

**TAS**  
**SCHÄFER**

**CHAIN & DRIVES®**

[chainanddrives.com.au](http://chainanddrives.com.au)  
[support@chainanddrives.com.au](mailto:support@chainanddrives.com.au)

# Shrink Discs 2-part

Displacement controlled | External clamping devices



# Description of function

## Two part shrink disc of the types TAS 33..

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 33xx range of shrink discs are self-locking. The clamping forces are provided through the screws.

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. Molykote G-Rapid Plus or comparable must be used as a lubricant. The contact surfaces between the hub and the bush must be provided with grease or oil before installation.

### Product data

A detailed installation manual is available on our Homepage.

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

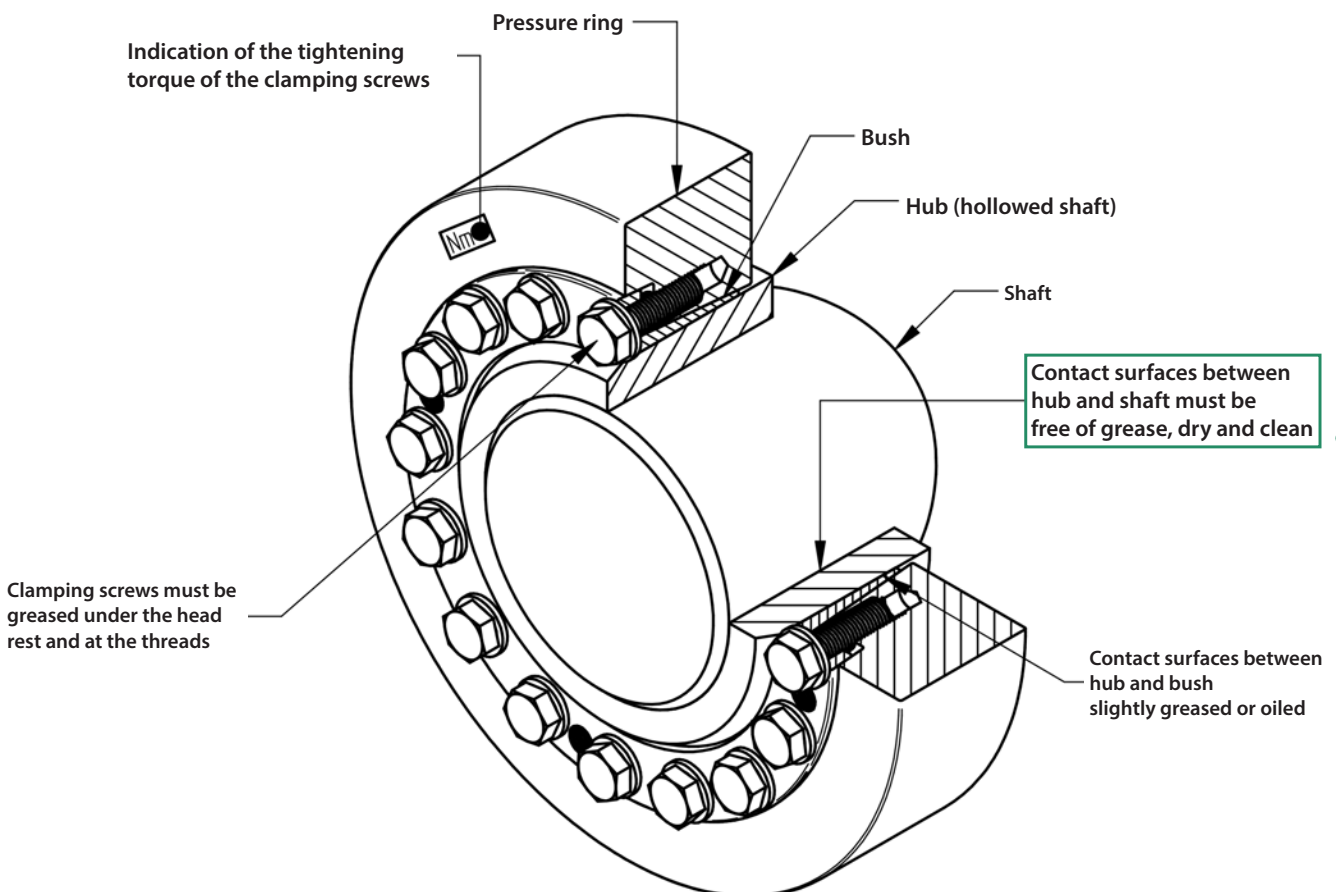
Desired product is not available, please contact us directly.

CAD data  
We provide CAD data for our products in various formats. Please contact:

**Rolf Gertner**  
rolf.gertner@tas-schaefer.de

or

**Mike Kemper**  
mike.kemper@tas-schaefer.de



# 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:

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  $\mu_{ges} = 0,1$ .

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 increases tensions in the hub.

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

**Tolerance for the outer diameter hub - f7!**

| 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       |

# 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  $M_{\text{res}}$ .

The formula below applies to the resulting moment:

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

At different load cases, these are individually checked against  $M_{\max}$ !  $M_{\text{res}}$  is determined for combined loads as follows:

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

$$\text{with } M_B \leq 0,3 M_{\max}$$

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  $M_{\max}$  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  $M_{\max}$ .

### Axial force only:

The maximum axial force is

$$M_{\max} \frac{2}{d_W}$$

A different equation applies for very small shrink discs (3173):

$$M_B \leq 0,2 M_{\max}$$

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:

$$M = M_{\max(\text{Catalog})} \left( \frac{d_{W(\text{target})}}{d_{W(\text{Catalog})}} \right)^2$$

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

$$F_{ax} = M \frac{2}{d_{W(\text{table})}}$$

## 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:

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

The modified pressures  $p_{W\min, \max}$  results from the following equation:

$$p_{W\min, \max} = p_W \pm \Delta p_W$$

The minimum pressure  $p_{W\min}$  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  $p_{W\max}$ .

# Basics - Calculation

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

## 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!

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 determined and thus a resultant notch factor found.

## Bore in the shaft (hollow shaft)

A large bore dB 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  $\Delta dB$  within the shaft and an increase of stresses in these components. Basically, a bore should not be greater than 0,3  $d_w$ .

## 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.

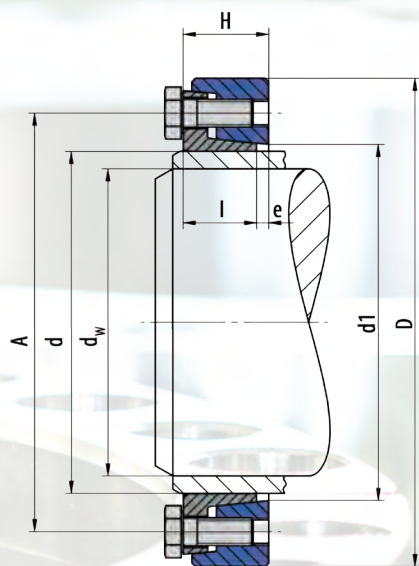
The stresses in the hub can be determined by various hypotheses, such as GEH. We will not make a presentation and analyse results at this point because we would only be able to cover a very limited range of static applications. Various calculation methods for different cases can be found in engineering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





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# 3173 Mini-Range



## Used symbols

|                  |                      |                                          |
|------------------|----------------------|------------------------------------------|
| d                | [mm]                 | Nominal diameter of the shrink disc      |
| d <sub>w</sub>   | [mm]                 | Shaft diameter                           |
| M <sub>max</sub> | [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 <sub>1</sub>   | [mm]                 | Attachment size                          |
| M <sub>A</sub>   | [Nm]                 | Tightening torque of the clamping screws |
| Z                |                      | Number of clamping screws                |
| S                |                      | Size of the clamping screws              |
| n <sub>max</sub> | [min-1]              | Permitted rotational frequency           |
| p <sub>N</sub>   | [N/mm <sup>2</sup> ] | Average pressure to the hub              |
| I                | [kgm <sup>2</sup> ]  | Moment of inertia                        |

## Design of the shrink disc

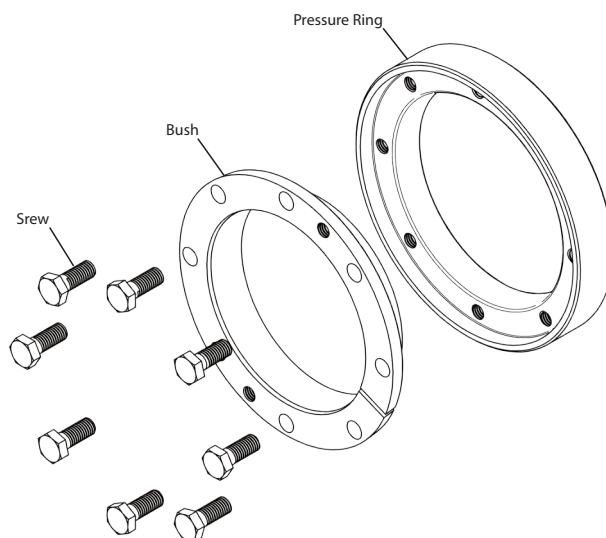
- Discs and bush galvanized
- Without washers
- Bush complete slit
- Dimensions H & e in unlocked position

| min. yield strength Rp0,2 | N/mm <sup>2</sup> |
|---------------------------|-------------------|
| Solid shaft               | 290               |
| Hub                       | 350               |

| Variation from the standard shaft diameter d <sub>W</sub> |         |                    |                    |
|-----------------------------------------------------------|---------|--------------------|--------------------|
| ><br>mm                                                   | ≤<br>mm | minimal<br>-<br>mm | maximal<br>+<br>mm |
| 20                                                        | 60      | -2                 | 1                  |
| 60                                                        | 100     | -2                 | 2                  |
| 100                                                       | 160     | -3                 | 2                  |
| 160                                                       | 220     | -4                 | 2                  |
| 220                                                       | 300     | -5                 | 2                  |

$$M = M_{\max(\text{Catalog})} \left( \frac{d_{W(\text{target})}}{d_{W(\text{Catalog})}} \right)^2$$

(see Basics - Calculation)



Ordering information: : TAS 3173-d (z.B.: TAS 3173-100 ... further sizes on request)

# 3173 Mini-Range

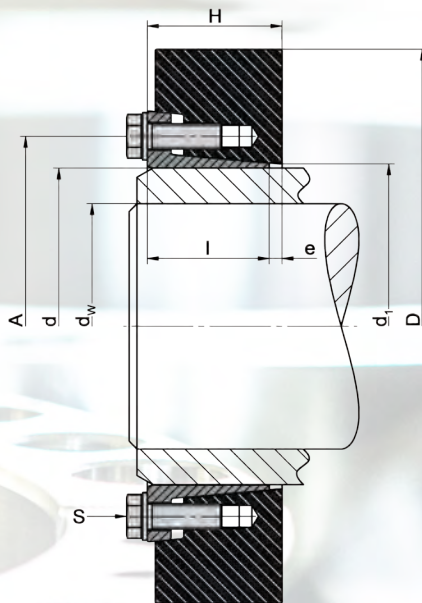
| <i>d</i><br>mm | <i>d<sub>w</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Class</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><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                         | 169            | 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                |

# 3173 Mini-Range

| <i>d</i><br>mm | <i>d<sub>w</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Class</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|--------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| 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                |
| 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                |



# 3371 Standard-Range



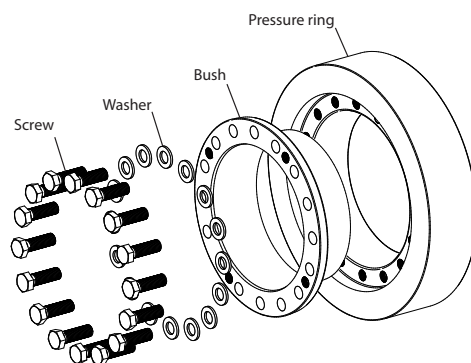
## Used symbols

|                  |                      |                                          |
|------------------|----------------------|------------------------------------------|
| d                | [mm]                 | Nominal diameter of the shrink disc      |
| d <sub>w</sub>   | [mm]                 | Shaft diameter                           |
| M <sub>max</sub> | [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 <sub>1</sub>   | [mm]                 | Attachment size                          |
| M <sub>A</sub>   | [Nm]                 | Tightening torque of the clamping screws |
| Z                |                      | Number of clamping screws                |
| S                |                      | Size of the clamping screws              |
| n <sub>max</sub> | [min <sup>-1</sup> ] | Permitted rotational frequency           |
| p <sub>N</sub>   | [N/mm <sup>2</sup> ] | Average pressure to the hub              |
| I                | [kgm <sup>2</sup> ]  | Moment of inertia                        |

## Design of the shrink disc

|         |                                     |
|---------|-------------------------------------|
| d < 120 | Discs lightly oiled without washers |
| d ≥ 120 | Disc painted with washers           |
| d ≥ 200 | Cone of bush not slit               |

Dimensions H & e in unlocked position



| min. yield strength Rp0,2 | N/mm <sup>2</sup> |
|---------------------------|-------------------|
| solid shaft               | 290               |
| Hub                       | 350               |

Ordering information : TAS 3371-d (z.B.: TAS 3371-390 ... further sizes on request)

# 3371 Standard-Range

| <i>d</i><br>mm | <i>d<sub>w</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Klasse</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|---------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| <b>12</b>      | 9                          | 20                           | 35             | 10             | 4              | 14             | 24             | 13                         | 12                         | 3               | M6x10    | 933        | 10.9          | 16370                                       | 274                                       | 0,000012                     | 0,1                 |
|                | 10                         | 40                           |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | -                          | -                            |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>14</b>      | 11                         | 30                           | 38             | 10             | 4              | 14             | 26             | 15                         | 12                         | 3               | M6x16    | 933        | 10.9          | 15078                                       | 241                                       | 0,000017                     | 0,1                 |
|                | 12                         | 50                           |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | -                          | -                            |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>16</b>      | 13                         | 70                           | 41             | 13,5           | 4              | 17             | 28             | 17                         | 12                         | 3               | M6x16    | 933        | 10.9          | 13975                                       | 232                                       | 0,000030                     | 0,1                 |
|                | 14                         | 90                           |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | -                          | -                            |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>18</b>      | 15                         | 80                           | 44             | 13,5           | 4              | 17             | 30             | 19                         | 12                         | 4               | M6x16    | 933        | 10.9          | 13022                                       | 191                                       | 0,000040                     | 0,1                 |
|                | 16                         | 110                          |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | -                          | -                            |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>20</b>      | 17                         | 150                          | 47             | 13,5           | 4              | 17             | 32             | 21                         | 12                         | 4               | M6x16    | 933        | 10.9          | 12191                                       | 233                                       | 0,000051                     | 0,2                 |
|                | 18                         | 180                          |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | -                          | -                            |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>24</b>      | 19                         | 160                          | 48             | 14             | 4              | 19             | 36             | 26                         | 12                         | 5               | M6x16    | 933        | 10.9          | 11937                                       | 217                                       | 0,000060                     | 0,2                 |
|                | 20                         | 200                          |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 22                         | 280                          |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>30</b>      | 24                         | 270                          | 60             | 16             | 4              | 21             | 44             | 32                         | 12                         | 6               | M6x16    | 933        | 10.9          | 9549                                        | 189                                       | 0,000164                     | 0,4                 |
|                | 25                         | 320                          |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 26                         | 360                          |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>36</b>      | 28                         | 490                          | 72             | 18             | 4              | 22             | 52             | 38                         | 30                         | 5               | M8x20    | 933        | 10.9          | 7958                                        | 208                                       | 0,000360                     | 0,5                 |
|                | 30                         | 610                          |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 33                         | 820                          |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>44</b>      | 35                         | 690                          | 80             | 20             | 5              | 26             | 61             | 47                         | 30                         | 6               | M8x20    | 933        | 10.9          | 7162                                        | 185                                       | 0,000615                     | 0,7                 |
|                | 35                         | 770                          |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 36                         | 840                          |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>50</b>      | 38                         | 1.100                        | 90             | 22             | 5              | 28             | 68             | 53                         | 30                         | 8               | M8x20    | 933        | 10.9          | 6366                                        | 202                                       | 0,001070                     | 0,9                 |
|                | 40                         | 1.290                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 42                         | 1.500                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>55</b>      | 42                         | 1.230                        | 100            | 23             | 5              | 28             | 72             | 58                         | 30                         | 8               | M8x20    | 933        | 10.9          | 5730                                        | 187                                       | 0,001638                     | 1,20                |
|                | 45                         | 1.530                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 48                         | 1.860                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>62</b>      | 48                         | 1.670                        | 110            | 23             | 5              | 28             | 80             | 66                         | 30                         | 9               | M8x20    | 933        | 10.9          | 5730                                        | 187                                       | 0,001638                     | 1,20                |
|                | 50                         | 1.890                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 52                         | 2.120                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>68</b>      | 50                         | 1.870                        | 115            | 23             | 5              | 28             | 86             | 72                         | 30                         | 9               | M8x20    | 933        | 10.9          | 4982                                        | 192                                       | 0,002769                     | 1,4                 |
|                | 55                         | 2.450                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 60                         | 3.120                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>75</b>      | 55                         | 2.330                        | 138            | 25             | 5              | 30             | 100            | 79                         | 59                         | 10              | M10x025  | 933        | 10.9          | 4152                                        | 187                                       | 0,006467                     | 2,5                 |
|                | 60                         | 3.020                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 65                         | 3.800                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |

# 3371 Standard-Range

| <i>d</i><br>mm | <i>d<sub>w</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Klasse</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|---------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| <b>80</b>      | 60                         | 3.190                        | 141            | 25             | 6              | 31             | 104            | 84                         | 59                         | 10              | M10x025  | 933        | 10.9          | 4064                                        | 199                                       | 0,006922                     | 2,5                 |
|                | 65                         | 4.000                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 70                         | 4.900                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>90</b>      | 65                         | 5.400                        | 155            | 30             | 6              | 36             | 114            | 94                         | 59                         | 10              | M10x025  | 933        | 10.9          | 3697                                        | 230                                       | 0,011917                     | 3,5                 |
|                | 70                         | 6.500                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 75                         | 7.800                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>100</b>     | 70                         | 6.000                        | 170            | 34             | 6              | 40             | 124            | 104                        | 59                         | 12              | M10x025  | 933        | 10.9          | 3370                                        | 201                                       | 0,019335                     | 4,7                 |
|                | 75                         | 7.200                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 80                         | 8.500                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>110</b>     | 80                         | 10.000                       | 185            | 39             | 7              | 46             | 137            | 114                        | 100                        | 12              | M12x30   | 933        | 10.9          | 3097                                        | 209                                       | 0,030806                     | 6,3                 |
|                | 85                         | 11.700                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 90                         | 13.600                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>120</b>     | 85                         | 11.900                       | 197            | 42             | 7              | 49             | 147            | 126                        | 100                        | 12              | M12x30   | 933        | 10.9          | 2908                                        | 210                                       | 0,041964                     | 7,4                 |
|                | 90                         | 13.800                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 95                         | 15.900                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>125</b>     | 90                         | 14.400                       | 215            | 42             | 7              | 49             | 152            | 129                        | 100                        | 12              | M12x30   | 933        | 10.9          | 2665                                        | 220                                       | 0,061151                     | 9,3                 |
|                | 95                         | 16.500                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 100                        | 18.700                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>135</b>     | 95                         | 18.100                       | 230            | 46             | 8              | 54             | 165            | 139                        | 160                        | 10              | M14x040  | 933        | 10.9          | 2491                                        | 225                                       | 0,087099                     | 11,5                |
|                | 100                        | 20.600                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 110                        | 26.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>140</b>     | 100                        | 19.600                       | 230            | 46             | 8              | 54             | 172            | 146                        | 160                        | 12              | M14x040  | 933        | 10.9          | 2491                                        | 217                                       | 0,085262                     | 11,1                |
|                | 105                        | 22.100                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 115                        | 27.600                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>155</b>     | 110                        | 26.500                       | 263            | 50             | 8              | 58             | 186            | 159                        | 160                        | 12              | M14x040  | 933        | 10.9          | 2179                                        | 220                                       | 0,161225                     | 15,9                |
|                | 115                        | 29.500                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 125                        | 36.100                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>165</b>     | 120                        | 37.300                       | 290            | 56             | 10             | 66             | 198            | 169                        | 250                        | 12              | M16x040  | 933        | 10.9          | 1976                                        | 226                                       | 0,271183                     | 22,2                |
|                | 125                        | 41.200                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 135                        | 49.600                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>175</b>     | 130                        | 45.000                       | 300            | 56             | 10             | 66             | 208            | 179                        | 250                        | 12              | M16x040  | 933        | 10.9          | 1910                                        | 230                                       | 0,306754                     | 23,3                |
|                | 135                        | 49.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 145                        | 58.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>185</b>     | 140                        | 64.000                       | 320            | 71             | 11             | 82             | 222            | 191                        | 250                        | 16              | M16x050  | 933        | 10.9          | 1790                                        | 221                                       | 0,503920                     | 33,3                |
|                | 145                        | 70.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 155                        | 82.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>200</b>     | 150                        | 80.000                       | 340            | 71             | 13             | 84             | 238            | 206                        | 250                        | 16              | M16x050  | 933        | 10.9          | 1685                                        | 241                                       | 0,636412                     | 36,9                |
|                | 155                        | 87.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 165                        | 100.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>220</b>     | 160                        | 103.000                      | 370            | 93             | 14             | 107            | 270            | 230                        | 490                        | 15              | M20x060  | 933        | 10.9          | 1549                                        | 212                                       | 1,31                         | 51,5                |
|                | 170                        | 119.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 180                        | 136.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |

# 3371 Standard-Range

| <i>d</i><br>mm | <i>d<sub>w</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Klasse</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|---------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| <b>240</b>     | 170                        | 122.000                      | 405            | 95             | 14             | 109            | 288            | 248                        | 490                        | 16              | M20x060  | 933        | 10.9          | 1415                                        | 217                                       | 1,70                         | 63,9                |
|                | 180                        | 140.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 200                        | 179.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>260</b>     | 190                        | 163.000                      | 430            | 105            | 14             | 119            | 306            | 268                        | 490                        | 15              | M20x060  | 933        | 10.9          | 1332                                        | 208                                       | 2,36                         | 77,5                |
|                | 200                        | 184.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 220                        | 231.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>280</b>     | 210                        | 215.000                      | 460            | 114            | 15             | 129            | 328            | 288                        | 490                        | 16              | M20x060  | 933        | 10.9          | 1246                                        | 204                                       | 3,34                         | 94,7                |
|                | 220                        | 240.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 240                        | 295.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>300</b>     | 220                        | 270.000                      | 485            | 123            | 17             | 140            | 354            | 308                        | 820                        | 16              | M24x070  | 933        | 10.9          | 1181                                        | 215                                       | 4,40                         | 112                 |
|                | 230                        | 300.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 250                        | 363.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>320</b>     | 240                        | 301.000                      | 520            | 125            | 16             | 141            | 380            | 328                        | 820                        | 18              | M24x070  | 933        | 10.9          | 1102                                        | 197                                       | 5,93                         | 133                 |
|                | 250                        | 332.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 270                        | 398.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>340</b>     | 250                        | 390.000                      | 570            | 134            | 17             | 151            | 402            | 349                        | 820                        | 18              | M24x070  | 933        | 10.9          | 1005                                        | 223                                       | 9,35                         | 177                 |
|                | 260                        | 427.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 280                        | 506.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>350</b>     | 270                        | 493.000                      | 580            | 140            | 18             | 158            | 414            | 365                        | 820                        | 20              | M24x070  | 933        | 10.9          | 988                                         | 223                                       | 10,40                        | 190                 |
|                | 280                        | 535.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 290                        | 580.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>360</b>     | 270                        | 496.000                      | 590            | 140            | 18             | 158            | 424            | 369                        | 820                        | 20              | M24x070  | 933        | 10.9          | 971                                         | 226                                       | 11,06                        | 194                 |
|                | 280                        | 539.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 300                        | 631.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>380</b>     | 290                        | 585.000                      | 640            | 146            | 18             | 164            | 444            | 388                        | 1210                       | 18              | M27x070  | 933        | 10.9          | 895                                         | 219                                       | 16,23                        | 244                 |
|                | 300                        | 632.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 310                        | 681.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>390</b>     | 290                        | 640.000                      | 645            | 146            | 19             | 165            | 454            | 398                        | 1210                       | 18              | M27x080  | 933        | 10.9          | 888                                         | 240                                       | 16,56                        | 243                 |
|                | 300                        | 691.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 320                        | 799.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>420</b>     | 320                        | 742.000                      | 670            | 167            | 19             | 186            | 490            | 428                        | 1210                       | 18              | M27x080  | 933        | 10.9          | 855                                         | 201                                       | 21,51                        | 286                 |
|                | 330                        | 797.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 350                        | 912.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>440</b>     | 340                        | 945.000                      | 710            | 174            | 23             | 197            | 506            | 448                        | 1210                       | 21              | M27x080  | 933        | 10.9          | 807                                         | 215                                       | 28,49                        | 339                 |
|                | 350                        | 1.009.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 370                        | 1.143.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>460</b>     | 360                        | 1.104.000                    | 745            | 174            | 24             | 198            | 534            | 470                        | 1210                       | 21              | M27x090  | 933        | 10.9          | 769                                         | 223                                       | 34,62                        | 375                 |
|                | 370                        | 1.174.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 390                        | 1.320.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>480</b>     | 380                        | 1.300.000                    | 770            | 192            | 25             | 217            | 552            | 488                        | 1640                       | 20              | M30x090  | 933        | 10.9          | 744                                         | 219                                       | 43,28                        | 437                 |
|                | 390                        | 1.378.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 410                        | 1.541.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |

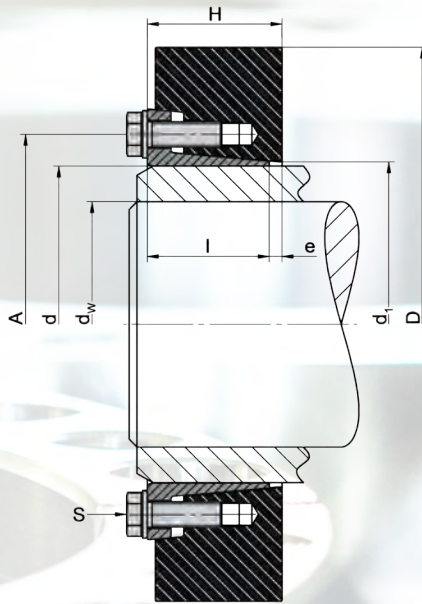
# 3371 Standard-Range

| $d$<br>mm   | $d_w$<br>mm | $M_{max}$<br>Nm | $D$<br>mm | $l$<br>mm | $e$<br>mm | $H$<br>mm | $A$<br>mm | $d_1$<br>mm | $M_A$<br>Nm | $Z$<br>Stk | $S$     | $DIN$ | $Klasse$ | $n_{max}$<br>min <sup>-1</sup> | $p_N$<br>N/mm <sup>2</sup> | $I$<br>kgm <sup>2</sup> | Weight<br>kg |
|-------------|-------------|-----------------|-----------|-----------|-----------|-----------|-----------|-------------|-------------|------------|---------|-------|----------|--------------------------------|----------------------------|-------------------------|--------------|
| <b>500</b>  | 400         | 1.496.000       | 800       | 192       | 26        | 218       | 572       | 508         | 1640        | 21         | M30x090 | 933   | 10.9     | 716                            | 219                        | 50,34                   | 470          |
|             | 410         | 1.581.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 430         | 1.759.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
| <b>530</b>  | 430         | 1.930.000       | 845       | 213       | 30        | 243       | 606       | 541         | 1640        | 24         | M30x100 | 933   | 10.9     | 678                            | 220                        | 69,62                   | 576          |
|             | 440         | 2.031.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 460         | 2.243.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
| <b>560</b>  | 450         | 2.097.000       | 900       | 213       | 30        | 243       | 632       | 568         | 1640        | 24         | M30x100 | 933   | 10.9     | 637                            | 218                        | 90,11                   | 660          |
|             | 460         | 2.201.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 480         | 2.420.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
| <b>590</b>  | 470         | 2.593.000       | 950       | 230       | 31        | 261       | 664       | 598         | 1640        | 28         | M30x100 | 933   | 10.9     | 603                            | 228                        | 120,87                  | 821          |
|             | 480         | 2.715.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 500         | 2.970.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
| <b>620</b>  | 500         | 2.904.000       | 960       | 254       | 33        | 287       | 706       | 630         | 1640        | 28         | M30x100 | 933   | 10.9     | 597                            | 204                        | 134,96                  | 872          |
|             | 520         | 3.169.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 540         | 3.447.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
| <b>660</b>  | 530         | 3.329.000       | 1020      | 260       | 35        | 295       | 748       | 670         | 2200        | 24         | M33x110 | 933   | 10.9     | 562                            | 204                        | 175,74                  | 1004         |
|             | 550         | 3.614.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 570         | 3.911.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
| <b>700</b>  | 560         | 3.804.000       | 1080      | 260       | 37        | 297       | 782       | 710         | 2200        | 28         | M33x120 | 933   | 10.9     | 531                            | 208                        | 220,57                  | 1141         |
|             | 580         | 4.109.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 600         | 4.427.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
| <b>750</b>  | 600         | 4.801.000       | 1150      | 278       | 41        | 319       | 848       | 760         | 2200        | 32         | M33x120 | 933   | 10.9     | 498                            | 213                        | 301,41                  | 1346         |
|             | 620         | 5.157.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 650         | 5.716.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
| <b>800</b>  | 640         | 5.620.000       | 1230      | 296       | 42        | 338       | 900       | 810         | 2200        | 32         | M33x130 | 933   | 10.9     | 466                            | 207                        | 420,80                  | 1646         |
|             | 660         | 6.012.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 700         | 6.839.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
| <b>850</b>  | 650         | 5.942.000       | 1300      | 315       | 44        | 359       | 950       | 860         | 2850        | 30         | M36x130 | 933   | 10.9     | 441                            | 201                        | 555,97                  | 1942         |
|             | 700         | 6.994.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 730         | 7.669.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
| <b>900</b>  | 700         | 6.967.000       | 1350      | 332       | 47        | 379       | 1000      | 915         | 2850        | 32         | M36x140 | 933   | 10.9     | 424                            | 192                        | 668,94                  | 2142         |
|             | 730         | 7.640.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 760         | 8.345.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
| <b>950</b>  | 750         | 8.295.000       | 1400      | 360       | 49        | 409       | 1050      | 965         | 2850        | 36         | M36x140 | 933   | 10.9     | 409                            | 183                        | 823,40                  | 2425         |
|             | 780         | 9.041.000       |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 820         | 10.088.000      |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
| <b>1000</b> | 800         | 9.568.000       | 1420      | 380       | 60        | 440       | 1100      | 1020        | 2850        | 36         | M36x160 | 933   | 10.9     | 402                            | 175                        | 880,02                  | 2740         |
|             | 830         | 10.380.000      |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 860         | 11.228.000      |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
| <b>1050</b> | 850         | 11.241.000      | 1520      | 400       | 58        | 458       | 1150      | 1070        | 2850        | 36         | M36x160 | 933   | 10.9     | 377                            | 173                        | 1245,24                 | 3078         |
|             | 880         | 12.135.000      |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |
|             | 920         | 13.383.000      |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |              |

# 3371 Standard-Range

| $d$<br>mm   | $d_w$<br>mm | $M_{max}$<br>Nm | $D$<br>mm | $l$<br>mm | $e$<br>mm | $H$<br>mm | $A$<br>mm | $d_1$<br>mm | $M_A$<br>Nm | $Z$<br>Stk | $S$     | $DIN$ | $Klasse$ | $n_{max}$<br>min <sup>-1</sup> | $p_N$<br>N/mm <sup>2</sup> | $I$<br>kgm <sup>2</sup> | $Weight$<br>kg |
|-------------|-------------|-----------------|-----------|-----------|-----------|-----------|-----------|-------------|-------------|------------|---------|-------|----------|--------------------------------|----------------------------|-------------------------|----------------|
| <b>1100</b> | 900         | 13.045.000      | 1570      | 430       | 61        | 491       | 1200      | 1120        | 2850        | 40         | M36x170 | 933   | 10.9     | 365                            | 166                        | 1496,97                 | 3438           |
|             | 930         | 14.023.000      |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |                |
|             | 960         | 15.038.000      |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |                |
| <b>1200</b> | 940         | 12.902.000      | 1630      | 460       | 66        | 526       | 1300      | 1220        | 2850        | 40         | M36x180 | 933   | 10.9     | 352                            | 143                        | 1730,72                 | 3566           |
|             | 1000        | 14.803.000      |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |                |
|             | 1050        | 16.493.000      |           |           |           |           |           |             |             |            |         |       |          |                                |                            |                         |                |

# 3381 Standard-Range (strengthened)



## Used symbols

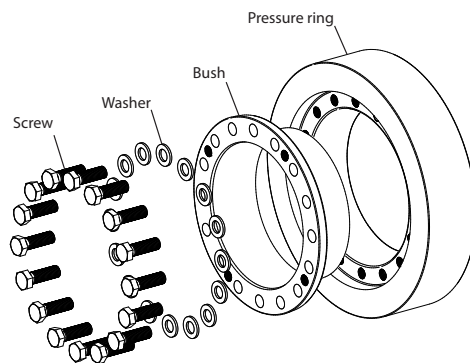
|                  |                      |                                          |
|------------------|----------------------|------------------------------------------|
| d                | [mm]                 | Nominal diameter of the shrink disc      |
| d <sub>w</sub>   | [mm]                 | Shaft diameter                           |
| M <sub>max</sub> | [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 <sub>1</sub>   | [mm]                 | Attachment size                          |
| M <sub>A</sub>   | [Nm]                 | Tightening torque of the clamping screws |
| Z                |                      | Number of clamping screws                |
| S                |                      | Size of the clamping screws              |
| n <sub>max</sub> | [min <sup>-1</sup> ] | Permitted rotational frequency           |
| p <sub>N</sub>   | [N/mm <sup>2</sup> ] | Average pressure to the hub              |
| I                | [kgm <sup>2</sup> ]  | Moment of inertia                        |

## Design of the shrink disc

|         |                                     |
|---------|-------------------------------------|
| d < 120 | Discs lightly oiled without washers |
| d ≥ 120 | Disc painted with washers           |
| d ≥ 200 | Cone of bush not slit               |

Dimensions H & e in unlocked position

| min. yield strength Rp0,2 | N/mm <sup>2</sup> |
|---------------------------|-------------------|
| solid shaft               | 350               |
| Hub                       | 450               |



Ordering information: : TAS 3381-d (z.B.: TAS 3381-390 ... further sizes on request)

# 3381 Standard-Range (strengthened)

| <i>d</i><br>mm | <i>d<sub>w</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Klasse</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|---------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| <b>50</b>      | 38                         | 1.500                        | 90             | 22             | 5              | 27             | 68             | 53                         | 35                         | 8               | M8x20    | 933        | 12.9          | 6366                                        | 265                                       | 0,001026                     | 0,9                 |
|                | 40                         | 1.700                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 42                         | 2.000                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>55</b>      | 42                         | 1.600                        | 100            | 23             | 5              | 28             | 72             | 58                         | 35                         | 8               | M8x20    | 933        | 12.9          | 5730                                        | 225                                       | 0,001638                     | 1,2                 |
|                | 45                         | 2.000                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 48                         | 2.400                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>62</b>      | 48                         | 2.200                        | 110            | 23             | 5              | 28             | 80             | 66                         | 35                         | 9               | M8x20    | 933        | 12.9          | 5209                                        | 225                                       | 0,002374                     | 1,4                 |
|                | 50                         | 2.500                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 52                         | 2.700                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>68</b>      | 50                         | 2.400                        | 115            | 23             | 6              | 29             | 86             | 72                         | 35                         | 9               | M8x20    | 933        | 12.9          | 4982                                        | 216                                       | 0,002769                     | 1,4                 |
|                | 55                         | 3.000                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 60                         | 3.800                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>75</b>      | 55                         | 3.700                        | 138            | 25             | 6              | 31             | 100            | 79                         | 70                         | 10              | M10x025  | 933        | 12.9          | 4152                                        | 264                                       | 0,006467                     | 2,5                 |
|                | 60                         | 4.700                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 65                         | 5.800                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>80</b>      | 60                         | 4.200                        | 141            | 25             | 6              | 31             | 104            | 84                         | 70                         | 10              | M10x025  | 933        | 12.9          | 4064                                        | 247                                       | 0,006922                     | 2,5                 |
|                | 65                         | 5.200                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 70                         | 6.300                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>90</b>      | 65                         | 5.900                        | 155            | 30             | 6              | 36             | 114            | 94                         | 70                         | 10              | M10x025  | 933        | 12.9          | 3697                                        | 247                                       | 0,011917                     | 3,5                 |
|                | 70                         | 7.200                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 75                         | 8.500                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>100</b>     | 70                         | 7.400                        | 170            | 34             | 7              | 41             | 124            | 104                        | 70                         | 12              | M10x025  | 933        | 12.9          | 3370                                        | 237                                       | 0,019335                     | 4,7                 |
|                | 75                         | 8.900                        |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 80                         | 10.400                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>110</b>     | 80                         | 12.600                       | 185            | 39             | 7              | 46             | 137            | 114                        | 120                        | 12              | M12x040  | 933        | 12.9          | 3097                                        | 253                                       | 0,030806                     | 6,3                 |
|                | 85                         | 14.600                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 90                         | 16.900                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>120</b>     | 85                         | 13.600                       | 197            | 42             | 7              | 49             | 147            | 126                        | 120                        | 12              | M12x040  | 933        | 12.9          | 2908                                        | 234                                       | 0,041964                     | 7,8                 |
|                | 90                         | 15.700                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 95                         | 18.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>125</b>     | 90                         | 16.400                       | 215            | 42             | 7              | 49             | 152            | 129                        | 120                        | 12              | M12x040  | 933        | 12.9          | 2665                                        | 245                                       | 0,061151                     | 9,3                 |
|                | 95                         | 18.800                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 100                        | 21.300                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>135</b>     | 95                         | 20.300                       | 230            | 46             | 8              | 54             | 165            | 139                        | 190                        | 10              | M14x040  | 933        | 12.9          | 2491                                        | 247                                       | 0,087099                     | 11,5                |
|                | 100                        | 23.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 110                        | 29.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>140</b>     | 100                        | 23.000                       | 230            | 46             | 9              | 55             | 172            | 146                        | 190                        | 12              | M14x040  | 933        | 12.9          | 2491                                        | 249                                       | 0,085262                     | 11,5                |
|                | 105                        | 25.900                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 115                        | 32.200                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>155</b>     | 110                        | 31.100                       | 263            | 50             | 9              | 59             | 186            | 159                        | 190                        | 12              | M14x040  | 933        | 12.9          | 2179                                        | 249                                       | 0,161225                     | 16                  |
|                | 115                        | 34.600                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 125                        | 42.100                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |

# 3381 Standard-Range (strengthened)

| <i>d</i><br>mm | <i>d<sub>w</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Klasse</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|---------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| <b>165</b>     | 120                        | 44.000                       | 290            | 56             | 10             | 66             | 198            | 169                        | 290                        | 12              | M16x040  | 933        | 12.9          | 1976                                        | 261                                       | 0,271183                     | 23                  |
|                | 125                        | 48.500                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 135                        | 58.100                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>175</b>     | 130                        | 54.000                       | 300            | 56             | 11             | 67             | 208            | 179                        | 290                        | 12              | M16x050  | 933        | 12.9          | 1910                                        | 271                                       | 0,306754                     | 24                  |
|                | 135                        | 59.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 145                        | 70.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>185</b>     | 140                        | 81.000                       | 320            | 71             | 12             | 83             | 222            | 191                        | 290                        | 16              | M16x050  | 933        | 12.9          | 1790                                        | 272                                       | 0,503920                     | 34                  |
|                | 145                        | 88.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 155                        | 102.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>200</b>     | 150                        | 96.000                       | 340            | 71             | 14             | 85             | 238            | 206                        | 290                        | 12              | M16x050  | 933        | 12.9          | 1685                                        | 283                                       | 0,636412                     | 37                  |
|                | 155                        | 103.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 165                        | 119.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>220</b>     | 160                        | 129.000                      | 370            | 93             | 15             | 108            | 270            | 230                        | 570                        | 15              | M20x060  | 933        | 12.9          | 1549                                        | 259                                       | 1,16                         | 52                  |
|                | 170                        | 149.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 180                        | 170.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>240</b>     | 170                        | 151.000                      | 405            | 95             | 15             | 110            | 288            | 248                        | 570                        | 16              | M20x060  | 933        | 12.9          | 1415                                        | 262                                       | 1,70                         | 64                  |
|                | 180                        | 172.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 200                        | 220.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>260</b>     | 190                        | 212.000                      | 430            | 105            | 17             | 122            | 306            | 268                        | 570                        | 15              | M20x060  | 933        | 12.9          | 1332                                        | 264                                       | 2,36                         | 78                  |
|                | 200                        | 239.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 220                        | 298.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>280</b>     | 210                        | 279.000                      | 46             | 114            | 17             | 131            | 328            | 288                        | 570                        | 16              | M20x060  | 933        | 12.9          | 1246                                        | 258                                       | 3,34                         | 95                  |
|                | 220                        | 311.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 240                        | 379.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>300</b>     | 220                        | 332.000                      | 485            | 123            | 19             | 142            | 354            | 308                        | 900                        | 16              | M24x070  | 933        | 12.9          | 1181                                        | 260                                       | 4,40                         | 113                 |
|                | 230                        | 367.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 250                        | 444.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>320</b>     | 240                        | 404.000                      | 520            | 125            | 19             | 144            | 380            | 328                        | 900                        | 18              | M24x070  | 933        | 12.9          | 1102                                        | 258                                       | 5,93                         | 133                 |
|                | 250                        | 444.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 270                        | 530.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>340</b>     | 250                        | 489.000                      | 570            | 134            | 19             | 153            | 402            | 349                        | 900                        | 18              | M24x070  | 933        | 12.9          | 1005                                        | 268                                       | 9,35                         | 178                 |
|                | 260                        | 534.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 280                        | 632.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>350</b>     | 270                        | 625.000                      | 580            | 140            | 21             | 161            | 414            | 365                        | 900                        | 20              | M24x070  | 933        | 12.9          | 988                                         | 276                                       | 10,40                        | 185                 |
|                | 280                        | 670.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 290                        | 730.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>360</b>     | 270                        | 625.000                      | 590            | 140            | 21             | 161            | 424            | 369                        | 900                        | 20              | M24x080  | 933        | 12.9          | 971                                         | 279                                       | 11,06                        | 195                 |
|                | 280                        | 678.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 300                        | 791.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>390</b>     | 290                        | 780.000                      | 650            | 146            | 21             | 167            | 454            | 398                        | 1310                       | 18              | M27x080  | 933        | 12.9          | 882                                         | 288                                       | 17,16                        | 249                 |
|                | 300                        | 845.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 320                        | 975.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |

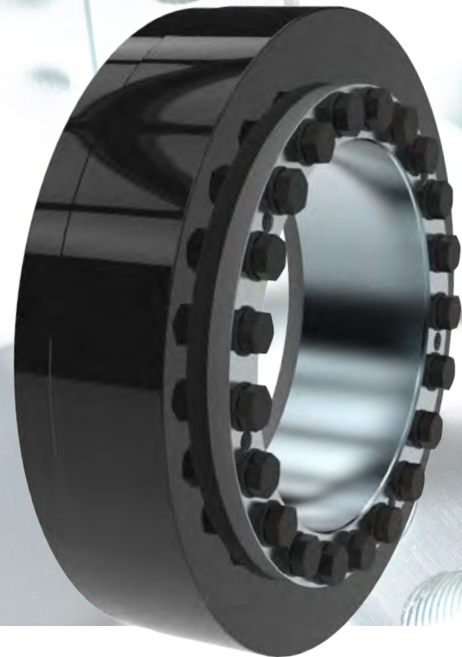
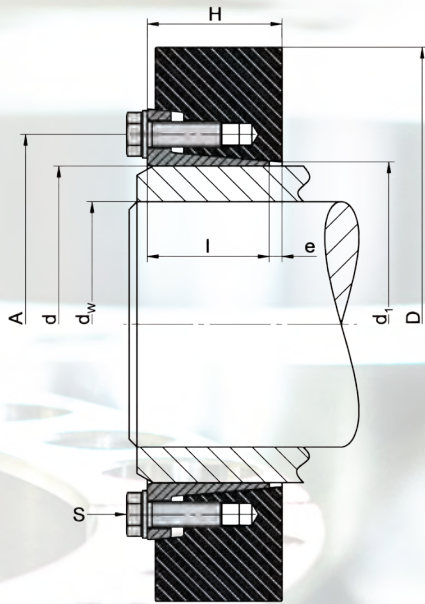
# 3381 Standard-Range (strengthened)

| <i>d</i><br>mm | <i>d<sub>w</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Klasse</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|---------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| <b>420</b>     | 320                        | 970.000                      | 680            | 167            | 22             | 189            | 490            | 428                        | 1310                       | 18              | M27x080  | 933        | 12.9          | 843                                         | 258                                       | 23,06                        | 300                 |
|                | 330                        | 1.040.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 350                        | 1.190.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>440</b>     | 340                        | 1.215.000                    | 725            | 174            | 26             | 200            | 506            | 448                        | 1310                       | 21              | M27x090  | 933        | 12.9          | 791                                         | 272                                       | 31,40                        | 363                 |
|                | 350                        | 1.295.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 370                        | 1.465.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>460</b>     | 360                        | 1.400.000                    | 745            | 174            | 28             | 202            | 534            | 470                        | 1310                       | 21              | M27x100  | 933        | 12.9          | 769                                         | 277                                       | 34,62                        | 376                 |
|                | 370                        | 1.485.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 390                        | 1.670.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>480</b>     | 380                        | 1.660.000                    | 790            | 192            | 27             | 219            | 552            | 488                        | 1800                       | 20              | M30x100  | 933        | 12.9          | 726                                         | 267                                       | 48,79                        | 476                 |
|                | 390                        | 1.760.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 410                        | 1.965.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>500</b>     | 400                        | 1.890.000                    | 835            | 192            | 28             | 220            | 572            | 508                        | 1800                       | 21              | M30x100  | 933        | 12.9          | 687                                         | 273                                       | 61,43                        | 540                 |
|                | 410                        | 1.995.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 430                        | 2.217.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>530</b>     | 430                        | 2.400.000                    | 890            | 213            | 31             | 244            | 606            | 541                        | 1800                       | 24              | M30x100  | 933        | 12.9          | 644                                         | 270                                       | 88,61                        | 680                 |
|                | 440                        | 2.525.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 460                        | 2.785.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>560</b>     | 450                        | 2.550.000                    | 920            | 213            | 32             | 245            | 632            | 568                        | 1800                       | 24              | M30x100  | 933        | 12.9          | 623                                         | 262                                       | 99,85                        | 710                 |
|                | 460                        | 2.675.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 480                        | 2.935.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>590</b>     | 470                        | 2.970.000                    | 960            | 230            | 33             | 263            | 664            | 598                        | 1800                       | 28              | M30x110  | 933        | 12.9          | 597                                         | 259                                       | 126,94                       | 830                 |
|                | 480                        | 3.110.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 500                        | 3.400.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>620</b>     | 500                        | 3.405.000                    | 970            | 254            | 35             | 289            | 706            | 630                        | 1800                       | 28              | M30x110  | 933        | 12.9          | 591                                         | 238                                       | 141,87                       | 900                 |
|                | 520                        | 3.715.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 540                        | 4.040.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>660</b>     | 530                        | 4.035.000                    | 1060           | 260            | 36             | 296            | 748            | 670                        | 2400                       | 24              | M33x120  | 933        | 12.9          | 541                                         | 245                                       | 211,19                       | 1120                |
|                | 550                        | 4.375.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 570                        | 4.730.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>700</b>     | 560                        | 4.605.000                    | 1140           | 260            | 38             | 298            | 782            | 710                        | 2400                       | 28              | M33x120  | 933        | 12.9          | 503                                         | 250                                       | 285,23                       | 1320                |
|                | 580                        | 4.970.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 600                        | 5.350.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>750</b>     | 600                        | 5.810.000                    | 1200           | 278            | 43             | 321            | 848            | 760                        | 2400                       | 32              | M33x130  | 933        | 12.9          | 478                                         | 256                                       | 369,70                       | 1540                |
|                | 620                        | 6.231.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 650                        | 6.900.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>800</b>     | 640                        | 6.800.000                    | 1270           | 296            | 45             | 341            | 900            | 810                        | 2400                       | 32              | M33x130  | 933        | 12.9          | 451                                         | 248                                       | 490,80                       | 1835                |
|                | 660                        | 7.270.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 700                        | 8.250.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>850</b>     | 650                        | 7.215.000                    | 1340           | 315            | 47             | 362            | 950            | 860                        | 3100                       | 30              | M36x140  | 933        | 12.9          | 428                                         | 242                                       | 643,65                       | 2154                |
|                | 700                        | 8.475.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 730                        | 9.275.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |

# 3381 Standard-Range (strengthened)

| <i>d</i><br>mm | <i>d<sub>W</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Klasse</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|---------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| <b>900</b>     | 700                        | 8.455.000                    | 1400           | 332            | 49             | 381            | 1000           | 915                        | 3100                       | 32              | M36x140  | 933        | 12.9          | 409                                         | 231                                       | 799,46                       | 2433                |
|                | 730                        | 9.260.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 760                        | 10.100.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>950</b>     | 750                        | 10.070.000                   | 1450           | 360            | 51             | 411            | 1050           | 965                        | 3100                       | 36              | M36x150  | 933        | 12.9          | 395                                         | 220                                       | 980,86                       | 2752                |
|                | 780                        | 10.950.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 820                        | 12.200.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>1000</b>    | 800                        | 11.300.000                   | 1470           | 380            | 61             | 441            | 1100           | 1020                       | 3100                       | 36              | M36x170  | 933        | 12.9          | 390                                         | 205                                       | 1053,28                      | 2700                |
|                | 830                        | 12.300.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 860                        | 13.200.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>1050</b>    | 850                        | 13.000.000                   | 1520           | 400            | 65             | 465            | 1150           | 1070                       | 3100                       | 40              | M36x170  | 933        | 12.9          | 377                                         | 199                                       | 1245,24                      | 3200                |
|                | 880                        | 14.000.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 920                        | 15.400.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |

# 3391 Heavy-Range



## Used symbols

|                  |                      |                                          |
|------------------|----------------------|------------------------------------------|
| d                | [mm]                 | Nominal diameter of the shrink disc      |
| d <sub>w</sub>   | [mm]                 | Shaft diameter                           |
| M <sub>max</sub> | [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 <sub>1</sub>   | [mm]                 | Attachment size                          |
| M <sub>A</sub>   | [Nm]                 | Tightening torque of the clamping screws |
| Z                |                      | Number of clamping screws                |
| S                |                      | Size of the clamping screws              |
| n <sub>max</sub> | [min <sup>-1</sup> ] | Permitted rotational frequency           |
| p <sub>N</sub>   | [N/mm <sup>2</sup> ] | Average pressure to the hub              |
| I                | [kgm <sup>2</sup> ]  | Moment of inertia                        |

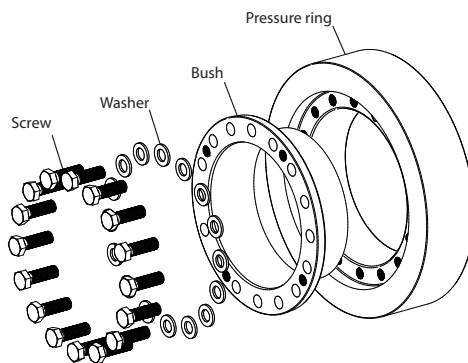
## Design of the shrink disc

Disc painted  
with washers

d ≥ 200 Cone of bush not slit

Dimensions H & e in unlocked  
position

| min. yield strength Rp0,2 | N/mm <sup>2</sup> |
|---------------------------|-------------------|
| solid shaft               | 290               |
| Hub                       | 350               |



Ordering information: : TAS 3391-d (z.B.: TAS 3391-390 ... further sizes on request)

# 3391 Heavy-Range

| <i>d</i><br>mm | <i>d<sub>w</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Klasse</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|---------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| 140            | 100                        | 26.000                       | 230            | 60             | 10             | 70             | 174            | 144                        | 250                        | 8               | M16x040  | 933        | 10.9          | 2491                                        | 221                                       | 0,110659                     | 13,6                |
|                | 105                        | 30.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 115                        | 37.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 155            | 110                        | 36.000                       | 263            | 66             | 10             | 76             | 194            | 160                        | 250                        | 9               | M16x040  | 933        | 10.9          | 2179                                        | 225                                       | 0,211805                     | 19,8                |
|                | 115                        | 40.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 125                        | 48.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 165            | 120                        | 50.000                       | 290            | 72             | 10             | 82             | 200            | 169                        | 250                        | 12              | M16x040  | 933        | 10.9          | 1976                                        | 234                                       | 0,347305                     | 27,7                |
|                | 125                        | 55.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 135                        | 66.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 175            | 130                        | 61.000                       | 300            | 72             | 11             | 83             | 210            | 179                        | 250                        | 12              | M16x050  | 933        | 10.9          | 1910                                        | 241                                       | 0,392860                     | 29                  |
|                | 135                        | 67.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 145                        | 79.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 185            | 140                        | 89.000                       | 320            | 92             | 12             | 104            | 232            | 190                        | 490                        | 12              | M20x050  | 933        | 10.9          | 1790                                        | 235                                       | 0,650897                     | 40,1                |
|                | 145                        | 96.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 155                        | 113.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 200            | 150                        | 104.000                      | 340            | 92             | 13             | 105            | 246            | 204                        | 490                        | 12              | M20x050  | 933        | 10.9          | 1685                                        | 242                                       | 0,822032                     | 44,5                |
|                | 155                        | 113.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 165                        | 130.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 220            | 160                        | 127.000                      | 370            | 117            | 13             | 130            | 266            | 224                        | 490                        | 15              | M20x050  | 933        | 10.9          | 1549                                        | 209                                       | 1,45                         | 65,3                |
|                | 170                        | 137.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 180                        | 169.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 240            | 170                        | 157.000                      | 405            | 122            | 13             | 135            | 286            | 244                        | 490                        | 16              | M20x060  | 933        | 10.9          | 1415                                        | 218                                       | 2,18                         | 81,6                |
|                | 180                        | 180.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 200                        | 230.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 260            | 190                        | 230.000                      | 430            | 136            | 17             | 153            | 306            | 265                        | 490                        | 18              | M20x060  | 933        | 10.9          | 1332                                        | 225                                       | 3,05                         | 101                 |
|                | 200                        | 260.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 220                        | 325.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 280            | 210                        | 306.000                      | 460            | 148            | 18             | 166            | 334            | 285                        | 840                        | 16              | M24x70   | 933        | 10.9          | 1246                                        | 222                                       | 4,32                         | 126                 |
|                | 220                        | 342.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 240                        | 418.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 300            | 220                        | 360.000                      | 485            | 152            | 19             | 171            | 354            | 305                        | 840                        | 16              | M24x70   | 933        | 10.9          | 1181                                        | 209                                       | 5,43                         | 140                 |
|                | 230                        | 398.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 250                        | 437.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 320            | 240                        | 430.000                      | 520            | 160            | 20             | 180            | 374            | 325                        | 840                        | 18              | M24x70   | 933        | 10.9          | 1102                                        | 218                                       | 7,58                         | 171                 |
|                | 250                        | 473.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 270                        | 565.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 340            | 250                        | 551.000                      | 560            | 176            | 22             | 198            | 404            | 345                        | 1250                       | 18              | M27x080  | 933        | 10.9          | 1023                                        | 233                                       | 11,37                        | 221                 |
|                | 260                        | 603.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 280                        | 714.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 350            | 270                        | 600.000                      | 570            | 180            | 22             | 202            | 414            | 361                        | 1250                       | 18              | M27x080  | 933        | 10.9          | 1005                                        | 212                                       | 12,32                        | 236                 |
|                | 280                        | 650.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 290                        | 710.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |

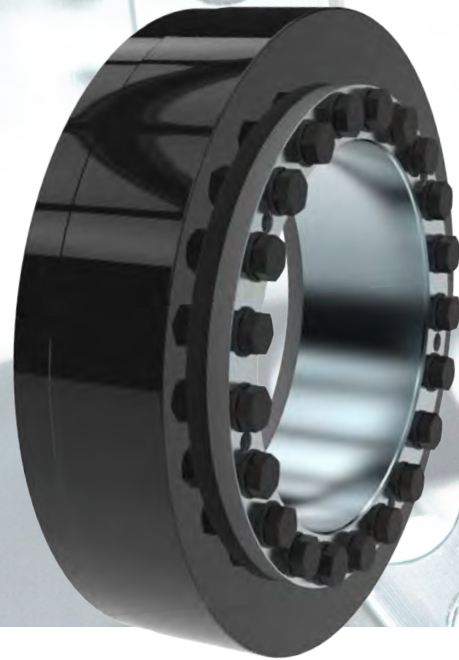
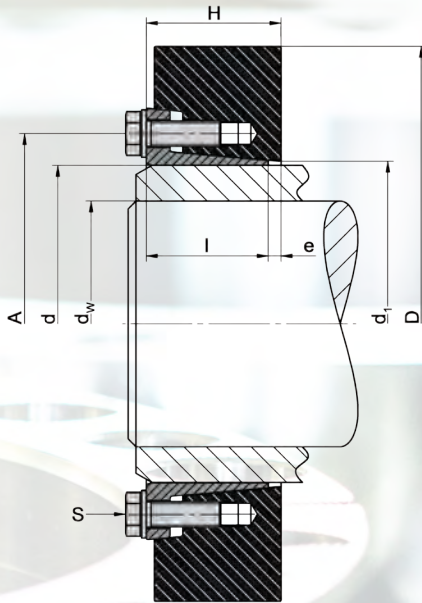
# 3391 Heavy-Range

| <i>d</i><br>mm | <i>d<sub>w</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Klasse</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|---------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| <b>360</b>     | 270                        | 671.000                      | 590            | 180            | 22             | 202            | 424            | 365                        | 1250                       | 18              | M27x080  | 933        | 10.9          | 971                                         | 236                                       | 14,20                        | 249                 |
|                | 280                        | 729.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 300                        | 852.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>390</b>     | 290                        | 850.000                      | 650            | 190            | 25             | 215            | 456            | 398                        | 1250                       | 20              | M27x090  | 933        | 10.9          | 881,473531                                  | 244,253884                                | 22,30                        | 324                 |
|                | 300                        | 917.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 320                        | 1.061.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>420</b>     | 320                        | 1.008.000                    | 670            | 214            | 26             | 240            | 486            | 428                        | 1250                       | 21              | M27x090  | 933        | 10.9          | 855,1608883                                 | 212,2902805                               | 27,53                        | 367                 |
|                | 330                        | 1.082.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 350                        | 1.237.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>440</b>     | 340                        | 1.218.000                    | 740            | 225            | 26             | 251            | 514            | 448                        | 1640                       | 21              | M30x090  | 933        | 10.9          | 774,2672907                                 | 235,709111                                | 44,56                        | 508                 |
|                | 350                        | 1.301.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 370                        | 1.475.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>460</b>     | 360                        | 1.402.000                    | 750            | 226            | 27             | 253            | 534            | 468                        | 1640                       | 21              | M30x100  | 933        | 10.9          | 763,9437268                                 | 217,1658389                               | 46,33                        | 485                 |
|                | 370                        | 1.491.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 390                        | 1.678.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>480</b>     | 380                        | 1.712.000                    | 760            | 246            | 29             | 275            | 552            | 488                        | 1640                       | 21              | M30x100  | 933        | 10.9          | 753,8918357                                 | 217,3324297                               | 52,07                        | 537                 |
|                | 390                        | 1.814.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 410                        | 2.028.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>500</b>     | 400                        | 1.993.000                    | 800            | 246            | 30             | 276            | 572            | 508                        | 1640                       | 24              | M30x100  | 933        | 10.9          | 716,1972439                                 | 226,8337117                               | 64,42                        | 604                 |
|                | 410                        | 2.106.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 430                        | 2.342.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>530</b>     | 430                        | 2.549.000                    | 860            | 276            | 32             | 312            | 616            | 538                        | 2210                       | 21              | M33x110  | 933        | 10.9          | 666,2299943                                 | 223,395598                                | 99,19                        | 794                 |
|                | 440                        | 2.683.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 460                        | 2.962.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>560</b>     | 450                        | 2.849.000                    | 900            | 280            | 34             | 314            | 646            | 568                        | 2210                       | 24              | M33x110  | 933        | 10.9          | 636,6197724                                 | 224,5460525                               | 118,19                       | 867                 |
|                | 460                        | 2.990.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 480                        | 3.285.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>590</b>     | 470                        | 3.310.000                    | 960            | 296            | 34             | 330            | 672            | 600                        | 2210                       | 24              | M33x110  | 933        | 10.9          | 596,8310366                                 | 225,9241121                               | 163,05                       | 1071                |
|                | 480                        | 3.467.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 500                        | 3.793.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>620</b>     | 500                        | 4.069.000                    | 1000           | 330            | 35             | 365            | 706            | 630                        | 2210                       | 27              | M33x110  | 933        | 10.9          | 572,9577951                                 | 219,3400416                               | 212,60                       | 1279                |
|                | 520                        | 4.251.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 540                        | 4.824.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>660</b>     | 530                        | 4.746.000                    | 1070           | 334            | 38             | 372            | 750            | 670                        | 2850                       | 27              | M36x120  | 933        | 10.9          | 535,4745749                                 | 225,3140418                               | 283,03                       | 1475                |
|                | 550                        | 4.944.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 570                        | 5.566.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>700</b>     | 560                        | 5.316.000                    | 1070           | 334            | 45             | 379            | 802            | 710                        | 2850                       | 27              | M36x130  | 933        | 10.9          | 535,4745749                                 | 225,5805788                               | 270,32                       | 1387                |
|                | 580                        | 5.525.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 600                        | 6.179.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>750</b>     | 600                        | 6.326.000                    | 1170           | 360            | 43             | 413            | 852            | 760                        | 2850                       | 30              | M36x130  | 933        | 10.9          | 489,7075172                                 | 216,6424012                               | 435,35                       | 1810                |
|                | 620                        | 6.794.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 650                        | 7.530.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |

# 3391 Heavy-Range

| <i>d</i><br>mm | <i>d<sub>W</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Klasse</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|---------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| <b>800</b>     | 640                        | 7.358.000                    | 1280           | 360            | 43             | 403            | 900            | 810                        | 2850                       | 35              | M36x130  | 933        | 10.9          | 447,6232774                                 | 221,6397391                               | 618,75                       | 2290                |
|                | 660                        | 7.871.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 700                        | 8.952.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>850</b>     | 650                        | 7.700.000                    | 1360           | 380            | 44             | 424            | 950            | 860                        | 2850                       | 36              | M36x130  | 933        | 10.9          | 421,2924964                                 | 214,6803652                               | 832,12                       | 2588                |
|                | 700                        | 9.000.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 730                        | 10.000.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>900</b>     | 700                        | 9.000.000                    | 1400           | 400            | 47             | 447            | 1010           | 912                        | 2850                       | 38              | M36x140  | 933        | 10.9          | 409,255568                                  | 204,717819                                | 962,23                       | 2779                |
|                | 730                        | 9.900.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 760                        | 10.800.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>950</b>     | 750                        | 11.300.000                   | 1460           | 430            | 52             | 482            | 1050           | 970                        | 2850                       | 44              | M36x150  | 933        | 10.9          | 392,436846                                  | 207,0315436                               | 1210,53                      | 3192                |
|                | 780                        | 12.300.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 820                        | 13.700.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>1000</b>    | 800                        | 13.000.000                   | 1500           | 460            | 57             | 487            | 1050           | 1020                       | 2850                       | 44              | M36x160  | 933        | 10.9          | 382                                         | 195                                       | 1318,72                      | 3246                |
|                | 830                        | 14.100.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 860                        | 15.200.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>1050</b>    | 850                        | 13.800.000                   | 1530           | 480            | 58             | 538            | 1160           | 1070                       | 2850                       | 44              | M36x160  | 933        | 10.9          | 374                                         | 176                                       | 1544,43                      | 3588                |
|                | 880                        | 14.900.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 920                        | 16.300.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |

# 3393 Heavy-Range (strengthened)



## Used symbols

|                  |                      |                                          |
|------------------|----------------------|------------------------------------------|
| d                | [mm]                 | Nominal diameter of the shrink disc      |
| d <sub>w</sub>   | [mm]                 | Shaft diameter                           |
| M <sub>max</sub> | [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 <sub>1</sub>   | [mm]                 | Attachment size                          |
| M <sub>A</sub>   | [Nm]                 | Tightening torque of the clamping screws |
| Z                |                      | Number of clamping screws                |
| S                |                      | Size of the clamping screws              |
| n <sub>max</sub> | [min <sup>-1</sup> ] | Permitted rotational frequency           |
| p <sub>N</sub>   | [N/mm <sup>2</sup> ] | Average pressure to the hub              |
| I                | [kgm <sup>2</sup> ]  | Moment of inertia                        |

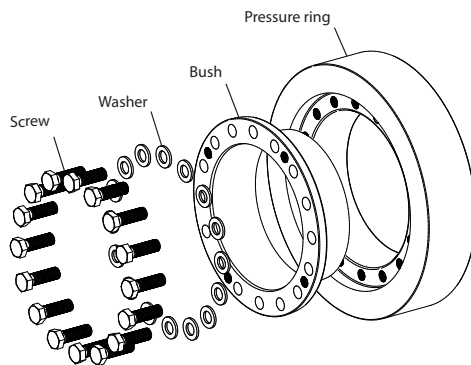
## Design of the shrink disc

Disc painted  
with washers

d ≥ 200 Cone of bush not slit

Dimensions H & e in unlocked  
position

| min. yield strength Rp0,2 | N/mm <sup>2</sup> |
|---------------------------|-------------------|
| solid shaft               | 350               |
| Hub                       | 450               |



Ordering information: TAS 3393 - d (z.B.: TAS 3393-390 ... further sizes on request)

# 3393 Heavy-Range (strengthened)

| <i>d</i><br>mm | <i>d<sub>w</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Klasse</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|---------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| 140            | 100                        | 30.000                       | 240            | 60             | 10             | 70             | 174            | 144                        | 290                        | 8               | M16x040  | 933        | 12.9          | 2387                                        | 249                                       | 0,134464                     | 15,5                |
|                | 105                        | 34.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 115                        | 43.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 155            | 110                        | 45.000                       | 263            | 66             | 11             | 77             | 194            | 160                        | 290                        | 9               | M16x045  | 933        | 12.9          | 2179                                        | 273                                       | 0,211805                     | 20                  |
|                | 115                        | 50.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 125                        | 61.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 165            | 120                        | 64.000                       | 290            | 72             | 11             | 83             | 200            | 169                        | 290                        | 12              | M16x045  | 933        | 12.9          | 1976                                        | 291                                       | 0,347305                     | 28                  |
|                | 125                        | 70.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 135                        | 84.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 175            | 130                        | 74.000                       | 300            | 72             | 12             | 84             | 210            | 179                        | 290                        | 12              | M16x045  | 933        | 12.9          | 1910                                        | 287                                       | 0,392860                     | 29                  |
|                | 135                        | 80.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 145                        | 95.000                       |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 185            | 140                        | 106.000                      | 320            | 92             | 13             | 105            | 232            | 189                        | 570                        | 12              | M20x050  | 933        | 12.9          | 1790                                        | 275                                       | 0,650897                     | 40,5                |
|                | 145                        | 115.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 155                        | 135.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 200            | 150                        | 127.000                      | 340            | 92             | 14             | 106            | 246            | 204                        | 570                        | 12              | M20x060  | 933        | 12.9          | 1685                                        | 289                                       | 0,822032                     | 44,5                |
|                | 155                        | 137.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 165                        | 158.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 220            | 160                        | 163.000                      | 370            | 117            | 14             | 131            | 266            | 224                        | 570                        | 15              | M20x060  | 933        | 12.9          | 1549                                        | 260                                       | 1,45                         | 65,5                |
|                | 170                        | 176.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 180                        | 215.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 240            | 170                        | 209.000                      | 405            | 122            | 15             | 137            | 286            | 244                        | 570                        | 16              | M20x060  | 933        | 12.9          | 1415                                        | 280                                       | 2,18                         | 82                  |
|                | 180                        | 238.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 200                        | 303.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 260            | 190                        | 288.000                      | 430            | 136            | 19             | 155            | 306            | 265                        | 570                        | 18              | M20x070  | 933        | 12.9          | 1332                                        | 276                                       | 3,05                         | 100                 |
|                | 200                        | 325.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 220                        | 404.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 280            | 210                        | 361.000                      | 460            | 148            | 20             | 168            | 334            | 285                        | 900                        | 16              | M24x70   | 933        | 12.9          | 1246                                        | 257                                       | 4,32                         | 126                 |
|                | 220                        | 402.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 240                        | 491.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 300            | 220                        | 465.000                      | 485            | 152            | 22             | 174            | 354            | 305                        | 900                        | 16              | M24x80   | 933        | 12.9          | 1181                                        | 265                                       | 5,43                         | 141                 |
|                | 230                        | 513.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 250                        | 563.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 320            | 240                        | 510.000                      | 520            | 160            | 22             | 182            | 374            | 325                        | 900                        | 18              | M24x80   | 933        | 12.9          | 1102                                        | 255                                       | 7,58                         | 171                 |
|                | 250                        | 560.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 270                        | 669.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 340            | 250                        | 664.000                      | 570            | 176            | 24             | 200            | 404            | 345                        | 1310                       | 18              | M27x080  | 933        | 12.9          | 1005                                        | 276                                       | 12,33                        | 234                 |
|                | 260                        | 726.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 280                        | 859.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| 350            | 270                        | 700.000                      | 580            | 180            | 23             | 203            | 414            | 361                        | 1310                       | 18              | M27x080  | 933        | 12.9          | 988                                         | 244                                       | 13,35                        | 243                 |
|                | 280                        | 760.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 290                        | 820.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |

# 3393 Heavy-Range (strengthened)

| <i>d</i><br>mm | <i>d<sub>w</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Klasse</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|---------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| <b>360</b>     | 270                        | 763.000                      | 590            | 180            | 24             | 204            | 424            | 365                        | 1310                       | 18              | M27x090  | 933        | 12.9          | 971                                         | 266                                       | 14,20                        | 249                 |
|                | 280                        | 829.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 300                        | 969.000                      |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>390</b>     | 290                        | 975.000                      | 650            | 190            | 27             | 217            | 456            | 398                        | 1310                       | 20              | M27x090  | 933        | 12.9          | 882                                         | 278                                       | 22,30                        | 325                 |
|                | 300                        | 1.050.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 320                        | 1.215.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>420</b>     | 320                        | 1.300.000                    | 690            | 214            | 29             | 243            | 486            | 428                        | 1310                       | 21              | M27x100  | 933        | 12.9          | 831                                         | 269                                       | 31,59                        | 404                 |
|                | 330                        | 1.390.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 350                        | 1.590.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>440</b>     | 340                        | 1.590.000                    | 750            | 225            | 28             | 253            | 514            | 448                        | 1800                       | 21              | M30x100  | 933        | 12.9          | 764                                         | 274                                       | 47,37                        | 530                 |
|                | 350                        | 1.695.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 370                        | 1.915.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>460</b>     | 360                        | 1.750.000                    | 760            | 226            | 30             | 256            | 534            | 468                        | 1800                       | 21              | M30x100  | 933        | 12.9          | 754                                         | 268                                       | 49,27                        | 520                 |
|                | 370                        | 1.860.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 390                        | 2.090.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>480</b>     | 380                        | 2.110.000                    | 800            | 246            | 30             | 276            | 552            | 488                        | 1800                       | 21              | M30x100  | 933        | 12.9          | 717                                         | 265                                       | 66,17                        | 640                 |
|                | 390                        | 2.230.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 410                        | 2.490.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>500</b>     | 400                        | 2.555.000                    | 850            | 246            | 32             | 278            | 572            | 508                        | 1800                       | 24              | M30x100  | 933        | 12.9          | 674                                         | 287                                       | 85,28                        | 740                 |
|                | 410                        | 2.700.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 430                        | 2.995.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>530</b>     | 430                        | 3.110.000                    | 890            | 280            | 34             | 314            | 616            | 538                        | 2600                       | 21              | M33x110  | 933        | 12.9          | 644                                         | 266                                       | 116,23                       | 900                 |
|                | 440                        | 3.275.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 460                        | 3.610.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>560</b>     | 450                        | 3.455.000                    | 940            | 280            | 35             | 315            | 646            | 568                        | 2600                       | 24              | M33x110  | 933        | 12.9          | 610                                         | 269                                       | 144,60                       | 1000                |
|                | 460                        | 3.625.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 480                        | 3.980.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>590</b>     | 470                        | 4.030.000                    | 980            | 296            | 37             | 333            | 666            | 600                        | 2600                       | 24              | M33x120  | 933        | 12.9          | 585                                         | 273                                       | 179,40                       | 1150                |
|                | 480                        | 4.220.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 500                        | 4.615.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>620</b>     | 500                        | 5.045.000                    | 1020           | 330            | 39             | 369            | 706            | 630                        | 2600                       | 27              | M33x120  | 933        | 12.9          | 562                                         | 268                                       | 233,17                       | 1370                |
|                | 520                        | 5.265.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 540                        | 5.965.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>660</b>     | 530                        | 5.835.000                    | 1090           | 334            | 42             | 376            | 750            | 670                        | 3300                       | 27              | M36x130  | 933        | 12.9          | 526                                         | 275                                       | 308,48                       | 1570                |
|                | 550                        | 6.080.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 570                        | 6.835.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>700</b>     | 560                        | 6.490.000                    | 1160           | 334            | 43             | 377            | 802            | 710                        | 3300                       | 27              | M36x130  | 933        | 12.9          | 494                                         | 273                                       | 396,52                       | 1810                |
|                | 580                        | 6.740.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 600                        | 7.530.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>750</b>     | 600                        | 7.675.000                    | 1220           | 370            | 44             | 414            | 852            | 760                        | 3300                       | 30              | M36x130  | 933        | 12.9          | 470                                         | 254                                       | 530,79                       | 2140                |
|                | 620                        | 8.235.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 650                        | 9.120.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |

# 3393 Heavy-Range (strengthened)

| <i>d</i><br>mm | <i>d<sub>w</sub></i><br>mm | <i>M<sub>max</sub></i><br>Nm | <i>D</i><br>mm | <i>l</i><br>mm | <i>e</i><br>mm | <i>H</i><br>mm | <i>A</i><br>mm | <i>d<sub>1</sub></i><br>mm | <i>M<sub>A</sub></i><br>Nm | <i>Z</i><br>Stk | <i>S</i> | <i>DIN</i> | <i>Klasse</i> | <i>n<sub>max</sub></i><br>min <sup>-1</sup> | <i>p<sub>N</sub></i><br>N/mm <sup>2</sup> | <i>I</i><br>kgm <sup>2</sup> | <i>Weight</i><br>kg |
|----------------|----------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|-----------------|----------|------------|---------------|---------------------------------------------|-------------------------------------------|------------------------------|---------------------|
| <b>800</b>     | 640                        | 9.090.000                    | 1350           | 360            | 46             | 406            | 920            | 810                        | 3300                       | 35              | M36x140  | 933        | 12.9          | 425                                         | 272                                       | 792,06                       | 2651                |
|                | 660                        | 9.710.000                    |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 700                        | 11.025.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>850</b>     | 650                        | 8.925.000                    | 1440           | 380            | 44             | 424            | 950            | 860                        | 3300                       | 36              | M36x140  | 933        | 12.9          | 398                                         | 247                                       | 1084,37                      | 3271                |
|                | 700                        | 10.475.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 730                        | 11.470.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>900</b>     | 700                        | 10.260.000                   | 1470           | 400            | 47             | 447            | 1010           | 912                        | 3300                       | 38              | M36x140  | 933        | 12.9          | 390                                         | 232                                       | 1212,30                      | 3370                |
|                | 730                        | 11.235.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 760                        | 12.255.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
| <b>950</b>     | 750                        | 12.150.000                   | 1520           | 430            | 50             | 480            | 1050           | 970                        | 3300                       | 44              | M36x150  | 933        | 12.9          | 377                                         | 222                                       | 1468,34                      | 3805                |
|                | 780                        | 13.220.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 820                        | 14.730.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 800                        | 14.300.000                   | 1550           | 460            | 56             | 486            | 1100           | 1020                       | 3300                       | 44              | M36x160  | 933        | 12.9          | 370                                         | 214                                       | 1549,03                      | 3820                |
|                | 830                        | 15.500.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 860                        | 16.700.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 850                        | 16.200.000                   | 1580           | 480            | 60             | 540            | 1160           | 1070                       | 3300                       | 44              | M36x160  | 933        | 12.9          | 363                                         | 205                                       | 1816,86                      | 4050                |
|                | 880                        | 17.400.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |
|                | 920                        | 19.200.000                   |                |                |                |                |                |                            |                            |                 |          |            |               |                                             |                                           |                              |                     |