

# SLIDING BEARINGS SUPPLIER

Metric Cylindrical & Flanged Bearing Bushing



## Sliding Bearings Material Selection Guidelines

| Bearing                        | Contact pressure N/mm <sup>2</sup> | Material                                                                                                                                                                                                     | Hardness      | Surface roughness R <sub>a</sub> |
|--------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------------------|
| Metallic bearings              | up to 24.5                         | Carbon Steel for Machine Structure and Alloy Steel (C45, 42CrMo4)<br>In Corrosive Environments: Corrosion-Resistant Steel (X20Cr13, X22CrNi17/AISI 431)<br>In Sea-Water: (Super)Duplex Grades or Inconel 625 | HB150 or over | Less than R <sub>a</sub> 1.6     |
|                                | 24.5 - 49.0                        | Surface hardening treatments, such as induction hardening and carburizing, should be applied to the materials mentioned above.                                                                               | HB250 or over |                                  |
|                                | 49.0 - 98.0                        | In addition to the aforementioned surface hardening treatment, supplementary surface treatments such as nitriding and hard chrome plating should be applied.                                                 | HRC50 or over |                                  |
| Metal polymer bushing bearings | up to 49.0                         | Carbon Steel for Machine Structure and Alloy Steel (S45C, SNC415, SCM435)<br>In Corrosive and Sea-Water Environments: Corrosion-Resistant Steel (X2CrNiMo17-12-2 (AISI 316); X5CrNi18-10 (AISI 304))         | HB120 or over | Less than R <sub>a</sub> 0.8     |
|                                | 49.0 - 98.0                        | Surface treatments such as induction hardening, carburizing quenching, and hard chrome plating should be applied to the aforementioned materials.                                                            | HRC45 or over |                                  |

## Foreign particle contamination

Compared to rolling-element bearings, self-lubricating sliding bearings are significantly less sensitive to contamination from foreign particles. However, their performance and lifespan can still be impacted. The following measures are recommended: Install dust seals on both sides of the bearing and fill the bearing area with grease. Periodically grease the bearing to expel foreign particles and prevent contamination. Apply surface hardening treatment to the shaft.

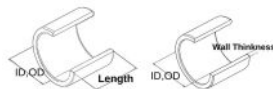
## Bearing Design

### Length

For general applications, the recommended ratio of bearing length to inner diameter (L/D) is between 0.5 and 2.0. For applications involving high loads, uneven contact, or high rotational speeds, the advised ratio is between 0.8 and 1.0.

The benefits of a larger L/D ratio include improved oil film formation and better vibration damping.

The advantages of a smaller L/D ratio are increased safety margin for eccentric loads, space savings, better particle discharge, and improved heat dissipation.



### Wall Thickness

The table below provides guidelines for the wall thickness of various bearing types. For more compact designs, it is possible to reduce the wall thickness within certain limits.

### Wall Thickness Guidelines

| ID             | ø10  | ø20  | ø50   | ø100   | ø300  |
|----------------|------|------|-------|--------|-------|
| Bearing type   | (mm) | (mm) | (mm)  | (mm)   | (mm)  |
| Solid Bronze   | 2-3  | 2-4  | 5-7.5 | 7.5-15 | 20-25 |
| Wrapped bushes | 1    | 1.5  | 2-2.5 | 2.5    | 2.5   |

### Chamfering

To facilitate the installation of a sliding bearing and prevent stress concentration, chamfers should be incorporated at both ends of the bearing. The general guidelines are provided in the table below:

#### Chamfering Guidelines

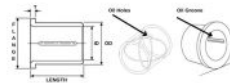
| Bearing ID (mm) | Chamfer size of ID and OD(mm) |
|-----------------|-------------------------------|
| Up to 30        | 0.5x45°                       |
| to ø80          | 1.0x45°                       |
| ø80 to ø200     | 1.5x45°                       |
| ø200 to ø300    | 2.0x45°                       |
| Over ø300       | 2.5x45°                       |

### Lubrication

Periodic lubrication extends the lifespan of a bearing by enhancing the following properties: • Increased allowable pv-value • Reduced wear due to improved friction coefficient • Cooling effect • Removal of foreign and wear particles • Prevention of shaft corrosion • Enhanced reliability

Recommended lubricants: Grease: Li-based multi-purpose grease

For operating temperatures above 150°C, grease with polyurea or bentonite thickeners is recommended.



#### Standard Dimensions For Lubrication Grooves

| Bearing ID (mm) | R (groove) (mm) | r (chamfer) (mm) | H (depth of groove) (mm) | Number of grooves |
|-----------------|-----------------|------------------|--------------------------|-------------------|
| 30 or less      | 1.5             | 1.5              | 1.2                      | 1 to 2            |
| 30 to 50        | 1.6             | 1.6              | 1.3                      | 1 to 3            |
| 50 to 80        | 1.7             | 1.7              | 1.4                      | 1 to 4            |
| 80 to 120       | 1.8             | 1.8              | 1.5                      | 1 to 5            |
| 120 to 180      | 1.9             | 1.9              | 1.6                      | 1 to 6            |
| 180 to 250      | 5.0             | 5.0              | 6.0                      | 5                 |
| 250 to 315      | 6.0             | 5.1              | 6.1                      | 6                 |
| 315 to 400      | 7.0             | 5.2              | 6.2                      | 7                 |
| 400 to 500      | 8.0             | 5.3              | 6.3                      | 8                 |

## Installation into housing

### Clearance-Fit Design

Self-lubricating bearings require a larger clearance fit than conventional sliding bearings under hydrodynamic lubrication. This is due to the thicker solid lubricant layer and the higher frictional heat generated.

For applications that may cause swelling, additional clearance adjustments are necessary.

### Fittings for high operating temperature

When the operating temperature of a metallic bushing exceeds 100°C, the thermal expansion coefficient of the shaft material must be considered. The thermal expansion distance should be added to the tolerances of the inner diameter (ID) at room temperature (20°C).

Thermal expansion distance = Thermal expansion coefficient of shaft material × Shaft diameter × (Operating temperature - Room temperature)

### Coefficient of Thermal Linear Expansion for Common Shaft Materials

| Shaft material            | Coefficient of thermal expansion                     |
|---------------------------|------------------------------------------------------|
| Soft steel                | $1.12 \times 10^{-5}/^{\circ}\text{C}$ (20 to 300°C) |
| Ni-Cr Steel               | $1.29 \times 10^{-5}/^{\circ}\text{C}$ (20 to 300°C) |
| X22CrNi17 (AISI431)       | $1.21 \times 10^{-5}/^{\circ}\text{C}$ (20 to 300°C) |
| X2CrNiMo17-12-2 (AISI316) | $1.62 \times 10^{-5}/^{\circ}\text{C}$ (20 to 300°C) |

When the bushing cools down to room temperature after operating at high temperatures, stress relaxation may lead to a reduction in interference. To prevent sliding at the outer diameter (OD), the use of set screws is highly recommended.

# SOLID LUBRICATING BRONZE BEARING



wrapped composite sliding bearing, stainless steel/PTFE, maintenance-free

## Solid bronze sliding bearing with solid lubricant inserts • Maintenance-free

|                                |                                                                                                                                                                                                                                                                               |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PROPERTIES                     | For high operational demands, including impact loads, oscillating movements, the bearing features exceptional wear resistance, immunity to dirt, and corrosion resistance, ensuring a prolonged lifespan. For comprehensive details, refer to the Bearing Properties section. |
| MATERIAL PROPERTIES            | Standard Material: CuZn25Al5 / ASTM C86300. For other metal alloys, please contact us.                                                                                                                                                                                        |
| SOLID LUBRICANTS               | Our solid lubricants are high-density compounds made from graphite, PTFE, and metals. The lubricants are aligned according to the direction of motion. Please specify the direction when placing the order.                                                                   |
| SL 1                           | Suitable for temperatures up to 350°C. Not suitable for use with water or vapor.                                                                                                                                                                                              |
| SL 4                           | Suitable for temperatures up to 80°C. Designed for use in water and humidity, with a very low coefficient of friction.                                                                                                                                                        |
| TOLERANCE DETAILS              |                                                                                                                                                                                                                                                                               |
| Housing Ø                      | H7                                                                                                                                                                                                                                                                            |
| Bushing Inner Ø after mounting | Standard Tolerances: R6/E7<br>Custom Tolerances Available Upon Customer Request.                                                                                                                                                                                              |
| Shaft tolerance                | f7 / h6                                                                                                                                                                                                                                                                       |
| SHAFT MATERIAL                 | The hardness differential relative to the bearing should be a minimum of 100HB, with a preference for hardening and precision grinding to the specified dimensions. The surface roughness should range from Ra 0.2 to 0.8 µm.                                                 |
| MOUNTING ADVICE                |                                                                                                                                                                                                                                                                               |
| Housing                        | Mounting chamfer, min. 1,5 mm x 15-45°                                                                                                                                                                                                                                        |
| Shaft                          | Mounting chamfer, 5 mm x 15°, edges rounded                                                                                                                                                                                                                                   |
| Force fitting mandrel          | Using a force-fitting mandrel is recommended. Prior to assembly, applying grease lubrication to the outer surface may be essential.                                                                                                                                           |
| Freeze fitting                 | For diameters exceeding 130mm, the utilization of dry ice is recommended.                                                                                                                                                                                                     |
| MAINTENANCE                    | Graphite bronze bearings are maintenance-free sliding bearings; however, initial lubrication is crucial. Consequently, an aging-resistant, lithium-based grease should be employed.                                                                                           |

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## MATERIAL LIST

| Material description                                                       |                |                        |                   | Analysis                                                              | Physical properties |                   |                |                   |                   | Application                                                                                                                                    |  |
|----------------------------------------------------------------------------|----------------|------------------------|-------------------|-----------------------------------------------------------------------|---------------------|-------------------|----------------|-------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--|
| DIN Alloy No.                                                              | ASTM Alloy No. | Scandinavian Alloy No. | British Alloy No. | Chemical Composition                                                  | Yield Strength      | Tensile Strength  | Elongation     | E-module          | Hardness          |                                                                                                                                                |  |
|                                                                            |                |                        |                   | %                                                                     | N/mm <sup>2</sup>   | N/mm <sup>2</sup> | %              | x 10 <sup>3</sup> | HB                |                                                                                                                                                |  |
| CuSn7ZnPb <sub>1</sub><br>CuSn7ZnPb <sub>2</sub><br>CuSn7ZnPb <sub>3</sub> | C93200         | JM1                    | 1400 LG2          | Cu 81-85<br>Sn 5-6<br>Zn 3-5<br>Pb 5-7<br>Ni 2 max<br>Sb 3,3 max      | 120<br>130<br>120   | 240<br>270<br>270 | 15<br>13<br>16 | 106<br>106<br>106 | 65<br>75<br>70    | Medium-hard bearing alloy<br>Good anti-friction properties<br>Seawater resistant<br>Applicable for light edgeloads                             |  |
| CuSn12Pb <sub>1</sub><br>CuSn12Pb <sub>2</sub><br>CuSn12Pb <sub>3</sub>    | C92500         | JM3                    | 1400 PB2          | Cu 84-88<br>Sn 11-13<br>Pb 1-2<br>Ni 2 max<br>Sb 0,2 max<br>P 0,2 max | 140<br>150<br>140   | 260<br>280<br>280 | 10<br>5<br>7   | 112<br>112<br>112 | 80<br>90<br>85    | Material for high loads<br>Seawater resistant                                                                                                  |  |
| CuAl10Ni <sub>1</sub><br>CuAl10Ni <sub>2</sub><br>CuAl10Ni <sub>3</sub>    | C95500         | JM7                    | 1400 AB2          | Cu 75 min<br>Al 8,5-11<br>Ni 2-8,5<br>Fe 3,5-5,5<br>Mn 3,3 max        | 270<br>300<br>300   | 600<br>700<br>800 | 12<br>13<br>13 | 122<br>122<br>122 | 140<br>160<br>160 | Hard Ni-Al bronze<br>Very high strength<br>Excellent wear resistance<br>Corrosion-resistant<br>Seawater resistant<br>High temperature strength |  |
| CuZn25Al <sub>1</sub><br>CuZn25Al <sub>2</sub><br>CuZn25Al <sub>3</sub>    | C86300         | JM18                   |                   | Cu 60-67<br>Al 3-7<br>Fe 1,5-4<br>Mn 2,5-5<br>Zn balance<br>Ni 3 max  | 450<br>480<br>480   | 750<br>750<br>750 | 8<br>8<br>5    | 115<br>115<br>115 | 200<br>220<br>220 | Water resistant<br>High strength bearing alloy<br>High fatigue resistance<br>Not applicable for seawater applications                          |  |

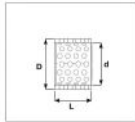
<sub>1</sub> Sand casting   <sub>2</sub> Centrifugal casting   <sub>3</sub> Continuous casting

## BEARING PROPERTIES\*

| Bronze Material | Solid Lubricant | p static (N/mm <sup>2</sup> ) | p dynamic (N/mm <sup>2</sup> ) | Friction dry               | Friction wet                 | v (m/s) max. | max p <sub>v</sub> value N/mm <sup>2</sup> x m/s | Temp. °C max. | Shaft Hardness HB (min) | Shaft Finish R <sub>a</sub> (µm) |
|-----------------|-----------------|-------------------------------|--------------------------------|----------------------------|------------------------------|--------------|--------------------------------------------------|---------------|-------------------------|----------------------------------|
| CuSn7ZnPb       | SL 4<br>SL 1    | 80<br>80                      | 40<br>30                       | 0.11 - 0.13<br>0.12 - 0.14 | 0.07 - 0.12<br>Not available | 0.4<br>0.5   | 1.2<br>1.0                                       | 80<br>250     | 180                     | 0.2 - 0.8                        |
| CuSn12PB        | SL 4<br>SL 1    | 100<br>100                    | 70<br>25                       | 0.11 - 0.13<br>0.12 - 0.14 | 0.07 - 0.12<br>Not available | 0.4<br>0.15  | 2.0<br>1.6                                       | 80<br>250     | 180                     | 0.2 - 0.8                        |
| CuAl10Ni        | SL 4<br>SL 1    | 150<br>150                    | 90<br>80                       | 0.13 - 0.15<br>0.14 - 0.16 | 0.07 - 0.12<br>Not available | 0.4<br>0.4   | 1.5<br>1.5                                       | 80<br>350     | 300                     | 0.2 - 0.8                        |
| CuZn25Al5       | SL 4<br>SL 1    | 150<br>150                    | 100<br>90                      | 0.13 - 0.15<br>0.14 - 0.16 | 0.07 - 0.12<br>Not available | 0.4<br>0.15  | 1.5<br>1.0                                       | 80<br>300     | 300                     | 0.2 - 0.8                        |

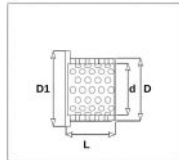
The aforementioned bearing properties are valid under optimal operating conditions. However, alterations in application conditions, such as increased sliding speed or enhanced shaft roughness, can lead to modifications in these values.

### Cylindrical bushing



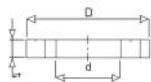
| Type | Cylindrical bushing      |
|------|--------------------------|
| 50   | Inner diameter 50 mm (d) |
| 65   | Outer diameter 65 mm (D) |
| 70   | Length 70 mm (L)         |

### Flange bushing



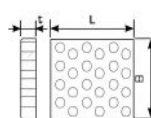
| Type   | Flange bushing           |
|--------|--------------------------|
| Flange | Flange diameter D1       |
| 50     | Inner diameter 50 mm (d) |
| 65     | Outer diameter 65 mm (D) |
| 70     | Length 70 mm (L)         |

### Thrust washer



| Type | Thrust washer            |
|------|--------------------------|
| 30   | Inner diameter 30 mm (d) |
| 60   | Outer diameter 60 mm (D) |
| 05   | Thickness 5 mm (t)       |

### Strips



| Type | Strip               |
|------|---------------------|
| 30   | Width 30 mm (B)     |
| 70   | Length 70 mm (L)    |
| 10   | Thickness 10 mm (t) |

All sizes and measurements can be produced to customer's specification.

# Solid Bronze Bearings



solid turned bronze sliding bearing, heavy-maintenance

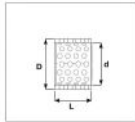
## Solid Bronze Sliding Bearing • Compliant with DIN 1850 / ISO 4379 Standards • Available in Multiple Alloy Options

|                                       |                                                                                                                                                                                    |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PROPERTIES</b>                     | Maintenance-bound sliding bearing, suitable for operation in contaminated environment, good corrosion resistance, unsuceptible to impact load.                                     |
| <b>MATERIALS</b>                      |                                                                                                                                                                                    |
| <b>Standard material</b>              | Standard material CuSn12                                                                                                                                                           |
| <b>MATERIAL PROPERTIES</b>            |                                                                                                                                                                                    |
| <b>Specific load capacity static</b>  | $\leq 150$ [ N/mm <sup>2</sup> ]                                                                                                                                                   |
| <b>Specific load capacity dynamic</b> | $\leq 60$ [ N/mm <sup>2</sup> ]                                                                                                                                                    |
| <b>Sliding speed</b>                  | < 10 [ m/s ] depends on lubrication - strain                                                                                                                                       |
| <b>Temperature strain</b>             | -40 – +150 [ °C ]                                                                                                                                                                  |
| <b>TOLERANCE DETAILS</b>              |                                                                                                                                                                                    |
| <b>Housing Ø</b>                      | According to customer's preference.                                                                                                                                                |
| <b>Bushing Inner Ø after mounting</b> | According to customer's preference.                                                                                                                                                |
| <b>Shaft tolerance</b>                | According to customer's preference.                                                                                                                                                |
| <b>SHAFT MATERIAL</b>                 | Hardened steel, surface roughness $R_a < 0.8 \mu\text{m}$                                                                                                                          |
| <b>MOUNTING ADVICE</b>                |                                                                                                                                                                                    |
| <b>Housing</b>                        | Mounting chamfer, min. 1,5 mm x 15-45°                                                                                                                                             |
| <b>Shaft</b>                          | Mounting chamfer, 5 mm x 15°, edges rounded                                                                                                                                        |
| <b>Freeze fitting</b>                 | For diameter > 130mm, dry ice or liquid nitrogen can be used                                                                                                                       |
| <b>MAINTENANCE</b>                    | Oil or grease lubrication is essential. Implementing lubrication groove systems and increasing the clearance between the shaft and bushing will minimize maintenance requirements. |

| DIN Alloy No.   | ASTM Alloy No. | Scandinavian Alloy No. | British Alloy No. | Yield Strength    | Tensile Strength  | Elongation | Hardness |
|-----------------|----------------|------------------------|-------------------|-------------------|-------------------|------------|----------|
|                 |                |                        |                   | N/mm <sup>2</sup> | N/mm <sup>2</sup> | %          | HB       |
| CuSn7ZnPb (RG7) | C93200         | JM1                    | 1400 LG2          | 130               | 270               | 13         | 75       |
| CuSn10          | C90700         | JM2                    | 1400 PB1          | 140               | 290               | 13         | 80       |
| CuSn12          | C90800         | JM3                    | 1400 PB2          | 150               | 280               | 5          | 95       |
| CuPb15Sn        | C93800         | JM4                    | 1400 LB1          | 100               | 210               | 7          | 65       |
| CuPb10Sn        | C93700         | JM5                    | 1400 LB2          | 100               | 220               | 8          | 70       |
| CuAl10Ni        | C95500         | JM7                    | 1400 AB2          | 300               | 680               | 13         | 160      |
| CuSn10Zn (RG10) | SAE 62         | JM12                   | 1400 G1-C (BC3)   | 140               | 260               | 7          | 80       |
| CuZn25Al5       | C86300         | JM18                   |                   | 480               | 750               | 8          | 220      |
| CuSn5ZnPb (RG5) | C83600         | SS5204                 | 1400 LG2 (BC6)    | 90                | 250               | 13         | 65       |

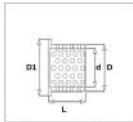
We craft all unique designs with swift turnaround!

### Cylindrical bushing



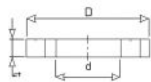
| Type | Cylindrical Bushing      |
|------|--------------------------|
| 50   | Inner diameter 50 mm (d) |
| 65   | Outer diameter 65 mm (D) |
| 70   | Length 70 mm (L)         |

### Flange bushing



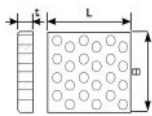
| Type | Flange bushing           |
|------|--------------------------|
| 50   | Inner diameter 50 mm (d) |
| 65   | Outer diameter 65 mm (D) |
| 70   | Length 70 mm (L)         |

### Thrust washer



| Type | Thrust washer            |
|------|--------------------------|
| 30   | Inner diameter 30 mm (d) |
| 60   | Outer diameter 60 mm (D) |
| 05   | Thickness 5 mm (t)       |

### Strips



| Type | Strip               |
|------|---------------------|
| 30   | Width 30 mm (B)     |
| 70   | Length 70 mm (L)    |
| 10   | Thickness 10 mm (t) |

All sizes and measurements can be tailored to meet the customer's specifications.

## Solid bronze sliding bearing



solid bronze sliding bearing, high-compressed with evenly applied lubricant, manufactured employing sintering technique, maintenance-free

## Turned steel sliding bushing/sleeve



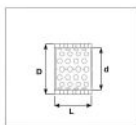
turned steel sliding bushing/sleeve, heavy-maintenance

## Hardened and grinded steel bushing/sleeve • Heavy maintenance

|                                                                                                                                                                                                                         |                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| PROPERTIES                                                                                                                                                                                                              | Suitable for highest operational demands, unsusceptible, high durability.<br>Narrow tolerances possible.                                  |
| MATERIALS                                                                                                                                                                                                               | 20MnV6 hardened and grinded<br>alternatively 100 Cr6 hardened and grinded                                                                 |
| MATERIAL PROPERTIES*                                                                                                                                                                                                    |                                                                                                                                           |
| Specific load capacity static                                                                                                                                                                                           | $\leq 250$ [ N/mm <sup>2</sup> ]                                                                                                          |
| Specific load capacity dynamic                                                                                                                                                                                          | $\leq 150$ [ N/mm <sup>2</sup> ]                                                                                                          |
| Sliding speed                                                                                                                                                                                                           | $< 0.6$ [ m/s ]                                                                                                                           |
| Friction value                                                                                                                                                                                                          | 0.05 – 0.25 [ $\mu$ ]                                                                                                                     |
| Temperature strain                                                                                                                                                                                                      | -100 – +250 [ °C ]                                                                                                                        |
| Max. $p_v$ - value                                                                                                                                                                                                      | 1.2 [ N/mm <sup>2</sup> x m/s ]                                                                                                           |
| Hardness                                                                                                                                                                                                                | 58 – 62 [ HRC ]                                                                                                                           |
| TOLERANCE DETAILS                                                                                                                                                                                                       |                                                                                                                                           |
| Housing $\varnothing$                                                                                                                                                                                                   | H7                                                                                                                                        |
| Shaft tolerance                                                                                                                                                                                                         | Specified by the customer.                                                                                                                |
| SHAFT MATERIAL                                                                                                                                                                                                          | Hardened steel (C45 recommended)                                                                                                          |
| MOUNTING ADVICE                                                                                                                                                                                                         |                                                                                                                                           |
| Housing                                                                                                                                                                                                                 | Mounting chamfer, min. 1,5 mm x 15–45°                                                                                                    |
| Shaft                                                                                                                                                                                                                   | Mounting chamfer, 5 mm x 15°, edges rounded                                                                                               |
| Force fitting mandrel                                                                                                                                                                                                   | Application of an adequate force fitting mandrel is advisable.<br>Grease lubrication of the outer surface may be necessary when mounting. |
| MAINTENANCE                                                                                                                                                                                                             | Sufficient lubrication is necessary.                                                                                                      |
| The aforementioned material properties hold true under optimal operating conditions. However, alterations in application conditions, such as increased sliding speed or strain, can lead to variations in these values. |                                                                                                                                           |

Custom sizes and specialized lubrication slots are available upon request!

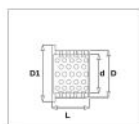
### Cylindrical bushing/sleeve



|    | L   | 20     | 25     | 30     | 35     | 40      | 45      | 50      | 55      | 60      | 65     |
|----|-----|--------|--------|--------|--------|---------|---------|---------|---------|---------|--------|
| d  | D   |        |        |        |        |         |         |         |         |         |        |
| 20 | 30  | 203020 | 203025 | 203030 | 203035 | 203040  | 203045  | 203050  | 203055  | 203060  | 203065 |
| 25 | 35  |        |        | 253530 | 253535 | 253540  | 253545  | 253550  | 253555  | 253560  | 253565 |
| 30 | 38  |        |        | 303830 | 303835 | 303840  | 303845  | 303850  |         | 303860  | 303865 |
| 30 | 40  |        |        | 304030 | 304035 | 304040  | 304045  | 304050  | 304055  | 304060  | 304065 |
| 35 | 45  |        |        | 354530 | 354535 | 354540  | 354545  | 354550  | 354555  | 354560  | 354565 |
| 40 | 50  |        |        | 405030 | 405035 | 405040  | 405045  | 405050  | 405055  | 405060  | 405065 |
| 45 | 55  |        |        | 455530 | 455535 | 455540  | 455545  | 455550  | 455555  | 455560  | 455565 |
| 50 | 60  |        |        | 506030 | 506035 | 506040  | 506045  | 506050  | 506055  | 506060  | 506065 |
| 55 | 65  |        |        |        | 556535 | 556540  | 556545  | 556550  | 556555  | 556560  | 556565 |
| 60 | 70  |        |        |        | 607035 | 607040  | 607045  | 607050  | 607055  | 607060  | 607065 |
| 65 | 75  |        |        |        | 657535 | 657540  | 657545  | 657550  | 657555  | 657560  | 657565 |
| 70 | 80  |        |        |        | 708035 | 708040  | 708045  | 708050  | 708055  | 708060  | 708065 |
| 75 | 85  |        |        |        | 758535 | 758540  | 758545  | 758550  | 758555  | 758560  | 758565 |
| 80 | 90  |        |        |        |        | 809040  | 809045  | 809050  | 809055  | 809060  | 809065 |
| 85 | 95  |        |        |        |        | 859540  | 859545  | 859550  | 859555  | 859560  |        |
| 90 | 100 |        |        |        |        | 9010040 | 9010045 | 9010050 | 9010055 | 9010060 |        |

|    | L   | 70      | 75     | 80      | 85     | 90      | 95     | 100     |
|----|-----|---------|--------|---------|--------|---------|--------|---------|
| d  | D   |         |        |         |        |         |        |         |
| 20 | 30  |         |        |         |        |         |        |         |
| 25 | 35  | 253570  | 253575 | 253580  | 253585 | 253590  | 253595 | 2535100 |
| 30 | 38  | 303870  |        | 303880  |        |         |        |         |
| 30 | 40  | 304070  | 304075 | 304080  | 304085 | 304090  | 304095 | 3040100 |
| 35 | 45  | 354570  | 354575 | 354580  | 354585 | 354590  | 354595 | 3545100 |
| 40 | 50  | 405070  | 405075 | 405080  | 405085 | 405090  | 405095 | 4050100 |
| 45 | 55  | 455570  | 455575 | 455580  | 455585 | 455590  | 455595 | 4555100 |
| 50 | 60  | 506070  | 506075 | 506080  | 506085 | 506090  | 506095 | 5060100 |
| 55 | 65  | 556570  | 556575 | 556580  |        | 556590  |        |         |
| 60 | 70  | 607070  |        | 607080  |        | 607090  |        | 6070100 |
| 65 | 75  | 657570  |        | 657580  |        | 657590  |        | 6575100 |
| 70 | 80  | 708070  |        | 708080  |        | 708090  |        | 7080100 |
| 75 | 85  | 758570  |        | 758580  |        | 758590  |        | 7585100 |
| 80 | 90  | 809070  |        | 809080  |        | 809090  | 809095 | 8090100 |
| 85 | 95  | 859570  |        | 859580  |        | 859590  |        | 8595100 |
| 90 | 100 | 9010070 |        | 9010080 |        | 9010090 |        | 9010010 |

### Flange bushing/sleeve



Flange bushings on customer's request.

# PTFE LINDE BEARING BUSHING



wrapped composite dry sliding bearing, steel/PTFE, maintenance-free

# Bronze Backed PTFE Bushing



wrapped composite sliding bearing, bronze/PTFE, maintenance-free

**Wrapped composite bearing with PTFE sliding layer • Maintenance-free • DIN 1494 / ISO 3547**

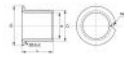
|                                |                                                                                                                                                              |                            |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <b>PROPERTIES</b>              | Excellent sliding and wear behaviour, for all types of movement, high load capacity                                                                          |                            |
| <b>MATERIALS</b>               |                                                                                                                                                              |                            |
|                                | Steel Backed PTFE Bushing                                                                                                                                    | Bronze Backed PTFE Bushing |
| Support material               | Steel tin-plated                                                                                                                                             | Bronze                     |
| Intermediate layer             | Sintered bronze                                                                                                                                              | Sintered bronze            |
| Sliding layer                  | PTFE                                                                                                                                                         | PTFE                       |
| <b>MATERIAL PROPERTIES</b>     |                                                                                                                                                              |                            |
| Specific load capacity static  | $\leq 250$ [ N/mm <sup>2</sup> ]                                                                                                                             |                            |
| Specific load capacity dynamic | $\leq 140$ [ N/mm <sup>2</sup> ] at low sliding speeds                                                                                                       |                            |
| Sliding speed                  | $\leq 2.5$ [ m/s ]                                                                                                                                           |                            |
| Friction value                 | 0,03 – 0,25 [ $\mu$ ]                                                                                                                                        |                            |
| Temperature strain             | -200 – +280 [ °C ]                                                                                                                                           |                            |
| Max. $p_v$ - value             | 1.8 [ N/mm <sup>2</sup> x m/s ] for a short time 3.6                                                                                                         |                            |
| <b>TOLERANCE DETAILS</b>       |                                                                                                                                                              |                            |
| Housing Ø                      | H7                                                                                                                                                           |                            |
| Bushing Inner Ø after mounting | H9                                                                                                                                                           |                            |
| Shaft tolerance                | f7 or h8                                                                                                                                                     |                            |
| <b>SHAFT MATERIAL</b>          | Steel, hardened or untempered, surface roughness $R_a < 0.8 \mu\text{m}$                                                                                     |                            |
| <b>MOUNTING ADVICE</b>         |                                                                                                                                                              |                            |
| Housing                        | Mounting chamfer, min. 1,5 mm x 15–45°                                                                                                                       |                            |
| Shaft                          | Mounting chamfer, 5 mm x 15°, edges rounded                                                                                                                  |                            |
| Force fitting mandrel          | Application of an adequate force fitting mandrel is advisable.<br>Grease lubrication of the outer surface may be necessary when mounting.                    |                            |
| Glueing                        | Adhesive should not contact the sliding surface.                                                                                                             |                            |
| <b>MAINTENANCE</b>             | Steel-backed PTFE bushing is a dry sliding bearing featuring a PTFE sliding layer.<br>Consequently, lubrication is not required, though it remains feasible. |                            |

We produce all special designs at short notice! Cylindrical and flange bushings, thrust washer, strips are standard fabrication.  
Punchings and moldings are produced on customer's requirement.

### Cylindrical bushing



### Flanged bushing



|    | L   | 3    | 4    | 6    | 8    | 10   | 12   | 15   | 20   | 25   | 30   | 35   | 40   | 50   |
|----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|
| d  | D   |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 03 | 4.5 | 0303 | 0304 |      |      |      |      |      |      |      |      |      |      |      |
| 04 | 5.5 |      | 0404 | 0406 |      |      |      |      |      |      |      |      |      |      |
| 06 | 08  |      | 0604 | 0606 | 0608 | 0610 |      |      |      |      |      |      |      |      |
| 07 | 09  |      |      | 0706 | 0708 | 0710 | 0712 | 0715 |      |      |      |      |      |      |
| 08 | 10  |      |      | 0806 | 0808 | 0810 | 0812 | 0815 |      |      |      |      |      |      |
| 10 | 12  |      |      | 1006 | 1008 | 1010 | 1012 | 1015 | 1020 |      |      |      |      |      |
| 12 | 14  |      |      | 1206 | 1208 | 1210 | 1212 | 1215 | 1220 | 1225 |      |      |      |      |
| 13 | 15  |      |      |      | 1308 | 1310 | 1312 | 1315 | 1320 | 1325 |      |      |      |      |
| 14 | 16  |      |      |      | 1408 | 1410 | 1412 | 1415 | 1420 | 1425 |      |      |      |      |
| 15 | 17  |      |      |      | 1508 | 1510 | 1512 | 1515 | 1520 | 1525 |      |      |      |      |
| 16 | 18  |      |      |      | 1608 | 1610 | 1612 | 1615 | 1620 | 1625 |      |      |      |      |
| 17 | 19  |      |      |      | 1708 | 1710 | 1712 | 1715 | 1720 | 1725 |      |      |      |      |
| 18 | 20  |      |      |      | 1808 | 1810 | 1812 | 1815 | 1820 | 1825 | 1830 |      |      |      |
| 20 | 22  |      |      |      | 2008 | 2010 | 2012 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 |      |
| 20 | 23  |      |      |      | 2008 | 2010 | 2012 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 |      |
| 22 | 25  |      |      |      | 2208 | 2210 | 2212 | 2215 | 2220 | 2225 | 2230 | 2235 | 2240 | 2250 |
| 24 | 27  |      |      |      |      | 2410 | 2412 | 2415 | 2420 | 2425 | 2430 | 2435 | 2440 | 2450 |
| 24 | 28  |      |      |      |      | 2410 | 2412 | 2415 | 2420 | 2425 | 2430 | 2435 | 2440 | 2450 |
| 25 | 28  |      |      |      |      | 2510 | 2512 | 2515 | 2520 | 2525 | 2530 | 2535 | 2540 | 2550 |
| 26 | 30  |      |      |      |      | 2610 | 2612 | 2615 | 2620 | 2625 | 2630 | 2635 | 2640 | 2650 |
| 28 | 32  |      |      |      |      | 2810 | 2812 | 2815 | 2820 | 2825 | 2830 | 2835 | 2840 | 2850 |
| 30 | 34  |      |      |      |      | 3010 | 3012 | 3015 | 3020 | 3025 | 3030 | 3035 | 3040 | 3050 |
| 32 | 36  |      |      |      |      | 3210 | 3212 | 3215 | 3220 | 3225 | 3230 | 3235 | 3240 | 3250 |
| 35 | 39  |      |      |      |      | 3510 | 3512 | 3515 | 3520 | 3525 | 3530 | 3535 | 3540 | 3550 |

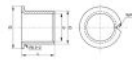
|     | L   | 12   | 15   | 20   | 25   | 30    | 35   | 40    | 50    | 60    | 70    | 80    | 90    | 100    |
|-----|-----|------|------|------|------|-------|------|-------|-------|-------|-------|-------|-------|--------|
| d   | D   |      |      |      |      |       |      |       |       |       |       |       |       |        |
| 38  | 42  | 3812 | 3815 | 3820 | 3825 | 3830  | 3835 | 3840  | 3850  | 3860  |       |       |       |        |
| 40  | 44  | 4012 | 4015 | 4020 | 4025 | 4030  | 4035 | 4040  | 4050  | 4060  |       |       |       |        |
| 42  | 46  | 4212 | 4215 | 4220 | 4225 | 4230  | 4235 | 4240  | 4250  | 4260  |       |       |       |        |
| 45  | 50  |      | 4515 | 4520 | 4525 | 4530  | 4535 | 4540  | 4550  | 4560  |       |       |       |        |
| 50  | 55  |      | 5015 | 5020 | 5025 | 5030  | 5035 | 5040  | 5050  | 5060  | 5070  |       |       |        |
| 55  | 60  |      | 5515 | 5520 | 5525 | 5530  | 5535 | 5540  | 5550  | 5560  | 5570  |       |       |        |
| 60  | 65  |      | 6015 | 6020 | 6025 | 6030  | 6035 | 6040  | 6050  | 6060  | 6070  | 6080  | 6090  |        |
| 65  | 70  |      | 6515 | 6520 |      | 6530  |      | 6540  | 6550  | 6560  | 6570  | 6580  | 6590  |        |
| 70  | 75  |      |      | 7020 |      | 7030  |      | 7040  | 7050  | 7060  | 7070  | 7080  | 7090  |        |
| 75  | 80  |      |      | 7520 |      | 7530  |      | 7540  | 7550  | 7560  | 7570  | 7580  | 7590  |        |
| 80  | 85  |      |      |      |      | 8030  |      | 8040  | 8050  | 8060  | 8070  | 8080  | 8090  | 80100  |
| 85  | 90  |      |      |      |      | 8530  |      | 8540  | 8550  | 8560  | 8570  | 8580  | 8590  | 85100  |
| 90  | 95  |      |      |      |      | 9030  |      | 9040  | 9050  | 9060  | 9070  | 9080  | 9090  | 90100  |
| 95  | 100 |      |      |      |      | 9530  |      | 9540  | 9550  | 9560  | 9570  | 9580  | 9590  | 95100  |
| 100 | 105 |      |      |      |      | 10030 |      | 10040 | 10050 | 10060 | 10070 | 10080 | 10090 | 100100 |

|     | L   | 50    | 60    | 70    | 80    | 90    | 100    | 110    | 115    | 120    | 130    | 140    | 150    |
|-----|-----|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| d   | D   |       |       |       |       |       |        |        |        |        |        |        |        |
| 105 | 110 | 10550 | 10560 | 10570 | 10580 | 10590 | 105100 |        | 105115 |        |        |        |        |
| 110 | 115 | 11050 | 11060 | 11070 | 11080 | 11090 | 110100 |        | 110115 |        |        |        |        |
| 115 | 120 | 11550 | 11560 | 11570 | 11580 | 11590 | 115100 |        | 115115 |        |        |        |        |
| 120 | 125 | 12050 | 12060 | 12070 | 12080 | 12090 | 120100 |        |        | 120120 |        |        |        |
| 125 | 130 | 12550 | 12560 | 12570 | 12580 | 12590 | 125100 |        | 125115 |        |        |        |        |
| 130 | 135 |       | 13060 | 13070 | 13080 | 13090 | 130100 |        |        | 130120 |        |        |        |
| 135 | 140 |       | 13560 | 13570 | 13580 | 13590 | 135100 |        |        | 135120 |        |        |        |
| 140 | 145 |       | 14060 | 14070 | 14080 | 14090 | 140100 |        |        |        |        |        |        |
| 150 | 155 |       | 15060 | 15070 | 15080 | 15090 | 150100 |        |        |        |        |        |        |
| 160 | 165 |       | 16060 | 16070 | 16080 | 16090 | 160100 | 160110 |        | 160120 | 160130 | 160140 | 160150 |
| 170 | 175 |       | 17060 | 17070 | 17080 | 17090 | 170100 | 170110 |        | 170120 | 170130 | 170140 | 170150 |
| 180 | 185 |       | 18060 | 18070 | 18080 | 18090 | 180100 | 180110 |        | 180120 | 180130 | 180140 | 180150 |
| 200 | 205 |       | 20060 | 20070 | 20080 | 20090 | 200100 | 200110 |        | 200120 | 200130 | 200140 | 200150 |
| 220 | 225 |       | 22060 | 22070 | 22080 | 22090 | 220100 | 220110 |        | 220120 | 220130 | 220140 | 220150 |
| 250 | 255 |       | 25060 | 25070 | 25080 | 25090 | 250100 | 250110 |        | 250120 | 250130 | 250140 | 250150 |
| 300 | 305 |       | 30060 | 30070 | 30080 | 30090 | 300100 | 300110 |        | 300120 | 300130 | 300140 | 300150 |

### Cylindrical bushing



### Cylindrical bushing

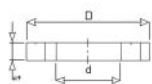


|    |     |    | L                | 4    | 5    | 5.5    | 6    | 7    | 7.5    | 8    | 9    | 9.5    | 10   |
|----|-----|----|------------------|------|------|--------|------|------|--------|------|------|--------|------|
| d  | D   | D1 | Flange thickness |      |      |        |      |      |        |      |      |        |      |
| 03 | 4.5 | 7  | 0.75             | 0304 |      |        |      |      |        |      |      |        |      |
| 04 | 5.5 | 9  | 0.75             | 0404 |      |        |      |      |        |      |      |        | 0410 |
| 05 | 07  | 10 | 1                |      | 0505 |        | 0506 |      |        |      |      |        |      |
| 06 | 08  | 12 | 1                | 0604 |      |        | 0606 | 0607 |        | 0608 |      |        | 0610 |
| 08 | 10  | 15 | 1                |      |      | 0805.5 |      |      | 0807.5 |      |      | 0809.5 | 0810 |
| 10 | 12  | 18 | 1                |      |      |        |      | 1007 |        |      | 1009 |        | 1010 |
| 12 | 14  | 20 | 1                |      |      |        | 1206 | 1207 |        |      | 1209 |        | 1210 |
| 14 | 16  | 22 | 1                |      |      |        |      |      |        |      |      |        | 1410 |
| 15 | 17  | 23 | 1                |      |      |        |      |      |        |      | 1509 |        | 1510 |

|    |    |    | L                | 11   | 11.5   | 12   | 15   | 16   | 16.5   | 17   | 20   | 21.5   | 22   |
|----|----|----|------------------|------|--------|------|------|------|--------|------|------|--------|------|
| d  | D  | D1 | Flange thickness |      |        |      |      |      |        |      |      |        |      |
| 10 | 12 | 18 | 1                | 1011 |        | 1012 | 1015 |      |        | 1017 |      |        |      |
| 12 | 14 | 20 | 1                |      |        | 1212 | 1215 |      |        | 1217 | 1220 |        |      |
| 13 | 15 | 21 | 1                |      |        |      | 1315 |      |        |      | 1320 |        |      |
| 14 | 16 | 22 | 1                |      |        | 1412 | 1415 |      |        | 1417 | 1420 |        |      |
| 15 | 17 | 23 | 1                | 1511 |        | 1512 | 1515 |      |        | 1517 | 1520 |        |      |
| 16 | 18 | 24 | 1                |      |        | 1612 | 1615 |      |        | 1617 |      |        | 1622 |
| 18 | 20 | 26 | 1                |      |        | 1812 | 1815 |      |        | 1817 |      |        | 1822 |
| 20 | 23 | 30 | 1.5              |      | 2011.5 |      | 2015 |      | 2016.5 |      | 2020 | 2021.5 |      |
| 22 | 25 | 33 | 1.5              |      | 2211.5 |      |      |      | 2216.5 |      |      | 2221.5 |      |
| 25 | 28 | 35 | 1.5              |      | 2511.5 | 2512 |      |      | 2516.5 |      |      | 2521.5 |      |
| 30 | 34 | 42 | 2                |      |        |      |      | 3016 |        |      | 3020 |        | 3022 |
| 32 | 36 | 46 | 2                |      |        |      |      |      |        |      |      |        | 3222 |
| 35 | 39 | 47 | 2                |      |        |      |      | 3516 |        |      | 3520 |        | 3522 |
| 40 | 44 | 53 | 2                |      |        |      |      |      |        |      | 4020 |        |      |
| 45 | 50 | 58 | 2.5              |      |        |      |      | 4516 |        |      |      |        | 4522 |
| 50 | 55 | 65 | 2.5              |      |        |      |      | 5016 |        |      | 5020 |        | 5022 |

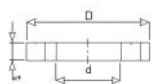
|     |     |     | L                | 25   | 26   | 26.5   | 30   | 40   | 50   | 60    | 70    | 80    | 100    |
|-----|-----|-----|------------------|------|------|--------|------|------|------|-------|-------|-------|--------|
| d   | D   | D1  | Flange thickness |      |      |        |      |      |      |       |       |       |        |
| 20  | 23  | 30  | 1.5              | 2025 |      | 2026.5 |      |      |      |       |       |       |        |
| 22  | 25  | 33  | 1.5              |      |      | 2226.5 |      |      |      |       |       |       |        |
| 25  | 28  | 35  | 1.5              |      |      | 2526.5 |      |      |      |       |       |       |        |
| 30  | 34  | 42  | 2                |      | 3026 |        | 3030 | 3040 |      |       |       |       |        |
| 32  | 36  | 46  | 2                |      |      |        | 3230 |      |      |       |       |       |        |
| 35  | 39  | 47  | 2                |      | 3526 |        | 3530 | 3540 | 3550 |       |       |       |        |
| 40  | 44  | 53  | 2                |      | 4026 |        | 4030 | 4040 |      |       |       |       |        |
| 45  | 50  | 58  | 2.5              |      | 4526 |        | 4530 | 4540 |      |       |       |       |        |
| 50  | 55  | 65  | 2.5              | 5025 | 5026 |        | 5030 | 5040 | 5050 | 5060  |       |       |        |
| 55  | 60  | 70  | 2.5              |      |      |        |      | 5540 |      |       |       |       |        |
| 60  | 65  | 75  | 2.5              |      |      |        | 6030 | 6040 | 6050 | 6060  |       |       |        |
| 70  | 75  | 85  | 2.5              |      |      |        | 7030 | 7040 | 7050 |       | 7070  |       |        |
| 75  | 80  | 90  | 2.5              |      |      |        |      |      |      | 7560  |       | 7580  |        |
| 80  | 85  | 95  | 2.5              |      |      |        |      | 8040 | 8050 | 8060  |       | 8080  | 80100  |
| 85  | 90  | 100 | 2.5              |      |      |        |      |      |      |       |       |       | 85100  |
| 90  | 95  | 110 | 2.5              |      |      |        |      | 9040 |      | 9060  |       | 9090  | 90100  |
| 100 | 105 | 120 | 2.5              |      |      |        |      |      |      | 10060 | 10070 |       | 100100 |
| 110 | 115 | 130 | 2.5              |      |      |        |      |      |      | 11060 |       |       |        |
| 120 | 125 | 150 | 2.5              |      |      |        |      |      |      | 12060 | 12070 |       | 120100 |
| 130 | 135 | 155 | 2.5              |      |      |        |      |      |      |       |       |       | 130100 |
| 140 | 145 | 165 | 2.5              |      |      |        |      |      |      | 14060 |       | 14080 |        |
| 160 | 165 | 190 | 2.5              |      |      |        |      |      |      |       |       | 16080 | 160100 |
| 220 | 225 | 235 | 2.5              |      |      |        |      |      |      |       |       |       | 220100 |
| 250 | 255 | 290 | 2.5              |      |      |        |      |      |      |       |       |       | 250100 |

### Thrust washer



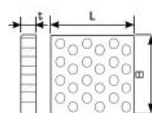
| Art. Nr. | d  | D  | t   |
|----------|----|----|-----|
| 1        | 10 | 20 | 1.5 |
| 2        | 12 | 24 | 1.5 |
| 3        | 14 | 26 | 1.5 |
| 4        | 16 | 30 | 1.5 |
| 5        | 18 | 32 | 1.5 |
| 6        | 20 | 36 | 1.5 |
| 7        | 22 | 38 | 1.5 |
| 8        | 24 | 42 | 1.5 |
| 9        | 26 | 44 | 1.5 |
| 10       | 28 | 48 | 1.5 |
| 11       | 32 | 54 | 1.5 |
| 12       | 38 | 62 | 1.5 |
| 13       | 42 | 66 | 1.5 |
| 14       | 48 | 74 | 2.0 |
| 15       | 52 | 78 | 2.0 |
| 16       | 62 | 90 | 2.0 |

### Thrust washer



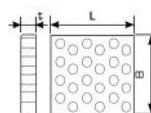
| Art. Nr. | d  |  | D  |  | t   |
|----------|----|--|----|--|-----|
| 1        | 10 |  | 20 |  | 1.5 |
| 2        | 12 |  | 24 |  | 1.5 |
| 3        | 14 |  | 26 |  | 1.5 |
| 4        | 16 |  | 30 |  | 1.5 |
| 5        | 18 |  | 32 |  | 1.5 |
| 6        | 20 |  | 36 |  | 1.5 |
| 7        | 22 |  | 38 |  | 1.5 |
| 8        | 24 |  | 42 |  | 1.5 |
| 9        | 26 |  | 44 |  | 1.5 |
| 10       | 28 |  | 48 |  | 1.5 |
| 11       | 32 |  | 54 |  | 1.5 |
| 12       | 38 |  | 62 |  | 1.5 |
| 13       | 42 |  | 66 |  | 1.5 |
| 14       | 48 |  | 74 |  | 2   |
| 15       | 52 |  | 78 |  | 2   |
| 16       | 62 |  | 90 |  | 2   |

### Strips



| Art. Nr. | B   | L   | t   |
|----------|-----|-----|-----|
| 1        | 245 | 500 | 1.0 |
| 2        | 245 | 500 | 1.5 |
| 3        | 245 | 500 | 2.0 |
| 4        | 245 | 500 | 2.5 |
| 5        | 245 | 500 | 3.0 |

### Strips



| Art. Nr. | B   | L   | t   |
|----------|-----|-----|-----|
| 1        | 245 | 500 | 1.0 |
| 2        | 245 | 500 | 1.5 |
| 3        | 245 | 500 | 2.0 |
| 4        | 245 | 500 | 2.5 |
| 5        | 245 | 500 | 3.0 |

# PTFE METAL BUSHING



steel sliding bushing/sleeve, heavy-maintenance

**Wrapped composite sliding bearing, stainless steel / PTFE coated • Maintenance-free • DIN 1494 / ISO 3547**

|                                |                                                                                                                                            |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PROPERTIES</b>              | Excellent sliding and wear behaviour, for all types of movement, high load capacity, all-round adaptable.                                  |
| <b>MATERIALS</b>               |                                                                                                                                            |
| Support material               | SS 304 (1.4301) / SS 316 (1.4401)                                                                                                          |
| Intermediate layer             | Sintered bronze (only for SS 304)                                                                                                          |
| Sliding layer                  | PTFE                                                                                                                                       |
| <b>MATERIAL PROPERTIES</b>     |                                                                                                                                            |
| Specific load capacity static  | $\leq 250$ [ N/mm <sup>2</sup> ]                                                                                                           |
| Specific load capacity dynamic | $\leq 140$ [ N/mm <sup>2</sup> ] at low sliding speeds                                                                                     |
| Sliding speed                  | $\leq 2.0$ [ m/s ]                                                                                                                         |
| Friction value                 | 0.02 – 0.20 [ $\mu$ ]                                                                                                                      |
| Temperature strain             | -200 – +280 [ °C ]                                                                                                                         |
| Max. $p_v$ - value             | 1.8 [ N/mm <sup>2</sup> x m/s ] for a short time 3.6                                                                                       |
| <b>TOLERANCE DETAILS</b>       |                                                                                                                                            |
| Housing Ø                      | H7                                                                                                                                         |
| Bushing Inner Ø after mounting | H9                                                                                                                                         |
| Shaft tolerance                | f7 or h8                                                                                                                                   |
| <b>SHAFT MATERIAL</b>          | Steel, hardened or untempered, wsurface roughness $R_a < 4 \mu\text{m}$                                                                    |
| <b>MOUNTING ADVICE</b>         |                                                                                                                                            |
| Housing                        | Mounting chamfer, min. 1,5 mm x 15-45°                                                                                                     |
| Shaft                          | Mounting chamfer, 5 mm x 15°, edges rounded                                                                                                |
| Force fitting mandrel          | Application of an adequate force fitting mandrel is advisable.<br>Grease lubrication of the outer surface may be necessary when mounting.  |
| <b>MAINTENANCE</b>             | Stainless steel Backed ushing is a dry sliding earing with PTFE sliding layer. Lurication is therefore not necessary, ut asically possile! |

We swiftly craft all specialized designs upon request! Cylindrical and flange ushings, thrust washers, and strips are our standard farications. Punchings and moldings are meticulously produced to meet customer specifications.

# Cylindrical bushing

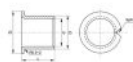


|    | L   | 3    | 4    | 6    | 8    | 10    | 12    | 15    | 20    | 25    | 30    | 35   | 40    | 50    |
|----|-----|------|------|------|------|-------|-------|-------|-------|-------|-------|------|-------|-------|
| d  | D   |      |      |      |      |       |       |       |       |       |       |      |       |       |
| 03 | 4.5 | 0303 | 0304 |      |      |       |       |       |       |       |       |      |       |       |
| 04 | 5.5 | 0403 | 0404 | 0406 | 0408 |       |       |       |       |       |       |      |       |       |
| 06 | 08  |      | 0604 | 0606 | 0608 | 0610  |       |       |       |       |       |      |       |       |
| 07 | 09  |      |      | 0706 | 0708 | 0710  |       | 0715  |       |       |       |      |       |       |
| 08 | 10  |      |      | 0806 | 0808 | 0810  | 0812  | 0815  | 0820  |       |       |      |       |       |
| 10 | 12  |      |      | 1006 | 1008 | 1010  | 1012  | 1015  | 1020  |       |       |      |       |       |
| 12 | 14  |      |      | 1206 | 1208 | 1210  | 1212  | 1215  | 1220  | 1225  |       |      |       |       |
| 13 | 15  |      |      |      |      | 1310  | 1312  | 1315  | 1320  |       |       |      |       |       |
| 14 | 16  |      |      |      |      | 1410  | 1412  | 1415  | 1420  | 1425  |       |      |       |       |
| 15 | 17  |      |      |      | 1508 | 1510  | 1512  | 1515  | 1520  | 1525  |       |      |       |       |
| 16 | 18  |      |      |      | 1608 | 1610  | 1612  | 1615  | 1620  | 1625  |       |      |       |       |
| 17 | 19  |      |      |      |      | 1710  | 1712  | 1715  | 1720  | 1725  |       |      |       |       |
| 18 | 20  |      |      |      | 1808 | 1810  | 1812  | 1815  | 1820  | 1825  | 1830  |      |       |       |
| 20 | 22  |      |      |      |      | 2010A | 2012A | 2015A | 2020A | 2025A | 2030A |      | 2040A |       |
| 20 | 23  |      |      |      |      | 2010B | 2012B | 2015B | 2020B | 2025B | 2030B |      | 2040B |       |
| 22 | 25  |      |      |      |      | 2210  | 2212  | 2215  | 2220  | 2225  | 2230  |      |       | 2250  |
| 24 | 27  |      |      |      |      | 2410A | 2412A | 2415A | 2420A | 2425A | 2430A |      |       | 2450A |
| 24 | 28  |      |      |      |      | 2410B | 2412B | 2415B | 2420B | 2425B | 2430B |      | 2440B | 2450B |
| 25 | 28  |      |      |      |      | 2510  | 2512  | 2515  | 2520  | 2525  | 2530  | 2535 | 2540  | 2550  |
| 26 | 30  |      |      |      |      | 2610  | 2612  | 2615  | 2620  | 2625  | 2630  | 2635 | 2640  | 2650  |
| 28 | 32  |      |      |      |      | 2810  | 2812  | 2815  | 2820  | 2825  | 2830  |      | 2840  | 2850  |
| 30 | 34  |      |      |      |      | 3010  | 3012  | 3015  | 3020  | 3025  | 3030  | 3035 | 3040  | 3050  |
| 32 | 36  |      |      |      |      | 3210  | 3212  | 3215  | 3220  | 3225  | 3230  |      | 3240  | 3250  |
| 35 | 39  |      |      |      |      | 3510  | 3512  | 3515  | 3520  | 3525  | 3530  | 3535 | 3540  | 3550  |

|     | L   | 15    | 20   | 25    | 30    | 35   | 40    | 45   | 50    | 55    | 60    | 70    | 80    | 90    |
|-----|-----|-------|------|-------|-------|------|-------|------|-------|-------|-------|-------|-------|-------|
| d   | D   |       |      |       |       |      |       |      |       |       |       |       |       |       |
| 38  | 42  | 3815  | 3820 | 3825  | 3830  | 3835 | 3840  |      | 3850  | 3855  | 3860  |       |       |       |
| 40  | 44  | 4015  | 4020 | 4025  | 4030  | 4035 | 4040  | 4045 | 4050  | 4055  | 4060  |       |       |       |
| 42  | 46  | 4215  | 4220 | 4225  | 4230  | 4235 | 4240  |      | 4250  |       | 4260  |       |       |       |
| 45  | 50  | 4515  | 4520 | 4525  | 4530  | 4535 | 4540  | 4545 | 4550  |       | 4560  |       |       |       |
| 50  | 55  | 5015  | 5020 | 5025  | 5030  | 5035 | 5040  | 5045 | 5050  | 5055  | 5060  | 5070  | 5080  |       |
| 55  | 60  | 5515  | 5520 | 5525  | 5530  | 5535 | 5540  | 5545 | 5550  | 5555  | 5560  | 5570  |       |       |
| 60  | 65  | 6015  | 6020 | 6025  | 6030  | 6035 | 6040  | 6045 | 6050  | 6055  | 6060  | 6070  | 6080  | 6090  |
| 65  | 70  | 6515  | 6520 | 6525  | 6530  |      | 6540  | 6545 | 6550  |       | 6560  | 6570  | 6580  | 6590  |
| 70  | 75  | 7015  | 7020 | 7025  | 7030  | 7035 | 7040  | 7045 | 7050  |       | 7060  | 7070  | 7080  | 7090  |
| 75  | 80  |       |      |       | 7530  |      | 7540  | 7545 | 7550  |       | 7560  | 7570  | 7580  | 7590  |
| 80  | 85  | 8015  | 8020 | 8025  | 8030  | 8035 | 8040  | 8045 | 8050  |       | 8060  | 8070  | 8080  | 8090  |
| 85  | 90  |       | 8520 |       | 8530  |      | 8540  |      | 8550  |       | 8560  | 8570  | 8580  | 8590  |
| 90  | 95  | 9015  | 9020 |       | 9030  |      | 9040  |      | 9050  | 9055  | 9060  | 9070  | 9080  | 9090  |
| 95  | 100 |       |      | 9525  | 9530  |      | 9540  | 9545 | 9550  |       | 9560  | 9570  | 9580  | 9590  |
| 100 | 105 | 10015 |      | 10025 | 10030 |      | 10040 |      | 10050 | 10055 | 10060 | 10070 | 10080 | 10090 |

|     | L   | 50    | 60    | 70    | 80    | 90    | 100    | 110    | 115    | 120    | 130    | 140    | 150    |
|-----|-----|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| d   | D   |       |       |       |       |       |        |        |        |        |        |        |        |
| 100 | 105 |       |       |       |       |       | 100100 | 100110 | 100115 |        |        |        |        |
| 105 | 110 | 10550 | 10560 | 10570 | 10580 | 10590 | 105100 |        | 105115 |        |        |        |        |
| 110 | 115 | 11050 | 11060 | 11070 | 11080 | 11090 | 110100 | 110110 | 110115 | 110120 |        |        |        |
| 115 | 120 | 11550 | 11560 | 11570 |       |       | 115100 |        | 115115 | 115120 |        |        |        |
| 120 | 125 | 12050 | 12060 | 12070 | 12080 | 12090 | 120100 |        |        | 120120 |        |        |        |
| 125 | 130 | 12550 | 12560 | 12570 | 12580 |       | 125100 |        |        |        |        |        |        |
| 130 | 135 |       | 13060 | 13070 | 13080 | 13090 | 130100 |        |        |        |        |        |        |
| 135 | 140 |       | 13560 | 13570 | 13580 | 13590 | 135100 |        |        |        |        |        |        |
| 140 | 145 |       | 14060 | 14070 | 14080 | 14090 | 140100 |        |        |        |        |        |        |
| 150 | 155 |       | 15060 | 15070 | 15080 | 15090 | 150100 |        |        |        |        |        |        |
| 160 | 165 |       | 16060 | 16070 | 16080 | 16090 | 160100 | 160110 |        | 160120 | 160130 | 160140 | 160150 |
| 170 | 175 |       | 17060 | 17070 | 17080 | 17090 | 170100 | 170110 |        | 170120 | 170130 | 170140 | 170150 |
| 180 | 185 |       | 18060 | 18070 | 18080 | 18090 | 180100 | 180110 |        | 180120 | 180130 | 180140 | 180150 |
| 200 | 205 |       | 20060 | 20070 | 20080 | 20090 | 200100 | 200110 |        | 200120 | 200130 | 200140 | 200150 |
| 220 | 225 |       | 22060 | 22070 | 22080 | 22090 | 220100 | 220110 |        | 220120 | 220130 | 220140 | 220150 |
| 250 | 255 |       | 25060 | 25070 | 25080 | 25090 | 250100 | 250110 |        | 250120 | 250130 | 250140 | 250150 |
| 300 | 305 |       | 30060 | 30070 | 30080 | 30090 | 300100 | 300110 |        | 300120 | 300130 | 300140 | 300150 |

# Flange bushing

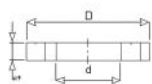


|    |     |    | L                | 4    | 5    | 05.5   | 6    | 7    | 07.5   | 8    | 9    | 09.5   | 10   |
|----|-----|----|------------------|------|------|--------|------|------|--------|------|------|--------|------|
| d  | D   | D1 | Flange thickness |      |      |        |      |      |        |      |      |        |      |
| 03 | 4.5 | 7  | 0.75             | 0304 |      |        |      |      |        |      |      |        |      |
| 04 | 5.5 | 9  | 0.75             | 0404 |      |        |      |      |        |      |      |        | 0410 |
| 05 | 07  | 10 | 1                |      | 0505 |        | 0506 |      |        |      |      |        |      |
| 06 | 08  | 12 | 1                | 0604 |      |        | 0606 | 0607 |        | 0608 |      |        | 0610 |
| 08 | 10  | 15 | 1                |      |      | 0805.5 |      |      | 0807.5 |      |      | 0809.5 | 0810 |
| 10 | 12  | 18 | 1                |      |      |        |      | 1007 |        |      | 1009 |        | 1010 |
| 12 | 14  | 20 | 1                |      |      |        | 1206 | 1207 |        |      | 1209 |        | 1210 |
| 14 | 16  | 22 | 1                |      |      |        |      |      |        |      |      |        | 1410 |
| 15 | 17  | 23 | 1                |      |      |        |      |      |        |      | 1509 |        | 1510 |

|    |    |    | L                | 11   | 11.5   | 12   | 15   | 16   | 16.5   | 17   | 20   | 21.5   | 22   |
|----|----|----|------------------|------|--------|------|------|------|--------|------|------|--------|------|
| d  | D  | D1 | Flange thickness |      |        |      |      |      |        |      |      |        |      |
| 10 | 12 | 18 | 1                | 1011 |        | 1012 | 1015 |      |        | 1017 |      |        |      |
| 12 | 14 | 20 | 1                |      |        | 1212 | 1215 |      |        | 1217 | 1220 |        |      |
| 13 | 15 | 21 | 1                |      |        |      | 1315 |      |        |      | 1320 |        |      |
| 14 | 16 | 22 | 1                |      |        | 1412 | 1415 |      |        | 1417 | 1420 |        |      |
| 15 | 17 | 23 | 1                | 1511 |        | 1512 | 1515 |      |        | 1517 | 1520 |        |      |
| 16 | 18 | 24 | 1                |      |        | 1612 | 1615 |      |        | 1617 |      |        | 1622 |
| 18 | 20 | 26 | 1                |      |        | 1812 | 1815 |      |        | 1817 |      |        | 1822 |
| 20 | 23 | 30 | 1.5              |      | 2011.5 |      | 2015 |      | 2016.5 |      | 2020 | 2021.5 |      |
| 22 | 25 | 33 | 1.5              |      | 2211.5 |      |      |      | 2216.5 |      |      | 2221.5 |      |
| 25 | 28 | 35 | 1.5              |      | 2511.5 | 2512 |      |      | 2516.5 |      |      | 2521.5 |      |
| 30 | 34 | 42 | 2                |      |        |      |      | 3016 |        |      | 3020 |        | 3022 |
| 32 | 36 | 46 | 2                |      |        |      |      |      |        |      |      |        | 3222 |
| 35 | 39 | 47 | 2                |      |        |      |      | 3516 |        |      | 3520 |        | 3522 |
| 40 | 44 | 53 | 2                |      |        |      |      |      |        |      | 4020 |        |      |
| 45 | 50 | 58 | 2.5              |      |        |      |      | 4516 |        |      |      |        | 4522 |
| 50 | 55 | 65 | 2.5              |      |        |      |      | 5016 |        |      | 5020 |        | 5022 |

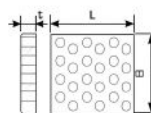
|     |     |     | L                | 25   | 26   | 26.5   | 30   | 40   | 50   | 60    | 70    | 80    | 100    |
|-----|-----|-----|------------------|------|------|--------|------|------|------|-------|-------|-------|--------|
| d   | D   | D1  | Flange thickness |      |      |        |      |      |      |       |       |       |        |
| 20  | 23  | 30  | 1.5              | 2025 |      | 2026.5 |      |      |      |       |       |       |        |
| 22  | 25  | 33  | 1.5              |      |      | 2226.5 |      |      |      |       |       |       |        |
| 25  | 28  | 35  | 1.5              |      |      | 2526.5 |      |      |      |       |       |       |        |
| 30  | 34  | 42  | 2                |      | 3026 |        | 3030 | 3040 |      |       |       |       |        |
| 32  | 36  | 46  | 2                |      |      |        | 3230 |      |      |       |       |       |        |
| 35  | 39  | 47  | 2                |      | 3526 |        | 3530 | 3540 | 3550 |       |       |       |        |
| 40  | 44  | 53  | 2                |      | 4026 |        | 4030 | 4040 |      |       |       |       |        |
| 45  | 50  | 58  | 2.5              |      | 4526 |        | 4530 | 4540 |      |       |       |       |        |
| 50  | 55  | 65  | 2.5              | 5025 | 5026 |        | 5030 | 5040 | 5050 | 5060  |       |       |        |
| 55  | 60  | 70  | 2.5              |      |      |        |      | 5540 |      |       |       |       |        |
| 60  | 65  | 75  | 2.5              |      |      |        | 6030 | 6040 | 6050 | 6060  |       |       |        |
| 70  | 75  | 85  | 2.5              |      |      |        | 7030 | 7040 | 7050 |       | 7070  |       |        |
| 75  | 80  | 90  | 2.5              |      |      |        |      |      |      | 7560  |       | 7580  |        |
| 80  | 85  | 95  | 2.5              |      |      |        |      | 8040 | 8050 | 8060  |       | 8080  | 80100  |
| 85  | 90  | 100 | 2.5              |      |      |        |      |      |      |       |       |       | 85100  |
| 90  | 95  | 110 | 2.5              |      |      |        |      | 9040 |      | 9060  |       | 9090  | 90100  |
| 100 | 105 | 120 | 2.5              |      |      |        |      |      |      | 10060 | 10070 |       | 100100 |
| 110 | 115 | 130 | 2.5              |      |      |        |      |      |      | 11060 |       |       |        |
| 120 | 125 | 150 | 2.5              |      |      |        |      |      |      | 12060 | 12070 |       | 120100 |
| 130 | 135 | 155 | 2.5              |      |      |        |      |      |      |       |       |       | 130100 |
| 140 | 145 | 165 | 2.5              |      |      |        |      |      |      | 14060 |       | 14080 |        |
| 160 | 165 | 190 | 2.5              |      |      |        |      |      |      |       |       | 16080 | 160100 |
| 220 | 225 | 235 | 2.5              |      |      |        |      |      |      |       |       |       | 220100 |
| 250 | 255 | 290 | 2.5              |      |      |        |      |      |      |       |       |       | 250100 |

Thrust washer



| Art. Nr. | d  | D  | t   |
|----------|----|----|-----|
| 1        | 10 | 20 | 1.5 |
| 2        | 12 | 24 | 1.5 |
| 3        | 14 | 26 | 1.5 |
| 4        | 16 | 30 | 1.5 |
| 5        | 18 | 32 | 1.5 |
| 6        | 20 | 36 | 1.5 |
| 7        | 22 | 38 | 1.5 |
| 8        | 24 | 42 | 1.5 |
| 9        | 26 | 44 | 1.5 |
| 10       | 28 | 48 | 1.5 |
| 11       | 32 | 54 | 1.5 |
| 12       | 38 | 62 | 1.5 |
| 13       | 42 | 66 | 1.5 |
| 14       | 48 | 74 | 2   |
| 15       | 52 | 78 | 2   |
| 16       | 62 | 90 | 2   |

Thrust washer



| Art. Nr. | B   | L   | t   |
|----------|-----|-----|-----|
| 1        | 245 | 500 | 1.0 |
| 2        | 245 | 500 | 1.5 |
| 3        | 245 | 500 | 2.0 |
| 4        | 245 | 500 | 2.5 |
| 5        | 245 | 500 | 3.0 |

# Composite POM Bushing



wrapped composite sliding bearing, steel/acetal resin (POM),  
lubrication pockets, low-maintenance

**Wrapped composite sliding bearing, steel / POM, with lubrication pockets • Low-maintenance • DIN 1494 / ISO 3547**

|                                |                                                                                                                                                                                                                                                    |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PROPERTIES</b>              | Suitable for grease or oil lubrication and all kinds of movements, good load capacity, robust and insensitive to dirt.                                                                                                                             |
| <b>MATERIALS</b>               |                                                                                                                                                                                                                                                    |
| Support material               | Steel copper plated / tinplated                                                                                                                                                                                                                    |
| Intermediate layer             | Sintered bronze                                                                                                                                                                                                                                    |
| Sliding layer                  | Acetal resin / POM                                                                                                                                                                                                                                 |
| <b>MATERIAL PROPERTIES</b>     |                                                                                                                                                                                                                                                    |
| Specific load capacity static  | $\leq 250$ [ N/mm <sup>2</sup> ]                                                                                                                                                                                                                   |
| Specific load capacity dynamic | $\leq 140$ [ N/mm <sup>2</sup> ] at low sliding speeds                                                                                                                                                                                             |
| Sliding speed                  | $\leq 2.5$ [ m/s ]                                                                                                                                                                                                                                 |
| Friction value                 | 0.04 – 0.12 [ $\mu$ ] depending on lubrication                                                                                                                                                                                                     |
| Temperature strain             | -40 – +130 [ °C ] for a short time up to +130 °C                                                                                                                                                                                                   |
| Max. $p_v$ - value             | 2.8 [ N/mm <sup>2</sup> x m/s ]                                                                                                                                                                                                                    |
| <b>TOLERANCE DETAILS</b>       |                                                                                                                                                                                                                                                    |
| Housing Ø                      | H7                                                                                                                                                                                                                                                 |
| Bushing Inner Ø after mounting | D9                                                                                                                                                                                                                                                 |
| Shaft tolerance                | h8                                                                                                                                                                                                                                                 |
| <b>SHAFT MATERIAL</b>          | Steel, hardened or untempered, wsurface roughness $R_a < 4 \mu\text{m}$                                                                                                                                                                            |
| <b>MOUNTING ADVICE</b>         |                                                                                                                                                                                                                                                    |
| Housing                        | Mounting chamfer, min. 1,5 mm x 15-45°                                                                                                                                                                                                             |
| Shaft                          | Mounting chamfer, 5 mm x 15°, edges rounded                                                                                                                                                                                                        |
| Force fitting mandrel          | Application of an adequate force fitting mandrel is advisable.<br>Grease lubrication of the outer surface may be necessary when mounting.                                                                                                          |
| Glueing                        | Adhesive should not contact the sliding surface.                                                                                                                                                                                                   |
| <b>MAINTENANCE</b>             | POM bushing is a low-maintenance composite bearing featuring a POM sliding layer. Primary lubrication is essential. Both oil and grease lubrication are feasible. Due to the presence of lubrication pockets, lubrication intervals are minimized! |

We offer all specialized designs with short notice! Additional lubrication slots or lubrication drills are available upon request! Cylindrical bushings, thrust washers, and strips are standard fabrications.

# Cylindrical bushing



|    | L  | 05   | 06   | 08   | 10    | 12    | 15    | 20    | 25    | 30    | 35    | 40   | 50   | 60   |
|----|----|------|------|------|-------|-------|-------|-------|-------|-------|-------|------|------|------|
| d  | D  |      |      |      |       |       |       |       |       |       |       |      |      |      |
| 05 | 7  | 0505 |      |      |       |       |       |       |       |       |       |      |      |      |
| 06 | 08 |      | 0606 | 0608 | 0610  |       |       |       |       |       |       |      |      |      |
| 07 | 09 |      |      |      | 0710  |       |       |       |       |       |       |      |      |      |
| 08 | 10 | 0805 | 0806 | 0808 | 0810  | 0812  |       |       |       |       |       |      |      |      |
| 10 | 12 |      | 1006 | 1008 | 1010  | 1012  | 1015  | 1020  |       |       |       |      |      |      |
| 12 | 14 |      |      | 1208 | 1210  | 1212  | 1215  | 1220  | 1225  |       |       |      |      |      |
| 13 | 15 |      |      |      | 1310  |       |       |       |       |       |       |      |      |      |
| 14 | 16 |      |      |      | 1410  | 1412  | 1415  | 1420  | 1425  |       |       |      |      |      |
| 15 | 17 |      |      |      | 1510  | 1512  | 1515  | 1520  | 1525  |       |       |      |      |      |
| 16 | 18 |      |      | 1608 | 1610  | 1612  | 1615  | 1620  | 1625  |       |       |      |      |      |
| 17 | 19 |      |      |      |       |       | 1715  | 1720  |       |       |       |      |      |      |
| 18 | 20 |      |      |      | 1810  | 1812  | 1815  | 1820  | 1825  |       |       |      |      |      |
| 20 | 22 |      |      |      | 2010A |       | 2015A | 2020A |       |       |       |      |      |      |
| 20 | 23 |      |      |      | 2010B | 2012B | 2015B | 2020B | 2025B | 2030B | 2040B |      |      |      |
| 22 | 25 |      |      |      |       |       | 2215  | 2220  | 2225  | 2230  | 2240  |      |      |      |
| 24 | 27 |      |      |      |       | 2412  | 2415  | 2420  | 2425  | 2430  | 2440  | 2450 |      |      |
| 25 | 28 |      |      |      | 2510  | 2512  | 2515  | 2520  | 2525  | 2530  | 2540  | 2550 |      |      |
| 26 | 30 |      |      |      |       |       |       |       |       | 2630  | 2640  | 2650 |      |      |
| 28 | 31 |      |      |      |       |       |       |       | 2825A | 2830A |       |      |      |      |
| 28 | 32 |      |      |      |       |       | 2815B | 2820B | 2825  | 2830  | 2840  |      |      |      |
| 30 | 34 |      |      |      | 3010  | 3012  | 3015  | 3020  | 3025  | 3030  | 3040  | 3050 |      |      |
| 32 | 36 |      |      |      |       |       |       | 3220  | 3225  | 3230  | 3240  | 3250 |      |      |
| 35 | 39 |      |      |      |       |       | 3515  | 3520  | 3525  | 3530  | 3540  | 3550 |      |      |
| 38 | 42 |      |      |      |       |       | 3815  | 3820  | 3825  | 3830  | 3835  | 3840 | 3850 | 3860 |
| 40 | 44 |      |      |      | 4010  |       |       | 4020  | 4025  | 4030  | 4035  | 4040 | 4050 | 4060 |
| 45 | 50 |      |      |      |       |       |       | 4520  |       | 4530  | 4535  | 4540 | 4550 | 4560 |

|     | L   | 10   | 15   | 20    | 25   | 30    | 35   | 40    | 50    | 60    | 70    | 80    | 90    | 100    |
|-----|-----|------|------|-------|------|-------|------|-------|-------|-------|-------|-------|-------|--------|
| d   | D   |      |      |       |      |       |      |       |       |       |       |       |       |        |
| 50  | 55  |      | 5015 | 5020  | 5025 | 5030  | 5035 | 5040  | 5050  | 5060  | 5070  |       |       |        |
| 55  | 60  | 5510 | 5515 | 5520  | 5525 | 5530  | 5535 | 5540  | 5550  | 5560  | 5570  |       |       |        |
| 60  | 65  | 6010 | 6015 | 6020  | 6025 | 6030  | 6035 | 6040  | 6050  | 6060  | 6070  | 6080  | 6090  |        |
| 65  | 70  |      | 6515 | 6520  | 6525 | 6530  | 6535 | 6540  | 6550  | 6560  | 6570  | 6580  |       |        |
| 70  | 75  |      |      | 7020  | 7025 | 7030  | 7035 | 7040  | 7050  | 7060  | 7070  | 7080  | 7090  |        |
| 75  | 80  |      |      | 7520  |      | 7530  |      | 7540  | 7550  | 7560  | 7570  | 7580  |       |        |
| 80  | 85  |      |      |       |      | 8030  |      | 8040  | 8050  | 8060  | 8070  | 8080  |       | 80100  |
| 85  | 90  |      |      | 8520  |      | 8530  |      | 8540  | 8550  | 8560  | 8570  | 8580  | 8590  | 85100  |
| 90  | 95  |      |      |       |      | 9030  |      | 9040  | 9050  | 9060  | 9070  | 9080  | 9090  | 90100  |
| 95  | 100 |      |      |       |      | 9530  |      | 9540  | 9550  | 9560  | 9570  | 9580  | 9590  | 95100  |
| 100 | 105 |      |      |       |      | 10030 |      | 10040 | 10050 | 10060 | 10070 | 10080 | 10090 | 100100 |
| 105 | 110 |      |      |       |      |       |      | 10540 | 10550 | 10560 | 10570 | 10580 | 10590 | 105100 |
| 110 | 115 |      |      |       |      |       |      | 11040 | 11050 | 11060 | 11070 | 11080 | 11090 | 110100 |
| 120 | 125 |      |      | 12020 |      |       |      | 12040 | 12050 | 12060 | 12070 | 12080 | 12090 | 120100 |

|     | L   | 50    | 60    | 70    | 80    | 90    | 100    | 110    | 115    | 120    | 130    | 140    | 150    |
|-----|-----|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| d   | D   |       |       |       |       |       |        |        |        |        |        |        |        |
| 105 | 110 |       |       |       |       |       |        | 105110 | 105115 |        |        |        |        |
| 110 | 115 |       |       |       |       |       |        | 110110 | 110115 |        |        |        |        |
| 115 | 120 | 11550 | 11560 | 11570 | 11580 | 11590 | 115100 | 115110 | 115115 |        |        |        |        |
| 120 | 125 |       |       |       |       |       |        | 120110 | 120115 | 120120 |        | 120140 |        |
| 125 | 130 | 12550 | 12560 | 12070 | 12580 | 12590 | 125100 | 125110 | 125115 | 125120 |        |        |        |
| 130 | 135 | 13050 | 13060 | 13070 | 13080 | 13090 | 130100 | 130110 |        | 130120 |        | 130140 |        |
| 135 | 140 | 13550 | 13560 | 13570 | 13580 | 13590 | 135100 | 135110 |        | 135120 |        |        |        |
| 140 | 145 | 14050 | 14060 | 14070 | 14080 | 14090 | 140100 | 140110 |        | 140120 |        |        |        |
| 150 | 155 | 15050 | 15060 | 15070 | 15080 | 15090 | 150100 | 150110 |        | 150120 |        |        | 150150 |
| 160 | 165 | 16050 | 16060 | 16070 | 16080 | 16090 | 160100 | 160110 |        | 160120 | 160130 | 160140 | 160150 |
| 170 | 175 | 17050 | 17060 | 17070 | 17080 | 17090 | 170100 | 170110 |        | 170120 | 170130 | 170140 | 170150 |
| 180 | 185 | 18050 | 18060 | 18070 | 18080 | 18090 | 180100 | 180110 |        | 180120 | 180130 | 180140 | 180150 |
| 200 | 205 | 20050 | 20060 | 20070 | 20080 | 20090 | 200100 | 200110 |        | 200120 | 200130 | 200140 | 200150 |
| 220 | 225 | 22050 | 22060 | 22070 | 22080 | 22090 | 220100 | 220110 |        | 220120 | 220130 | 220140 | 220150 |
| 250 | 255 |       | 25060 | 25070 | 25080 | 25090 | 250100 | 250110 |        | 250120 | 250130 | 250140 | 250150 |
| 300 | 305 |       | 30060 | 30070 | 30080 | 30090 | 300100 | 300110 |        | 300120 | 300130 | 300140 | 300150 |

## Wrapped Bronze Bearings



wrapped bronze sliding bearing, lubrication pockets, low-maintenance

## CuSn8 Bronze Bearings



wrapped bronze sliding bearing, perforations, low-maintenance

## Wrapped bronze sliding bearing, with lubrication pockets • Low-maintenance • DIN 1494 / ISO 3547

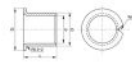
|                                    |                                                                                                                                                                                                                               |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PROPERTIES                         | Good load capacity and stability at low abrasion, suited for rough operation, corrosion resistant.                                                                                                                            |
| MATERIALS                          | CuSn8P (DIN 17662)                                                                                                                                                                                                            |
| MATERIAL PROPERTIES                |                                                                                                                                                                                                                               |
| Specific load capacity static      | $\leq 120$ [ N/mm <sup>2</sup> ]                                                                                                                                                                                              |
| Specific load capacity dynamic     | $\leq 40$ [ N/mm <sup>2</sup> ] at max. 2.0 m/s                                                                                                                                                                               |
| Sliding speed                      | $\leq 2.5$ [ m/s ]                                                                                                                                                                                                            |
| Friction value                     | 0.05 – 0.12 [ $\mu$ ] depending on lubrication                                                                                                                                                                                |
| Temperature strain                 | -40 – +250 [ °C ]                                                                                                                                                                                                             |
| Max. $p_v$ - value                 | 2.8 [ N/mm <sup>2</sup> x m/s ]                                                                                                                                                                                               |
| Percentage contact area (BRO-MET®) | > 75 [ % ]                                                                                                                                                                                                                    |
| TOLERANCE DETAILS                  |                                                                                                                                                                                                                               |
| Housing Ø                          | H7                                                                                                                                                                                                                            |
| Bushing Inner Ø after mounting     | H9                                                                                                                                                                                                                            |
| Shaft tolerance                    | f7 or h8                                                                                                                                                                                                                      |
| SHAFT MATERIAL                     | Steel, hardened or untempered, surface roughness $R_a < 0.8 \mu\text{m}$                                                                                                                                                      |
| MOUNTING ADVICE                    |                                                                                                                                                                                                                               |
| Housing                            | Mounting chamfer, min. 1,5 mm x 15-45°                                                                                                                                                                                        |
| Shaft                              | Mounting chamfer, 5 mm x 15°, edges rounded                                                                                                                                                                                   |
| Force fitting mandrel              | Application of an adequate force fitting mandrel is advisable.<br>Grease lubrication of the outer surface may be necessary when mounting.                                                                                     |
| MAINTENANCE                        | wrapped bronze bearing cusn8 are low-maintenance bronze sliding bearings, primary lubrication is necessary. Oil or grease lubrication is possible. Due to lubrication pockets lubrication intervals are reduced to a minimum! |

We offer all custom designs on short notice! Additional lubrication slots or lubrication drills are available upon request. Cylindrical and flange bushings, thrust washers, and strips are standard fabrications.

### Cylindrical bushing



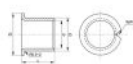
### Flanged Bushing



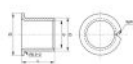
|    | L  | 6    | 8    | 10    | 12   | 15    | 20    | 25    | 30    | 35   | 40    | 50   | 60   | 70   |
|----|----|------|------|-------|------|-------|-------|-------|-------|------|-------|------|------|------|
| d  | D  |      |      |       |      |       |       |       |       |      |       |      |      |      |
| 06 | 08 |      | 0608 | 0610  |      |       |       |       |       |      |       |      |      |      |
| 08 | 10 |      | 0808 | 0810  | 0812 |       |       |       |       |      |       |      |      |      |
| 10 | 12 | 1006 |      | 1010  | 1012 | 1015  | 1020  |       |       |      |       |      |      |      |
| 12 | 14 |      | 1208 | 1210  | 1212 | 1215  | 1220  |       |       |      |       |      |      |      |
| 13 | 15 |      |      |       |      | 1315  | 1320  |       |       |      |       |      |      |      |
| 14 | 16 |      |      | 1410  | 1412 | 1415  | 1420  | 1425  |       |      |       |      |      |      |
| 15 | 17 |      | 1508 | 1510  | 1512 | 1515  | 1520  | 1525  |       |      |       |      |      |      |
| 16 | 18 |      |      | 1610  | 1612 | 1615  | 1620  | 1625  |       |      |       |      |      |      |
| 17 | 19 |      |      |       |      | 1715  | 1720  |       |       |      |       |      |      |      |
| 18 | 20 |      |      | 1810A |      | 1815A | 1820A | 1825A | 1830A |      |       |      |      |      |
| 18 | 21 |      |      |       |      | 1815B | 1820B |       | 1830B |      |       |      |      |      |
| 20 | 22 |      |      |       |      |       | 2020A | 2025A | 2030A |      |       |      |      |      |
| 20 | 23 |      |      |       |      |       | 2020B | 2025B | 2030B |      | 2040B |      |      |      |
| 22 | 25 |      |      |       |      | 2215  | 2220  | 2225  | 2230  |      | 2240  |      |      |      |
| 24 | 27 |      |      |       |      | 2415A | 2420A | 2425A | 2430A |      | 2440A |      |      |      |
| 24 | 28 |      |      |       |      | 2415B | 2420B | 2425B | 2430B |      |       |      |      |      |
| 25 | 28 |      |      |       |      | 2515  | 2520  | 2525  | 2530  |      | 2540  | 2550 |      |      |
| 28 | 31 |      |      |       |      | 2815A | 2820A | 2825A | 2830A |      |       |      |      |      |
| 28 | 32 |      |      |       |      | 2815B | 2820B | 2825B | 2830B |      | 2840B |      |      |      |
| 30 | 34 |      |      | 3010  | 3012 | 3015  | 3020  | 3025  | 3030  |      | 3040  | 3050 |      |      |
| 32 | 36 |      |      |       |      | 3215  | 3220  | 3225  | 3230  |      | 3240  | 3250 |      |      |
| 35 | 39 |      |      | 3510  |      | 3515  | 3520  | 3525  | 3530  |      | 3540  | 3550 |      |      |
| 38 | 42 |      |      |       |      |       |       | 3825  | 3830  |      | 3840  | 3850 | 3860 |      |
| 40 | 44 |      |      |       |      | 4015  | 4020  | 4025  | 4030  | 4035 | 4040  | 4050 | 4060 | 4070 |
| 42 | 46 |      |      |       |      |       | 4220  |       | 4230  |      |       |      |      |      |
| 45 | 50 |      |      |       |      |       | 4520  |       | 4530  |      | 4540  | 4550 | 4560 |      |
| 50 | 55 |      |      | 5010  |      | 5015  | 5020  | 5025  | 5030  | 5035 | 5040  | 5050 | 5060 | 5070 |
| 55 | 60 |      |      |       |      | 5515  | 5520  | 5525  | 5530  | 5535 | 5540  | 5550 | 5560 | 5570 |

|     | L   | 20    | 30    | 40    | 50    | 60    | 70    | 80    | 90    | 100    | 120    | 130    | 140    | 150    |
|-----|-----|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
| d   | D   |       |       |       |       |       |       |       |       |        |        |        |        |        |
| 60  | 65  | 6020  | 6030  | 6040  | 6050  | 6060  | 6070  | 6080  | 6090  |        |        |        |        |        |
| 65  | 70  | 6520  | 6530  | 6540  | 6550  | 6560  | 6570  | 6580  | 6590  |        |        |        |        |        |
| 70  | 75  | 7020  | 7030  | 7040  | 7050  | 7060  | 7070  | 7080  | 7090  |        |        |        |        |        |
| 75  | 80  |       | 7530  | 7540  | 7550  | 7560  | 7570  | 7580  | 7590  |        |        |        |        |        |
| 80  | 85  | 8020  | 8030  | 8040  | 8050  | 8060  | 8070  | 8080  | 8090  | 80100  |        |        |        |        |
| 85  | 90  |       | 8530  | 8540  | 8550  | 8560  | 8570  | 8580  | 8590  |        |        |        |        |        |
| 90  | 95  |       | 9030  | 9040  | 9050  | 9060  | 9070  | 9080  | 9090  | 90100  | 90120  |        |        |        |
| 95  | 100 |       |       | 9540  | 9550  | 9560  | 9570  | 9580  | 9590  | 95100  |        |        |        |        |
| 100 | 105 | 10020 | 10030 | 10040 | 10050 | 10060 | 10070 | 10080 | 10090 | 100100 | 100120 |        |        |        |
| 105 | 110 |       |       |       | 10550 | 10560 | 10570 | 10580 | 10590 | 105100 |        |        |        |        |
| 110 | 115 |       | 11030 |       | 11050 | 11060 | 11070 | 11080 | 11090 | 110100 |        |        |        |        |
| 115 | 120 |       |       | 11540 | 11550 | 11560 | 11570 | 11580 | 11590 | 115100 |        |        |        |        |
| 120 | 125 |       |       |       | 12050 | 12060 | 12070 | 12080 | 12090 |        |        |        |        |        |
| 125 | 130 |       |       |       |       | 12560 | 12570 | 12580 | 12590 | 125100 |        |        |        |        |
| 130 | 135 |       |       | 13040 | 13050 | 13060 | 13070 | 13080 | 13090 | 130100 | 130120 |        |        |        |
| 135 | 140 |       |       |       |       | 13560 | 13570 | 13580 | 13590 |        | 135120 |        |        |        |
| 140 | 145 |       |       |       | 14050 | 14060 | 14070 | 14080 | 14090 | 140100 | 140120 |        |        |        |
| 150 | 155 |       |       |       |       | 15060 | 15070 | 15080 | 15090 | 150100 |        |        |        |        |
| 160 | 165 |       |       |       |       | 16060 | 16070 | 16080 | 16090 | 160100 | 160120 | 160130 | 160140 | 160150 |
| 170 | 175 |       |       |       |       | 17060 | 17070 | 17080 | 17090 | 170100 | 170120 | 170130 | 170140 | 170150 |
| 180 | 185 |       |       |       |       | 18060 | 18070 | 18080 | 18090 | 180100 | 180120 | 180130 | 180140 | 180150 |
| 200 | 205 |       |       |       |       | 20060 | 20070 | 20080 | 20090 | 200100 | 200120 | 200130 | 200140 | 200150 |
| 220 | 225 |       |       |       |       | 22060 | 22070 | 22080 | 22090 | 220100 | 220120 | 220130 | 220140 | 220150 |
| 250 | 255 |       |       |       |       | 25060 | 25070 | 25080 | 25090 | 250100 | 250120 | 250130 | 250140 | 250150 |
| 300 | 305 |       |       |       |       | 30060 | 30070 | 30080 | 30090 | 300100 | 300120 | 300130 | 300140 | 300150 |

### Flange bushing



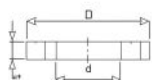
### Flange bushing



|    |    |    | L                | 11.5   | 15   | 16   | 16.5   | 20   | 21.5   | 25   | 26   | 30   | 35   | 40   |
|----|----|----|------------------|--------|------|------|--------|------|--------|------|------|------|------|------|
| d  | D  | D1 | Flange thickness |        |      |      |        |      |        |      |      |      |      |      |
| 20 | 23 | 30 | 1.5              | 2011.5 | 2015 | 2016 |        | 2020 |        | 2025 |      |      |      |      |
| 25 | 28 | 35 | 1.5              |        | 2515 |      | 2516.5 | 2520 | 2521.5 | 2525 |      | 2530 |      |      |
| 30 | 34 | 42 | 2                |        | 3015 |      |        | 3020 |        | 3025 | 3026 | 3030 |      | 3040 |
| 32 | 36 | 46 | 2                |        |      |      |        |      |        |      |      | 3230 |      |      |
| 35 | 39 | 47 | 2                |        | 3515 |      |        | 3520 |        |      | 3526 | 3530 | 3535 | 3540 |
| 40 | 44 | 55 | 2                |        |      | 4016 |        |      |        | 4025 |      | 4030 | 4035 | 4040 |

|     |     |     | L                | 20    | 25   | 30   | 35    | 40    | 50    | 60    | 70    | 80    | 90    | 100    |
|-----|-----|-----|------------------|-------|------|------|-------|-------|-------|-------|-------|-------|-------|--------|
| d   | D   | D1  | Flange thickness |       |      |      |       |       |       |       |       |       |       |        |
| 45  | 50  | 58  | 2.5              | 4520  |      | 4530 |       | 4540  | 4550  |       |       |       |       |        |
| 50  | 55  | 65  | 2.5              |       | 5025 | 5030 |       | 5040  | 5050  | 5060  |       |       |       |        |
| 55  | 60  | 70  | 2.5              |       |      | 5530 |       | 5540  | 5550  | 5560  |       |       |       |        |
| 60  | 65  | 75  | 2.5              |       |      | 6030 | 6035  | 6040  | 6050  | 6060  |       |       |       |        |
| 65  | 70  | 80  | 2.5              |       |      | 6530 |       | 6540  | 6550  | 6560  |       |       |       |        |
| 70  | 75  | 85  | 2.5              |       |      |      |       | 7040  | 7050  | 7060  | 7070  |       |       |        |
| 80  | 85  | 95  | 2.5              |       |      | 8030 | 8035  | 8040  | 8050  | 8060  | 8070  | 8080  |       |        |
| 85  | 90  | 100 | 2.5              |       |      |      |       |       |       |       |       |       |       |        |
| 90  | 95  | 110 | 2.5              |       |      |      |       |       | 9050  | 9060  | 9070  | 9080  | 9090  |        |
| 100 | 105 | 120 | 2.5              | 10020 |      |      | 10035 | 10040 | 10050 | 10060 | 10070 |       | 10090 | 100100 |
| 110 | 115 | 130 | 2.5              |       |      |      | 11035 | 11040 | 11050 | 11060 | 11070 |       | 11090 | 110100 |
| 120 | 125 | 150 | 2.5              |       |      |      |       |       | 12050 | 12060 | 12070 |       | 12090 | 120100 |
| 130 | 135 | 155 | 2.5              |       |      |      |       |       |       | 13060 |       |       | 13090 |        |
| 140 | 145 | 165 | 2.5              |       |      |      |       |       |       | 14060 |       |       | 14090 |        |
| 150 | 155 | 180 | 2.5              |       |      |      |       |       |       | 15060 | 15070 | 15080 | 15090 |        |
| 160 | 165 | 190 | 2.5              |       |      |      |       |       |       | 16060 | 16070 | 16080 | 16090 | 160100 |
| 180 | 185 | 215 | 2.5              |       |      |      |       |       |       | 18060 |       |       | 18090 | 180100 |
| 190 | 195 | 225 | 2.5              |       |      |      |       |       |       | 19060 | 19070 | 19080 | 19090 | 190100 |
| 200 | 205 | 235 | 2.5              |       |      |      |       |       |       | 20060 | 20070 | 20080 | 20090 | 200100 |
| 250 | 255 | 290 | 2.5              |       |      |      |       |       | 25050 |       |       |       | 25090 |        |
| 300 | 305 | 340 | 2.5              |       |      |      |       |       |       | 30060 |       |       | 30090 |        |

### Thrust washer



| Art. Nr. | d  | D  | t   |
|----------|----|----|-----|
| 1        | 10 | 20 | 1.5 |
| 2        | 12 | 24 | 1.5 |
| 3        | 14 | 26 | 1.5 |
| 4        | 16 | 30 | 1.5 |
| 5        | 18 | 32 | 1.5 |
| 6        | 20 | 36 | 1.5 |
| 7        | 22 | 38 | 1.5 |
| 8        | 24 | 42 | 1.5 |
| 9        | 26 | 44 | 1.5 |
| 10       | 28 | 48 | 1.5 |
| 11       | 32 | 54 | 1.5 |
| 12       | 38 | 62 | 1.5 |
| 13       | 42 | 66 | 1.5 |
| 14       | 48 | 74 | 2   |
| 15       | 52 | 78 | 2   |
| 16       | 62 | 90 | 2   |

# Bimetal Bearing Bushing



wrapped composite sliding bearing, steel/bronze, lubrication pockets,  
low-maintenance

## Wrapped composite sliding bearing steel / bronze with lubrication pockets Low-maintenance • DIN 1494 / ISO 3547

|                                |                                                                                                                                                                                                                       |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PROPERTIES</b>              | For high load capacity and oscillating movements, as well as for rough operation and temperature load. Long-run lubrication because of lubricant storages.                                                            |
| <b>MATERIALS</b>               |                                                                                                                                                                                                                       |
| Support material               | Steel copper-plated / tin-plated                                                                                                                                                                                      |
| Sliding layer                  | CuPb10Sn10                                                                                                                                                                                                            |
| <b>MATERIAL PROPERTIES</b>     |                                                                                                                                                                                                                       |
| Specific load capacity static  | $\leq 250$ [ N/mm <sup>2</sup> ]                                                                                                                                                                                      |
| Specific load capacity dynamic | $\leq 140$ [ N/mm <sup>2</sup> ]                                                                                                                                                                                      |
| Sliding speed                  | $\leq 2.5$ [ m/s ] oil lubricated $\leq 5$ m/s                                                                                                                                                                        |
| Friction value                 | 0.04 – 0.12 [ $\mu$ ] depending on lubrication                                                                                                                                                                        |
| Temperature strain             | -40 – +250 [ °C ]                                                                                                                                                                                                     |
| Max. $p_v$ - value             | 2.8 [ N/mm <sup>2</sup> x m/s ]                                                                                                                                                                                       |
| Percentage contact area        | > 75 [ % ]                                                                                                                                                                                                            |
| <b>TOLERANCE DETAILS</b>       |                                                                                                                                                                                                                       |
| Housing Ø                      | H7                                                                                                                                                                                                                    |
| Bushing Inner Ø after mounting | H9                                                                                                                                                                                                                    |
| Shaft tolerance                | f7                                                                                                                                                                                                                    |
| <b>SHAFT MATERIAL</b>          | Steel, hardened or untempered, surface roughness $R_a < 0.8 \mu\text{m}$                                                                                                                                              |
| <b>MOUNTING ADVICE</b>         |                                                                                                                                                                                                                       |
| Housing                        | Mounting chamfer, min. 1,5 mm x 15-45°                                                                                                                                                                                |
| Shaft                          | Mounting chamfer, 5 mm x 15°, edges rounded                                                                                                                                                                           |
| Force fitting mandrel          | Application of an adequate force fitting mandrel is advisable.<br>Grease lubrication of the outer surface may be necessary when mounting.                                                                             |
| <b>MAINTENANCE</b>             | Bimetal Bearing Bushing is a low-maintenance composite sliding bearing, but primary lubrication is necessary. Oil or grease lubrication is possible. Due to lubrication pockets, lubrication is reduced to a minimum. |

We produce all special designs at short notice! Flange bushings, punchings and moldings are produced on customer's requirement.  
Additional lubrication slots or lubrication drills are available on demand! Cylindrical bushings, thrust washer and strips are standard fabrication.

# Cylindrical bushing



|     | L   | 10   | 15   | 20   | 25   | 30   | 40   | 50    | 60    | 80    | 90    | 100    |
|-----|-----|------|------|------|------|------|------|-------|-------|-------|-------|--------|
| d   | D   |      |      |      |      |      |      |       |       |       |       |        |
| 10  | 12  | 1010 | 1015 | 1020 |      |      |      |       |       |       |       |        |
| 12  | 14  | 1210 | 1215 | 1220 |      |      |      |       |       |       |       |        |
| 14  | 16  | 1410 | 1415 | 1420 |      |      |      |       |       |       |       |        |
| 15  | 17  | 1510 | 1515 | 1520 |      |      |      |       |       |       |       |        |
| 16  | 18  | 1610 | 1615 | 1620 |      |      |      |       |       |       |       |        |
| 18  | 20  | 1810 | 1815 | 1820 | 1825 |      |      |       |       |       |       |        |
| 20  | 23  | 2010 | 2015 | 2020 | 2025 |      |      |       |       |       |       |        |
| 22  | 25  | 2210 | 2215 | 2220 | 2225 |      |      |       |       |       |       |        |
| 24  | 27  | 2410 | 2415 | 2420 |      | 2430 |      |       |       |       |       |        |
| 25  | 28  |      | 2515 | 2520 | 2525 | 2530 |      |       |       |       |       |        |
| 26  | 30  |      | 2615 | 2620 | 2625 | 2630 |      |       |       |       |       |        |
| 28  | 32  |      | 2815 | 2820 | 2825 | 2830 | 2840 |       |       |       |       |        |
| 30  | 34  |      | 3015 | 3020 | 3025 | 3030 | 3040 |       |       |       |       |        |
| 32  | 36  |      | 3215 | 3220 | 3225 | 3230 | 3240 |       |       |       |       |        |
| 35  | 39  |      |      | 3520 | 3525 | 3530 | 3540 | 3550  |       |       |       |        |
| 38  | 42  |      |      | 3820 | 3825 | 3830 | 3840 | 3850  |       |       |       |        |
| 40  | 44  |      |      | 4020 | 4025 | 4030 | 4040 | 4050  |       |       |       |        |
| 45  | 50  |      |      | 4520 | 4525 | 4530 | 4540 | 4550  |       |       |       |        |
| 50  | 55  |      |      |      |      | 5030 | 5040 | 5050  | 5060  |       |       |        |
| 55  | 60  |      |      |      |      | 5530 | 5540 | 5550  | 5560  |       |       |        |
| 60  | 65  |      |      |      |      | 6030 |      | 6050  | 6060  |       |       |        |
| 65  | 70  |      |      |      |      | 6530 | 6540 | 6550  | 6560  |       |       |        |
| 70  | 75  |      |      |      |      | 7030 | 7040 | 7050  | 7060  | 7080  |       |        |
| 75  | 80  |      |      |      |      | 7530 | 7540 | 7550  | 7560  |       |       |        |
| 80  | 85  |      |      |      |      |      | 8040 | 8050  | 8060  | 8080  |       |        |
| 85  | 90  |      |      |      |      |      | 8540 | 8550  | 8560  | 8580  |       |        |
| 90  | 95  |      |      |      |      |      | 9040 | 9050  | 9060  | 9080  |       |        |
| 95  | 100 |      |      |      |      |      |      | 9550  | 9560  | 9580  | 9590  |        |
| 100 | 105 |      |      |      |      |      |      | 10050 | 10060 | 10080 | 10090 |        |
| 105 | 110 |      |      |      |      |      |      | 10550 | 10560 | 10580 |       |        |
| 110 | 115 |      |      |      |      |      |      | 11050 | 11060 | 11080 |       |        |
| 115 | 120 |      |      |      |      |      |      | 11550 | 11560 | 11580 |       |        |
| 120 | 125 |      |      |      |      |      |      | 12050 | 12060 | 12080 |       |        |
| 125 | 130 |      |      |      |      |      |      | 12550 | 12560 | 12580 |       | 125100 |
| 130 | 135 |      |      |      |      |      |      |       | 13060 | 13080 |       | 130100 |
| 135 | 140 |      |      |      |      |      |      |       | 13560 | 13580 |       | 135100 |
| 140 | 145 |      |      |      |      |      |      |       | 14060 | 14080 |       | 140100 |
| 150 | 155 |      |      |      |      |      |      |       | 15060 | 15080 | 15090 |        |
| 160 | 165 |      |      |      |      |      |      |       | 16060 | 16080 |       | 160100 |
| 170 | 175 |      |      |      |      |      |      |       | 17060 | 17080 |       | 170100 |
| 175 | 180 |      |      |      |      |      |      |       | 17560 | 17580 |       | 175100 |

## Metal Bearing with Graphite



wrapped bronze sliding bearing, solid lubricant, maintenance-free

## Bimetal Bearing Bushing with Graphite



wrapped composite sliding bearing, steel/bronze, solid lubricant, maintenance-free

**Wrapped bronze sliding bearing • Solid lubricant pockets • Maintenance-free • DIN 1494 / ISO 3547**

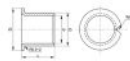
|                                            |                                                                                                                                                                                                                      |                                               |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| <b>PROPERTIES</b>                          | High load capacity and stability at low abrasion, excellent suitable at low sliding speeds and oscillating movements.                                                                                                |                                               |
| <b>MATERIALS</b>                           |                                                                                                                                                                                                                      |                                               |
|                                            | bimetal                                                                                                                                                                                                              | bimetal                                       |
| Support material                           | CuSn8P (DIN 17662)                                                                                                                                                                                                   | Steel copper-plated                           |
| Sliding layer                              |                                                                                                                                                                                                                      | CuPb10Sn10                                    |
| Solid lubricant                            | Lubrication pockets are filled with graphite.                                                                                                                                                                        | Lubrication pockets are filled with graphite. |
| <b>MATERIAL PROPERTIES</b>                 |                                                                                                                                                                                                                      |                                               |
| Specific load capacity static              | $\leq 120 \text{ [ N/mm}^2 \text{ ]}$                                                                                                                                                                                | $\leq 200 \text{ [ N/mm}^2 \text{ ]}$         |
| Specific load capacity dynamic             | $\leq 40 \text{ [ N/mm}^2 \text{ ]}$                                                                                                                                                                                 | $\leq 75 \text{ [ N/mm}^2 \text{ ]}$          |
| Sliding speed                              | $\leq 0.4 \text{ [ m/s ]}$                                                                                                                                                                                           | $\leq 0.4 \text{ [ m/s ]}$                    |
| Friction value                             | $0.03 - 0.25 \text{ [ } \mu \text{ ]}$                                                                                                                                                                               | $0.08 - 0.22 \text{ [ } \mu \text{ ]}$        |
| Temperature strain                         | $-100 - +200 \text{ [ } ^\circ\text{C ]}$                                                                                                                                                                            | $-100 - +200 \text{ [ } ^\circ\text{C ]}$     |
| Max. $p_v$ - value                         | $1.5 \text{ [ N/mm}^2 \times \text{m/s ]}$                                                                                                                                                                           | $1.5 \text{ [ N/mm}^2 \times \text{m/s ]}$    |
| <b>TOLERANCE DETAILS</b>                   |                                                                                                                                                                                                                      |                                               |
| Housing $\varnothing$                      | H7                                                                                                                                                                                                                   |                                               |
| Bushing Inner $\varnothing$ after mounting | H9                                                                                                                                                                                                                   |                                               |
| Shaft tolerance                            | f7                                                                                                                                                                                                                   |                                               |
| <b>SHAFT MATERIAL</b>                      | Steel, hardened or untempered, surface roughness $R_a < 0.8 \mu\text{m}$                                                                                                                                             |                                               |
| <b>MOUNTING ADVICE</b>                     |                                                                                                                                                                                                                      |                                               |
| Housing                                    | Mounting chamfer, min. 1,5 mm x 15–45°                                                                                                                                                                               |                                               |
| Shaft                                      | Mounting chamfer, 5 mm x 15°, edges rounded                                                                                                                                                                          |                                               |
| Force fitting mandrel                      | Application of an adequate force fitting mandrel is advisable.<br>Grease lubrication of the outer surface may be necessary when mounting.                                                                            |                                               |
| <b>MAINTENANCE</b>                         | bimetal bearing with graphite are maintenance-free bronzed sliding bearing with solid lubricant pockets, but primary lubrication is necessary! Therefore an ageing resistant lithium-stiffenedgrease should be used. |                                               |

We produce all special designs at short notice! Cylindrical bushings, thrust washer and strips are standard fabrication. Punchings and moldings are produced on customer's requirement.

Cylindrical bushing



Flanged bushing



|     | L   | 10   | 15   | 20   | 25   | 30   | 40   | 50    | 60    | 80    | 90    | 100    |
|-----|-----|------|------|------|------|------|------|-------|-------|-------|-------|--------|
| d   | D   |      |      |      |      |      |      |       |       |       |       |        |
| 10  | 12  | 1010 | 1015 | 1020 |      |      |      |       |       |       |       |        |
| 12  | 14  | 1210 | 1215 | 1220 |      |      |      |       |       |       |       |        |
| 14  | 16  | 1410 | 1415 | 1420 |      |      |      |       |       |       |       |        |
| 15  | 17  | 1510 | 1515 | 1520 |      |      |      |       |       |       |       |        |
| 16  | 18  | 1610 | 1615 | 1620 |      |      |      |       |       |       |       |        |
| 18  | 20  | 1810 | 1815 | 1820 | 1825 |      |      |       |       |       |       |        |
| 20  | 23  | 2010 | 2015 | 2020 | 2025 |      |      |       |       |       |       |        |
| 22  | 25  | 2210 | 2215 | 2220 | 2225 |      |      |       |       |       |       |        |
| 24  | 27  | 2410 | 2415 | 2420 |      | 2430 |      |       |       |       |       |        |
| 25  | 28  |      | 2515 | 2520 | 2525 | 2530 |      |       |       |       |       |        |
| 26  | 30  |      | 2615 | 2620 | 2625 | 2630 |      |       |       |       |       |        |
| 28  | 32  |      | 2815 | 2820 | 2825 | 2830 | 2840 |       |       |       |       |        |
| 30  | 34  |      | 3015 | 3020 | 3025 | 3030 | 3040 |       |       |       |       |        |
| 32  | 36  |      | 3215 | 3220 | 3225 | 3230 | 3240 |       |       |       |       |        |
| 35  | 39  |      |      | 3520 | 3525 | 3530 | 3540 | 3550  |       |       |       |        |
| 38  | 42  |      |      | 3820 | 3825 | 3830 | 3840 | 3850  |       |       |       |        |
| 40  | 44  |      |      | 4020 | 4025 | 4030 | 4040 | 4050  |       |       |       |        |
| 45  | 50  |      |      | 4520 | 4525 | 4530 | 4540 | 4550  |       |       |       |        |
| 50  | 55  |      |      |      |      | 5030 | 5040 | 5050  | 5060  |       |       |        |
| 55  | 60  |      |      |      |      | 5530 | 5540 | 5550  | 5560  |       |       |        |
| 60  | 65  |      |      |      |      | 6030 |      | 6050  | 6060  |       |       |        |
| 65  | 70  |      |      |      |      | 6530 | 6540 | 6550  | 6560  |       |       |        |
| 70  | 75  |      |      |      |      | 7030 | 7040 | 7050  | 7060  | 7080  |       |        |
| 75  | 80  |      |      |      |      | 7530 | 7540 | 7550  | 7560  |       |       |        |
| 80  | 85  |      |      |      |      |      | 8040 | 8050  | 8060  | 8080  |       |        |
| 85  | 90  |      |      |      |      |      | 8540 | 8550  | 8560  | 8580  |       |        |
| 90  | 95  |      |      |      |      |      | 9040 | 9050  | 9060  | 9080  |       |        |
| 95  | 100 |      |      |      |      |      |      | 9550  | 9560  | 9580  | 9590  |        |
| 100 | 105 |      |      |      |      |      |      | 10050 | 10060 | 10080 | 10090 |        |
| 105 | 110 |      |      |      |      |      |      | 10550 | 10560 | 10580 |       |        |
| 110 | 115 |      |      |      |      |      |      | 11050 | 11060 | 11080 |       |        |
| 115 | 120 |      |      |      |      |      |      | 11550 | 11560 | 11580 |       |        |
| 120 | 125 |      |      |      |      |      |      | 12050 | 12060 | 12080 |       |        |
| 125 | 130 |      |      |      |      |      |      | 12550 | 12560 | 12580 |       | 125100 |
| 130 | 135 |      |      |      |      |      |      |       | 13060 | 13080 |       | 130100 |
| 135 | 140 |      |      |      |      |      |      |       | 13560 | 13580 |       | 135100 |
| 140 | 145 |      |      |      |      |      |      |       | 14060 | 14080 |       | 140100 |
| 150 | 155 |      |      |      |      |      |      |       | 15060 | 15080 | 15090 |        |
| 160 | 165 |      |      |      |      |      |      |       | 16060 | 16080 |       | 160100 |
| 170 | 175 |      |      |      |      |      |      |       | 17060 | 17080 |       | 170100 |
| 175 | 180 |      |      |      |      |      |      |       | 17560 | 17580 |       | 175100 |

Our strips are custom made for your requirements.

## spherical plain bearings

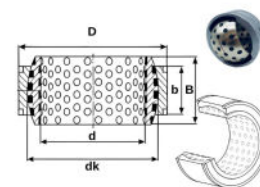


spherical plain bearing, steel with graphite,  
maintenance-free and corrosion-free

## spherical plain bearing

| Dimension (mm) |      |      |     |     | Load Rating ND LL |                     |          |                     |           |                     |
|----------------|------|------|-----|-----|-------------------|---------------------|----------|---------------------|-----------|---------------------|
|                |      |      |     |     | CuSn12            |                     | CuAl10Ni |                     | CuZn25Al5 |                     |
| d              | dk   | D    | b   | B   | C (KN)            | C <sub>0</sub> (KN) | C (KN)   | C <sub>0</sub> (KN) | C (KN)    | C <sub>0</sub> (KN) |
| 20             | 29   | 35   | 12  | 16  | 33                | 59                  | 61       | 101                 | 77        | 128                 |
| 25             | 35.5 | 42   | 16  | 20  | 53                | 97                  | 99       | 165                 | 126       | 210                 |
| 30             | 40.7 | 47   | 18  | 22  | 69                | 125                 | 127      | 213                 | 163       | 270                 |
| 35             | 47   | 55   | 20  | 25  | 88                | 160                 | 164      | 274                 | 209       | 347                 |
| 40             | 53   | 62   | 22  | 28  | 110               | 198                 | 203      | 339                 | 259       | 430                 |
| 45             | 60   | 68   | 25  | 32  | 141               | 255                 | 261      | 437                 | 333       | 554                 |
| 50             | 66   | 75   | 28  | 35  | 174               | 314                 | 322      | 538                 | 410       | 682                 |
| 60             | 80   | 90   | 36  | 44  | 271               | 490                 | 501      | 838                 | 639       | 1063                |
| 70             | 92   | 105  | 40  | 49  | 346               | 626                 | 640      | 1071                | 817       | 1358                |
| 80             | 105  | 120  | 45  | 55  | 444               | 803                 | 822      | 1375                | 1049      | 1744                |
| 90             | 115  | 130  | 50  | 60  | 541               | 978                 | 1001     | 1673                | 1277      | 2122                |
| 100            | 130  | 150  | 55  | 70  | 672               | 1216                | 1244     | 2081                | 1587      | 2638                |
| 110            | 140  | 160  | 55  | 70  | 724               | 1309                | 1340     | 2241                | 1709      | 2841                |
| 120            | 160  | 180  | 70  | 85  | 1053              | 1904                | 1949     | 3259                | 2486      | 4133                |
| 140            | 180  | 210  | 70  | 90  | 1184              | 2142                | 2192     | 3667                | 2797      | 4649                |
| 160            | 200  | 230  | 80  | 105 | 1504              | 2720                | 2784     | 4656                | 3552      | 5904                |
| 180            | 225  | 260  | 80  | 105 | 1692              | 3060                | 3132     | 5238                | 3996      | 6642                |
| 200            | 250  | 290  | 100 | 130 | 2350              | 4250                | 4350     | 7275                | 5550      | 9225                |
| 220            | 275  | 320  | 100 | 135 | 2585              | 4675                | 4785     | 8003                | 6105      | 10148               |
| 240            | 300  | 340  | 100 | 140 | 2820              | 5100                | 5220     | 8730                | 6660      | 11070               |
| 260            | 325  | 370  | 110 | 150 | 3361              | 6078                | 6221     | 10403               | 7937      | 13192               |
| 280            | 350  | 400  | 120 | 155 | 3948              | 7140                | 7308     | 12222               | 9324      | 15498               |
| 300            | 375  | 430  | 120 | 165 | 4230              | 7650                | 7830     | 13095               | 9990      | 16605               |
| 320            | 380  | 440  | 135 | 160 | 4822              | 8721                | 8926     | 14928               | 11389     | 18930               |
| 340            | 400  | 460  | 135 | 160 | 5076              | 9180                | 9396     | 15714               | 11988     | 19926               |
| 360            | 420  | 480  | 135 | 160 | 5330              | 9639                | 9866     | 16500               | 12587     | 20922               |
| 380            | 450  | 520  | 160 | 190 | 6768              | 12240               | 12528    | 20952               | 15984     | 26568               |
| 400            | 470  | 540  | 160 | 190 | 7069              | 12784               | 13085    | 21883               | 16694     | 27749               |
| 420            | 490  | 560  | 160 | 190 | 7370              | 13328               | 13642    | 22814               | 17405     | 28930               |
| 440            | 520  | 600  | 185 | 218 | 9043              | 16354               | 16739    | 27994               | 21356     | 35498               |
| 460            | 540  | 620  | 185 | 218 | 9391              | 16983               | 17383    | 29071               | 22178     | 36863               |
| 480            | 565  | 650  | 195 | 230 | 10356             | 18730               | 19170    | 32061               | 24459     | 40655               |
| 500            | 585  | 670  | 195 | 230 | 10723             | 19393               | 19849    | 33196               | 25325     | 42094               |
| 530            | 620  | 710  | 205 | 243 | 11947             | 21607               | 22115    | 36986               | 28216     | 46900               |
| 560            | 655  | 750  | 215 | 258 | 13238             | 23940               | 24504    | 40980               | 31263     | 51964               |
| 600            | 700  | 800  | 230 | 272 | 15134             | 27370               | 28014    | 46851               | 35742     | 59409               |
| 630            | 740  | 850  | 260 | 300 | 18086             | 32708               | 33478    | 55988               | 42713     | 70996               |
| 670            | 785  | 900  | 260 | 308 | 19185             | 34697               | 35513    | 59393               | 45310     | 75313               |
| 710            | 830  | 950  | 275 | 325 | 21456             | 38803               | 39716    | 66421               | 50672     | 84224               |
| 750            | 875  | 1000 | 280 | 335 | 23030             | 41650               | 42630    | 71295               | 54390     | 90405               |
| 800            | 930  | 1060 | 300 | 355 | 26226             | 47430               | 48546    | 81189               | 61938     | 102951              |
| 850            | 985  | 1120 | 310 | 365 | 28703             | 51910               | 53131    | 88857               | 67788     | 112674              |
| 900            | 1040 | 1180 | 320 | 375 | 31283             | 56576               | 57907    | 96845               | 73882     | 122803              |
| 950            | 1100 | 1250 | 340 | 400 | 35156             | 63580               | 65076    | 108834              | 83028     | 138006              |
| 1000           | 1160 | 1320 | 370 | 438 | 40345             | 72964               | 74681    | 124897              | 95282     | 158375              |

C = dynamic load rating  
C<sub>0</sub> = static load rating



### spherical plain bearing

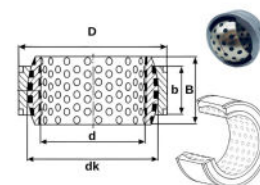
The outer bearing ring is fixed to the housing. The spherical surface accommodates the tilting of the bearing, while the rotational movement occurs at the inner diameter, also allowing for longitudinal movement.

- Consists of an inner ring and a stainless steel outer ring.
- Bronze alloy and stainless steel grades will be recommended based on your application requirements.
- Sea-water resistant material combinations are available.
- Bearings can operate without lubrication (self-lubricating).
- For applications with contamination, the bearing can be supplied with sealing.
- The bearing size in this chart is compatible with standard "GE" bearings.
- Custom bearings with greater tilting angles, higher load ratings, and the ability to handle multiple force directions are available.

## spherical plain bearing

| Dimension (mm) |      |      |     |     | Load Rating HD LL |                     |          |                     |           |                     |
|----------------|------|------|-----|-----|-------------------|---------------------|----------|---------------------|-----------|---------------------|
|                |      |      |     |     | CuSn12            |                     | CuAl10Ni |                     | CuZn25Al5 |                     |
| d              | dk   | D    | b   | B   | C (KN)            | C <sub>0</sub> (KN) | C (KN)   | C <sub>0</sub> (KN) | C (KN)    | C <sub>0</sub> (KN) |
| 100            | 135  | 150  | 67  | 71  | 860               | 1556                | 1593     | 2664                | 2032      | 3378                |
| 110            | 145  | 160  | 74  | 78  | 1021              | 1846                | 1889     | 3160                | 2411      | 4007                |
| 120            | 160  | 180  | 80  | 85  | 1218              | 2202                | 2254     | 3769                | 2876      | 4780                |
| 140            | 185  | 210  | 95  | 100 | 1672              | 3024                | 3095     | 5176                | 3948      | 6563                |
| 160            | 210  | 230  | 109 | 115 | 2177              | 3938                | 4031     | 6741                | 5143      | 8548                |
| 180            | 240  | 260  | 122 | 128 | 2785              | 5037                | 5156     | 8623                | 6578      | 10934               |
| 200            | 260  | 290  | 134 | 140 | 3314              | 5994                | 6135     | 10260               | 7827      | 13010               |
| 220            | 290  | 320  | 148 | 155 | 4083              | 7384                | 7558     | 12640               | 9643      | 16028               |
| 240            | 310  | 340  | 162 | 170 | 4777              | 8640                | 8843     | 14789               | 11283     | 18754               |
| 260            | 340  | 370  | 175 | 185 | 5660              | 10236               | 10477    | 17522               | 13368     | 22219               |
| 280            | 370  | 400  | 190 | 200 | 6687              | 12094               | 12379    | 20703               | 15794     | 26252               |
| 300            | 390  | 430  | 200 | 212 | 7420              | 13419               | 13735    | 22970               | 17524     | 29127               |
| 320            | 414  | 460  | 218 | 230 | 8585              | 15527               | 15892    | 26578               | 20276     | 33703               |
| 340            | 434  | 480  | 230 | 243 | 9496              | 17173               | 17577    | 29396               | 22426     | 37276               |
| 360            | 474  | 520  | 243 | 258 | 10957             | 19816               | 20282    | 33920               | 25877     | 43012               |
| 380            | 494  | 540  | 258 | 272 | 12124             | 21927               | 22443    | 37534               | 28634     | 47594               |
| 400            | 514  | 580  | 265 | 280 | 12957             | 23434               | 23985    | 40113               | 30601     | 50865               |
| 420            | 534  | 600  | 280 | 300 | 14224             | 25723               | 26329    | 44032               | 33592     | 55835               |
| 440            | 574  | 630  | 300 | 315 | 16381             | 29625               | 30322    | 50712               | 38687     | 64304               |
| 460            | 593  | 650  | 308 | 325 | 17375             | 31422               | 32161    | 53787               | 41034     | 68204               |
| 480            | 623  | 680  | 320 | 340 | 18965             | 34298               | 35105    | 58710               | 44789     | 74447               |
| 500            | 643  | 710  | 335 | 355 | 20491             | 37058               | 37930    | 63435               | 48394     | 80438               |
| 530            | 673  | 750  | 355 | 375 | 22728             | 41103               | 42070    | 70359               | 53676     | 89218               |
| 560            | 723  | 800  | 380 | 400 | 26135             | 47266               | 48378    | 80909               | 61724     | 102596              |
| 600            | 773  | 850  | 400 | 425 | 29414             | 53195               | 54446    | 91057               | 69466     | 115464              |
| 630            | 813  | 900  | 425 | 450 | 32869             | 59444               | 60843    | 101754              | 77627     | 129029              |
| 670            | 862  | 950  | 450 | 475 | 36900             | 66734               | 68305    | 114233              | 87147     | 144853              |
| 710            | 912  | 1000 | 475 | 500 | 41209             | 74528               | 76281    | 127574              | 97324     | 161769              |
| 750            | 972  | 1060 | 500 | 530 | 46232             | 83611               | 85579    | 143123              | 109187    | 181486              |
| 800            | 1022 | 1120 | 530 | 565 | 51527             | 93187               | 95380    | 159515              | 121692    | 202271              |
| 850            | 1112 | 1220 | 565 | 600 | 59767             | 108089              | 110633   | 185023              | 141152    | 234617              |
| 900            | 1142 | 1250 | 600 | 635 | 65182             | 117882              | 120655   | 201786              | 153940    | 255873              |
| 950            | 1242 | 1360 | 635 | 670 | 75025             | 135683              | 138875   | 232257              | 177186    | 294511              |
| 1000           | 1312 | 1450 | 670 | 710 | 83,621            | 151,230             | 154,788  | 258,870             | 197,489   | 328,258             |

C = dynamic load rating  
C<sub>0</sub> = static load rating



### spherical plain bearing

These bearings are designed for high-load applications where space is limited. The outer bearing ring is fixed to the housing. The spherical surface accommodates tilting, while the rotational movement occurs at the inner diameter of the bearing, allowing for longitudinal movement as well.

- Consists of an inner ring and a stainless steel outer ring.
- Bronze alloy and stainless steel grades will be recommended based on your application requirements.
- Sea-water resistant material combinations are available.
- Bearings can operate fully without lubrication (self-lubricating).
- For applications with contamination, the bearing can be supplied with sealing and lubrication grooves.
- Custom bearings with greater tilting angles, multiple force directions, and other specifications are available.