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nach DIN-EN-ISO 9001

TAS
SCHÄFER
TECHNIK FÜR
ANTRIEB UND
STEUERUNG

Internal
Locking Devices

AREAS OF APPLICATION

Conveyor belt drives

Presses

Packaging machinery

Textiles machinery

Pulverizing installations

Rope drums

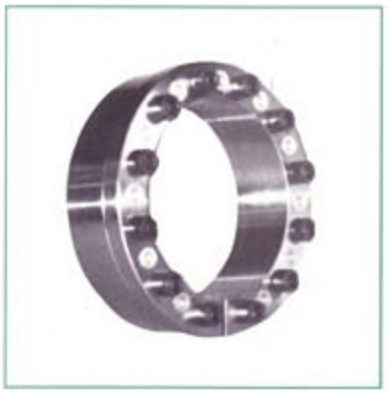
Lever attachments

Gear wheels

CONTENTS OF CATALOGUE

THE FOLLOWING HUB TO SHAFT CONNECTIONS ARE PRODUCED AND MARKETED BY TAS

TAS 3003
Locking Assembly, consisting of internally slotted bush and externally slotted ring. These are clamped together by locking screws, thus mating the shaft with the bore of the hub. High degree of concentricy. Removal by means of jacking screws.



TAS 3006
As for TAS 3003. The difference is the larger flange of the internal bush, preventing axial movements of shaft and hub.

TAS 3012, TAS 3015
Higher torque transmission values than for TAS 3003 and 3006. Additionally collar of the inner face of the external bush results in shorter fitting and removal time.

TAS RB, TAS 3015.1
This type is especially suitable for conveyor pulley locking assemblies.

TAS 3020
Two tapered rings are locked together by screws forcing one slotted internal and one slotted external ring against the respective shaft and hub surfaces. Machining tolerances need not be too close.
Removal is simple as the cone angles prevent binding.
For the transmission of higher torque values several locking assemblies can be used in series.

Special Locking Assemblies on request – Short delivery time. For Shrink Discs asc for special catalogue.

GENERAL INFORMATION FOR THE USE OF INTERNAL HUB TO SHAFT CONNECTIONS

Surface finish for shaft and hub bore: $R_t \leq 16\,\mu$

Tolerances:
(recommended)

1. TAS 3003, 3006, 3012, 3015, RB
   Shaft: h 8
   Bore: H 8
2. TAS 3020
   Shaft: Every fit between h 11 and k 11
   Bore: Every fit between H 11 and N 11

Friction coefficients:

μ = 0.12 for slightly oiled locking assembly
$\mu_{tot.}$ = 0.14 for locking screws

General torque calculation:

$$M_t \approx 9560 \cdot \frac{P}{n} \text{ (P in kW)} \quad [Nm] \quad 1\ kW = 1.36\ HP$$

$$M_t \approx 7026 \cdot \frac{P}{n} \text{ (P in HP)} \quad [Nm] \quad 1\ HP = 0.736\ kW$$

Transmissible torque per locking assembly:

$$M_t = \mu \cdot N \cdot \frac{d}{2} \qquad N\ [N] \quad d\ [m]$$

Transmissible axial force per locking assembly:

$$N_{ax} = M_t \cdot \frac{2}{d} \qquad N_{ax}\ [KN],\ \text{if d [mm]}$$

When torque and axial force act simultaneously, the reduced transmissible torque is:

$$M_R = \sqrt{M_{t\,cat.}^2 - (N_{ax} \cdot \frac{d}{2})^2}$$

For the determination of shaft and hub material:

p_W and p_N have to be $\leq \sigma_{0.2}$

Legend:

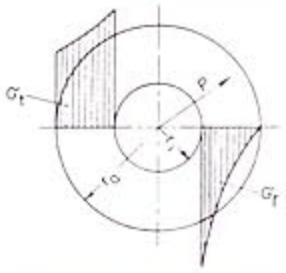
M_t = transmissible torque
M_R = reduced transmissible torque
P = power
n = shaft speed r.p.m.
N = nominal force
N_{ax} = axial force
d = shaft diameter
p_W = contact pressure between locking assembly and shaft
p_N = contact pressure between locking assembly and hub bore
$\sigma_{0.2}$ = stress resulting in a permanent deformation of 0.2%

$\sigma_{0.2}$-values of various materials

$\sigma_{0,2}$ [N/mm²]	150	180	200	220	250	270	300	350	400
Material	GG-22	GG-26 GS-38 V2A-S	GG-30 V2A-E V4A-S GTS-35	GS-45 St 35 St 37-3 V4A-E	GS-52 GGG-38 St 42-3 C 22	GGG-42 St 50-2 C 35 AlCuNiC	GS-60 St 60-2 St 55 GTS-45	GS-62 GGG-50 St 70-2 C 45	GS-70 GGG-60 C 60

HUB CALCULATION

Thick wall cylinders and tubings may be calculated in accordance with an equation by Lame.



$$\sigma_t = p \cdot \frac{r_i^2}{r_a^2 - r_i^2} \left(1 + \frac{r_a^2}{r^2}\right)$$

$$\sigma_r = p \cdot \frac{r_i^2}{r_a^2 - r_i^2} \left(1 - \frac{r_a^2}{r^2}\right)$$

From these, the following equations are derived for the hub calculation:

$$(1)\quad \sigma_{tiN} \approx p_N \frac{(a_N^2 + 1)}{a_N^2 - 1} \quad \text{u.} \quad (2)\quad \sigma_{taN} \approx \frac{2p_N \cdot C}{a_N^2 - 1}$$

Legend:

$a_N = \frac{D_N}{D}$ outer hub diameter / bore diameter

C = constant, depending on hub width

For full hub section over the width of the locking assembly

C = 0.6 if hub width $B \geqq 2\ L_1$

C = 0.8 when using several locking assemblies, with $B \geqq L_3 (1+n)$; n = number of l. ass.

C = 1.0 for $B \geqq L_1$

As $\sigma_{tiN} > \sigma_{taN}$, equation (1) will be used for the calculation. Solved for D_N

$$D_N \approx D \cdot \sqrt{\frac{\sigma_{tiN} + p_N \cdot C}{\sigma_{tiN} - p_N \cdot C}}$$

as σ_{tiN} should be $\leqq \sigma_S$

using $\sigma_S \approx \sigma_{0.2}$:

$$D_N \geqq D \cdot \sqrt{\frac{\sigma_{0.2N} + p_N \cdot C}{\sigma_{0.2N} - p_N \cdot C}}$$

If the hub is weakened (e. g. bores or threads), the hub diameter should be enlarged correspondingly (e. g. by the bore diameter)

For hollow shafts the equation is:

$$d_B \leqq d \cdot \sqrt{\frac{\sigma_{0.2w} - 2p_w \cdot C}{\sigma_{0.2w}}}$$

General application:
Hollow shaft longer than 2 L_1,
i. e.: C = 0.6

d_B = internal diameter of hollow shaft

Example:
A hub made of GS-52 with a width of $B \geqq 2\ l_1$ to be connected with a shaft d = 100 mm diameter by means of locking assembly TAS 3020

GS-52 → $\sigma_{0.2} \approx 250$ N/mm²

$B \geqq 2\ l_1$ corresponds to C = 0.6

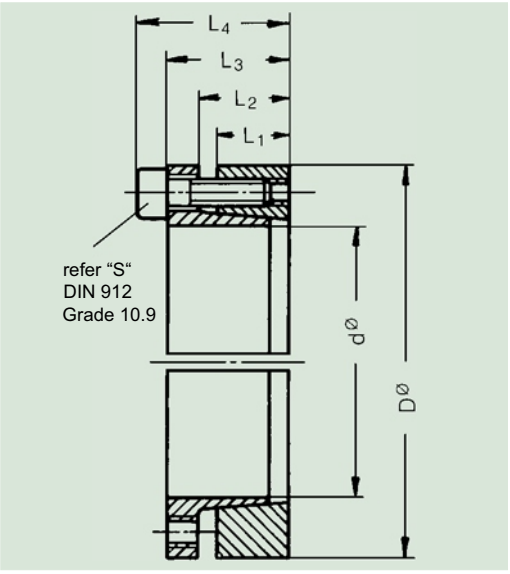
Shaft diameter d = 100 mm requires a locking assembly 100 x 145; therefore

D = 145 mm $\quad p_N \approx 157$ N/mm²

$$D_N \geqq 145 \sqrt{\frac{250 + 157 \cdot 0.6}{250 - 157 \cdot 0.6}} \geqq 215.5$$

i. e. $D_N = 220$ mm

TAS 3003



M_t = Transmissible torque per locking assembly

M_A = Tightening torque per screw

P_{ax} = Transmission axial force

p_w p_N = Contact pressure between locking assembly and shaft (p_w) resp. hub (p_n)

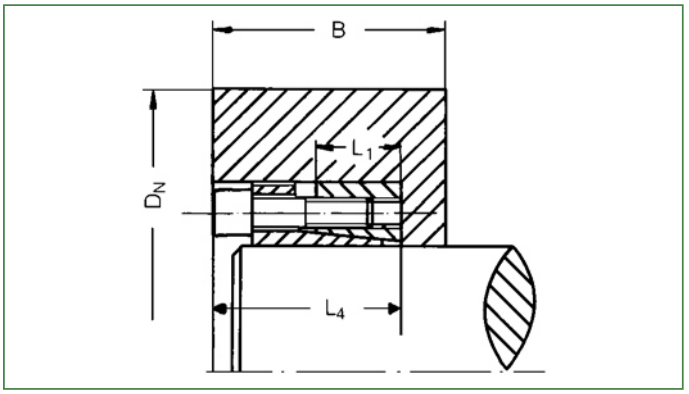
$L_2 - L_4$ are for unocked assemblies

mm	Nm	kN	mm						Nm	N/mm²		Weight
dxD	M_t	P_{ax}	L_1	L_2	L_3	L_4	Pieces	S	M_A	p_W	p_N	kg
20x 47	300	30	17	22	30	36	5	M 6x20	14	235	100	0,25
22x 47	330	30	17	22	30	36	5	M 6x20	14	215	100	0,25
24x 50	360	30	17	22	30	36	5	M 6x20	14	195	95	0,27
25x 50	450	36	17	22	30	36	6	M 6x20	14	225	110	0,27
28x 55	500	36	17	22	30	36	6	M 6x20	14	200	100	0,32
30x 55	540	36	17	22	30	36	6	M 6x20	14	190	100	0,31
32x 60	760	48	17	22	30	36	8	M 6x20	14	230	125	0,37
35x 60	830	48	17	22	30	36	8	M 6x20	14	215	125	0,34
38x 65	910	48	17	22	30	36	8	M 6x20	14	200	115	0,44
40x 65	950	48	17	22	30	36	8	M 6x20	14	185	115	0,4
45x 75	1750	77	20	25	34	42	8	M 8x25	35	230	135	0,63
50x 80	1920	77	20	25	34	42	8	M 8x25	35	205	130	0,7
55x 85	2400	88	20	25	34	42	8	M 8x25	35	210	140	0,78
60x 90	2650	88	20	25	34	42	8	M 8x25	35	195	130	0,82
65x 95	3200	99	20	25	34	42	9	M 8x25	35	205	140	0,88
70x110	4900	140	24	30	42	52	8	M 10x30	69	220	140	1,6
75x115	5250	140	24	30	42	52	8	M 10x30	69	205	135	1,7
80x120	5600	140	24	30	42	52	8	M 10x30	69	195	130	1,8
85x125	6675	157	24	30	42	52	9	M 10x30	69	205	140	1,9
90x130	7100	158	24	30	42	52	9	M 10x30	69	195	135	2
95x135	8300	175	24	30	42	52	10	M 10x30	69	205	145	2,1
100x145	10200	204	26	32	46	58	9	M 12x35	120	210	145	2,8
110x155	11250	205	26	32	46	58	9	M 12x35	120	190	135	3
120x165	13800	230	26	32	46	58	9	M 12x35	120	195	140	3,2
130x180	19900	306	34	40	57	71	9	M 14x40	190	185	135	4,8
140x190	22050	315	34	40	57	71	9	M 14x40	190	175	130	5,1
150x200	26250	330	34	40	57	71	10	M 14x40	190	180	140	5,4
160x210	30800	385	34	40	57	71	12	M 14x40	190	190	145	5,7
170x225	35700	420	44	50	67	81	12	M 14x40	190	150	115	7,9
180x235	37800	420	44	50	67	81	12	M 14x40	190	140	115	8,4
190x250	49900	525	44	50	67	83	12	M 16x50	295	170	130	9,5
200x260	52500	525	44	50	67	83	12	M 16x50	295	160	120	10,4
220x285	63700	579	50	56	75	91	12	M 16x50	295	140	110	14
240x305	87000	725	50	56	75	91	15	M 16x50	295	160	125	15,2
260x325	113000	869	50	56	75	91	18	M 16x50	295	180	140	16,2
280x355	131500	939	60	66	87	105	16	M 18x60	405	150	120	22,9
300x375	158500	1060	60	66	87	105	18	M 18x60	405	155	125	24,4
320x405	218000	1363	74	81	104	124	18	M 20x60	580	155	120	36,1
340x425	270000	1588	74	81	104	124	21	M 20x60	580	170	135	38,4
360x455	305000	1694	86	94	120	142	18	M 22x60	780	145	115	46,2
380x475	375500	1976	86	94	120	142	21	M 22x60	780	160	130	55
400x495	395500	1978	86	94	120	142	21	M 22x60	780	155	125	61

Further sizes on request. When ordering, show: TAS 3003/d/D

HUB OUTSIDE DIAMETER D_N AS A FACTOR OF THE YIELD POINT

(minimum theoretical values)



The values in the table for D_N apply to the use of one Locking Assembly TAS 3003

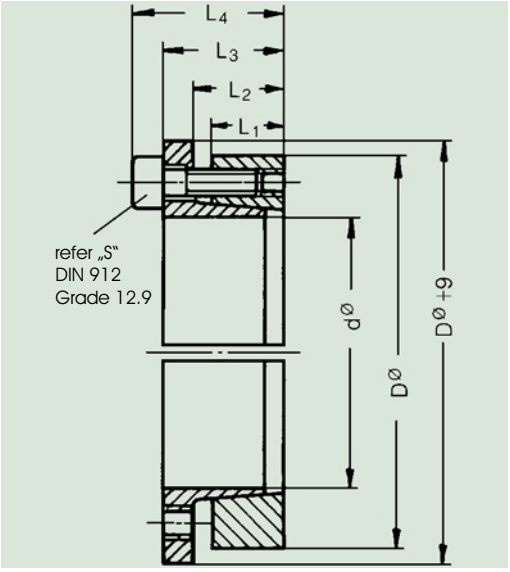
Width of the hub B $\geq 2\ L_1$

Depth of the bore b $\geq L_4$

Hub section unweakened

dxD	PN	ó 0,2 N/mm²								
		150	180	200	220	250	270	300	350	400
mm	N/mm²	GG-22	GG-26 GS-38 V2A-S V2A-E	GG-30 V4A-S GTS-35	GS-45 St 35 St 37-3 V4A-E	GS-52 GS-C 25 GGG-40 St 45	C 35 St 50-2 X8CrTi 17 AlCuNiC	GS-60 St 60-2 C 20 GTS-45	GS-62 St 70-2 St 52	GS-70 C 60 25CrMo4
20x 47	100	75	70	65	65	60	60	60	57	55
25x 50	110	80	75	72	69	66	64	63	61	59
30x 55	100	85	78	75	73	71	69	68	66	64
35x 60	125	104	94	89	86	82	80	78	75	73
40x 65	115	108	98	93	90	87	85	83	80	78
45x 75	135	138	123	116	111	105	102	99	96	93
50x 80	130	143	128	121	116	111	108	104	101	98
55x 85	140	163	142	133	128	121	118	114	109	105
60x 90	130	161	143	136	131	125	122	117	114	110
65x 95	140	182	158	149	143	135	132	127	122	117
70x110	140	211	183	172	165	157	152	147	141	136
75x115	135	211	188	178	170	161	157	152	147	142
80x120	130	214	191	182	174	166	162	156	152	147
85x125	140	239	208	195	188	178	173	167	160	154
90x130	135	238	212	201	192	182	177	172	166	160
95x135	145	262	229	215	206	195	189	183	175	168
100x145	145	282	246	231	221	209	203	196	188	180
110x155	135	284	253	239	228	217	211	205	197	191
120x165	140	316	274	258	248	235	228	220	212	203
130x180	135	330	294	278	265	252	245	238	229	222
140x190	130	339	303	287	276	263	257	247	240	232
150x200	140	382	332	312	300	284	276	266	256	246
160x210	145	408	355	334	320	303	294	284	271	261
170x225	115	372	338	322	311	300	293	286	275	268
180x135	115	388	353	337	325	313	306	299	287	280
190x250	130	445	398	378	363	345	338	325	315	305
200x260	120	440	398	380	367	351	344	333	323	312
220x285	110	456	419	402	388	374	365	357	345	337
240x305	125	528	476	452	437	415	406	394	382	370
260x325	140	621	540	507	488	462	449	433	416	400
280x355	120	600	543	519	501	480	469	455	441	426
300x375	125	649	585	555	537	510	499	484	469	454
320x405	120	685	620	592	572	547	535	519	503	486
340x425	135	778	693	655	625	595	578	561	540	523
360x455	115	751	683	651	628	606	592	578	556	542
380x475	130	846	756	718	689	656	642	618	599	580
400x495	125	857	773	733	708	674	659	639	619	599

TAS 3006



M_t = Transmissible torque per locking assembly

M_A = Tightening torque per screw

P_{ax} = Transmission axial force

p_w p_N = Contact pressure between locking assembly and shaft (p_w) resp. hub (p_n)

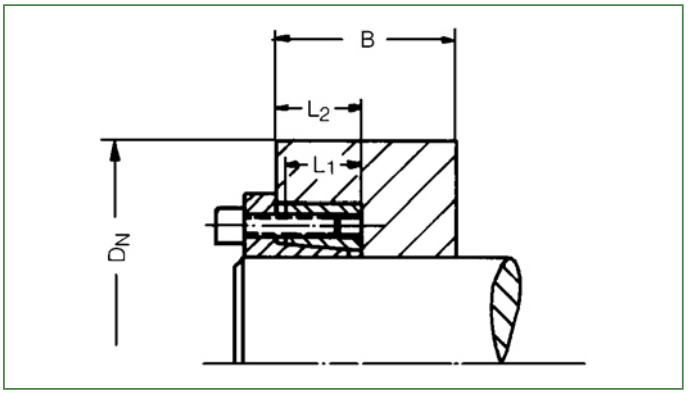
$L_2 - L_4$ are for unocked assemblies

mm	Nm	kN			mm				Nm	N/mm²		Weight
dxD	M_t	P_{ax}	L_1	L2	L3	L4	Pieces	S	M_A	p_W	p_N	kg
20x 47	280	28	17	22	30	36	5	M 6x20	17	219	93	0,28
22x 47	310	28	17	22	30	36	5	M 6x20	17	200	94	0,28
24x 50	340	28	17	22	30	36	5	M 6x20	17	185	89	0,32
25x 50	420	34	17	22	30	36	6	M 6x20	17	210	105	0,3
28x 55	470	33	17	22	30	36	6	M 6x20	17	187	96	0,4
30x 55	500	33	17	22	30	36	6	M 6x20	17	174	95	0,35
32x 60	720	45	17	22	30	36	8	M 6x20	17	220	118	0,4
35x 60	780	45	17	22	30	36	8	M 6x20	17	199	116	0,39
38x 65	850	45	17	22	30	36	8	M 6x20	17	184	108	0,49
40x 65	900	45	17	22	30	36	8	M 6x20	17	176	108	0,45
45x 75	1750	77	20	25	34	42	8	M 8x25	41	214	128	0,72
50x 80	1950	78	20	25	34	42	8	M 8x25	41	213	120	0,8
55x 85	2250	100	20	25	34	42	8	M 8x25	41	222	130	0,85
60x 90	2475	83	20	25	34	42	8	M 8x25	41	203	122	0,92
65x 95	3025	93	20	25	34	42	9	M 8x25	41	205	131	0,99
70x110	4600	131	24	30	42	52	8	M 10x30	83	227	132	1,75
75x115	4925	131	24	30	42	52	8	M 10x30	83	212	126	1,85
80x120	5250	131	24	30	42	52	8	M 10x30	83	198	121	1,95
85x125	6300	148	24	30	42	52	9	M 10x30	83	210	131	2,05
90x130	6650	148	24	30	42	52	9	M 10x30	83	198	126	2,15
95x135	7800	164	24	30	42	52	10	M 10x30	83	209	135	2,25
100x145	10750	215	26	32	46	58	9	M 12x35	145	229	152	3
110x155	11850	215	26	32	46	58	9	M 12x35	145	208	142	3,2
120x165	12900	215	26	32	46	58	9	M 12x35	145	191	133	3,5
130x180	19200	295	34	40	57	71	9	M 14x40	230	195	128	5,1
140x190	20700	296	34	40	57	71	9	M 14x40	230	181	121	5,4
150x200	24600	328	34	40	57	71	10	M 14x40	230	187	128	5,8
160x210	28900	361	34	40	57	71	12	M 14x40	230	193	134	6
170x225	33500	394	44	50	67	81	12	M 14x40	230	150	106	8,3
180x235	35500	394	44	50	67	81	12	M 14x40	230	142	101	8,8
190x250	52000	597	44	50	67	83	12	M 16x50	355	187	132	10,4
200x260	54800	548	44	50	67	83	12	M 16x50	355	177	127	10,9
220x285	60200	548	50	56	75	91	12	M 16x50	355	141	102	14,7
240x305	82200	685	50	56	75	91	15	M 16x50	355	161	119	15,9
260x325	114000	877	50	56	75	91	18	M 16x50	355	180	145	17
280x355	123050	879	60	66	87	105	16	M 18x60	485	139	110	24,7
300x375	148300	989	60	66	87	105	18	M 18x60	485	146	117	26,4
320x405	182500	1141	74	81	104	124	18	M 20x60	690	128	101	38
340x425	218000	1282	74	81	104	124	21	M 20x60	690	136	109	40
360x455	290000	1611	86	94	120	142	18	M 22x60	930	138	109	48
380x475	305000	1605	86	94	120	142	21	M 22x60	930	131	105	57
400x495	355000	1775	86	94	120	142	21	M 22x60	930	137	111	63

Further sizes on request. When ordering, show: TAS 3006/d/D

HUB OUTSIDE DIAMETER D_N AS A FACTOR OF THE YIELD POINT

(minimum theoretical values)



The values in the table for D_N apply to the use of one Locking Assembly TAS 3006

Width of the hub B $\geq 2\ L_1$

Depth of the bore b $\geq L_4$

Hub section unweakened

dxD	PN	ó 0,2 N/mm²								
		150	180	200	220	250	270	300	350	400
mm	N/mm²	GG-22	GG-26 GS-38 V2A-S V2A-E	GG-30 V4A-S GTS-35	GS-45 St 35 St 37-3 V4A-E	GS-52 GS-C 25 GGG-40 St 45	C 35 St 50-2 X8CrTi 17 AlCuNiC	GS-60 St 60-2 C 20 GTS-45	GS-62 St 70-2 St 52	GS-70 C 60 25CrMo4
20x 47	93	70	65	63	61	59	58	57	55	54
25x 50	105	78	72	70	67	65	64	62	60	59
30x 55	95	82	77	74	72	70	69	67	65	64
35x 60	116	100	91	87	84	81	79	77	74	72
40x 65	108	104	95	91	88	85	83	82	79	77
45x 75	128	132	119	113	108	103	101	98	95	92
50x 80	120	136	123	117	113	108	106	103	100	96
55x 85	130	152	136	129	124	118	115	111	108	104
60x 90	122	154	140	133	128	123	120	117	113	109
65x 95	131	170	152	145	139	132	129	125	121	117
70x110	132	197	176	168	161	153	149	145	140	136
75x115	126	201	179	172	165	157	154	150	144	140
80x120	121	204	185	176	170	162	159	154	149	145
85x125	131	224	200	191	183	174	170	165	160	154
90x130	126	228	203	195	187	178	175	170	163	159
95x135	136	250	221	208	199	189	184	179	172	167
100x145	152	295	254	238	225	214	206	199	190	183
110x155	142	298	259	244	234	222	216	208	200	192
120x165	133	299	271	253	242	231	224	218	210	203
130x180	128	317	286	272	260	248	243	236	228	221
140x190	121	323	293	279	269	257	252	244	236	230
150x200	128	352	318	302	288	275	270	262	254	246
160x210	134	384	342	323	518	294	286	277	267	258
170x225	106	352	325	313	302	290	286	279	270	264
180x235	101	360	332	320	311	301	294	287	280	273
190x250	132	448	400	382	366	348	339	330	318	309
200x260	127	456	412	392	374	357	350	340	328	318
220x285	102	439	405	391	379	367	359	351	340	331
240x305	119	515	467	445	430	412	403	390	378	366
260x325	145	630	549	517	494	468	455	439	419	403
280x355	110	568	522	501	483	465	454	444	430	419
300x375	117	626	570	544	525	502	491	461	450	443
320x405	101	620	571	551	535	518	506	494	482	470
340x425	109	680	625	599	578	557	544	531	514	501
360x455	109	728	669	641	618	596	582	568	550	536
380x475	105	741	684	660	637	613	603	589	570	556
400x495	111	792	728	698	673	649	634	619	599	585

FITTING AND REMOVAL OF TAS 3003/3006 LOCKING ASSEMBLIES

N. B. Do not use any molybdenum disulphide.

The locking assemblies are delivered by the manufacturers oiled and are ready to be fitted.
Additional hub centring arrangements are not absolutely necessary as the concentricity is 0.02 to 0.04 mm.

Fitting:

1. At least 3 screws, evenly spaced around the circumference, must be screwed into the flanges' lifting screw holes which are protected by plastic plugs. As a result, the bushes and rings are held apart due to the stopping effect of the taper and cannot tilt during fitting.

2. Tighten locking screws delicately and carefully until the locking assembly is located in place without any play. Remove lifting screws and tighten with the remaining screws.

3. Tighten all screws evenly by tightening them crosswise covering the whole circumference several times, until the given torque has been reached for each screw. Make sure that the screws to the left and right of the slot are tightened one after the other.

Removal:

Loosen all locking screws several turns and insert one screw into each of the bush's lifting screw holes after removing the plastic plugs. Tighten these screws crosswise to loosen the connection. Tighten the screws to the left and right of the slot one after the other.

Tightening torques in Nm for DIN 912 screws

DIN 912		M 6	M 8	M 10	M 12	M 14	M 16	M 18	M 20	M 22
10.9	$\mu = 0.14$ $\mu = 0.125$	14 13	35 32	69 64	120 110	190 180	295 275	405 390	580 540	780 720
12.9	$\mu = 0.14$ $\mu = 0.125$	17 16	41 39	83 77	145 135	230 215	355 330	485 455	690 650	930 870

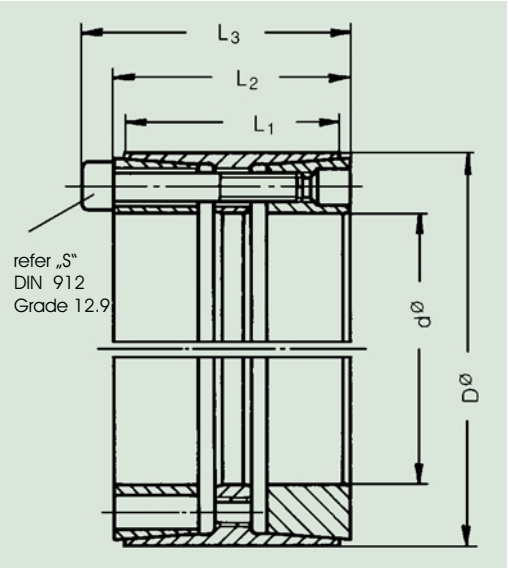
N. B.

Screws which are re-oiled on fitting should be tightened to a reduced torque
($\mu_{scr.} = 0.125$) to avoid possible overloading, especially in the case of screws of 12.9 quality.

TAS 3003

TAS 3006

TAS 3012



M_t = Transmissible torque per locking assembly

M_A = Tightening torque per screw

P_{ax} = Transmission axial force

p_w p_N = Contact pressure between locking assembly and shaft (p_w) resp. hub (p_n)

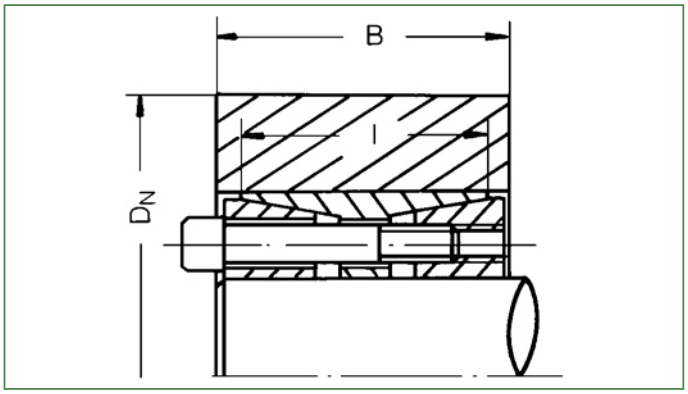
$L_2 - L_3$ are for unocked assemblies

mm	Nm	kN		mm				Nm	N/mm²		Weight
dxD	M_t	P_{ax}	L1	L2	L3	Pieces	S	M_A	p_W	p_N	kg
25x 50	650	52	45	55	61	5	M 6x 45	17	156	78	0,5
30x 55	950	63	45	55	61	6	M 6x 45	17	158	86	0,6
35x 60	1280	73	45	55	61	7	M 6x 45	17	156	91	0,7
38x 65	1600	84	45	55	61	8	M 6x 45	17	164	96	0,8
40x 65	1680	84	45	55	61	8	M 6x 45	17	156	96	0,8
45x 75	3200	142	44	54	62	7	M 8x 50	41	243	146	1
50x 80	4150	165	56	64	72	8	M 8x 50	41	200	98	1,2
55x 85	5150	186	56	64	72	9	M 8x 50	41	205	104	1,3
60x 90	6200	207	56	64	72	10	M 8x 50	41	202	106	1,4
65x 95	6750	207	56	64	72	10	M 8x 50	41	187	100	1,5
70x110	11500	329	70	78	88	10	M 10x 60	83	223	114	2,8
80x120	14500	362	70	78	88	11	M 10x 60	83	215	115	3,1
90x130	17800	390	70	78	88	12	M 10x 60	83	208	115	3,4
100x145	26300	527	90	100	112	11	M 12x 80	145	200	107	5,5
110x155	31800	575	90	100	112	12	M 12x 80	145	198	110	6
120x165	40400	670	90	100	112	14	M 12x 80	145	212	120	6,4
130x180	51500	789	104	116	130	12	M 14x 90	230	192	112	9
140x190	64700	920	104	116	130	14	M 14x 90	230	208	124	9,4
150x200	74200	989	104	116	130	15	M 14x 90	230	208	127	10
160x210	84500	1050	104	116	130	16	M 14x 90	230	208	128	10,8
170x225	108200	1280	134	146	162	14	M 16x110	355	182	113	16
180x235	123250	1370	134	146	162	15	M 16x110	355	184	115	16,8
190x250	133800	1460	134	146	162	16	M 16x110	355	186	116	21,9
200x260	146000	1460	134	146	162	16	M 16x110	355	177	112	20,7
220x285	181000	1640	134	146	162	18	M 16x110	355	188	115	24,6
240x305	218000	1820	134	146	162	20	M 16x110	355	184	119	26,5
260x325	238000	1920	134	146	162	20	M 16x110	355	178	117	28,6
280x355	360000	2550	165	177	197	18	M 20x130	690	185	117	42,6
300x375	428000	2855	165	177	197	20	M 20x130	690	192	123	45,2
320x405	480000	3000	165	177	197	21	M 20x130	690	188	119	58,4
340x425	534000	3140	165	177	197	22	M 20x130	690	186	119	61,4
360x455	670000	3730	190	202	224	21	M 22x150	930	176	115	83,2
380x475	742000	3900	190	202	224	22	M 22x150	930	175	115	88,6
400x495	852000	4260	190	202	224	24	M 22x150	930	181	120	100
420x515	894000	4260	190	202	224	24	M 22x150	930	173	116	104
440x535	937000	4260	190	202	224	24	M 22x150	930	165	112	109
460x555	980000	4260	190	202	224	24	M 22x150	930	158	107	113
480x575	1200000	5000	190	202	224	28	M 22x150	930	176	121	118
500x595	1240000	5000	190	202	224	28	M 22x150	930	169	117	122
520x615	1390000	5330	190	202	224	30	M 22x150	930	174	121	126

Further sizes on request. When ordering, show: TAS 3012/d/D

HUB OUTSIDE DIAMETER D_N AS A FACTOR OF THE YIELD POINT

(minimum theoretical values)



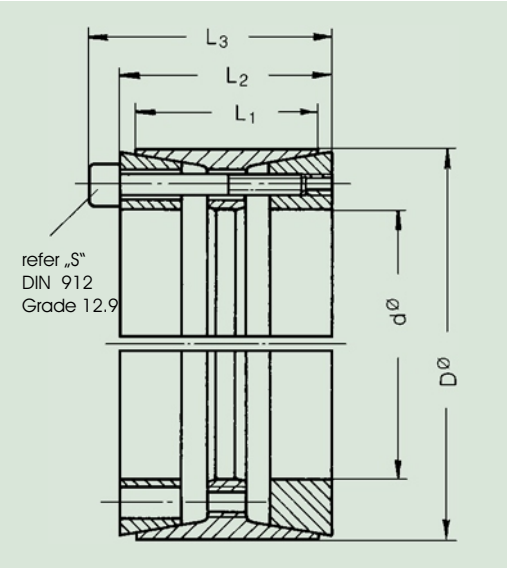
The values in the table for D_N apply to the use of one Locking Assembly TAS 3012

Width of the hub B $\geq$ l

Hub section unweakened

dxD	PN	ó 0,2 N/mm²								
		150	180	200	220	250	270	300	350	400
mm	N/mm²	GG-22	GG-26 GS-38 V2A-S V2A-E	GG-30 V4A-S GTS-35	GS-45 St 35 St 37-3 V4A-E	GS-52 GS-C 25 GGG-40 St 45	C 35 St 50-2 X8CrTi 17 AlCuNiC	GS-60 St 60-2 C 20 GTS-45	GS-62 St 70-2 St 52	GS-70 C 60 25CrMo4
25x 50	78	89	80	76	73	69	68	65	63	60
30x 55	86	106	93	88	84	79	77	74	71	69
35x 60	91	122	105	99	95	88	86	83	79	76
38x 65	96	139	119	110	104	98	95	91	86	83
40x 65	96	139	119	110	104	98	95	91	86	83
45x 75	146	576	228	188	166	146	137	128	116	107
50x 80	98	173	148	137	129	121	118	112	106	103
55x 85	104	202	156	152	143	133	128	122	116	111
60x 90	106	217	176	162	152	141	137	130	123	118
65x 95	100	212	178	165	155	145	141	134	128	123
70x110	114	302	234	212	196	180	173	165	155	148
80x120	115	330	256	232	215	197	190	180	170	162
90x130	115	358	277	251	233	213	206	195	184	176
100x145	107	357	286	264	247	229	220	211	199	192
110x155	110	395	315	288	268	248	239	228	214	206
120x165	120	495	370	330	304	279	266	253	236	226
130x180	112	473	373	338	315	292	281	267	251	241
140x190	124	619	443	393	359	330	312	295	275	264
150x200	127	696	482	424	386	350	334	314	292	278
160x210	128	731	506	445	405	368	351	330	307	292
170x225	113	601	470	430	398	364	352	335	315	302
180x235	115	646	501	454	421	386	372	353	332	318
190x250	116	700	538	487	450	413	398	378	353	339
200x260	112	684	538	497	455	419	405	385	362	349
220x285	115	784	607	550	510	468	450	428	402	385
240x305	119	900	677	604	558	512	489	466	436	417
260x325	117	926	708	637	588	540	517	491	461	442
280x355	117	1010	772	695	641	589	564	536	503	482
300x375	123	1193	863	772	705	645	612	581	540	518
320x405	119	1195	899	802	741	680	648	616	575	550
340x425	119	1254	944	842	778	714	680	647	603	577
360x455	115	1252	969	878	814	746	719	683	642	614
380x475	115	1306	1012	917	850	779	751	713	670	641
400x495	120	1485	1109	990	911	837	797	758	708	678
420x515	116	1442	1107	1004	927	850	819	778	731	700
440x535	112	1407	1107	1011	936	867	835	792	744	717
460x555	107	1360	1099	1010	944	877	844	805	760	733
480x575	121	1794	1311	1161	1070	978	932	886	828	794
500x595	117	1696	1291	1166	1077	988	946	898	845	809
520x615	121	1919	1402	1242	1144	1046	996	947	886	849
540x635	117	1810	1378	1245	1149	1054	1010	959	902	864
560x655	1121	2044	1493	1323	1218	1114	1061	1009	943	904
580x675	121	2106	1539	1364	1256	1148	1094	1040	972	932
600x695	118	2016	1529	1376	1265	1161	1112	1056	987	945

TAS 3015



M_t = Transmissible torque per locking assembly

M_A = Tightening torque per screw

P_{ax} = Transmission axial force

p_w p_N = Contact pressure between locking assembly and shaft (p_w) resp. hub (p_n)

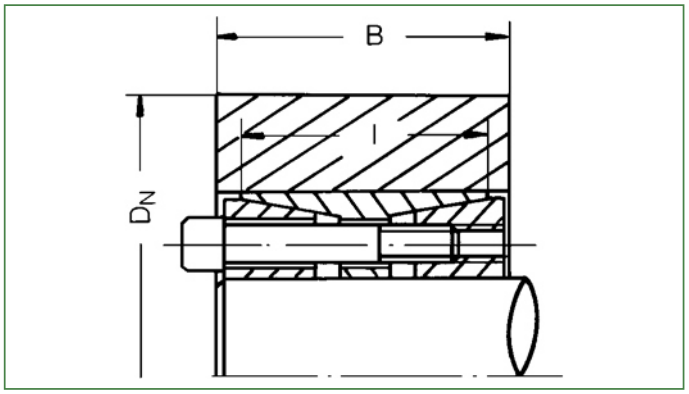
$L_2 - L_3$ are for unocked assemblies

mm	Nm	kN		mm				Nm	N/mm²		Weight
dxD	M_t	P_{ax}	L_1	L2	L3	Pieces	S	M_A	p_W	p_N	kg
70x110	7150	204	50	60	70	8	M 10x 55	83	194	107	2,3
80x120	10250	250	50	60	70	10	M 10x 55	83	212	123	2,5
90x130	12600	280	50	60	70	11	M 10x 55	83	207	125	2,7
100x145	18600	372	60	70	82	10	M 12x 60	145	205	126	4
110x155	20500	372	60	70	82	10	M 12x 60	145	187	118	4,3
120x165	24500	408	60	70	82	11	M 12x 60	145	188	122	4,6
130x180	33800	520	65	79	91	14	M 12x 65	145	197	128	6,3
140x190	39000	557	65	79	91	15	M 12x 65	145	196	130	6,6
150x200	41800	557	65	79	91	15	M 12x 65	145	183	123	7,1
160x210	47500	593	65	79	91	16	M 12x 65	145	183	125	7,5
170x225	65000	764	78	92	106	15	M 14x 75	230	193	133	10,3
180x235	69000	765	78	92	106	15	M 14x 75	230	182	127	10,9
190x250	77500	815	88	102	116	16	M 14x 80	230	163	103	14
200x260	102000	1020	88	102	116	18	M 14x 80	230	194	124	14,7
220x285	117000	1060	96	108	124	15	M 16x 90	355	174	113	19,1
240x305	170000	1410	96	108	124	20	M 16x 90	355	212	140	20,3
260x325	193000	1480	96	108	124	20	M 16x 90	355	205	138	21,9
280x355	232000	1650	96	110	130	15	M 20x100	690	213	141	28,1
300x375	249000	1650	96	110	130	16	M 20x100	690	198	134	30,1
320x405	354000	2210	124	136	156	20	M 20x110	690	191	125	44
340x425	376000	2210	124	136	156	20	M 20x110	690	180	119	46,7
360x455	496000	2750	140	155	177	20	M 22x130	930	185	118	66
380x475	524000	2750	140	155	177	20	M 22x130	930	175	113	73
400x495	602000	3010	140	155	177	22	M 22x130	930	183	122	76
420x515	694000	3300	140	155	177	24	M 22x130	930	190	127	80
440x535	728000	3300	140	155	177	24	M 22x130	930	166	123	81
460x555	760000	3300	140	155	177	24	M 22x130	930	159	118	85
480x575	830000	3440	140	155	177	25	M 22x130	930	159	119	88
500x595	861000	3440	140	155	177	25	M 22x130	930	153	115	91
520x615	1003000	3850	140	155	177	28	M 22x130	930	164	124	95
540x635	1042000	3850	140	155	177	28	M 22x130	930	158	120	98
560x655	1157000	4130	140	155	177	30	M 22x130	930	163	125	101
580x675	1199000	4130	140	155	177	30	M 22x130	930	158	121	104
600x695	1240000	4130	140	155	177	30	M 22x130	930	153	118	108

Further sizes on request. When ordering, show: TAS 3015/d/D

HUB OUTSIDE DIAMETER D_N AS A FACTOR OF THE YIELD POINT

(minimum theoretical values)



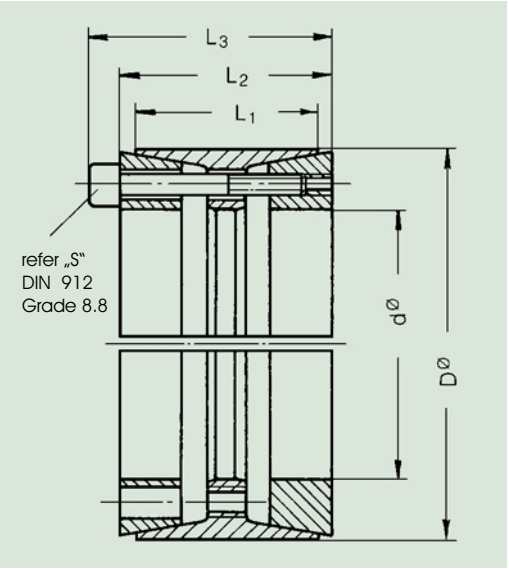
The values in the table for D_N apply to the use of one Locking Assembly TAS 3015

Width of the hub B $\geq$ l

Hub section unweakened

dxD	PN	ó 0,2 N/mm²								
		150	180	200	220	250	270	300	350	400
mm	N/mm²	GG-22	GG-26 GS-38 V2A-S V2A-E	GG-30 V4A-S GTS-35	GS-45 St 35 St 37-3 V4A-E	GS-52 GS-C 25 GGG-40 St 45	C 35 St 50-2 X8CrTi 17 AlCuNiC	GS-60 St 60-2 C 20 GTS-45	GS-62 St 70-2 St 52	GS-70 C 60 25CrMo4
70x110	107	280	225	205	190	176	169	161	152	146
80x120	123	395	282	250	229	208	198	187	174	167
90x135	125	448	294	280	258	234	223	210	196	190
100x145	126	481	340	300	277	251	240	226	219	201
110x155	118	465	347	310	285	261	250	237	222	212
120x165	122	495	370	344	304	285	272	264	239	230
130x180	128	673	448	392	355	320	304	286	266	252
140x190	130	710	473	412	375	338	321	302	281	266
150x200	123	664	470	416	382	346	330	312	290	278
160x210	125	697	493	437	401	363	347	327	305	292
170x225	133	978	596	511	459	412	389	364	338	317
180x235	127	878	585	510	469	418	398	374	348	329
190x250	103	595	488	432	420	390	378	360	340	327
200x260	124	836	611	540	497	450	430	405	377	361
220x285	113	783	607	550	510	468	450	427	402	385
240x305	140	1775	863	726	646	573	543	506	467	433
260x325	138	1894	920	774	689	611	579	540	497	461
280x355	141	2070	1015	507	753	667	632	589	543	504
300x375	134	1631	993	851	765	686	649	607	562	529
320x405	125	1344	952	842	774	700	668	632	587	563
340x425	119	1275	952	850	782	718	684	650	608	582
360x455	118	1365	1020	910	837	768	733	696	651	623
380x475	113	1306	1010	917	850	780	750	712	670	641
400x495	122	1643	1163	990	911	856	817	772	718	688
420x515	127	1926	1282	1118	1014	917	870	819	762	721
440x535	123	1776	1257	1113	1022	925	883	835	776	743
460x555	118	1665	1243	1110	1020	938	894	849	794	760
480x575	119	1725	1288	1150	1060	972	926	880	822	788
500x595	115	1636	1267	1148	1065	976	940	892	839	803
520x615	124	2040	1445	1280	1175	1064	1015	959	892	855
540x635	120	1905	1422	1270	1168	1073	1022	972	908	870
560x655	125	2174	1540	1362	1250	1133	1081	1021	950	910
580x675	121	2025	1512	1350	1242	1140	1087	1033	965	938
600x695	118	2085	1556	1390	1278	1175	1120	1063	994	952

TAS 3015.1 REDUCED PRESSURES, especially for Conveyor Pulleys



M_t = Max. transmissible torque per locking assembly

M_A = Tightening torque per screw

P_{ax} = Transmission axial force

p_w p_N = Contact pressure between locking assembly and shaft (p_w) resp. hub (p_n)

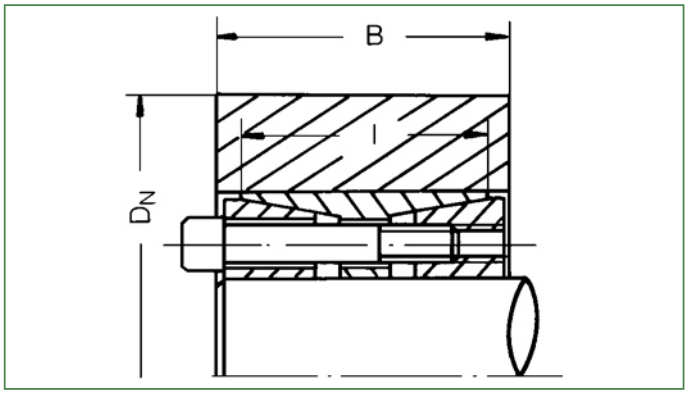
$L_2 - L_3$ for unocked assemblies

mm	Nm	kN		mm				Nm	N/mm²		Weight
dxD	M_t	P_{ax}	L_1	L2	L3	Pieces	S	M_A	p_W	p_N	kg
70x110	4250	121	50	60	70	8	M 10x 55	49	115	64	2,3
80x120	6100	152	50	60	70	10	M 10x 55	49	125	73	2,5
90x130	7500	167	50	60	70	11	M 10x 55	49	122	74	2,7
100x145	8840	177	60	70	82	10	M 12x 60	69	97	60	4
110x155	9740	177	60	70	82	10	M 12x 60	69	89	56	4,3
120x165	11600	193	60	70	82	11	M 12x 60	69	89	58	4,6
130x180	16060	247	65	79	91	14	M 12x 65	69	93	61	6,3
140x190	18500	264	65	79	91	15	M 12x 65	69	93	62	6,6
150x200	19860	264	65	79	91	15	M 12x 65	69	87	59	7,1
160x210	23270	290	65	79	91	16	M 12x 65	69	87	60	7,5
170x225	30870	363	78	92	106	15	M 14x 75	108	92	63	10,3
180x235	32750	363	78	92	106	15	M 14x 75	108	87	60	10,9
190x250	36800	387	88	102	116	16	M 14x 80	108	78	50	14
200x260	48450	484	88	102	116	18	M 14x 80	108	92	59	14,7
220x285	55570	505	96	108	124	15	M 16x 90	168	83	54	19,1
240x305	80750	673	96	108	124	20	M 16x 90	168	100	67	20,3
260x325	91670	705	96	108	124	20	M 16x 90	168	97	66	21,9
280x355	122800	877	96	110	130	15	M 20x100	369	114	75	28,1
300x375	133000	887	96	110	130	16	M 20x100	369	106	72	30,1
320x405	189000	1181	124	136	156	20	M 20x110	369	102	67	44
340x425	200800	1181	124	136	156	20	M 20x110	369	96	64	46,7
360x455	262000	1455	140	155	177	20	M 22x130	495	98	62	66
380x475	277700	1455	140	155	177	20	M 22x130	495	93	60	73
400x495	319000	1595	140	155	177	22	M 22x130	495	97	65	76
420x515	367800	1751	140	155	177	24	M 22x130	495	100	68	80
440x535	429500	1952	140	155	177	24	M 22x130	550	98	73	81
460x555	448400	1952	140	155	177	24	M 22x130	550	94	70	85
480x575	489700	2040	140	155	177	25	M 22x130	550	94	70	88
500x595	508000	2040	140	155	177	25	M 22x130	550	90	68	91
520x615	591000	2273	140	155	177	28	M 22x130	550	97	73	95
540x635	614000	2273	140	155	177	28	M 22x130	550	93	71	98
560x655	682000	2437	140	155	177	30	M 22x130	550	96	74	101
580x675	707400	2437	140	155	177	30	M 22x130	550	93	72	104
600x695	731600	2437	140	155	177	30	M 22x130	550	90	70	108

Further sizes on request. When ordering, show: TAS 3015.1/d/D

HUB OUTSIDE DIAMETER D_N AS A FACTOR OF THE YIELD POINT

(minimum theoretical values)



The values in the table for D_N apply to the use of o n e Locking Assembly TAS 3015.1

Width of the hub B ≥ l

Hub section unweakened

dxD	PN	ó 0,2 N/mm²								
		150	180	200	220	250	270	300	350	400
mm	N/mm²	GG-22	GG-26 GS-38 V2A-S V2A-E	GG-30 V4A-S GTS-35	GS-45 St 35 St 37-3 V4A-E	GS-52 GS-C 25 GGG-40 St 45	C 35 St 50-2 X8CrTi 17 AlCuNiC	GS-60 St 60-2 C 20 GTS-45	GS-62 St 70-2 St 52	GS-70 C 60 25CrMo4
70x110	64	174	160	153	149	143	140	138	133	130
80x120	73	206	185	175	168	160	158	154	149	144
90x130	74	223	201	191	185	177	173	168	161	157
100x145	60	222	183	197	191	186	181	178	172	169
110x155	56	230	214	208	200	194	191	186	181	178
120x165	58	249	229	223	215	211	205	203	196	191
130x180	61	277	254	247	239	230	225	221	214	207
140x190	62	292	270	260	253	247	239	236	228	222
150x200	59	304	282	272	264	256	250	246	238	232
160x210	60	321	296	285	277	269	262	258	250	244
170x225	63	351	324	310	302	293	286	281	270	264
180x235	60	359	331	320	310	301	294	289	280	273
190x250	50	355	330	325	313	308	303	293	290	283
200x260	59	395	364	354	343	333	325	320	309	302
220x285	54	419	390	379	367	356	351	342	333	326
240x305	67	494	452	436	418	400	393	384	372	361
260x325	66	520	478	468	445	426	416	406	400	384
280x355	75	614	554	525	508	483	472	458	440	429
300x375	72	641	574	547	529	503	495	484	465	450
320x405	67	660	603	575	559	535	522	514	494	480
340x425	64	671	616	595	574	557	544	531	514	500
360x455	65	701	705	628	605	592	573	564	550	532
380x475	60	727	670	646	627	608	594	584	565	553
400x495	65	787	723	693	673	648	634	619	599	583
420x515	68	839	767	731	706	685	664	649	633	611
440x535	73	915	824	781	754	722	701	685	663	642
460x555	70	921	838	799	772	738	722	705	683	662
480x575	70	954	868	828	799	765	747	730	707	686
500x595	68	976	886	851	821	785	773	750	732	706
520x615	73	1051	953	898	867	830	806	787	756	740
540x635	71	1060	965	914	883	845	825	806	781	760
560x655	74	1126	1015	963	937	891	858	838	812	790
580x675	72	1134	1032	979	945	911	884	864	830	810
600x695	70	1154	1049	1000	966	924	904	883	855	829

FITTING AND REMOVAL OF TAS 3012, 3015 AND 3015.1 LOCKING ASSEMBLIES

Fitting:

Power is transmitted by means of pressure and friction between the functional surfaces. Therefore, make a particular check of the locking screw torques and the condition of the contact surfaces (see point 1).

1. All contact surfaces, including the threads and surfaces on which the locking screw heads rest, must be clean and provided with a film of oil. Fit shaft, hub and locking assembly having been oiled.
2. Unscrew all locking screws several turns and screw at least three screws into the threads of Parts 3 and 2, so that they press against the stop and hold Parts 1 and 3 away from Part 2.
3. Place locking assembly in hub bore. Take screws from the lifting screw holes and screw back into the threaded holes of Part 1.
4. Tighten screws evenly to the given torque, M_A, crosswise covering the circumference several times. (Tighten the screws on the two sides of the slot one after the other.) When none of the screws can be tightened any further with the torque wrench, fitting is complete.

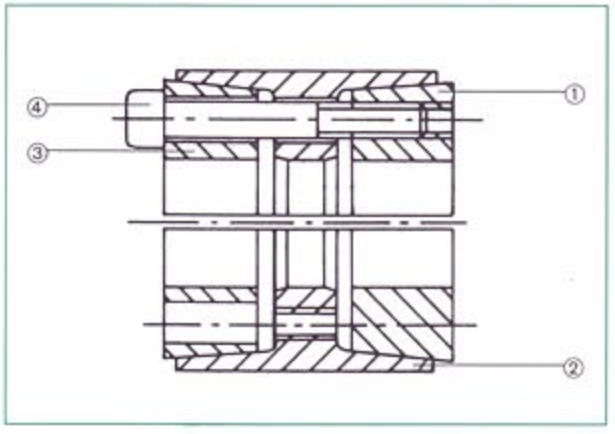


Fig. 1

1 = Back thrust ring
2 = Internal bush
3 = Front thrust ring
4 = Locking screws DIN 912 12.9

Used locking assemblies must be cleaned, lightly oiled and put together as in Fig. 1. When being fitted together it should be ensured that the thrust rings and the internal bush are correctly arranged together, i. e. all threaded holes in the back thrust ring must be opposite through-holes in the arm of the bush and front thrust ring.

Removal:

1. Remove sealing plugs.
2. Loosen all screws several turns.
3. Insert screws into all lifting screw holes in the front thrust ring and the arm of the internal bush, which are screwed out of the back thrust ring.
4. By tightening the screws in the lifting screw holes evenly (the screws on the two sides of the slot one after the other), the connection is loosened.

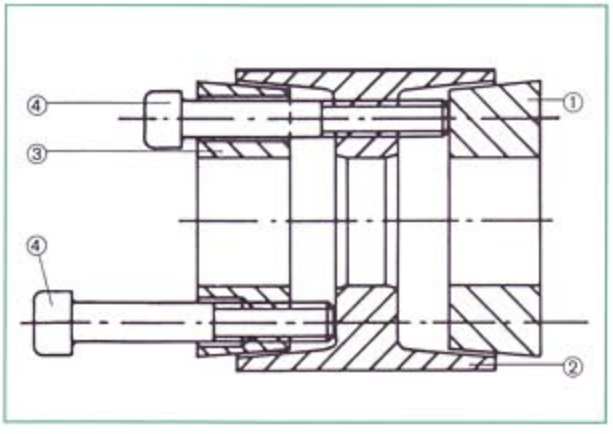
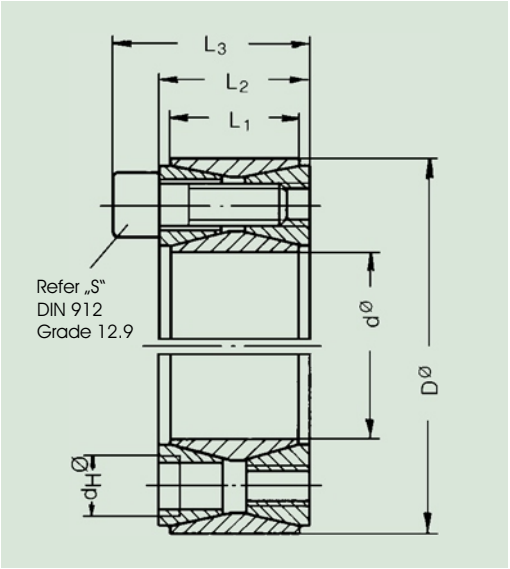


Fig. 2

1 = Back thrust ring
2 = Internal bush
3 = Front thrust ring
4 = Locking screws DIN 912 12.9

TAS 3020



M_t = Transmissible torque per locking assembly

M_A = Tightening torque per screw

d_H = 3 auxialiary threads in the front thrust ring.
The screw heads are marked..
Not to be used for pullers.

P_{ax} = Transmission axial force

p_W p_N = Contact pressure between locking assembly and shaft (p_w) resp. hub (p_n)

$L_2 - L_3$ are for unocked assemblies

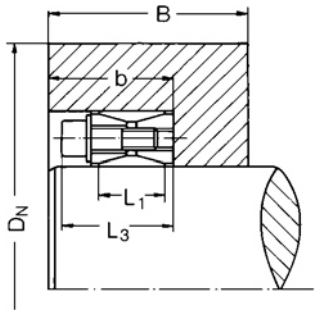
mm	Nm	kN		mm				Nm	N/mm²		Weight
dxD	M_t	P_{ax}	L_1	L2	L3	Pieces	S	M_A	p_W	p_N	kg
17x47	274	32	17	20	27,5	8	M 6x18	17	296	110	0,23
18x47	290	32	17	20	27,5	8	M 6x18	17	280	110	0,23
19x47	306	32	17	20	27,5	8	M 6x18	17	265	110	0,23
20x 47	320	32	17	20	27,5	8	M 6x18	17	255	110	0,23
22x 47	360	32	17	20	27,5	8	M 6x18	17	237	110	0,23
24x 50	387	33	17	20	27,5	8	M 6x18	17	210	101	0,26
25x 50	402	33	17	20	27,5	8	M 6x18	17	201	101	0,25
28x 55	678	48	17	20	27,5	12	M 6x18	17	270	137	0,30
30x 55	726	48	17	20	27,5	12	M 6x18	17	252	137	0,29
32x60	774	48	17	20	27,5	12	M 6x18	17	236	128	0,32
35x 60	850	48	17	20	27,5	12	M 6x18	17	219	128	0,32
38x65	1050	55	17	20	27,5	15	M 6x18	15	230	134	0,34
40x 65	1110	55	17	20	27,5	15	M 6x18	17	219	134	0,34
42x75	1750	84	20	24	33,5	12	M 8x22	41	264	147	0,57
45x 75	1880	84	20	24	33,5	12	M 8x22	41	246	147	0,57
48x80	2020	84	20	24	33,5	12	M 8x22	41	233	135	0,60
50x 80	2070	83	20	24	33,5	12	M 8x22	41	223	135	0,60
55x 85	2890	105	20	24	33,5	15	M 8x22	41	254	164	0,63
60x 90	3160	105	20	24	33,5	15	M 8x22	41	233	155	0,69
65x 95	3420	105	20	24	33,5	15	M 8x22	41	215	147	0,73
70x110	6070	173	24	28	39,5	15	M 10x25	83	274	175	1,26
75x115	6500	173	24	28	39,5	15	M 10x25	83	256	167	1,33
80x120	6900	173	24	28	39,5	15	M 10x25	83	240	160	1,40
85x125	7380	174	24	28	39,5	15	M 10x25	83	226	153	1,49
90x130	7800	174	24	28	39,5	15	M 10x25	83	214	178	1,53
95x135	9360	198	24	28	39,5	18	M 10x25	83	231	160	1,62
100x145	12800	256	26	33	47	15	M 12x30	145	262	180	2,01
110x155	14100	256	26	33	47	15	M 12x30	145	238	169	2,15
120x165	15200	263	26	33	47	16	M 12x30	145	215	157	2,35
130x180	20400	315	34	38	52	20	M 12x35	145	191	133	3,51
140x190	24200	345	34	38	52	22	M 12x35	145	191	145	3,85
150x200	28000	376	34	38	52	24	M 12x35	145	197	145	4,07
160x210	32500	406	34	38	52	26	M 12x35	145	197	151	4,03
170x225	39700	467	38	44	60	22	M 14x40	230	194	145	5,78
180x235	45700	508	38	44	60	24	M 14x40	230	200	151	6,05
190x250	56300	593	46	52	68	28	M 14x45	230	182	139	8,25
200x260	63500	635	46	52	68	30	M 14x45	230	182	139	8,65
220x285	81800	746	50	56	74	26	M 16x50	355	181	138	11,22
240x305	102900	860	50	56	74	30	M 16x50	355	193	150	12,20
260x325	125000	962	50	56	74	34	M 16x50	355	199	156	13,20

280x355	153000	1095	60	66	86,5	32	M 18x60	485	174	138	19,20
300x375	183000	1221	60	66	86,5	36	M 18x60	485	180	144	20,50
320x405	250000	1558	72	78	100,5	36	M 20x70	690	178	143	29,60
340x425	266500	1558	72	78	100,5	36	M 20x70	690	172	137	31,10
360x455	350500	1943	84	90	116	36	M 22x80	930	173	137	42,20
380x475	367000	1931	84	90	116	36	M 22x80	930	161	131	44,00
400x495	384000	1920	84	90	116	36	M 22x80	930	155	125	46,00
420x515	446000	2122	84	90	116	40	M 22x80	930	161	131	50,00
440x545	545000	2470	96	102	130	40	M 24x90	1200	155	126	64,60
460x565	565000	2450	96	102	130	40	M 24x90	1200	150	120	67,40
480x585	620000	2580	96	102	130	42	M 24x90	1200	150	120	71,00
500x605	670000	2680	96	102	130	44	M 24x90	1200	150	120	72,60

Further sizes on request. When ordering, show: TAS 3020/d/D

HUB OUTSIDE DIAMETER D_N AS A FACTOR OF THE YIELD POINT

(minimum theoretical values)



The values in the table for D_N apply to the use of o n e Locking Assembly TAS 3020

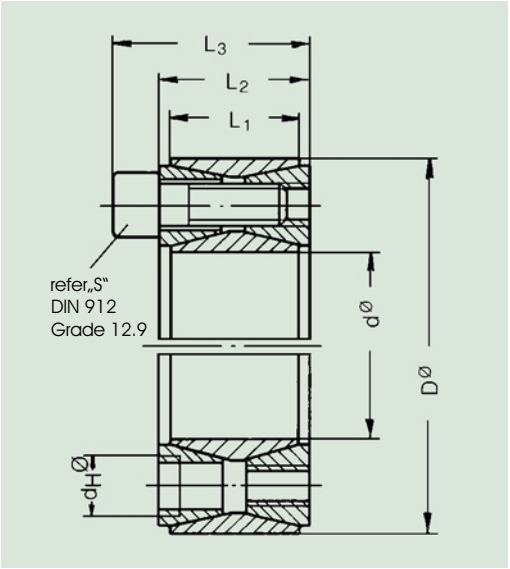
Width of the hub B $\geq 2\ L_1$

Depth of the before b $\geq L_3$

Hub section unweakened

dxD	PN	ó 0,2 N/mm²								
		150	180	200	220	250	270	300	350	400
mm	N/mm²	GG-22	GG-26 GS-38 V2A-S V2A-E	GG-30 V4A-S GTS-35	GS-45 St 35 St 37-3 V4A-E	GS-52 GS-C 25 GGG-40 St 45	C 35 St 50-2 X8CrTi 17 AlCuNiC	GS-60 St 60-2 C 20 GTS-45	GS-62 St 70-2 St 52	GS-70 C 60 25CrMo4
20x 47	110	76	70	68	65	62	62	60	58	56
25x 50	116	84	75	72	70	68	65	64	62	60
30x 55	116	92	84	80	78	74	72	70	68	66
35x 60	128	106	95	90	88	84	82	78	75	74
40x 65	134	120	106	100	96	92	90	86	82	80
45x 75	147	148	130	122	115	110	105	102	98	95
50x 80	135	148	130	124	118	112	110	106	102	100
55x 85	152	165	150	140	132	125	122	118	112	108
60x 90	140	170	150	142	135	128	124	120	116	112
65x 95	152	190	168	156	148	140	135	132	125	120
70x110	154	210	195	182	172	162	158	152	145	140
75x115	148	228	198	186	176	168	164	158	150	144
80x120	142	230	202	190	182	172	168	162	155	150
85x125	154	245	220	208	195	185	180	172	165	158
90x130	148	258	225	210	200	190	185	178	170	165
95x135	160	270	245	230	218	205	198	188	180	175
100x145	157	285	260	245	230	220	210	202	192	185
110x155	145	305	265	248	238	225	220	210	200	195
120x165	157	310	298	278	262	248	238	230	220	210
130x180	133	328	290	278	265	252	245	238	228	222
140x190	145	370	325	305	290	275	268	258	248	238
150x200	145	390	340	320	305	290	280	270	260	250
160x210	151	410	368	345	328	308	300	290	275	265
170x225	145	438	382	358	345	325	315	305	292	282
180x235	151	450	410	385	365	345	335	325	308	300
190x250	139	468	415	390	375	355	345	335	320	310
200x260	139	488	430	408	388	370	360	348	335	325
220x285	138	532	472	445	425	402	392	380	365	355
240x305	150	570	528	495	470	448	430	415	398	385
260x325	156	620	580	540	515	482	470	450	430	415
280x355	138	662	588	552	530	502	488	475	455	442
300x375	144	725	635	600	570	540	525	508	485	470
320x405	143	780	682	640	615	580	565	545	525	508
340x425	137	790	700	660	630	600	585	562	540	525
360x455	137	845	748	708	675	642	625	602	580	560
380x475	131	852	760	720	690	658	645	625	600	580
400x495	125	858	775	735	710	675	660	640	615	600
420x515	131	925	826	780	750	715	700	675	650	630
440x545	126	950	852	815	780	742	725	705	678	660
460x565	120	955	865	825	800	765	742	725	695	680
480x585	120	990	896	855	825	790	768	750	720	705
500x605	120	1025	928	885	855	820	795	775	745	728

TAS 3020 A



M_t = Transmissible torque per locking assembly

M_A = Tightening torque per screw

d_H = 3 auxiliary threads in the front
The screw heads are marked
Not to be used for pullers

P_{ax} = Transmission axial force

p_W p_N = Contact pressure between locking assembly and shaft (p_w) resp. hub (p_n)

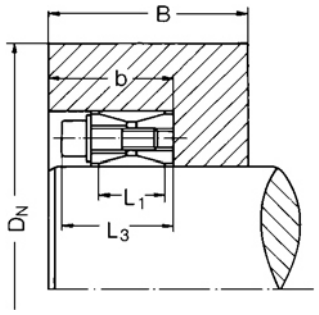
$L_2 - L_3$ are for unocked assemblies

mm	Nm	kN		mm					Nm	N/mm²		Weight
dxD	M_t	P_{ax}	L_1	L2	L3	Pieces	S		M_A	p_W	p_N	kg
20x 47	270	27	17	20	27,5	8	M 6x18		14	210	90	0,24
22x 47	300	27	17	20	27,5	8	M 6x18		14	195	90	0,23
24x 50	360	30	17	20	27,5	8	M 6x18		14	195	95	0,26
25x 50	380	30	17	20	27,5	8	M 6x18		14	190	95	0,25
28x 55	470	33	17	20	27,5	12	M 6x18		14	185	95	0,3
30x 55	500	33	17	20	27,5	12	M 6x18		14	175	95	0,29
35x 60	700	40	17	20	27,5	12	M 6x18		14	180	105	0,32
40x 65	920	46	17	20	27,5	15	M 6x18		14	180	110	0,34
45x 75	1610	72	20	24	33,5	12	M 8x22		35	210	125	0,57
50x 80	1770	71	20	24	33,5	12	M 8x22		35	190	115	0,6
55x 85	2270	83	20	24	33,5	15	M 8x22		35	200	130	0,63
60x 90	2470	83	20	24	33,5	15	M 8x22		35	180	120	0,69
65x 95	3040	93	20	24	33,5	15	M 8x22		35	190	130	0,73
70x110	4600	132	24	28	39,5	15	M 10x25		70	210	130	1,26
75x115	4900	131	24	28	39,5	15	M 10x25		70	195	125	1,33
80x120	5200	131	24	28	39,5	15	M 10x25		70	180	120	1,4
85x125	6300	148	24	28	39,5	15	M 10x25		70	195	130	1,49
90x130	6600	147	24	28	39,5	15	M 10x25		70	180	125	1,53
95x135	7900	167	24	28	39,5	18	M 10x25		70	195	135	1,62
100x145	9600	192	26	33	47	15	M 12x30		125	195	135	2,01
110x155	10500	191	26	33	47	15	M 12x30		125	180	125	2,15
120x165	13100	218	26	33	47	16	M 12x30		125	185	135	2,35
130x180	17600	272	34	38	52	20	M 12x35		125	165	115	3,51
140x190	20900	298	34	38	52	22	M 12x35		125	165	125	3,85
150x200	24200	324	34	38	52	24	M 12x35		125	170	125	4,07
160x210	28000	350	34	38	52	26	M 12x35		125	170	130	4,03
170x225	32800	386	38	44	60	22	M 14x40		190	160	120	5,78
180x235	37800	420	38	44	60	24	M 14x40		190	165	125	6,05
190x250	46500	490	46	52	68	28	M 14x45		190	150	115	8,25
200x260	52500	525	46	52	68	30	M 14x45		190	150	115	8,65
220x285	68000	620	50	56	74	26	M 16x50		295	150	115	11,22
240x305	85500	715	50	56	74	30	M 16x50		295	160	125	12,2
260x325	104000	800	50	56	74	34	M 16x50		295	165	130	13,2
280x355	128000	915	60	66	86,5	32	M 18x60		405	145	115	19,2
300x375	153000	1020	60	66	86,5	36	M 18x60		405	150	120	20,5
320x405	210000	1310	72	78	100,5	36	M 20x70		580	150	120	29,6
340x425	224000	1310	72	78	100,5	36	M 20x70		580	145	115	31,1
360x455	294000	1630	84	90	116	36	M 22x80		780	145	115	42,2
380x475	308000	1620	84	90	116	36	M 22x80		780	135	110	44
400x495	322000	1610	84	90	116	36	M 22x80		780	130	105	46
420x515	374000	1780	84	90	116	40	M 22x80		780	135	110	50
440x545	455000	2060	96	102	130	40	M 24x90		1000	130	105	64,6
460x565	470000	2040	96	102	130	40	M 24x90		1000	125	100	67,4
480x585	515000	2160	96	102	130	42	M 24x90		1000	125	100	71
500x605	560000	2240	96	102	130	44	M 24x90		1000	125	100	72,6

Further sizes on request. When ordering, show: TAS 3020/d/D

HUB OUTSIDE DIAMETER D_N AS A FACTOR OF THE YIELD POINT

(minimum theoretical values)



The values in the table for D_N apply to the use of o n e Locking Assembly TAS 3020 A

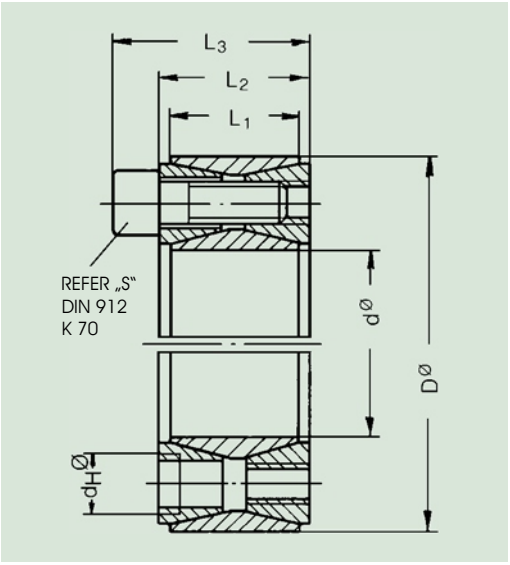
Width of the hub B $\geq 2\ L_1$

Depth of the bore b $\geq L_3$

Hub section unweakened

dxD	PN	ó 0,2 N/mm²								
		150	180	200	220	250	270	300	350	400
mm	N/mm²	GG-22	GG-26 GS-38 V2A-S V2A-E	GG-30 V4A-S GTS-35	GS-45 St 35 St 37-3 V4A-E	GS-52 GS-C 25 GGG-40 St 45	C 35 St 50-2 X8CrTi 17 AlCuNiC	GS-60 St 60-2 C 20 GTS-45	GS-62 St 70-2 St 52	GS-70 C 60 25CrMo4
20x 47	90	69	65	62	61	59	58	57	55	54
25x 50	95	75	70	67	66	63	62	61	59	58
30x 55	95	82	77	74	72	69	68	67	65	64
35x 60	105	96	87	84	81	78	76	74	72	71
40x 65	110	105	96	92	89	85	84	81	79	77
45x 75	125	130	117	111	107	103	100	97	93	91
50x 80	115	132	120	114	111	106	104	101	98	95
55x 85	130	151	136	128	123	118	115	111	107	104
60x 90	120	152	138	131	126	121	118	115	111	108
65x 95	130	169	152	143	138	132	128	124	120	116
70x110	130	196	176	166	160	152	149	144	138	134
75x115	125	200	180	171	165	157	153	148	143	139
80x120	120	203	184	175	169	161	158	154	148	144
85x125	130	223	199	189	181	173	169	164	158	153
90x130	125	226	203	193	186	178	173	168	162	157
95x135	135	247	219	208	199	189	185	178	172	166
100x145	135	265	236	223	214	203	198	192	184	178
110x155	125	269	242	230	222	212	206	200	193	187
120x165	135	302	268	254	243	231	225	218	209	203
130x180	115	297	270	257	250	240	234	228	220	214
140x190	125	330	296	282	272	260	252	245	237	230
150x200	125	347	312	297	286	273	266	258	249	242
160x210	130	374	335	317	304	291	284	275	265	257
170x225	120	380	344	328	316	302	296	288	278	270
180x235	125	408	366	349	336	321	313	303	292	284
190x250	115	413	375	357	346	333	325	316	305	298
200x260	115	430	390	372	360	346	338	329	317	310
220x285	115	470	428	408	395	379	370	360	348	339
240x305	125	530	475	453	436	416	405	394	380	369
260x325	130	578	518	490	472	450	440	425	410	396
280x355	115	585	533	507	492	472	462	450	433	423
300x375	120	642	572	545	526	505	493	480	462	450
320x405	120	693	618	590	568	545	533	517	500	486
340x425	115	700	636	610	588	564	553	537	519	506
360x455	115	748	680	653	630	605	592	575	556	542
380x475	110	762	700	670	646	623	610	594	576	562
400x495	105	790	715	690	665	640	630	615	595	585
420x515	110	828	758	726	705	675	660	650	625	608
440x545	105	853	786	755	732	705	695	675	655	640
460x565	100	865	800	770	750	725	715	695	675	660
480x585	100	895	825	800	775	750	740	715	695	680
500x605	100	925	855	825	805	775	765	740	720	705

TAS 3020 S 1 STAINLESS AND ACIDPROOF STEELE



M_t = Transmissible torque per locking assembly

M_A = Tightening torque per screw

d_H = 3 auxiliary threads in the front
The screw heads are marked
Not to be used for pullers

P_{ax} = Transmission axial force

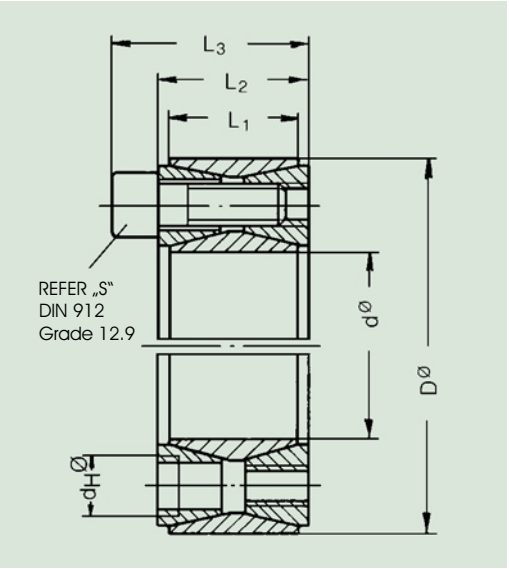
p_W p_N = Contact pressure between locking assembly and shaft (p_w) resp. hub (p_n)

$L_2 - L_3$ are for unocked assemblies

mm	Nm	kN		mm				Nm	N/mm²		Weight
dxD	M_t	P_{ax}	L1	L2	L3	Pieces	S	M_A	p_W	p_N	kg
20x 47	108	11	17	20	27,5	8	M 6x18	7	126	54	0,24
22x 47	120	11	17	20	27,5	8	M 6x18	7	117	55	0,23
24x 50	145	12	17	20	27,5	9	M 6x18	7	117	56	0,26
25x 50	152	12	17	20	27,5	9	M 6x18	7	114	57	0,25
28x 55	188	13	17	20	27,5	9	M 6x18	7	111	57	0,3
30x 55	200	13	17	20	27,5	9	M 6x18	7	105	57	0,29
32x 60	252	16	17	20	27,5	12	M 6x18	7	115	61	0,34
35x 60	280	16	17	20	27,5	12	M 6x18	7	108	63	0,32
38x 65	348	18	17	20	27,5	15	M 6x18	7	113	66	0,36
40x 65	370	19	17	20	27,5	15	M 6x18	7	108	67	0,34
42x 75	600	28	20	24	33,5	12	M 8x22	18	136	76	0,6
45x 75	645	28	20	24	33,5	12	M 8x22	18	126	76	0,57
48x 80	680	28	20	24	33,5	12	M 8x22	18	118	71	0,62
50x 80	700	28	20	24	33,5	12	M 8x22	18	114	71	0,6
55x 85	910	33	20	24	33,5	14	M 8x22	18	120	78	0,63
60x 90	990	33	20	24	33,5	14	M 8x22	18	108	72	0,69
65x 95	1115	34	20	24	33,5	16	M 8x22	18	114	78	0,73
70x110	1840	52	24	28	39,5	14	M 10x25	35	126	80	1,26
75x115	1960	52	24	28	39,5	14	M 10x25	35	117	76	1,33
80x120	2080	52	24	28	39,5	14	M 10x25	35	118	79	1,4
85x125	2520	59	24	28	39,5	16	M 10x25	35	117	80	1,49
90x130	2640	59	24	28	39,5	16	M 10x25	35	108	75	1,53
95x135	3160	66	24	28	39,5	18	M 10x25	35	117	82	1,62

Further sizes on request. When ordering, show: TAS 3020 S 1/d/D

TAS 3020 S 2 STAINLESS AND STAINLESS SCREWS



M_t = Transmissible torque per locking assembly

M_A = Tightening torque per screw

d_H = 3 auxiliary threads in the front
The screw heads are marked
Not to be used for pullers

P_{ax} = Transmission axial force

p_W p_N = Contact pressure between locking assembly and shaft (p_w) resp. hub (p_n)

$L_2 - L_3$ are for unocked assemblies

mm	Nm	kN		mm				Nm	N/mm²		Weight
dxD	M_t	P_{ax}	L_1	L2	L3	Pieces	S	M_A	p_W	p_N	kg
20x 47	270	27	17	20	27,5	8	M 6x18	17	210	90	0,24
22x 47	300	27	17	20	27,5	8	M 6x18	17	195	90	0,23
24x 50	360	30	17	20	27,5	9	M 6x18	17	195	95	0,26
25x 50	380	30	17	20	27,5	9	M 6x18	17	190	95	0,25
28x 55	470	33	17	20	27,5	9	M 6x18	17	185	95	0,3
30x 55	500	33	17	20	27,5	9	M 6x18	17	175	95	0,29
32x 60	630	40	17	20	27,5	12	M 6x18	17	192	105	0,34
35x 60	700	40	17	20	27,5	12	M 6x18	17	180	105	0,32
38x 65	870	46	17	20	27,5	15	M 6x18	17	188	110	0,36
40x 65	920	46	17	20	27,5	15	M 6x18	17	180	110	0,34
42x 75	1500	72									

Further sizes on request. When ordering, show: TAS 3020 S 2/d/D

FITTING AND REMOVAL OF TAS 3020, 3020 A, 3020 S 1/S 2 LOCKING ASSEMBLIES

Fitting:

Power is transmitted by means of contact pressure and friction between the functional surfaces. It is therefore very important to carefully check the condition of the contact surfaces (refer point 1) and to properly tighten the Locking Screws.

1. All contact surfaces, including threads and heads of the locking screws, have to be clean and are to be covered with an oil film. Shaft, hub and Locking Assembly are to be assembled in this condition.
2. Tighten locking screws lightly and position hub.
3. Tighten locking screws evenly crosswise up to the nominated tightening torque (tightening in 2-3 stages).
4. Re-check the tightening torque of the locking screws all the way round. When no screw can be tightened further with the torque wrench set to the tightening torque M_A, the fitting process is completed.

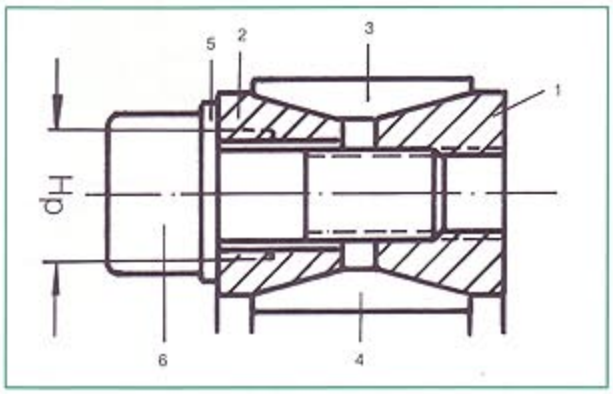


Fig. 1

1 = Rear thrust ring
2 = Front thrust ring
3 = Outer ring
4 = Inner ring
5 = Washer
6 = Locking screw grade DIN 912

Prior to fitting, used Locking Assemblies have to be cleaned and lightly oiled and then to be re-assembled as shown figure 1. The cadmium plated screws have to be fitted with a washer and placed in the holes of front thrust ring which have the pull-out threads (d_H).

Removal:

1. Loosen all screws crosswise several turns.
2. Now the loosened connection can be dis-assembled. If necessary, the front and rear thrust ring are to be dis-assembled as shown in figure 2 and 3.

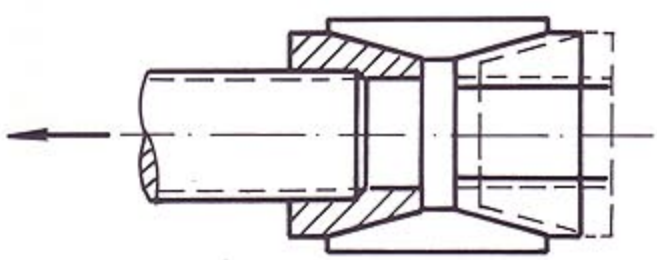


Figure 2

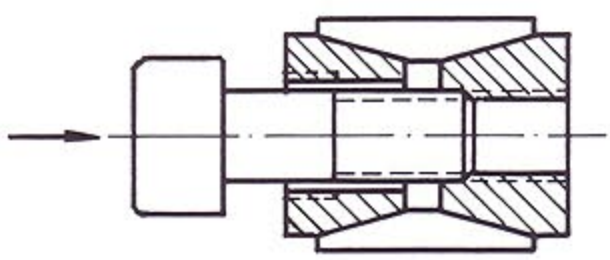


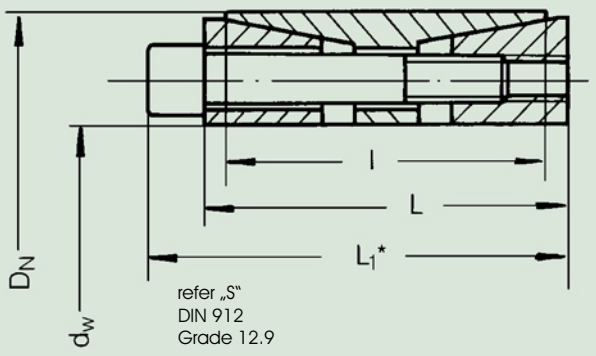
Figure 3

Tightening torque of screws DIN 912

Screw DIN 912		M 6	M 8	M 10	M 12	M 14	M 16	M 18	M 20	M 22	M 24
Tightening torque (Nm)	10.9	14	35	70	125	190	295	405	580	780	1000
	12.9	17	41	83	145	230	355	485	690	930	1200
d_H		M 8	M 10	M 12	M 16	M 18	M 20	M 22	M 24	M 27	M 30

TAS RB - CONVEYOR PULLEY LOCKING ASSEMBLIES

with low surface pressure



* L_1 can be changed on request.

M_t = Max. Transmissible torque per locking assembly

M_A = Tightening torque per screw

P_{ax} = Transmission axial force

p_w p_N = Contact pressure between locking assembly and shaft (p_w) resp. hub (p_n)

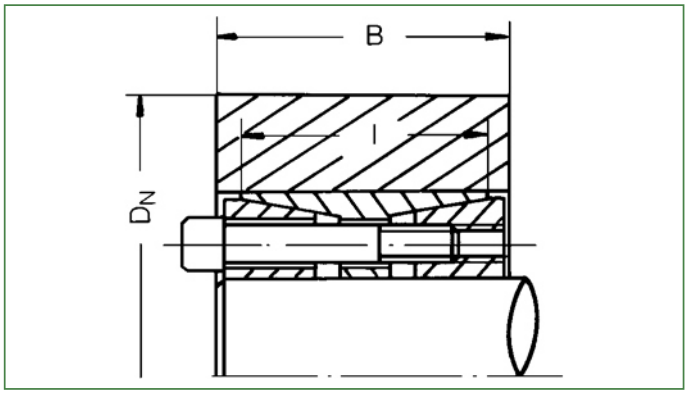
L_1 and L for unocked assemblies

mm	Nm	kN		mm				Nm	N/mm 2		Number of	Weight
dxD	M_t	P_{ax}	L1	L	l	Pieces	S	M_A	p_W	p_N	rel. threads	kg
100x145	7950	159	84	74	62	7	M 10x 60	83	87,3	60,2	7/ 6	4,4
110x155	10050	182	84	74	62	8	M 10x 60	83	90,9	64,5	8/ 7	4,8
120x165	12300	205	86	76	64	9	M 10x 60	83	89,8	65,3	9/ 8	5,3
130x180	14800	227	86	76	64	10	M 10x 60	83	92,3	66,7	10 / 9	5,9
140x190	17500	250	88	78	66	11	M 10x 60	83	90,9	66,7	11/ 10	6,8
150x200	19020	253	94	84	62	11	M 10x 70	83	80,1	60	11/ 10	9
160x210	23900	298	104	92	78	9	M 12x 75	145	79,9	60,9	9/ 8	9,3
170x225	28200	331	104	92	78	10	M 12x 75	145	83,4	63	10 / 9	11
180x235	30210	335	98	86	75	10	M 12x 70	145	85,3	63,1	10 / 9	13
190x250	38900	409	126	112	85	9	M 14x 80	230	86	68	9/ 8	15
200x260	45500	455	126	112	85	10	M 14x 90	230	80	70	10 / 9	17
220x285	55000	500	126	112	85	11	M 14x 90	230	80	71	11/ 10	20,6
240x305	69130	576	126	112	85	9	M 16x 90	355	86	78,3	10 / 9	23
260x325	90500	696	140	124	97	11	M 16x100	355	81,4	65,1	11/ 10	26
280x355	116490	832	136	136	108	13	M 16x 90	355	85,7	60,9	14/14	37
300x375	124810	832	127	127	108	13	M 16x 90	355	82,7	57,7	14/14	37
320x405	151800	948	167	151	135	15	M 16x110	355	70,6	55,7	15/14	52
340x425	150340	884	142	142	120	15	M 16x 90	355	70,4	48,4	15/14	53
360x455	204310	1135	178	160	130	16	M 18x130	485	77,4	53,4	16/15	68
380x475	246790	1298	192	172	145	13	M 20x130	690	75,6	51,8	14/14	90
400x495	319720	1598	192	172	145	16	M 20x130	690	88,3	64,9	16/15	90
420x515	335710	1598	190	180	145	16	M 20x130	690	78,9	63,3	16/15	90
440x545	391000	1777	200	180	160	18	M 20x130	690	81,3	65,6	18/17	102
460x565	413640	1798	190	180	145	18	M 20x130	690	80	60,9	18/17	112
480x585	474000	1975	200	180	160	20	M 20x130	690	82,8	67,9	20/19	110
500x605	499500	1998	190	180	140	20	M 20x130	690	82,8	78,2	20/19	120
520x630	575300	2212	224	202	180	18	M 22x140	930	75,1	62	18/17	141
540x650	630500	2335	224	202	180	19	M 22x140	930	76,3	63,4	19/18	146
560x670	688000	2457	224	202	180	20	M 22x140	930	77,5	64,8	20/19	150
580x690	664450	2291	208	208	180	20	M 22x140	930	76	51	20/19	155
600x710	687360	2291	208	208	180	20	M 22x140	930	73,4	57	20/19	164
620x730	781200	2520	208	208	180	22	M 22x140	930	89,3	60	22/21	173

Further sizes on request. When ordering, show: TAS RB/d/D

HUB OUTSIDE DIAMETER D_N AS A FACTOR OF THE YIELD POINT

(minimum theoretical values)



The values in the table for D_N apply to the use of o n e Locking Assembly TAS 3003

Width of the hub B ≥ l

Hub section unweakened

dxD	PN	ó 0,2 N/mm²								
		150	180	200	220	250	270	300	350	400
mm	N/mm²	GG-22	GG-26 GS-38 V2A-S V2A-E	GG-30 V4A-S GTS-35	GS-45 St 35 St 37-3 V4A-E	GS-52 GS-C 25 GGG-40 St 45	C 35 St 50-2 X8CrTi 17 AlCuNiC	GS-60 St 60-2 C 20 GTS-45	GS-62 St 70-2 St 52	GS-70 C 60 25CrMo4
100x145	60,2	221	204	197	191	185	182	179	174	171
110x155	64,5	247	226	217	210	202	198	193	187	183
120x165	65,3	262	241	231	224	215	211	206	199	194
130x180	66,7	291	266	255	247	237	232	226	218	213
140x190	66,7	307	281	269	260	250	245	238	231	225
150x200	60	306	283	273	265	255	251	245	238	233
160x210	60,9	323	299	288	279	269	264	258	250	245
170x255	63	352	324	312	302	291	285	278	270	264
180x235	63,1	368	339	326	316	304	298	291	282	275
190x250	68	408	373	357	346	330	323	315	306	298
200x260	70	432	393	375	362	346	338	330	320	311
220x285	71	476	433	413	399	381	372	364	351	341
240x305	78,3	542	485	460	442	421	411	398	383	372
260x325	65,1	517	474	455	441	424	415	405	392	383
280x355	60,9	547	505	486	472	455	447	436	423	414
300x375	57,7	564	524	505	491	475	466	456	443	434
320x405	55,7	600	559	540	525	509	500	489	476	466
340x425	48,4	592	559	543	531	516	509	499	488	479
360x455	53,4	663	620	600	585	567	557	546	532	521
380x475	51,8	682	639	620	604	587	577	566	552	541
400x495	64,9	787	723	694	671	646	633	617	597	583
420x515	63,3	806	742	714	691	666	653	637	617	603
440x545	65,6	874	801	768	743	714	699	682	660	644
460x565	60,9	863	799	770	747	722	708	692	672	657
480x585	67,9	954	871	834	805	773	757	737	712	695
500x605	78,2	1077	962	913	876	835	815	789	759	737
520x630	62	978	902	868	842	812	796	777	754	736
540x650	63,4	1017	937	901	873	841	824	804	780	762
560x670	64,8	1066	978	939	909	874	856	835	808	789
580x690	51	983	923	896	874	849	835	819	799	784
600x710	57	1059	986	952	926	895	880	861	837	820
620x730	60	1115	1032	995	966	932	915	894	868	849

FITTING AND REMOVAL OF TAS RB-CONVEYOR PULLEY L.A.

Fitting:

Power is transmitted by means of contact pressure and friction between the functional surfaces. It is therefore very important to carefully check the condition of the contact surfaces (refer point 1) and to properly tighten the Locking Screws.

1. All contact surfaces, including threads and heads of the locking screws, have to be clean and are to be covered with an oil film. Shaft, hub and Locking Assembly are to be assembled in this condition.
2. Tighten locking screws lightly and position hub.
3. Tighten locking screws evenly crosswise up to the nominated tightening torque.
4. Re-check the tightening torque of the locking screws all the way round. When no screw can be tightened further with the torque wrench set to the tightening torque M_A, the fitting process is completed.

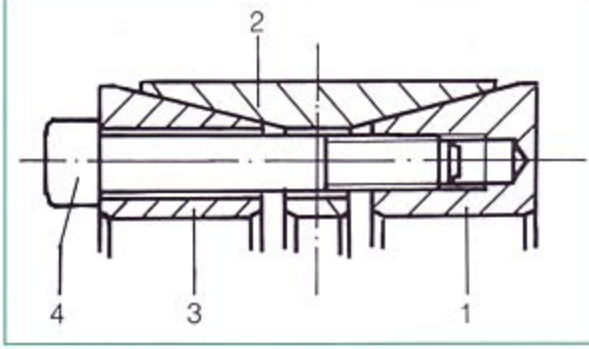


Fig. 1

1 = Rear thrust ring
2 = Outer ring
3 = Front thrust ring
4 = Locking screw

Prior to fitting, used Locking Assemblies have to be cleaned and lightly oiled and then to be re-assembled as shown in figure 1.

When re-assembling, it is important to make sure that the thrust rings and the outer ring are properly positioned to each other. All threaded holes of the rear thrust ring (1) are to be in line with the through holes of the web of the outer ring (2) and the front thrust ring (3).

Removal:

Sequence of removal:

1. Remove plugs.
   1.1 Loosen all screws several turns.
2. Remove screws adjacent to the puller threads and screw them into these threads.
   2.1 The front thrust ring is released by jacking the screws against the web of the outer ring (figure 2).
   2.2 Simularly the rear thrust ring is released a per figure 3.

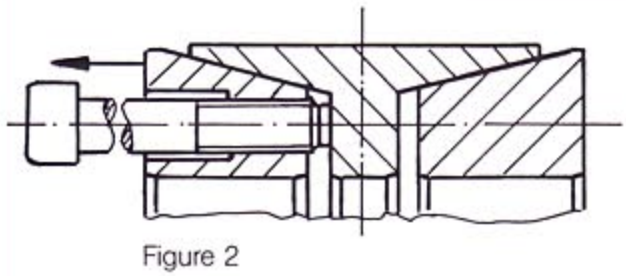


Figure 2

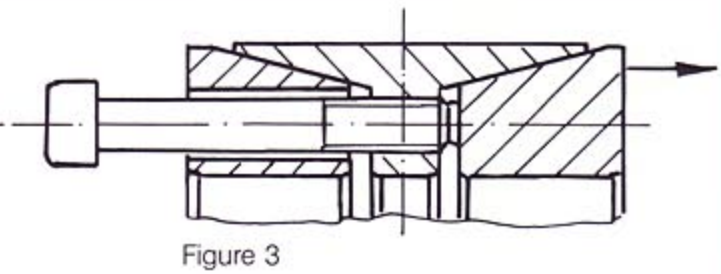
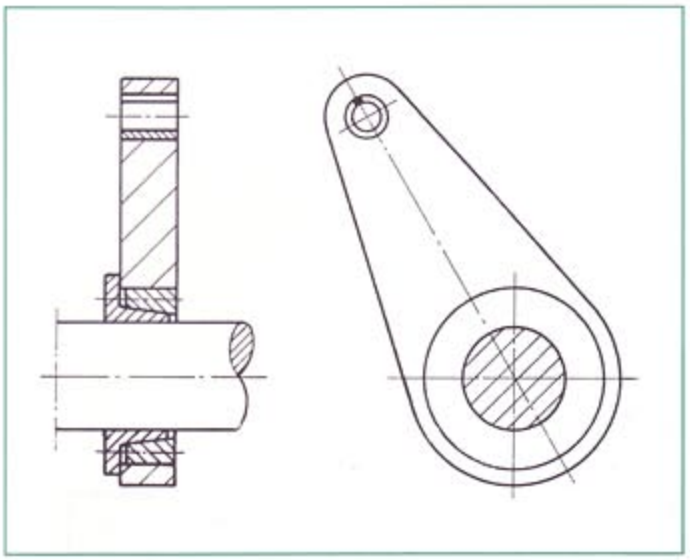


Figure 3

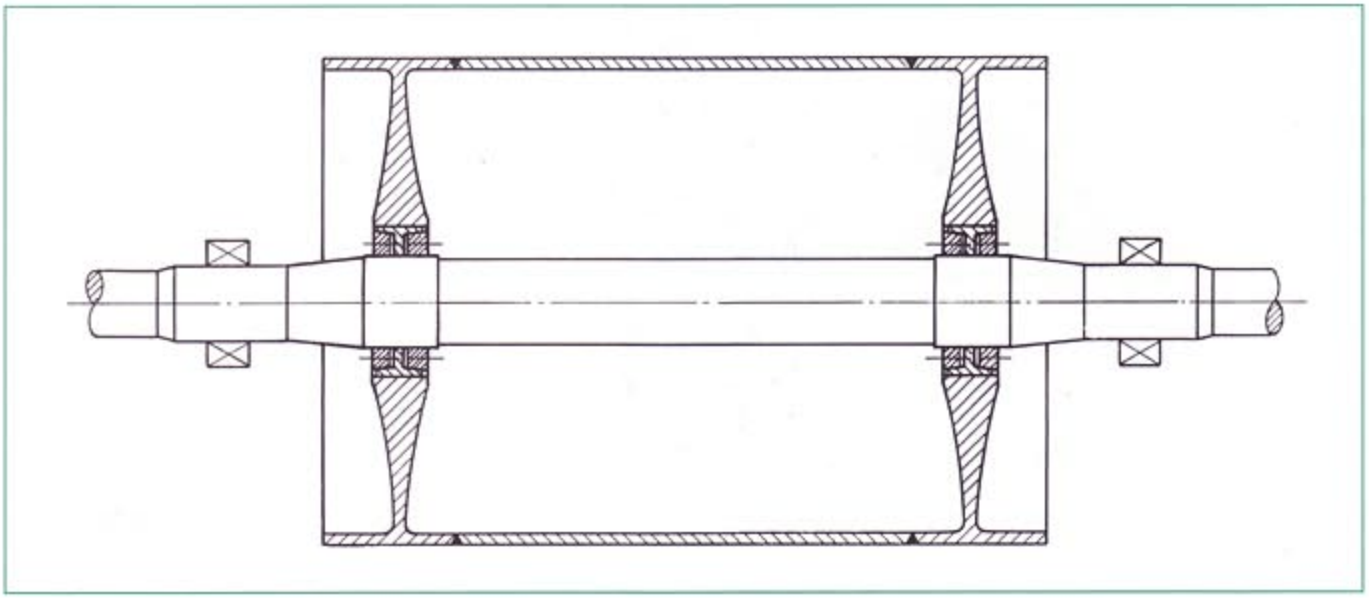
3. Pull or push hub and Locking Assembly off the shaft. The jacking screws should only be taken out after the Locking Assembly has been removed completely.

Undamaged Locking Assemblies are to be dis-assembled and cleaned before being re-used.

Damaged Locking Assemblies can be re-used by completing them with appropriate spare-parts.

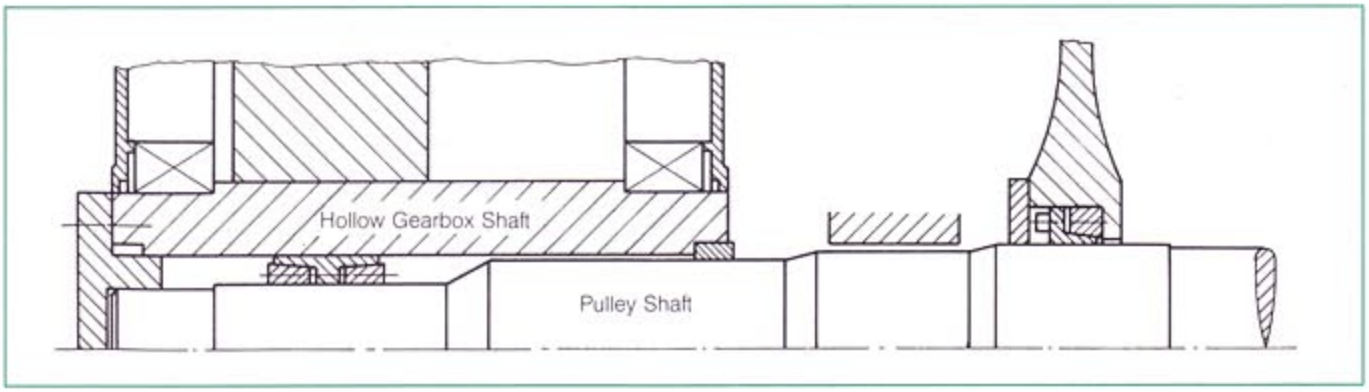


Lever mounting in every desired position using locking assembly TAS 3006

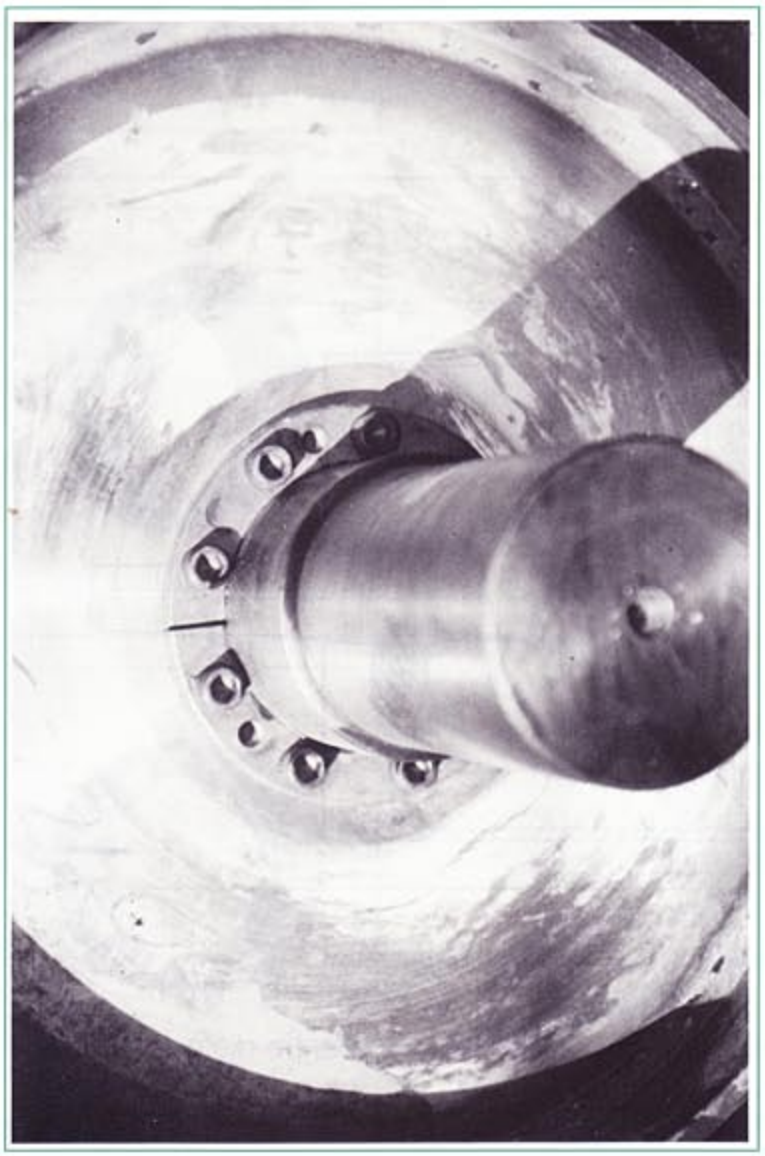


Mounting of a belt conveyor pulley using locking assemblies TAS 3012, 3015, RB

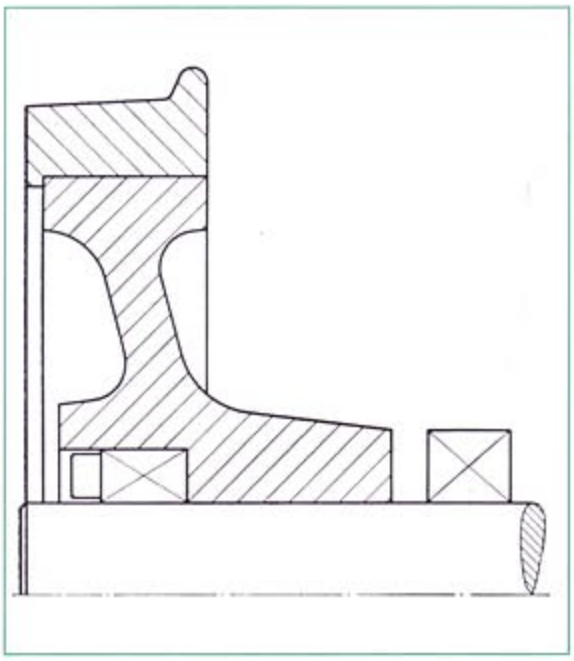
Important: Shaft deflections should not exceed $\frac{1}{2500}$ of the bearing centre distance.



Fastening of a shaft mounted gearbox using TAS 3012



Attachment of a belt drum
with TAS 3006 locking assemblies



Attachment of a travel wheel
with a TAS 3020 locking assembly

Attachment of a bevel gear
with a TAS 3020 locking assembly