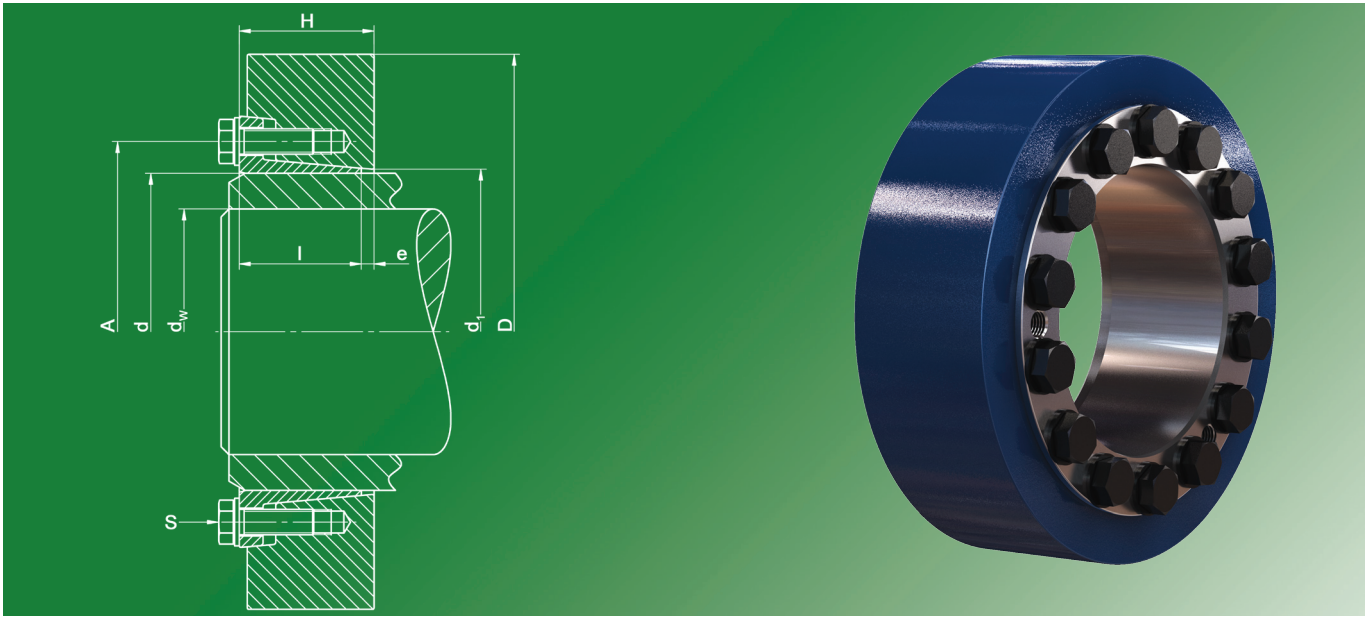
$$M = M_{max(Katalog)} \frac{d_w(soll)}{d_w(Katalog)}$$

(see Basics - Calculation)

Ordering information: TAS 3191-d (e.g.: TAS 3191-200 ... further sizes on request)

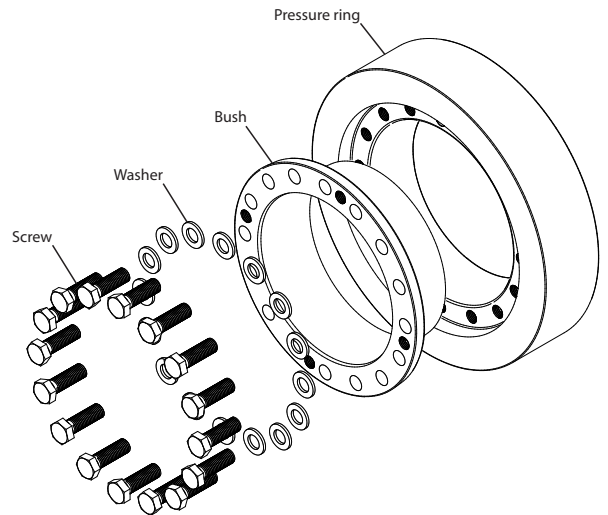
# 3191 Heavy-Range

| <b>d</b><br>mm | <b>d<sub>w</sub></b><br>mm | <b>M<sub>max</sub></b><br>Nm | <b>D</b><br>mm | <b>l</b><br>mm | <b>e</b><br>mm | <b>H</b><br>mm | <b>A</b><br>mm | <b>d<sub>1</sub></b><br>mm | <b>M<sub>A</sub></b><br>Nm | <b>Z</b><br>Stk | <b>S</b>   | <b>DIN</b> | <b>Class</b> | <b>n<sub>max</sub></b><br>min <sup>-1</sup> | <b>p<sub>N</sub></b><br>N/mm <sup>2</sup> | <b>I</b><br>kgm <sup>2</sup> | <b>Weight</b><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|------------|------------|--------------|---|---|------------------------------|---------------------|
| 110            | 80                         | 13100                        | 185            | 65             | 5              | 70             | 139            | 113                        | 100                        | 10              | M 12 x 35  | 933        | 10.9         | 3097  | 216                                       | 0,0508296                    | 8,78                |
| 125            | 90                         | 21200                        | 215            | 68             | 6              | 74             | 163            | 129                        | 250                        | 8               | M 16 x 45  | 933        | 10.9         | 2665  | 276                                       | 0,0959929                    | 12,4                |
| 135            | 95                         | 24000                        | 230            | 68             | 6              | 74             | 178            | 144                        | 250                        | 10              | M 16 x 45  | 933        | 10.9         | 2491  | 311                                       | 0,1250883                    | 14,1                |
| 140            | 105                        | 30000                        | 230            | 68             | 6              | 74             | 178            | 144                        | 250                        | 10              | M 16 x 45  | 933        | 10.9         | 2491  | 311                                       | 0,1278926                    | 14,1                |
| 155            | 115                        | 37000                        | 263            | 73             | 7              | 80             | 196            | 162                        | 250                        | 12              | M 16 x 45  | 933        | 10.9         | 2179  | 309                                       | 0,2402568                    | 20,6                |
| 165            | 125                        | 52000                        | 290            | 80             | 8              | 88             | 204            | 172                        | 250                        | 15              | M 16 x 45  | 933        | 10.9         | 1976  | 318                                       | 0,3853659                    | 27,7                |
| 175            | 135                        | 63000                        | 300            | 80             | 8              | 88             | 214            | 182                        | 250                        | 15              | M 16 x 45  | 933        | 10.9         | 1910  | 301                                       | 0,4359133                    | 28,9                |
| 185            | 145                        | 91000                        | 330            | 100            | 12             | 112            | 236            | 194                        | 490                        | 12              | M 20 x 60  | 933        | 10.9         | 1736  | 278                                       | 0,8593076                    | 48,0                |
| 200            | 155                        | 113000                       | 350            | 102            | 11             | 113            | 246            | 204                        | 490                        | 14              | M 20 x 60  | 933        | 10.9         | 1637  | 302                                       | 1,0778672                    | 53,1                |
| 220            | 165                        | 137000                       | 370            | 127            | 9              | 136            | 270            | 225                        | 490                        | 18              | M 20 x 60  | 933        | 10.9         | 1549  | 271                                       | 1,5895806                    | 68,6                |
| 240            | 180                        | 180000                       | 405            | 132            | 12             | 144            | 298            | 248                        | 490                        | 20              | M 20 x 60  | 933        | 10.9         | 1415  | 260                                       | 2,4546318                    | 88,6                |
| 260            | 200                        | 224000                       | 430            | 148            | 12             | 160            | 326            | 266                        | 490                        | 22              | M 20 x 60  | 933        | 10.9         | 1332  | 228                                       | 3,4273171                    | 109                 |
| 280            | 220                        | 305000                       | 460            | 160            | 12             | 172            | 346            | 289                        | 840                        | 18              | M 24 x 70  | 933        | 10.9         | 1246  | 241                                       | 4,8181962                    | 133                 |
| 300            | 240                        | 398000                       | 485            | 160            | 16             | 176            | 366            | 305                        | 840                        | 21              | M 24 x 70  | 933        | 10.9         | 1181  | 261                                       | 6,0332094                    | 148                 |
| 320            | 250                        | 433000                       | 520            | 170            | 14             | 184            | 388            | 325                        | 840                        | 22              | M 24 x 70  | 931        | 10.9         | 1102  | 244                                       | 8,3297625                    | 179                 |
| 340            | 260                        | 460000                       | 570            | 186            | 14             | 200            | 414            | 349                        | 1250                       | 18              | M 27 x 80  | 933        | 10.9         | 1005  | 223                                       | 13,3704682                   | 243                 |
| 350            | 270                        | 494000                       | 570            | 186            | 14             | 200            | 419            | 359                        | 1250                       | 18              | M 27 x 80  | 933        | 10.9         | 1005  | 222                                       | 12,9280867                   | 231                 |
| 360            | 280                        | 576000                       | 590            | 188            | 22             | 210            | 434            | 365                        | 1250                       | 20              | M 27 x 80  | 931        | 10.9         | 971   | 235                                       | 15,9212399                   | 267                 |
| 390            | 300                        | 627000                       | 650            | 205            | 15             | 220            | 470            | 398                        | 1250                       | 21              | M 27 x 90  | 931        | 10.9         | 881   | 198                                       | 24,8087801                   | 345                 |
| 420            | 330                        | 973000                       | 715            | 222            | 25             | 247            | 508            | 428                        | 1700                       | 20              | M 30 x 80  | 931        | 10.9         | 801   | 235                                       | 41,0007733                   | 477                 |
| 440            | 350                        | 1160000                      | 750            | 233            | 25             | 258            | 528            | 448                        | 1700                       | 22              | M 30 x 90  | 931        | 10.9         | 764   | 234                                       | 51,9773030                   | 550                 |
| 460            | 370                        | 1307000                      | 770            | 240            | 18             | 258            | 548            | 468                        | 1700                       | 23              | M 30 x 90  | 931        | 10.9         | 744   | 227                                       | 57,1634855                   | 568                 |
| 480            | 390                        | 1435000                      | 800            | 270            | 28             | 298            | 572            | 488                        | 1700                       | 24              | M 30 x 90  | 931        | 10.9         | 716   | 197                                       | 76,8838095                   | 707                 |
| 500            | 410                        | 1650000                      | 825            | 270            | 28             | 298            | 592            | 508                        | 1700                       | 26              | M 30 x 90  | 931        | 10.9         | 694   | 206                                       | 86,4231353                   | 743                 |
| 530            | 440                        | 2105000                      | 890            | 306            | 32             | 338            | 640            | 539                        | 2200                       | 25              | M 33 x 100 | 931        | 10.9         | 644   | 198                                       | 133,9516584                  | 999                 |
| 560            | 460                        | 2276000                      | 940            | 306            | 32             | 338            | 670            | 569                        | 2200                       | 26              | M 33 x 100 | 931        | 10.9         | 610   | 196                                       | 166,6476108                  | 1114                |



## Used symbols

|           |                      |  |
|-----------|----------------------|--|
| $d$       | [mm]                 | Nominal diameter of the shrink disc      |
| $d_w$     | [mm]                 | Shaft diameter                           |
| $M_{max}$ | [mm]                 | Maximal transmittable torque             |
| $D$       | [mm]                 | Outer diameter                           |
| $l$       | [mm]                 | Length of the bush                       |
| $e$       | [mm]                 | Excess length                            |
| $H$       | [mm]                 | Width of the shrink disc                 |
| $A$       | [mm]                 | Pitch circle diameter                    |
| $d_t$     | [mm]                 | Attachment size                          |
| $M_A$     | [Nm]                 | Tightening torque of the clamping screws |
| $Z$       |                      | Number of clamping screws                |
| $S$       |                      | Size of the clamping screws              |
| $n_{max}$ | [min <sup>-1</sup> ] | Permitted rotational frequency           |
| $p_N$     | [N/mm <sup>2</sup> ] | Moderate pressure to the hub             |
| $I$       | [kgm <sup>2</sup> ]  | Moment of inertia                        |



## Design of the shrink disc

$d < 120$  - Discs galvanized - without washers

$d \geq 120$  - Discs painted - with washers

$d \geq 220$  - Cone of bush not slit

Dimensions  $H$  &  $e$  in unlocked position

| min. yield strength $R_{p0,2}$ | N/mm <sup>2</sup> |
|--------------------------------|-------------------|
| Solid shaft                    | 350               |
| Hub                            | 450               |

## Variation from the standard shaft diameter $d_w$

| > mm | ≤ mm | minimal - mm | maximal + mm |
|------|------|--------------|--------------|
| 40   | 50   | -3           | 2            |
| 50   | 140  | -5           | 5            |
| 140  | 180  | -10          | 5            |
| 180  | 320  | -15          | 10           |
| 320  | 440  | -20          | 10           |
| 440  | 600  | -30          | 10           |

$$M = M_{max(Katalog)} \frac{d_{W(soll)}}{d_{W(Katalog)}}$$

(see Basics - Calculation)

Ordering information: TAS 3193-d (e.g.: TAS 3193-200 ... further sizes on request)

| <b>d</b><br>mm | <b>d<sub>W</sub></b><br>mm | <b>M<sub>max</sub></b><br>Nm | <b>D</b><br>mm | <b>l</b><br>mm | <b>e</b><br>mm | <b>H</b><br>mm | <b>A</b><br>mm | <b>d<sub>1</sub></b><br>mm | <b>M<sub>A</sub></b><br>Nm | <b>Z</b><br>Stk | <b>S</b>   | <b>DIN</b> | <b>Class</b> | <b>n<sub>max</sub></b><br>min <sup>-1</sup> | <b>p<sub>N</sub></b><br>N/mm <sup>2</sup> | <b>I</b><br>kgm <sup>2</sup> | <b>Weight</b><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|------------|------------|--------------|---|---|------------------------------|---------------------|
| 110            | 80                         | 14900                        | 185            | 65             | 5              | 70             | 139            | 113                        | 120                        | 10              | M 12 x 35  | 933        | 12.9         | 3097  | 253                                       | 0,0508296                    | 8,78                |
| 125            | 90                         | 25900                        | 215            | 68             | 6              | 74             | 163            | 129                        | 290                        | 8               | M 16 x 45  | 933        | 12.9         | 2665  | 324                                       | 0,0959929                    | 12,4                |
| 135            | 95                         | 28200                        | 230            | 68             | 6              | 74             | 178            | 144                        | 290                        | 10              | M 16 x 45  | 933        | 12.9         | 2491  | 365                                       | 0,1250883                    | 14,1                |
| 140            | 105                        | 35000                        | 230            | 68             | 6              | 74             | 178            | 144                        | 290                        | 10              | M 16 x 45  | 933        | 12.9         | 2491  | 365                                       | 0,1278926                    | 14,1                |
| 155            | 115                        | 43000                        | 263            | 73             | 7              | 80             | 196            | 162                        | 290                        | 12              | M 16 x 45  | 933        | 12.9         | 2179  | 362                                       | 0,2402568                    | 20,6                |
| 165            | 125                        | 60000                        | 290            | 80             | 8              | 88             | 204            | 172                        | 290                        | 15              | M 16 x 45  | 933        | 12.9         | 1976  | 373                                       | 0,3853659                    | 27,7                |
| 175            | 135                        | 72000                        | 300            | 80             | 8              | 88             | 214            | 182                        | 290                        | 15              | M 16 x 45  | 933        | 12.9         | 1910  | 353                                       | 0,4359133                    | 28,9                |
| 185            | 145                        | 112000                       | 330            | 100            | 12             | 112            | 236            | 194                        | 570                        | 12              | M 20 x 60  | 933        | 12.9         | 1736  | 324                                       | 0,8593076                    | 48,0                |
| 200            | 155                        | 131000                       | 350            | 102            | 11             | 113            | 246            | 204                        | 570                        | 14              | M 20 x 60  | 933        | 12.9         | 1637  | 352                                       | 1,0778672                    | 53,1                |
| 220            | 165                        | 159000                       | 370            | 127            | 9              | 136            | 270            | 225                        | 570                        | 18              | M 20 x 60  | 933        | 12.9         | 1549  | 318                                       | 1,5895806                    | 68,6                |
| 240            | 180                        | 209000                       | 405            | 132            | 12             | 144            | 298            | 248                        | 570                        | 20              | M 20 x 60  | 933        | 12.9         | 1415  | 305                                       | 2,4546318                    | 88,6                |
| 260            | 200                        | 260000                       | 430            | 150            | 12             | 162            | 326            | 266                        | 570                        | 22              | M 20 x 60  | 933        | 12.9         | 1332  | 268                                       | 3,4273171                    | 109                 |
| 280            | 220                        | 354000                       | 460            | 160            | 12             | 172            | 346            | 289                        | 980                        | 18              | M 24 x 70  | 933        | 12.9         | 1246  | 283                                       | 4,8181962                    | 133                 |
| 300            | 240                        | 464000                       | 485            | 162            | 16             | 178            | 366            | 305                        | 980                        | 21              | M 24 x 70  | 933        | 12.9         | 1181  | 306                                       | 6,0332094                    | 148                 |
| 320            | 250                        | 505000                       | 520            | 170            | 14             | 184            | 388            | 325                        | 980                        | 22              | M 24 x 70  | 931        | 12.9         | 1102  | 287                                       | 8,3297625                    | 179                 |
| 340            | 260                        | 536000                       | 570            | 189            | 14             | 203            | 414            | 349                        | 1450                       | 18              | M 27 x 80  | 933        | 12.9         | 1005  | 262                                       | 13,3704682                   | 243                 |
| 350            | 270                        | 576000                       | 570            | 186            | 14             | 200            | 419            | 354                        | 1450                       | 18              | M 27 x 80  | 933        | 12.9         | 1005  | 260                                       | 12,9280867                   | 231                 |
| 360            | 280                        | 671000                       | 590            | 191            | 22             | 213            | 434            | 365                        | 1450                       | 20              | M 27 x 80  | 933        | 12.9         | 971   | 276                                       | 15,9212399                   | 267                 |
| 390            | 300                        | 730000                       | 650            | 208            | 15             | 223            | 470            | 398                        | 1450                       | 21              | M 27 x 90  | 931        | 12.9         | 881   | 233                                       | 24,8087801                   | 345                 |
| 420            | 330                        | 1154000                      | 715            | 222            | 25             | 247            | 508            | 428                        | 1950                       | 20              | M 30 x 80  | 931        | 12.9         | 801   | 276                                       | 41,0007733                   | 477                 |
| 440            | 350                        | 1351000                      | 750            | 233            | 25             | 258            | 528            | 448                        | 1950                       | 22              | M 30 x 90  | 931        | 12.9         | 764   | 275                                       | 51,9773030                   | 550                 |
| 460            | 370                        | 1523000                      | 770            | 243            | 18             | 261            | 548            | 468                        | 1950                       | 23              | M 30 x 90  | 931        | 12.9         | 744   | 267                                       | 57,1634855                   | 568                 |
| 480            | 390                        | 1672000                      | 800            | 270            | 28             | 298            | 572            | 488                        | 1950                       | 24              | M 30 x 90  | 931        | 12.9         | 716   | 231                                       | 76,8838095                   | 707                 |
| 500            | 410                        | 1960000                      | 825            | 270            | 28             | 298            | 592            | 508                        | 1950                       | 26              | M 30 x 90  | 931        | 12.9         | 694   | 241                                       | 86,4231353                   | 743                 |
| 530            | 440                        | 2505000                      | 890            | 306            | 32             | 338            | 640            | 539                        | 2600                       | 25              | M 33 x 100 | 931        | 12.9         | 644   | 234                                       | 133,9516584                  | 999                 |
| 560            | 460                        | 2653000                      | 940            | 309            | 32             | 341            | 670            | 569                        | 2600                       | 26              | M 33 x 100 | 931        | 12.9         | 610   | 231                                       | 166,6476108                  | 1114                |





# Special design

For the following product features, please send us a separate request:

Other dimensions

Stainless steel designs

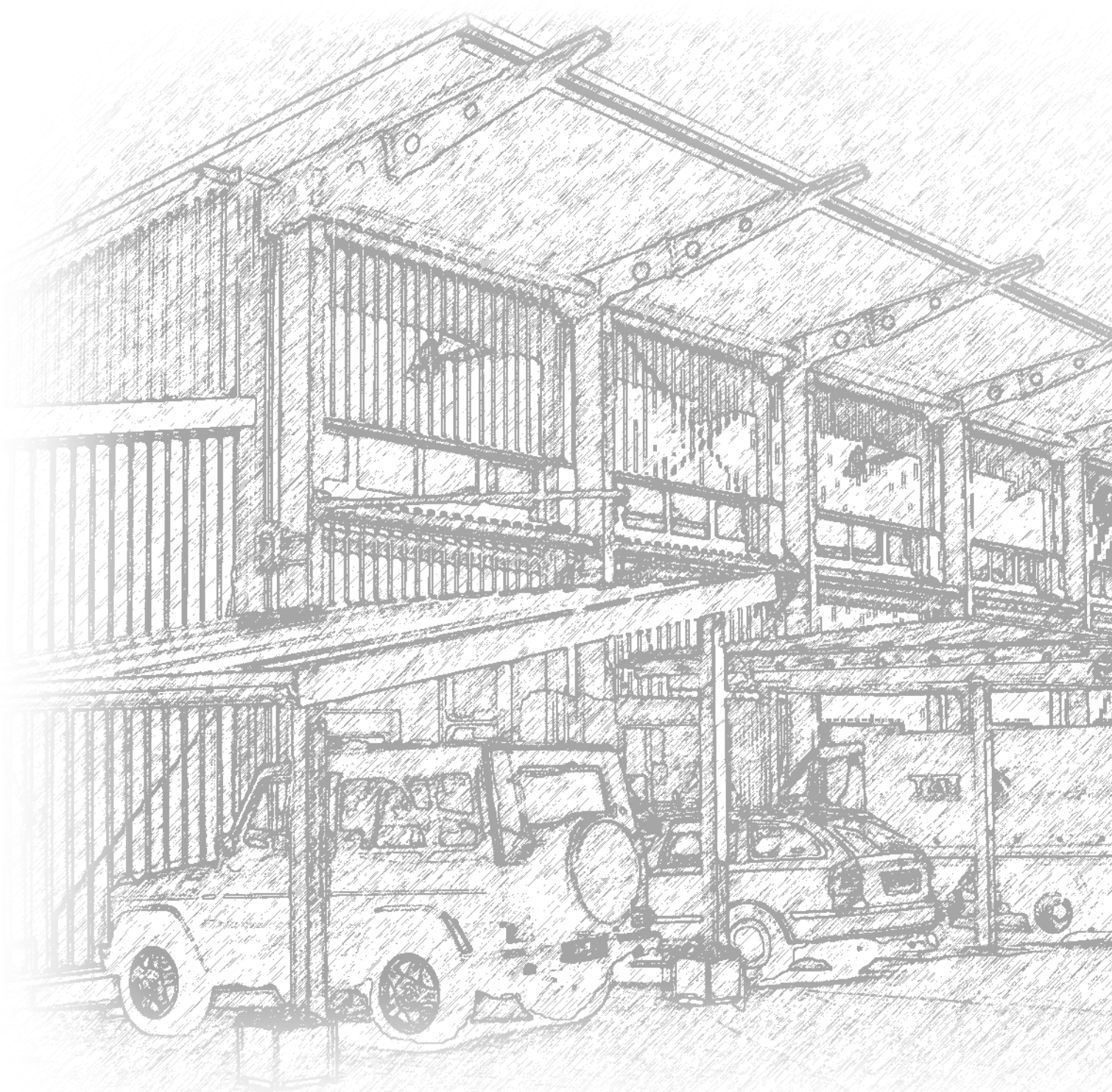
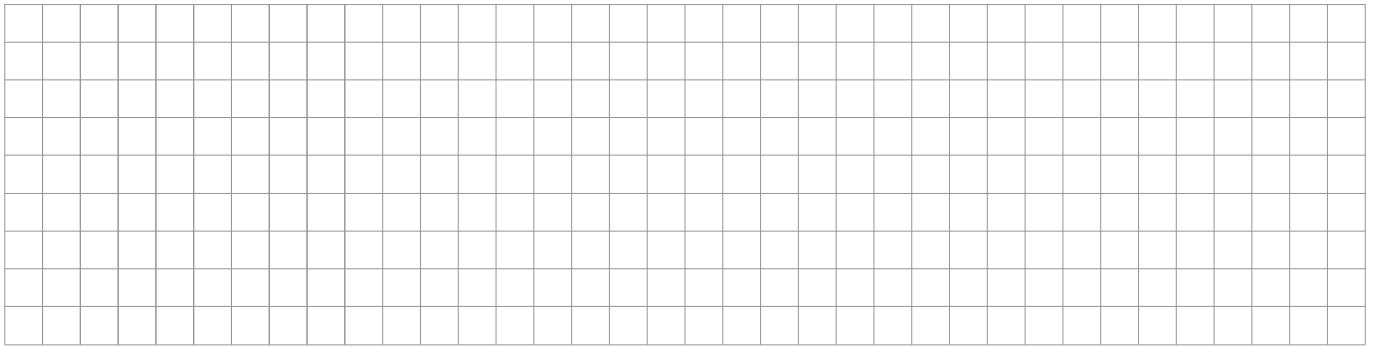
Galvanized or nickel plated surfaces

Special painting

With class acceptance (e.g.: Lloyds Register, Germanischer Lloyd, Rina, etc ...)

...

# Notes

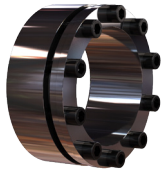


# Further products from our company

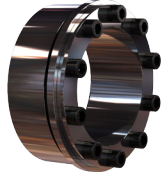
## Clamping devices



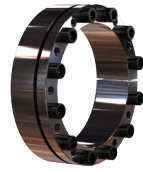
TAS 110



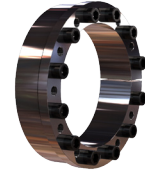
TAS 130



TAS 131



TAS 3003



TAS 3006



TAS 3012



TAS 3013



TAS 3015



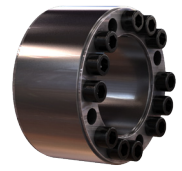
TAS 3015DK



TAS 3020



TAS 4006



TAS 7014

## Shrink discs in three-parts design



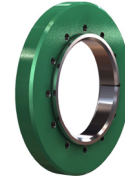
TAS 3073



TAS 3051, 3071, 3081, 3091, 3093



Geteilt

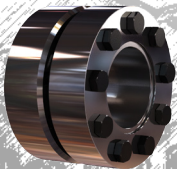


Halb-G

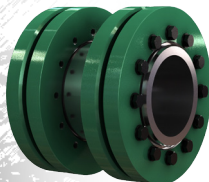


Halb-D

## Shaft couplings



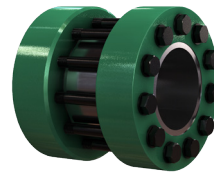
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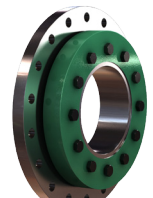
TAS WK



TAS WLA

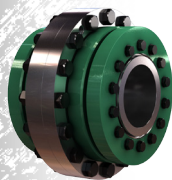


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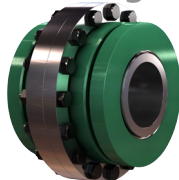


TAS AFS

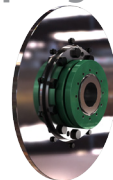
## Flange couplings



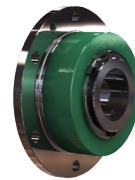
TAS FK



TAS FKB

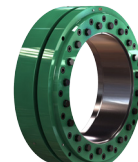
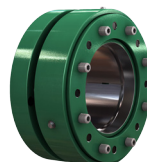
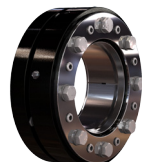


TAS FKBS



TAS FKH

## Hydraulic actuated shrink discs



TAS SHS



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