

Spannsätze und Buchsen



Locking Assemblies and Bushes

Lagerprogramm

Klemmbuchsen
 Klemmbuchsen - Auswahltabellen
 Anbaunaben für Klemmbuchsen
 Einschweißnaben für Klemmbuchsen
 Spannbuchsen
 Spannbuchsen - Montageanleitung
 Spannsätze
 - selbstzentrierend & nicht selbstzentrierend
 Spannsätze
 - Berechnung des Naben-Mindestdurchmessers DM
 Schrumpfscheiben
 Spannsätze Trantorques

D 1 - D 2
 D 3
 D 4
 D 4
 D 5
 D 6
 D 7 - D 13

 D 14 - D 15

 D 16
 D 17 - D 18

stock programme

Taper Bushes
 Taper Bushes - Selection Tables
 Bolt on Hubs for Taper Bushes
 Weld on Hubs for Taper Bushes
 Clamping Bushes
 Clamping Bushes - Mounting Instructions
 Locking Assemblies
 - Self-centering & Non-Self-centering
 Locking Assemblies
 - Calculation of Minimum Hub Diameter DM
 Shrink Discs
 Trantorques

Sonderanfertigungen

Auf Anfrage



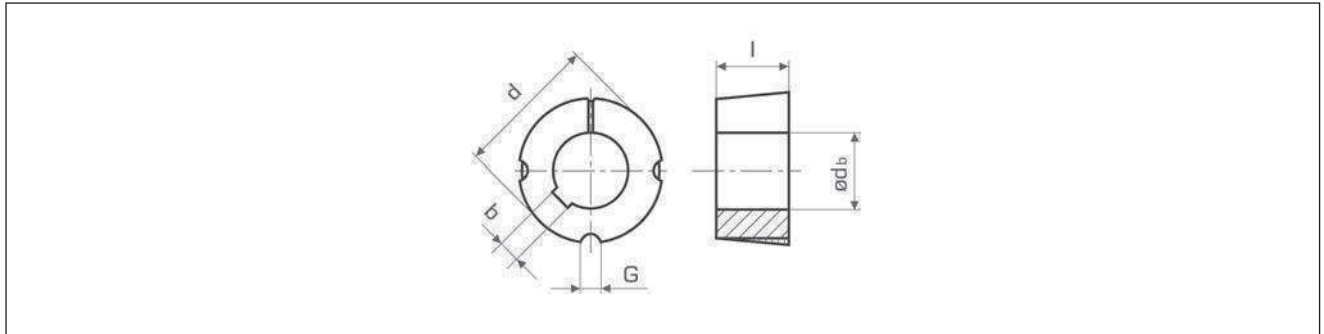
made to order

on request



Klemmbuchsen

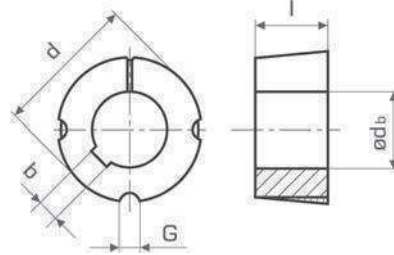
Taper Bushes



| d _b | b | x | t ₂ | d | l | G | Mat. | [kg] | Bestell Nr. Part No. | d _b | b | x | t ₂ | d | l | G | Mat. | [kg] | Bestell Nr. Part No. |
|----------------|----|---|----------------|------|------|------|------|------|-------------------------|----------------|----|---|----------------|----|------|-------|------|------|-------------------------|
| 10 | 3 | x | 1,4 | 35,0 | 22,3 | 1/4" | GG25 | 0,12 | 295-100-810 | 14 | 5 | x | 2,3 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-014 |
| 11 | 4 | x | 1,8 | 35,0 | 22,3 | 1/4" | GG25 | 0,12 | 295-100-811 | 16 | 6 | x | 2,8 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-016 |
| 12 | 4 | x | 1,8 | 35,0 | 22,3 | 1/4" | GG25 | 0,12 | 295-100-812 | 18 | 6 | x | 2,8 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-018 |
| 14 | 5 | x | 2,3 | 35,0 | 22,3 | 1/4" | GG25 | 0,12 | 295-100-814 | 19 | 6 | x | 2,8 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-019 |
| 16 | 5 | x | 2,3 | 35,0 | 22,3 | 1/4" | GG25 | 0,12 | 295-100-816 | 20 | 6 | x | 2,8 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-020 |
| 18 | 6 | x | 2,8 | 35,0 | 22,3 | 1/4" | GG25 | 0,12 | 295-100-818 | 22 | 6 | x | 2,8 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-022 |
| 19 | 6 | x | 2,8 | 35,0 | 22,3 | 1/4" | GG25 | 0,12 | 295-100-819 | 24 | 8 | x | 3,3 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-024 |
| 20 | 6 | x | 2,8 | 35,0 | 22,3 | 1/4" | GG25 | 0,12 | 295-100-820 | 25 | 8 | x | 3,3 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-025 |
| 22 | 6 | x | 2,8 | 35,0 | 22,3 | 1/4" | GG25 | 0,12 | 295-100-822 | 28 | 8 | x | 3,3 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-028 |
| 24 | 8 | x | 1,3* | 35,0 | 22,3 | 1/4" | GG25 | 0,12 | 295-100-824 | 30 | 8 | x | 3,3 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-030 |
| 25 | 8 | x | 1,3* | 35,0 | 22,3 | 1/4" | GG25 | 0,12 | 295-100-825 | 32 | 10 | x | 3,3 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-032 |
| | | | | | | | | | | 35 | 10 | x | 3,3 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-035 |
| 10 | 3 | x | 1,4 | 38,5 | 22,3 | 1/4" | GG25 | 0,16 | 295-110-810 | 38 | 10 | x | 3,3 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-038 |
| 11 | 4 | x | 1,8 | 38,5 | 22,3 | 1/4" | GG25 | 0,16 | 295-110-811 | 40 | 12 | x | 3,3 | 57 | 25,4 | 3/8" | GG25 | 0,41 | 295-161-040 |
| 12 | 4 | x | 1,8 | 38,5 | 22,3 | 1/4" | GG25 | 0,16 | 295-110-812 | 42 | 12 | x | 2,2* | 57 | 25,4 | 3/8" | St | 0,41 | 295-161-042 |
| 14 | 5 | x | 2,3 | 38,5 | 22,3 | 1/4" | GG25 | 0,16 | 295-110-814 | | | | | | | | | | |
| 16 | 5 | x | 2,3 | 38,5 | 22,3 | 1/4" | GG25 | 0,16 | 295-110-816 | 14 | 5 | x | 2,3 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-514 |
| 18 | 6 | x | 2,8 | 38,5 | 22,3 | 1/4" | GG25 | 0,16 | 295-110-818 | 16 | 6 | x | 2,8 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-516 |
| 19 | 6 | x | 2,8 | 38,5 | 22,3 | 1/4" | GG25 | 0,16 | 295-110-819 | 18 | 6 | x | 2,8 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-518 |
| 20 | 6 | x | 2,8 | 38,5 | 22,3 | 1/4" | GG25 | 0,16 | 295-110-820 | 19 | 6 | x | 2,8 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-519 |
| 22 | 6 | x | 2,8 | 38,5 | 22,3 | 1/4" | GG25 | 0,16 | 295-110-822 | 20 | 6 | x | 2,8 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-520 |
| 24 | 8 | x | 3,3 | 38,5 | 22,3 | 1/4" | GG25 | 0,16 | 295-110-824 | 22 | 6 | x | 2,8 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-522 |
| 25 | 8 | x | 3,3 | 38,5 | 22,3 | 1/4" | GG25 | 0,16 | 295-110-825 | 24 | 8 | x | 3,3 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-524 |
| 28 | 8 | x | 1,3* | 38,5 | 22,3 | 1/4" | St | 0,16 | 295-110-828 | 25 | 8 | x | 3,3 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-525 |
| | | | | | | | | | | 28 | 8 | x | 3,3 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-528 |
| 11 | 4 | x | 1,8 | 47,5 | 25,4 | 3/8" | GG25 | 0,28 | 295-121-011 | 30 | 8 | x | 3,3 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-530 |
| 12 | 4 | x | 1,8 | 47,5 | 25,4 | 3/8" | GG25 | 0,28 | 295-121-012 | 32 | 10 | x | 3,3 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-532 |
| 14 | 5 | x | 2,3 | 47,5 | 25,4 | 3/8" | GG25 | 0,28 | 295-121-014 | 35 | 10 | x | 3,3 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-535 |
| 16 | 6 | x | 2,8 | 47,5 | 25,4 | 3/8" | GG25 | 0,28 | 295-121-016 | 38 | 10 | x | 3,3 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-538 |
| 18 | 6 | x | 2,8 | 47,5 | 25,4 | 3/8" | GG25 | 0,28 | 295-121-018 | 40 | 12 | x | 3,3 | 57 | 38,1 | 3/8" | GG25 | 0,60 | 295-161-540 |
| 19 | 6 | x | 2,8 | 47,5 | 25,4 | 3/8" | GG25 | 0,28 | 295-121-019 | 42 | 12 | x | 2,2* | 57 | 38,1 | 3/8" | St | 0,60 | 295-161-542 |
| 20 | 6 | x | 2,8 | 47,5 | 25,4 | 3/8" | GG25 | 0,28 | 295-121-020 | | | | | | | | | | |
| 22 | 6 | x | 2,8 | 47,5 | 25,4 | 3/8" | GG25 | 0,28 | 295-121-022 | 14 | 5 | x | 2,3 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-214 |
| 24 | 8 | x | 3,3 | 47,5 | 25,4 | 3/8" | GG25 | 0,28 | 295-121-024 | 16 | 5 | x | 2,3 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-216 |
| 25 | 8 | x | 3,3 | 47,5 | 25,4 | 3/8" | GG25 | 0,28 | 295-121-025 | 18 | 6 | x | 2,8 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-218 |
| 28 | 8 | x | 3,3 | 47,5 | 25,4 | 3/8" | GG25 | 0,28 | 295-121-028 | 19 | 6 | x | 2,8 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-219 |
| 30 | 8 | x | 3,3 | 47,5 | 25,4 | 3/8" | GG25 | 0,28 | 295-121-030 | 20 | 6 | x | 2,8 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-220 |
| 32 | 10 | x | 3,3 | 47,5 | 25,4 | 3/8" | GG25 | 0,28 | 295-121-032 | 22 | 6 | x | 2,8 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-222 |
| | | | | | | | | | | 24 | 8 | x | 3,3 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-224 |
| 14 | 5 | x | 2,3 | 51 | 25,4 | 3/8" | GG25 | 0,32 | 295-131-014 | 25 | 8 | x | 3,3 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-225 |
| 16 | 6 | x | 2,8 | 51 | 25,4 | 3/8" | GG25 | 0,32 | 295-131-016 | 28 | 8 | x | 3,3 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-228 |
| 18 | 6 | x | 2,8 | 51 | 25,4 | 3/8" | GG25 | 0,32 | 295-131-018 | 30 | 8 | x | 3,3 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-230 |
| 19 | 6 | x | 2,8 | 51 | 25,4 | 3/8" | GG25 | 0,32 | 295-131-019 | 32 | 10 | x | 3,3 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-232 |
| 20 | 6 | x | 2,8 | 51 | 25,4 | 3/8" | GG25 | 0,32 | 295-131-020 | 35 | 10 | x | 3,3 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-235 |
| 22 | 6 | x | 2,8 | 51 | 25,4 | 3/8" | GG25 | 0,32 | 295-131-022 | 38 | 10 | x | 3,3 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-238 |
| 24 | 8 | x | 3,3 | 51 | 25,4 | 3/8" | GG25 | 0,32 | 295-131-024 | 40 | 12 | x | 3,3 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-240 |
| 25 | 8 | x | 3,3 | 51 | 25,4 | 3/8" | GG25 | 0,32 | 295-131-025 | 42 | 12 | x | 3,3 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-242 |
| 28 | 8 | x | 3,3 | 51 | 25,4 | 3/8" | GG25 | 0,32 | 295-131-028 | 45 | 14 | x | 3,8 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-245 |
| 30 | 8 | x | 3,3 | 51 | 25,4 | 3/8" | GG25 | 0,32 | 295-131-030 | 48 | 14 | x | 3,8 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-248 |
| 32 | 10 | x | 3,3 | 51 | 25,4 | 3/8" | GG25 | 0,32 | 295-131-032 | 50 | 14 | x | 3,8 | 70 | 31,8 | 7/16" | GG25 | 0,75 | 295-201-250 |

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Taper Bushes



| d_b | b | x | t_2 | d | l | G | Mat. | [kg] | Bestell Nr. Part No. | d_b | b | x | t_2 | d | l | G | Mat. | [kg] | Bestell Nr. Part No. |
|-------|-----|-----|-------|-----|------|------|------|------|-------------------------|-------|-----|-----|-------|-----|------|------|------|------|-------------------------|
| 16 | 5 | x | 2,3 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-716 | 30 | 8 | x | 3,3 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-030 |
| 18 | 6 | x | 2,8 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-718 | 32 | 10 | x | 3,3 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-032 |
| 19 | 6 | x | 2,8 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-719 | 35 | 10 | x | 3,3 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-035 |
| 20 | 6 | x | 2,8 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-720 | 38 | 10 | x | 3,3 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-038 |
| 22 | 6 | x | 2,8 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-722 | 40 | 12 | x | 3,3 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-040 |
| 24 | 8 | x | 3,3 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-724 | 42 | 12 | x | 3,3 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-042 |
| 25 | 8 | x | 3,3 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-725 | 45 | 14 | x | 3,8 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-045 |
| 28 | 8 | x | 3,3 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-728 | 48 | 14 | x | 3,8 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-048 |
| 30 | 8 | x | 3,3 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-730 | 50 | 14 | x | 3,8 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-050 |
| 32 | 10 | x | 3,3 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-732 | 55 | 16 | x | 4,3 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-055 |
| 35 | 10 | x | 3,3 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-735 | 60 | 18 | x | 4,4 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-060 |
| 38 | 10 | x | 3,3 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-738 | 65 | 18 | x | 4,4 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-065 |
| 40 | 12 | x | 3,3 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-740 | 70 | 20 | x | 4,9 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-070 |
| 42 | 12 | x | 3,3 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-742 | 75 | 20 | x | 4,9 | 108 | 76,2 | 5/8" | GG25 | 3,75 | 295-303-075 |
| 45 | 14 | x | 3,8 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-745 | | | | | | | | | | |
| 48 | 14 | x | 3,8 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-748 | 35 | 12 | x | 3,3 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-535 |
| 50 | 14 | x | 3,8 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-750 | 38 | 12 | x | 3,3 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-538 |
| 55 | 16 | x | 4,3 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-755 | 40 | 12 | x | 3,3 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-540 |
| 60 | 18 | x | 4,4 | 86 | 44,5 | 1/2" | GG25 | 1,06 | 295-251-760 | 42 | 12 | x | 3,3 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-542 |
| | | | | | | | | | | 45 | 14 | x | 3,8 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-545 |
| 25 | 8 | x | 3,3 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-025 | 48 | 14 | x | 3,8 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-548 |
| 28 | 8 | x | 3,3 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-028 | 50 | 14 | x | 3,8 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-550 |
| 30 | 8 | x | 3,3 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-030 | 55 | 16 | x | 4,3 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-555 |
| 32 | 10 | x | 3,3 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-032 | 60 | 18 | x | 4,4 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-560 |
| 35 | 10 | x | 3,3 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-035 | 65 | 18 | x | 4,4 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-565 |
| 38 | 10 | x | 3,3 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-038 | 70 | 20 | x | 4,9 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-570 |
| 40 | 12 | x | 3,3 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-040 | 75 | 20 | x | 4,9 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-575 |
| 42 | 12 | x | 3,3 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-042 | 80 | 22 | x | 4,5 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-580 |
| 45 | 14 | x | 3,8 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-045 | 85 | 22 | x | 4,5 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-585 |
| 48 | 14 | x | 3,8 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-048 | 90 | 25 | x | 4,5 | 127 | 88,9 | 1/2" | GG25 | 5,13 | 295-353-590 |
| 50 | 14 | x | 3,8 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-050 | | | | | | | | | | |
| 55 | 16 | x | 4,3 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-055 | | | | | | | | | | |
| 60 | 18 | x | 4,4 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-060 | | | | | | | | | | |
| 65 | 18 | x | 4,4 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-065 | | | | | | | | | | |
| 70 | 20 | x | 4,9 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-070 | | | | | | | | | | |
| 75 | 20 | x | 4,9 | 108 | 50,8 | 5/8" | GG25 | 2,50 | 295-302-075 | | | | | | | | | | |

Klemmbuchsen

Taper Bushes

| Buchse bush | 1008 | 1108 | 1210 | 1310 | 1610 | 1615 | 2012 | 2517 | 3020 | 3030 | 3535 |
|---|------|------|------|------|------|------|-------|------|------|------|------|
| Anzugsmoment d. Schrauben [Nm] starting torque of screws [Nm] | 5,6 | 5,6 | 20 | 20 | 20 | 20 | 30 | 50 | 90 | 90 | 115 |
| Schraubenzahl (Stk.) number of screws (pieces) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| Schraubendurchmesser (Zoll) diameter of screw (inch) | 1/4" | 1/4" | 3/8" | 3/8" | 3/8" | 3/8" | 7/16" | 1/2" | 5/8" | 5/8" | 1/2" |
| Innensechskant SWL (mm) allen wrench opening | 3 | 3 | 5 | 5 | 5 | 5 | 6 | 6 | 8 | 8 | 10 |

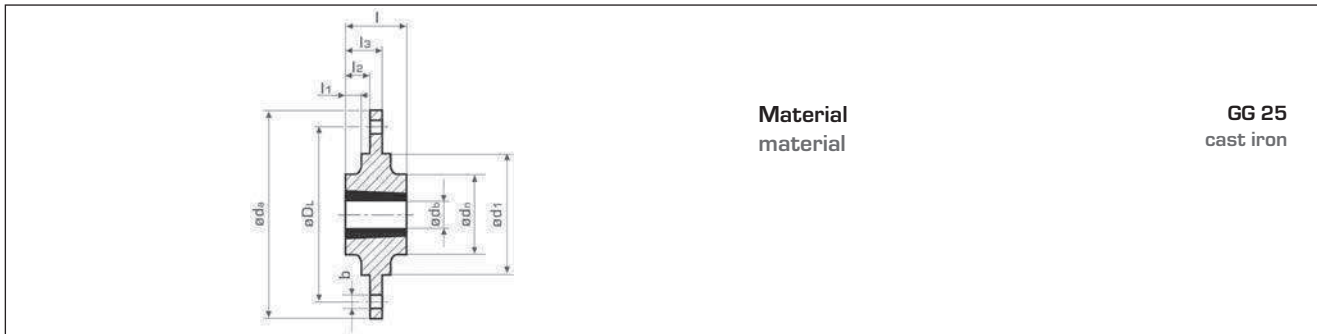
| Buchse bush | Buchsenbohrung diameter of bore (bush) [mm] | Rutschmoment slipping moment [Nm] | Klemmkraft clamping power [N] | min. Nabendurchmesser für diverse Materialien min. hub diameter for various materials [mm] | | | |
|---------------|--|--|--|--|-----------------------|---|-----------------------|
| | | | | Zugfestigkeit tensile strength [N/mm ²] | | | |
| | | | | Grauguss cast iron | | Stahl / duktiler Stahl steel / ductile iron | Stahl steel |
| | | | | 180 N/mm ² | 250 N/mm ² | 420 N/mm ² | 600 N/mm ² |

| | | | | | | | |
|-------------|----|-------|--------|-----|-----|-----|-----|
| 295-100-8XX | 12 | 29 | 3990 | 62 | 54 | 51 | 47 |
| | 19 | 51 | 4940 | 64 | 57 | 54 | 50 |
| 295-110-8XX | 12 | 28 | - | | | | |
| | 19 | 49 | 4 630 | | | | |
| | 24 | 64 | 5 220 | | | | |
| 295-121-0XX | 16 | 82 | 8 840 | 104 | 86 | 78 | 69 |
| | 19 | 105 | 9 800 | | | | |
| | 24 | 142 | 10 900 | | | | |
| 295-131-0XX | 14 | 59 | 7800 | | | | |
| | 25 | 120 | 10 900 | | | | |
| 295-161-0XX | 19 | 98 | - | 109 | 92 | 85 | 78 |
| | 24 | 135 | 9 570 | | | | |
| | 38 | 240 | 11 900 | | | | |
| 295-161-5XX | 19 | 98 | - | 90 | 81 | 77 | 73 |
| | 24 | 135 | 9 570 | | | | |
| | 38 | 240 | 11 900 | | | | |
| 295-201-2XX | 24 | 165 | 11 500 | 121 | 106 | 99 | 92 |
| | 38 | 310 | 14 400 | | | | |
| | 42 | 340 | 15 700 | | | | |
| | 48 | 400 | - | | | | |
| 295-251-7XX | 24 | 220 | - | 130 | 119 | 113 | 108 |
| | 38 | 380 | 1 700 | | | | |
| | 42 | 430 | 18 500 | | | | |
| | 48 | 510 | - | | | | |
| | 55 | 600 | 21 000 | | | | |
| 295-302-0XX | 38 | 520 | 23 900 | 160 | 146 | 140 | 132 |
| | 48 | 730 | 26 100 | | | | |
| | 55 | 890 | 29 900 | | | | |
| | 60 | 970 | 31 500 | | | | |
| | 75 | 1 300 | 34 500 | | | | |
| 295-303-0XX | 38 | 520 | 23 900 | 144 | 136 | 132 | 127 |
| | 48 | 730 | 26 100 | | | | |
| | 55 | 890 | 29 900 | | | | |
| | 60 | 970 | 31 500 | | | | |
| | 75 | 1 300 | 34 500 | | | | |
| 295-353-5XX | 42 | 1 000 | 41 000 | 191 | 176 | 168 | 160 |
| | 60 | 1 580 | 49 800 | | | | |
| | 75 | 2 150 | 54 600 | | | | |
| | 90 | 2 600 | 59 000 | | | | |

Die WMH-Klemmbuchsen sind mit Taperlock ® - Klemmbuchsen austauschbar. Die letzten beiden Zahlen entsprechen dem Bohrungs-Ø. Bsp.: 295-121-012.

Anbaunaben für Klemmbuchsen

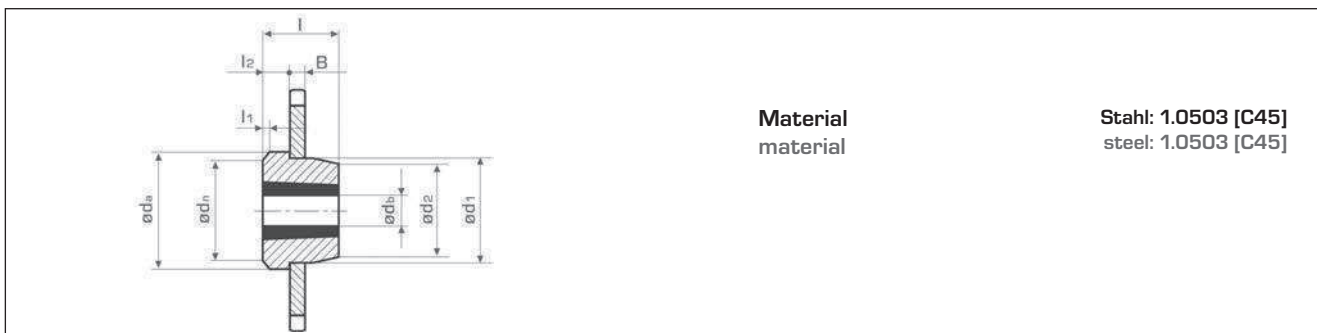
Bolt on Hubs for Taper Bushes



| d_a | D_L | d_1 | d_n | l | l_1 | l_2 | l_3 | b | L^* | [kg] | für Klemmbuchsen for taper bushes | Bestell Nr. Part No. |
|-------|-------|-------|-------|-----|-------|-------|-------|------|-------|------|--|-------------------------|
| 180 | 135 | 90 | 75 | 25 | 6,75 | 9,25 | 15,75 | 7,5 | 6 | 1,8 | 295-121-011...032 | 295-121-002 |
| 200 | 150 | 110 | 85 | 38 | 12,75 | 15,25 | 22,25 | 7,5 | 6 | 2,2 | 295-161-514...542 | 295-161-502 |
| 270 | 190 | 140 | 110 | 32 | 9,25 | 11,75 | 20,25 | 9,5 | 6 | 4,35 | 295-201-214...250 | 295-201-202 |
| 340 | 240 | 170 | 125 | 45 | 14,75 | 17,25 | 26,75 | 11,5 | 8 | 8,8 | 295-251-716...760 | 295-251-702 |
| 430 | 300 | 220 | 160 | 51 | 16,25 | 18,75 | 32,25 | 13,5 | 8 | 19,2 | 295-302-025...075 | 295-302-002 |
| 485 | 340 | 250 | 160 | 51 | 15,75 | 18,25 | 31,75 | 13,5 | 8 | 26,0 | 295-302-025...075 | 295-302-102 |

Einschweißnaben für Klemmbuchsen

Weld on Hubs for Taper Bushes

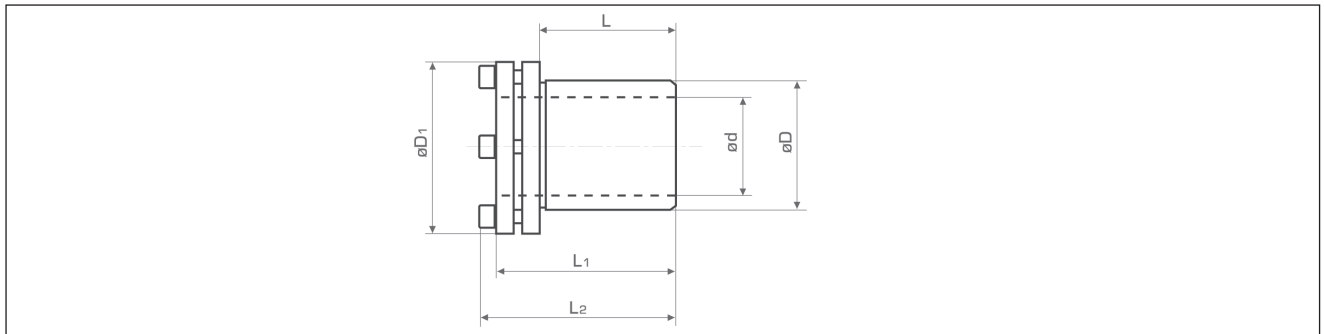


| d_a | d_1 (h8) | d_2 | d_n | l | l_1 | l_2 | B | [kg] | für Klemmbuchsen for taper bushes | Bestell Nr. Part No. |
|-------|------------|-------|-------|-----|-------|-------|-----|-------|--|-------------------------|
| 70 | 60 | 60 | 65 | 25 | 7 | 9 | 10 | 0,275 | 295-121-011...032 | 295-121-003 |
| 83 | 70 | 68 | 76 | 38 | 10 | 16 | 11 | 0,55 | 295-161-514...542 | 295-161-503 |
| 127 | 110 | 108 | 117 | 44 | 10 | 19 | 13 | 1,75 | 295-251-716...760 | 295-251-703 |
| 152 | 130 | 125 | 140 | 76 | 13 | 25 | 19 | 3,4 | 295-303-030...075 | 295-303-003 |
| 184 | 155 | 151 | 168 | 89 | 16 | 32 | 25 | 6,7 | 295-353-535...590 | 295-353-503 |

L^* : Lochzahl | number of holes

Spannbuchsen

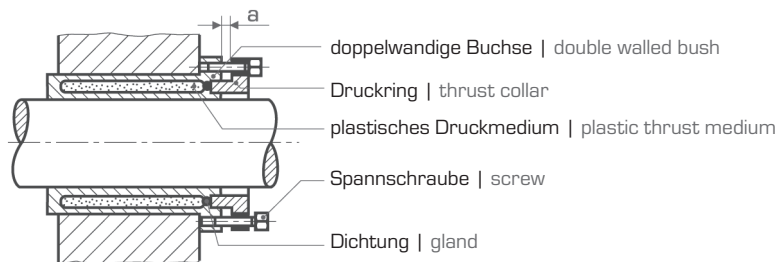
Clamping Bushes



| d | D | D ₁ | L | L ₁ | L ₂ | M _t | F _a | [kg] | Bestell Nr. Part No. | d | D | D ₁ | L | L ₁ | L ₂ | M _t | F _a | [kg] | Bestell Nr. Part No. |
|----|----|----------------|----|----------------|----------------|----------------|----------------|-------|-------------------------|----|----|----------------|----|----------------|----------------|----------------|----------------|-------|-------------------------|
| 20 | 28 | 45 | 22 | 37 | 42 | 125 | 12,5 | 0,185 | 298-000-020 | 40 | 53 | 70 | 43 | 63 | 68 | 940 | 47,0 | 0,550 | 298-000-040 |
| 22 | 32 | 49 | 22 | 37 | 42 | 135 | 12,3 | 0,195 | 298-000-022 | 42 | 55 | 70 | 45 | 65 | 70 | 940 | 44,8 | 0,550 | 298-000-042 |
| 24 | 34 | 49 | 25 | 40 | 45 | 200 | 16,7 | 0,210 | 298-000-024 | 45 | 59 | 77 | 49 | 69 | 75 | 1 290 | 57,3 | 0,700 | 298-000-045 |
| 25 | 34 | 49 | 27 | 43 | 48 | 250 | 20,0 | 0,205 | 298-000-025 | 48 | 62 | 80 | 52 | 73 | 79 | 1 570 | 65,4 | 0,800 | 298-000-048 |
| 28 | 39 | 55 | 29 | 45 | 50 | 300 | 21,4 | 0,270 | 298-000-028 | 50 | 65 | 83 | 53 | 76 | 82 | 1 900 | 76,0 | 0,900 | 298-000-050 |
| 30 | 41 | 57 | 32 | 47,5 | 52 | 420 | 28,0 | 0,290 | 298-000-030 | 55 | 71 | 88 | 58 | 82 | 88 | 2 500 | 90,9 | 1,100 | 298-000-055 |
| 32 | 43 | 60 | 34 | 52 | 57 | 420 | 26,3 | 0,390 | 298-000-032 | 60 | 77 | 95 | 64 | 90 | 96 | 3 400 | 113,0 | 1,400 | 298-000-060 |
| 35 | 47 | 63 | 37 | 55 | 60 | 650 | 37,1 | 0,425 | 298-000-035 | 65 | 84 | 102 | 68 | 96 | 102 | 3 500 | 108,0 | 1,800 | 298-000-065 |
| 38 | 50 | 65 | 41 | 59 | 64 | 750 | 39,5 | 0,470 | 298-000-038 | 70 | 90 | 113 | 72 | 99 | 107 | 5 200 | 149,0 | 2,100 | 298-000-070 |

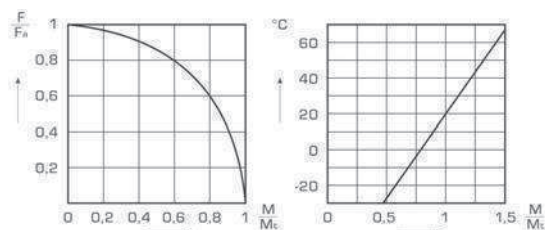
Vor der Montage sollen Welle und Bohrung eingölt werden (nicht fetten). Beim Anziehen der Spannschrauben ist zu beachten, dass die Schrauben nur je eine halbe Umdrehung angezogen bzw. gelöst werden. Die WMH-Spannbuchsen sind für Wellentoleranzen h 8 bis k 6 und Bohrungstoleranzen H 7 ausgelegt. Die Naben dürfen nicht mehr als 5 mm kürzer als die Spannbuchse sein. Außerdem darf die Nabe keine Eindrehung haben. Nuten in Nabe und Welle sind zulässig. Zwischen den Flanschen der Spannbuchse soll ein Spalt (a) vorhanden sein.

Before mounting, shaft and bore should be oiled (not greased). Tighten the locking screws alternately 180° at a time and loosen in a similar way. The WMH-clamping bushes are made for shaft tolerances h 8 up to k 6 and bore tolerances H 7. It is permitted to use hubs more than 5 mm shorter than the clamping bush. Keyways in hubs and shaft are allowed. Between the ends of the clamping bush should be a gap (a).



Wenn die Spannbuchse zum Drehmoment zusätzlich eine Axialkraft „F“ übertragen soll, muss die linke Tabelle berücksichtigt werden.

If the clamping bush has to transmit torque and thrust „F“, the left hand table must be used.

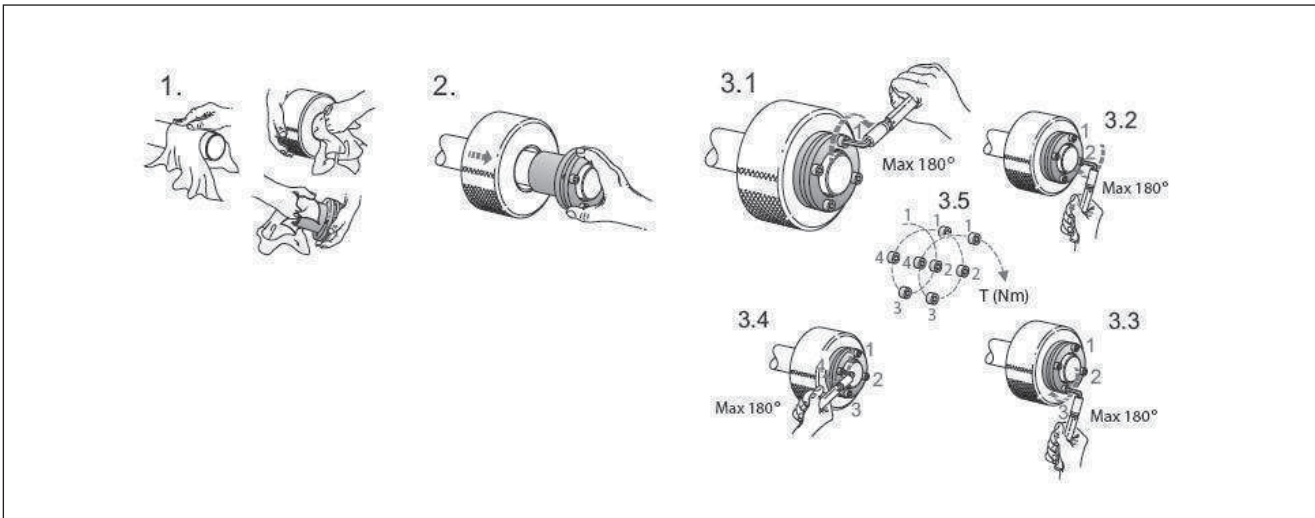


Die Flächenpressung zw. Welle und Spannbuchse beträgt bei einer Raumtemperatur von ca. 20° C und dem vorgeschriebenen Anzugsmoment der Schraube ca. 90 N/mm², die Flächenpressung zw. Nabe und Spannbuchse 80 N/mm². Obenstehendes Diagramm (rechts) zeigt das Übertragungsmoment in Abhängigkeit der Umgebungstemperatur. Die WMH-Spannbuchsen können bis zu einer maximalen Umgebungstemperatur von 85° C eingesetzt werden.

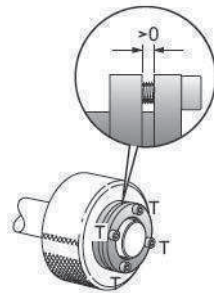
The pressure between shaft and clamping bush is at an ambient of approximately 20° C and the tightening torque of the screws approx. 90 N/mm², the contact pressure between hub and clamping bush 80 N/mm². The above performance chart (right hand) shows the transmitted torque at ambient temperature. The WMH-Clamping bushes can be used up to a maximum ambient temperature of 85° C.

Spannbuchsen - Einbauanleitung

Clamping Bushes - Fitting Instructions



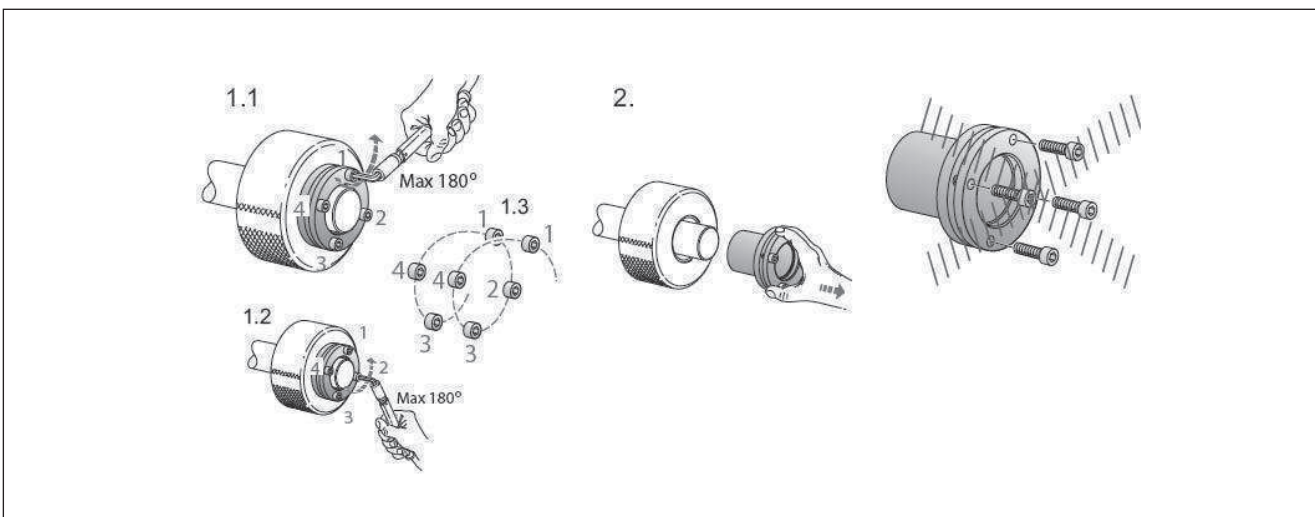
Schrauben der Reihenfolge (siehe Abb. 3) nach um je eine halbe Umdrehung anziehen, bis das angegebene Anzugsmoment erreicht ist. Zwischen den Flanschen der Spannbuchse soll ein Spalt vorhanden sein.



Tighten the screws half a turn at a time (in the correct order - see illustration 3) to the prescribed torque. Between the ends of the clamping bush should be a gap.

Demontage

Removal

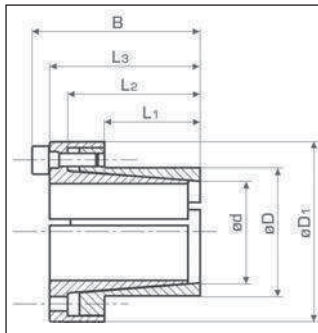


Schrauben in umgekehrter Reihenfolge je eine halbe Umdrehung lösen bis sich die Spannbuchse drehen lässt.

Loosen the screws, half a turn at a time, in consecutive order, until the clamping bush is loose.

Spannsätze - selbstzentrierend

Locking Assemblies - Self-centering


Kennzeichen:

Mittlere bis hohe Drehmomente
 Kurze Montagezeiten
 Geringe radiale Einbaumaße
 Sehr niedrige Flächenpressung

Toleranzen, Rauhtiefe:

Höchste zulässige Rauhtiefe:
 Rt max 16µm (Ra 3 µm - Rz 13 µm)
 Wellentoleranz = h 8; Nabentoleranz = H 8

Axiale Verschiebung:

Während der Montage erfolgt keine axiale
 Verschiebung der Nabe gegenüber der Welle.

Characteristics:

medium-high torque
 limited installation time
 restricted hub diameter
 very low surface pressure

Tolerances, surface finish:

maximum allowable surface finish:
 Rt max 16µm (Ra 3 µm - Rz 13 µm)
 shaft tolerance = h 8; hub tolerance = H 8

Axial movement:

During screws tightening the hub has no axial
 movement with respect to the shaft.

| d | D | L ₁ | L ₂ | L ₃ | B | D ₁ | Spannschrauben set screws | M _M | M _t | F _a | P _W | P _N | [kg] | Bestell Nr. Part No. |
|-----|-----|----------------|----------------|----------------|-----|----------------|------------------------------|----------------|----------------|----------------|----------------|----------------|-------|-------------------------|
| 6 | 14 | 10 | 18,5 | 21 | 24 | 25 | 3 x M3 | 2 | 12 | 4 | 185 | 80 | 0,04 | 298-001-006 |
| 7 | 15 | 12 | 22 | 25 | 29 | 27 | 3 x M4 | 5 | 25 | 7 | 235 | 110 | 0,06 | 298-001-007 |
| 8 | 15 | 12 | 22 | 25 | 29 | 27 | 3 x M4 | 5 | 29 | 7 | 205 | 110 | 0,05 | 298-001-008 |
| 9 | 16 | 14 | 23 | 26 | 30 | 28 | 4 x M4 | 5 | 44 | 10 | 205 | 115 | 0,06 | 298-001-009 |
| 10 | 16 | 14 | 23 | 26 | 30 | 28 | 4 x M4 | 5 | 49 | 10 | 185 | 115 | 0,06 | 298-001-010 |
| 11 | 18 | 14 | 23 | 26 | 30 | 32 | 4 x M4 | 5 | 53 | 10 | 170 | 105 | 0,07 | 298-001-011 |
| 12 | 18 | 14 | 23 | 26 | 30 | 32 | 4 x M4 | 5 | 58 | 10 | 160 | 105 | 0,07 | 298-001-012 |
| 13 | 23 | 14 | 23 | 26 | 30 | 38 | 4 x M4 | 5 | 63 | 10 | 140 | 80 | 0,11 | 298-001-013 |
| 14 | 23 | 14 | 23 | 26 | 30 | 38 | 4 x M4 | 5 | 68 | 10 | 130 | 80 | 0,10 | 298-001-014 |
| 15 | 24 | 16 | 29 | 36 | 42 | 45 | 3 x M6 | 17 | 127 | 17 | 185 | 115 | 0,22 | 298-001-015 |
| 16 | 24 | 16 | 29 | 36 | 42 | 45 | 3 x M6 | 17 | 136 | 17 | 175 | 115 | 0,22 | 298-001-016 |
| 17 | 26 | 18 | 31 | 38 | 44 | 47 | 4 x M6 | 17 | 180 | 22 | 190 | 125 | 0,25 | 298-001-017 |
| 18 | 26 | 18 | 31 | 38 | 44 | 47 | 4 x M6 | 17 | 200 | 22 | 180 | 125 | 0,24 | 298-001-018 |
| 19 | 27 | 18 | 31 | 38 | 44 | 49 | 4 x M6 | 17 | 210 | 22 | 170 | 120 | 0,26 | 298-001-019 |
| 20 | 28 | 18 | 31 | 38 | 44 | 50 | 4 x M6 | 17 | 220 | 22 | 160 | 115 | 0,27 | 298-001-020 |
| 22 | 32 | 25 | 38 | 45 | 51 | 54 | 4 x M6 | 17 | 250 | 22 | 115 | 80 | 0,34 | 298-001-022 |
| 24 | 34 | 25 | 38 | 45 | 51 | 56 | 4 x M6 | 17 | 270 | 22 | 105 | 75 | 0,36 | 298-001-024 |
| 25 | 34 | 25 | 38 | 45 | 51 | 56 | 4 x M6 | 17 | 280 | 22 | 100 | 75 | 0,35 | 298-001-025 |
| 28 | 39 | 25 | 38 | 45 | 51 | 61 | 6 x M6 | 17 | 465 | 33 | 135 | 97 | 0,48 | 298-001-028 |
| 30 | 41 | 25 | 38 | 45 | 51 | 62 | 6 x M6 | 17 | 510 | 33 | 127 | 90 | 0,48 | 298-001-030 |
| 32 | 43 | 25 | 38 | 45 | 51 | 65 | 6 x M6 | 17 | 540 | 33 | 120 | 90 | 0,47 | 298-001-032 |
| 35 | 47 | 32 | 45 | 52 | 58 | 69 | 8 x M6 | 17 | 790 | 45 | 105 | 80 | 0,58 | 298-001-035 |
| 38 | 50 | 32 | 45 | 52 | 58 | 72 | 8 x M6 | 17 | 860 | 45 | 100 | 75 | 0,61 | 298-001-038 |
| 40 | 53 | 32 | 45 | 52 | 58 | 75 | 8 x M6 | 17 | 900 | 45 | 95 | 70 | 0,68 | 298-001-040 |
| 42 | 55 | 32 | 45 | 52 | 58 | 78 | 8 x M6 | 17 | 950 | 45 | 90 | 70 | 0,76 | 298-001-042 |
| 45 | 59 | 45 | 62 | 70 | 78 | 86 | 8 x M8 | 41 | 1 890 | 84 | 110 | 85 | 1,20 | 298-001-045 |
| 48 | 62 | 45 | 62 | 70 | 78 | 87 | 8 x M8 | 41 | 2 010 | 84 | 105 | 80 | 1,20 | 298-001-048 |
| 50 | 65 | 45 | 62 | 70 | 78 | 92 | 8 x M8 | 41 | 2 100 | 84 | 100 | 75 | 1,40 | 298-001-050 |
| 55 | 71 | 55 | 72 | 80 | 88 | 98 | 9 x M8 | 41 | 2 600 | 94 | 85 | 65 | 1,60 | 298-001-055 |
| 60 | 77 | 55 | 72 | 80 | 88 | 104 | 9 x M8 | 41 | 2 840 | 94 | 75 | 60 | 1,80 | 298-001-060 |
| 65 | 84 | 55 | 72 | 80 | 88 | 111 | 9 x M8 | 41 | 3 070 | 94 | 70 | 55 | 2,10 | 298-001-065 |
| 70 | 90 | 65 | 86 | 96 | 106 | 119 | 9 x M10 | 83 | 5 250 | 150 | 90 | 70 | 3,00 | 298-001-070 |
| 75 | 95 | 65 | 86 | 96 | 106 | 126 | 9 x M10 | 83 | 5 600 | 150 | 80 | 65 | 3,00 | 298-001-075 |
| 80 | 100 | 65 | 86 | 96 | 106 | 131 | 12 x M10 | 83 | 8 020 | 200 | 100 | 80 | 3,50 | 298-001-080 |
| 85 | 106 | 65 | 86 | 96 | 106 | 137 | 12 x M10 | 83 | 8 500 | 200 | 95 | 75 | 3,60 | 298-001-085 |
| 90 | 112 | 65 | 86 | 96 | 106 | 144 | 12 x M10 | 83 | 9 000 | 200 | 90 | 75 | 3,90 | 298-001-090 |
| 95 | 120 | 65 | 86 | 96 | 106 | 149 | 14 x M10 | 83 | 11 000 | 230 | 100 | 80 | 4,40 | 298-001-095 |
| 100 | 125 | 65 | 86 | 96 | 106 | 154 | 18 x M10 | 83 | 15 000 | 300 | 120 | 95 | 4,60 | 298-001-100 |
| 110 | 140 | 90 | 114 | 128 | 140 | 180 | 12 x M12 | 145 | 16 000 | 290 | 80 | 65 | 8,70 | 298-001-110 |
| 120 | 155 | 90 | 114 | 128 | 140 | 198 | 12 x M12 | 145 | 17 500 | 290 | 70 | 55 | 10,60 | 298-001-120 |
| 130 | 165 | 90 | 114 | 128 | 140 | 208 | 16 x M12 | 145 | 25 000 | 384 | 90 | 70 | 11,30 | 298-001-130 |

Anzugsmoment | starting torque

Drehmoment | torque

Axialkraft | thrust

Flächenpressung - Welle | contact pressure - shaft

Flächenpressung - Nabe | contact pressure - hub

 M_M

[Nm]

 M_t

[Nm]

 F_a

[kN]

 P_W

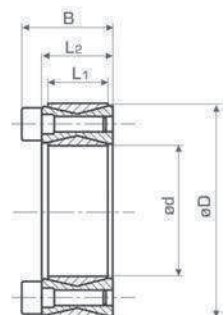
 [N/mm²]

 P_N

 [N/mm²]

Spannsätze - nicht selbstzentrierend

Locking Assemblies - Not-Self-centering

| | | |
|--|--|--|
|  | Kennzeichen: Mittlere bis hohe Drehmomente Breite Toleranzen | Characteristics: medium-high torque wide tolerances |
| | Toleranzen, Rauhtiefe: Höchste zulässige Rauhtiefe: $R_t \max 16\mu\text{m}$ ($R_a 3\mu\text{m} - R_z 13\mu\text{m}$) Wellentoleranz = h 11; Nabentoleranz = H 11 | Tolerances, surface finish: maximum allowable surface finish: $R_t \max 16\mu\text{m}$ ($R_a 3\mu\text{m} - R_z 13\mu\text{m}$) shaft tolerance = h 11; hub tolerance = H 11 |
| Zentrierung: Eine Selbstzentrierung ist bei dieser Art nicht gegeben. Die Rundlaufgenauigkeit der Verbindung ist von der Toleranz und Führungsbreite der Vorzentrierung zwischen Welle und Nabe abhängig. | Centering: Such a system is not selfcentering and therefore the concentricity of the piece to be fastened depends on the working tolerances between shaft and hub as well as the width of the centering guide. | |
| Axiale Verschiebung: Während des Schraubenanziehens erfolgt keine axiale Verschiebung der Nabe gegenüber der Welle. | Axial movement: During screws tightening the hub has no axial movement with respect to the shaft. | |

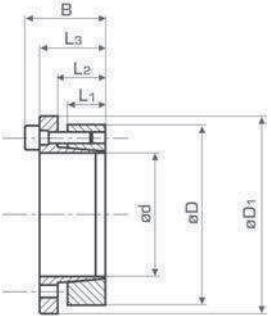
| d | D | L ₁ | L ₂ | B | Spannschrauben set screws | M _M | M _t | F _a | P _W | P _N | [kg] | Bestell Nr. Part No. |
|-----|-----|----------------|----------------|------|------------------------------|----------------|----------------|----------------|----------------|----------------|------|-------------------------|
| 20 | 47 | 17 | 20 | 27,5 | 8 x M6 | 15 | 280 | 29 | 225 | 95 | 0,2 | 298-002-020 |
| 22 | 47 | 17 | 20 | 27,5 | 8 x M6 | 15 | 310 | 29 | 210 | 95 | 0,2 | 298-002-022 |
| 24 | 50 | 17 | 20 | 27,5 | 8 x M6 | 15 | 370 | 32 | 210 | 100 | 0,3 | 298-002-024 |
| 25 | 50 | 17 | 20 | 27,5 | 8 x M6 | 15 | 400 | 32 | 200 | 100 | 0,3 | 298-002-025 |
| 28 | 55 | 17 | 20 | 27,5 | 10 x M6 | 15 | 500 | 36 | 200 | 100 | 0,3 | 298-002-028 |
| 30 | 55 | 17 | 20 | 27,5 | 10 x M6 | 15 | 530 | 36 | 185 | 100 | 0,3 | 298-002-030 |
| 32 | 60 | 17 | 20 | 27,5 | 12 x M6 | 15 | 680 | 42 | 205 | 110 | 0,3 | 298-002-032 |
| 35 | 60 | 17 | 20 | 27,5 | 12 x M6 | 15 | 750 | 43 | 190 | 110 | 0,3 | 298-002-035 |
| 38 | 65 | 17 | 20 | 27,5 | 14 x M6 | 15 | 930 | 49 | 200 | 115 | 0,4 | 298-002-038 |
| 40 | 65 | 17 | 20 | 27,5 | 14 x M6 | 15 | 980 | 49 | 190 | 115 | 0,3 | 298-002-040 |
| 42 | 75 | 20 | 24 | 33,5 | 12 x M8 | 37 | 1 580 | 75 | 235 | 130 | 0,6 | 298-002-042 |
| 45 | 75 | 20 | 24 | 33,5 | 12 x M8 | 37 | 1 700 | 76 | 220 | 130 | 0,6 | 298-002-045 |
| 48 | 80 | 20 | 24 | 33,5 | 12 x M8 | 37 | 1 790 | 74 | 210 | 120 | 0,6 | 298-002-048 |
| 50 | 80 | 20 | 24 | 33,5 | 12 x M8 | 37 | 1 870 | 75 | 200 | 120 | 0,6 | 298-002-050 |
| 55 | 85 | 20 | 24 | 33,5 | 14 x M8 | 37 | 2 390 | 88 | 210 | 135 | 0,6 | 298-002-055 |
| 60 | 90 | 20 | 24 | 33,5 | 14 x M8 | 37 | 2 610 | 88 | 190 | 125 | 0,7 | 298-002-060 |
| 65 | 95 | 20 | 24 | 33,5 | 16 x M8 | 37 | 3 210 | 98 | 200 | 135 | 0,7 | 298-002-065 |
| 70 | 110 | 24 | 28 | 39,5 | 14 x M10 | 70 | 4 600 | 132 | 210 | 130 | 1,3 | 298-002-070 |
| 75 | 115 | 24 | 28 | 39,5 | 14 x M10 | 70 | 4 900 | 131 | 195 | 125 | 1,3 | 298-002-075 |
| 80 | 120 | 24 | 28 | 39,5 | 14 x M10 | 70 | 5 200 | 131 | 180 | 120 | 1,4 | 298-002-080 |
| 85 | 125 | 24 | 28 | 39,5 | 16 x M10 | 70 | 6 300 | 148 | 195 | 130 | 1,4 | 298-002-085 |
| 90 | 130 | 24 | 28 | 39,5 | 16 x M10 | 70 | 6 600 | 147 | 180 | 125 | 1,5 | 298-002-090 |
| 95 | 135 | 24 | 28 | 39,5 | 18 x M10 | 70 | 7 900 | 167 | 195 | 135 | 1,6 | 298-002-095 |
| 100 | 145 | 26 | 33 | 47 | 14 x M12 | 127 | 9 750 | 195 | 195 | 135 | 2,2 | 298-002-100 |
| 110 | 155 | 26 | 33 | 47 | 14 x M12 | 127 | 10 650 | 194 | 180 | 125 | 2,5 | 298-002-110 |
| 120 | 165 | 26 | 33 | 47 | 16 x M12 | 127 | 13 300 | 221 | 185 | 135 | 2,6 | 298-002-120 |
| 130 | 180 | 34 | 38 | 52 | 20 x M12 | 127 | 17 850 | 276 | 165 | 115 | 3,8 | 298-002-130 |
| 140 | 190 | 34 | 38 | 52 | 22 x M12 | 127 | 21 200 | 302 | 165 | 125 | 3,9 | 298-002-140 |
| 150 | 200 | 34 | 38 | 52 | 24 x M12 | 127 | 24 500 | 329 | 170 | 125 | 4,0 | 298-002-150 |
| 160 | 210 | 34 | 38 | 52 | 26 x M12 | 127 | 28 400 | 355 | 170 | 130 | 4,3 | 298-002-160 |
| 170 | 225 | 38 | 44 | 60 | 22 x M14 | 195 | 33 600 | 396 | 165 | 120 | 5,8 | 298-002-170 |
| 180 | 235 | 38 | 44 | 60 | 24 x M14 | 195 | 38 700 | 431 | 170 | 130 | 6,0 | 298-002-180 |
| 190 | 250 | 46 | 52 | 68 | 28 x M14 | 195 | 44 700 | 502 | 155 | 120 | 8,5 | 298-002-190 |
| 200 | 260 | 46 | 52 | 68 | 30 x M14 | 195 | 53 500 | 538 | 155 | 120 | 8,6 | 298-002-200 |

Anzugsmoment | starting torque
 Drehmoment | torque
 Axialkraft | thrust
 Flächenpressung - Welle | contact pressure - shaft
 Flächenpressung - Nabe | contact pressure - hub

M_M [Nm]
 M_t [Nm]
 F_a [kN]
 P_W [N/mm²]
 P_N [N/mm²]

Spannsätze - selbstzentrierend

Locking Assemblies - Self-centering

| | | |
|---|--|--|
|  | Kennzeichen: Mittlere bis hohe Drehmomente Kurze Montagezeiten Kostengünstige Anwendung Austauschbar mit WMH-Serie 298-002... | Characteristics: medium-high torque limited installation time application economically advantageous interchangeable with WMH serie 298-002... |
| | Toleranzen, Rauhtiefe: Höchste zulässige Rauhtiefe: Rt max 16µm (Ra 3 µm - Rz 13 µm) Wellentoleranz = h 8; Nabentoleranz = H 8 | Tolerances, surface finish: maximum allowable surface finish: Rt max 16µm (Ra 3 µm - Rz 13 µm) shaft tolerance = h 8; hub tolerance = H 8 |
| | Axiale Verschiebung: Während des Schraubenanziehens erfolgt keine axiale Verschiebung der Nabe gegenüber der Welle. | Axial movement: During screws tightening the hub has no axial movement with respect to the shaft. |

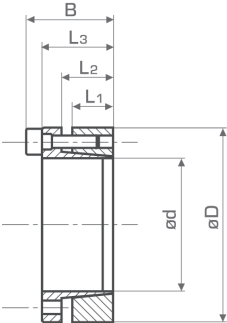
| d | D | L ₁ | L ₂ | L ₃ | B | D ₁ | Spannschrauben set screws | M _M | M _t | F _a | P _W | P _N | [kg] | Bestell Nr. Part No. |
|-----|-----|----------------|----------------|----------------|----|----------------|------------------------------|----------------|----------------|----------------|----------------|----------------|------|-------------------------|
| 20 | 47 | 17 | 22 | 28 | 34 | 54 | 5 x M6 | 17 | 280 | 28 | 220 | 95 | 0,3 | 298-004-020 |
| 22 | 47 | 17 | 22 | 28 | 34 | 54 | 5 x M6 | 17 | 300 | 28 | 200 | 95 | 0,3 | 298-004-022 |
| 24 | 50 | 17 | 22 | 28 | 34 | 57 | 5 x M6 | 17 | 330 | 28 | 180 | 90 | 0,3 | 298-004-024 |
| 25 | 50 | 17 | 22 | 28 | 34 | 57 | 6 x M6 | 17 | 420 | 34 | 210 | 105 | 0,3 | 298-004-025 |
| 28 | 55 | 17 | 22 | 28 | 34 | 62 | 6 x M6 | 17 | 470 | 34 | 190 | 95 | 0,4 | 298-004-028 |
| 30 | 55 | 17 | 22 | 28 | 34 | 62 | 6 x M6 | 17 | 500 | 34 | 175 | 95 | 0,4 | 298-004-030 |
| 32 | 60 | 17 | 22 | 28 | 34 | 67 | 8 x M6 | 17 | 720 | 45 | 220 | 115 | 0,4 | 298-004-032 |
| 35 | 60 | 17 | 22 | 28 | 34 | 67 | 8 x M6 | 17 | 790 | 45 | 200 | 115 | 0,4 | 298-004-035 |
| 38 | 65 | 17 | 22 | 28 | 34 | 72 | 8 x M6 | 17 | 850 | 45 | 185 | 105 | 0,5 | 298-004-038 |
| 40 | 65 | 17 | 22 | 28 | 34 | 72 | 8 x M6 | 17 | 900 | 45 | 175 | 105 | 0,5 | 298-004-040 |
| 42 | 75 | 20 | 25 | 33 | 41 | 82 | 7 x M8 | 41 | 1 530 | 73 | 225 | 125 | 0,8 | 298-004-042 |
| 45 | 75 | 20 | 25 | 33 | 41 | 82 | 7 x M8 | 41 | 1 650 | 73 | 215 | 125 | 0,7 | 298-004-045 |
| 48 | 80 | 20 | 25 | 33 | 41 | 87 | 7 x M8 | 41 | 1 760 | 73 | 200 | 120 | 0,8 | 298-004-048 |
| 50 | 80 | 20 | 25 | 33 | 41 | 87 | 7 x M8 | 41 | 1 830 | 73 | 195 | 120 | 0,8 | 298-004-050 |
| 55 | 85 | 20 | 25 | 33 | 41 | 92 | 8 x M8 | 41 | 2 300 | 83 | 200 | 130 | 0,9 | 298-004-055 |
| 60 | 90 | 20 | 25 | 33 | 41 | 97 | 8 x M8 | 41 | 2 510 | 83 | 185 | 125 | 0,9 | 298-004-060 |
| 65 | 95 | 20 | 25 | 33 | 41 | 102 | 9 x M8 | 41 | 3 060 | 94 | 190 | 130 | 1,0 | 298-004-065 |
| 70 | 110 | 24 | 30 | 40 | 50 | 117 | 8 x M10 | 83 | 4 670 | 133 | 210 | 135 | 1,9 | 298-004-070 |
| 75 | 115 | 24 | 30 | 40 | 50 | 122 | 8 x M10 | 83 | 5 000 | 133 | 195 | 125 | 2,0 | 298-004-075 |
| 80 | 120 | 24 | 30 | 40 | 50 | 127 | 8 x M10 | 83 | 5 300 | 133 | 185 | 125 | 2,0 | 298-004-080 |
| 85 | 125 | 24 | 30 | 40 | 50 | 132 | 9 x M10 | 83 | 6 300 | 148 | 195 | 135 | 2,0 | 298-004-085 |
| 90 | 130 | 24 | 30 | 40 | 50 | 137 | 9 x M10 | 83 | 6 750 | 148 | 185 | 130 | 2,2 | 298-004-090 |
| 95 | 135 | 24 | 30 | 40 | 50 | 142 | 10 x M10 | 83 | 7 900 | 166 | 195 | 135 | 2,3 | 298-004-095 |
| 100 | 145 | 26 | 32 | 44 | 56 | 152 | 8 x M12 | 145 | 9 700 | 194 | 200 | 140 | 3,0 | 298-004-100 |
| 110 | 155 | 26 | 32 | 44 | 56 | 162 | 8 x M12 | 145 | 10 600 | 194 | 180 | 130 | 3,2 | 298-004-110 |
| 120 | 165 | 26 | 32 | 44 | 56 | 172 | 9 x M12 | 145 | 13 000 | 216 | 185 | 135 | 3,4 | 298-004-120 |
| 130 | 180 | 34 | 40 | 54 | 64 | 187 | 12 x M12 | 145 | 18 900 | 290 | 175 | 125 | 5,2 | 298-004-130 |
| 140 | 190 | 34 | 40 | 54 | 68 | 197 | 9 x M14 | 230 | 20 500 | 290 | 165 | 120 | 5,4 | 298-004-140 |
| 150 | 200 | 34 | 40 | 54 | 68 | 207 | 10 x M14 | 230 | 25 000 | 333 | 175 | 130 | 5,7 | 298-004-150 |
| 160 | 210 | 34 | 40 | 54 | 68 | 217 | 11 x M14 | 230 | 29 000 | 362 | 180 | 135 | 6,0 | 298-004-160 |
| 170 | 225 | 44 | 50 | 64 | 78 | 232 | 12 x M14 | 230 | 34 000 | 400 | 140 | 105 | 8,3 | 298-004-170 |
| 180 | 235 | 44 | 50 | 64 | 78 | 242 | 12 x M14 | 230 | 36 000 | 400 | 135 | 105 | 8,8 | 298-004-180 |
| 190 | 250 | 44 | 50 | 64 | 78 | 257 | 15 x M14 | 230 | 47 500 | 500 | 160 | 120 | 10,0 | 298-004-190 |
| 200 | 260 | 44 | 50 | 64 | 78 | 267 | 15 x M14 | 230 | 50 000 | 500 | 150 | 115 | 10,5 | 298-004-200 |

Anzugsmoment | starting torque
 Drehmoment | torque
 Axialkraft | thrust
 Flächenpressung - Welle | contact pressure - shaft
 Flächenpressung - Nabe | contact pressure - hub

M_M [Nm]
 M_t [Nm]
 F_a [kN]
 P_W [N/mm²]
 P_N [N/mm²]

Spannsätze - selbstzentrierend

Locking Assemblies - Self-centering

| | | |
|---|--|--|
|  | Kennzeichen: Mittlere bis hohe Drehmomente Kurze Montagezeiten Kostengünstige Anwendung Austauschbar mit WMH-Serie 298-002... | Characteristics: medium-high torque limited installation time application economically advantageous interchangeable with WMH serie 298-002... |
| | Toleranzen, Rauhtiefe: Höchste zulässige Rauhtiefe: Rt max 16µm (Ra 3 µm - Rz 13 µm) Wellentoleranz = h 8; Nabentoleranz = H 8 | Tolerances, surface finish: maximum allowable surface finish: Rt max 16µm (Ra 3 µm - Rz 13 µm) shaft tolerance = h 8; hub tolerance = H 8 |
| | Axiale Verschiebung: Während des Schraubenanziehens erfolgt eine leichte axiale Verschiebung der Nabe gegenüber der Welle. | Axial movement: During screws tightening the hub has a slight axial movement with respect to the shaft. |

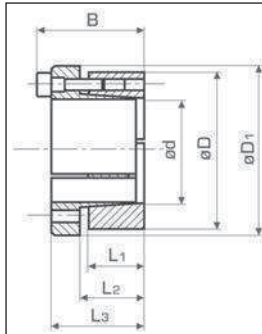
| d | D | L ₁ | L ₂ | L ₃ | B | Spannschrauben set screws | M _M | M _t | F _a | P _W | P _N | [kg] | Bestell Nr. Part No. |
|-----|-----|----------------|----------------|----------------|----|------------------------------|----------------|----------------|----------------|----------------|----------------|------|-------------------------|
| 20 | 47 | 17 | 22 | 28 | 34 | 5 x M6 | 14 | 380 | 38 | 295 | 125 | 0,3 | 298-005-020 |
| 22 | 47 | 17 | 22 | 28 | 34 | 5 x M6 | 14 | 410 | 38 | 270 | 125 | 0,3 | 298-005-022 |
| 24 | 50 | 17 | 22 | 28 | 34 | 5 x M6 | 14 | 450 | 38 | 245 | 120 | 0,3 | 298-005-024 |
| 25 | 50 | 17 | 22 | 28 | 34 | 6 x M6 | 14 | 570 | 46 | 285 | 140 | 0,3 | 298-005-025 |
| 28 | 55 | 17 | 22 | 28 | 34 | 6 x M6 | 14 | 630 | 46 | 255 | 130 | 0,4 | 298-005-028 |
| 30 | 55 | 17 | 22 | 28 | 34 | 6 x M6 | 14 | 660 | 46 | 235 | 130 | 0,3 | 298-005-030 |
| 32 | 60 | 17 | 22 | 28 | 34 | 8 x M6 | 14 | 970 | 60 | 295 | 155 | 0,4 | 298-005-032 |
| 35 | 60 | 17 | 22 | 28 | 34 | 8 x M6 | 14 | 1 060 | 60 | 270 | 155 | 0,4 | 298-005-035 |
| 38 | 65 | 17 | 22 | 28 | 34 | 8 x M6 | 14 | 1 150 | 60 | 250 | 145 | 0,4 | 298-005-038 |
| 40 | 65 | 17 | 22 | 28 | 34 | 8 x M6 | 14 | 1 210 | 60 | 235 | 145 | 0,4 | 298-005-040 |
| 42 | 75 | 20 | 25 | 33 | 41 | 7 x M8 | 35 | 2 050 | 98 | 300 | 170 | 0,8 | 298-005-042 |
| 45 | 75 | 20 | 25 | 33 | 41 | 7 x M8 | 35 | 2 200 | 98 | 290 | 170 | 0,6 | 298-005-045 |
| 48 | 80 | 20 | 25 | 33 | 41 | 7 x M8 | 35 | 2 350 | 98 | 270 | 160 | 0,8 | 298-005-048 |
| 50 | 80 | 20 | 25 | 33 | 41 | 7 x M8 | 35 | 2 450 | 98 | 260 | 160 | 0,8 | 298-005-050 |
| 55 | 85 | 20 | 25 | 33 | 41 | 8 x M8 | 35 | 3 080 | 112 | 270 | 175 | 0,8 | 298-005-055 |
| 60 | 90 | 20 | 25 | 33 | 41 | 8 x M8 | 35 | 3 360 | 112 | 245 | 165 | 0,8 | 298-005-060 |
| 65 | 95 | 20 | 25 | 33 | 41 | 9 x M8 | 35 | 4 090 | 126 | 255 | 175 | 0,9 | 298-005-065 |
| 70 | 110 | 24 | 30 | 40 | 50 | 8 x M10 | 70 | 6 300 | 179 | 280 | 180 | 1,8 | 298-005-070 |
| 75 | 115 | 24 | 30 | 40 | 50 | 8 x M10 | 70 | 6 700 | 179 | 260 | 170 | 1,8 | 298-005-075 |
| 80 | 120 | 24 | 30 | 40 | 50 | 8 x M10 | 70 | 7 150 | 179 | 250 | 170 | 1,8 | 298-005-080 |
| 85 | 125 | 24 | 30 | 40 | 50 | 9 x M10 | 70 | 8 500 | 200 | 260 | 180 | 2,0 | 298-005-085 |
| 90 | 130 | 24 | 30 | 40 | 50 | 9 x M10 | 70 | 9 100 | 200 | 250 | 170 | 2,1 | 298-005-090 |
| 95 | 135 | 24 | 30 | 40 | 50 | 10 x M10 | 70 | 10 600 | 224 | 260 | 180 | 2,1 | 298-005-095 |
| 100 | 145 | 26 | 32 | 44 | 56 | 8 x M12 | 125 | 13 400 | 268 | 270 | 190 | 2,8 | 298-005-100 |
| 110 | 155 | 26 | 32 | 44 | 56 | 8 x M12 | 125 | 14 600 | 268 | 240 | 180 | 3,0 | 298-005-110 |
| 120 | 165 | 26 | 32 | 44 | 56 | 9 x M12 | 125 | 17 900 | 298 | 250 | 180 | 3,2 | 298-005-120 |
| 130 | 180 | 34 | 40 | 54 | 64 | 12 x M12 | 125 | 26 000 | 400 | 240 | 170 | 4,8 | 298-005-130 |
| 140 | 190 | 34 | 40 | 54 | 68 | 9 x M14 | 190 | 27 000 | 384 | 210 | 150 | 5,2 | 298-005-140 |
| 150 | 200 | 34 | 40 | 54 | 68 | 10 x M14 | 190 | 33 000 | 440 | 230 | 170 | 5,4 | 298-005-150 |
| 160 | 210 | 34 | 40 | 54 | 68 | 11 x M14 | 190 | 38 000 | 479 | 230 | 170 | 5,7 | 298-005-160 |
| 170 | 225 | 44 | 50 | 64 | 78 | 12 x M14 | 190 | 45 000 | 530 | 180 | 130 | 8,0 | 298-005-170 |
| 180 | 235 | 44 | 50 | 64 | 78 | 12 x M14 | 190 | 47 000 | 530 | 170 | 130 | 8,3 | 298-005-180 |
| 190 | 250 | 44 | 50 | 64 | 78 | 15 x M14 | 190 | 62 900 | 660 | 210 | 150 | 9,6 | 298-005-190 |
| 200 | 260 | 44 | 50 | 64 | 78 | 15 x M14 | 190 | 66 000 | 660 | 190 | 150 | 10,0 | 298-005-200 |

Anzugsmoment | starting torque
 Drehmoment | torque
 Axialkraft | thrust
 Flächenpressung - Welle | contact pressure - shaft
 Flächenpressung - Nabe | contact pressure - hub

M_M [Nm]
 M_t [Nm]
 F_a [kN]
 P_W [N/mm²]
 P_N [N/mm²]

Spannsätze - selbstzentrierend

Locking Assemblies - Self-centering



Kennzeichen:
 Hohe Drehmomente
 Kurze Montagezeiten
 Kostengünstige Anwendung

Toleranzen, Rauhtiefe:
 Höchste zulässige Rauhtiefe:
 Rt max 16µm (Ra 3 µm - Rz 13 µm)
 Wellentoleranz = h 8; Nabentoleranz = H 8

Axiale Verschiebung:
 Während des Schraubenanziehens erfolgt keine axiale Verschiebung der Nabe gegenüber der Welle.

Characteristics:
 high torque
 limited installation time
 application economically advantageous

Tolerances, surface finish:
 maximum allowable surface finish:
 Rt max 16µm (Ra 3 µm - Rz 13 µm)
 shaft tolerance = h 8; hub tolerance = H 8

Axial movement:
 During screws tightening the hub has no axial movement with respect to the shaft.

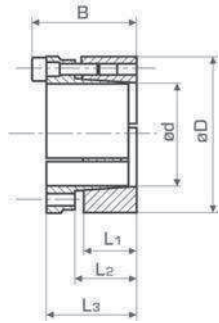
| d | D | L ₁ | L ₂ | L ₃ | B | D ₁ | Spannschrauben set screws | M _M | M _t | F _a | P _W | P _N | [kg] | Bestell Nr. Part No. |
|-----|-----|----------------|----------------|----------------|----|----------------|---------------------------|----------------|----------------|----------------|----------------|----------------|------|----------------------|
| 20 | 47 | 26 | 30 | 41 | 47 | 53 | 6 x M6 | 17 | 330 | 34 | 175 | 75 | 0,5 | 298-006-020 |
| 22 | 47 | 26 | 30 | 41 | 47 | 53 | 6 x M6 | 17 | 370 | 34 | 160 | 75 | 0,5 | 298-006-022 |
| 24 | 50 | 26 | 30 | 41 | 47 | 56 | 6 x M6 | 17 | 400 | 34 | 145 | 70 | 0,5 | 298-006-024 |
| 25 | 50 | 26 | 30 | 41 | 47 | 56 | 6 x M6 | 17 | 420 | 34 | 140 | 70 | 0,5 | 298-006-025 |
| 28 | 55 | 26 | 30 | 41 | 47 | 61 | 6 x M6 | 17 | 470 | 34 | 125 | 65 | 0,6 | 298-006-028 |
| 30 | 55 | 26 | 30 | 41 | 47 | 61 | 6 x M6 | 17 | 510 | 34 | 115 | 65 | 0,6 | 298-006-030 |
| 32 | 60 | 26 | 30 | 41 | 47 | 66 | 9 x M6 | 17 | 720 | 45 | 145 | 80 | 0,7 | 298-006-032 |
| 35 | 60 | 26 | 30 | 41 | 47 | 66 | 9 x M6 | 17 | 790 | 45 | 135 | 80 | 0,6 | 298-006-035 |
| 38 | 65 | 26 | 30 | 41 | 47 | 71 | 9 x M6 | 17 | 860 | 45 | 125 | 70 | 0,8 | 298-006-038 |
| 40 | 65 | 26 | 30 | 41 | 47 | 71 | 9 x M6 | 17 | 900 | 45 | 120 | 70 | 0,6 | 298-006-040 |
| 42 | 75 | 30 | 35 | 49 | 57 | 81 | 6 x M8 | 41 | 1320 | 63 | 135 | 75 | 1,2 | 298-006-042 |
| 45 | 75 | 30 | 35 | 49 | 57 | 81 | 6 x M8 | 41 | 1410 | 63 | 125 | 75 | 1,1 | 298-006-045 |
| 48 | 80 | 30 | 35 | 49 | 57 | 86 | 6 x M8 | 41 | 1510 | 63 | 120 | 70 | 1,3 | 298-006-048 |
| 50 | 80 | 30 | 35 | 49 | 57 | 86 | 6 x M8 | 41 | 1570 | 63 | 110 | 70 | 1,1 | 298-006-050 |
| 55 | 85 | 30 | 35 | 49 | 57 | 91 | 9 x M8 | 41 | 2310 | 84 | 135 | 90 | 1,2 | 298-006-055 |
| 60 | 90 | 30 | 35 | 49 | 57 | 96 | 9 x M8 | 41 | 2520 | 84 | 124 | 85 | 1,3 | 298-006-060 |
| 65 | 95 | 30 | 35 | 49 | 57 | 102 | 9 x M8 | 41 | 2730 | 84 | 115 | 80 | 1,4 | 298-006-065 |
| 70 | 110 | 40 | 45 | 59 | 69 | 117 | 7 x M10 | 83 | 4650 | 133 | 125 | 80 | 2,5 | 298-006-070 |
| 75 | 115 | 40 | 45 | 59 | 69 | 122 | 7 x M10 | 83 | 5000 | 133 | 120 | 80 | 2,6 | 298-006-075 |
| 80 | 120 | 40 | 45 | 59 | 69 | 127 | 7 x M10 | 83 | 5330 | 133 | 110 | 75 | 2,8 | 298-006-080 |
| 85 | 125 | 40 | 45 | 59 | 69 | 132 | 8 x M10 | 83 | 7080 | 167 | 130 | 90 | 2,8 | 298-006-085 |
| 90 | 130 | 40 | 45 | 59 | 69 | 137 | 8 x M10 | 83 | 7500 | 167 | 125 | 85 | 3,0 | 298-006-090 |
| 95 | 135 | 40 | 45 | 59 | 69 | 142 | 10 x M10 | 83 | 7900 | 167 | 115 | 85 | 3,0 | 298-006-095 |
| 100 | 145 | 46 | 52 | 68 | 80 | 153 | 7 x M12 | 145 | 9700 | 194 | 115 | 80 | 5,5 | 298-006-100 |
| 110 | 155 | 46 | 52 | 68 | 80 | 163 | 7 x M12 | 145 | 10650 | 194 | 100 | 75 | 4,8 | 298-006-110 |
| 120 | 165 | 46 | 52 | 68 | 80 | 173 | 8 x M12 | 145 | 14550 | 243 | 120 | 85 | 5,5 | 298-006-120 |
| 130 | 180 | 46 | 52 | 68 | 80 | 188 | 10 x M12 | 145 | 18950 | 291 | 130 | 95 | 6,0 | 298-006-130 |
| 140 | 190 | 50 | 57 | 76 | 90 | 199 | 11 x M14 | 230 | 18650 | 267 | 100 | 75 | 7,5 | 298-006-140 |
| 150 | 200 | 50 | 57 | 76 | 90 | 209 | 12 x M14 | 230 | 25000 | 333 | 120 | 90 | 7,7 | 298-006-150 |
| 160 | 210 | 50 | 57 | 76 | 90 | 219 | 13 x M14 | 230 | 26650 | 333 | 110 | 85 | 8,0 | 298-006-160 |
| 170 | 225 | 50 | 57 | 76 | 90 | 234 | 14 x M14 | 230 | 34000 | 400 | 125 | 95 | 9,8 | 298-006-170 |
| 180 | 235 | 50 | 57 | 76 | 90 | 244 | 14 x M14 | 230 | 36000 | 400 | 120 | 90 | 9,8 | 298-006-180 |

Anzugsmoment | starting torque
 Drehmoment | torque
 Axialkraft | thrust
 Flächenpressung - Welle | contact pressure - shaft
 Flächenpressung - Nabe | contact pressure - hub

M_M [Nm]
 M_t [Nm]
 F_a [kN]
 P_W [N/mm²]
 P_N [N/mm²]

Spannsätze - selbstzentrierend

Locking Assemblies - Self-centering

| | | |
|---|--|---|
|  | Kennzeichen: Hohe Drehmomente Kurze Montagezeiten Kostengünstige Anwendung | Characteristics: high torque limited installation time application economically advantageous |
| | Toleranzen, Rauhtiefe: Höchste zulässige Rauhtiefe: Rt max 16µm (Ra 3 µm - Rz 13 µm) Wellentoleranz = h 8; Nabentoleranz = H 8 | Tolerances, surface finish: maximum allowable surface finish: Rt max 16µm (Ra 3 µm - Rz 13 µm) shaft tolerance = h 8; hub tolerance = H 8 |
| | Axiale Verschiebung: Während des Schraubenanziehens erfolgt eine leichte axiale Verschiebung der Nabe gegenüber der Welle. | Axial movement: During screws tightening the hub has a slight axial movement with respect to the shaft. |

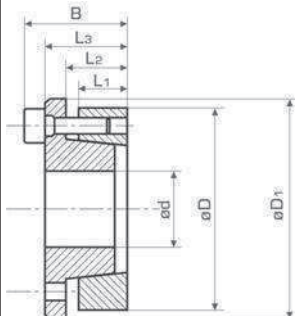
| d | D | L ₁ | L ₂ | L ₃ | B | Spannschrauben set screws | M _M | M _t | F _a | P _W | P _N | [kg] | Bestell Nr. Part No. |
|-----|-----|----------------|----------------|----------------|----|------------------------------|----------------|----------------|----------------|----------------|----------------|------|-------------------------|
| 20 | 47 | 26 | 30 | 41 | 47 | 6 x M6 | 17 | 540 | 54 | 280 | 120 | 0,4 | 298-007-020 |
| 22 | 47 | 26 | 30 | 41 | 47 | 6 x M6 | 17 | 600 | 54 | 255 | 120 | 0,4 | 298-007-022 |
| 24 | 50 | 26 | 30 | 41 | 47 | 6 x M6 | 17 | 650 | 54 | 235 | 115 | 0,4 | 298-007-024 |
| 25 | 50 | 26 | 30 | 41 | 47 | 6 x M6 | 17 | 680 | 54 | 225 | 115 | 0,4 | 298-007-025 |
| 28 | 55 | 26 | 30 | 41 | 47 | 6 x M6 | 17 | 760 | 54 | 200 | 105 | 0,5 | 298-007-028 |
| 30 | 55 | 26 | 30 | 41 | 47 | 6 x M6 | 17 | 820 | 54 | 185 | 105 | 0,5 | 298-007-030 |
| 32 | 60 | 26 | 30 | 41 | 47 | 9 x M6 | 17 | 1160 | 73 | 235 | 125 | 0,6 | 298-007-032 |
| 35 | 60 | 26 | 30 | 41 | 47 | 9 x M6 | 17 | 1270 | 73 | 215 | 125 | 0,5 | 298-007-035 |
| 38 | 65 | 26 | 30 | 41 | 47 | 9 x M6 | 17 | 1380 | 73 | 200 | 115 | 0,6 | 298-007-038 |
| 40 | 65 | 26 | 30 | 41 | 47 | 9 x M6 | 17 | 1450 | 73 | 190 | 115 | 0,6 | 298-007-040 |
| 42 | 75 | 30 | 35 | 49 | 57 | 6 x M8 | 41 | 2130 | 101 | 215 | 120 | 1,0 | 298-007-042 |
| 45 | 75 | 30 | 35 | 49 | 57 | 6 x M8 | 41 | 2280 | 101 | 200 | 120 | 1,0 | 298-007-045 |
| 48 | 80 | 30 | 35 | 49 | 57 | 6 x M8 | 41 | 2430 | 101 | 190 | 115 | 1,1 | 298-007-048 |
| 50 | 80 | 30 | 35 | 49 | 57 | 6 x M8 | 41 | 2530 | 101 | 180 | 115 | 1,0 | 298-007-050 |
| 55 | 85 | 30 | 35 | 49 | 57 | 9 x M8 | 41 | 3700 | 135 | 220 | 140 | 1,1 | 298-007-055 |
| 60 | 90 | 30 | 35 | 49 | 57 | 9 x M8 | 41 | 4000 | 135 | 200 | 135 | 1,2 | 298-007-060 |
| 65 | 95 | 30 | 35 | 49 | 57 | 9 x M8 | 41 | 4380 | 135 | 185 | 125 | 1,3 | 298-007-065 |
| 70 | 110 | 40 | 45 | 59 | 69 | 7 x M10 | 83 | 7500 | 214 | 205 | 130 | 2,2 | 298-007-070 |
| 75 | 115 | 40 | 45 | 59 | 69 | 7 x M10 | 83 | 8000 | 214 | 190 | 125 | 2,5 | 298-007-075 |
| 80 | 120 | 40 | 45 | 59 | 69 | 7 x M10 | 83 | 8560 | 214 | 180 | 120 | 2,6 | 298-007-080 |
| 85 | 125 | 40 | 45 | 59 | 69 | 8 x M10 | 83 | 11370 | 268 | 210 | 145 | 2,8 | 298-007-085 |
| 90 | 130 | 40 | 45 | 59 | 69 | 8 x M10 | 83 | 12000 | 268 | 200 | 135 | 2,7 | 298-007-090 |
| 95 | 135 | 40 | 45 | 59 | 69 | 10 x M10 | 83 | 12600 | 268 | 190 | 130 | 2,9 | 298-007-095 |
| 100 | 145 | 46 | 52 | 68 | 80 | 7 x M12 | 145 | 15580 | 312 | 180 | 125 | 3,9 | 298-007-100 |
| 110 | 155 | 46 | 52 | 68 | 80 | 7 x M12 | 145 | 17100 | 312 | 165 | 115 | 4,2 | 298-007-110 |
| 120 | 165 | 46 | 52 | 68 | 80 | 8 x M12 | 145 | 23370 | 390 | 190 | 135 | 4,8 | 298-007-120 |
| 130 | 180 | 46 | 52 | 68 | 80 | 10 x M12 | 145 | 30380 | 467 | 210 | 150 | 5,0 | 298-007-130 |
| 140 | 190 | 50 | 57 | 76 | 90 | 11 x M14 | 230 | 29900 | 428 | 165 | 120 | 6,5 | 298-007-140 |
| 150 | 200 | 50 | 57 | 76 | 90 | 12 x M14 | 230 | 40000 | 535 | 190 | 145 | 7,0 | 298-007-150 |
| 160 | 210 | 50 | 57 | 76 | 90 | 13 x M14 | 230 | 42750 | 535 | 180 | 135 | 7,0 | 298-007-160 |
| 170 | 225 | 50 | 57 | 76 | 90 | 14 x M14 | 230 | 54500 | 641 | 200 | 150 | 8,5 | 298-007-170 |
| 180 | 235 | 50 | 57 | 76 | 90 | 14 x M14 | 230 | 57700 | 641 | 190 | 145 | 9,0 | 298-007-180 |

Anzugsmoment | starting torque
 Drehmoment | torque
 Axialkraft | thrust
 Flächenpressung - Welle | contact pressure - shaft
 Flächenpressung - Nabe | contact pressure - hub

M_M [Nm]
 M_t [Nm]
 F_a [kN]
 P_W [N/mm²]
 P_N [N/mm²]

Spannsätze - selbstzentrierend

Locking Assemblies - Self-centering

| | | |
|---|---|--|
|  | Kennzeichen: Mittlere bis hohe Drehmomente Kurze Montagezeiten Kostengünstige Anwendung Austauschbar mit WMH-Serie 298-002... | Characteristics: medium-high torque limited installation time application economically advantageous interchangeable with WMH serie 298-002... |
| | Toleranzen, Rauhtiefe: Höchste zulässige Rauhtiefe: $R_t \max 16\mu\text{m}$ ($R_a 3\mu\text{m} - R_z 13\mu\text{m}$) Wellentoleranz = h 8; Nabentoleranz = H 8 | Tolerances, surface finish: maximum allowable surface finish: $R_t \max 16\mu\text{m}$ ($R_a 3\mu\text{m} - R_z 13\mu\text{m}$) shaft tolerance = h 8; hub tolerance = H 8 |
| | Axiale Verschiebung: Während des Schraubenanziehens erfolgt keine axiale Verschiebung der Nabe gegenüber der Welle. | Axial movement: During screws tightening the hub has no axial movement with respect to the shaft. |

| d | D | L ₁ | L ₂ | L ₃ | B | D ₁ | Spannschrauben set screws | M _M | M _t | F _a | P _W | P _N | [kg] | Bestell Nr. Part No. |
|----|----|----------------|----------------|----------------|----|----------------|------------------------------|----------------|----------------|----------------|----------------|----------------|------|-------------------------|
| 14 | 55 | 17 | 22 | 30 | 38 | 62 | 3 x M8 | 25 | 120 | 18 | 205 | 55 | 0,5 | 298-008-012 |
| 16 | 55 | 17 | 22 | 30 | 38 | 62 | 3 x M8 | 25 | 140 | 18 | 180 | 55 | 0,5 | 298-008-014 |
| 18 | 55 | 17 | 22 | 30 | 38 | 62 | 3 x M8 | 25 | 150 | 18 | 160 | 55 | 0,5 | 298-008-015 |
| 19 | 55 | 17 | 22 | 30 | 38 | 62 | 3 x M8 | 25 | 160 | 18 | 150 | 55 | 0,5 | 298-008-016 |
| 20 | 55 | 17 | 22 | 30 | 38 | 62 | 3 x M8 | 25 | 170 | 18 | 145 | 55 | 0,5 | 298-008-017 |
| 22 | 55 | 17 | 22 | 30 | 38 | 62 | 3 x M8 | 35 | 280 | 25 | 185 | 75 | 0,5 | 298-008-028 |
| 24 | 55 | 17 | 22 | 30 | 38 | 62 | 3 x M8 | 35 | 300 | 25 | 170 | 75 | 0,5 | 298-008-030 |
| 25 | 55 | 17 | 22 | 30 | 38 | 62 | 3 x M8 | 35 | 310 | 25 | 165 | 75 | 0,5 | 298-008-031 |
| 28 | 55 | 17 | 22 | 30 | 38 | 62 | 3 x M8 | 41 | 430 | 31 | 175 | 90 | 0,4 | 298-008-043 |
| 30 | 55 | 17 | 22 | 30 | 38 | 62 | 3 x M8 | 41 | 470 | 31 | 165 | 90 | 0,4 | 298-008-047 |
| 24 | 65 | 17 | 22 | 30 | 38 | 72 | 5 x M8 | 30 | 440 | 37 | 244 | 90 | 0,7 | 298-008-044 |
| 25 | 65 | 17 | 22 | 30 | 38 | 72 | 5 x M8 | 30 | 460 | 37 | 234 | 90 | 0,7 | 298-008-046 |
| 28 | 65 | 17 | 22 | 30 | 38 | 72 | 5 x M8 | 35 | 600 | 44 | 243 | 105 | 0,6 | 298-008-060 |
| 30 | 65 | 17 | 22 | 30 | 38 | 72 | 5 x M8 | 35 | 640 | 44 | 227 | 105 | 0,6 | 298-008-064 |
| 32 | 65 | 17 | 22 | 30 | 38 | 72 | 5 x M8 | 35 | 690 | 44 | 213 | 105 | 0,6 | 298-008-069 |
| 35 | 65 | 17 | 22 | 30 | 38 | 72 | 5 x M8 | 41 | 910 | 52 | 234 | 126 | 0,5 | 298-008-091 |
| 38 | 65 | 17 | 22 | 30 | 38 | 72 | 5 x M8 | 41 | 990 | 52 | 216 | 126 | 0,5 | 298-008-099 |
| 40 | 65 | 17 | 22 | 30 | 38 | 72 | 5 x M8 | 41 | 1 050 | 52 | 205 | 126 | 0,5 | 298-008-105 |
| 30 | 80 | 20 | 25 | 33 | 41 | 87 | 7 x M8 | 30 | 780 | 52 | 232 | 87 | 1,0 | 298-008-078 |
| 32 | 80 | 20 | 25 | 33 | 41 | 87 | 7 x M8 | 30 | 830 | 52 | 217 | 87 | 1,0 | 298-008-083 |
| 35 | 80 | 20 | 25 | 33 | 41 | 87 | 7 x M8 | 35 | 1 060 | 61 | 232 | 102 | 1,0 | 298-008-106 |
| 38 | 80 | 20 | 25 | 33 | 41 | 87 | 7 x M8 | 35 | 1 150 | 61 | 214 | 102 | 1,0 | 298-008-115 |
| 40 | 80 | 20 | 25 | 33 | 41 | 87 | 7 x M8 | 35 | 1 220 | 61 | 203 | 102 | 0,9 | 298-008-122 |
| 42 | 80 | 20 | 25 | 33 | 41 | 87 | 7 x M8 | 41 | 1 540 | 73 | 233 | 122 | 0,9 | 298-008-157 |
| 45 | 80 | 20 | 25 | 33 | 41 | 87 | 7 x M8 | 41 | 1 650 | 73 | 217 | 122 | 0,8 | 298-008-165 |
| 48 | 80 | 20 | 25 | 33 | 41 | 87 | 7 x M8 | 41 | 1 760 | 73 | 203 | 122 | 0,8 | 298-008-176 |
| 50 | 80 | 20 | 25 | 33 | 41 | 87 | 7 x M8 | 41 | 1 830 | 73 | 195 | 122 | 0,8 | 298-008-183 |

Anzugsmoment | starting torque
 Drehmoment | torque
 Axialkraft | thrust
 Flächenpressung - Welle | contact pressure - shaft
 Flächenpressung - Nabe | contact pressure - hub

M_M [Nm]
 M_t [Nm]
 F_a [kN]
 P_W [N/mm²]
 P_N [N/mm²]

Spannsätze - Berechnung des Nabenmindstdurchmessers DM

Locking Assemblies - Calculation of Minimum Hub Diameter DM

Nachfolgende Erläuterungen und Tabellen beziehen sich auf folgende WMH-Spannsatz-Serien:

The following explanations and tables refer to these WMH locking assemblies:

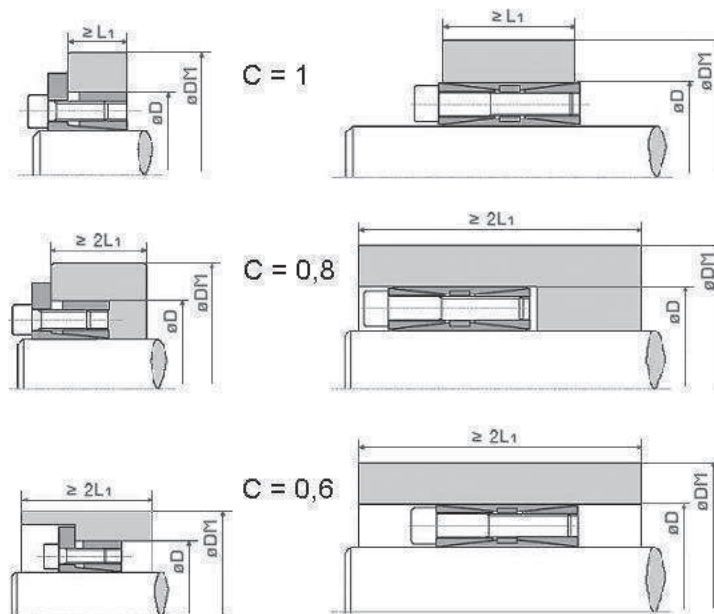
| | |
|------------|------------|
| 298-001... | 298-006... |
| 298-002... | 298-007... |
| 298-004... | 298-008... |
| 298-005... | |

Bei der Anwendung von Spannsätzen erzeugt die Flächenpressung P_N zwischen Spannsatz- Außendurchmesser und Nabe eine Spannung. Für die Berechnung des Nabenmindstdurchmessers DM wird die selbe Formel benutzt wie für die dicken Hohlzylinder: Abhängig von den Nabenlängen und -formen gegenüber der Länge L_1 des Spannsatzes ändern sich die realen Spannungen.

Der Faktor C ist in Funktion vom Anwendungstyp zu berücksichtigen.

By installing locking assemblies, the surface pressure P_N , existing between the clamping outer ring and related hub bore, generate a stress. To calculate the minimum hub diameter DM the formula normally used for thick hollow cylinder is valid. Depending from hub shape and length with respect to the dimension L_1 of locking assemblies, the real stresses change.

Factor C must be considered in function of application type.



Für die Berechnung vom Nabenmindstdurchmesser DM muss man folgende Formel anwenden: $DM = D \cdot K$, wobei K gleich:

$$K = \sqrt{\frac{\sigma_{02} + (C \cdot P_N)}{\sigma_{02} - (C \cdot P_N)}}$$

Um die Berechnungen einfacher zu machen, wurde die Tabelle des Koeffizienten K auf Seite D 15 erarbeitet.

Beispiel:

WMH Spannsatz 298-006-060 Ø 60 x 90
 Nabenpressung $P_N = 85 \text{ N/mm}^2$ (siehe Tabelle auf Seite D 11).
 Nabenwerkstoff GGG40 (Streckgrenze = 250 N/mm^2).
 Nabenbreite und -form entsprechend $C = 1$.
 $DM = 90 \cdot 1,42 = 127,8 \text{ mm}$

For minimum hub diameter DM calculation following formula must be applied: $DM = D \cdot K$, where K is equal to:

To simplify the calculation we prepared the table of coefficient K (see page D 15).

Example:

WMH locking assembly type 298-006-060 Ø 60 x 90
 hub pressure $P_N = 85 \text{ N/mm}^2$ (see page D 11).
 hub material GGG40 (yielding limit = 250 N/mm^2).
 hub length and shape equivalent $C = 1$.
 $DM = 90 \cdot 1,42 = 127,8 \text{ mm}$

Spannsätze - Berechnung des Naben-Mindestdurchmessers DM

Locking Assemblies - Calculation of Minimum Hub Diameter DM

Tabelle des Koeffizienten K
Table of coefficient K

| Nabenpressung pressure generated on the hub | | σ_{02} Streckgrenze yield point [N/mm ²] | | | | | | | | | | |
|--|------------------------------|---|-------|---------|------|-------|---------|-------|-------|--------|---------|------|
| | | 150 | 180 | 200 | 220 | 250 | 270 | 300 | 350 | 400 | 450 | 600 |
| P _N [N/mm ²] | Anwendungstyp application | Werkstofftyp material type | | | | | | | | | | |
| | type | GG20 | GG25 | GG30 | GS45 | GGG40 | St 50-2 | GGG50 | GGG60 | GGG70 | | |
| | C | GS38 | GTS35 | St 37-2 | GS52 | C35 | GS60 | GS62 | GS70 | St60-2 | St 70-2 | C60 |
| 60 | C = 0,6 | 1,28 | 1,25 | 1,20 | 1,18 | 1,15 | 1,14 | 1,12 | 1,10 | 1,09 | 1,08 | 1,06 |
| | C = 0,8 | 1,39 | 1,30 | 1,24 | 1,23 | 1,22 | 1,20 | 1,18 | 1,15 | 1,12 | 1,11 | 1,08 |
| | C = 1 | 1,52 | 1,42 | 1,36 | 1,32 | 1,28 | 1,25 | 1,22 | 1,18 | 1,16 | 1,14 | 1,10 |
| 65 | C = 0,6 | 1,30 | 1,25 | 1,22 | 1,20 | 1,18 | 1,15 | 1,13 | 1,11 | 1,10 | 1,09 | 1,07 |
| | C = 0,8 | 1,44 | 1,35 | 1,30 | 1,28 | 1,24 | 1,22 | 1,20 | 1,16 | 1,14 | 1,12 | 1,09 |
| | C = 1 | 1,60 | 1,45 | 1,40 | 1,35 | 1,30 | 1,28 | 1,24 | 1,20 | 1,18 | 1,16 | 1,12 |
| 70 | C = 0,6 | 1,34 | 1,26 | 1,24 | 1,22 | 1,18 | 1,16 | 1,15 | 1,12 | 1,11 | 1,10 | 1,07 |
| | C = 0,8 | 1,48 | 1,38 | 1,34 | 1,30 | 1,25 | 1,23 | 1,20 | 1,18 | 1,15 | 1,13 | 1,10 |
| | C = 1 | 1,65 | 1,50 | 1,45 | 1,40 | 1,34 | 1,30 | 1,26 | 1,22 | 1,20 | 1,17 | 1,13 |
| 75 | C = 0,6 | 1,30 | 1,28 | 1,25 | 1,23 | 1,20 | 1,18 | 1,16 | 1,14 | 1,12 | 1,11 | 1,08 |
| | C = 0,8 | 1,52 | 1,42 | 1,36 | 1,32 | 1,28 | 1,25 | 1,22 | 1,18 | 1,16 | 1,14 | 1,11 |
| | C = 1 | 1,74 | 1,55 | 1,48 | 1,42 | 1,36 | 1,33 | 1,30 | 1,25 | 1,20 | 1,18 | 1,13 |
| 80 | C = 0,6 | 1,39 | 1,31 | 1,28 | 1,25 | 1,21 | 1,20 | 1,18 | 1,15 | 1,13 | 1,11 | 1,08 |
| | C = 0,8 | 1,58 | 1,45 | 1,39 | 1,35 | 1,30 | 1,27 | 1,24 | 1,20 | 1,18 | 1,15 | 1,11 |
| | C = 1 | 1,81 | 1,61 | 1,53 | 1,46 | 1,39 | 1,36 | 1,31 | 1,26 | 1,22 | 1,20 | 1,14 |
| 85 | C = 0,6 | 1,42 | 1,34 | 1,30 | 1,27 | 1,23 | 1,21 | 1,19 | 1,16 | 1,14 | 1,12 | 1,09 |
| | C = 0,8 | 1,63 | 1,49 | 1,42 | 1,38 | 1,32 | 1,29 | 1,26 | 1,22 | 1,19 | 1,16 | 1,12 |
| | C = 1 | 1,90 | 1,67 | 1,57 | 1,50 | 1,42 | 1,39 | 1,34 | 1,28 | 1,24 | 1,21 | 1,15 |
| 90 | C = 0,6 | 1,46 | 1,36 | 1,32 | 1,28 | 1,25 | 1,22 | 1,20 | 1,17 | 1,15 | 1,13 | 1,09 |
| | C = 0,8 | 1,69 | 1,53 | 1,46 | 1,40 | 1,34 | 1,31 | 1,28 | 1,23 | 1,20 | 1,18 | 1,13 |
| | C = 1 | 2,00 | 1,73 | 1,62 | 1,54 | 1,46 | 1,41 | 1,36 | 1,30 | 1,26 | 1,22 | 1,16 |
| 95 | C = 0,6 | 1,49 | 1,39 | 1,34 | 1,30 | 1,26 | 1,24 | 1,21 | 1,18 | 1,15 | 1,14 | 1,10 |
| | C = 0,8 | 1,75 | 1,57 | 1,49 | 1,43 | 1,37 | 1,34 | 1,30 | 1,25 | 1,21 | 1,19 | 1,14 |
| | C = 1 | 2,11 | 1,80 | 1,68 | 1,59 | 1,49 | 1,44 | 1,39 | 1,32 | 1,27 | 1,24 | 1,17 |
| 100 | C = 0,6 | 1,53 | 1,41 | 1,36 | 1,32 | 1,28 | 1,25 | 1,22 | 1,19 | 1,16 | 1,14 | 1,11 |
| | C = 0,8 | 1,81 | 1,61 | 1,53 | 1,46 | 1,39 | 1,36 | 1,31 | 1,26 | 1,22 | 1,20 | 1,14 |
| | C = 1 | 2,24 | 1,87 | 1,73 | 1,63 | 1,53 | 1,48 | 1,41 | 1,34 | 1,29 | 1,25 | 1,18 |
| 105 | C = 0,6 | 1,56 | 1,44 | 1,39 | 1,34 | 1,29 | 1,27 | 1,24 | 1,20 | 1,17 | 1,15 | 1,11 |
| | C = 0,8 | 1,88 | 1,66 | 1,56 | 1,50 | 1,42 | 1,38 | 1,33 | 1,28 | 1,24 | 1,21 | 1,15 |
| | C = 1 | 2,38 | 1,95 | 1,79 | 1,68 | 1,56 | 1,51 | 1,44 | 1,36 | 1,31 | 1,27 | 1,19 |
| 110 | C = 0,6 | 1,60 | 1,47 | 1,41 | 1,36 | 1,31 | 1,28 | 1,25 | 1,21 | 1,18 | 1,16 | 1,12 |
| | C = 0,8 | 1,96 | 1,71 | 1,60 | 1,53 | 1,44 | 1,41 | 1,35 | 1,29 | 1,25 | 1,22 | 1,16 |
| | C = 1 | 2,55 | 2,04 | 1,86 | 1,73 | 1,60 | 1,54 | 1,47 | 1,38 | 1,33 | 1,28 | 1,20 |
| 115 | C = 0,6 | 1,64 | 1,50 | 1,43 | 1,36 | 1,33 | 1,30 | 1,26 | 1,22 | 1,19 | 1,17 | 1,12 |
| | C = 0,8 | 2,04 | 1,76 | 1,64 | 1,56 | 1,47 | 1,43 | 1,37 | 1,31 | 1,26 | 1,23 | 1,17 |
| | C = 1 | 2,75 | 2,13 | 1,93 | 1,79 | 1,64 | 1,58 | 1,50 | 1,41 | 1,34 | 1,30 | 1,21 |
| 120 | C = 0,6 | 1,69 | 1,53 | 1,46 | 1,40 | 1,34 | 1,31 | 1,28 | 1,23 | 1,20 | 1,18 | 1,13 |
| | C = 0,8 | 2,13 | 1,81 | 1,69 | 1,60 | 1,50 | 1,45 | 1,39 | 1,33 | 1,28 | 1,24 | 1,18 |
| | C = 1 | 3,00 | 2,24 | 2,00 | 1,84 | 1,69 | 1,61 | 1,53 | 1,43 | 1,36 | 1,31 | 1,22 |
| 125 | C = 0,6 | 1,73 | 1,56 | 1,48 | 1,43 | 1,36 | 1,33 | 1,29 | 1,24 | 1,21 | 1,18 | 1,13 |
| | C = 0,8 | 2,24 | 1,87 | 1,73 | 1,63 | 1,53 | 1,48 | 1,41 | 1,34 | 1,29 | 1,25 | 1,18 |
| | C = 1 | 3,32 | 2,35 | 2,08 | 1,91 | 1,73 | 1,65 | 1,56 | 1,45 | 1,38 | 1,33 | 1,24 |
| 130 | C = 0,6 | 1,78 | 1,59 | 1,51 | 1,45 | 1,38 | 1,35 | 1,30 | 1,25 | 1,22 | 1,19 | 1,14 |
| | C = 0,8 | 2,35 | 1,93 | 1,78 | 1,67 | 1,56 | 1,50 | 1,44 | 1,36 | 1,30 | 1,27 | 1,19 |
| | C = 1 | 3,74 | 2,49 | 2,17 | 1,97 | 1,78 | 1,69 | 1,59 | 1,48 | 1,40 | 1,35 | 1,25 |
| 135 | C = 0,6 | 1,83 | 1,62 | 1,54 | 1,47 | 1,40 | 1,36 | 1,32 | 1,27 | 1,23 | 1,20 | 1,15 |
| | C = 0,8 | 2,48 | 2,00 | 1,83 | 1,71 | 1,59 | 1,53 | 1,46 | 1,38 | 1,32 | 1,28 | 1,20 |
| | C = 1 | 4,36 | 2,65 | 2,27 | 2,04 | 1,83 | 1,73 | 1,62 | 1,50 | 1,42 | 1,36 | 1,26 |
| 140 | C = 0,6 | 1,88 | 1,66 | 1,56 | 1,50 | 1,42 | 1,38 | 1,33 | 1,28 | 1,24 | 1,21 | 1,15 |
| | C = 0,8 | 2,63 | 2,07 | 1,88 | 1,75 | 1,62 | 1,55 | 1,48 | 1,39 | 1,33 | 1,29 | 1,21 |
| | C = 1 | 5,39 | 2,83 | 2,38 | 2,12 | 1,88 | 1,78 | 1,66 | 1,53 | 1,44 | 1,38 | 1,27 |
| 145 | C = 0,6 | 1,94 | 1,69 | 1,59 | 1,52 | 1,44 | 1,40 | 1,35 | 1,29 | 1,25 | 1,22 | 1,16 |
| | C = 0,8 | 2,80 | 2,15 | 1,94 | 1,80 | 1,65 | 1,58 | 1,50 | 1,41 | 1,35 | 1,30 | 1,22 |
| | C = 1 | 7,68 | 3,05 | 2,50 | 2,21 | 1,94 | 1,82 | 1,69 | 1,55 | 1,46 | 1,40 | 1,28 |
| 150 | C = 0,6 | 2,00 | 1,73 | 1,62 | 1,54 | 1,46 | 1,41 | 1,36 | 1,30 | 1,26 | 1,23 | 1,16 |
| | C = 0,8 | 3,00 | 2,24 | 2,00 | 1,84 | 1,69 | 1,61 | 1,53 | 1,43 | 1,36 | 1,31 | 1,23 |
| | C = 1 | - | 3,32 | 2,65 | 2,30 | 2,00 | 1,87 | 1,73 | 1,58 | 1,48 | 1,41 | 1,29 |
| 155 | C = 0,6 | 2,06 | 1,77 | 1,65 | 1,57 | 1,48 | 1,43 | 1,38 | 1,31 | 1,27 | 1,24 | 1,17 |
| | C = 0,8 | 3,25 | 2,33 | 2,06 | 1,89 | 1,72 | 1,65 | 1,55 | 1,45 | 1,38 | 1,33 | 1,23 |
| | C = 1 | - | 3,66 | 2,80 | 2,40 | 2,06 | 1,92 | 1,77 | 1,61 | 1,51 | 1,43 | 1,30 |
| 160 | C = 0,6 | 2,13 | 1,81 | 1,69 | 1,60 | 1,50 | 1,45 | 1,39 | 1,33 | 1,28 | 1,24 | 1,18 |
| | C = 0,8 | 3,55 | 2,43 | 2,13 | 1,94 | 1,76 | 1,67 | 1,58 | 1,47 | 1,39 | 1,34 | 1,24 |
| | C = 1 | - | 4,12 | 3,00 | 2,52 | 2,13 | 1,98 | 1,81 | 1,64 | 1,53 | 1,45 | 1,31 |
| 165 | C = 0,6 | 2,21 | 1,86 | 1,72 | 1,62 | 1,52 | 1,47 | 1,41 | 1,34 | 1,29 | 1,25 | 1,18 |
| | C = 0,8 | 3,96 | 2,55 | 2,21 | 2,00 | 1,80 | 1,71 | 1,60 | 1,49 | 1,41 | 1,35 | 1,25 |
| | C = 1 | - | 4,80 | 3,23 | 2,65 | 2,21 | 2,04 | 1,86 | 1,67 | 1,55 | 1,47 | 1,33 |

Schrumpfscheiben - NEU

Shrink Discs - NEW



Kennzeichen:
 Hohe bis höchste Drehmomente
 Kurze Montagezeiten
 Schnelle Demontage
 Keine axiale Verschiebung Welle - Nabe

Characteristics:
 medium-high torque
 limited installation time
 quick dismantling
 no shaft-hub axial movement

Toleranzen, Rauhtiefe:
 Höchste zulässige Rauhtiefe:
 Rt max 16µm (Ra 3 µm - Rz 13 µm)
 Höchste zulässige Wellentoleranz = h 8

Tolerances, surface finish:
 maximum allowable surface finish:
 Rt max 16µm (Ra 3 µm - Rz 13 µm)
 maximum permissible shaft tolerance = h 8

Nabentoleranz: Naben-Ø 18 bis 30 mm = H6/j6
 Naben-Ø 30 bis 50 mm = H6/h6
 Naben-Ø 50 bis 80 mm = H6/g6
 Naben-Ø 80 bis 500 mm = H7/g6

hub tolerance: hub Ø 18 to 30 mm = H6/j6
 hub Ø 30 to 50 mm = H6/h6
 hub Ø 50 to 80 mm = H6/g6
 hub Ø 80 to 500 mm = H7/g6

Axiale Verschiebung:
 Während des Schraubenanziehens erfolgt keine axiale Verschiebung der Nabe gegenüber der Welle.

Axial movement:
 During screws tightening the hub has no axial movement with respect to the shaft.

| d | d _w | D | l | L | d ₁ | e | Spannschrauben set screws | M _M | M _t | F _a | [kg] | Bestell Nr. Part No. |
|-----|----------------|-----|----|------|----------------|------|------------------------------|----------------|----------------|----------------|------|-------------------------|
| 30 | 24 | 60 | 16 | 21,5 | 44 | 2,75 | 7 x M5 | 4 | 300 | 29 | 0,3 | 298-101-130 |
| 30 | 25 | 60 | 16 | 21,5 | 44 | 2,75 | 7 x M5 | 4 | 340 | 31 | 0,3 | 298-101-230 |
| 30 | 26 | 60 | 16 | 21,5 | 44 | 2,75 | 7 x M5 | 4 | 380 | 33 | 0,3 | 298-101-330 |
| 36 | 28 | 72 | 18 | 23,5 | 52 | 2,75 | 5 x M6 | 12 | 440 | 50 | 0,4 | 298-101-136 |
| 36 | 30 | 72 | 18 | 23,5 | 52 | 2,75 | 5 x M6 | 12 | 570 | 58 | 0,4 | 298-101-236 |
| 36 | 31 | 72 | 18 | 23,5 | 52 | 2,75 | 5 x M6 | 12 | 630 | 58 | 0,4 | 298-101-336 |
| 44 | 32 | 80 | 20 | 25,5 | 61 | 2,75 | 7 x M6 | 12 | 620 | 64 | 0,6 | 298-101-144 |
| 44 | 35 | 80 | 20 | 25,5 | 61 | 2,75 | 7 x M6 | 12 | 780 | 74 | 0,6 | 298-101-244 |
| 44 | 36 | 80 | 20 | 25,5 | 61 | 2,75 | 7 x M6 | 12 | 860 | 77 | 0,6 | 298-101-344 |
| 50 | 38 | 90 | 22 | 27,5 | 70 | 2,75 | 8 x M6 | 12 | 940 | 79 | 0,8 | 298-101-150 |
| 50 | 40 | 90 | 22 | 27,5 | 70 | 2,75 | 8 x M6 | 12 | 1160 | 86 | 0,8 | 298-101-250 |
| 50 | 42 | 90 | 22 | 27,5 | 70 | 2,75 | 8 x M6 | 12 | 1380 | 92 | 0,8 | 298-101-350 |
| 55 | 42 | 100 | 23 | 30,5 | 75 | 3,75 | 8 x M6 | 12 | 1160 | 79 | 1,1 | 298-101-155 |
| 55 | 45 | 100 | 23 | 30,5 | 75 | 3,75 | 8 x M6 | 12 | 1520 | 88 | 1,1 | 298-101-255 |
| 55 | 48 | 100 | 23 | 30,5 | 75 | 3,75 | 8 x M6 | 12 | 1880 | 97 | 1,1 | 298-101-355 |
| 62 | 48 | 110 | 23 | 30,5 | 86 | 3,75 | 10 x M6 | 12 | 1850 | 100 | 1,3 | 298-101-162 |
| 62 | 50 | 110 | 23 | 30,5 | 86 | 3,75 | 10 x M6 | 12 | 2200 | 111 | 1,3 | 298-101-262 |
| 62 | 52 | 110 | 23 | 30,5 | 86 | 3,75 | 10 x M6 | 12 | 2400 | 117 | 1,3 | 298-101-362 |
| 68 | 50 | 115 | 23 | 30,5 | 86 | 3,75 | 10 x M6 | 12 | 2000 | 97 | 1,4 | 298-101-168 |
| 68 | 55 | 115 | 23 | 30,5 | 86 | 3,75 | 10 x M6 | 12 | 2500 | 106 | 1,4 | 298-101-268 |
| 68 | 60 | 115 | 23 | 30,5 | 86 | 3,75 | 10 x M6 | 12 | 3150 | 120 | 1,4 | 298-101-368 |
| 75 | 55 | 138 | 25 | 32,5 | 100 | 3,75 | 7 x M8 | 30 | 2500 | 119 | 1,7 | 298-101-175 |
| 75 | 60 | 138 | 25 | 32,5 | 100 | 3,75 | 7 x M8 | 30 | 3200 | 137 | 1,7 | 298-101-275 |
| 75 | 65 | 138 | 25 | 32,5 | 100 | 3,75 | 7 x M8 | 30 | 3950 | 155 | 1,7 | 298-101-375 |
| 80 | 60 | 145 | 25 | 32,5 | 100 | 3,75 | 7 x M8 | 30 | 3200 | 124 | 1,9 | 298-101-180 |
| 80 | 65 | 145 | 25 | 32,5 | 100 | 3,75 | 7 x M8 | 30 | 3900 | 140 | 1,9 | 298-101-280 |
| 80 | 70 | 145 | 25 | 32,5 | 100 | 3,75 | 7 x M8 | 30 | 4600 | 158 | 1,9 | 298-101-380 |
| 85 | 65 | 155 | 30 | 39,0 | 114 | 4,50 | 10 x M8 | 30 | 4800 | 175 | 3,5 | 298-101-185 |
| 85 | 70 | 155 | 30 | 39,0 | 114 | 4,50 | 10 x M8 | 30 | 6100 | 195 | 3,5 | 298-101-285 |
| 85 | 75 | 155 | 30 | 39,0 | 114 | 4,50 | 10 x M8 | 30 | 7400 | 216 | 3,5 | 298-101-385 |
| 90 | 65 | 155 | 30 | 39,0 | 114 | 4,50 | 10 x M8 | 30 | 4750 | 170 | 3,3 | 298-101-190 |
| 90 | 70 | 155 | 30 | 39,0 | 114 | 4,50 | 10 x M8 | 30 | 6000 | 190 | 3,3 | 298-101-290 |
| 90 | 75 | 155 | 30 | 39,0 | 114 | 4,50 | 10 x M8 | 30 | 7250 | 210 | 3,3 | 298-101-390 |
| 100 | 70 | 170 | 34 | 44,0 | 124 | 5,00 | 12 x M8 | 30 | 6900 | 195 | 4,7 | 298-101-100 |
| 100 | 75 | 170 | 34 | 44,0 | 124 | 5,00 | 12 x M8 | 30 | 7500 | 220 | 4,7 | 298-101-200 |
| 100 | 80 | 170 | 34 | 44,0 | 124 | 5,00 | 12 x M8 | 30 | 9000 | 240 | 4,7 | 298-101-300 |
| 110 | 75 | 185 | 39 | 50,0 | 136 | 5,50 | 9 x M10 | 59 | 7200 | 229 | 5,9 | 298-101-110 |
| 110 | 80 | 185 | 39 | 50,0 | 136 | 5,50 | 9 x M10 | 59 | 9000 | 252 | 5,9 | 298-101-210 |
| 110 | 85 | 185 | 39 | 50,0 | 136 | 5,50 | 9 x M10 | 59 | 10800 | 262 | 5,9 | 298-101-310 |

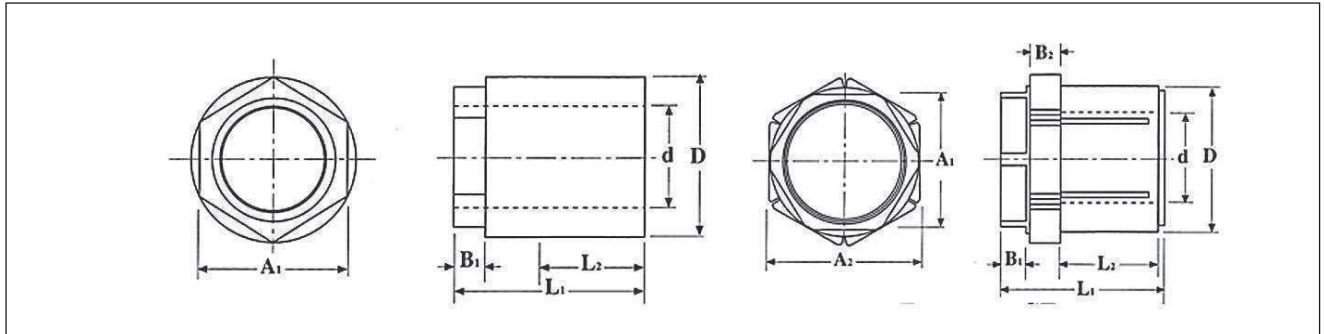
Weitere Größen auf Anfrage.
 For larger size please contact us.

Anzugsmoment | starting torque
 Drehmoment | torque
 Axialkraft | thrust

M_M [Nm]
 M_t [Nm]
 F_a [kN]

Spannsätze

Trantorques



| d | D | L ₁ | L ₂ | A ₁ | A ₂ | B ₁ | B ₂ | M _{tmax} | F _{Amax} | P _N | M _A | [kg] | Bestell Nr. Part No. |
|----|-------|----------------|----------------|----------------|----------------|----------------|----------------|-------------------|-------------------|----------------|----------------|-------|-------------------------|
| 5 | 16,0 | 19,1 | 9,5 | 13,0 | - | 3,2 | - | 12 | 3,2 | 3 585 | 14,1 | 0,014 | 299-005-000 |
| 6 | 16,0 | 19,1 | 9,5 | 13,0 | - | 3,2 | - | 16 | 3,4 | 3 585 | 14,1 | 0,014 | 299-006-000 |
| 7 | 19,0 | 22,2 | 11,1 | 15,9 | - | 3,2 | - | 20 | 3,5 | 2 550 | 17 | 0,014 | 299-007-000 |
| 8 | 19,0 | 22,2 | 11,1 | 15,9 | - | 3,2 | - | 23 | 4,0 | 2 550 | 17 | 0,028 | 299-008-000 |
| 9 | 19,0 | 22,2 | 11,1 | 15,9 | - | 3,2 | - | 26 | 4,1 | 2 550 | 17 | 0,028 | 299-009-000 |
| 10 | 22,5 | 25,7 | 12,7 | 19,0 | - | 4,8 | - | 30 | 4,2 | 1 860 | 19,8 | 0,042 | 299-010-000 |
| 11 | 22,5 | 25,7 | 12,7 | 19,0 | - | 4,8 | - | 34 | 4,2 | 1 860 | 19,8 | 0,042 | 299-011-000 |
| 12 | 22,5 | 25,7 | 12,7 | 19,0 | - | 4,8 | - | 39 | 4,3 | 1 860 | 19,8 | 0,042 | 299-012-000 |
| 14 | 25,5 | 28,6 | 15,9 | 22,0 | - | 4,8 | - | 44 | 4,4 | 1 240 | 22,6 | 0,056 | 299-014-000 |
| 15 | 25,5 | 28,6 | 15,9 | 22,0 | - | 4,8 | - | 45 | 4,4 | 1 240 | 22,6 | 0,050 | 299-015-000 |
| 16 | 25,5 | 28,6 | 15,9 | 22,0 | - | 4,8 | - | 50 | 4,5 | 1 240 | 22,6 | 0,056 | 299-016-000 |
| 17 | 32,0 | 34,9 | 19,1 | 27,0 | - | 6,4 | - | 170 | 8,9 | 5 500 | 80 | 0,060 | 299-017-000 |
| 18 | 38,0 | 38,1 | 19,1 | 31,8 | 38,1 | 8,0 | 8,9 | 265 | 18,1 | 7 590 | 136 | 0,230 | 299-018-001 |
| 19 | 38,0 | 38,1 | 19,1 | 31,8 | 38,1 | 8,0 | 8,9 | 282 | 19,9 | 7 590 | 136 | 0,230 | 299-019-001 |
| 20 | 45,0 | 47,6 | 22,2 | 38,0 | 44,5 | 11,1 | 9,5 | 290 | 21,0 | 6 480 | 170 | 0,350 | 299-020-001 |
| 22 | 45,0 | 47,6 | 22,2 | 38,0 | 44,5 | 11,1 | 9,5 | 315 | 24,1 | 6 480 | 170 | 0,310 | 299-022-001 |
| 24 | 45,0 | 47,6 | 22,2 | 38,0 | 44,5 | 11,1 | 9,5 | 380 | 27,2 | 6 480 | 170 | 0,310 | 299-024-001 |
| 25 | 45,0 | 47,6 | 22,2 | 38,0 | 44,5 | 11,1 | 9,5 | 390 | 28,7 | 6 480 | 170 | 0,310 | 299-025-001 |
| 28 | 51,0 | 57,2 | 25,4 | 46,0 | 50,8 | 12,7 | 14,3 | 495 | 32,6 | 5 380 | 225 | 0,450 | 299-028-001 |
| 30 | 51,0 | 57,2 | 25,4 | 46,0 | 50,8 | 12,7 | 14,3 | 580 | 35,4 | 5 380 | 225 | 0,520 | 299-030-001 |
| 32 | 51,0 | 57,2 | 25,4 | 46,0 | 50,8 | 12,7 | 14,3 | 680 | 38,2 | 5 380 | 225 | 0,450 | 299-032-001 |
| 34 | 60,5 | 69,9 | 38,1 | 50,0 | 60,3 | 14,3 | 12,7 | 710 | 41,0 | 4 480 | 260 | 0,770 | 299-034-001 |
| 35 | 60,5 | 69,9 | 38,1 | 50,0 | 60,3 | 14,3 | 12,7 | 725 | 42,4 | 4 480 | 260 | 0,900 | 299-035-001 |
| 36 | 60,5 | 69,9 | 38,1 | 50,0 | 60,3 | 14,3 | 12,7 | 750 | 43,8 | 4 480 | 260 | 0,770 | 299-036-001 |
| 38 | 60,5 | 69,9 | 38,1 | 50,0 | 60,3 | 14,3 | 12,7 | 790 | 46,6 | 4 480 | 260 | 0,770 | 299-038-001 |
| 40 | 67,0 | 79,4 | 42,9 | 60,0 | 66,7 | 14,3 | 17,4 | 900 | 49,7 | 3 790 | 316 | 1,250 | 299-040-001 |
| 42 | 67,0 | 79,4 | 42,9 | 60,0 | 66,7 | 14,3 | 17,4 | 1 000 | 53,3 | 3 790 | 316 | 1,050 | 299-042-001 |
| 45 | 73,0 | 90,5 | 50,8 | 65,0 | 73,0 | 15,9 | 19,1 | 1 170 | 57,5 | 2 900 | 554 | 1,050 | 299-045-001 |
| 48 | 73,0 | 90,5 | 50,8 | 65,0 | 73,0 | 15,9 | 19,1 | 1 355 | 62,9 | 2 900 | 554 | 1,360 | 299-048-001 |
| 50 | 73,0 | 90,5 | 50,8 | 65,0 | 73,0 | 15,9 | 19,1 | 1 510 | 65,7 | 2 900 | 554 | 1,360 | 299-050-001 |
| 55 | 80,0 | 95,3 | 54,0 | 69,9 | 79,4 | 15,9 | 20,7 | 1 650 | 67,8 | 2 400 | 600 | 1,700 | 299-055-001 |
| 60 | 86,0 | 98,4 | 57,2 | 75,0 | 85,7 | 17,5 | 19,1 | 1 740 | 68,7 | 1 930 | 635 | 2,000 | 299-060-001 |
| 65 | 92,0 | 103,2 | 60,3 | 82,0 | 92,1 | 17,5 | 20,7 | 1 930 | 69,5 | 1 660 | 680 | 2,400 | 299-065-001 |
| 70 | 92,0 | 103,2 | 60,3 | 82,0 | 92,1 | 17,5 | 20,7 | 1 920 | 70,4 | 1 660 | 680 | 2,000 | 299-070-001 |
| 75 | 100,0 | 108,0 | 63,5 | 90,0 | 98,4 | 19,1 | 20,7 | 2 000 | 71,5 | 1 600 | 750 | 2,720 | 299-075-001 |

Wellen und Bohrungstoleranzen:

Bis Größe 299-015-000: ± 0.038 mm

ab Größe 299-016-000: ± 0.067 mm

Rundlaufgenauigkeit: 0.06 mm

Temperaturbereich - 34° C bis + 200° C

Sämtliche Kontaktflächen müssen sauber und ölfrei sein

permissible tolerance on shaft and bore:

up to size 299-015-000: ± 0.038 mm

from size 299-016-000: ± 0.067 mm

concentricity 0.06 mm

temperature limits - 34° C to + 200° C

all the surfaces of contact must be clean and free of oil

Drehmoment | max. torque

Max. Axialkraft | max. thrust

Flächenpressung - Nabe | contact pressure on hub

Anzugsmoment der Mutter | installation torque on nut

M_t [Nm]

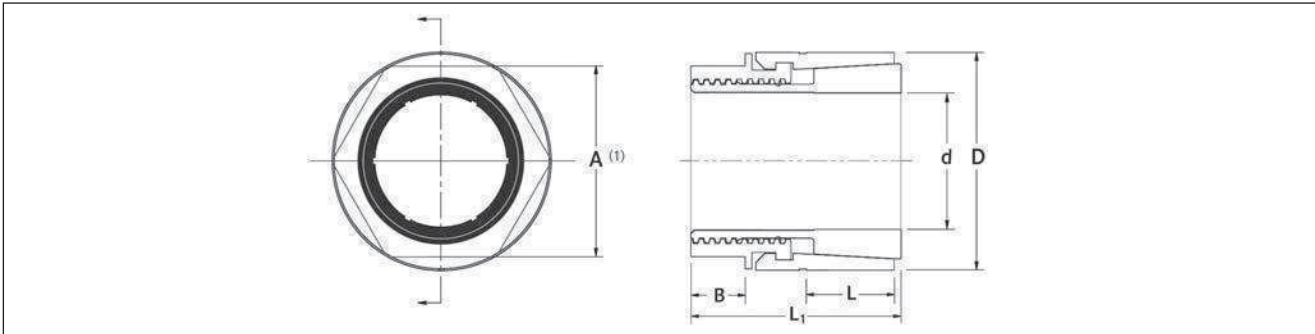
F_a [kN]

P_n [N/mm²]

M_A [Nm]

Spannsätze

Trantorques



| d | D | L | L ₁ | A ¹⁾ | B | M _{tmax} | F _{Amax} | P _N | M _A | DM ²⁾ | [kg] | Bestell Nr. Part No. |
|----|------|------|----------------|-----------------|------|-------------------|-------------------|----------------|----------------|------------------|-------|-------------------------|
| 15 | 38,0 | 19,7 | 38,1 | 32,0 | 8,0 | 168,0 | 22,4 | 79,0 | 113,0 | 49,3 | 0,200 | 299-015-002 |
| 16 | 38,0 | 19,7 | 38,1 | 32,0 | 8,0 | 179,0 | 22,4 | 79,0 | 113,0 | 49,3 | 0,200 | 299-016-002 |
| 17 | 38,0 | 19,7 | 38,1 | 32,0 | 8,0 | 190,0 | 22,4 | 79,0 | 113,0 | 49,3 | 0,200 | 299-017-002 |
| 18 | 38,0 | 19,7 | 38,1 | 32,0 | 8,0 | 201,0 | 22,4 | 79,0 | 113,0 | 49,3 | 0,200 | 299-018-002 |
| 19 | 38,0 | 19,7 | 38,1 | 32,0 | 8,0 | 213,0 | 22,4 | 79,0 | 113,0 | 49,3 | 0,200 | 299-019-002 |
| 20 | 45,0 | 20,2 | 42,6 | 38,0 | 11,1 | 233,0 | 23,3 | 68,0 | 141,0 | 56,2 | 0,300 | 299-020-002 |
| 22 | 45,0 | 20,2 | 42,6 | 38,0 | 11,1 | 257,0 | 23,3 | 68,0 | 141,0 | 56,2 | 0,300 | 299-022-002 |
| 24 | 45,0 | 20,2 | 42,6 | 38,0 | 11,1 | 280,0 | 23,3 | 68,0 | 141,0 | 56,2 | 0,300 | 299-024-002 |
| 25 | 45,0 | 20,2 | 42,6 | 38,0 | 11,1 | 292,0 | 23,3 | 68,0 | 141,0 | 56,2 | 0,300 | 299-025-002 |
| 28 | 51,0 | 20,4 | 49,1 | 46,0 | 12,7 | 325,0 | 23,2 | 59,0 | 164,0 | 61,9 | 0,400 | 299-028-002 |
| 30 | 51,0 | 20,4 | 49,1 | 46,0 | 12,7 | 348,0 | 23,2 | 59,0 | 164,0 | 61,9 | 0,400 | 299-030-002 |
| 32 | 51,0 | 20,4 | 49,1 | 46,0 | 12,7 | 372,0 | 23,2 | 59,0 | 164,0 | 61,9 | 0,400 | 299-032-002 |
| 34 | 60,5 | 28,9 | 57,6 | 50,0 | 14,3 | 520,0 | 30,6 | 46,0 | 249,0 | 70,4 | 0,800 | 299-034-002 |
| 35 | 60,5 | 28,9 | 57,6 | 50,0 | 14,3 | 535,0 | 30,6 | 46,0 | 249,0 | 70,4 | 0,800 | 299-035-002 |
| 36 | 60,5 | 28,9 | 57,6 | 50,0 | 14,3 | 551,0 | 30,6 | 46,0 | 249,0 | 70,4 | 0,700 | 299-036-002 |
| 38 | 60,5 | 28,9 | 57,6 | 50,0 | 14,3 | 581,0 | 30,6 | 46,0 | 249,0 | 70,4 | 0,700 | 299-038-002 |
| 40 | 67,0 | 31,5 | 64,9 | 60,0 | 14,3 | 650,0 | 32,5 | 41,0 | 294,0 | 76,5 | 0,800 | 299-040-002 |
| 42 | 67,0 | 31,5 | 64,9 | 60,0 | 14,3 | 682,0 | 32,5 | 41,0 | 294,0 | 76,5 | 0,800 | 299-042-002 |
| 45 | 73,0 | 37,6 | 74,2 | 65,0 | 15,9 | 761,0 | 33,8 | 33,0 | 339,0 | 81,1 | 1,200 | 299-045-002 |
| 48 | 73,0 | 37,6 | 74,2 | 65,0 | 15,9 | 812,0 | 33,8 | 33,0 | 339,0 | 81,1 | 1,100 | 299-048-002 |
| 50 | 73,0 | 37,6 | 74,2 | 65,0 | 15,9 | 845,0 | 33,8 | 33,0 | 339,0 | 81,1 | 1,000 | 299-050-002 |

¹⁾ bestimmt Schlüsselweite | designates wrench size

²⁾ empfohlener Naben-Außendurchmesser für Stahl 1.1191 mit 310 N/mm² Streckgrenze und Faktor C = 1 |
 required hub outer diameter for steel 1.1191 hub assuming 310 N/mm² yield point and factor C = 1

Wellen und Bohrungstoleranzen:
 Alle Größen: ± 0.08 mm

permissible tolerance on shaft and bore:
 all sizes: ± 0.08 mm

| | | |
|--|----------------------|----------------------|
| Drehmoment max. torque | M_t | [Nm] |
| Max. Axialkraft max. thrust | F_A | [kN] |
| Flächenpressung - Nabe contact pressure on hub | P_N | [N/mm ²] |
| Anzugsmoment der Mutter installation torque on nut | M_A | [Nm] |
| Naben-Mindestdurchmesser minimum hub diameter | DM | [mm] |

