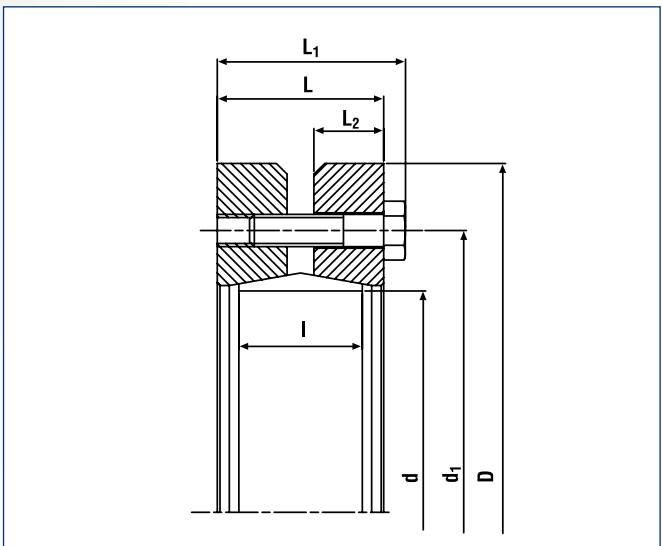
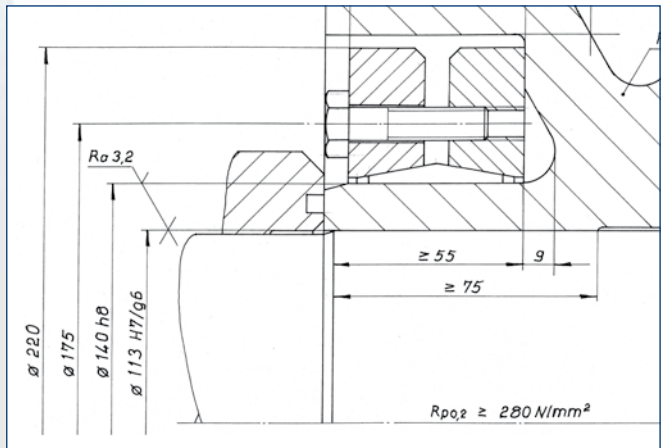


Shrink Disc® CfN 4051 · Location



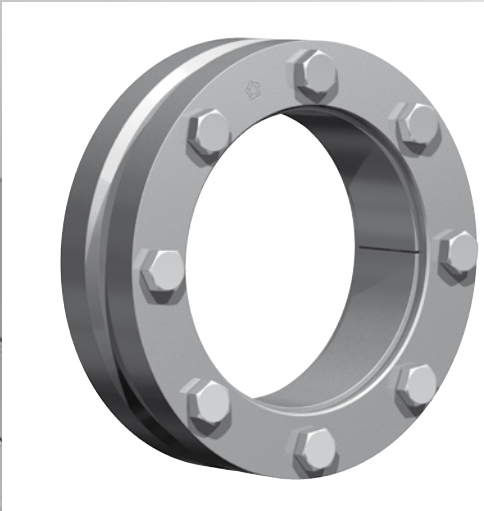
Shrink Disc® CfN 4051 · Dimensions



Thrust bearing locking collar (metric example)

| Size | Shrink Disc® dimensions |                |        |               |        |                |       |                |                |       | Transmissible torques or axial forces |        |                 |       |                | Locking screws<br>DIN EN ISO 4014-10.9 |         | Weight |                  |
|------|-------------------------|----------------|--------|---------------|--------|----------------|-------|----------------|----------------|-------|---------------------------------------|--------|-----------------|-------|----------------|--|---------|--------|------------------|
|      | d <sub>w</sub>          | C <sub>w</sub> | d      | Ch            | D      | L <sub>1</sub> | L     | d <sub>1</sub> | L <sub>2</sub> | l     | T <sub>A</sub>                        | T      | F <sub>ax</sub> | P     | σ <sub>v</sub> | Quantity                               | Thread  | WT     | T <sub>max</sub> |
|      | Inch                    | Inch           | Inch   | Inch          | Inch   | Inch           | Inch  | Inch           | Inch           | Inch  | lb-ft                                 | lb-ft  | lbs             | psi   | psi            | n                                      |         | lbs    | lb-ft            |
| 125  | 3.740                   | 0.0027         | 4.921  |               | 7.283  | 2.283          | 2.008 | 6.220          | 0.866          | 1.535 | 44                                    | 7781   | 49456           | 27695 | 40310          | 8                                      | M10x40  | 13     | 9736             |
|      | 4.134                   |                |        |               |        |                |       |                |                |       |                                       | 10178  | 58448           |       | 41760          |  |         |        | 12723            |
|      | 4.331                   |                |        |               |        |                |       |                |                |       |                                       | 10916  | 59572           |       | 38860          |  |         |        | 13645            |
| 140  | 4.921                   | 0.0031         | 5.512  |               | 8.661  | 2.283          | 2.008 | 6.890          | 0.866          | 1.535 | 44                                    | 15120  | 73060           | 27840 | 45675          | 9                                      | M10x40  | 18     | 18900            |
|      | 5.118                   |                |        |               |        |                |       |                |                |       |                                       | 17701  | 82052           |       | 42485          |  |         |        | 22127            |
| 155  | 5.512                   | 0.0035         | 6.102  | +0<br>-0.0025 | 9.646  | 2.283          | 2.008 | 7.559          | 0.866          | 1.535 | 44                                    | 21389  | 92168           | 30740 | 48430          | 11                                     | M10x40  | 22     | 26737            |
|      | 5.315                   |                |        |               |        |                |       |                |                |       |                                       | 23602  | 106780          |       | 43210          |  |         |        | 29502            |
|      | 5.709                   |                |        |               |        |                |       |                |                |       |                                       | 28396  | 119144          |       | 47415          |  |         |        | 35495            |
| 165  | 5.709                   | 0.0031         | 6.496  |               | 10.236 | 2.756          | 2.441 | 8.268          | 1.024          | 1.811 | 74                                    | 28765  | 120268          | 32480 | 47415          | 10                                     | M12x50  | 31     | 35956            |
|      | 5.709                   |                |        |               |        |                |       |                |                |       |                                       | 28765  | 120268          |       | 43790          |  |         |        | 35956            |
| 175  | 6.102                   | 0.0031         | 6.890  |               | 10.827 | 2.756          | 2.441 | 8.661          | 1.024          | 1.811 | 74                                    | 33928  | 132632          | 33640 | 48430          | 11                                     | M12x50  | 35     | 42410            |
|      | 6.102                   |                |        |               |        |                |       |                |                |       |                                       | 34370  | 134880          |       | 44515          |  |         |        | 42963            |
|      | 6.496                   |                |        |               |        |                |       |                |                |       |                                       | 39828  | 146120          |       | 49445          |  |         |        | 49785            |
| 185  | 6.496                   | 0.0035         | 7.283  |               | 11.614 | 2.756          | 2.441 | 8.858          | 1.024          | 1.811 | 74                                    | 46466  | 170848          | 34800 | 44370          | 12                                     | M12x50  | 44     | 58083            |
|      | 6.496                   |                |        |               |        |                |       |                |                |       |                                       | 46466  | 170848          |       | 44370          |  |         |        | 58083            |
| 195  | 6.890                   | 0.0035         | 7.677  |               | 12.402 | 3.150          | 2.835 | 9.331          | 1.220          | 2.205 | 74                                    | 53473  | 185460          | 33785 | 51475          | 15                                     | M12x55  | 60     | 66841            |
|      | 6.890                   |                |        |               |        |                |       |                |                |       |                                       | 54579  | 191080          |       | 48430          |  |         |        | 68316            |
|      | 7.283                   |                |        |               |        |                |       |                |                |       |                                       | 62324  | 205692          |       | 63800          |  |         |        | 77905            |
| 200  | 7.087                   | 0.0035         | 7.874  | +0<br>-0.0028 | 12.992 | 3.150          | 2.835 | 9.528          | 1.220          | 2.205 | 74                                    | 61070  | 206816          | 35235 | 40165          | 16                                     | M12x55  | 66     | 76337            |
|      | 7.087                   |                |        |               |        |                |       |                |                |       |                                       | 61070  | 206816          |       | 40165          |  |         |        | 76337            |
| 220  | 7.874                   | 0.0035         | 8.661  |               | 13.583 | 3.701          | 3.307 | 10.433         | 1.417          | 2.598 | 184                                   | 77444  | 237164          | 31900 | 53215          | 10                                     | M16x65  | 77     | 96805            |
|      | 7.874                   |                |        |               |        |                |       |                |                |       |                                       | 83344  | 255148          |       | 44080          |  |         |        | 104180           |
|      | 8.465                   |                |        |               |        |                |       |                |                |       |                                       | 99202  | 281000          |       | 51620          |  |         |        | 124002           |
| 240  | 8.661                   | 0.0035         | 9.449  |               | 14.567 | 3.701          | 3.307 | 11.417         | 1.417          | 2.598 | 184                                   | 109896 | 303480          | 34800 | 43935          | 14                                     | M16x70  | 106    | 137371           |
|      | 8.661                   |                |        |               |        |                |       |                |                |       |                                       | 109896 | 303480          |       | 43935          |  |         |        | 137371           |
| 260  | 9.252                   | 0.0035         | 10.236 |               | 15.551 | 4.016          | 3.622 | 12.205         | 1.575          | 2.835 | 184                                   | 127598 | 331580          | 34800 | 52780          | 14                                     | M16x70  | 106    | 159497           |
|      | 9.055                   |                |        |               |        |                |       |                |                |       |                                       | 126123 | 333828          |       | 39150          |  |         |        | 157653           |
|      | 9.843                   |                |        |               |        |                |       |                |                |       |                                       | 153412 | 373168          |       | 46980          |  |         |        | 191766           |
| 280  | 9.843                   | 0.0040         | 11.024 | +0<br>-0.0032 | 16.732 | 4.488          | 4.094 | 13.110         | 1.811          | 3.307 | 184                                   | 158575 | 386656          | 31610 | 40455          | 16                                     | M16x75  | 132    | 198219           |
|      | 9.843                   |                |        |               |        |                |       |                |                |       |                                       | 158575 | 386656          |       | 40455          |  |         |        | 198219           |
| 300  | 10.630                  | 0.0040         | 11.811 |               | 18.110 | 4.488          | 4.094 | 14.094         | 1.811          | 3.307 | 184                                   | 188078 | 424872          | 33205 | 49590          | 18                                     | M16x75  | 165    | 235097           |
|      | 10.630                  |                |        |               |        |                |       |                |                |       |                                       | 191766 | 436112          |       | 42485          |  |         |        | 239707           |
|      | 11.417                  |                |        |               |        |                |       |                |                |       |                                       | 225693 | 477700          |       | 51475          |  |         |        | 282117           |
| 320  | 11.417                  | 0.0040         | 12.598 |               | 19.488 | 4.567          | 4.173 | 14.882         | 1.890          | 3.307 | 184                                   | 221268 | 465336          | 34655 | 41760          | 20                                     | M16x75  | 185    | 276585           |
|      | 11.417                  |                |        |               |        |                |       |                |                |       |                                       | 221268 | 465336          |       | 41760          |  |         |        | 276585           |
|      | 12.008                  |                |        |               |        |                |       |                |                |       |                                       | 248558 | 496808          |       | 47270          |  |         |        | 310697           |
| 340  | 11.811                  | 0.0044         | 13.386 |               | 21.063 | 4.567          | 4.173 | 15.827         | 1.890          | 3.307 | 184                                   | 274372 | 558628          | 34220 | 42340          | 21                                     | M16x75  | 221    | 342965           |
|      | 11.811                  |                |        |               |        |                |       |                |                |       |                                       | 274372 | 558628          |       | 42340          |  |         |        | 342965           |
| 350  | 12.205                  | 0.0044         | 13.780 | +0<br>-0.0035 | 21.457 | 5.315          | 4.803 | 16.260         | 2.126          | 3.937 | 361                                   | 295024 | 582232          | 33350 | 46400          | 16                                     | M20x90  | 265    | 368780           |
|      | 11.811                  |                |        |               |        |                |       |                |                |       |                                       | 265522 | 539520          |       | 39150          |  |         |        | 331902           |
|      | 12.598                  |                |        |               |        |                |       |                |                |       |                                       | 306087 | 582232          |       | 45530          |  |         |        | 382609           |
| 360  | 12.598                  | 0.0044         | 14.173 |               | 21.850 | 5.315          | 4.803 | 16.654         | 2.126          | 3.937 | 361                                   | 320839 | 611456          | 30885 | 38860          | 16                                     | M20x90  | 276    | 401048           |
|      | 12.598                  |                |        |               |        |                |       |                |                |       |                                       | 320839 | 611456          |       | 38860          |  |         |        | 401048           |
| 380  | 14.961                  | 0.0044         | 14.961 |               | 23.031 | 5.866          | 5.354 | 17.402         | 2.362          | 4.409 | 361                                   | 344441 | 637308          | 30885 | 41325          | 18                                     | M20x100 | 331    | 430551           |
|      | 12.992                  |                |        |               |        |                |       |                |                |       |                                       | 344441 | 637308          |       | 41325          |  |         |        | 465585           |
|      | 12.992                  |                |        |               |        |                |       |                |                |       |                                       | 372468 | 687888          |       | 41325          |  |         |        | 465585           |
| 390  | 13.780                  | 0.0044         | 15.354 |               | 23.425 | 5.866          | 5.354 | 17.795         | 2.362          | 4.409 | 361                                   | 425572 | 740716          | 33350 | 48865          | 20                                     | M20x100 | 344    | 531965           |
|      | 13.780                  |                |        |               |        |                |       |                |                |       |                                       | 425572 | 740716          |       | 48865          |  |         |        | 531965           |

To continue see next page



### Characteristics

**Reduced dimensions with lower transmission values** – especially for applications with restricted space.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finish and tolerances are required.

**Easy adjustability** – No stops, steps, keyways, splines etc. are required, therefore hubs can be located and locked at any point or angle on the shaft.

**Easy mounting** Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

**Easy removal** – after loosening the locking screws, the Shrink Disc® will self release and the hub will move freely on the shaft.

**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and prevent contamination by dirt and moisture.

**Highest reliability** – due to the materials chosen and manufacturing processes used, Shrink Discs® can be tightened and released as often as required. If locking screws need replacing, they are standard items and thus easily available.

| Size   | Shrink Disc® dimensions |                |        |        |        |                |        |                |                |         | Transmissible torques or axial forces |        |                 |        |                | Locking screws<br>DIN EN ISO 4014-10.9 |         | Weight |                  |
|--------|-------------------------|----------------|--------|--------|--------|----------------|--------|----------------|----------------|---------|---------------------------------------|--------|-----------------|--------|----------------|--|---------|--------|------------------|
|        | d <sub>w</sub>          | C <sub>w</sub> | d      | Ch     | D      | L <sub>1</sub> | L      | d <sub>1</sub> | L <sub>2</sub> | l       | T <sub>A</sub>                        | T      | F <sub>ax</sub> | P      | σ <sub>v</sub> | Quantity                               | Thread  | WT     | T <sub>max</sub> |
|        | Inch                    | Inch           | Inch   | Inch   | Inch   | Inch           | Inch   | Inch           | Inch           | Inch    | lb-ft                                 | lb-ft  | lbs             | psi    | psi            | n                                      |         | lbs    | lb-ft            |
| 400    | 13.386                  | 0.0044         | 15.748 | +0     | 24.213 | 5.866          | 5.354  | 18.189         | 2.362          | 4.409   | 361                                   | 405658 | 727228          | 34220  | 42195          | 21                                     | M20x100 | 375    | 507073           |
|        | -0.0035                 |                |        | 461713 |        |                |        |                |                |         |                                       | 782304 | 50025           |        | 577141         |  |         |        |                  |
| 14.173 | 16.535                  |                | 24.803 | 6.181  | 5.669  | 19.094         | 2.520  | 4.724          | 361            | 426310  | 741840                                | 38425  | 603877          |        |                |  |         |        |                  |
| 13.780 |                         |                |        |        |        |                |        |                |                | 483102  | 796916                                | 43065  | 624160          |        |                |  |         |        |                  |
| 420    | 14.567                  |                | 17.323 | 25.984 | 6.181  | 5.669          | 19.882 | 2.520          | 4.724          | 361     | 499328                                | 822768 | 39730           | 702526 |                |  |         |        |                  |
| 14.567 | 562021                  |                |        |        |        |                |        |                |                |         | 878968                                | 44805  | 774438          |        |                |  |         |        |                  |
| 440    | 15.354                  |                | 18.110 | 26.969 | 6.732  | 6.220          | 20.748 | 2.795          | 5.197          | 361     | 619550                                | 971136 | 41035           | 821457 |                |  |         |        |                  |
| 15.354 | 689619                  |                |        |        |        |                |        |                |                |         | 1029584                               | 47560  | 862945          |        |                |  |         |        |                  |
| 460    | 16.142                  |                | 18.898 | 28.150 | 6.732  | 6.220          | 21.535 | 2.795          | 5.197          | 361     | 657166                                | 977880 | 39875           | 890604 |                |  |         |        |                  |
| 16.142 | 712483                  |                |        |        |        |                |        |                |                |         | 1022390,4                             | 43645  | 909043          |        |                |  |         |        |                  |
| 480    | 16.732                  | 19.685         | 29.528 | 6.732  | 6.220  | 22.323         | 2.795  | 5.197          | 361            | 727234  | 1044196                               | 39875  | 982799          |        |                |  |         |        |                  |
| 16.732 | 786239                  |                |        |        |        |                |        |                |                | 1089156 | 33060                                 | 43065  |                 |        |                |  |         |        |                  |
| 500    | 17.323                  |                |        |        |        |                |        |                |                |         |                                       |        |                 |        |                |  |         |        |                  |

More sizes on request

## Explanations to tables

d, D, L, l, L<sub>1</sub>, L<sub>2</sub>, d<sub>1</sub> = Basic dimensions

d<sub>w</sub> = solid shaft diameter (provided by the customer)

T = transmissible torque

F<sub>ax</sub> = transmissible axial force

p = approx. surface pressure on the hub extension (diameter d)

T<sub>A</sub> = required tightening torque per screw (Screws greased with molykote or equivalent!)

n = quantity of screws

T<sub>max</sub> = maximum theoretical transmissible torque

C<sub>w</sub> = shaft clearances

C<sub>n</sub> = hub tolerances

C<sub>d</sub> = shaft tolerances

|l<sub>1</sub> = Inner ring centering shoulder length

d<sub>2</sub> = clamped component bore

x = clamped component thickness

B = width dimension, relaxed condition

R<sub>1</sub> = hub max. radius (split Shrink Disc®)

s<sub>v</sub> = calculated combined stress in the hub extension (d/dw) under consideration of the tangential, radial and torsional stresses following the equation:

$$\sigma_v = \sqrt{1/2 [(\sigma_x - \sigma_y)^2 + (\sigma_y - \sigma_z)^2 + (\sigma_z - \sigma_x)^2] + 3\tau^2}$$

Additional loads, e.g. tension, thrust or bending have to be taken into consideration accordingly.

### Function values

The functional characteristics are valid with the screw tightening torque listed in the tables and the following assumed conditions:

The locking screws are lubricated using MoS<sub>2</sub> (μ<sub>tot</sub> = 0.1).

The tapered cones are lubricated using MoS<sub>2</sub> (μ = 0.05).

The contact surfaces (d<sub>w</sub>) are in lightly oiled condition with coefficient of friction μ = 0.12.

The hub and shaft materials have a modulus of elasticity of 30 x 10<sup>6</sup> PSI. (Lower values result in increased values for T and Fax with reduced tangential stress.)

The maximum clearance is being fully utilized.

The shaft being used is solid, for hollow shaft applications the functional values will change.

In cases where the assumed conditions do not apply then contact our Technical Department where we will be happy to assist you with your application.