# APPLYING ALL-ROUND PRESSURE WITH PRECISION

**Spieth clamping sets – friction-locked shaft-hub connections.**
Rising power densities. Increasing levels of dynamic stress. And the required function must be realised within increasingly restrictive cost parameters. The stringent demands of modern mechanical engineering can only be satisfied with high-quality shaft-hub connecting elements.

Spieth clamping sets apply uniform pressure. Without compromise. The are designed to be more accurate, precise, efficient, simpler to install and easier to service. The economical solution for modern machinery designs. Offering outstanding performance.


SPIETH

## 4 UNIQUE FEATURES – NUMEROUS BENEFITS

**Precise**
All functional surfaces that determine precision are machined to the finest geometrical and positional tolerances.

**Single-piece design**
Unlike tapered clamping sets, the single-piece steel body does not have any joints that could compromise tolerances. This ensures that the high degree of precision achieved in the manufacturing process can also be brought to bear in the relevant application.

**Self-centering**
When subjected to axial compression, the unique geometry of the absolutely symmetrical base body ensures uniform transverse contraction in the direction of the shaft and hub. The resulting centring effect is equivalent to that of the hydro-expansion principle, only much simpler, safer and stiffer.

**Intelligent**
Cylindrical clamping sets exert very low levels of wear on their connecting components. Significantly better clamping homogeneity at the contact surfaces eliminates any possibility of peak clamping force acting at specific points, which frequently lead to damage and installation problems. At the same time, the Spieth design in the tensioned state is equivalent to the combination of a knee lever and a spring compressed against a block, thus guaranteeing an extremely rigid connection. And when released, the cylindrical clamping set easily returns to its original shape.

### BENEFITS TO YOU

Competitiveness through technological leadership – a strategy that calls for an economical increase in power density, efficiency and accuracy. Cylindrical clamping sets create the foundation for this.

**Lower Resource Input**
- Simple configuration of connecting components.
- Simple installation and dismantling of all components thanks to mating play.
- Minimum axial drag during clamping process.
- Clamping force initiation can be freely configured.
- Quick-release connection.

**More Success**
- High level of concentricity.
- Minimised vibrational excitation.
- High torque levels and axial forces.
- Suitable for alternating torsion.
- Axial and angular position freely adjustable.
- Preserves connecting components.
- Connection can be automated/switched.
- Re-usable.

*Series DSM .. 1, DSM .. 2*

*Series DSM*

*Series DSL*

*Series DSK*

## FIELDS OF APPLICATION

Spieth clamping sets are friction-locked shaft-hub connections for all areas of mechanical engineering. They are used wherever high-quality and reliable connections perform key functional roles. At the same time, they are the ideal solution for applications with high levels of replacement and adjustment as well as for manual or automated clamping of sleeves, skids, pivoting heads or rotary tables.

## APPLICATION EXAMPLES

- In machining, forming and cutting machine tools.
- In handling and automation equipment.
- In materials handling.
- In general drive engineering and transmissions.
- In packaging machinery.
- In fixture construction.
- In compressors and pumps.
- In printing presses and paper-making technology.
- In textile machines.
- In woodworking machines.
- In process engineering applications for mixing, crushing and centrifuging.
- For metrology, control and test engineering.
- In precision engineering and optical technology.

*Series AK*

*Series IK*

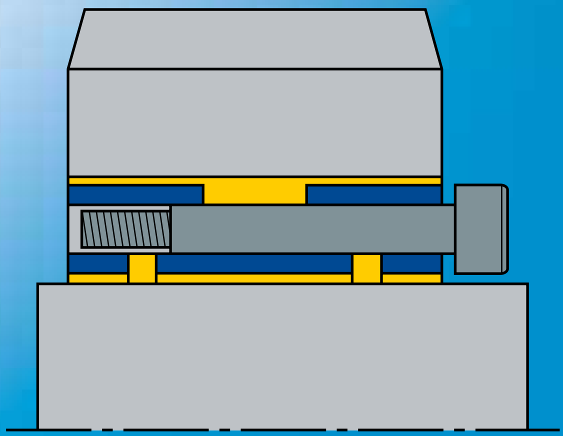
*Series AL*

*Series IL*

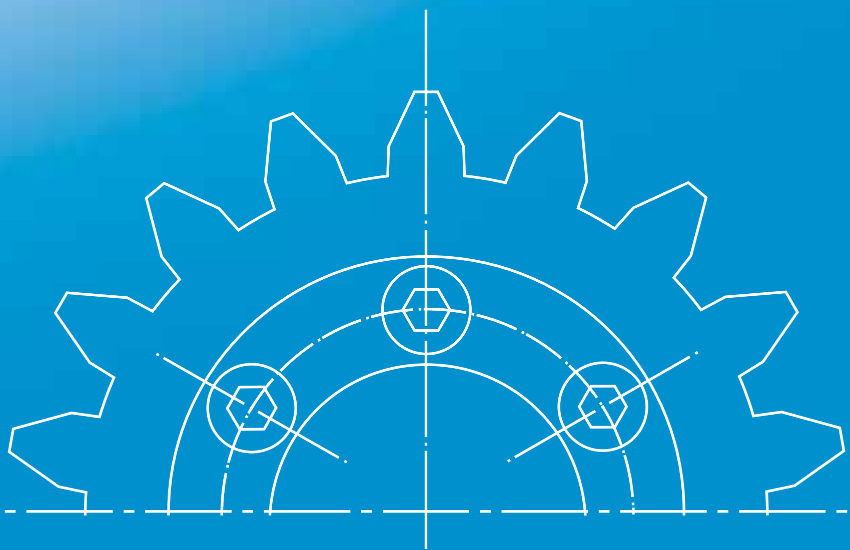
## FUNCTIONAL PRINCIPLE

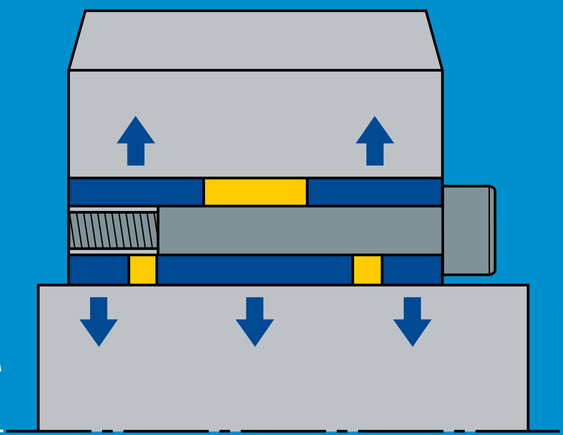
Shown here using a clamping set from series DSK with an integrated clamping screw.

The principle is illustrated in a simplified diagram with enlarged play.



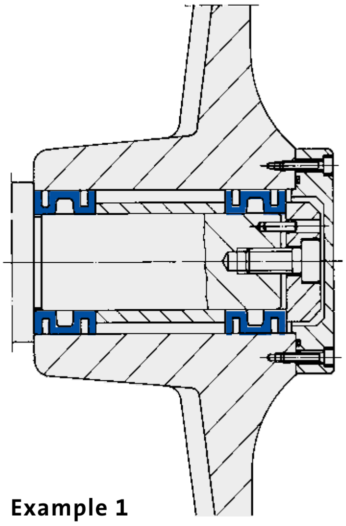
Clamping set released, easy installation or dismantling with mating play.





Clamping set clamped, connection is centred with a high load capacity. No lateral displacement during tightening. This ensures ultra-high precision centring and optimum concentricity.

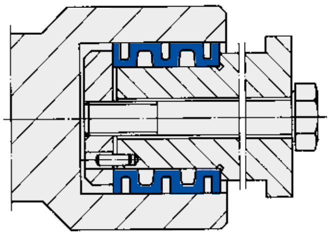
## ASSEMBLY EXAMPLES



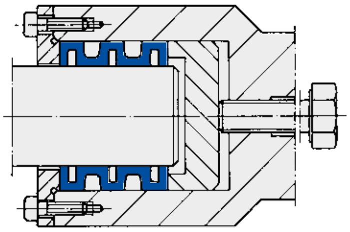
Example 1

**Example 1: Blade wheel fixture**

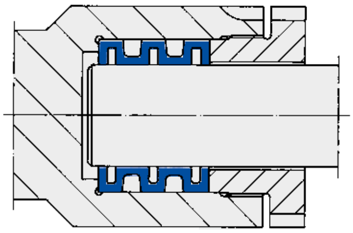
The clamping sleeves arranged over a wide basis exert a positive influence on run-out accuracy and rotating flexural stress of the shaft-hub fit. The degree of torque which can be transferred with two consecutively arranged clamping sleeves is approx. 30 % higher than when using a single clamping sleeve.



**Example 2**
Clamping force initiated by tension screw.



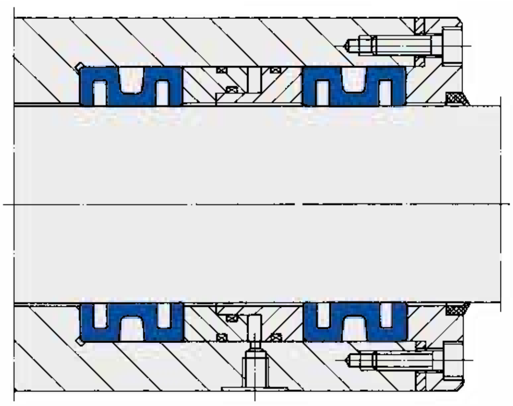
**Example 3**
Clamping force initiated by set screw.



**Example 4**
Clamping force initiated by hollow screw.

**Example 2–4: Plug-in connections**

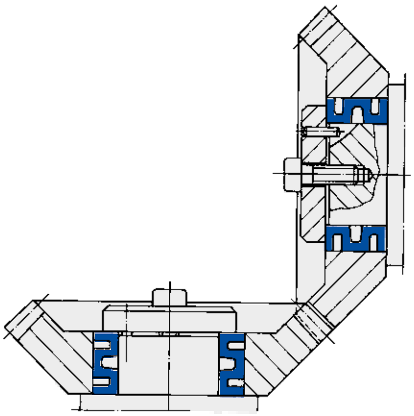
This shaft-hub connection is completely free of play and can be released an unlimited number of times. The tightening torque levels for clamping force initiating screws depend on the required clamping force for each individual clamping sleeve.



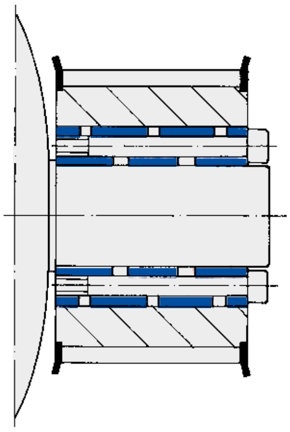
**Example 5**

**Example 5: Sleeve clamping**

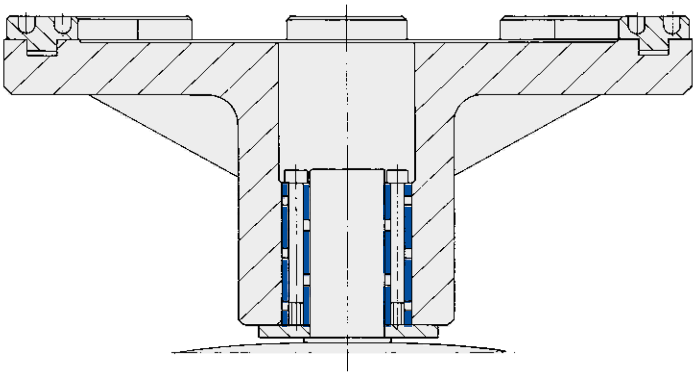
The sleeve is hydraulically tensioned and precisely centred. Free movement is immediately possible in the un-tensioned state. The axial thrust created during the clamping process with single arrangement of a clamping sleeve is theoretically balanced out in this case by forces working in opposition. In practice, however, in case of a freely located sleeve, allowance must be made for a slight residual thrust as it is not possible to create identical clamping conditions at the clamping sleeves.



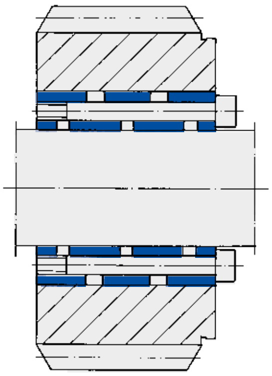
**Example 6: Bevel wheel fixture**
This connection is characterized by simple connecting components, a high degree of concentricity and absolute freedom from play.



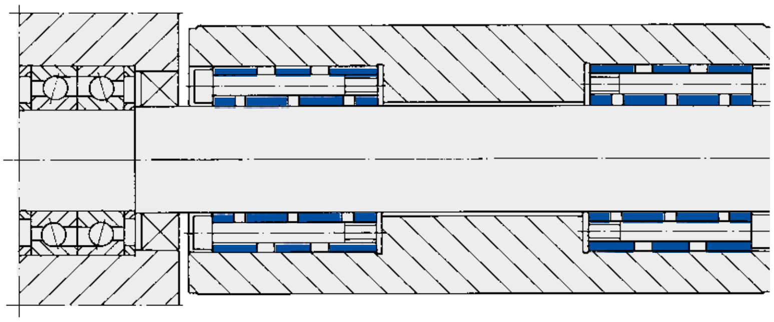
**Example 7: Pulley fixture**
The hub can be made of an aluminium alloy. Observe the minimum strength specification. High temperatures can impair retention force.



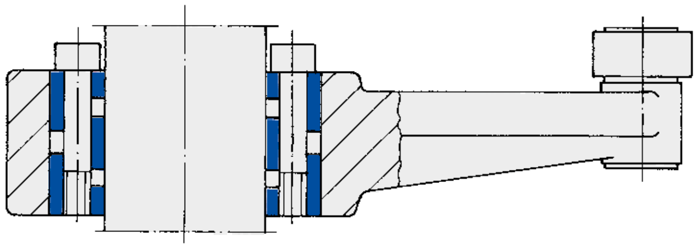
**Example 8: Indexing plate**
Indexing plate in alloy material at the shaft end of an indexing gear. Here, precise concentricity and run-out are vital.



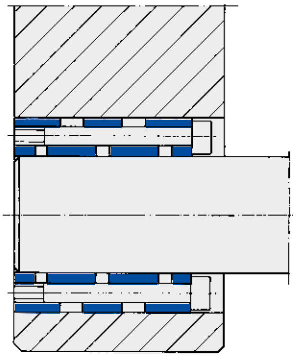
**Example 9: Gear fixture**
To satisfy the highest concentricity requirements, we recommend mounting a control facility on the gear to allow the concentricity to be checked and adjusted if necessary.



**Example 10: Pressure roller fixture**
Here, 2 long clamping sets are used to achieve high overall radial rigidity due to intensive tensioning of the shaft and hub. The pressure roller is exchanged by pulling the shaft out of the bearings.



**Example 11: Rocker arm fixture**
The peripheral and axial position can be ideally adjusted during assembly.



**Example 12: Guide column**
Fixture of a guide column in the machine body.

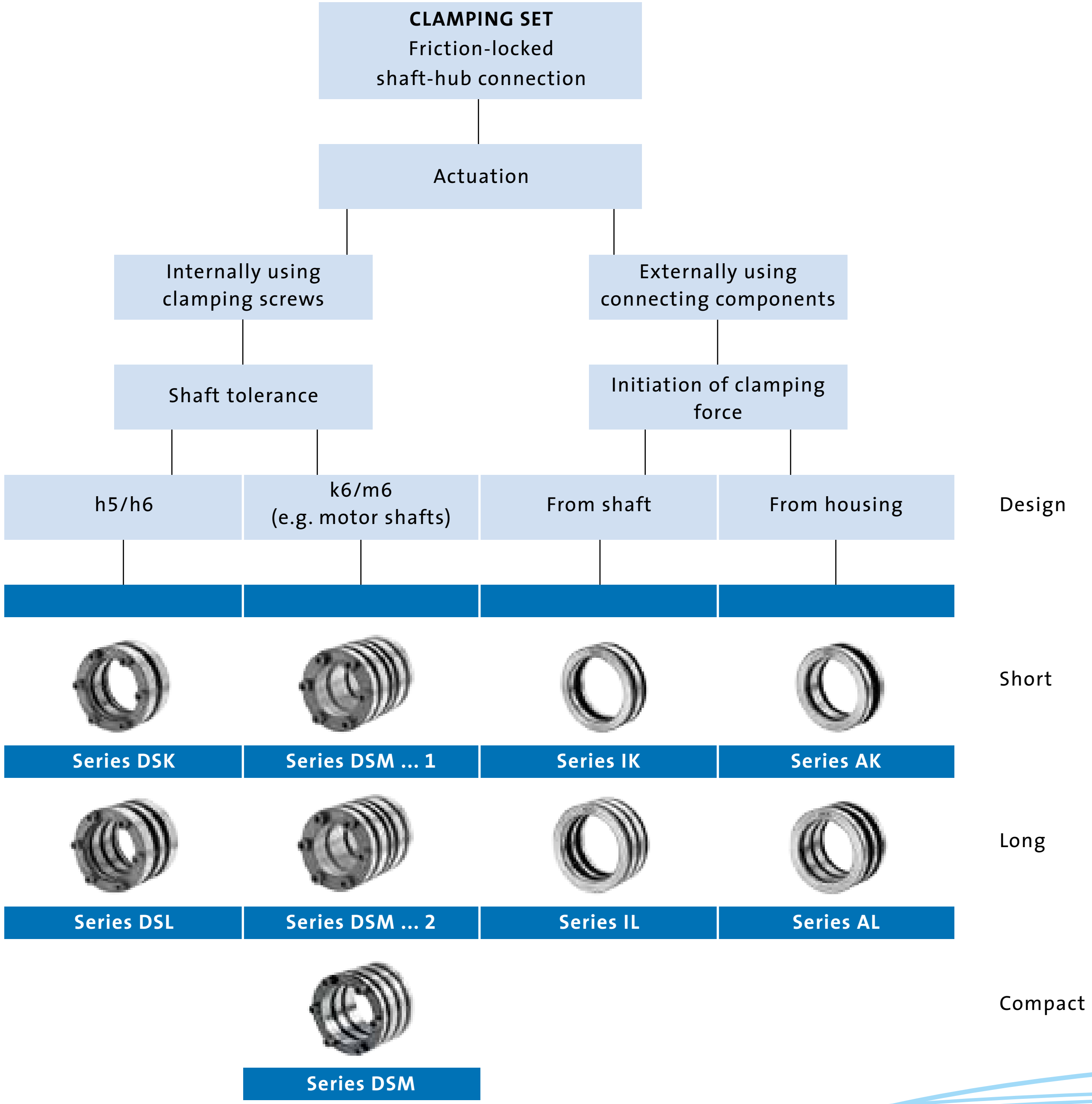
# SPIETH **CLAMPING SETS: THE RIGHT CHOICE**

We'll provide you with the perfect clamping sets for your application. We'll also help you choose the right one – with expert advice from our specialists.

**Series DSK, DSL**
Ready-to-use friction-locked shaft-hub connection for quick and easy installation.

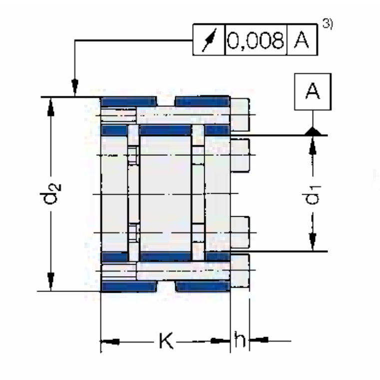
**Series DSM**
Ready-to-use friction-locked shaft-hub connection for use on motor shafts to DIN 748.

**Series AK/IK and AL/IL**
Friction-locked shaft-hub connection that can be automated. Clamping force initiation can be freely configured.



# SPIETH CLAMPING SETS SERIES **DSK**

**For shafts with h tolerance zone**




NEW

Increased Transmissible Torques

| Name | Dimensions in mm | | | Clamping screws | | | | Transmittable forces | | Moment of inertia J |
|---|---|---|---|---|---|---|---|---|---|---|
| | $d_1$ | $d_2$ | K | ISO 4762 | h | $M_A$ | No. | M | $F_a$ | |
| | H6 | h5 | | | mm | Nm | | Nm | N | kg $cm^2$ |
| DSK 14.26 | 14 | 26 | 21 | M3 | 3 | 2 | 6 | 40 | 5700 | 0.045 |
| DSK 15.28 | 15 | 28 | 21 | M3 | 3 | 2 | 6 | 44 | 5900 | 0.059 |
| DSK 16.28 | 16 | 28 | 21 | M3 | 3 | 2 | 6 | 45 | 5600 | 0.058 |
| DSK 16.32 | 16 | 32 | 31 | M4 | 4 | 5 | 6 | 100 | 12500 | 0.161 |
| DSK 18.30 | 18 | 30 | 21 | M3 | 3 | 2 | 6 | 53 | 5900 | 0.074 |
| DSK 18.35 | 18 | 35 | 31 | M4 | 4 | 5 | 6 | 110 | 12200 | 0.227 |
| DSK 20.32 | 20 | 32 | 21 | M3 | 3 | 2 | 6 | 64 | 6400 | 0.093 |
| DSK 20.37 | 20 | 37 | 31 | M4 | 4 | 5 | 6 | 130 | 13000 | 0.278 |
| DSK 20.40 | 20 | 40 | 36 | M5 | 5 | 7 | 6 | 180 | 18000 | 0.434 |
| DSK 22.35 | 22 | 35 | 21 | M3 | 3 | 2 | 6 | 76 | 6900 | 0.131 |
| DSK 22.38 | 22 | 38 | 31 | M4 | 4 | 5 | 6 | 160 | 14500 | 0.302 |
| DSK 22.42 | 22 | 42 | 36 | M5 | 5 | 10 | 6 | 330 | 30000 | 0.519 |
| DSK 25.37 | 25 | 37 | 21 | M3 | 3 | 2 | 6 | 94 | 7500 | 0.155 |
| DSK 25.42 | 25 | 42 | 31 | M4 | 4 | 5 | 6 | 220 | 17600 | 0.439 |
| DSK 25.45 | 25 | 45 | 36 | M5 | 5 | 10 | 6 | 388 | 31000 | 0.666 |
| DSK 28.40 | 28 | 40 | 21 | M3 | 3 | 2 | 6 | 113 | 8100 | 0.203 |
| DSK 28.45 | 28 | 45 | 31 | M4 | 4 | 5 | 6 | 280 | 20000 | 0.562 |
| DSK 28.48 | 28 | 48 | 36 | M5 | 5 | 10 | 6 | 450 | 32100 | 0.84 |
| DSK 30.42 | 30 | 42 | 21 | M3 | 3 | 2 | 6 | 126 | 8400 | 0.24 |
| DSK 30.47 | 30 | 47 | 31 | M4 | 4 | 5 | 6 | 321 | 21400 | 0.655 |
| DSK 30.50 | 30 | 50 | 36 | M5 | 5 | 10 | 6 | 510 | 34000 | 0.973 |
| DSK 30.55 | 30 | 55 | 41 | M6 | 6 | 13 | 6 | 588 | 39200 | 1.59 |
| DSK 32.48 | 32 | 48 | 31 | M4 | 4 | 5 | 6 | 360 | 22500 | 0.69 |
| DSK 32.52 | 32 | 52 | 36 | M5 | 5 | 10 | 6 | 585 | 36600 | 1.12 |
| DSK 32.56 | 32 | 56 | 41 | M6 | 6 | 13 | 6 | 634 | 39600 | 1.69 |
| DSK 35.52 | 35 | 52 | 31 | M4 | 4 | 5 | 6 | 390 | 22300 | 0.936 |
| DSK 35.55 | 35 | 55 | 36 | M5 | 5 | 10 | 6 | 679 | 38800 | 1.36 |
| DSK 35.60 | 35 | 60 | 41 | M6 | 6 | 17 | 6 | 935 | 53400 | 2.18 |
| DSK 40.56 | 40 | 56 | 31 | M4 | 4 | 5 | 6 | 430 | 21500 | 1.17 |
| DSK 40.62 | 40 | 62 | 36 | M5 | 5 | 10 | 6 | 835 | 41800 | 2.14 |
| DSK 40.65 | 40 | 65 | 41 | M6 | 6 | 17 | 6 | 1118 | 55900 | 2.9 |
| DSK 40.70 | 40 | 70 | 52 | M8 | 8 | 25 | 6 | 1270 | 63500 | 5.3 |
| DSK 45.68 | 45 | 68 | 36 | M5 | 5 | 10 | 6 | 987 | 43900 | 3.01 |
| DSK 45.70 | 45 | 70 | 41 | M6 | 6 | 17 | 6 | 1307 | 58100 | 3.76 |
| DSK 45.75 | 45 | 75 | 52 | M8 | 8 | 25 | 6 | 1485 | 66000 | 6.78 |
| DSK 50.72 | 50 | 72 | 36 | M5 | 5 | 10 | 6 | 1115 | 44600 | 3.6 |

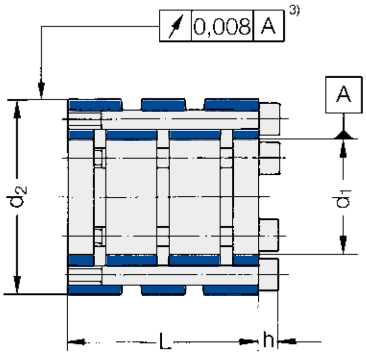
| Name | Dimensions in mm | | | Clamping screws | | | | Transmittable forces | | Moment of inertia J |
|---|---|---|---|---|---|---|---|---|---|---|
| | $d_1$ | $d_2$ | K | ISO 4762 | h | $M_A$ | No. | M | $F_a$ | |
| | H6 | h5 | | | mm | Nm | | Nm | N | kg cm² |
| DSK 50.75 | 50 | 75 | 41 | M6 | 6 | 17 | 6 | 1500 | 60000 | 4.78 |
| DSK 50.80 | 50 | 80 | 52 | M8 | 8 | 35 | 6 | 1850 | 74000 | 8.52 |
| DSK 55.80 | 55 | 80 | 41 | M6 | 6 | 17 | 6 | 1693 | 61600 | 5.98 |
| DSK 55.85 | 55 | 85 | 52 | M8 | 8 | 35 | 6 | 2120 | 77100 | 10.5 |
| DSK 60.85 | 60 | 85 | 41 | M6 | 6 | 17 | 6 | 1885 | 62800 | 7.36 |
| DSK 60.90 | 60 | 90 | 52 | M8 | 8 | 35 | 6 | 2370 | 79000 | 12.9 |
| DSK 65.90 | 65 | 90 | 41 | M6 | 6 | 17 | 6 | 2072 | 63800 | 8.95 |
| DSK 65.95 | 65 | 95 | 52 | M8 | 8 | 35 | 6 | 2650 | 81500 | 15.5 |
| DSK 70.100 | 70 | 100 | 52 | M8 | 8 | 35 | 6 | 2990 | 85400 | 18.5 |
| DSK 75.105 | 75 | 105 | 52 | M8 | 8 | 35 | 6 | 3250 | 86700 | 21.9 |
| DSK 80.110 | 80 | 110 | 52 | M8 | 8 | 35 | 6 | 3520 | 88000 | 25.6 |
| DSK 85.120 | 85 | 120 | 57 | M8 | 8 | 35 | 6 | 3560 | 83800 | 40.3 |
| DSK 90.120 | 90 | 120 | 52 | M8 | 8 | 35 | 7 | 4300 | 95600 | 35.2 |
| DSK 95.125 | 95 | 125 | 52 | M8 | 8 | 35 | 8 | 4800 | 101100 | 40.7 |
| DSK 100.130 | 100 | 130 | 52 | M8 | 8 | 35 | 8 | 5050 | 101000 | 46.3 |
| DSK 110.140 | 110 | 140 | 52 | M8 | 8 | 32 | 10 | 6570 | 119500 | 60.2 |
| DSK 120.150 | 120 | 150 | 52 | M8 | 8 | 32 | 10 | 7170 | 119500 | 75.2 |
| DSK 130.160 | 130 | 160 | 52 | M8 | 8 | 32 | 10 | 7760 | 119400 | 92.5 |
| DSK 140.170 | 140 | 170 | 52 | M8 | 8 | 32 | 10 | 8360 | 119400 | 112 |
| DSK 150.180 | 150 | 180 | 52 | M8 | 8 | 32 | 10 | 8960 | 119500 | 134 |
| DSK 160.190 | 160 | 190 | 52 | M8 | 8 | 32 | 12 | 11470 | 143400 | 162 |
| DSK 170.200 | 170 | 200 | 52 | M8 | 8 | 32 | 12 | 12180 | 143300 | 190 |
| DSK 180.210 | 180 | 210 | 52 | M8 | 8 | 32 | 12 | 12900 | 143300 | 221 |
| DSK 190.230 | 190 | 230 | 62 | M10 | 10 | 60 | 12 | 18400 | 193700 | 487 |
| DSK 200.240 | 200 | 240 | 62 | M10 | 10 | 60 | 12 | 19300 | 193000 | 588 |
| DSK 210.250 | 210 | 250 | 62 | M10 | 10 | 60 | 12 | 20400 | 194300 | 614 |
| DSK 220.260 | 220 | 260 | 62 | M10 | 10 | 60 | 12 | 21600 | 196400 | 639 |
| DSK 230.270 | 230 | 270 | 62 | M10 | 10 | 60 | 12 | 22500 | 195700 | 812 |
| DSK 240.280 | 240 | 280 | 62 | M10 | 10 | 60 | 12 | 23600 | 196700 | 984 |
| DSK 250.300 | 250 | 300 | 72 | M10 | 10 | 60 | 15 | 32000 | 256000 | 1580 |
| DSK 260.310 | 260 | 310 | 72 | M10 | 10 | 60 | 15 | 33300 | 256200 | 1760 |
| DSK 270.320 | 270 | 320 | 72 | M10 | 10 | 60 | 15 | 34600 | 256300 | 1950 |
| DSK 280.330 | 280 | 330 | 72 | M10 | 10 | 60 | 15 | 36000 | 257100 | 2150 |
| DSK 290.340 | 290 | 340 | 72 | M10 | 10 | 60 | 15 | 36800 | 253800 | 2360 |
| DSK 300.350 | 300 | 350 | 72 | M10 | 10 | 60 | 15 | 38500 | 256700 | 2590 |

[3] d2 > 80 mm = Concentricity to IT4

All information is supplied without liability and subject to technical changes. Please observe the operating instructions at https://www.spieth-maschinenelemente.de/en/download-faqs/catalogueinstructions/

# SPIETH CLAMPING SETS SERIES **DSL**

**For shafts with h tolerance zone**




NEW

Increased Transmissible Torques

| Name | Dimensions in mm $d_1$ H6 | $d_2$ h5 | L | Clamping screws ISO 4762 | h mm | $M_A$ Nm | No. | Transmittable forces M Nm | $F_a$ N | Moment of inertia J kg cm² |
|---|---|---|---|---|---|---|---|---|---|---|
| DSL 14.26 | 14 | 26 | 31 | M3 | 3 | 2 | 6 | 60 | 8600 | 0.059 |
| DSL 15.28 | 15 | 28 | 31 | M3 | 3 | 2 | 6 | 66 | 8800 | 0.078 |
| DSL 16.28 | 16 | 28 | 31 | M3 | 3 | 2 | 6 | 73 | 9100 | 0.077 |
| DSL 16.32 | 16 | 32 | 41 | M4 | 4 | 5 | 6 | 187 | 23400 | 0.179 |
| DSL 18.30 | 18 | 30 | 31 | M3 | 3 | 2 | 6 | 87 | 9700 | 0.099 |
| DSL 18.35 | 18 | 35 | 41 | M4 | 4 | 5 | 6 | 205 | 22800 | 0.25 |
| DSL 20.32 | 20 | 32 | 31 | M3 | 3 | 2 | 6 | 100 | 10000 | 0.124 |
| DSL 20.37 | 20 | 37 | 41 | M4 | 4 | 5 | 6 | 230 | 23000 | 0.307 |
| DSL 20.40 | 20 | 40 | 52 | M5 | 5 | 7 | 6 | 250 | 25000 | 0.547 |
| DSL 22.35 | 22 | 35 | 31 | M3 | 3 | 2 | 6 | 110 | 10000 | 0.173 |
| DSL 22.38 | 22 | 38 | 41 | M4 | 4 | 5 | 6 | 275 | 25000 | 0.334 |
| DSL 22.42 | 22 | 42 | 52 | M5 | 5 | 10 | 6 | 485 | 44100 | 0.653 |
| DSL 25.37 | 25 | 37 | 31 | M3 | 3 | 2 | 6 | 140 | 11200 | 0.206 |
| DSL 25.42 | 25 | 42 | 41 | M4 | 4 | 5 | 6 | 348 | 27800 | 0.484 |
| DSL 25.45 | 25 | 45 | 52 | M5 | 5 | 10 | 6 | 566 | 45300 | 0.839 |
| DSL 28.40 | 28 | 40 | 31 | M3 | 3 | 2 | 6 | 160 | 11400 | 0.269 |
| DSL 28.45 | 28 | 45 | 41 | M4 | 4 | 5 | 6 | 420 | 30000 | 0.619 |
| DSL 28.48 | 28 | 48 | 52 | M5 | 5 | 10 | 6 | 653 | 46600 | 1.06 |
| DSL 30.42 | 30 | 42 | 31 | M3 | 3 | 2 | 6 | 180 | 12000 | 0.318 |
| DSL 30.47 | 30 | 47 | 41 | M4 | 4 | 5 | 6 | 470 | 31300 | 0.722 |
| DSL 30.50 | 30 | 50 | 52 | M5 | 5 | 10 | 6 | 705 | 47000 | 1.23 |
| DSL 30.55 | 30 | 55 | 62 | M6 | 6 | 13 | 6 | 717 | 47800 | 2.13 |
| DSL 32.48 | 32 | 48 | 41 | M4 | 4 | 5 | 6 | 520 | 32500 | 0.764 |
| DSL 32.52 | 32 | 52 | 52 | M5 | 5 | 10 | 6 | 760 | 47500 | 1.41 |
| DSL 32.56 | 32 | 56 | 62 | M6 | 6 | 13 | 6 | 770 | 48100 | 2.26 |
| DSL 35.52 | 35 | 52 | 41 | M4 | 4 | 5 | 6 | 600 | 34300 | 1.03 |
| DSL 35.55 | 35 | 55 | 52 | M5 | 5 | 10 | 6 | 871 | 49800 | 1.72 |
| DSL 35.60 | 35 | 60 | 62 | M6 | 6 | 17 | 6 | 1149 | 65700 | 2.91 |
| DSL 40.62 | 40 | 62 | 52 | M5 | 5 | 10 | 6 | 1040 | 52000 | 1.3 |
| DSL 40.56 | 40 | 56 | 41 | M4 | 4 | 5 | 6 | 690 | 34500 | 2.69 |
| DSL 40.65 | 40 | 65 | 62 | M6 | 6 | 17 | 6 | 1372 | 68600 | 3.87 |
| DSL 40.70 | 40 | 70 | 77 | M8 | 8 | 25 | 6 | 1420 | 71000 | 6.89 |
| DSL 45.68 | 45 | 68 | 52 | M5 | 5 | 10 | 6 | 1232 | 54800 | 3.77 |
| DSL 45.70 | 45 | 70 | 62 | M6 | 6 | 17 | 6 | 1607 | 71400 | 5.03 |
| DSL 45.75 | 45 | 75 | 77 | M8 | 8 | 25 | 6 | 1666 | 74000 | 8.81 |
| DSL 50.72 | 50 | 72 | 52 | M5 | 5 | 10 | 6 | 1412 | 56500 | 4.52 |

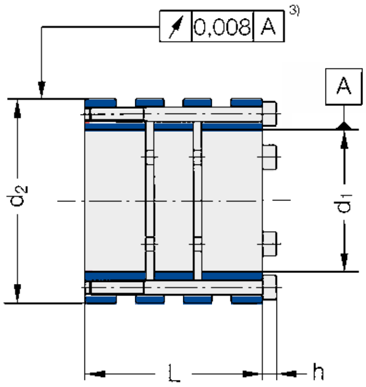
| Name | Dimensions in mm | | | Clamping screws | | | | Transmittable forces | | Moment of inertia J |
|---|---|---|---|---|---|---|---|---|---|---|
| | $d_1$ | $d_2$ | L | ISO 4762 | h | $M_A$ | No. | M | $F_a$ | |
| | H6 | h5 | | | mm | Nm | | Nm | N | kg $cm^2$ |
| DSL 50.75 | 50 | 75 | 62 | M6 | 6 | 17 | 6 | 1851 | 74000 | 6.4 |
| DSL 50.80 | 50 | 80 | 77 | M8 | 8 | 35 | 6 | 2043 | 81700 | 11.1 |
| DSL 55.80 | 55 | 80 | 62 | M6 | 6 | 17 | 6 | 2103 | 76500 | 8 |
| DSL 55.85 | 55 | 85 | 77 | M8 | 8 | 35 | 6 | 2344 | 85200 | 13.7 |
| DSL 60.85 | 60 | 85 | 62 | M6 | 6 | 17 | 6 | 2359 | 78600 | 9.85 |
| DSL 60.90 | 60 | 90 | 77 | M8 | 8 | 35 | 6 | 2650 | 88300 | 16.7 |
| DSL 65.90 | 65 | 90 | 62 | M6 | 6 | 17 | 6 | 2617 | 80500 | 12 |
| DSL 65.95 | 65 | 95 | 77 | M8 | 8 | 35 | 6 | 2970 | 91400 | 20.1 |
| DSL 70.100 | 70 | 100 | 77 | M8 | 8 | 35 | 6 | 3288 | 93900 | 24 |
| DSL 75.105 | 75 | 105 | 77 | M8 | 8 | 35 | 6 | 3605 | 96100 | 28.4 |
| DSL 80.110 | 80 | 110 | 77 | M8 | 8 | 35 | 6 | 3919 | 98000 | 33.2 |
| DSL 85.120 | 85 | 120 | 92 | M8 | 8 | 35 | 6 | 3950 | 92900 | 60.2 |
| DSL 90.120 | 90 | 120 | 77 | M8 | 8 | 35 | 7 | 6850 | 152200 | 48.1 |
| DSL 95.125 | 95 | 125 | 77 | M8 | 8 | 35 | 8 | 7390 | 155600 | 55.7 |
| DSL 100.130 | 100 | 130 | 77 | M8 | 8 | 35 | 8 | 7780 | 155600 | 63.3 |
| DSL 110.140 | 110 | 140 | 77 | M8 | 8 | 32 | 10 | 10690 | 194400 | 82.3 |
| DSL 120.150 | 120 | 150 | 77 | M8 | 8 | 32 | 10 | 11670 | 194500 | 103 |
| DSL 130.160 | 130 | 160 | 77 | M8 | 8 | 32 | 10 | 12640 | 194500 | 126 |
| DSL 140.170 | 140 | 170 | 77 | M8 | 8 | 32 | 10 | 13610 | 194400 | 153 |
| DSL 150.180 | 150 | 180 | 77 | M8 | 8 | 32 | 10 | 14580 | 194400 | 184 |
| DSL 160.190 | 160 | 190 | 77 | M8 | 8 | 32 | 12 | 18670 | 233400 | 221 |
| DSL 170.200 | 170 | 200 | 77 | M8 | 8 | 32 | 12 | 19830 | 233300 | 260 |
| DSL 180.210 | 180 | 210 | 77 | M8 | 8 | 32 | 12 | 21000 | 233300 | 302 |
| DSL 190.230 | 190 | 230 | 92 | M10 | 10 | 60 | 12 | 27200 | 286300 | 678 |
| DSL 200.240 | 200 | 240 | 92 | M10 | 10 | 60 | 12 | 28540 | 285400 | 777 |
| DSL 210.250 | 210 | 250 | 92 | M10 | 10 | 60 | 12 | 29960 | 285300 | 885 |
| DSL 220.260 | 220 | 260 | 92 | M10 | 10 | 60 | 12 | 31390 | 285400 | 1000 |
| DSL 230.270 | 230 | 270 | 92 | M10 | 10 | 60 | 12 | 33000 | 287000 | 1130 |
| DSL 240.280 | 240 | 280 | 92 | M10 | 10 | 60 | 12 | 34250 | 285400 | 1270 |
| DSL 250.300 | 250 | 300 | 102 | M10 | 10 | 60 | 15 | 46300 | 370400 | 2050 |
| DSL 260.310 | 260 | 310 | 102 | M10 | 10 | 60 | 15 | 48000 | 369200 | 2280 |
| DSL 270.320 | 270 | 320 | 102 | M10 | 10 | 60 | 15 | 50200 | 371900 | 2520 |
| DSL 280.330 | 280 | 330 | 102 | M10 | 10 | 60 | 15 | 52800 | 377100 | 2780 |
| DSL 290.340 | 290 | 340 | 102 | M10 | 10 | 60 | 15 | 54200 | 373800 | 3060 |
| DSL 300.350 | 300 | 350 | 102 | M10 | 10 | 60 | 15 | 55800 | 372000 | 3360 |

[3] d2 > 80 mm = Concentricity to IT4

All information is supplied without liability and subject to technical changes. Please observe the operating instructions at https://www.spieth-maschinenelemente.de/en/download-faqs/catalogueinstructions/

# SPIETH CLAMPING SETS SERIES **DSM**

**For motor shafts to DIN 748 with k6/m6 tolerance zone**




NEW

Increased Transmissible Torques

| Name | Dimensions in mm | | | Clamping screws | | | | Transmittable forces | | Moment of inertia J |
|---|---|---|---|---|---|---|---|---|---|---|
| | $d_1$ | $d_2$ | L | ISO 4762 | h | $M_A$ | No. | M | $F_a$ | |
| | | h5 | | | mm | Nm | | Nm | N | kg cm² |
| DSM 14.2 | 14 | 26 | 26 | M3 | 3 | 2 | 4 | 50 | 7100 | 0.055 |
| DSM 16.28 | 16 | 28 | 26 | M3 | 3 | 2 | 6 | 70 | 8800 | 0.071 |
| DSM 16.1 | 16 | 32 | 26 | M4 | 4 | 5 | 6 | 100 | 12500 | 0.138 |
| DSM 16.2 | 16 | 32 | 36 | M4 | 4 | 5 | 6 | 195 | 24400 | 0.178 |
| DSM 18.30 | 18 | 30 | 26 | M3 | 3 | 2 | 6 | 92 | 10200 | 0.091 |
| DSM 18.2 | 18 | 34 | 36 | M4 | 4 | 5 | 6 | 224 | 24900 | 0.222 |
| DSM 19.32 | 19 | 32 | 26 | M3 | 3 | 2 | 6 | 100 | 10500 | 0.118 |
| DSM 19.1 | 19 | 35 | 26 | M4 | 4 | 5 | 6 | 135 | 14200 | 0.192 |
| DSM 19.2 | 19 | 35 | 36 | M4 | 4 | 5 | 6 | 243 | 25600 | 0.247 |
| DSM 20.32 | 20 | 32 | 26 | M3 | 3 | 2 | 6 | 109 | 10900 | 0.115 |
| DSM 20.1 | 20 | 40 | 36 | M5 | 5 | 10 | 5 | 215 | 21500 | 0.437 |
| DSM 20.2 | 20 | 40 | 46 | M5 | 5 | 10 | 5 | 386 | 38600 | 0.534 |
| DSM 22.35 | 22 | 35 | 26 | M3 | 3 | 2 | 6 | 123 | 11200 | 0.162 |
| DSM 22.1 | 22 | 42 | 36 | M5 | 5 | 10 | 5 | 256 | 23300 | 0.524 |
| DSM 22.2 | 22 | 42 | 46 | M5 | 5 | 10 | 5 | 445 | 40500 | 0.639 |
| DSM 24.36 | 24 | 36 | 26 | M3 | 3 | 2 | 6 | 153 | 12800 | 0.174 |
| DSM 24.1 | 24 | 44 | 36 | M5 | 5 | 10 | 5 | 299 | 24900 | 0.621 |
| DSM 24.2 | 24 | 44 | 46 | M5 | 5 | 10 | 5 | 505 | 42100 | 0.757 |
| DSM 25.37 | 25 | 37 | 26 | M3 | 3 | 2 | 6 | 184 | 14700 | 0.191 |
| DSM 25.1 | 25 | 45 | 41 | M5 | 5 | 10 | 6 | 390 | 31200 | 0.755 |
| DSM 25.2 | 25 | 45 | 52 | M5 | 5 | 10 | 6 | 622 | 49800 | 0.925 |
| DSM 28.40 | 28 | 40 | 26 | M3 | 3 | 2 | 6 | 205 | 14600 | 0.251 |
| DSM 28.1 | 28 | 48 | 41 | M5 | 5 | 10 | 6 | 455 | 32500 | 0.954 |
| DSM 28.2 | 28 | 48 | 52 | M5 | 5 | 10 | 6 | 724 | 51700 | 1.17 |
| DSM 30.42 | 30 | 42 | 26 | M3 | 3 | 2 | 6 | 223 | 14900 | 0.297 |
| DSM 30.1 | 30 | 52 | 57 | M6 | 6 | 17 | 5 | 900 | 60000 | 1.85 |
| DSM 30.2 | 30 | 52 | 62 | M6 | 6 | 17 | 5 | 950 | 63300 | 1.92 |
| DSM 32.48 | 32 | 48 | 36 | M4 | 4 | 5 | 6 | 570 | 35600 | 0.754 |
| DSM 32.1 | 32 | 55 | 57 | M6 | 6 | 17 | 5 | 1000 | 62500 | 2.29 |
| DSM 32.2 | 32 | 55 | 62 | M6 | 6 | 17 | 5 | 1050 | 65600 | 2.37 |
| DSM 35.52 | 35 | 52 | 36 | M4 | 4 | 5 | 6 | 670 | 38300 | 1.02 |
| DSM 35.1 | 35 | 58 | 57 | M6 | 6 | 17 | 6 | 1300 | 74300 | 2.79 |
| DSM 35.2 | 35 | 58 | 62 | M6 | 6 | 17 | 6 | 1320 | 75400 | 2.88 |
| DSM 38.55 | 38 | 55 | 36 | M4 | 4 | 5 | 6 | 750 | 39500 | 1.24 |
| DSM 38.1 | 38 | 60 | 57 | M6 | 6 | 17 | 6 | 1480 | 77900 | 3.08 |
| DSM 38.2 | 38 | 60 | 62 | M6 | 6 | 17 | 6 | 1510 | 79500 | 3.18 |

| Name | Dimensions in mm | | | Clamping screws | | | | Transmittable forces | | Moment of inertia J |
|---|---|---|---|---|---|---|---|---|---|---|
| | $d_1$ | $d_2$ | L | ISO 4762 | h | $M_A$ | No. | M | $F_a$ | |
| | | h5 | | | mm | Nm | | Nm | N | kg $cm^2$ |
| DSM 40.56 | 40 | 56 | 36 | M4 | 4 | 5 | 6 | 805 | 40300 | 1.29 |
| DSM 40.1 | 40 | 70 | 77 | M8 | 8 | 40 | 5 | 1820 | 91000 | 7.8 |
| DSM 40.2 | 40 | 70 | 92 | M8 | 8 | 40 | 5 | 1854 | 92700 | 9.08 |
| DSM 42.58 | 42 | 58 | 36 | M4 | 4 | 5 | 6 | 850 | 40500 | 1.46 |
| DSM 42.1 | 42 | 72 | 77 | M8 | 8 | 40 | 5 | 1950 | 92900 | 8.63 |
| DSM 42.2 | 42 | 72 | 92 | M8 | 8 | 40 | 5 | 2000 | 95200 | 10 |
| DSM 45.62 | 45 | 62 | 36 | M4 | 4 | 5 | 6 | 920 | 40900 | 1.9 |
| DSM 45.1 | 45 | 75 | 77 | M8 | 8 | 40 | 5 | 2100 | 93300 | 10 |
| DSM 45.2 | 45 | 75 | 92 | M8 | 8 | 40 | 5 | 2250 | 100000 | 11.6 |
| DSM 48.65 | 48 | 65 | 36 | M4 | 4 | 5 | 6 | 980 | 40800 | 2.25 |
| DSM 48.1 | 48 | 78 | 77 | M8 | 8 | 40 | 5 | 2370 | 98800 | 11.5 |
| DSM 48.2 | 48 | 78 | 92 | M8 | 8 | 40 | 5 | 2600 | 108300 | 13.4 |
| DSM 50.1 | 50 | 80 | 77 | M8 | 8 | 40 | 6 | 2600 | 104000 | 12.6 |
| DSM 50.2 | 50 | 80 | 92 | M8 | 8 | 40 | 6 | 2700 | 108000 | 14.7 |
| DSM 55.1 | 55 | 85 | 77 | M8 | 8 | 40 | 6 | 3000 | 109100 | 15.6 |
| DSM 55.2 | 55 | 85 | 92 | M8 | 8 | 40 | 6 | 3100 | 112700 | 18.2 |
| DSM 60.1 | 60 | 90 | 92 | M8 | 8 | 40 | 6 | 3550 | 118300 | 22.3 |
| DSM 60.2 | 60 | 90 | 122 | M8 | 8 | 40 | 6 | 3550 | 118300 | 34.3 |
| DSM 65.1 | 65 | 95 | 92 | M8 | 8 | 40 | 6 | 4000 | 123100 | 26.9 |
| DSM 65.2 | 65 | 95 | 122 | M8 | 8 | 40 | 6 | 4000 | 123100 | 41.4 |
| DSM 70.1 | 70 | 100 | 92 | M8 | 8 | 40 | 6 | 4500 | 128600 | 30 |
| DSM 70.2 | 70 | 100 | 122 | M8 | 8 | 40 | 6 | 4500 | 128600 | 49.4 |
| DSM 75.1 | 75 | 105 | 92 | M8 | 8 | 40 | 7 | 5000 | 133300 | 38.1 |
| DSM 75.2 | 75 | 105 | 122 | M8 | 8 | 40 | 7 | 5000 | 133300 | 58.7 |
| DSM 80.1 | 80 | 110 | 122 | M8 | 8 | 40 | 8 | 6500 | 162500 | 69 |
| DSM 85.1 | 85 | 115 | 122 | M8 | 8 | 40 | 8 | 7150 | 168200 | 80 |

[3)] d2 > 80 mm = Concentricity to IT4

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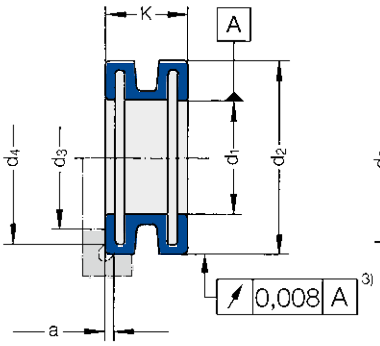
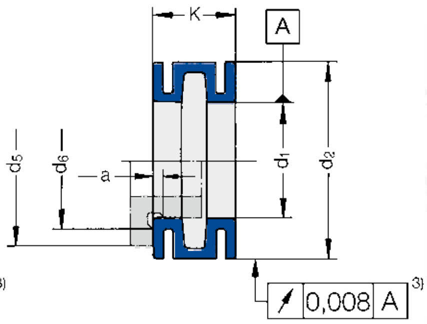
# SPIETH CLAMPING SLEEVES SERIES **AK/IK**

**For shafts with h tolerance zone**




Series AK




Series IK

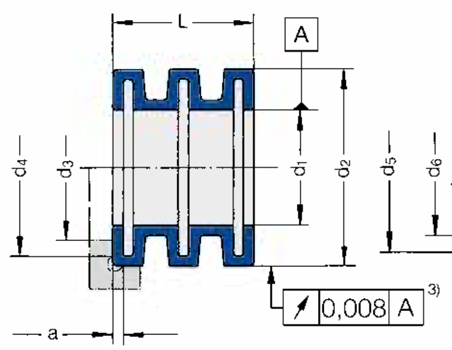
Designation of a clamping sleeve with initiation of clamping force from the shaft with $d_1$ = 28 mm, $d_2$ = 40 mm and K = 16 mm: **IK 28.40**.

| Order No. | Dimensions in mm | | | Initiation of clamping force | | Transmittable forces | | Dimensions for connecting components in mm | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AK/IK | $d_1$ | $d_2$ | K | $F_{max}$ 1) | $C_{min}$ 2) | M | $F_a$ | $d_3$ | $d_4$ | $d_5$ | $d_6$ | a |
| | H6 | h5 | | N | mm | Nm | N | max. | min. | min. | max. | max. |
| 8.12 | 8 | 12 | 12 | 10000 | 0.3 | 7 | 1750 | 9 | 10.8 | 11 | 9.2 | 1.5 |
| 10.15 | 10 | 15 | 12 | 11000 | 0.4 | 11 | 2200 | 11 | 13.8 | 14 | 11.2 | 1.5 |
| 12.18 | 12 | 18 | 12 | 11800 | 0.4 | 18 | 2950 | 13 | 16.8 | 17 | 13.2 | 1.5 |
| 14.20 | 14 | 20 | 12 | 13400 | 0.5 | 25 | 3620 | 15 | 18.8 | 19 | 15.2 | 1.5 |
| 15.22 | 15 | 22 | 12 | 13700 | 0.5 | 29 | 3840 | 16 | 20.8 | 21 | 16.2 | 1.5 |
| 16.22 | 16 | 22 | 12 | 14900 | 0.5 | 35 | 4320 | 17 | 20.8 | 21 | 17.2 | 1.5 |
| 18.25 | 18 | 25 | 12 | 15900 | 0.6 | 44 | 4930 | 19 | 23.8 | 24 | 19.2 | 1.5 |
| 20.32 | 20 | 32 | 16 | 20600 | 0.6 | 82 | 8240 | 24 | 30 | 28 | 22 | 1.7 |
| 22.35 | 22 | 35 | 16 | 21700 | 0.6 | 95 | 8680 | 27 | 33 | 30 | 24 | 1.7 |
| 25.37 | 25 | 37 | 16 | 24500 | 0.7 | 128 | 10290 | 29 | 35 | 33 | 27 | 1.7 |
| 28.40 | 28 | 40 | 16 | 26900 | 0.7 | 162 | 11570 | 32 | 38 | 36 | 30 | 1.7 |
| 30.42 | 30 | 42 | 16 | 28300 | 0.7 | 187 | 12450 | 34 | 40 | 38 | 32 | 1.7 |
| 32.48 | 32 | 48 | 21 | 32400 | 0.8 | 259 | 16200 | 40 | 46 | 40 | 34 | 2.2 |
| 35.52 | 35 | 52 | 21 | 34400 | 0.8 | 307 | 17540 | 43 | 50 | 44 | 37 | 2.2 |
| 40.56 | 40 | 56 | 21 | 38900 | 0.8 | 404 | 20230 | 48 | 54 | 49 | 42 | 2.2 |
| 45.68 | 45 | 68 | 26 | 44700 | 0.8 | 553 | 24590 | 58 | 65 | 55 | 48 | 3 |
| 50.72 | 50 | 72 | 26 | 49400 | 0.8 | 679 | 27170 | 62 | 69 | 60 | 53 | 3 |
| 55.80 | 55 | 80 | 31 | 59000 | 1.0 | 908 | 33040 | 70 | 77 | 65 | 58 | 3 |
| 60.85 | 60 | 85 | 31 | 63300 | 1.0 | 1082 | 36080 | 75 | 82 | 70 | 63 | 3 |
| 63.88 | 63 | 88 | 31 | 66000 | 1.0 | 1205 | 38280 | 78 | 85 | 73 | 66 | 3 |
| 65.90 | 65 | 90 | 31 | 67700 | 1.0 | 1298 | 39940 | 80 | 87 | 75 | 68 | 3 |
| 70.100 | 70 | 100 | 38 | 78800 | 1.0 | 1682 | 48070 | 88 | 96 | 82 | 74 | 4 |
| 75.105 | 75 | 105 | 38 | 83400 | 1.0 | 1907 | 50870 | 93 | 101 | 87 | 79 | 4 |
| 80.110 | 80 | 110 | 38 | 88100 | 1.1 | 2185 | 54620 | 98 | 106 | 92 | 84 | 4 |
| 85.115 | 85 | 115 | 38 | 92700 | 1.1 | 2442 | 57470 | 103 | 111 | 97 | 89 | 4 |
| 90.120 | 90 | 120 | 38 | 97200 | 1.1 | 2799 | 62200 | 108 | 116 | 102 | 94 | 4 |
| 95.125 | 95 | 125 | 38 | 101800 | 1.2 | 3139 | 66100 | 113 | 121 | 107 | 99 | 4 |
| 100.130 | 100 | 130 | 38 | 106500 | 1.3 | 3460 | 69200 | 118 | 126 | 112 | 104 | 4 |
| 110.140 | 110 | 140 | 38 | 115700 | 1.4 | 4136 | 75200 | 128 | 136 | 122 | 114 | 4 |
| 120.150 | 120 | 150 | 38 | 125000 | 1.4 | 4950 | 82500 | 138 | 146 | 132 | 124 | 4 |
| 125.155 | 125 | 155 | 38 | 129600 | 1.4 | 5343 | 85500 | 143 | 151 | 137 | 129 | 4 |
| 130.160 | 130 | 160 | 38 | 134300 | 1.5 | 5759 | 88 600 | 148 | 156 | 142 | 134 | 4 |
| 140.170 | 140 | 170 | 38 | 143500 | 1.5 | 6727 | 96100 | 158 | 166 | 152 | 144 | 4 |
| 150.180 | 150 | 180 | 38 | 152800 | 1.5 | 7672 | 102300 | 168 | 176 | 162 | 154 | 4 |

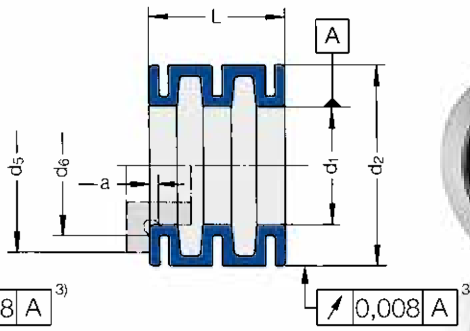
1) Max. perm. clamping force. For automated operation, the clamping sleeve should be clamped with max. 0.75xF.
2) Design specification, not to be confused with actuation travel. For explanations, see p. 55.
3) $d_2$ > 80 mm = Concentricity to IT4

# SPIETH CLAMPING SLEEVES SERIES **AL/IL**

**For shafts with h tolerance zone**




Series AL




Series IL

Designation of a clamping sleeve with initiation of clamping force from the housing with $d_1$ = 55 mm, $d_2$ = 80 mm and L = 52 mm: **AL 55.80**.

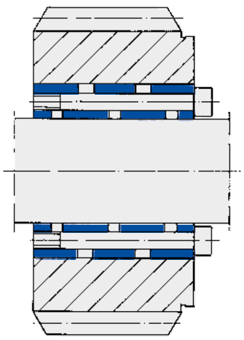
| Order No. | Dimensions in mm | | | Initiation of clamping force | | Transmittable forces | | Dimensions for connecting components in mm | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AL/IL | $d_1$ | $d_2$ | L | $F_{max}$ [1] | $C_{min}$ [2] | M | $F_a$ | $d_3$ | $d_4$ | $d_5$ | $d_6$ | a |
| | H6 | h5 | | N | mm | Nm | N | max. | min. | min. | max. | max. |
| 8.12 | 8 | 12 | 19 | 10000 | 0.5 | 12 | 3000 | 9 | 10.8 | 11 | 9.2 | 1.5 |
| 10.15 | 10 | 15 | 19 | 11000 | 0.6 | 21 | 4200 | 11 | 13.8 | 14 | 11.2 | 1.5 |
| 12.18 | 12 | 18 | 19 | 11800 | 0.7 | 35 | 5900 | 13 | 16.8 | 17 | 13.2 | 1.5 |
| 14.20 | 14 | 20 | 19 | 13400 | 0.8 | 49 | 6970 | 15 | 18.8 | 19 | 15.2 | 1.5 |
| 15.22 | 15 | 22 | 19 | 13700 | 0.8 | 54 | 7260 | 16 | 20.8 | 21 | 16.2 | 1.5 |
| 16.22 | 16 | 22 | 19 | 14900 | 0.8 | 64 | 8050 | 17 | 20.8 | 21 | 17.2 | 1.5 |
| 18.25 | 18 | 25 | 19 | 15900 | 0.9 | 80 | 8900 | 19 | 23.8 | 24 | 19.2 | 1.5 |
| 20.32 | 20 | 32 | 26 | 20600 | 0.9 | 124 | 12360 | 24 | 30 | 28 | 22 | 1.7 |
| 22.35 | 22 | 35 | 26 | 21700 | 0.9 | 143 | 13020 | 27 | 33 | 30 | 24 | 1.7 |
| 25.37 | 25 | 37 | 26 | 24500 | 1.1 | 190 | 15190 | 29 | 35 | 33 | 27 | 1.7 |
| 28.40 | 28 | 40 | 26 | 26900 | 1.1 | 237 | 16950 | 32 | 38 | 36 | 30 | 1.7 |
| 30.42 | 30 | 42 | 26 | 28300 | 1.1 | 272 | 18110 | 34 | 40 | 38 | 32 | 1.7 |
| 32.48 | 32 | 48 | 35 | 32400 | 1.2 | 389 | 24300 | 40 | 46 | 40 | 34 | 2.2 |
| 35.52 | 35 | 52 | 35 | 34400 | 1.2 | 457 | 26140 | 43 | 50 | 44 | 37 | 2.2 |
| 40.56 | 40 | 56 | 35 | 38900 | 1.2 | 599 | 29950 | 48 | 54 | 49 | 42 | 2.2 |
| 45.68 | 45 | 68 | 42 | 44700 | 1.2 | 804 | 35760 | 58 | 65 | 55 | 48 | 3 |
| 50.72 | 50 | 72 | 42 | 49400 | 1.2 | 988 | 39520 | 62 | 69 | 60 | 53 | 3 |
| 55.80 | 55 | 80 | 52 | 59000 | 1.5 | 1314 | 47790 | 70 | 77 | 65 | 58 | 3 |
| 60.85 | 60 | 85 | 52 | 63300 | 1.5 | 1557 | 51910 | 75 | 82 | 70 | 63 | 3 |
| 63.88 | 63 | 88 | 52 | 66000 | 1.5 | 1725 | 54780 | 78 | 85 | 73 | 66 | 3 |
| 65.90 | 65 | 90 | 52 | 67700 | 1.5 | 1848 | 56870 | 80 | 87 | 75 | 68 | 3 |
| 70.100 | 70 | 100 | 62 | 78800 | 1.5 | 2372 | 67770 | 88 | 96 | 82 | 74 | 4 |
| 75.105 | 75 | 105 | 62 | 83400 | 1.5 | 2690 | 71720 | 93 | 101 | 87 | 79 | 4 |
| 80.110 | 80 | 110 | 62 | 88100 | 1.6 | 3065 | 76650 | 98 | 106 | 92 | 84 | 4 |
| 85.115 | 85 | 115 | 62 | 92700 | 1.6 | 3427 | 80650 | 103 | 111 | 97 | 89 | 4 |
| 90.120 | 90 | 120 | 62 | 97200 | 1.6 | 3802 | 84500 | 108 | 116 | 102 | 94 | 4 |
| 95.125 | 95 | 125 | 62 | 101800 | 1.8 | 4251 | 89500 | 113 | 121 | 107 | 99 | 4 |
| 100.130 | 100 | 130 | 62 | 106500 | 2.0 | 4685 | 93700 | 118 | 126 | 112 | 104 | 4 |
| 110.140 | 110 | 140 | 62 | 115700 | 2.1 | 5599 | 101800 | 128 | 136 | 122 | 114 | 4 |
| 120.150 | 120 | 150 | 62 | 125000 | 2.1 | 6672 | 111200 | 138 | 146 | 132 | 124 | 4 |
| 125.155 | 125 | 155 | 62 | 129600 | 2.1 | 7206 | 115300 | 143 | 151 | 137 | 129 | 4 |
| 130.160 | 130 | 160 | 62 | 134300 | 2.2 | 7767 | 119500 | 148 | 156 | 142 | 134 | 4 |
| 140.170 | 140 | 170 | 62 | 143500 | 2.2 | 9037 | 129100 | 158 | 166 | 152 | 144 | 4 |
| 150.180 | 150 | 180 | 62 | 152800 | 2.2 | 10314 | 137520 | 168 | 176 | 162 | 154 | 4 |

[1] Max. perm. clamping force. For automated operation, the clamping sleeve should be clamped with max. 0.75xF.
[2] Design specification, not to be confused with actuation travel. For explanations, see p. 55.
[3] $d_2$ > 80 mm = Concentricity to IT4

## GENERAL APPLICATION

The clamping sleeve may only be actuated when the bore and outside surface of the clamping sleeve are covered by the connecting components. Otherwise the clamping set could be destroyed as a result of plastic deformation.

## APPLICATION USING SCREWS



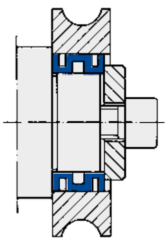
**Assembly**

1. Clean the clamping set, shaft and hub bore carefully and wet slightly with a low-viscosity machine oil.
2. Join the clamping set and connecting components without applying force.
3. Tighten the clamping screws evenly in diagonal order until the initial assembly play is eliminated. The play elimination phase is particularly important for ensuring good concentricity results.
4. Continue tightening evenly and gradually in diagonal sequence until you have applied full torque.
5. Finally, check the tightening torque all round.

**Dismantling**

1. Release the clamping screws gradually in diagonal sequence. Never completely unscrew one screw after the other. This would cause the last screw to be subjected to the total spring-back force exerted by the clamping sleeve and consequently to block. An attempt to release it can result in destruction of the hexagonal socket.
2. After releasing the clamp screws, all the components of the connection can be freely moved. After several assembly processes, an unfavourable alteration of the friction ratio between the head and contact surface of the clamping screws can take place. A stick-slip effect can occur during the tightening procedure, which results in jerky movement of the clamping screw. In this case, the contact surface of the screw head must be re-lubricated using a standard machine oil without additives.

## APPLICATION WITHOUT SCREWS



**Assembly**

1. Clean the clamping sleeve, shaft and hub bore carefully and wet slightly with a low-viscosity machine oil.
2. Join the clamping sleeve and connecting components without applying force.
3. Initiate clamping force. The clamping sleeve deforms elastically and creates a friction-locked connection between the shaft and the housing bore.

**Dismantling**

1. Release the clamping force.
2. The clamping sleeve relaxes and resumes its original shape. All the parts are once again freely movable. Due to the many possible ways of initiating the clamping force, this description can only be formulated in general terms.

## DESIGN

The clamping sets are manufactured from spring-hardened steel. The concentricity of the bore/outside diameter is accurate to 0.008 mm and from $d_2$ > 80 mm, concentricity to IT4.

The outside diameter is machined according to ISO tolerance h5. Depending on the design, the inside diameter is machined to ISO tolerance H6 or, for shaft ends, to DIN 748 (k6/m6).

Two different series (AK/AL and IK/IL) are offered to enable the different types of clamping force initiation. The AK/AL series sleeves are designed for use where the clamping force is initiated from the housing (Fig. 1). IK/IL series clamping sleeves are used in cases where clamping force is initiated from the shaft (Fig. 2).

However, of decisive importance is that the clamping force is applied to the end faces of the clamping sleeves in the area of diameter $d_3$ and $d_4$ or $d_5$ and $d_6$.

## CONNECTING COMPONENTS

The cylindrical bore and outside surfaces of the clamping set must be completely covered by the connecting components. The shaft and bore must be machined cylindrically with a mean peak-to-valley height of Rz=2.5 ... 6.3 µm microns.

To ensure that the stress exerted on the hub or housing bore remains within the elastic range, we recommend the following minimum wall thickness:

| | |
|---|---|
| Steel C 45 | $= 0.6 (d_2 - d_1)$ |
| Aluminium alloys<br>Minimum strength F 38 | $= 1.0 (d_2 - d_1)$ |
| Grey cast iron GG 25<br>shrinkage-free casting | $= 1.0 (d_2 - d_1)$ |

**Hub bore**
The following manufacturing tolerance applies for all series:
H7 (H6 for stringent concentricity requirements or a hydraulically operated clamp).

**Shaft**
Shafts must generally be manufactured to manufacturing tolerance h5 (max. perm. h6). As an exception when the DSM series is used, shafts must be manufactured to DIN 748 for motor shafts (up to dia.50 mm in k6 tolerance field, from dia.55 mm in m6 tolerance field).

**Series AK/IK, AL/IL (without screws)**
To permit simple configuration of the connecting components, however, projection of the clamping sleeve up to max. a (Fig. 1 and 2) can be tolerated.

**Initiation of clamping force**
The functional surfaces of the connecting components, which are used to initiate clamping force in the clamping sleeves, must be manufactured with a run-out accuracy of 0.01 mm or to IT4.

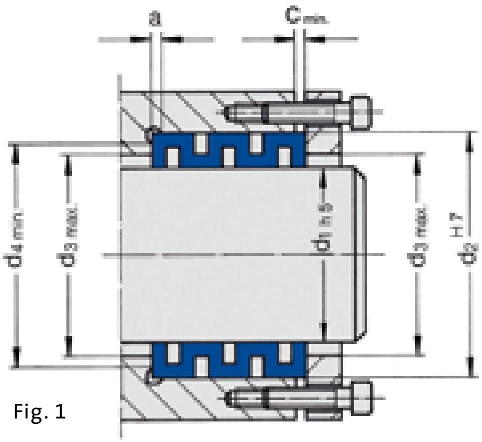



Fig. 1

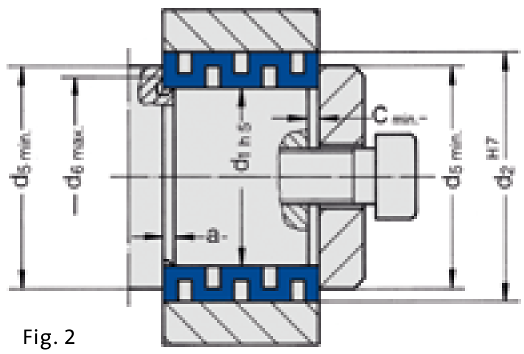



Fig. 2

## CLAMPING SCREWS

Cheese-head screws with a hexagon socket ISO 4762 (DIN 912) with strength class 12.9 are used. As the power transmission of the clamping sleeves depends on the exerted clamping force, the clamping screws should be tightened using a torque wrench.

**$M_A$: Tightening torque per clamping screw**

## TRANSMITTABLE FORCES

**DSK/DSL/AK/IK/AL/IL**

The specifications provided in the table apply to a bore tolerance of H7 and a shaft tolerance of h5 in the connecting components. For an h6 shaft, in the most unfavourable scenario, a reduction of transmittable forces of approx. 10 % may be expected.

**DSM**

The specifications provided in the table apply to a bore tolerance of H7 and a shaft tolerance to DIN 748 (k6/m6).

**M: Transmittable torque at $F_a$ = 0**

The specified values were ascertained in a series of tests, in which the connecting components were made of C45steel, produced with the stipulated surface quality.

The specified performance data are subject to the variation of the friction values of the different contact partners. The components are designed to be reusable, with frequent assembly and disassembly we recommend reducing the tightening torque. Please note that this can also reduce the transmissible torque.

**$F_a$: Transmittable axial force at M = 0**

The $F_a$ values are calculated according to

$$F_a = 2000 \cdot \frac{M}{d_1} \text{ [N]}$$

Subjection of the clamped connection to steady, pulsating, alternating or sudden stress has no impact provided that the occurring peak forces do not exceed the catalogue values. The risk of fretting corrosion is always a possibility in friction-locked connections subjected to alternating torsion or rotating bending stress. This phenomenon can complicate dismantling, and can be prevented by complying with the following instructions:

| | | |
|---|---|---|
| Perm. alternating torsion | $\tilde{T}_{perm.}$ | $\leqq$ 0,6 M |
| Perm. rotating bending stress | $\tilde{M}_{b_{perm.}}$ | $\leqq$ 0,3 M |

**M and $F_a$:**

If both torque and axial forces act on a clamping set at the same time, check using the following formula whether the resulting torque Mr is transmittable.

$$M \geqq M_r = \sqrt{M_e^2 + \left(\frac{F_{ae} \cdot d_1}{2000}\right)^2} \text{ [Nm]}$$

| | | |
|---|---|---|
| M | = | Transmittable torque (catalogue value) [Nm] |
| $M_e$ | = | Required torque [Nm] |
| $M_r$ | = | Resulting torque [Nm] |
| $F_{ae}$ | = | Required axial force [N] |
| $d_1$ | = | Shaft diameter [mm] |

## TRANSMITTABLE FORCES

**For series AK/IK, AL/IL only**

**F: Maximum permissible clamping force**
To avoid the danger of fatigue failure and fretting corrosion, the clamping sleeves should be tensioned in case of high clamping/release cycle frequencies to a maximum of 0.75 F.

**C: Required functional installation space**
Spieth clamping sleeves must be clamped using the controlled application of force. The clamping force cannot be applied in relation to the clamping path. To prevent premature blocking, a "free" functional path "C" must be provided.

**Automated operation**
In the case of automated operation, for example, using hydraulic actuation, a variety of influencing variables can cause the actual values of the system to deviate from the catalogue values. For this application scenario, we strongly recommend that you verify the force or torque values required. In this application, care must be taken to ensure that the installation is completely free of axial play. To avoid fatigue failure and due to the danger of fretting corrosion, in case of high clamping/release cycle frequencies, the clamping sleeves should be tensioned at a maximum of 0.75xF.

**General**
If it is not possible to apply the clamping force F, the following formula is used for approximate determination of the torque $M_{red}$ which can be transmitted with the given clamping force $F_{giv.}$ (<F).

$$M_{red} = \frac{M\ (F_{giv.} - 0.05\ F)}{0.95\ F}\ [Nm]$$

To ascertain the necessary clamping force for a transmittable torque $M_{red} < M$ an approximation is possible using the following formula:

$$F_{req.} = \frac{M_{red} \cdot 0.95\ F}{M} + 0.05\ F[N]$$

M = Transmittable torque (catalogue value) [Nm]
$M_{red}$ = Reduced transmittable torque [Nm]
F = Max. perm. clamping force (catalogue value) [N]
$F_{ae}$ = Required axial force [N]
$F_{req.}$ = Required clamping force [N]
$F_{giv.}$ = Given clamping force (<F) [N]

## NOTE

During the clamping process, the clamping sleeve reduces in length by some tenths of a mm (depending on the size of the clamping sleeve, the clamping force and the real dimensions of the clamping sleeve and connected components), dragging the clamped part in the direction of clamping. The resulting axial displacement of the clamped part can be up to 0.5 times the clamping path. When positioned against a thrust collar or similar, the axial thrust produces an intensive face contact with the clamped part. AK and IK series clamping sleeves can be supplied in a low-thrust version. However, the retention force of these versions only achieves 0.5 times the values listed in the table.

For clamping sets with integrated clamping screws, this effect is theoretically cancelled as the actuating force is applied symmetrically. Due to the actual dimensions of all components, however, allowance must be made for a slight residual thrust in an undefined direction.