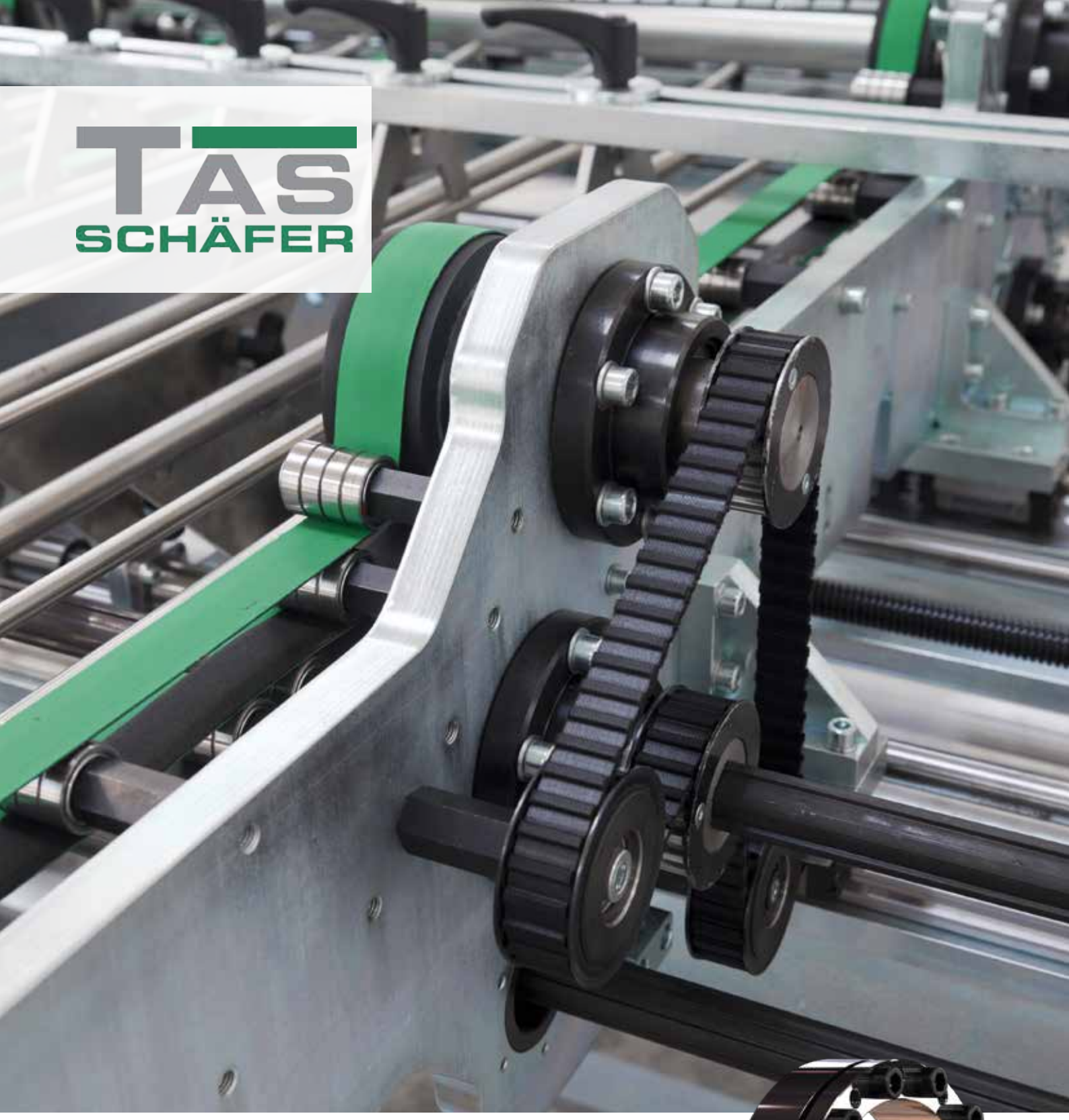
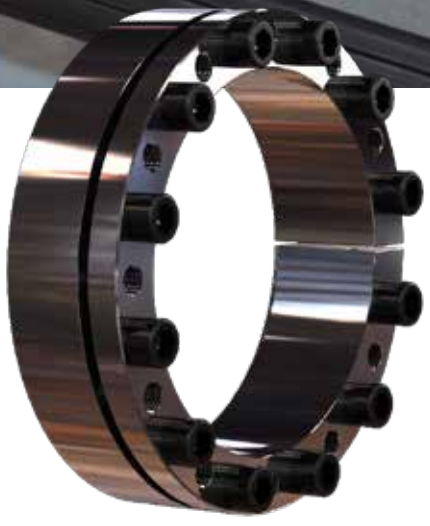
TAS SCHÄFER



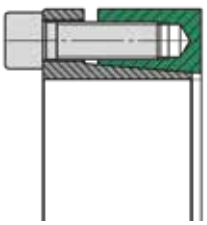


Internal Locking Devices

Shaft-Hub-Connection

Product overview

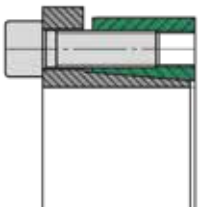
Shaft/ Hub-connections



3003 plus / 3003

For low torque transmission.
For medium bending moments
Short installation lenght

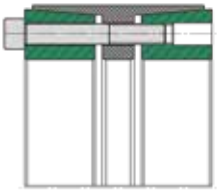
Page 124



3006 plus / 3006

For medium torque transmission.
For medium bending moments
Short installation lenght

Page 128



3012

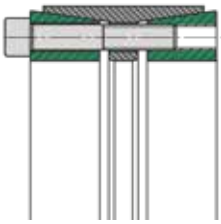
For very high torque transmission.
For high bending moments
Wide installation lenght

Page 132

3014

For high torque transmission
For medium bending moments
Wide installation lenght

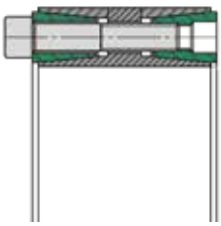
Page 134



RB,3015,3015.1

For medium torque transmission.
For medium bending moments
Average installation lenght

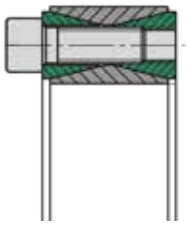
Page 136



3015 DK, 3015.1 DK

For high torque transmission.
For medium bending moments.
Average installation lenght

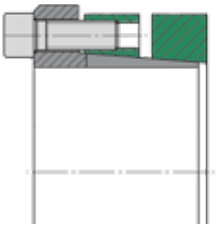
Page 142



3020

For high torque transmission
Low bending moment takes place via the hub Short installation lenght

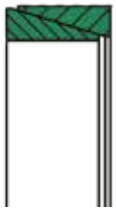
Page 146



4006

For very high torque transmission.
For very high bending moments.
Wide installation lenght (Especially for pulley)

Page 150



8006
(Locking elements)

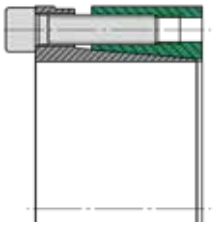
For low torque transmission
Small installation space

Page 154

TAS 110

For medium torque transmission.
For medium bending moments.
Small hub diameter

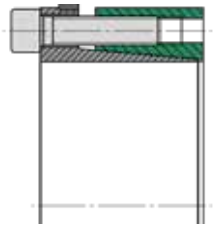
Page 158



TAS 130

For medium torque transmission.
For medium bending moments.
Average installation lenght

Page 160



TAS 131

For medium torque transmission.
For medium bending moments.
Average installation lenght

Page 160

Description of function

Locking devices of the types TAS ...

The main function of a locking assembly is the safe connection of a shaft to a hub by means of friction. For example, between a shaft and a gear hub. The locking assembly creates a play-free connection by expanding between the shaft and the hub. This type of connection is used mainly for transmitting torque.

It is installed by inserting the locking assembly between the components and the subsequent tightening of the screws. By using conical surfaces, the outer diameter increases and the inner diameter reduces. Radial pressure is built up. The clamping forces are provided and controlled by the screws (force-controlled). This allows the direct compensation of the clearance between shaft and hub.

The supplied locking devices are ready for installation.

To achieve proper operation with a sufficiently high coefficient of friction, the contact surfaces between shaft and hub must be clean and slightly oiled. Machine oil must be used as a lubricant. The functional surfaces of the locking assembly, threads and screw heads are prepared at the factory with oil film.

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.

• For CAD data of couplings, contact us directly, please.

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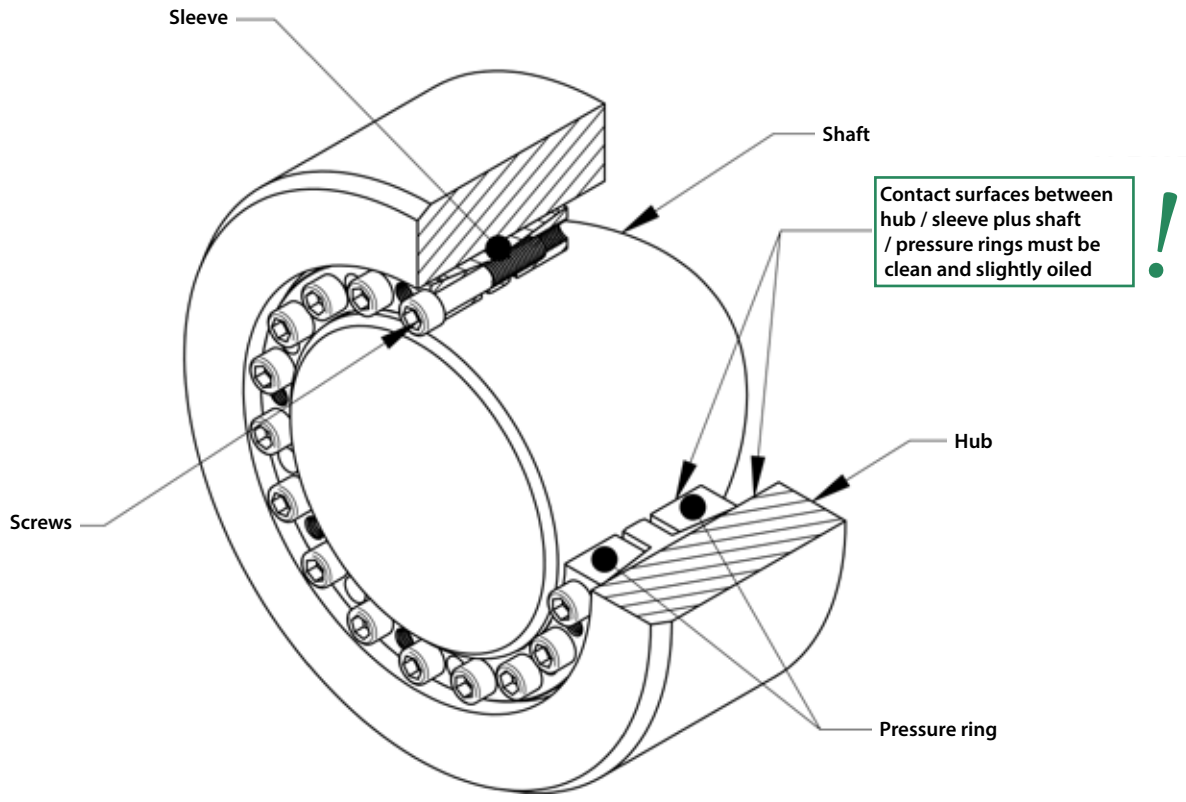


Basic-Design

Clamping length for locking devices

Pressure rings and bush of a locking device must be fully supported on the shaft and in the hub bore.

Tightening torque of the clamping screws

The tightening torque values for screws given in the tables are based on a friction μ_{ges}= 0,14. Basically the specified tightening torque M_A can be reduced to M_{Agew} , to reduce the stresses in the components. When using soft materials, as well as bored shafts, it might become necessary. By reducing M_A , the pressures of P_N and P_W and the transmittable torque M_t are also reduced. The ratio is approximately proportional and can be converted accordingly (approximately):

$$M = \frac{M_{Agew}}{M_A} M_t \quad \text{and} \quad p_{N,W} = \frac{M_{Agew}}{M_A} p_{N,w}$$

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

$$M_{Agew} \geq \left| \begin{array}{l} \text{Class } 8.8 : 0{,}85\ M_A \\ \text{Class } 10.9 : 0{,}70\ M_A \\ \text{Class } 12.9 : 0{,}60\ M_A \end{array} \right| \leq M_A$$

Locking assemblies of type RB, 3015.1 and 3015.1 DK are excluded because they are already provided with reduced values.

Tolerances and surfaces

The values found in the product data, base on surface quality and tolerances according to the tables there. These values are given as recommendations.

Higher surface roughness reduces the transmissible torque and promote unwanted settlings. Larger clearance also reduces the transmissible torque.

In case of significantly differnt values, please contact us!

The calculation of the values, given in the catalog, are based on the following assumptions and simplification:

Transmissible torque

A connection by locking assembly is capable of transmitting torque, bending moment and axial force. Alternatively, the transmissible torque Mmax is specified in the product data. If such loads occur simultaneously, they must be added vectorially to form a resultant moment Mres. For the resultant moment applies:

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

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

M_{res} is determined for combined load as follows:

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

*Basically the maximum bending moment corresponds to the maximum transmissible torque. A limitation is due to the change of the surface pressure at the edges of the connection, or by the higher loading of the locking assembly itself. Appropriate limits are found under each product. (See also under „bending moment“)

This results in the following relationships:

Torque only:
The maximum torque is equivalent to M_{max} .

Bending moment only:
The Bending moment coresponds with the indicated portion of M_T , on the product page.

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

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

TAS Schäfer GmbH • Osterfeldstraße 75 • 58300 Wetter

Basics-Calculation

Radial Force:

Radial forces cause a change in pressure at the contact surface. In the force direction, the pressure increases on one side and is reduced accordingly on the other side. This depends on the amount of radial forceand 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 $p_{Wmin,\,max}$ results from the following equation:

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

The minimum pressure p_{Wmin} should be at least 30 N/mm² to avoid gap corrosion. In addition, the material must be selected for a maximum pressure p_{Wmax} .

Bending moment

Here the situation is similar to the radial forces. 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:

$$\Delta p_{W,\,N} = 4{,}5 \frac{M_B}{d_W \, l_K^2}$$

As before, the modified pressures results from:

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

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

Shaft and hub calculation

The catalogue contains information about the generated surface pressure of each locking assembly. Due to the generated radial pressure the hub is deformed, whereupon resilience of the shaft and surface smoothing still has to be added. For solid shafts resilience is negligible but has to be considered for hollow shafts. They are showing greater deformation and therefore greater stresses. This should be considered in addition to the other loads.

The equivalent stresses in the hub can be determined according to various hypotheses such as GEH. On the following pages you will find tables showing required hub sizes, taking pressure, shape and yield strength of hub material into consideration. The shown values for hub sizes are only valid for a solid hub cross-section! The calculation is simplified, includes no additional safety and covers the range of static loads only. Various calculation methods for different cases can be found in mechanical-engineering literature. Specialized software allows the same. For complex geometry reliable results can be determined only by verified FEA.

The minimum yield strength of solid shafts should be at least 2 * PW , the yield point of hub material at least 1 * PN. These values are for orientation only, represent minimum requirements and cannot replace calculations for each application! They also do not release from doing so!

Notch effect

Generally there is a notch effect on the components, caused by the radial pressure of the locking device. This depends mainly on the applied pressure. On the shaft the notch effect is usually much higher than at the hub, as the pressure is higher here. The factors are in the range of 1.2 to 1.8 at the shaft. This can, for example, be mitigated by appropriate design details, such as relief notches.

Bore in the shaft (Hollow shaft)

A large bore d_B in the shaft or use of a hollow shaft, reduces the stiffness of this component against radial pressure. Basically, a bore should not be greater than 0,3 d_W.

Hub-Calculation

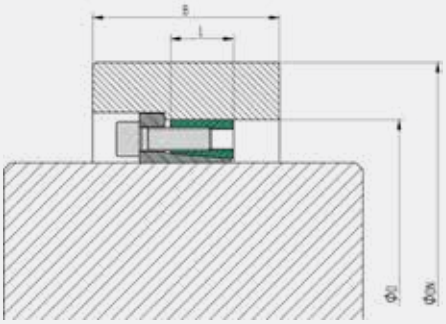
The K-Values can directly be taken from the tables or can be calculated as follows:

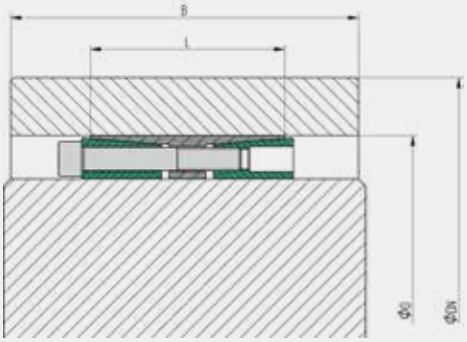
When using TAS Locking assemblies a tension is generated by the surface pressure PN between locking assembly and hub. The required hub diameter is calculated using the same formula, as used for thick-walled hollow cylinder. The real tensions depend on the hub length and shape with respect to the length L of the locking assemblies. Depending on the type of hub, the factor C is taken into account for calculation.

$$D_N \geq D \cdot K \qquad K = \sqrt{\frac{\sigma_{02} + (C \cdot p_n)}{\sigma_{02} - (C \cdot p_n)}}$$

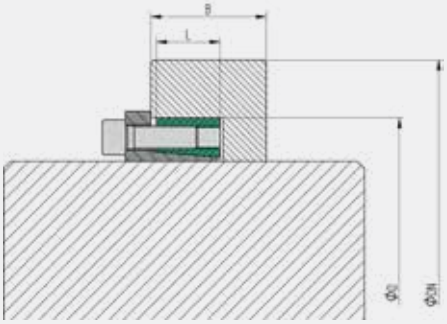
B = ≥ 2 L

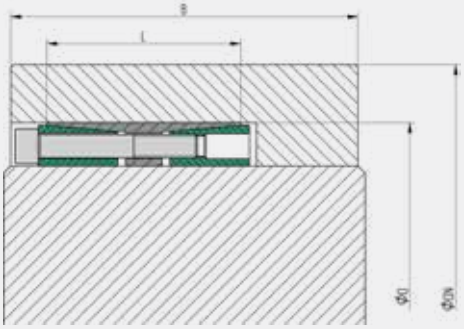
C = 0,6





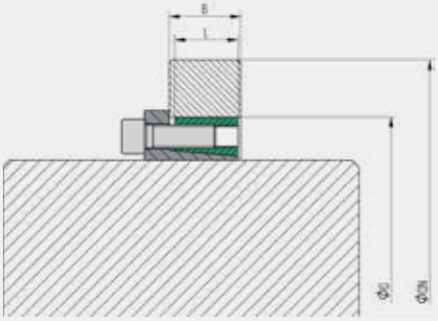
C = 0,8

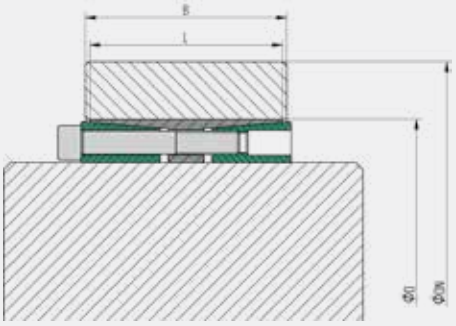




B = ≥ L

C = 1,0





Hub Outside Diameter

p_N N/mm²	K-Factor for hubtype with C = 0,6 Yield strength hubmaterial (N/mm²)										
	150	180	210	240	270	300	330	360	390	420	450
50	1,225	1,184	1,155	1,134	1,119	1,106	1,096	1,088	1,081	1,075	1,070
55	1,251	1,204	1,172	1,149	1,131	1,117	1,106	1,097	1,089	1,082	1,077
60	1,278	1,225	1,190	1,164	1,144	1,129	1,116	1,106	1,097	1,090	1,084
65	1,305	1,247	1,207	1,179	1,157	1,140	1,127	1,115	1,106	1,098	1,091
70	1,334	1,269	1,225	1,194	1,170	1,152	1,137	1,125	1,115	1,106	1,099
75	1,363	1,291	1,244	1,209	1,184	1,164	1,148	1,134	1,123	1,114	1,106
80	1,394	1,315	1,262	1,225	1,197	1,176	1,158	1,144	1,132	1,122	1,114
85	1,425	1,339	1,282	1,241	1,211	1,188	1,169	1,154	1,141	1,130	1,121
90	1,458	1,363	1,301	1,258	1,225	1,200	1,180	1,164	1,150	1,139	1,129
95	1,492	1,389	1,322	1,274	1,240	1,213	1,191	1,174	1,159	1,147	1,136
100	1,528	1,415	1,342	1,291	1,254	1,225	1,202	1,184	1,168	1,155	1,144
105	1,565	1,442	1,363	1,309	1,269	1,238	1,214	1,194	1,177	1,164	1,152
110	1,604	1,469	1,385	1,327	1,284	1,251	1,225	1,204	1,187	1,172	1,160
115	1,645	1,498	1,407	1,345	1,299	1,264	1,237	1,215	1,196	1,181	1,168
120	1,688	1,528	1,430	1,363	1,315	1,278	1,249	1,225	1,206	1,190	1,176
125	1,733	1,559	1,453	1,382	1,331	1,291	1,261	1,236	1,215	1,198	1,184
130	1,780	1,591	1,478	1,402	1,347	1,305	1,273	1,247	1,225	1,207	1,192
135	1,830	1,624	1,502	1,421	1,363	1,319	1,285	1,258	1,235	1,216	1,200
140	1,883	1,659	1,528	1,442	1,380	1,334	1,298	1,269	1,245	1,225	1,208
145	1,940	1,695	1,554	1,462	1,397	1,348	1,310	1,280	1,255	1,234	1,217
150	-	1,733	1,582	1,484	1,415	1,363	1,323	1,291	1,265	1,244	1,225
155	-	1,772	1,610	1,506	1,433	1,378	1,336	1,303	1,276	1,253	1,234
160	-	1,813	1,639	1,528	1,451	1,394	1,350	1,315	1,286	1,262	1,242
165	-	1,856	1,669	1,551	1,469	1,409	1,363	1,327	1,297	1,272	1,251
170	-	1,902	1,700	1,575	1,489	1,425	1,377	1,339	1,308	1,282	1,260
175	-	1,950	1,733	1,599	1,508	1,442	1,391	1,351	1,318	1,291	1,269
180	-	-	1,766	1,624	1,528	1,458	1,405	1,363	1,329	1,301	1,278
185	-	-	1,801	1,650	1,548	1,475	1,420	1,376	1,341	1,311	1,287
190	-	-	1,838	1,677	1,569	1,492	1,434	1,389	1,352	1,322	1,296
195	-	-	1,876	1,704	1,591	1,510	1,449	1,402	1,363	1,332	1,305
200	-	-	1,915	1,733	1,613	1,528	1,464	1,415	1,375	1,342	1,315
205	-	-	1,957	1,762	1,636	1,546	1,480	1,428	1,387	1,353	1,324
210	-	-	-	1,792	1,659	1,565	1,496	1,442	1,399	1,363	1,334
215	-	-	-	1,824	1,683	1,584	1,512	1,455	1,411	1,374	1,344
220	-	-	-	1,856	1,707	1,604	1,528	1,469	1,423	1,385	1,353
225	-	-	-	1,890	1,733	1,624	1,545	1,484	1,435	1,396	1,363
230	-	-	-	1,926	1,759	1,645	1,562	1,498	1,448	1,407	1,373
235	-	-	-	1,962	1,785	1,666	1,579	1,513	1,461	1,419	1,383
240	-	-	-	-	1,813	1,688	1,597	1,528	1,474	1,430	1,394
245	-	-	-	-	1,842	1,710	1,615	1,543	1,487	1,442	1,404
250	-	-	-	-	1,871	1,733	1,633	1,559	1,500	1,453	1,415

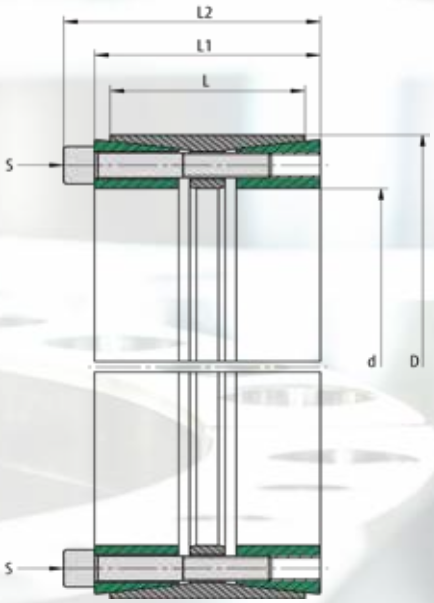
Hub Outside Diameter

K-Factor for hubtype with C = 0,8											
p_N	Yield strength hubmaterial (N/mm²)										
N/mm²	150	180	210	240	270	300	330	360	390	420	450
50	1,315	1,254	1,213	1,184	1,161	1,144	1,130	1,119	1,109	1,101	1,094
55	1,353	1,284	1,237	1,204	1,179	1,160	1,144	1,131	1,120	1,111	1,104
60	1,394	1,315	1,262	1,225	1,197	1,176	1,158	1,144	1,132	1,122	1,114
65	1,436	1,347	1,288	1,247	1,216	1,192	1,173	1,157	1,144	1,133	1,124
70	1,481	1,380	1,315	1,269	1,235	1,208	1,187	1,170	1,156	1,144	1,134
75	1,528	1,415	1,342	1,291	1,254	1,225	1,202	1,184	1,168	1,155	1,144
80	1,578	1,451	1,370	1,315	1,274	1,242	1,218	1,197	1,181	1,166	1,154
85	1,631	1,489	1,400	1,339	1,294	1,260	1,233	1,211	1,193	1,178	1,165
90	1,688	1,528	1,430	1,363	1,315	1,278	1,249	1,225	1,206	1,190	1,176
95	1,748	1,569	1,461	1,389	1,336	1,296	1,265	1,240	1,219	1,201	1,186
100	1,813	1,613	1,494	1,415	1,358	1,315	1,281	1,254	1,232	1,213	1,197
105	1,883	1,659	1,528	1,442	1,380	1,334	1,298	1,269	1,245	1,225	1,208
110	1,960	1,707	1,563	1,469	1,403	1,353	1,315	1,284	1,259	1,237	1,220
115	2,043	1,759	1,600	1,498	1,427	1,373	1,332	1,299	1,272	1,250	1,231
120	2,135	1,813	1,639	1,528	1,451	1,394	1,350	1,315	1,286	1,262	1,242
125	2,237	1,871	1,679	1,559	1,476	1,415	1,368	1,331	1,300	1,275	1,254
130	2,350	1,934	1,722	1,591	1,502	1,436	1,386	1,347	1,315	1,288	1,266
135	2,479	2,000	1,766	1,624	1,528	1,458	1,405	1,363	1,329	1,301	1,278
140	2,626	2,073	1,813	1,659	1,555	1,481	1,424	1,380	1,344	1,315	1,290
145	2,798	2,151	1,863	1,695	1,584	1,504	1,444	1,397	1,359	1,328	1,302
150	-	2,237	1,915	1,733	1,613	1,528	1,464	1,415	1,375	1,342	1,315
155	-	2,330	1,971	1,772	1,643	1,553	1,485	1,433	1,391	1,356	1,327
160	-	2,434	2,031	1,813	1,675	1,578	1,506	1,451	1,407	1,370	1,340
165	-	2,550	2,094	1,856	1,707	1,604	1,528	1,469	1,423	1,385	1,353
170	-	2,680	2,163	1,902	1,741	1,631	1,550	1,489	1,440	1,400	1,367
175	-	2,829	2,237	1,950	1,776	1,659	1,573	1,508	1,457	1,415	1,380
180	-	-	2,316	2,000	1,813	1,688	1,597	1,528	1,474	1,430	1,394
185	-	-	2,403	2,054	1,852	1,717	1,621	1,548	1,492	1,446	1,408
190	-	-	2,499	2,111	1,892	1,748	1,646	1,569	1,510	1,461	1,422
195	-	-	2,604	2,172	1,934	1,780	1,672	1,591	1,528	1,478	1,436
200	-	-	2,721	2,237	1,978	1,813	1,698	1,613	1,547	1,494	1,451
205	-	-	2,852	2,306	2,024	1,848	1,726	1,636	1,566	1,511	1,466
210	-	-	-	2,381	2,073	1,883	1,754	1,659	1,586	1,528	1,481
215	-	-	-	2,462	2,124	1,921	1,783	1,683	1,606	1,546	1,496
220	-	-	-	2,550	2,179	1,960	1,813	1,707	1,627	1,563	1,512
225	-	-	-	2,646	2,237	2,000	1,844	1,733	1,648	1,582	1,528
230	-	-	-	2,752	2,298	2,043	1,877	1,759	1,670	1,600	1,544
235	-	-	-	2,869	2,364	2,088	1,910	1,785	1,692	1,619	1,561
240	-	-	-	-	2,434	2,135	1,945	1,813	1,715	1,639	1,578
245	-	-	-	-	2,510	2,184	1,982	1,842	1,738	1,659	1,595
250	-	-	-	-	2,592	2,237	2,020	1,871	1,763	1,679	1,613

Hub Outside Diameter

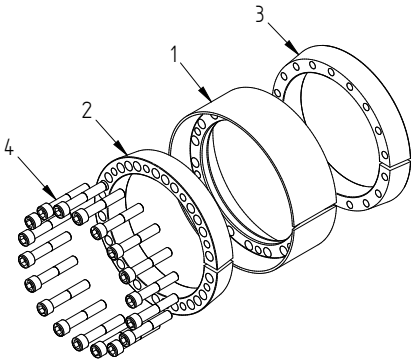
K-Factor for hubtype with C = 1,0											
p_N	Yield strength hubmaterial (N/mm²)										
N/mm²	150	180	210	240	270	300	330	360	390	420	450
50	1,415	1,331	1,275	1,236	1,207	1,184	1,165	1,151	1,138	1,128	1,119
55	1,469	1,372	1,308	1,263	1,230	1,204	1,184	1,167	1,153	1,141	1,131
60	1,528	1,415	1,342	1,291	1,254	1,225	1,202	1,184	1,168	1,155	1,144
65	1,591	1,460	1,378	1,321	1,279	1,247	1,221	1,201	1,184	1,169	1,157
70	1,659	1,508	1,415	1,351	1,304	1,269	1,241	1,218	1,199	1,184	1,170
75	1,733	1,559	1,453	1,382	1,331	1,291	1,261	1,236	1,215	1,198	1,184
80	1,813	1,613	1,494	1,415	1,358	1,315	1,281	1,254	1,232	1,213	1,197
85	1,902	1,671	1,537	1,449	1,386	1,339	1,302	1,273	1,248	1,228	1,211
90	2,000	1,733	1,582	1,484	1,415	1,363	1,323	1,291	1,265	1,244	1,225
95	2,111	1,799	1,629	1,520	1,445	1,389	1,345	1,311	1,283	1,259	1,240
100	2,237	1,871	1,679	1,559	1,476	1,415	1,368	1,331	1,300	1,275	1,254
105	2,381	1,950	1,733	1,599	1,508	1,442	1,391	1,351	1,318	1,291	1,269
110	2,550	2,036	1,789	1,641	1,542	1,469	1,415	1,372	1,337	1,308	1,284
115	2,752	2,131	1,850	1,686	1,577	1,498	1,439	1,393	1,356	1,325	1,299
120	3,000	2,237	1,915	1,733	1,613	1,528	1,464	1,415	1,375	1,342	1,315
125	3,317	2,355	1,986	1,782	1,651	1,559	1,490	1,437	1,395	1,360	1,331
130	3,742	2,490	2,062	1,835	1,691	1,591	1,517	1,460	1,415	1,378	1,347
135	4,359	2,646	2,145	1,890	1,733	1,624	1,545	1,484	1,435	1,396	1,363
140	5,386	2,829	2,237	1,950	1,776	1,659	1,573	1,508	1,457	1,415	1,380
145	7,682	3,048	2,337	2,014	1,823	1,695	1,603	1,533	1,478	1,434	1,397
150	-	3,317	2,450	2,082	1,871	1,733	1,633	1,559	1,500	1,453	1,415
155	-	3,661	2,577	2,156	1,923	1,772	1,665	1,585	1,523	1,474	1,433
160	-	4,124	2,721	2,237	1,978	1,813	1,698	1,613	1,547	1,494	1,451
165	-	4,796	2,887	2,324	2,036	1,856	1,733	1,641	1,571	1,515	1,469
170	-	5,917	3,083	2,421	2,098	1,902	1,768	1,671	1,596	1,537	1,489
175	-	8,427	3,317	2,527	2,165	1,950	1,806	1,701	1,622	1,559	1,508
180	-	-	3,606	2,646	2,237	2,000	1,844	1,733	1,648	1,582	1,528
185	-	-	3,975	2,780	2,314	2,054	1,885	1,765	1,675	1,605	1,548
190	-	-	4,473	2,933	2,398	2,111	1,928	1,799	1,703	1,629	1,569
195	-	-	5,197	3,110	2,490	2,172	1,973	1,835	1,733	1,654	1,591
200	-	-	6,404	3,317	2,592	2,237	2,020	1,871	1,763	1,679	1,613
205	-	-	9,111	3,566	2,704	2,306	2,069	1,910	1,794	1,705	1,636
210	-	-	-	3,873	2,829	2,381	2,122	1,950	1,826	1,733	1,659
215	-	-	-	4,267	2,970	2,462	2,177	1,992	1,860	1,760	1,683
220	-	-	-	4,796	3,131	2,550	2,237	2,036	1,895	1,789	1,707
225	-	-	-	5,568	3,317	2,646	2,300	2,082	1,931	1,819	1,733
230	-	-	-	6,856	3,536	2,752	2,367	2,131	1,969	1,850	1,759
235	-	-	-	9,747	3,799	2,869	2,439	2,182	2,009	1,882	1,785
240	-	-	-	-	4,124	3,000	2,517	2,237	2,050	1,915	1,813
245	-	-	-	-	4,539	3,148	2,601	2,294	2,093	1,950	1,842
250	-	-	-	-	5,100	3,317	2,693	2,355	2,139	1,986	1,871

3015



Used symbols

d	[mm]	Shaft diameter
D	[mm]	Hub inside diameter
M_t	[Nm]	Max. transmittable torque $F_{ax} = 0$
F_{ax}	[kN]	Max. transmittable axial force $M_t = 0$
p_W	[N/mm²]	Average pressure on the shaft
p_N	[N/mm²]	Average pressure on the hub
L	[mm]	Lenght of the sleeve
L_1	[mm]	Width of the locking device without screws
L_2	[mm]	Width of the locking device with screws
Z		Number of clamping screws
S		Size of the clamping screws
M_A	[Nm]	Tightening torque of the clamping screws



Pos.	Designation
1	Sleeve
2	Pressure ring 1
3	Pressure ring 2
4	Screw

Recommended tolerances & surfaces

Shaft	h8 / Rz10
Hub	H8 / Rz10

Bending loads

Bending moment (share)	M_B max = 0,3 * M_t
Bending angle	max. 5´

More properties

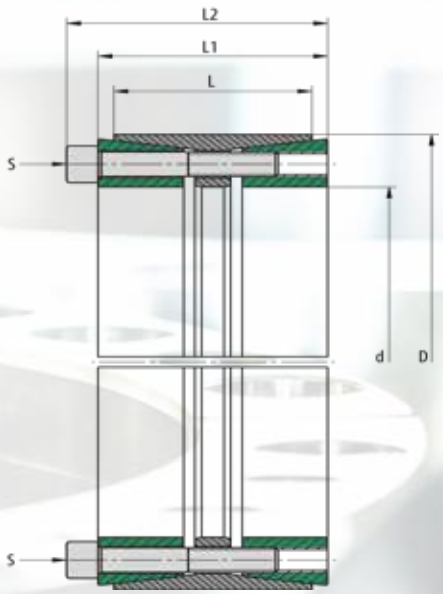
- low axial displacement during assembly
- good self-centering
- low self-locking

Ordering information: TAS 3015/d/D (e.g: TAS 3015/150/200 ... further sizes on request)

3015

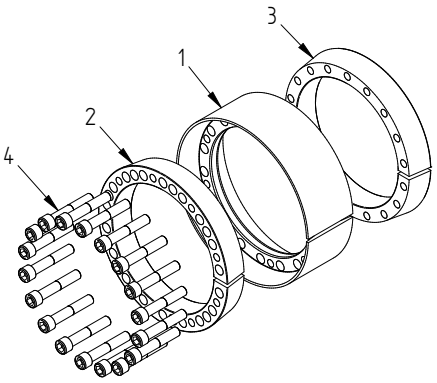
d mm		D mm	M_t Nm	F_{ax} kN	p_W N/mm²	p_N N/mm²	Z Pcs.	S	M_A Nm	L mm	L_1 mm	L_2 mm	Weight kg
70	**x**	**110**	6900	197	187	95	8	M10 x 055	83	50	60	70	2,2
80	**x**	**120**	9800	247	204	109	10	M10 x 055	83	50	60	70	2,5
90	**x**	**130**	12200	271	200	111	11	M10 x 055	83	50	60	70	2,8
100	**x**	**145**	18200	364	201	111	10	M12 x 060	145	60	70	82	4,0
110	**x**	**155**	20000	364	183	104	10	M12 x 060	145	60	70	82	4,4
120	**x**	**165**	24000	401	185	107	11	M12 x 060	145	60	70	82	4,6
130	**x**	**180**	33100	510	193	116	14	M12 x 065	145	65	79	91	6,2
140	**x**	**190**	38200	547	192	117	15	M12 x 065	145	65	79	91	6,6
150	**x**	**200**	40900	547	179	112	15	M12 x 065	145	65	79	91	7,0
160	**x**	**210**	46600	583	179	113	16	M12 x 065	145	65	79	91	7,5
170	**x**	**225**	62300	734	179	111	15	M14 x 075	230	78	92	106	10,3
180	**x**	**235**	66000	734	169	106	15	M14 x 075	230	78	92	106	10,9
190	**x**	**250**	74300	782	144	94	16	M14 x 080	230	88	102	116	14,2
200	**x**	**260**	97100	972	170	113	18	M14 x 080	230	88	102	116	14,8
220	**x**	**285**	110000	1007	148	98	15	M16 x 090	355	96	108	124	19,0
240	**x**	**305**	161000	1342	181	122	20	M16 x 090	355	96	108	124	20,2
260	**x**	**325**	174000	1342	167	114	20	M16 x 090	355	96	108	124	21,8
280	**x**	**355**	219000	1569	196	122	15	M20 x 100	690	96	110	130	28,4
300	**x**	**375**	251000	1674	195	123	16	M20 x 100	690	96	110	130	30,0
320	**x**	**405**	334000	2092	181	111	20	M20 x 110	690	124	136	156	44,2
340	**x**	**425**	355000	2092	170	105	20	M20 x 110	690	124	136	156	49,7
360	**x**	**455**	469000	2610	160	109	20	M22 x 130	930	140	157	179	66,8
380	**x**	**475**	495000	2610	152	104	20	M22 x 130	930	140	157	179	70,0
400	**x**	**495**	574000	2871	159	110	22	M22 x 130	930	140	157	179	73,4
420	**x**	**515**	657000	3132	165	115	24	M22 x 130	930	140	157	179	76,7
440	**x**	**535**	689000	3132	157	111	24	M22 x 130	930	140	157	179	79,9
460	**x**	**555**	720000	3132	151	107	24	M22 x 130	930	140	157	179	83,2
480	**x**	**575**	782000	3262	150	108	25	M22 x 130	930	140	157	179	82,8
500	**x**	**595**	815000	3262	144	104	25	M22 x 130	930	140	157	179	89,8
520	**x**	**615**	950000	3654	155	113	28	M22 x 130	930	140	157	179	93,1
540	**x**	**635**	986000	3654	150	109	28	M22 x 130	930	140	157	179	96,3
560	**x**	**655**	1096000	3915	155	113	30	M22 x 130	930	140	157	179	100
580	**x**	**675**	1135000	3915	149	110	30	M22 x 130	930	140	157	179	103
600	**x**	**695**	1174000	3915	144	107	30	M22 x 130	930	140	157	179	106

3015.1



Used symbols

d	[mm]	Shaft diameter
D	[mm]	Hub inside diameter
M_t	[Nm]	Max. transmittable torque $F_{ax} = 0$
F_{ax}	[kN]	Max. transmittable axial force $M_t = 0$
p_W	[N/mm²]	Average pressure on the shaft
p_N	[N/mm²]	Average pressure on the hub
L	[mm]	Lenght of the sleeve
L_1	[mm]	Width of the locking device without screws
L_2	[mm]	Width of the locking device with screws
Z		Number of clamping screws
S		Size of the clamping screws
M_A	[Nm]	Tightening torque of the clamping screws



Pos.	Designation
1	Sleeve
2	Pressure ring 1
3	Pressure ring 2
4	Screw

Recommended tolerances & surfaces

Shaft	h8 / Rz10
Hub	H8 / Rz10

Bending loads

Bending moment (share)	M_B max = 0,4 * M_t
Bending angle	max. 5´

More properties

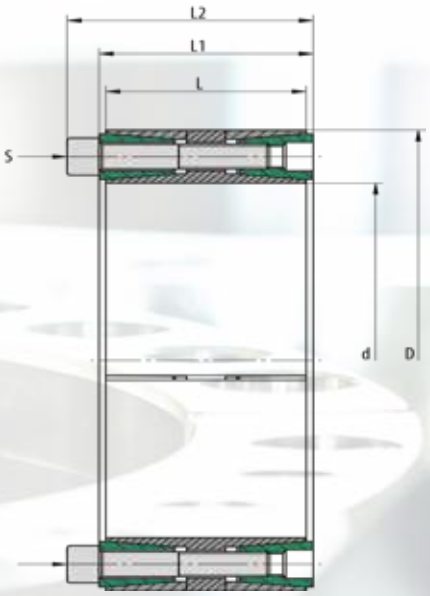
- low axial displacement during assembly
- good self-centering
- low self-locking

Ordering information: TAS 3015.1/d/D (e.g: TAS 3015.1/150/200 ... further sizes on request)

3015.1

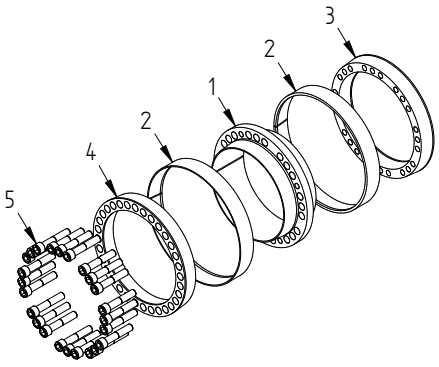
d mm		D mm	M_t Nm	F_{ax} kN	p_W N/mm²	p_N N/mm²	Z Pcs.	S	M_A Nm	L mm	L_1 mm	L_2 mm	Weight kg
70	**x**	**110**	4000	116	110	56	8	M10 x 055	49	50	60	70	2,2
80	**x**	**120**	5800	146	121	64	10	M10 x 055	49	50	60	70	2,5
90	**x**	**130**	7200	160	118	65	11	M10 x 055	49	50	60	70	2,7
100	**x**	**145**	8600	173	96	53	10	M12 x 060	69	60	70	82	4,1
110	**x**	**155**	9500	173	87	49	10	M12 x 060	69	60	70	82	4,4
120	**x**	**165**	11400	191	88	51	11	M12 x 060	69	60	70	82	4,7
130	**x**	**180**	15700	243	92	55	14	M12 x 065	69	65	79	91	6,2
140	**x**	**190**	18200	260	91	56	15	M12 x 065	69	65	79	91	6,6
150	**x**	**200**	19500	260	85	53	15	M12 x 065	69	65	79	91	7,0
160	**x**	**210**	22100	277	85	54	16	M12 x 065	69	65	79	91	7,4
170	**x**	**225**	29200	344	84	52	15	M14 x 075	108	78	92	106	10,4
180	**x**	**235**	30900	344	79	50	15	M14 x 075	108	78	92	106	11,0
190	**x**	**250**	34900	367	67	44	16	M14 x 080	108	88	102	116	14,3
200	**x**	**260**	45600	456	80	53	18	M14 x 080	108	88	102	116	15,0
220	**x**	**285**	52400	476	70	46	15	M16 x 090	168	96	108	124	19,4
240	**x**	**305**	76200	635	86	58	20	M16 x 090	168	96	108	124	21,0
260	**x**	**325**	82500	635	79	54	20	M16 x 090	168	96	108	124	22,5
280	**x**	**355**	117000	839	105	65	15	M20 x 100	369	96	110	130	28,2
300	**x**	**375**	134000	895	104	66	16	M20 x 100	369	96	110	130	30,0
320	**x**	**405**	179000	1119	97	59	20	M20 x 110	369	124	136	156	47,1
340	**x**	**425**	190000	1119	91	56	20	M20 x 110	369	124	136	156	49,7
360	**x**	**455**	250000	1389	85	58	20	M22 x 130	495	140	157	179	66,8
380	**x**	**475**	263000	1389	81	55	20	M22 x 130	495	140	157	179	70,1
400	**x**	**495**	305000	1528	84	58	22	M22 x 130	495	140	157	179	73,4
420	**x**	**515**	350000	1667	88	61	24	M22 x 130	495	140	157	179	76,7
440	**x**	**535**	366000	1667	84	59	24	M22 x 130	550	140	157	179	79,9
460	**x**	**555**	383000	1667	80	57	24	M22 x 130	550	140	157	179	83,2
480	**x**	**575**	416000	1736	80	57	25	M22 x 130	550	140	157	179	86,5
500	**x**	**595**	434000	1736	77	55	25	M22 x 130	550	140	157	179	89,8
520	**x**	**615**	505000	1945	83	60	28	M22 x 130	550	140	157	179	93,1
540	**x**	**635**	525000	1945	80	58	28	M22 x 130	550	140	157	179	96,3
560	**x**	**655**	583000	2084	82	60	30	M22 x 130	550	140	157	179	99,6
580	**x**	**675**	604000	2084	79	58	30	M22 x 130	550	140	157	179	103
600	**x**	**695**	625000	2084	77	57	30	M22 x 130	550	140	157	179	106

3015 DK



Used symbols

d	[mm]	Shaft diameter	
D	[mm]	Hub inside diameter	
M_t	[Nm]	Max. transmittable torque	$F_{ax} = 0$
F_{ax}	[kN]	Max. transmittable axial force	$M_t = 0$
p_W	[N/mm²]	Average pressure on the shaft	
p_N	[N/mm²]	Average pressure on the hub	
L	[mm]	Lenght of the sleeve	
L_1	[mm]	Width of the locking device without screws	
L_2	[mm]	Width of the locking device with screws	
Z		Number of clamping screws	
S		Size of the clamping screws	
M_A	[Nm]	Tightening torque of the clamping screws	



Pos.	Designation
1	Sleeve
2	Outer ring
3	Pressure ring 1
4	Pressure ring 2
5	Screw

Recommended tolerances & surfaces

Shaft	h8 / Rz10
Hub	H8 / Rz10

Bending loads

Bending moment (share)	M_B max = 0,25 * M_t
Bending angle	max. 5´

More properties

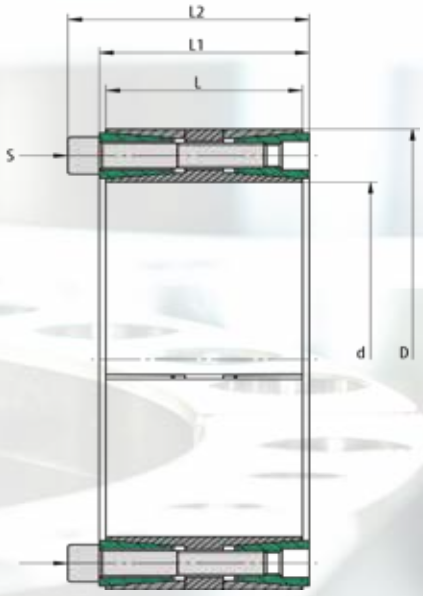
- no axial displacement during assembly
- good self-centering
- low self-locking

Ordering information: TAS 3015 DK/d/D (e.g: TAS 3015 DK/150/200 ... further sizes on request)

3015 DK

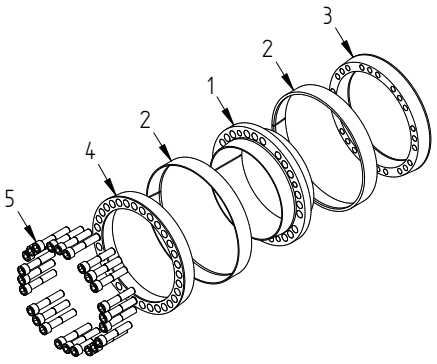
d mm		D mm	M_t Nm	F_{ax} kN	p_W N/mm²	p_N N/mm²	Z Pcs.	S	M_A Nm	L mm	L_1 mm	L_2 mm	Weight kg
100	**x**	**145**	15000	300	217	150	10	M12 x 055	145	60	65	77	4,1
110	**x**	**155**	16500	300	197	140	10	M12 x 055	145	60	65	77	4,4
120	**x**	**165**	21600	360	217	158	12	M12 x 055	145	60	65	77	4,8
130	**x**	**180**	29200	450	212	153	15	M12 x 060	145	68	74	86	6,5
140	**x**	**190**	37800	540	236	174	18	M12 x 060	145	68	74	86	7,0
150	**x**	**200**	40500	540	220	165	18	M12 x 060	145	68	74	86	7,4
160	**x**	**210**	48000	600	230	175	20	M12 x 060	145	68	74	86	7,8
170	**x**	**225**	61600	725	234	177	18	M14 x 065	230	75	81	95	10,0
180	**x**	**235**	65200	725	221	169	18	M14 x 065	230	75	81	95	10,6
190	**x**	**250**	76500	805	198	151	20	M14 x 075	230	88	94	108	14,3
200	**x**	**260**	96600	966	226	174	24	M14 x 075	230	88	94	108	15,0
220	**x**	**285**	109400	995	203	156	18	M16 x 090	355	98	104	120	19,8
240	**x**	**305**	159200	1326	248	195	24	M16 x 090	355	98	104	120	21,4
260	**x**	**325**	179600	1382	238	191	25	M16 x 090	355	98	104	120	23,0
280	**x**	**355**	225200	1608	208	164	24	M18 x 110	485	120	126	144	35,2
300	**x**	**375**	251300	1675	202	162	25	M18 x 110	485	120	126	144	37,4
320	**x**	**405**	344600	2153	208	164	25	M20 x 120	690	135	142	162	51,3
340	**x**	**425**	366100	2153	196	157	25	M20 x 120	690	135	142	162	54,1
360	**x**	**455**	483500	2686	198	157	25	M22 x 130	930	158	165	187	75,4
380	**x**	**475**	510400	2686	188	150	25	M22 x 130	930	158	165	187	79,0
400	**x**	**495**	537200	2686	178	144	25	M22 x 130	930	158	165	187	82,8
420	**x**	**515**	676900	3223	204	166	30	M22 x 130	930	158	165	187	86,5
440	**x**	**545**	829200	3769	207	167	30	M24 x 150	1200	172	180	204	110
460	**x**	**565**	866900	3769	198	161	30	M24 x 150	1200	172	180	204	114
480	**x**	**585**	964600	4020	202	166	32	M24 x 150	1200	172	180	204	119
500	**x**	**605**	100500	4020	194	160	32	M24 x 150	1200	172	180	204	123
520	**x**	**630**	1162900	4473	183	151	30	M27 x 160	1600	190	200	227	148
540	**x**	**650**	1207600	4473	176	146	30	M27 x 160	1600	190	200	227	154
560	**x**	**670**	1252400	4473	169	142	30	M27 x 160	1600	190	200	227	160
580	**x**	**690**	1297100	4473	164	138	30	M27 x 160	1600	190	200	227	165
600	**x**	**710**	1431300	4771	169	143	32	M27 x 160	1600	190	200	227	170
620	**x**	**730**	1478000	4771	163	139	32	M27 x 160	1600	190	200	227	175

3015.1 DK



Used symbols

d	[mm]	Shaft diameter	
D	[mm]	Hub inside diameter	
M_t	[Nm]	Max. transmittable torque	$F_{ax} = 0$
F_{ax}	[kN]	Max. transmittable axial force	$M_t = 0$
p_W	[N/mm²]	Average pressure on the shaft	
p_N	[N/mm²]	Average pressure on the hub	
L	[mm]	Lenght of the sleeve	
L_1	[mm]	Width of the locking device without screws	
L_2	[mm]	Width of the locking device with screws	
Z		Number of clamping screws	
S		Size of the clamping screws	
M_A	[Nm]	Tightening torque of the clamping screws	



Pos.	Designation
1	Sleeve
2	Outer ring
3	Pressure ring 1
4	Pressure ring 2
5	Screw

Recommended tolerances & surfaces

Shaft	h8 / Rz10
Hub	H8 / Rz10

Bending loads

Bending moment (share)	M_B max = 0,35 * M_t
Bending angle	max. 5´

More properties

- no axial displacement during assembly
- good self-centering
- low self-locking

Ordering information: TAS 3015.1 DK/d/D (e.g: TAS 3015.1 DK/150/200 ... further sizes on request)

3015.1 DK

d mm		D mm	M_t Nm	F_{ax} kN	p_W N/mm²	p_N N/mm²	Z Pcs.	S	M_A Nm	L mm	L_1 mm	L_2 mm	Weight kg
100	**x**	**145**	7000	139	101	69	9	M10 x 055	83	60	65	75	4,1
110	**x**	**155**	8500	155	102	72	10	M10 x 055	83	60	65	75	4,4
120	**x**	**165**	11100	185	112	81	12	M10 x 055	83	60	65	75	4,8
130	**x**	**180**	15100	232	109	79	15	M10 x 060	83	68	74	84	6,5
140	**x**	**190**	16200	232	101	75	15	M10 x 060	83	68	74	84	7,0
150	**x**	**200**	18500	247	101	76	16	M10 x 060	83	68	74	84	7,4
160	**x**	**210**	22300	278	106	81	18	M10 x 060	83	68	74	84	7,8
170	**x**	**225**	29100	343	111	84	15	M12 x 065	145	75	81	93	10,0
180	**x**	**235**	32900	365	111	85	16	M12 x 065	145	75	81	93	10,6
190	**x**	**250**	39100	411	101	77	18	M12 x 075	145	88	94	106	14,3
200	**x**	**260**	45700	457	107	82	20	M12 x 075	145	88	94	106	15,0
220	**x**	**285**	52800	480	98	75	21	M12 x 080	145	98	104	116	19,8
240	**x**	**305**	65800	548	102	81	24	M12 x 080	145	98	104	116	21,4
260	**x**	**325**	80200	617	106	85	27	M12 x 080	145	98	104	116	23,0
280	**x**	**355**	120200	858	111	87	28	M14 x 100	230	120	126	140	35,2
300	**x**	**375**	128700	858	104	83	28	M14 x 100	230	120	126	140	37,4
320	**x**	**405**	188500	1178	114	90	28	M16 x 110	355	135	142	158	51,3
340	**x**	**425**	200300	1178	107	86	28	M16 x 110	355	135	142	158	54,1
360	**x**	**455**	220400	1225	90	71	24	M18 x 140	485	158	165	183	75,4
380	**x**	**475**	261800	1378	96	77	27	M18 x 140	485	158	165	183	79,0
400	**x**	**495**	326600	1633	108	87	32	M18 x 140	485	158	165	183	82,8
420	**x**	**515**	342900	1633	103	84	32	M18 x 140	485	158	165	183	86,5
440	**x**	**545**	389600	1771	97	78	27	M20 x 140	690	172	180	200	110
460	**x**	**565**	407300	1771	93	76	27	M20 x 140	690	172	180	200	114
480	**x**	**585**	472200	1968	99	81	30	M20 x 140	690	172	180	200	119
500	**x**	**605**	491900	1968	95	78	30	M20 x 140	690	172	180	200	123
520	**x**	**630**	545700	2099	86	71	32	M20 x 150	690	190	200	220	148
540	**x**	**650**	566700	2099	83	69	32	M20 x 150	690	190	200	220	154
560	**x**	**670**	661100	2361	90	75	36	M20 x 150	690	190	200	220	160
580	**x**	**690**	684700	2361	86	73	36	M20 x 150	690	190	200	220	165
600	**x**	**710**	708300	2361	84	71	36	M20 x 150	690	190	200	220	170
620	**x**	**730**	731900	2361	81	69	36	M20 x 150	690	190	200	220	175
640	**x**	**750**	755500	2361	78	67	36	M20 x 150	690	190	200	220	180