# SIT-LOCK® self locking elements

**Advantages of SIT-LOCK® on the shaft-hub connection compared with traditional systems**

**Easy assembly and disassembly**
Both actions take place by locking and unlocking the clamping screws with common tools.
The use of a torque wrench is only necessary when a more precise torque is required.

**Superior holding power**
The action of the clamping cones creates shaft clamping torque superior to a normal keyed hub.

**Overload protection**
When the pre-set torque is exceeded SIT-LOCK® will slip, preventing the connected elements from being broken.
Note: SIT-LOCK® units are not friction couplings so, excessive slip will cause damage.

**Easy adjustment**
Combining the SIT-LOCK® design of smooth cone action with superior holding power, the hub can be clamped at any position along a shaft, eliminating the need for lock washers, spacers, stop rings, etc.

**Precision location**
With the SIT-LOCK® smooth cone action, the SIT-LOCK® is ideal for clamping cams, timing devices, and indexing mechanisms accurately and precisely.

**Temperature**
-20 °C ÷ 150 °C

**Unlimited use possibilities**
SIT-LOCK® units are suitable to connect any type of hub (flywheels, chainwheels, gears, levers, pulleys, eccentrics, coupling, etc).

**Various solutions in stock**
Available in stock in 10 different types, SIT-LOCK® units can be utilized in a varied range of industrial applications

**Order form**

SIT-LOCK® **CAL 1 F25 /50**

- CAL: SIT-LOCK® self locking element
- Type
- Shaft diameter
- External diameter (hub bore)

**Performances**

Given values of transmissible torque, axial force, and pressure between shaft and hub are valid for a lubricated installation (friction coefficient μ=0,12). Both hub and shaft, as well as locking unit's contact surfaces and screws, should be lubricated.

Locking unit and screws are supplied already oiled.

Always consider tolerances and roughness values per single locking unit.

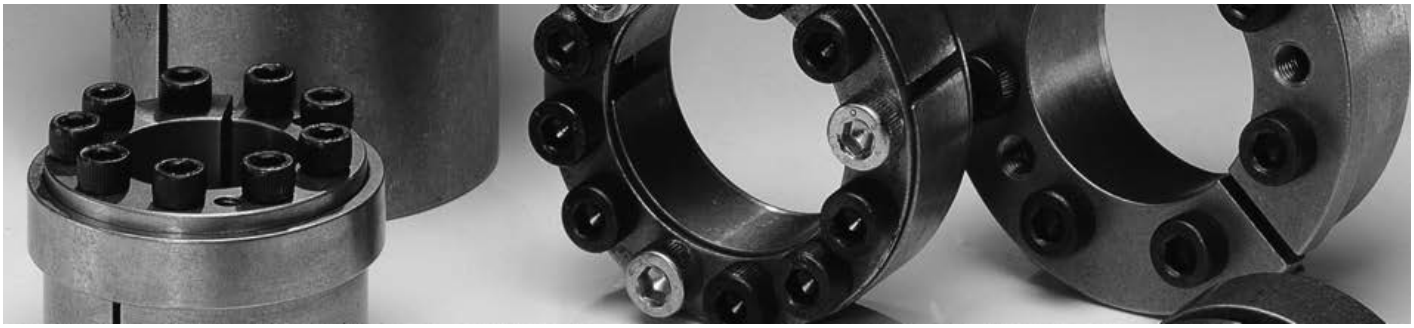
**To avoid decrease of locking unit performances, do not use molybdenum disulfide lubricant or other substances that drastically reduce coefficient of friction.**

**Design procedure**

For a correct functioning of SIT-LOCK®, the transmissible torque $M_T$ (stated in this catalogue) must always exceed the maximum torque in operation. So, in selecting the SIT-LOCK® dimensions, you must consider the start up torque could be even 4 times larger than the nominal one.
The transmissible axial forces ($F_{ax}$) given in the tables are valid for cases where there is no torque. If it is necessary to transmit both a torque and an axial force (ex. helical gear), the following formula must be used:

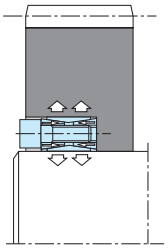
$$M_T \geq \sqrt{M_a^2 + \left(\frac{F_{ax} \cdot d}{2000}\right)^2} \quad [Nm]$$

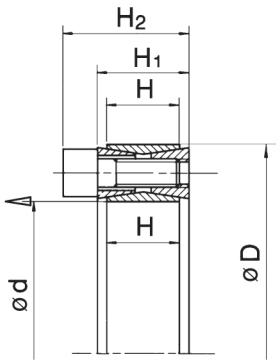
where:
$M_a$ = maximum torque to be transmitted [Nm]
$F_{ax}$ = axial force in operation [N]
d = shaft diameter [mm]



# SIT-LOCK® 1 - Not Self-Centering

SITLOCK® locking assembly unit consists of four pieces with two inside double-cone rings joined through a set of tightening screws. It is recommended for medium torques. Although it is not self centering, it can be easily assembled and disassembled.






### Installation

Carefully clean contact surfaces of shaft and hub. Then, lightly oil both surfaces with standard mineral oil. Position the SIT-LOCK® on the shaft and into the hub machined bore. Align them as required by the application. Gradually and uniformly tighten the locking screws to the tightening torque (Ms).

You must tighten the screws in diametrically opposite sequence in stages:

- hand tighten the screws until the surfaces are in contact
- check the position of the hub on the shaft
- tighten the screws to half the value of the tightening torque (Ms) stated in the catalogue
- repeat the operation until the tightening torque is reached using the dynamometric screw-driver
- check every locking screw to insure it has been tightened to the specific tightening torque

*Do not use lubricant like "Molykote" or molybdenum disulfide based oils.*

### Removal

SIT-LOCK® 1 are not self-locking. The inner rings are tapered so that they spring apart when all screws are released.
Gradually loosen opposite locking screws in stages until the SIT-LOCK® is released. DO NOT remove the screws completely. In case it should jam, it is necessary to lightly hammer the released screws, so the back cone ring is pushed backwards.

*Note: To reuse the locking element, carefully oil the screws and the tapered surfaces, then follow installation instructions.*

### Percentering hub selection

In order to perform an accurate centering, it is necessary to machine with accuracy a precentering hub section which should be longer than ≥ di 2 x $H_2$.

### Axial displacement

During the Installation of the unit no axial displacement of the hubs on the shaft occurs.

| Maximum allowable roughness |
|---|
| Rt 16 µm |
| **Maximum recommended tolerance** |
| shaft h 11 - hub H 11 |

| Calculation of ($M_T$) with more SIT-LOCK® 1 | |
|---|---|
| 1 unit | $M_T = M_T$ table |
| 2 units | $M_T = M_T$ table x 1,9 |
| 3 units | $M_T = M_T$ table x 2,7 |
| 4 units | $M_T = M_T$ table x 3,55 |

## SIT-LOCK® 1

| Dimensions [mm] | | | | Performances | | Pressure [N/mm²] | | Clamping screws (DIN 912 - 12,9) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **d x D** | H | $H_1$ | $H_2$ | $M_T$ [Nm] | $F_{ax}$ [kN] | $p_w$ | $p_n$ | N° | Type | $M_S$ [Nm] |
| **20 x 47** | 17 | 20 | 26 | 288 | 29 | 225 | 96 | 8 | M 6 | 15 |
| **22 x 47** | 17 | 20 | 26 | 317 | 29 | 204 | 96 | 8 | M 6 | 15 |
| **24 x 50** | 17 | 20 | 26 | 345 | 29 | 187 | 90 | 8 | M 6 | 15 |
| **25 x 50** | 17 | 20 | 26 | 360 | 29 | 180 | 90 | 8 | M 6 | 15 |
| **28 x 55** | 17 | 20 | 26 | 498 | 36 | 198 | 101 | 10 | M 6 | 15 |
| **30 x 55** | 17 | 20 | 26 | 533 | 36 | 185 | 101 | 10 | M 6 | 15 |
| **32 x 60** | 17 | 20 | 26 | 676 | 42 | 206 | 110 | 12 | M 6 | 15 |
| **35 x 60** | 17 | 20 | 26 | 739 | 42 | 188 | 110 | 12 | M 6 | 15 |
| **38 x 65** | 17 | 20 | 26 | 928 | 49 | 201 | 117 | 14 | M 6 | 15 |
| **40 x 65** | 17 | 20 | 26 | 977 | 49 | 190 | 117 | 14 | M 6 | 15 |
| **42 x 75** | 20 | 24 | 32 | 1.587 | 76 | 239 | 134 | 12 | M 8 | 37 |
| **45 x 75** | 20 | 24 | 32 | 1.701 | 76 | 223 | 134 | 12 | M 8 | 37 |
| **48 x 80** | 20 | 24 | 32 | 1.814 | 76 | 209 | 125 | 12 | M 8 | 37 |
| **50 x 80** | 20 | 24 | 32 | 1.889 | 76 | 200 | 125 | 12 | M 8 | 37 |
| **55 x 85** | 20 | 24 | 32 | 2.397 | 87 | 210 | 136 | 14 | M 8 | 37 |
| **60 x 90** | 20 | 24 | 32 | 2.615 | 87 | 193 | 128 | 14 | M 8 | 37 |
| **65 x 95** | 20 | 24 | 32 | 3.204 | 99 | 201 | 138 | 16 | M 8 | 37 |
| **70 x 110** | 24 | 28 | 38 | 4.589 | 131 | 207 | 132 | 14 | M10 | 70 |
| **75 x 115** | 24 | 28 | 38 | 4.917 | 131 | 193 | 126 | 14 | M10 | 70 |
| **80 x 120** | 24 | 28 | 38 | 5.245 | 131 | 181 | 121 | 14 | M10 | 70 |
| **85 x 125** | 24 | 28 | 38 | 6.290 | 148 | 192 | 131 | 16 | M10 | 70 |
| **90 x 130** | 24 | 28 | 38 | 6.660 | 148 | 182 | 126 | 16 | M10 | 70 |
| **95 x 135** | 24 | 28 | 38 | 7.819 | 165 | 192 | 135 | 18 | M10 | 70 |
| **100 x 145** | 26 | 33 | 45 | 9.703 | 194 | 198 | 137 | 14 | M12 | 127 |
| **110 x 155** | 26 | 33 | 45 | 10.673 | 194 | 180 | 128 | 14 | M12 | 127 |
| **120 x 165** | 26 | 33 | 45 | 13.262 | 221 | 188 | 137 | 16 | M12 | 127 |
| **130 x 180** | 34 | 38 | 50 | 17.850 | 275 | 165 | 119 | 20 | M12 | 127 |
| **140 x 190** | 34 | 38 | 50 | 21.089 | 301 | 168 | 124 | 22 | M12 | 127 |
| **150 x 200** | 34 | 38 | 50 | 24.586 | 328 | 171 | 128 | 24 | M12 | 127 |
| **160 x 210** | 34 | 38 | 50 | 28.343 | 354 | 173 | 132 | 26 | M12 | 127 |
| **170 x 225** | 38 | 44 | 58 | 33.541 | 395 | 162 | 122 | 22 | M14 | 195 |
| **180 x 235** | 38 | 44 | 58 | 38.636 | 429 | 166 | 128 | 24 | M14 | 195 |
| **190 x 250** | 46 | 52 | 66 | 47.337 | 498 | 151 | 115 | 28 | M14 | 195 |
| **200 x 260** | 46 | 52 | 66 | 53.261 | 533 | 154 | 118 | 30 | M14 | 195 |
| **220 x 285** | 50 | 56 | 72 | 68.790 | 625 | 151 | 116 | 26 | M16 | 300 |
| **240 x 305** | 50 | 56 | 72 | 86.127 | 718 | 159 | 125 | 30 | M16 | 300 |
| **260 x 325** | 50 | 56 | 72 | 105.229 | 809 | 165 | 132 | 34 | M16 | 300 |
| **280 x 355** | 60 | 66 | 84 | 128.456 | 918 | 145 | 114 | 32 | M18 | 410 |
| **300 x 375** | 60 | 66 | 84 | 154.066 | 1.027 | 151 | 121 | 36 | M18 | 410 |
| **320 x 405** | 72 | 78 | 98 | 211.342 | 1.321 | 152 | 120 | 36 | M20 | 590 |
| **340 x 425** | 72 | 78 | 98 | 224.551 | 1.321 | 143 | 115 | 36 | M20 | 590 |
| **360 x 455** | 84 | 90 | 112 | 289.095 | 1.606 | 141 | 111 | 36 | M22 | 790 |
| **380 x 475** | 84 | 90 | 112 | 305.156 | 1.606 | 133 | 107 | 36 | M22 | 790 |
| **400 x 495** | 84 | 90 | 112 | 321.217 | 1.606 | 127 | 102 | 36 | M22 | 790 |
| **420 x 515** | 84 | 90 | 112 | 372.740 | 1.775 | 133 | 109 | 40 | M22 | 790 |
| **440 x 545** | 96 | 102 | 126 | 447.549 | 2.034 | 128 | 103 | 40 | M24 | 1.000 |
| **460 x 565** | 96 | 102 | 126 | 467.892 | 2.034 | 122 | 99 | 40 | M24 | 1.000 |
| **480 x 585** | 96 | 102 | 126 | 511.273 | 2.130 | 123 | 101 | 42 | M24 | 1.000 |
| **500 x 605** | 96 | 102 | 126 | 556.488 | 2.226 | 123 | 102 | 44 | M24 | 1.000 |
| **520 x 630** | 96 | 102 | 126 | 591.149 | 2.274 | 121 | 100 | 45 | M24 | 1.000 |
| **540 x 650** | 96 | 102 | 126 | 613.885 | 2.274 | 116 | 97 | 45 | M24 | 1.000 |
| **560 x 670** | 96 | 102 | 126 | 676.552 | 2.416 | 119 | 100 | 48 | M24 | 1.000 |
| **580 x 690** | 96 | 102 | 126 | 728.173 | 2.511 | 120 | 101 | 50 | M24 | 1.000 |
| **600 x 710** | 96 | 102 | 126 | 753.282 | 2.511 | 116 | 98 | 50 | M24 | 1.000 |
| **620 x 730** | 96 | 102 | 126 | 807.649 | 2.605 | 116 | 99 | 52 | M24 | 1.000 |
| **640 x 750** | 96 | 102 | 126 | 863.810 | 2.699 | 117 | 99 | 54 | M24 | 1.000 |
| **660 x 770** | 96 | 102 | 126 | 921.758 | 2.793 | 117 | 100 | 56 | M24 | 1.000 |
| **680 x 790** | 96 | 102 | 126 | 949.690 | 2.793 | 113 | 98 | 56 | M24 | 1.000 |
| **700 x 810** | 96 | 102 | 126 | 1.042.991 | 2.980 | 118 | 102 | 60 | M24 | 1.000 |
| **720 x 830** | 96 | 102 | 126 | 1.072.791 | 2.980 | 114 | 99 | 60 | M24 | 1.000 |
| **740 x 850** | 96 | 102 | 126 | 1.136.994 | 3.073 | 115 | 100 | 62 | M24 | 1.000 |
| **760 x 870** | 96 | 102 | 126 | 1.202.959 | 3.166 | 115 | 101 | 64 | M24 | 1.000 |
| **780 x 890** | 96 | 102 | 126 | 1.252.660 | 3.212 | 114 | 100 | 65 | M24 | 1.000 |
| **800 x 910** | 96 | 102 | 126 | 1.303.261 | 3.258 | 113 | 99 | 66 | M24 | 1.000 |
| **820 x 930** | 96 | 102 | 126 | 1.373.654 | 3.350 | 113 | 100 | 68 | M24 | 1.000 |
| **840 x 950** | 96 | 102 | 126 | 1.445.789 | 3.442 | 113 | 100 | 70 | M24 | 1.000 |
| **860 x 970** | 96 | 102 | 126 | 1.519.663 | 3.534 | 114 | 101 | 72 | M24 | 1.000 |
| **880 x 990** | 96 | 102 | 126 | 1.595.268 | 3.626 | 114 | 101 | 74 | M24 | 1.000 |
| **900 x 1010** | 96 | 102 | 126 | 1.652.075 | 3.671 | 113 | 100 | 75 | M24 | 1.000 |

*Notes:*
Dimensions representing the total length of the hub are indicative; they are calculated according to the geometric rules.

For assemblies requiring larger dimensions, contact our Technical Department.

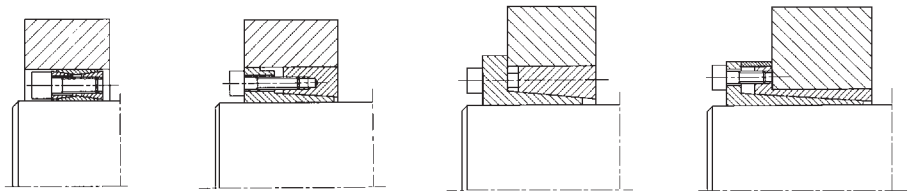
| | | |
|---|---|---|
| $M_S$ | Screw tightening torque | Nm |
| $M_T$ | Transmissible torque moment | Nm |
| $F_{ax}$ | Transmissible axial load | N |

| | | |
|---|---|---|
| $p_w$ | Shaft pressure | $N/mm^2$ |
| $p_n$ | Hub pressure | $N/mm^2$ |

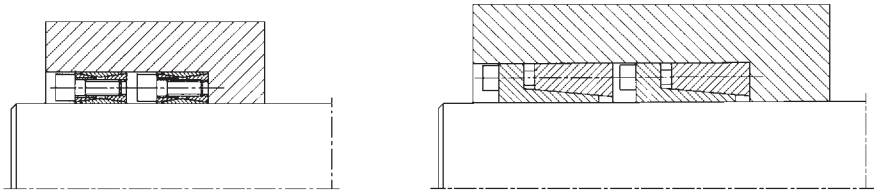
# Design of hub outside minimum diameter

When using the locking units, the shaft-hub connection is characterized by a pressure on the hub surface, which is exerted by the locking unit outer ring when the clamping screws are tightened to the stated value. It is important to design correctly the hub outside diameter. The following table summarizes the procedure as a simple calculation. To determine the hub outside minimum diameter, simply multiply the factor K by the SIT-LOCK® outside diameter to obtain the hub outside minimum diameter. The factor K varies depending on the yield limit of hub material, the hub surface pressure (Pn) and the factor (x), variable according to the application type (A, B, C).

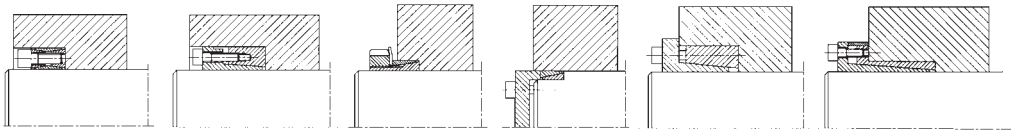
Installation type A ($L_M \cong L_C$)
X = 1



Installation type B ($L_M \cong 2\ L_C$)
X = 0,8



Installation type C ($L_M > 2\ L_C$)
X = 0,6



**Hub min diameter D x K**

for: K = factor stated in the table
D = SIT-LOCK® outside diameter

| | | |
|---|---|---|
| $L_M$ | Hub length | mm |
| $L_c$ | SIT-LOCK® length | mm |

## Hollow shaft

For application with locking-assemblies on hollow shaft, it is important to scale both hub minimum diameter and hollow shaft diameter. Contact our Technical Department for design.

# Coefficient K

| Hub surface pressure | | Yield limit of hub material $\sigma_{02}$ [N/mm²] | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 150 | 180 | 200 | 220 | 250 | 270 | 300 | 350 | 400 | 450 | 600 |
| | | Hub material | | | | | | | | | | |
| $p_n$ [N/mm²] | Application | GG 20 | GG 25<br>GS 38 | GG 30<br>GTS 35 | GS 45<br>ST 37-2 | GG 40<br>GS 52 | ST 50-2<br>C 35 | GG 50<br>GS 60<br>ST 60-2 | GG 60<br>GS 62<br>ST 70-2 | GG 70<br>GS 70<br>C 60 | Heat treatment steel | |
| 60 | C | 1,29 | 1,26 | 1,21 | 1,19 | 1,16 | 1,15 | 1,13 | 1,11 | 1,10 | 1,09 | 1,07 |
| | B | 1,40 | 1,31 | 1,25 | 1,24 | 1,23 | 1,21 | 1,19 | 1,16 | 1,13 | 1,12 | 1,09 |
| | A | 1,53 | 1,43 | 1,37 | 1,33 | 1,29 | 1,26 | 1,23 | 1,19 | 1,17 | 1,15 | 1,11 |
| 65 | C | 1,31 | 1,26 | 1,23 | 1,21 | 1,19 | 1,16 | 1,14 | 1,12 | 1,11 | 1,10 | 1,08 |
| | B | 1,45 | 1,36 | 1,31 | 1,29 | 1,25 | 1,23 | 1,21 | 1,17 | 1,15 | 1,13 | 1,10 |
| | A | 1,61 | 1,46 | 1,41 | 1,36 | 1,31 | 1,29 | 1,25 | 1,21 | 1,19 | 1,17 | 1,13 |
| 70 | C | 1,35 | 1,27 | 1,25 | 1,23 | 1,19 | 1,17 | 1,16 | 1,13 | 1,12 | 1,11 | 1,08 |
| | B | 1,49 | 1,39 | 1,35 | 1,31 | 1,26 | 1,24 | 1,21 | 1,19 | 1,16 | 1,14 | 1,11 |
| | A | 1,66 | 1,51 | 1,46 | 1,41 | 1,35 | 1,31 | 1,26 | 1,23 | 1,21 | 1,18 | 1,14 |
| 75 | C | 1,31 | 1,29 | 1,26 | 1,24 | 1,21 | 1,19 | 1,16 | 1,15 | 1,13 | 1,12 | 1,09 |
| | B | 1,53 | 1,43 | 1,37 | 1,33 | 1,29 | 1,26 | 1,23 | 1,19 | 1,17 | 1,15 | 1,12 |
| | A | 1,75 | 1,56 | 1,49 | 1,43 | 1,37 | 1,34 | 1,31 | 1,26 | 1,21 | 1,19 | 1,14 |
| 80 | C | 1,40 | 1,32 | 1,29 | 1,26 | 1,22 | 1,21 | 1,19 | 1,16 | 1,14 | 1,12 | 1,09 |
| | B | 1,59 | 1,46 | 1,40 | 1,36 | 1,31 | 1,28 | 1,25 | 1,21 | 1,19 | 1,16 | 1,12 |
| | A | 1,82 | 1,62 | 1,54 | 1,47 | 1,40 | 1,37 | 1,32 | 1,27 | 1,23 | 1,21 | 1,15 |
| 85 | C | 1,43 | 1,35 | 1,31 | 1,28 | 1,24 | 1,22 | 1,20 | 1,17 | 1,15 | 1,13 | 1,10 |
| | B | 1,64 | 1,50 | 1,43 | 1,39 | 1,33 | 1,30 | 1,27 | 1,23 | 1,20 | 1,17 | 1,13 |
| | A | 1,91 | 1,68 | 1,58 | 1,51 | 1,43 | 1,40 | 1,35 | 1,29 | 1,25 | 1,22 | 1,16 |
| 90 | C | 1,47 | 1,37 | 1,33 | 1,29 | 1,26 | 1,23 | 1,21 | 1,18 | 1,16 | 1,14 | 1,10 |
| | B | 1,70 | 1,54 | 1,47 | 1,41 | 1,35 | 1,32 | 1,29 | 1,24 | 1,21 | 1,19 | 1,14 |
| | A | 2,01 | 1,74 | 1,63 | 1,55 | 1,47 | 1,42 | 1,37 | 1,31 | 1,27 | 1,23 | 1,17 |
| 95 | C | 1,50 | 1,40 | 1,35 | 1,31 | 1,27 | 1,25 | 1,22 | 1,19 | 1,16 | 1,15 | 1,11 |
| | B | 1,76 | 1,58 | 1,50 | 1,44 | 1,38 | 1,35 | 1,31 | 1,26 | 1,22 | 1,20 | 1,15 |
| | A | 2,12 | 1,81 | 1,69 | 1,60 | 1,50 | 1,45 | 1,40 | 1,33 | 1,28 | 1,25 | 1,18 |
| 100 | C | 1,54 | 1,42 | 1,37 | 1,33 | 1,29 | 1,26 | 1,23 | 1,20 | 1,17 | 1,15 | 1,12 |
| | B | 1,82 | 1,62 | 1,54 | 1,47 | 1,40 | 1,37 | 1,32 | 1,27 | 1,23 | 1,21 | 1,15 |
| | A | 2,25 | 1,88 | 1,74 | 1,64 | 1,54 | 1,49 | 1,42 | 1,35 | 1,30 | 1,26 | 1,19 |
| 105 | C | 1,57 | 1,45 | 1,40 | 1,35 | 1,30 | 1,28 | 1,25 | 1,21 | 1,18 | 1,16 | 1,12 |
| | B | 1,89 | 1,67 | 1,57 | 1,51 | 1,43 | 1,39 | 1,34 | 1,29 | 1,25 | 1,22 | 1,16 |
| | A | 2,39 | 1,96 | 1,80 | 1,69 | 1,57 | 1,52 | 1,45 | 1,37 | 1,32 | 1,28 | 1,20 |
| 110 | C | 1,61 | 1,48 | 1,42 | 1,37 | 1,32 | 1,29 | 1,26 | 1,22 | 1,19 | 1,17 | 1,13 |
| | B | 1,97 | 1,72 | 1,61 | 1,54 | 1,45 | 1,41 | 1,36 | 1,30 | 1,26 | 1,23 | 1,17 |
| | A | 2,56 | 2,05 | 1,87 | 1,74 | 1,61 | 1,55 | 1,48 | 1,39 | 1,34 | 1,29 | 1,21 |
| 115 | C | 1,65 | 1,51 | 1,44 | 1,37 | 1,34 | 1,31 | 1,27 | 1,23 | 1,20 | 1,18 | 1,13 |
| | B | 2,05 | 1,77 | 1,65 | 1,57 | 1,48 | 1,44 | 1,38 | 1,32 | 1,27 | 1,24 | 1,18 |
| | A | 2,76 | 2,14 | 1,94 | 1,80 | 1,65 | 1,59 | 1,51 | 1,42 | 1,35 | 1,31 | 1,22 |
| 120 | C | 1,70 | 1,54 | 1,47 | 1,40 | 1,35 | 1,32 | 1,29 | 1,24 | 1,21 | 1,19 | 1,14 |
| | B | 2,14 | 1,82 | 1,70 | 1,61 | 1,51 | 1,46 | 1,40 | 1,34 | 1,29 | 1,25 | 1,19 |
| | A | 3,01 | 2,25 | 2,01 | 1,85 | 1,70 | 1,62 | 1,54 | 1,44 | 1,37 | 1,32 | 1,23 |
| 125 | C | 1,74 | 1,57 | 1,49 | 1,44 | 1,37 | 1,34 | 1,30 | 1,25 | 1,22 | 1,19 | 1,14 |
| | B | 2,25 | 1,88 | 1,74 | 1,64 | 1,54 | 1,49 | 1,42 | 1,35 | 1,30 | 1,26 | 1,19 |
| | A | 3,33 | 2,36 | 2,09 | 1,92 | 1,74 | 1,66 | 1,57 | 1,46 | 1,39 | 1,34 | 1,25 |
| 130 | C | 1,79 | 1,60 | 1,52 | 1,46 | 1,39 | 1,36 | 1,31 | 1,26 | 1,23 | 1,20 | 1,15 |
| | B | 2,36 | 1,94 | 1,79 | 1,68 | 1,57 | 1,51 | 1,45 | 1,37 | 1,31 | 1,28 | 1,20 |
| | A | 3,75 | 2,50 | 2,18 | 1,98 | 1,79 | 1,70 | 1,60 | 1,49 | 1,41 | 1,36 | 1,26 |
| 135 | C | 1,84 | 1,62 | 1,55 | 1,48 | 1,41 | 1,37 | 1,33 | 1,28 | 1,24 | 1,21 | 1,16 |
| | B | 2,49 | 2,01 | 1,84 | 1,72 | 1,60 | 1,54 | 1,47 | 1,39 | 1,33 | 1,29 | 1,21 |
| | A | 4,37 | 2,66 | 2,28 | 2,05 | 1,84 | 1,74 | 1,63 | 1,51 | 1,43 | 1,37 | 1,27 |
| 140 | C | 1,89 | 1,67 | 1,57 | 1,51 | 1,43 | 1,39 | 1,34 | 1,29 | 1,25 | 1,22 | 1,16 |
| | B | 2,64 | 2,08 | 1,89 | 1,76 | 1,63 | 1,55 | 1,49 | 1,40 | 1,34 | 1,30 | 1,22 |
| | A | 5,40 | 2,84 | 2,39 | 2,13 | 1,89 | 1,79 | 1,67 | 1,54 | 1,45 | 1,39 | 1,28 |
| 145 | C | 1,95 | 1,70 | 1,60 | 1,53 | 1,45 | 1,41 | 1,36 | 1,30 | 1,26 | 1,23 | 1,17 |
| | B | 2,81 | 2,16 | 1,95 | 1,81 | 1,66 | 1,59 | 1,51 | 1,42 | 1,36 | 1,31 | 1,23 |
| | A | 7,67 | 3,06 | 2,51 | 2,22 | 1,95 | 1,83 | 1,70 | 1,56 | 1,47 | 1,41 | 1,29 |
| 150 | C | 2,01 | 1,74 | 1,63 | 1,55 | 1,47 | 1,42 | 1,37 | 1,31 | 1,27 | 1,24 | 1,17 |
| | B | 3,01 | 2,25 | 2,01 | 1,85 | 1,70 | 1,62 | 1,54 | 1,44 | 1,37 | 1,32 | 1,24 |
| | A | — | 3,33 | 2,66 | 2,31 | 2,01 | 1,88 | 1,74 | 1,59 | 1,49 | 1,42 | 1,30 |
| 155 | C | 2,07 | 1,78 | 1,66 | 1,58 | 1,49 | 1,44 | 1,39 | 1,32 | 1,28 | 1,25 | 1,18 |
| | B | 3,26 | 2,34 | 2,07 | 1,90 | 1,73 | 1,66 | 1,56 | 1,46 | 1,39 | 1,34 | 1,24 |
| | A | — | 3,67 | 2,81 | 2,41 | 2,07 | 1,93 | 1,78 | 1,62 | 1,52 | 1,44 | 1,31 |
| 160 | C | 2,14 | 1,82 | 1,70 | 1,61 | 1,51 | 1,46 | 1,40 | 1,34 | 1,29 | 1,25 | 1,19 |
| | B | 3,56 | 2,44 | 2,14 | 1,95 | 1,77 | 1,68 | 1,59 | 1,48 | 1,40 | 1,35 | 1,25 |
| | A | — | 4,13 | 3,01 | 2,53 | 2,14 | 1,99 | 1,82 | 1,65 | 1,54 | 1,48 | 1,32 |
| 165 | C | 2,22 | 1,87 | 1,73 | 1,63 | 1,53 | 1,48 | 1,42 | 1,35 | 1,30 | 1,26 | 1,19 |
| | B | 3,97 | 2,56 | 2,22 | 2,01 | 1,81 | 1,72 | 1,61 | 1,50 | 1,42 | 1,36 | 1,26 |
| | A | — | 4,81 | 3,24 | 2,66 | 2,22 | 2,05 | 1,87 | 1,68 | 1,56 | 1,48 | 1,34 |

Note: $p_n$ is stated in the dimensional table of each of the locking assemblies. Installation type (A, B, C) are stated in the previous page.

# Example of calculation procedure

**Design data**
- Power transmission element to be connected: V-pulley
- Shaft diameter: 50 mm
- Maximum Torque in operation (Ma): 1.500 Nm
- V-pulley material: cast iron GG20
- Yield limit of V-pulley material: 150 N/mm²

**Calculation**
- SIT-LOCK® type: for this kind of applcation SIT-LOCK® 1 is suggested
- Size selection: 50 x 80 mm (see table SIT-LOCK® 1)
- Performance control: verify $M_T \geq Ma$

  From the table obtain $M_T$ = 1.889 Nm, so the above condition is verified
- Tolerance: h11 for the shaft - H11 for the SIT-LOCK® bore
- Roughness: $R_t \leq 16$
- Screws tightening torque: $M_S$ = 37 Nm (see table SIT-LOCK® 1)
- Hub surface pressure: from the table you can find the value $P_n$ = 125 N/mm²
- Application type: in this case it is preferable to adopt the application “C” with the centering guide between shaft and hub
- Coefficient K : obtained through the table “Coefficient K” by considering the following information:
  - yield limit of hub material = 150 N/mm²
  - hub surface pressure = 125 N/mm²
  - installation C

Then, K = 1,74

- Hub outside minimum diameter:

  $Hub\ D_{min} \geq D \cdot K$

  for

  - D = SIT-LOCK® outside diameter [mm]
  - K = 1,74

Then, hub $D_{min}$ = (80 • 1,74) = **140 [mm]**

# DIN 912

| Screw diameter | $P_V$ [N] | | | $M_S$ [Nm] | | |
|---|---|---|---|---|---|---|
| | **8,8** | **10,9** | **12,9** | **8,8** | **10,9** | **12,9** |
| **M2,5** | 1.600 | 2.140 | 2.565 | 0,76 | 1,0 | 1,2 |
| **M3** | 2.210 | 3.110 | 3.730 | 1,3 | 1,9 | 2,2 |
| **M4** | 3.900 | 5.450 | 6.550 | 2,9 | 4,1 | 4,9 |
| **M5** | 6.350 | 8.950 | 10.700 | 6 | 8,5 | 10 |
| **M6** | 9.000 | 12.600 | 15.100 | 10 | 14 | 17 |
| **M7** | 13.200 | 18.500 | 22.200 | 16 | 23 | 28 |
| **M8** | 16.500 | 23.200 | 27.900 | 25 | 35 | 41 |
| **M9** | 22.000 | 30.900 | 37.100 | 36 | 51 | 61 |
| **M10** | 26.200 | 36.900 | 44.300 | 49 | 69 | 83 |
| **M12** | 38.300 | 54.000 | 64.500 | 86 | 120 | 145 |
| **M14** | 52.500 | 74.000 | 88.500 | 135 | 190 | 230 |
| **M16** | 73.000 | 102.000 | 123.000 | 210 | 295 | 355 |
| **M18** | 88.000 | 124.000 | 148.000 | 290 | 405 | 485 |
| **M20** | 114.000 | 160.000 | 192.000 | 410 | 580 | 690 |
| **M22** | 141.000 | 199.000 | 239.000 | 550 | 780 | 930 |
| **M24** | 164.000 | 230.000 | 276.000 | 710 | 1.000 | 1.200 |
| **M27** | 215.000 | 302.000 | 363.000 | 1.050 | 1.500 | 1.800 |
| **M30** | 262.000 | 368.000 | 442.000 | 1.450 | 2.000 | 2.400 |