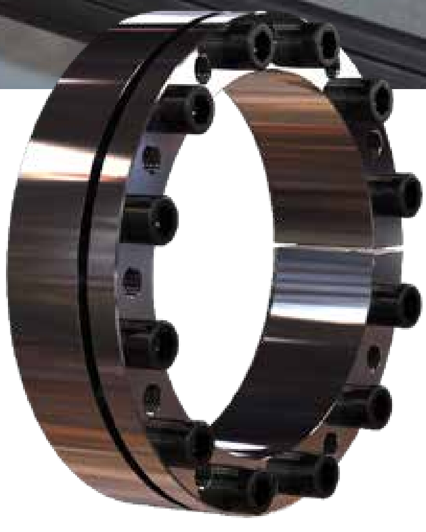
TAS SCHÄFER

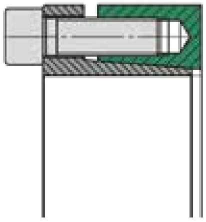


Internal Locking Devices

Shaft-Hub-Connection

Product overview

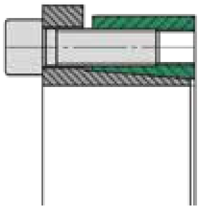
Shaft/ Hub-connections



3003 plus / 3003

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

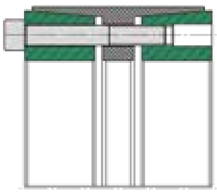
Page 124



3006 plus / 3006

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

Page 128



3012

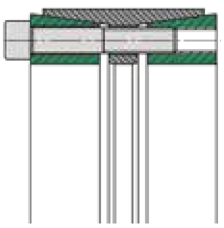
For very high torque transmission.
For high bending moments
Wide installation lenght

Page 132

3014

For high torque transmission
For medium bending moments
Wide installation lenght

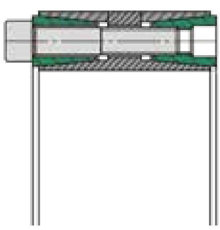
Page 134



RB,3015,3015.1

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

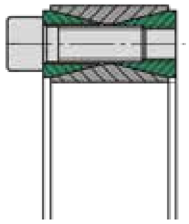
Page 136



3015 DK, 3015.1 DK

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

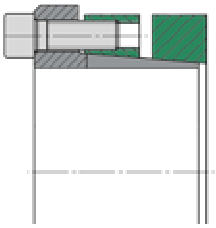
Page 142



3020

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

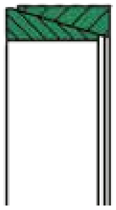
Page 146



4006

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

Page 150



8006 (Locking elements)

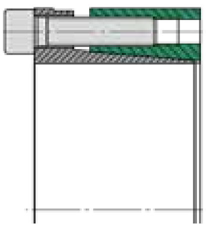
For low torque transmission
Small installation space

Page 154

TAS 110

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

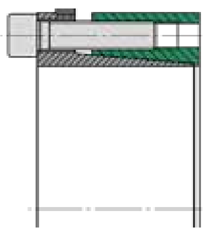
Page 158



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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or

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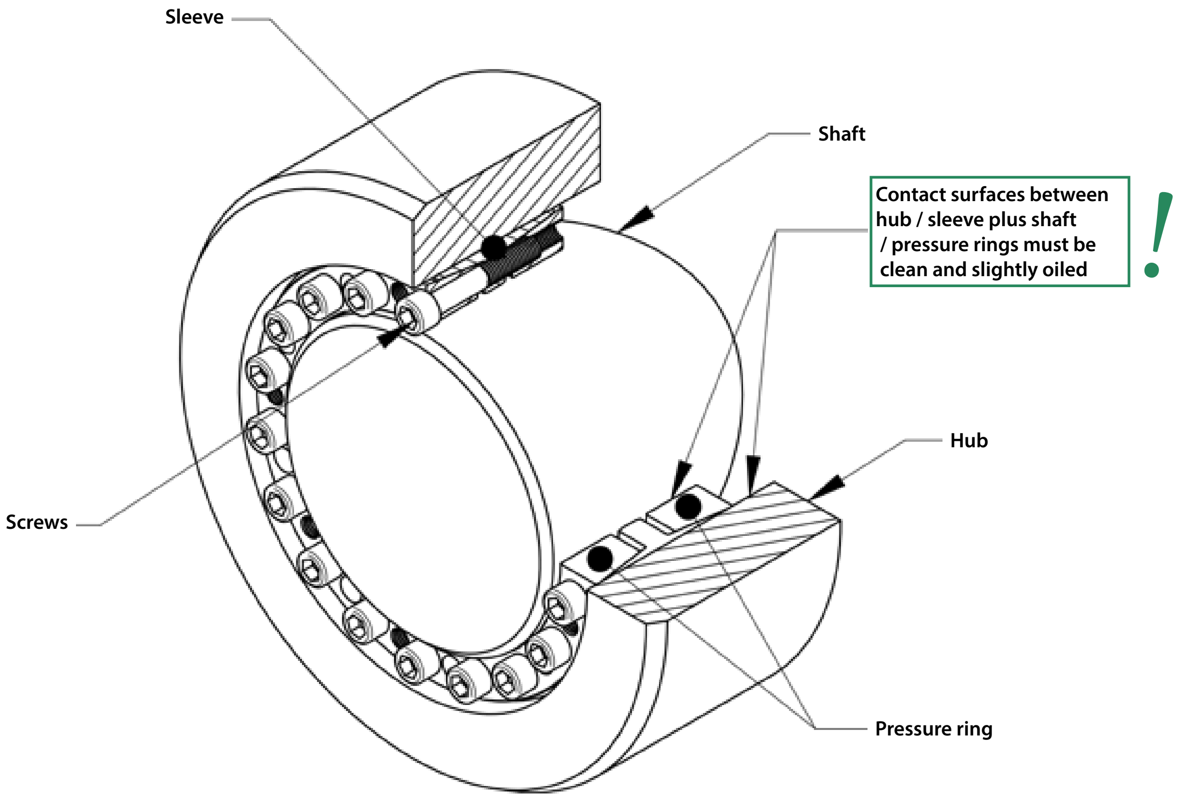


Basic-Design

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 diffrent 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:

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

*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!

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

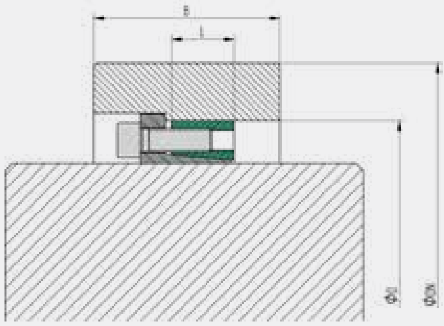
The K-Values can directly be taken from the tables or can be calculated as follows:

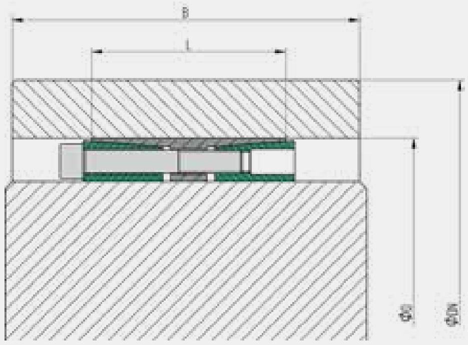
When using TAS Locking assemblies a tension is generated by the surface pressure PN between locking assembly and hub. The required hub diameter is calculated using the same formula, as used for thick-walled hollow cylinder. The real tensions depend on the hub length and shape with respect to the length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

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

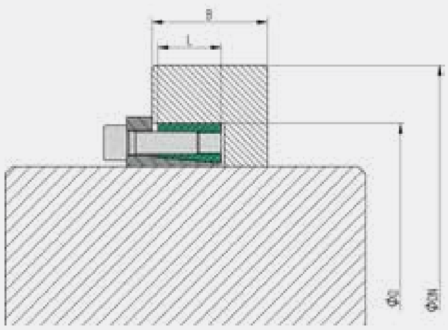
B = ≥ 2 L

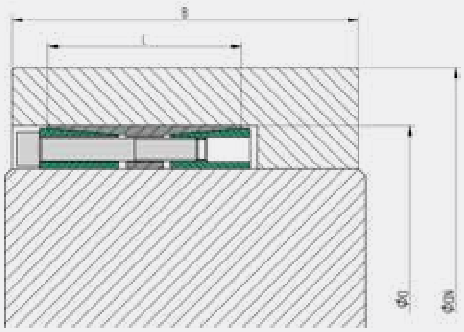
C = 0,6





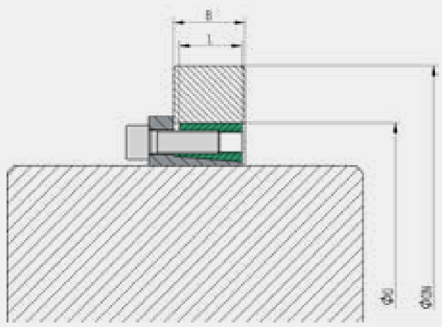
C = 0,8

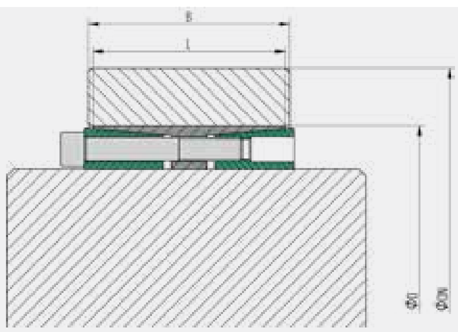




B = ≥ L

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

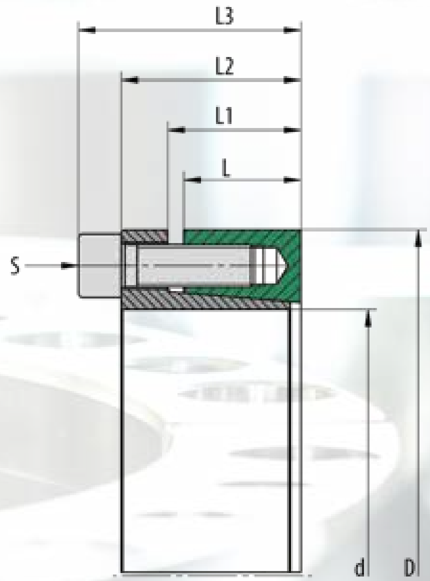
Hub Outside Diameter

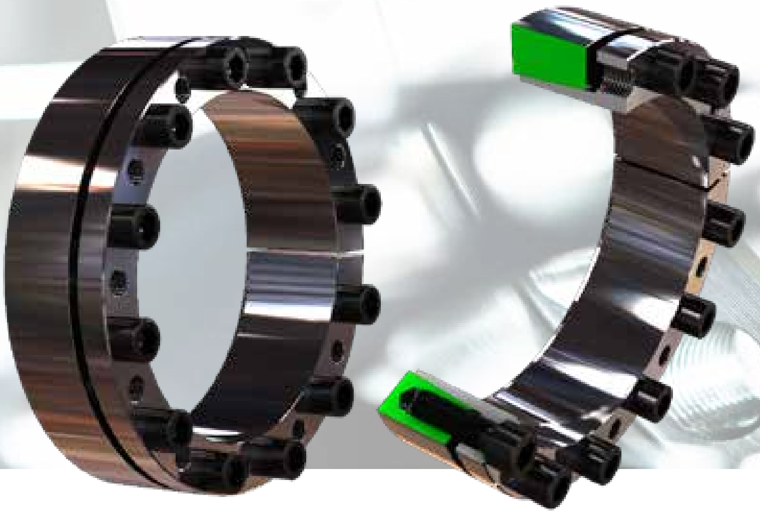
p_N N/mm²	K-Factor for hubtype with C = 0,8 Yield strength hubmaterial (N/mm²)										
	150	180	210	240	270	300	330	360	390	420	450
50	1,315	1,254	1,213	1,184	1,161	1,144	1,130	1,119	1,109	1,101	1,094
55	1,353	1,284	1,237	1,204	1,179	1,160	1,144	1,131	1,120	1,111	1,104
60	1,394	1,315	1,262	1,225	1,197	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

p_N N/mm²	K-Factor for hubtype with C = 1,0 — Yield strength hubmaterial (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

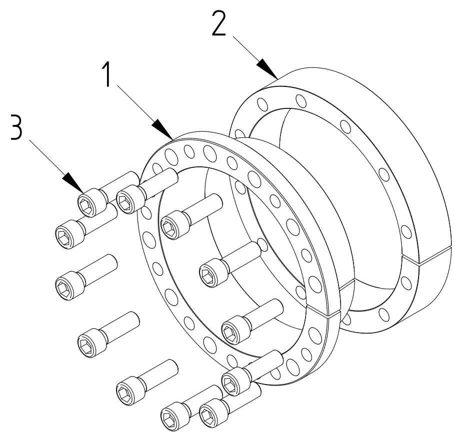
3003 plus





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 pressure ring	
L_1	[mm]	Distance of the pressure ring	
L_2	[mm]	Width of the locking device without screws	
L_3	[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
3	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

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

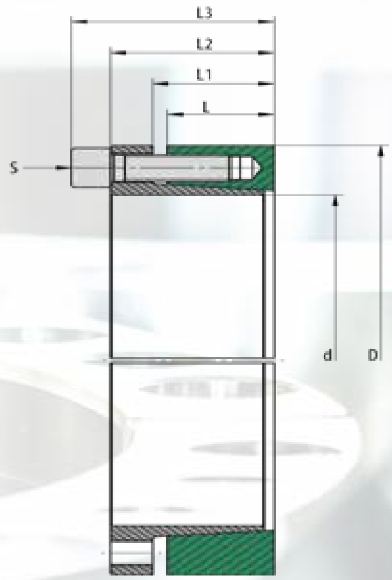
Ordering information: TAS 3003/d/D plus (e.g: TAS 3003/150/200 plus ... further sizes on request)

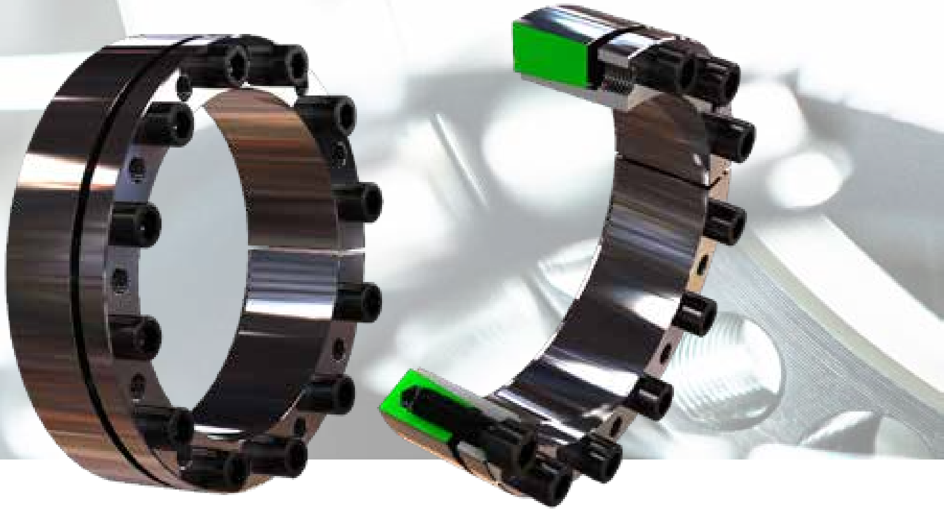
TAS SCHÄFER

3003 plus

d mm		D mm	M_t Nm	F_{ax} kN	p_W N/mm^2	p_N N/mm^2	Z Pcs.	S	M_A Nm	L mm	L_1 mm	L_2 mm	L_3 mm	Weight kg
20	x	**47**	360	36	281	119	5	M6 x 020	14	17	22	28	34	0,2
22	x	**47**	390	36	255	119	5	M6 x 020	14	17	22	28	34	0,25
24	x	**50**	430	36	234	112	5	M6 x 020	14	17	22	28	34	0,3
25	x	**50**	540	43	270	135	6	M6 x 020	14	17	22	28	34	0,3
28	x	**55**	600	43	241	123	6	M6 x 020	14	17	22	28	34	0,4
30	x	**55**	640	43	225	123	6	M6 x 020	14	17	22	28	34	0,35
32	x	**60**	920	58	281	150	8	M6 x 020	14	17	22	28	34	0,4
35	x	**60**	1000	58	257	150	8	M6 x 020	14	17	22	28	34	0,38
38	x	**65**	1000	58	236	138	8	M6 x 020	14	17	22	30	36	0,45
40	x	**65**	1100	58	225	138	8	M6 x 020	14	17	22	30	36	0,4
45	x	**75**	2400	110	325	195	8	M8 x 025	35	20	25	34	42	0,7
50	x	**80**	2700	110	293	183	8	M8 x 025	35	20	25	34,5	42,5	0,75
55	x	**85**	3000	110	266	172	8	M8 x 025	35	20	25	34,5	42,5	0,8
60	x	**90**	3300	110	244	163	8	M8 x 025	35	20	25	34,5	42,5	0,8
65	x	**95**	4000	124	253	173	9	M8 x 025	35	20	25	34,5	42,5	0,9
70	x	**110**	6000	173	274	174	8	M10 x 030	69	24	29	41	51	1,6
75	x	**115**	6500	173	255	167	8	M10 x 030	69	24	29	41	51	1,7
80	x	**120**	6900	173	239	160	8	M10 x 030	69	24	29	41	51	1,8
85	x	**125**	8200	195	254	172	9	M10 x 030	69	24	29	41	51	1,9
90	x	**130**	8700	195	239	166	9	M10 x 030	69	24	29	41	51	2,0
95	x	**135**	10200	217	252	177	10	M10 x 030	69	24	29	41	51	2,0
100	x	**145**	14200	285	291	201	9	M12 x 035	120	26	31	46	58	2,8
110	x	**155**	15600	285	265	188	9	M12 x 035	120	26	31	46	58	3,0
120	x	**165**	17100	285	242	176	9	M12 x 035	120	26	32	46	58	3,2
130	x	**180**	25100	387	232	168	9	M14 x 040	190	34	40	57	71	4,7
140	x	**190**	27100	387	216	159	9	M14 x 040	190	34	40	57	71	5,0
150	x	**200**	32200	430	224	168	10	M14 x 040	190	34	40	57	71	5,4
160	x	**210**	41200	516	252	192	12	M14 x 040	190	34	40	57	71	5,6
170	x	**225**	43800	516	183	138	12	M14 x 040	190	44	50	67	81	7,9
180	x	**235**	46400	516	173	132	12	M14 x 040	190	44	50	67	81	8,3
190	x	**250**	67800	714	227	172	12	M16 x 050	295	44	50	67,5	83,5	10,0
200	x	**260**	71300	714	215	166	12	M16 x 050	295	44	50	67,5	83,5	10,5
220	x	**285**	78500	714	172	133	12	M16 x 050	295	50	56	76	92	14,2
240	x	**305**	107000	892	197	155	15	M16 x 050	295	50	56	76	92	15,2
260	x	**325**	139000	1071	219	175	18	M16 x 050	295	50	56	76	92	16,4
280	x	**355**	159000	1136	179	141	16	M18 x 060	405	60	66	88	106	23,9
300	x	**375**	191000	1278	188	151	18	M18 x 060	405	60	66	88	106	25,6
320	x	**405**	265000	1660	186	147	18	M20 x 060	580	74	81	104	124	36,9
340	x	**425**	329000	1937	204	163	21	M20 x 060	580	74	81	104	124	38,9
360	x	**455**	374000	2081	178	141	18	M22 x 060	780	86	94	120	142	53,5
380	x	**475**	461000	2428	197	158	21	M22 x 060	780	86	94	120	142	56,1
400	x	**495**	485000	2428	187	151	21	M22 x 060	780	86	94	120	142	58,7

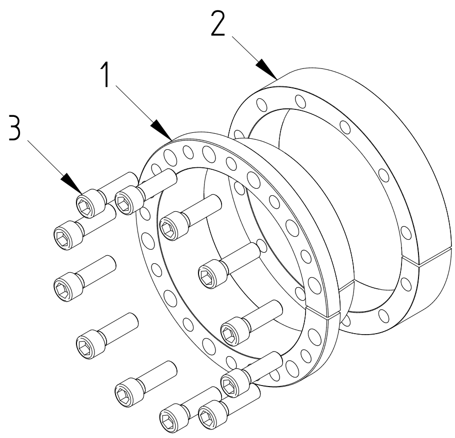
3003





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 pressure ring	
L_1	[mm]	Distance of the pressure ring	
L_2	[mm]	Width of the locking device without screws	
L_3	[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
3	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

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

Ordering information: TAS 3003/d/D (e.g: TAS 3003/150/200 ... further sizes on request)

TAS SCHÄFER

3003

d mm		D mm	M_t Nm	F_{ax} kN	p_W N/mm^2	p_N N/mm^2	Z Pcs.	S	M_A Nm	L mm	L_1 mm	L_2 mm	L_3 mm	Weight kg
20	x	**47**	410	41	320	136	6	M6 x 020	14	17	22	28	34	0,26
22	x	**47**	450	41	290	136	6	M6 x 020	14	17	22	28	34	0,24
24	x	**50**	490	41	265	127	6	M6 x 020	14	17	22	28	34	0,27
25	x	**50**	510	41	255	127	6	M6 x 020	14	17	22	28	34	0,27
28	x	**55**	570	41	227	116	6	M6 x 020	14	17	22	28	34	0,32
30	x	**55**	610	41	212	115	6	M6 x 020	14	17	22	28	34	0,30
32	x	**60**	880	55	268	143	8	M6 x 020	14	17	22	28	34	0,37
35	x	**60**	960	55	245	143	8	M6 x 020	14	17	22	28	34	0,34
38	x	**65**	1000	53	216	126	8	M6 x 020	14	17	22	28	34	0,43
40	x	**65**	1100	55	215	132	8	M6 x 020	14	17	22	28	34	0,40
42	x	**75**	2200	105	331	185	8	M8 x 025	35	20	25	33	41	0,68
45	x	**75**	2400	107	314	189	8	M8 x 025	35	20	25	33	41	0,64
48	x	**80**	2500	104	288	173	8	M8 x 025	35	20	24	33,5	41	0,73
50	x	**80**	2600	104	276	172	8	M8 x 025	35	20	24	33,5	41	0,71
55	x	**85**	2900	105	254	165	8	M8 x 025	35	20	24	33,5	41	0,76
60	x	**90**	3100	103	228	152	8	M8 x 025	35	20	24	33,5	41	0,82
65	x	**95**	3400	105	213	146	8	M8 x 025	35	20	24	33,5	41	0,87
70	x	**110**	6000	171	271	172	8	M10 x 030	70	24	29	40	50	1,6
75	x	**115**	6400	171	252	164	8	M10 x 030	70	24	29	40	50	1,7
80	x	**120**	6800	170	235	157	8	M10 x 030	70	24	29	40	50	1,8
85	x	**125**	9000	212	275	187	10	M10 x 030	70	24	29	40	50	1,9
90	x	**130**	9600	213	262	181	10	M10 x 030	70	24	29	40	50	2,0
95	x	**135**	10200	215	250	176	10	M10 x 030	70	24	29	40	50	2,0
100	x	**145**	12000	240	245	169	8	M12 x 035	115	26	31	44	56	2,8
110	x	**155**	13000	236	219	156	8	M12 x 035	115	26	31	44	56	3,0
120	x	**165**	16000	267	227	165	9	M12 x 035	115	26	31	44	56	3,2
130	x	**180**	23000	354	212	153	12	M12 x 035	115	34	39	52	68	4,9
140	x	**190**	25000	357	199	147	9	M14 x 040	185	34	39	54	68	5,2
150	x	**200**	30000	400	208	156	10	M14 x 040	185	34	39	54	68	5,5
160	x	**210**	38800	485	236	180	12	M14 x 040	185	34	39	54	68	5,8
170	x	**225**	41300	486	172	130	12	M14 x 040	185	44	49	64	78	8,2
180	x	**235**	43700	486	163	125	12	M14 x 040	185	44	49	64	78	8,6
190	x	**250**	57700	607	193	146	15	M14 x 040	185	44	49	64	78	10,0
200	x	**260**	60700	607	183	141	15	M14 x 040	185	44	49	64	78	10,5