

For New Technology Network



NTNcorporation

# Plummer Blocks



CAT. NO. 2500/E

## Warranty

NTN warrants, to the original purchaser only, that the delivered product which is the subject of this sale (a) will conform to drawings and specifications mutually established in writing as applicable to the contract, and (b) be free from defects in material or fabrication. The duration of this warranty is one year from date of delivery. If the buyer discovers within this period a failure of the product to conform to drawings or specifications, or a defect in material or fabrication, it must promptly notify NTN in writing. In no event shall such notification be received by NTN later than 13 months from the date of delivery. Within a reasonable time after such notification, NTN will, at its option, (a) correct any failure of the product to conform to drawings, specifications or any defect in material or workmanship, with either replacement or repair of the product, or (b) refund, in part or in whole, the purchase price. Such replacement and repair, excluding charges for labor, is at NTN's expense. All warranty service will be performed at service centers designated by NTN. These remedies are the purchaser's exclusive remedies for breach of warranty.

NTN does not warrant (a) any product, components or parts not manufactured by NTN, (b) defects caused by failure to provide a suitable installation environment for the product, (c) damage caused by use of the product for purposes other than those for which it was designed, (d) damage caused by disasters such as fire, flood, wind, and lightning, (e) damage caused by unauthorized attachments or modification, (f) damage during shipment, or (g) any other abuse or misuse by the purchaser.

**THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

In no case shall NTN be liable for any special, incidental, or consequential damages based upon breach of warranty, breach of contract, negligence, strict tort, or any other legal theory, and in no case shall total liability of NTN exceed the purchase price of the part upon which such liability is based. Such damages include, but are not limited to, loss of profits, loss of savings or revenue, loss of use of the product or any associated equipment, cost of capital, cost of any substitute equipment, facilities or services, downtime, the claims of third parties including customers, and injury to property. Some states do not allow limits on warranties, or on remedies for breach in certain transactions. In such states, the limits in this paragraph and in paragraph (2) shall apply to the extent allowable under case law and statutes in such states.

Any action for breach of warranty or any other legal theory must be commenced within 15 months following delivery of the goods.

Unless modified in a writing signed by both parties, this agreement is understood to be the complete and exclusive agreement between the parties, superceding all prior agreements, oral or written, and all other communications between the parties relating to the subject matter of this agreement. No employee of NTN or any other party is authorized to make any warranty in addition to those made in this agreement.

This agreement allocates the risks of product failure between NTN and the purchaser. This allocation is recognized by both parties and is reflected in the price of the goods. The purchaser acknowledges that it has read this agreement, understands it, and is bound by its terms.

# CONTENTS

**Technical Data**

**3~32**

**Index of Bearing Tables**

**Split type**

**34~51**

**Unit type**

**52~59**

**Specialized Plummer Blocks**

**60~63**

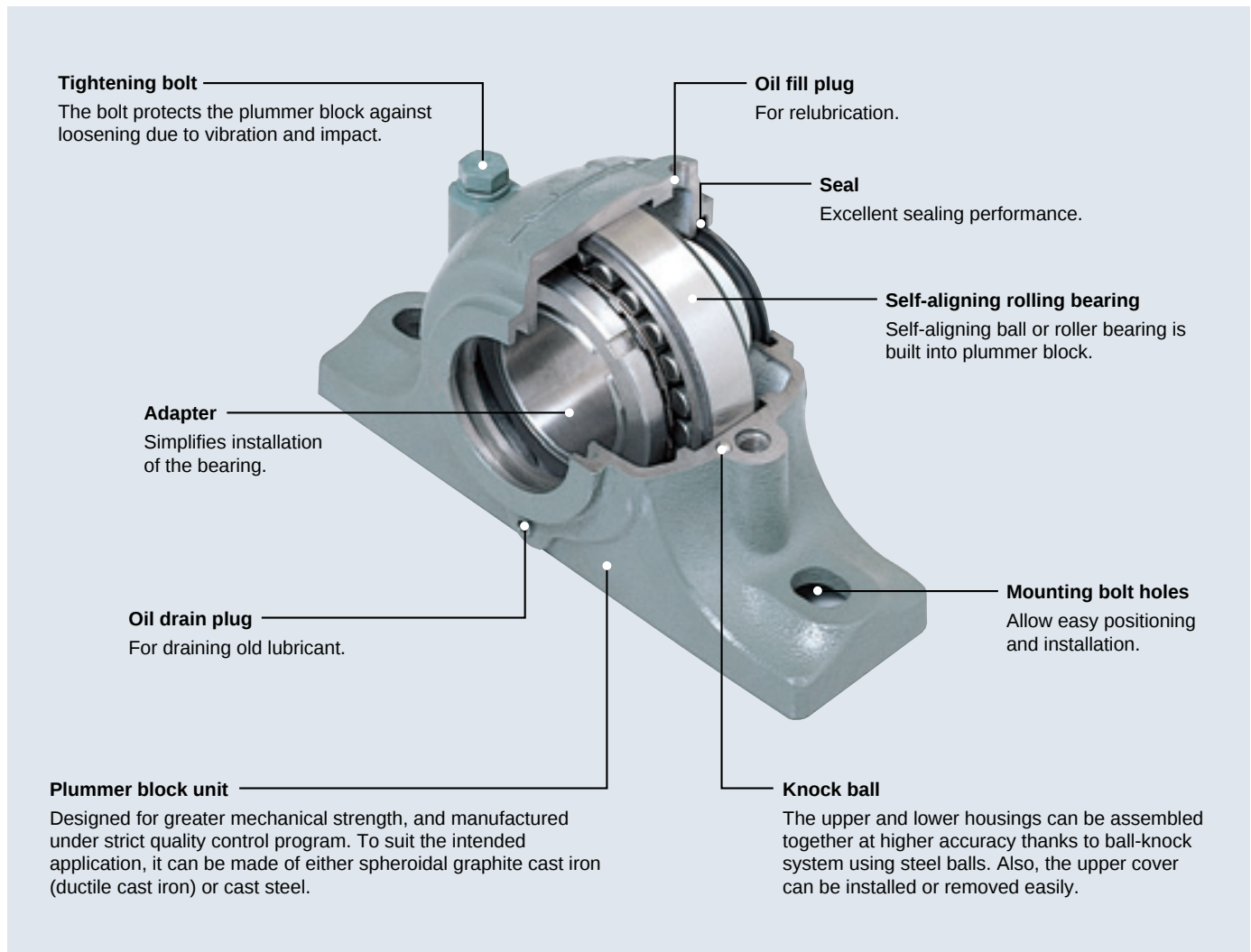
# **NTN PLUMMER BLOCKS**

# CONTENTS

---

|                                                                     |    |
|---------------------------------------------------------------------|----|
| <b>1. Structure</b>                                                 | 3  |
| <b>2. Plummer Block and Rolling Bearing Tolerances</b>              | 4  |
| 2.1 Plummer block tolerances                                        | 4  |
| 2.2 Machining tolerances of mounting bolt seat faces                | 8  |
| 2.3 Rolling bearing accuracies                                      | 9  |
| 2.4 Rolling bearing internal clearance                              | 11 |
| <b>3. Plummer Block and Bearing Materials</b>                       | 13 |
| 3.1 Plummer block materials                                         | 13 |
| 3.2 Bearing materials                                               | 14 |
| <b>4. Strength of Plummer Blocks, and Combination with Bearings</b> | 15 |
| 4.1 Strength of plummer blocks                                      | 15 |
| 4.2 Combinations of plummer blocks and bearings                     | 16 |
| <b>5. Allowable Speed</b>                                           | 18 |
| <b>6. Bearing Seals</b>                                             | 19 |
| 6.1 Contact seals                                                   | 19 |
| 6.2 Non-contact seals                                               | 20 |
| 6.3 Combination seals                                               | 20 |
| <b>7. Shaft Design</b>                                              | 21 |
| 7.1 Bearing-to-shaft fit                                            | 21 |
| 7.2 Mounting dimensions                                             | 21 |
| <b>8. Lubrication</b>                                               | 23 |
| 8.1 Grease lubrication                                              | 23 |
| <b>9. Handling the Plummer Blocks and Bearings</b>                  | 24 |
| 9.1 Inspection before installation                                  | 24 |
| 9.2 Preparation for installing the bearing                          | 24 |
| 9.3 Installation of the bearing and associated components           | 25 |
| 9.4 Assembling the plummer blocks                                   | 29 |
| 9.5 Running inspection                                              | 30 |
| 9.6 Maintenance and inspection                                      | 31 |
| 9.7 Bearing disassembly                                             | 31 |
| 9.8 Cleaning the bearing                                            | 32 |
| 9.9 Storing the bearing                                             | 32 |

## 1. Structure



Products painted in user-specified colors ►

## 2. Plummer Block and Rolling Bearing Tolerances

### 2.1 Plummer block tolerances

The tolerances of **NTN** split plummer blocks meet JIS B 1551, and those of unit type plummer blocks with Japan Bearing Manufacturers' Association standard BAS 188. The tolerances of both types are given in the tables below.

Tolerances of bearing seating bore diameter, width and center height ..... **Table 2.1**  
 Tolerances of length of cast iron components  
 (As cast portions on bearing base, bolt holes, etc.) ..... **Table 2.2**  
 Dimensions and tolerances of bore ..... **Table 2.3**  
 Dimensions and tolerances of stabilizing ring ..... **Table 2.4**

**Table 2.1 Tolerances of plummer blocks**

Unit: mm

| Split type                                                                                          |                                       |                               |                               | Unit type                                       |                                       |                               |                     |                           |                             |
|-----------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------|-------------------------------|-------------------------------------------------|---------------------------------------|-------------------------------|---------------------|---------------------------|-----------------------------|
| Plummer block series                                                                                | Housing bore diameter<br>$\Delta D_s$ | Housing width<br>$\Delta g_s$ | Center height<br>$\Delta H_s$ | Plummer block series                            | Housing bore diameter<br>$\Delta D_s$ | Center height<br>$\Delta H_s$ | Body width<br>$I_1$ | Cover dimensions<br>$I_2$ | Cover spigot width<br>$I_3$ |
| SN5, SN5F<br>SN (S)6, SN (S)6F<br>SN2, SNZ2, SN30<br>SN (S)3, SNZ (SZ)3, SN31<br>SAF5, SAF6<br>SBG5 | H8                                    | H13                           | h13                           | SV5<br>SV6<br>SV2<br>SV3<br>SV30<br>SV35<br>VA5 | H7                                    | h11                           | +0.2<br>0           | $\pm 1$                   | 0<br>-0.2                   |
| SD30, SD31<br>SD33<br>SD34, SD35<br>SD36<br>SD2, SD3<br>SD5, SD6<br>SD31TS, SD32TS                  | H8                                    | $\pm 0.2$                     | h13                           |                                                 |                                       |                               |                     |                           |                             |

**Table 2.2 Tolerances of length of cast iron components**

Unit: mm

| Casting size |            |            |            |             |
|--------------|------------|------------|------------|-------------|
| 120 or less  | 120 to 250 | 250 to 400 | 400 to 800 | 800 to 1600 |
| $\pm 1.5$    | $\pm 2.0$  | $\pm 3.0$  | $\pm 4.0$  | $\pm 6.0$   |

# Plummer Block and Rolling Bearing Tolerances

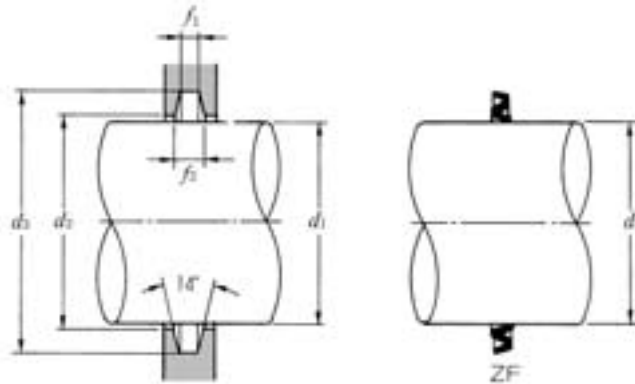


Table 2.3 Bore dimensions and tolerances

Unit: mm

| Shaft diameter<br>$d_1$ | $d_2$     |             | $d_3$     |             | $f_1$     |              | $f_2$     | Angular tolerance | Rubber seal part number (reference) |
|-------------------------|-----------|-------------|-----------|-------------|-----------|--------------|-----------|-------------------|-------------------------------------|
|                         | Dimension | Tolerance   | Dimension | Tolerance   | Dimension | Tolerance    | Dimension |                   |                                     |
| 20                      | 21.5      | +0.210<br>0 | 31        |             | 3         | +0.140<br>0  | 4.2       | $\pm 1^\circ$     | ZF 5                                |
| 25                      | 26.5      |             | 38        | +0.250<br>0 | 4         |              | 5.4       |                   | ZF 6                                |
| 30                      | 31.5      |             | 43        |             | 4         |              | 5.4       |                   | ZF 7                                |
| 35                      | 36.5      | +0.250<br>0 | 48        |             | 4         |              | 5.4       |                   | ZF 8                                |
| 40                      | 41.5      |             | 53        |             | 4         |              | 5.4       |                   | ZF 9                                |
| 45                      | 46.5      |             | 58        |             | 4         |              | 5.4       |                   | ZF10                                |
| 50                      | 51.5      |             | 67        | +0.300<br>0 | 5         |              | 6.9       |                   | ZF11                                |
| 55                      | 56.5      |             | 82        |             | 5         | +0.180<br>0  | 6.9       |                   | ZF12                                |
| 60                      | 62        | +0.300<br>0 | 77        |             | 5         |              | 6.8       |                   | ZF13                                |
| 65                      | 67        |             | 82        |             | 5         |              | 6.8       |                   | ZF15                                |
| 70                      | 72        |             | 89        |             | 6         |              | 8.1       |                   | ZF16                                |
| 75                      | 77        |             | 94        | +0.350<br>0 | 6         |              | 8.1       |                   | ZF17                                |
| 80                      | 82        |             | 99        |             | 6         |              | 8.1       |                   | ZF18                                |
| 85                      | 87        |             | 104       |             | 6         |              | 8.1       |                   | ZF19                                |
| 90                      | 92        | +0.350<br>0 | 111       |             | 7         |              | 9.3       |                   | ZF20                                |
| 100                     | 102       |             | 125       |             | 8         |              | 10.8      |                   | ZF22                                |
| 110                     | 113       |             | 135       |             | 8         |              | 10.7      |                   | ZF24                                |
| 115                     | 118       |             | 140       | +0.400<br>0 | 8         |              | 10.7      |                   | ZF26                                |
| 125                     | 128       |             | 154       |             | 9         |              | 12.2      |                   | ZF28                                |
| 135                     | 138       |             | 164       |             | 9         | +0.220<br>0  | 12.2      |                   | ZF30                                |
| 140                     | 143       | +0.400<br>0 | 173       |             | 10        |              | 13.7      |                   | ZF32                                |
| 150                     | 153       |             | 183       |             | 10        |              | 13.7      |                   | ZF34                                |
| 160                     | 163       |             | 193       |             | 10        |              | 13.7      |                   | ZF36                                |
| 170                     | 173       |             | 203       | +0.460<br>0 | 10        |              | 13.7      |                   | ZF38                                |
| 180                     | 183       |             | 213       |             | 10        |              | 13.7      |                   | ZF40                                |
| 200                     | 203       | +0.460<br>0 | 240       |             | 11        |              | 15.5      |                   | ZF44                                |
| 220                     | 223       |             | 260       |             | 11        |              | 15.5      |                   | ZF48                                |
| 240                     | 243       |             | 286       | +0.520<br>0 | 12        |              | 17.3      |                   | ZF52                                |
| 260                     | 263       |             | 306       |             | 12        |              | 17.3      |                   | ZF56                                |
| 280                     | 283       | +0.520<br>0 | 332       |             | 13        |              | 19        |                   | ZF60                                |
| 300                     | 303       |             | 352       |             | 13        |              | 19        |                   | ZF64                                |
| 320                     | 323       |             | 372       | +0.570<br>0 | 13        | +0.27 0<br>0 | 19        |                   | ZF68                                |
| 340                     | 343       | +0.570<br>0 | 390       |             | 14        |              | 19.8      |                   | GS72                                |
| 360                     | 363       |             | 412       |             | 13        |              | 19        |                   | GS76                                |
| 380                     | 383       |             | 432       |             | 13        |              | 19        |                   | GS80                                |
| 400                     | 403       |             | 452       | +0.630<br>0 | 14        |              | 20        |                   | GS84                                |
| 410                     | 413       | +0.630<br>0 | 460       |             | 14        |              | 19.8      |                   | GS88                                |
| 430                     | 433       |             | 480       |             | 14        |              | 19.8      |                   | GS92                                |
| 450                     | 453       |             | 505       | +0.700<br>0 | 14        |              | 20.3      |                   | GS96                                |

# Plummer Block and Rolling Bearing Tolerances

Table 2.4 (1) Dimensions and tolerances of locating rings

Unit: mm

| Part number | Outside dia.<br>h12 | Inside dia. | Width<br>0<br>-0.2 | Material                           |
|-------------|---------------------|-------------|--------------------|------------------------------------|
| SR 52× 5    | 52                  | 44          | 5                  | Die-cast zinc alloy, class 2, ZDC2 |
| SR 52× 6    | 52                  | 44          | 6                  |                                    |
| SR 52× 7    | 52                  | 44          | 7                  |                                    |
| SR 52× 9    | 52                  | 44          | 9                  |                                    |
| SR 62× 6    | 62                  | 54          | 6                  |                                    |
| SR 62× 6.5  | 62                  | 54          | 6.5                |                                    |
| SR 62× 7    | 62                  | 54          | 7                  |                                    |
| SR 62× 8.5  | 62                  | 54          | 8.5                |                                    |
| SR 62×10    | 62                  | 54          | 10                 |                                    |
| SR 72× 6    | 72                  | 64          | 6                  |                                    |
| SR 72× 7    | 72                  | 64          | 7                  |                                    |
| SR 72× 8    | 72                  | 64          | 8                  |                                    |
| SR 72× 9    | 72                  | 64          | 9                  |                                    |
| SR 72×10    | 72                  | 64          | 10                 |                                    |
| SR 80× 6    | 80                  | 70          | 6                  |                                    |
| SR 80× 7    | 80                  | 70          | 7                  |                                    |
| SR 80× 7.5  | 80                  | 70          | 7.5                |                                    |
| SR 80× 8    | 80                  | 70          | 8                  |                                    |
| SR 80× 9.5  | 80                  | 70          | 9.5                |                                    |
| SR 80×10    | 80                  | 70          | 10                 |                                    |
| SR 85× 6    | 85                  | 75          | 6                  |                                    |
| SR 85× 8    | 85                  | 75          | 8                  |                                    |
| SR 85×10    | 85                  | 75          | 10                 |                                    |
| SR 90× 6    | 90                  | 80          | 6                  |                                    |
| SR 90× 6.5  | 90                  | 80          | 6.5                |                                    |
| SR 90× 8    | 90                  | 80          | 8                  |                                    |
| SR 90× 9.5  | 90                  | 80          | 9.5                |                                    |
| SR 90×10    | 90                  | 80          | 10                 |                                    |
| SR100× 6    | 100                 | 89          | 6                  |                                    |
| SR100× 8    | 100                 | 89          | 8                  |                                    |
| SR100× 8.5  | 100                 | 89          | 8.5                |                                    |
| SR100×10    | 100                 | 89          | 10                 |                                    |
| SR100×10.5  | 100                 | 89          | 10.5               |                                    |
| SR110× 6    | 110                 | 99          | 6                  |                                    |
| SR110× 8    | 110                 | 99          | 8                  |                                    |
| SR110× 9    | 110                 | 99          | 9                  |                                    |
| SR110× 9.5  | 110                 | 99          | 9.5                |                                    |
| SR110×10    | 110                 | 99          | 10                 |                                    |
| SR110×11.5  | 110                 | 99          | 11.5               |                                    |
| SR110×12    | 110                 | 99          | 12                 |                                    |
| SR120× 6    | 120                 | 108         | 6                  |                                    |
| SR120× 9    | 120                 | 108         | 9                  |                                    |

Unit: mm

| Part number | Outside dia.<br>h12 | Inside dia. | Width<br>0<br>-0.2 | Material                           |
|-------------|---------------------|-------------|--------------------|------------------------------------|
| SR120×10    | 120                 | 108         | 10                 | Die-cast zinc alloy, class 2, ZDC2 |
| SR120×12    | 120                 | 108         | 12                 |                                    |
| SR120×13    | 120                 | 108         | 13                 |                                    |
| SR125× 9.5  | 125                 | 113         | 9.5                |                                    |
| SR125×10    | 125                 | 113         | 10                 |                                    |
| SR125×13    | 125                 | 113         | 13                 |                                    |
| SR130× 4    | 130                 | 118         | 4                  |                                    |
| SR130× 8    | 130                 | 118         | 8                  |                                    |
| SR130× 9.5  | 130                 | 118         | 9.5                |                                    |
| SR130×10    | 130                 | 118         | 10                 |                                    |
| SR130×12.5  | 130                 | 118         | 12.5               |                                    |
| SR140× 8    | 140                 | 125         | 8                  |                                    |
| SR140× 8.5  | 140                 | 125         | 8.5                |                                    |
| SR140×10    | 140                 | 125         | 10                 |                                    |
| SR140×11.5  | 140                 | 125         | 11.5               |                                    |
| SR140×12.5  | 140                 | 125         | 12.5               |                                    |
| SR140×15    | 140                 | 125         | 15                 |                                    |
| SR150× 5    | 150                 | 135         | 5                  |                                    |
| SR150× 9    | 150                 | 135         | 9                  |                                    |
| SR150×10    | 150                 | 135         | 10                 |                                    |
| SR150×10.5  | 150                 | 135         | 10.5               |                                    |
| SR150×14    | 150                 | 135         | 14                 |                                    |
| SR150×13    | 150                 | 135         | 13                 |                                    |
| SR160× 7    | 160                 | 144         | 7                  |                                    |
| SR160× 9.6  | 160                 | 144         | 9.6                |                                    |
| SR160×10    | 160                 | 144         | 10                 |                                    |
| SR160×11    | 160                 | 144         | 11                 |                                    |
| SR160×11.2  | 160                 | 144         | 11.2               |                                    |
| SR160×12.5  | 160                 | 144         | 12.5               |                                    |
| SR160×14    | 160                 | 144         | 14                 |                                    |
| SR160×15    | 160                 | 144         | 15                 |                                    |
| SR160×16    | 160                 | 144         | 16                 |                                    |
| SR160×16.2  | 160                 | 144         | 16.2               |                                    |
| SR170× 4    | 170                 | 154         | 4                  |                                    |
| SR170× 9.5  | 170                 | 154         | 9.5                |                                    |
| SR170×10    | 170                 | 154         | 10                 |                                    |
| SR170×10.5  | 170                 | 154         | 10.5               |                                    |
| SR170×11.5  | 170                 | 154         | 11.5               |                                    |
| SR170×14.5  | 170                 | 154         | 14.5               |                                    |
| SR170×15    | 170                 | 154         | 15                 |                                    |
| SR180× 9.5  | 180                 | 163         | 9.5                |                                    |
| SR180× 9.7  | 180                 | 163         | 9.7                |                                    |

# Plummer Block and Rolling Bearing Tolerances

Table 2.4 (2) Dimensions and tolerances of locating rings

Unit: mm

| Part number | Outside dia.<br>h12 | Inside dia. | Width<br>0<br>−0.2 | Material                           |
|-------------|---------------------|-------------|--------------------|------------------------------------|
| SR180×10    | 180                 | 163         | 10                 | Die-cast zinc alloy, class 2, ZDC2 |
| SR180×12    | 180                 | 163         | 12                 |                                    |
| SR180×12.1  | 180                 | 163         | 12.1               |                                    |
| SR180×14.5  | 180                 | 163         | 14.5               |                                    |
| SR180×18    | 180                 | 163         | 18                 |                                    |
| SR180×18.1  | 180                 | 163         | 18.1               |                                    |
| SR190× 6    | 190                 | 173         | 6                  |                                    |
| SR190× 9.5  | 190                 | 173         | 9.5                |                                    |
| SR190×13.5  | 190                 | 173         | 13.5               |                                    |
| SR190×15.3  | 190                 | 173         | 15.3               |                                    |
| SR200× 9.5  | 200                 | 180         | 9.5                |                                    |
| SR200×10    | 200                 | 180         | 10                 |                                    |
| SR200×12.2  | 200                 | 180         | 12.2               |                                    |
| SR200×13.5  | 200                 | 180         | 13.5               |                                    |
| SR200×14.5  | 200                 | 180         | 14.5               |                                    |
| SR200×15    | 200                 | 180         | 15                 |                                    |
| SR200×15.8  | 200                 | 180         | 15.8               |                                    |
| SR200×18.5  | 200                 | 180         | 18.5               |                                    |
| SR200×21    | 200                 | 180         | 21                 |                                    |
| SR200×22    | 200                 | 180         | 22                 |                                    |
| SR210×9.5   | 210                 | 190         | 9.5                |                                    |
| SR210×10    | 210                 | 190         | 10                 |                                    |
| SR215× 6    | 215                 | 195         | 6                  |                                    |
| SR215× 9    | 215                 | 195         | 9                  |                                    |
| SR215× 9.5  | 215                 | 195         | 9.5                |                                    |
| SR215×10    | 215                 | 195         | 10                 |                                    |
| SR215×12    | 215                 | 195         | 12                 |                                    |
| SR215×14    | 215                 | 195         | 14                 |                                    |
| SR215×17.5  | 215                 | 195         | 17.5               |                                    |
| SR215×17.8  | 215                 | 195         | 17.8               |                                    |
| SR225× 9.5  | 225                 | 205         | 9.5                |                                    |
| SR225×10    | 225                 | 205         | 10                 |                                    |
| SR230× 6    | 230                 | 210         | 6                  |                                    |
| SR230×10    | 230                 | 210         | 10                 |                                    |
| SR230×11    | 230                 | 210         | 11                 |                                    |
| SR230×13    | 230                 | 210         | 13                 |                                    |
| SR240× 9.5  | 240                 | 218         | 9.5                |                                    |
| SR240×10    | 240                 | 218         | 10                 |                                    |
| SR240×16    | 240                 | 218         | 16                 |                                    |
| SR240×19.8  | 240                 | 218         | 19.8               |                                    |
| SR240×23    | 240                 | 218         | 23                 |                                    |
| SR250× 5    | 250                 | 230         | 5                  |                                    |

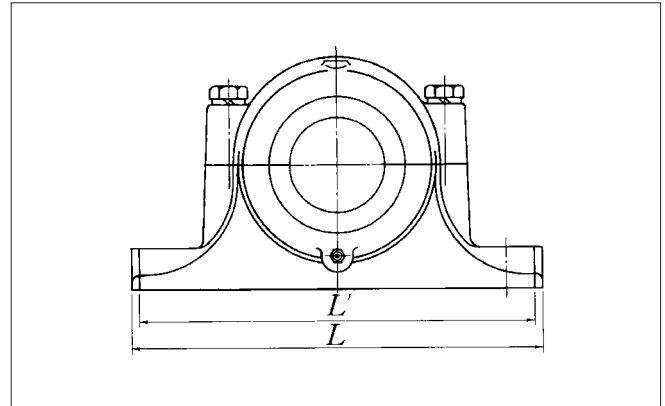
Unit: mm

| Part number | Outside dia.<br>h12 | Inside dia. | Width<br>0<br>−0.2 | Material                       |
|-------------|---------------------|-------------|--------------------|--------------------------------|
| SR250× 6    | 250                 | 230         | 6                  | Gray cast iron, class 3, FC200 |
| SR250× 9.5  | 250                 | 230         | 9.5                |                                |
| SR250×10    | 250                 | 230         | 10                 |                                |
| SR250×13    | 250                 | 230         | 13                 |                                |
| SR250×15    | 250                 | 230         | 15                 |                                |
| SR260× 9.5  | 260                 | 238         | 9.5                |                                |
| SR260×10    | 260                 | 238         | 10                 |                                |
| SR260×17    | 260                 | 238         | 17                 |                                |
| SR270× 7    | 270                 | 248         | 7                  |                                |
| SR270× 9.5  | 270                 | 248         | 9.5                |                                |
| SR270×10    | 270                 | 248         | 10                 |                                |
| SR270×15    | 270                 | 248         | 15                 |                                |
| SR270×16.5  | 270                 | 248         | 16.5               |                                |
| SR280× 9.5  | 280                 | 255         | 9.5                |                                |
| SR280×10    | 280                 | 255         | 10                 |                                |
| SR280×15    | 280                 | 255         | 15                 |                                |
| SR290× 9    | 290                 | 268         | 9                  |                                |
| SR290×10    | 290                 | 268         | 10                 |                                |
| SR290×16.5  | 290                 | 268         | 16.5               |                                |
| SR290×17    | 290                 | 268         | 17                 |                                |
| SR300× 9.5  | 300                 | 275         | 9.5                |                                |
| SR300×10    | 300                 | 275         | 10                 |                                |
| SR300×11    | 300                 | 275         | 11                 |                                |
| SR310×10    | 310                 | 290         | 10                 |                                |
| SR310×12    | 310                 | 290         | 12                 |                                |
| SR310×18    | 310                 | 290         | 18                 |                                |
| SR320× 9.5  | 320                 | 290         | 9.5                |                                |
| SR320×10    | 320                 | 290         | 10                 |                                |
| SR320×14    | 320                 | 290         | 14                 |                                |
| SR320×18    | 320                 | 290         | 18                 |                                |
| SR340× 9.5  | 340                 | 310         | 9.5                |                                |
| SR340×10    | 340                 | 310         | 10                 |                                |
| SR340×16    | 340                 | 310         | 16                 |                                |
| SR340×19    | 340                 | 310         | 19                 |                                |
| SR360×10    | 360                 | 330         | 10                 |                                |
| SR380×10    | 380                 | 350         | 10                 |                                |
| SR400×10    | 400                 | 370         | 10                 |                                |
| SR500×15.5  | 500                 | 470         | 15.5               |                                |
| SR540×18.5  | 540                 | 510         | 18.5               |                                |
| SR580×21.5  | 580                 | 550         | 21.5               |                                |

## 2.2 Machining tolerances of mounting bolt seat faces

When subjected to a greater lateral load, a plummer block cannot be reliably secured with the tightening force of mounting bolts alone. To overcome this problem the end faces of the mounting bolt seat are secured with stoppers to lock the plummer block. With the plummer block used in this type of application, the end faces in contact with the stoppers are machined.

When a plummer block mounting seat end faces have been machined, the bottom length  $L$  of the bearing housing is smaller by the dimension in **Table 2.5**.



$L$ : Basic casting dimension (as cast dimension)

$L'$ : Dimension after machining of the end faces of bearing base

**Table 2.5 Machining allowance**

Unit: mm

| Plummer block part number                                                                                                                                         | Machining allowance $L-L'$ | Surface roughness |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------|
| SN506~SN519<br>SN206~SN219<br>SNZ206~SNZ219<br><br>SN606~SN616<br>SN306~SN316<br>SNZ306~SNZ316<br><br>SV505~SV519<br>SV205~SV219<br>SV605~SV616<br>SV305~SV316    | 3                          | ▽                 |
| SN520~<br>SN220~<br>SNZ220~<br><br>SN617~<br>SN317~<br>SNZ317~<br><br>Model SN30, model SN31<br>Model SN..F, model SD<br><br>SV520~<br>SV220~<br>SV617~<br>SV317~ | 5                          |                   |

**Table 2.6 Tolerances of dimension L after machining of mounting bolt seat end faces**

Unit: mm

| Dimension after machining $L'$ | 30~120 | 120~315 | 315~1 000 | 1 000~2 000 |
|--------------------------------|--------|---------|-----------|-------------|
| Tolerance                      | ±0.8   | ±1.2    | ±2.0      | ±3.0        |

## 2.3 Rolling bearing accuracies

The tolerances of self-aligning ball and roller bearings used in conjunction with NTN plummer blocks conform to JIS B 1514 (Tolerances for rolling bearings).

Table 2.7 Bearing tolerances

### (1) Tolerances of inner rings (JIS class 0)

Unit:  $\mu\text{m}$

| Nominal bore diameter<br>$d$<br>(mm)<br>over    incl. |     | Single plane mean bore diameter deviation<br>$\Delta d_{\text{mp}}$<br>high    low |     | Single radial plane bore diameter variation<br>$Vd_p$<br>diameter series 0, 1 max    diameter series 2, 3, 4 max |    | Mean single plane bore diameter deviation<br>$Vd_{\text{mp}}$<br>max | Inner ring radial runout<br>$K_{\text{ia}}$<br>max | Inner ring width deviation<br>$\Delta_{\text{BS}}$<br>high    low |      | Inner ring width variation<br>$V_{\text{BS}}$<br>max |
|-------------------------------------------------------|-----|------------------------------------------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------|----|----------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------|------|------------------------------------------------------|
| 18                                                    | 30  | 0                                                                                  | −10 | 10                                                                                                               | 8  | 8                                                                    | 13                                                 | 0                                                                 | −120 | 20                                                   |
| 30                                                    | 50  | 0                                                                                  | −12 | 12                                                                                                               | 9  | 9                                                                    | 15                                                 | 0                                                                 | −120 | 20                                                   |
| 50                                                    | 80  | 0                                                                                  | −15 | 19                                                                                                               | 11 | 11                                                                   | 20                                                 | 0                                                                 | −150 | 25                                                   |
| 80                                                    | 120 | 0                                                                                  | −20 | 25                                                                                                               | 15 | 15                                                                   | 25                                                 | 0                                                                 | −200 | 25                                                   |
| 120                                                   | 150 | 0                                                                                  | −25 | 31                                                                                                               | 19 | 19                                                                   | 30                                                 | 0                                                                 | −250 | 30                                                   |
| 150                                                   | 180 | 0                                                                                  | −25 | 31                                                                                                               | 19 | 19                                                                   | 30                                                 | 0                                                                 | −250 | 30                                                   |
| 180                                                   | 250 | 0                                                                                  | −30 | 38                                                                                                               | 23 | 23                                                                   | 40                                                 | 0                                                                 | −300 | 30                                                   |
| 250                                                   | 315 | 0                                                                                  | −35 | 44                                                                                                               | 26 | 26                                                                   | 50                                                 | 0                                                                 | −350 | 35                                                   |
| 315                                                   | 400 | 0                                                                                  | −40 | 50                                                                                                               | 30 | 30                                                                   | 60                                                 | 0                                                                 | −400 | 40                                                   |
| 400                                                   | 500 | 0                                                                                  | −45 | 56                                                                                                               | 34 | 34                                                                   | 65                                                 | 0                                                                 | −450 | 50                                                   |

### (2) Tolerances of outer rings (JIS class 0)

Unit:  $\mu\text{m}$

| Nominal outside diameter<br>$D$<br>(mm)<br>over    incl. |     | Single plane outside diameter deviation<br>$\Delta D_{\text{mp}}$<br>high    low |     | Single radial plane outside diameter deviation<br>$VD_p$<br>diameter series 0, 1 max    diameter series 2, 3, 4 max |    | Mean single plane outside diameter deviation<br>$VD_{\text{mp}}$<br>max | Outer ring radial runout<br>$K_{\text{ea}}$<br>max | Outer ring width deviation<br>$\Delta_{\text{CS}}$<br>high    low                 |  | Outer ring width variation<br>$V_{\text{CS}}$<br>max                         |
|----------------------------------------------------------|-----|----------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------|--|------------------------------------------------------------------------------|
| 30                                                       | 50  | 0                                                                                | −11 | 11                                                                                                                  | 8  | 8                                                                       | 20                                                 | Depends on tolerance of $\Delta_{\text{BS}}$ relative to $d$ of the same bearing. |  | Depends on tolerance of $V_{\text{BS}}$ relative to $d$ of the same bearing. |
| 50                                                       | 80  | 0                                                                                | −13 | 13                                                                                                                  | 10 | 10                                                                      | 25                                                 |                                                                                   |  |                                                                              |
| 80                                                       | 120 | 0                                                                                | −15 | 19                                                                                                                  | 11 | 11                                                                      | 35                                                 |                                                                                   |  |                                                                              |
| 120                                                      | 150 | 0                                                                                | −18 | 23                                                                                                                  | 14 | 14                                                                      | 40                                                 |                                                                                   |  |                                                                              |
| 150                                                      | 180 | 0                                                                                | −25 | 31                                                                                                                  | 19 | 19                                                                      | 45                                                 |                                                                                   |  |                                                                              |
| 180                                                      | 250 | 0                                                                                | −30 | 38                                                                                                                  | 23 | 23                                                                      | 50                                                 |                                                                                   |  |                                                                              |
| 250                                                      | 315 | 0                                                                                | −35 | 44                                                                                                                  | 26 | 26                                                                      | 60                                                 |                                                                                   |  |                                                                              |
| 315                                                      | 400 | 0                                                                                | −40 | 50                                                                                                                  | 30 | 30                                                                      | 70                                                 |                                                                                   |  |                                                                              |
| 400                                                      | 500 | 0                                                                                | −45 | 56                                                                                                                  | 34 | 34                                                                      | 80                                                 |                                                                                   |  |                                                                              |
| 500                                                      | 630 | 0                                                                                | −50 | 63                                                                                                                  | 38 | 38                                                                      | 100                                                |                                                                                   |  |                                                                              |
| 630                                                      | 800 | 0                                                                                | −75 | 94                                                                                                                  | 55 | 55                                                                      | 120                                                |                                                                                   |  |                                                                              |

## (3) Tolerance and allowable values (JIS class 0) of tapered $\bullet$ bore radial bearings

Unit:  $\mu\text{m}$

| Nominal bore diameter<br>$d$<br>(mm) |       | $\Delta d_{\text{mp}}$ |     | $\Delta d_{\text{mp}} - \Delta d_{\text{mp}}$ |     | $V_{\text{dp}}$ |
|--------------------------------------|-------|------------------------|-----|-----------------------------------------------|-----|-----------------|
| over                                 | incl. | high                   | low | high                                          | low | max             |
| 50                                   | 80    | +15                    | 0   | +30                                           | 0   | 19              |
| 80                                   | 120   | +20                    | 0   | +35                                           | 0   | 22              |
| 120                                  | 180   | +25                    | 0   | +45                                           | 0   | 40              |
| 180                                  | 250   | +30                    | 0   | +46                                           | 0   | 46              |
| 250                                  | 315   | +35                    | 0   | +52                                           | 0   | 52              |
| 315                                  | 400   | +40                    | 0   | +57                                           | 0   | 57              |
| 400                                  | 500   | +45                    | 0   | +63                                           | 0   | 63              |
| 500                                  | 630   | +50                    | 0   | +70                                           | 0   | 70              |

① Applicable to all radial planes of tapered bore

Note 1: Applicable to 1/12 tapered bore

2: Quantifiers

$d_1$  : Standard diameter at theoretical large end of tapered bore

$$d_1 = d + \frac{1}{12} B$$

$\Delta d_{\text{mp}}$  : Single plane mean bore diameter deviation at theoretical small end of tapered bore

$\Delta d_{\text{1mp}}$  : Single plane mean bore diameter deviation at theoretical large end of tapered bore

$V_{\text{dp}}$  : Bore diameter variation in a single radial plane

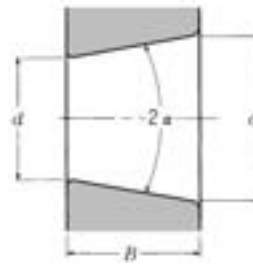
$B$  : Nominal bore diameter

$\alpha$  : 1/2 nominal taper angle of tapered bore

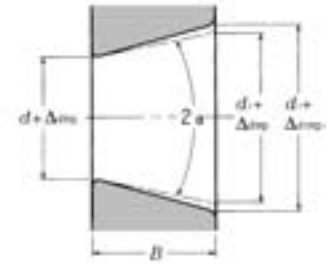
$$\alpha = 2^\circ 23' 9.4''$$

$$= 2.38594^\circ$$

$$= 0.041643 \text{ rad}$$



Theoretical tapered bore



Tapered bore associated with single plane mean bore diameter deviation

## 2.4 Rolling bearing internal clearance

The radial clearance values of the self-aligning ball bearings used in the NTN plummer blocks are summarized in **Table 2.8 (1) and (2)**, and those of the self-aligning roller bearings in **Table 2.9 (1) and (2)**.

**Table 2.8 Radial internal clearance of self-aligning ball bearings**

**(1) Data for cylindrical bore bearings**

Unit:  $\mu\text{m}$

| Nominal bore diameter<br>$d$ (mm) |       | Clearance |     |             |     |     |     |     |     |     |     |
|-----------------------------------|-------|-----------|-----|-------------|-----|-----|-----|-----|-----|-----|-----|
|                                   |       | C2        |     | CN (normal) |     | C3  |     | C4  |     | C5  |     |
| over                              | incl. | max       | min | max         | min | max | min | max | min | max | min |
| 24                                | 30    | 5         | 16  | 11          | 24  | 19  | 35  | 29  | 46  | 40  | 58  |
| 30                                | 40    | 6         | 18  | 13          | 29  | 23  | 40  | 34  | 53  | 46  | 66  |
| 40                                | 50    | 6         | 19  | 14          | 31  | 25  | 44  | 37  | 57  | 50  | 71  |
| 50                                | 65    | 7         | 21  | 16          | 36  | 30  | 50  | 45  | 69  | 62  | 88  |
| 65                                | 80    | 8         | 24  | 18          | 40  | 35  | 60  | 54  | 83  | 76  | 108 |
| 80                                | 100   | 9         | 27  | 22          | 48  | 42  | 70  | 64  | 96  | 89  | 124 |
| 100                               | 120   | 10        | 31  | 25          | 56  | 50  | 83  | 75  | 114 | 105 | 145 |

**(2) Data for tapered bore bearings**

Unit:  $\mu\text{m}$

| Nominal bore diameter<br>$d$ (mm) |       | Clearance |     |             |     |     |     |     |     |     |     |
|-----------------------------------|-------|-----------|-----|-------------|-----|-----|-----|-----|-----|-----|-----|
|                                   |       | C2        |     | CN (normal) |     | C3  |     | C4  |     | C5  |     |
| over                              | incl. | max       | min | max         | min | max | min | max | min | max | min |
| 24                                | 30    | 9         | 20  | 15          | 28  | 23  | 39  | 33  | 50  | 44  | 62  |
| 30                                | 40    | 12        | 24  | 19          | 35  | 29  | 46  | 40  | 59  | 52  | 72  |
| 40                                | 50    | 14        | 27  | 22          | 39  | 33  | 52  | 45  | 65  | 58  | 79  |
| 50                                | 65    | 18        | 32  | 27          | 47  | 41  | 61  | 56  | 80  | 73  | 99  |
| 65                                | 80    | 23        | 39  | 35          | 57  | 50  | 75  | 69  | 98  | 91  | 123 |
| 80                                | 100   | 29        | 47  | 42          | 68  | 62  | 90  | 84  | 116 | 109 | 144 |
| 100                               | 120   | 35        | 56  | 50          | 81  | 75  | 108 | 100 | 139 | 130 | 170 |

# Plummer Block and Rolling Bearing Tolerances

Table 2.9 Radial internal clearance of self-aligning roller bearings

(1) Data for cylindrical bore bearings

Unit:  $\mu\text{m}$

| Nominal bore diameter<br>$d$ (mm) |       | Clearance |     |             |     |     |     |     |     |     |     |
|-----------------------------------|-------|-----------|-----|-------------|-----|-----|-----|-----|-----|-----|-----|
|                                   |       | C2        |     | CN (normal) |     | C3  |     | C4  |     | C5  |     |
| over                              | incl. | max       | min | max         | min | max | min | max | min | max | min |
| 30                                | 40    | 15        | 30  | 30          | 45  | 45  | 60  | 60  | 80  | 80  | 100 |
| 40                                | 50    | 20        | 35  | 35          | 55  | 55  | 75  | 75  | 100 | 100 | 125 |
| 50                                | 65    | 20        | 40  | 40          | 65  | 65  | 90  | 90  | 120 | 120 | 150 |
| 65                                | 80    | 30        | 50  | 50          | 80  | 80  | 110 | 110 | 145 | 145 | 180 |
| 80                                | 100   | 35        | 60  | 60          | 100 | 100 | 135 | 135 | 180 | 180 | 255 |
| 100                               | 120   | 40        | 75  | 75          | 120 | 120 | 160 | 160 | 210 | 210 | 260 |
| 120                               | 140   | 50        | 95  | 95          | 145 | 145 | 190 | 190 | 240 | 240 | 300 |
| 140                               | 160   | 60        | 110 | 110         | 170 | 170 | 220 | 220 | 280 | 280 | 350 |
| 160                               | 180   | 65        | 120 | 120         | 180 | 180 | 240 | 240 | 310 | 310 | 390 |
| 180                               | 200   | 70        | 130 | 130         | 200 | 200 | 260 | 260 | 340 | 340 | 430 |
| 200                               | 225   | 80        | 140 | 140         | 220 | 220 | 290 | 290 | 380 | 380 | 470 |
| 225                               | 250   | 90        | 150 | 150         | 240 | 240 | 320 | 320 | 420 | 420 | 520 |
| 250                               | 280   | 100       | 170 | 170         | 260 | 260 | 350 | 350 | 460 | 460 | 570 |
| 280                               | 315   | 110       | 190 | 190         | 280 | 280 | 370 | 370 | 500 | 500 | 630 |
| 315                               | 355   | 120       | 200 | 200         | 310 | 310 | 410 | 410 | 550 | 550 | 690 |
| 355                               | 400   | 130       | 220 | 220         | 340 | 340 | 450 | 450 | 600 | 600 | 750 |
| 400                               | 450   | 140       | 240 | 240         | 370 | 370 | 500 | 500 | 660 | 660 | 820 |
| 450                               | 500   | 140       | 260 | 260         | 410 | 410 | 550 | 550 | 720 | 720 | 900 |

(2) Data for tapered bore bearing

Unit:  $\mu\text{m}$

| Nominal bore diameter<br>$d$ (mm) |       | Clearance |     |             |     |     |     |     |     |     |       |
|-----------------------------------|-------|-----------|-----|-------------|-----|-----|-----|-----|-----|-----|-------|
|                                   |       | C2        |     | CN (normal) |     | C3  |     | C4  |     | C5  |       |
| over                              | incl. | max       | min | max         | min | max | min | max | min | max | min   |
| 30                                | 40    | 25        | 35  | 35          | 50  | 50  | 65  | 65  | 85  | 85  | 105   |
| 40                                | 50    | 30        | 45  | 45          | 60  | 60  | 80  | 80  | 100 | 100 | 130   |
| 50                                | 65    | 40        | 55  | 55          | 75  | 75  | 95  | 95  | 120 | 120 | 160   |
| 65                                | 80    | 50        | 70  | 70          | 95  | 95  | 120 | 120 | 150 | 150 | 200   |
| 80                                | 100   | 55        | 80  | 80          | 110 | 110 | 140 | 140 | 180 | 180 | 230   |
| 100                               | 120   | 65        | 100 | 100         | 135 | 135 | 170 | 170 | 220 | 220 | 280   |
| 120                               | 140   | 80        | 120 | 120         | 160 | 160 | 200 | 200 | 260 | 260 | 330   |
| 140                               | 160   | 90        | 130 | 130         | 180 | 180 | 230 | 230 | 300 | 300 | 380   |
| 160                               | 180   | 100       | 140 | 140         | 200 | 200 | 260 | 260 | 340 | 340 | 430   |
| 180                               | 200   | 110       | 160 | 160         | 220 | 220 | 290 | 290 | 370 | 370 | 470   |
| 200                               | 225   | 120       | 180 | 180         | 250 | 250 | 320 | 320 | 410 | 410 | 520   |
| 225                               | 250   | 140       | 200 | 200         | 270 | 270 | 350 | 350 | 450 | 450 | 570   |
| 250                               | 280   | 150       | 220 | 220         | 300 | 300 | 390 | 390 | 490 | 490 | 620   |
| 280                               | 315   | 170       | 240 | 240         | 330 | 330 | 430 | 430 | 540 | 540 | 680   |
| 315                               | 355   | 190       | 270 | 270         | 360 | 360 | 470 | 470 | 590 | 590 | 740   |
| 355                               | 400   | 210       | 300 | 300         | 400 | 400 | 520 | 520 | 650 | 650 | 820   |
| 400                               | 450   | 230       | 330 | 330         | 440 | 440 | 570 | 570 | 720 | 720 | 910   |
| 450                               | 500   | 260       | 370 | 370         | 490 | 490 | 630 | 630 | 790 | 790 | 1 000 |

### 3. Plummer Block and Bearing Materials

#### 3.1 Plummer block materials

The housings of NTN plummer blocks are made of class 3 gray cast iron (FC200). **Table 3.1** summarizes the mechanical properties of this material.

Cast iron materials boasts the greatest vibration dampening capability among various metal materials.

They also perform well in a wider operating temperature range of –20 to 300°C.

For application involving shock load and vibration, class 2 spheroidal graphite cast iron (FCD450) or class 3 carbon cast steel (SC450) is used.

**Table 3.1 Mechanical properties**

##### (1) Mechanical properties of gray cast iron

| Type                          | Symbol | Typical wall thickness<br>of cast iron product<br>mm | Cast diameter<br>of samples<br>mm | Tensile strength<br>MPa<br>(kgf/mm <sup>2</sup> ) | Transverse test            |               | Brinell<br>hardness<br>HB |
|-------------------------------|--------|------------------------------------------------------|-----------------------------------|---------------------------------------------------|----------------------------|---------------|---------------------------|
|                               |        |                                                      |                                   |                                                   | Maximum load<br>N<br>(kgf) | Flexure<br>mm |                           |
| Gray<br>cast iron,<br>class 3 | FC200  | 4 to 8                                               | 13                                | 235 {24} over                                     | 1 960 {200} over           | 2.0 over      | 255 incl.                 |
|                               |        | over 8, incl. 15                                     | 20                                | 216 {22} over                                     | 4 410 {450} over           | 3.0 over      | 235 incl.                 |
|                               |        | over 15, incl. 30                                    | 30                                | 196 {20} over                                     | 8 820 {900} over           | 4.5 over      | 223 incl.                 |
|                               |        | over 30, incl. 50                                    | 45                                | 167 {17} over                                     | 19 600 {2 000} over        | 6.5 over      | 217 incl.                 |

##### (2) Mechanical properties of spheroidal graphite cast iron

| Type                                     | Symbol | Tensile test                                  |                                                   |                 | Impact test                                    |
|------------------------------------------|--------|-----------------------------------------------|---------------------------------------------------|-----------------|------------------------------------------------|
|                                          |        | Proof stress<br>MPa<br>(kgf/mm <sup>2</sup> ) | Tensile strength<br>MPa<br>(kgf/mm <sup>2</sup> ) | Elongation<br>% | Charpy absorption energy<br>N • m<br>{kgf • m} |
| Class 2 spheroidal<br>graphite cast iron | FCD450 | 226 {23} over                                 | 450 {46} over                                     | 10 over         | —                                              |

##### (3) Mechanical properties of carbon cast steel

| Type              | Symbol | Yield point<br>MPa<br>(kgf/mm <sup>2</sup> ) | Tensile test                                      |                 |                        |
|-------------------|--------|----------------------------------------------|---------------------------------------------------|-----------------|------------------------|
|                   |        |                                              | Tensile strength<br>MPa<br>(kgf/mm <sup>2</sup> ) | Elongation<br>% | Reduction in area<br>% |
| Carbon cast steel | SC450  | 226 {23} over                                | 451 {46} over                                     | 19 over         | 30 over                |

# Plummer Block and Bearing Materials

**Table 3.2 Plummer block accessories materials**

| Accessory                                        | Material used                                       | Symbol      | Applicable JIS standard |
|--------------------------------------------------|-----------------------------------------------------|-------------|-------------------------|
| Tightening bolt and nut                          | Class 2 rolled steel for general structure          | SS400       | G3101                   |
| Spring washer                                    | Hard drawn steel wire                               | SWRH62B     | G3506                   |
| Grease nipple (on housing)                       | Copper and copper alloy rod and bar                 | C3604B      | H3250                   |
| Plug for relubrication or draining               | Class 2 rolled steel for general structure          | SS400       | G3101                   |
| Stabilizing ring, general purpose (normal width) | Class 3 gray cast iron and class 2 zinc die-casting | FC200, ZDC2 | G5501, H5301            |
|                                                  | Class 2 rolled steel for general structure          | SS400       | G3101                   |

## 3.2 Bearing materials

### Raceway and rolling element materials

When the contact surfaces of a bearing raceway and rolling elements are repeatedly subjected to heavy stress, they still must maintain high precision and running accuracy. To accomplish this, the raceway and rolling elements must be made of a material that has high hardness, is resistant to rolling fatigue, is wear resistant, and has good dimensional stability.

By using pure materials, low in these non-metallic impurities, the rolling fatigue life of the bearing is lengthened. For all **NTN** bearings, pure material is prepared which has low oxygen content and low non-metallic impurities, by vacuum degassing process and secondary refining process.

**Table 3.3 Adapter materials**

|                 | Part description            | Material used                                | Symbol  | Applicable JIS standard | Remarks                                                                         |
|-----------------|-----------------------------|----------------------------------------------|---------|-------------------------|---------------------------------------------------------------------------------|
| Sleeve, adapter | Bearing bore #14 or smaller | Carbon steel for machine structural purposes | STKM13A | G3445                   | Can be SS400 (G3101), S20C to S35C (G4051), STPG370 (G3454) or STKM13A (G3445). |
|                 | Bearing bore #15 or greater | Carbon steel for machine structural purposes | S25C    | G4051                   |                                                                                 |
| Nut             | #05~#07                     | Carbon steel for machine structural purposes | S20C    | G4051                   | Can be SS400 (G3101), or S20C to S35C (G4051).                                  |
|                 | #08~#32                     | Rolled steel for general structure           | SS400   | G3101                   |                                                                                 |
|                 | #34~                        | Carbon steel for machine structural purposes | S25C    | G4051                   |                                                                                 |
| Lock-washer     | Thickness: less than 3 mm   | Cold rolled steel plate and strip            | SPCC-SD | G3141                   |                                                                                 |
|                 | Thickness: 3 mm or greater  | Rolled steel for general structure           | SS400   | G3101                   | Can be SPHD (G3131).                                                            |
| Lock plate      |                             | Rolled steel for general structure           | SS400   | G3101                   | Can be S20C to S35C (G4051).                                                    |

### Cage materials

Bearing cage materials must be strong enough to withstand the vibration and shock load occurring on running bearings, develop limited friction with rolling elements and bearing ring, be light, and resist the heat occurring on running bearings.

The cages for small- and medium-sized bearings are pressed cages prepared through pressing process with cold or hot rolled steel plate, while the cages for large-sized bearings are machined cages made of cast high tensile brass or carbon steel for machine structural purposes.

## 4. Strength of Plummer Blocks, and Combination with Bearings

### 4.1 Strength of plummer blocks

The disruptive strength of plummer block varies depending on its type, nature and direction of a load working on it, as well as the flatness of a surface to which it is installed. The typical trend of static disruptive strength of SN5 and SN6 (S6) series of cast iron plummer blocks is plotted in **Figs. 4.1 and 4.2** respectively.

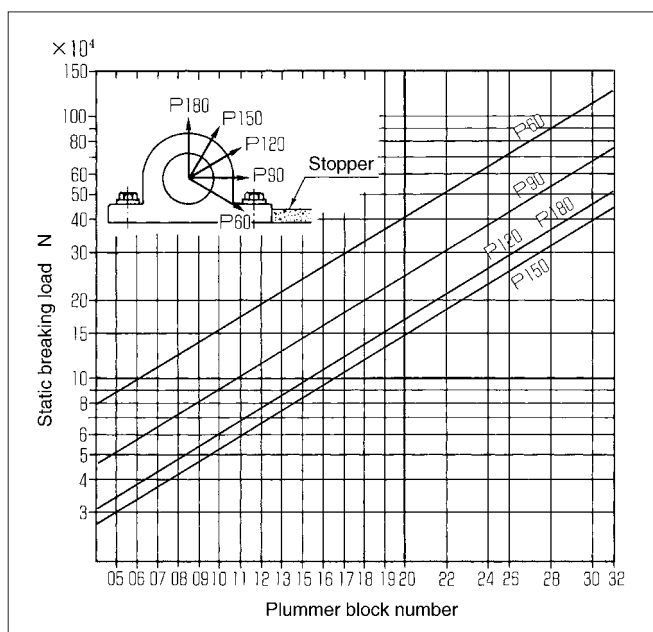
When selecting a plummer block, the safety factors in **Table 4.1** must be considered. Also, a higher grade of flatness is required of a surface for mounting a plummer block.

**Table 4.1 Safety factors of cast iron plummer blocks**

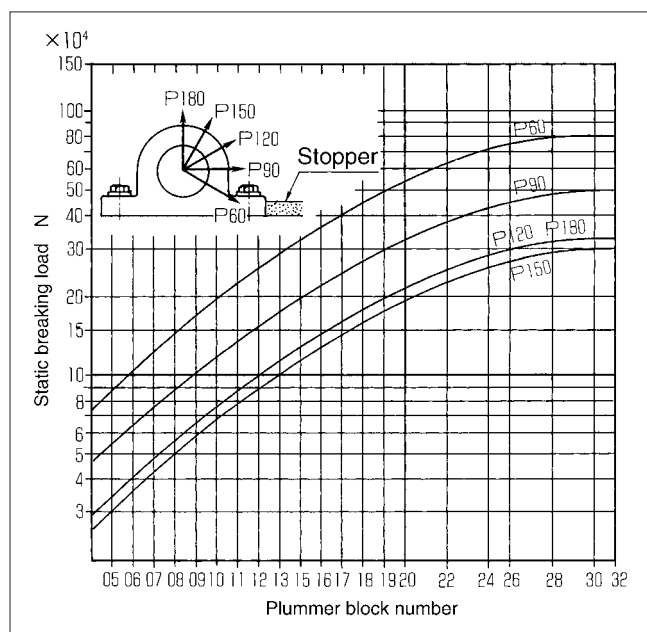
| Nature of load | Light | Repeated | Alternating | Shock |
|----------------|-------|----------|-------------|-------|
| Safety factor  | 4     | 6        | 10          | 15    |

**To counter a horizontal or axial load, the face of the bed must be secured with a stopper.**

**For applications where extreme shock load is present or a fractured plummer block can lead to severe accident, NTN offers special plummer blocks made of spherical graphite cast iron or cast steel. For further information, contact NTN Engineering.**



**Fig. 4.1 Static disruptive strength of SN5 series**



**Fig. 4.2 Static disruptive strength of SN6 (S6) series**

## 4.2 Combinations of plummer blocks and bearings

The typical plummer block-bearing combinations are listed in **Tables 4.2 (1) and (2)**.

**Table 4.2 (1) Plummer blocks and applicable bearings**

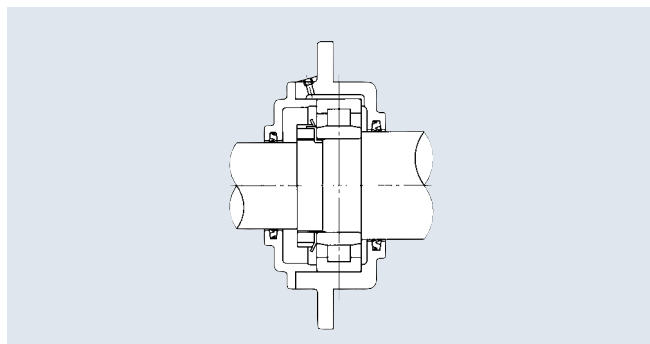
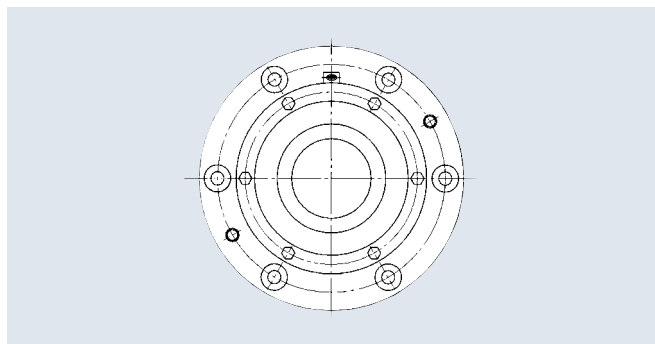
| Bearing series<br>Plummer block series | 12      | 22     | 13      | 23      | 230       | 231       | 222                    | 232                | 213      | 223       |
|----------------------------------------|---------|--------|---------|---------|-----------|-----------|------------------------|--------------------|----------|-----------|
| SN5<br>SN5··F                          | 06K~22K | 06K~22 |         |         |           |           | 08CK~32BK<br>11EK~18EK | 18BK,<br>20BK~32BK |          |           |
| SN(S)6<br>SN(S)6··F                    |         |        | 06K~22K | 06K~22K |           |           |                        |                    | 08CK~22K | 08CK~32BK |
| SN2<br>SN2··F                          | 06~22   | 06~22  |         |         |           |           | 08C~32B<br>11E~18E     | 18B,<br>20B~32B    |          |           |
| SN(S)3<br>SN(S)3··F                    |         |        | 06~22   | 06~22   |           |           |                        |                    | 08C~22   | 08C~32B   |
| SNZ2<br>SNZ2··F                        | 06~22   | 06~22  |         |         |           |           | 08C~32B<br>11E~18E     | 18B,<br>22B~32B    |          |           |
| SNZ(SZ)3<br>SNZ(SZ)3··F                |         |        | 06~22   | 06~22   |           |           |                        |                    | 08C~22   | 08C~32B   |
| SN30                                   |         |        |         |         | 24BK~38BK |           |                        |                    |          |           |
| SN31                                   |         |        |         |         |           | 22BK~38BK |                        |                    |          |           |
| SD5<br>SD5··G                          |         |        |         |         |           |           | 34BK~64BK              |                    |          |           |
| SD6<br>SD6··G                          |         |        |         |         |           |           |                        |                    |          | 34BK~56BK |
| SD2<br>SD2··G                          |         |        |         |         |           |           | 34B~64B                |                    |          |           |
| SD3<br>SD3··G                          |         |        |         |         |           |           |                        |                    |          | 34B~56B   |
| SD2··D<br>SD2··DG                      |         |        |         |         |           |           | 34B~64B                |                    |          |           |
| SD3··D<br>SD3··DG                      |         |        |         |         |           |           |                        |                    |          | 34B~56B   |
| SD30<br>SD30··G                        |         |        |         |         | 34BK~96BK |           |                        |                    |          |           |
| SD31<br>SD31··G                        |         |        |         |         |           | 34BK~84BK |                        |                    |          |           |

# Strength of Plummer Blocks, and Combination with Bearings

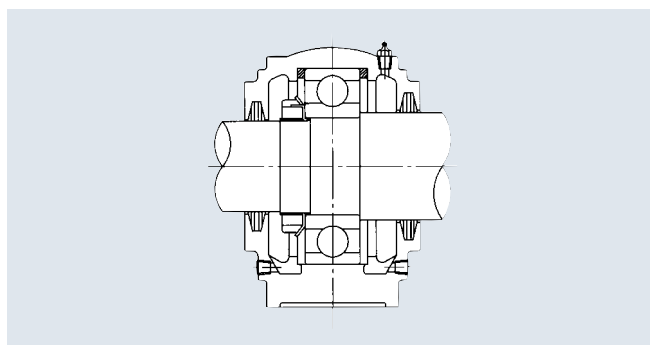
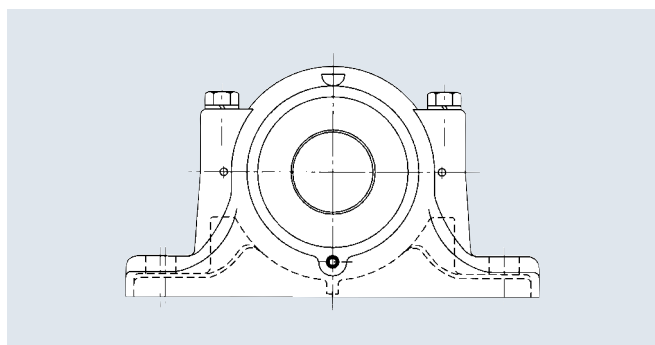
Table 4.2 (2) Plummer blocks and applicable bearings

| Bearing series<br>Plummer<br>block series | 12      | 22      | 13      | 23      | 230 | 231 | 222                    | 232              | 213      | 223      |
|-------------------------------------------|---------|---------|---------|---------|-----|-----|------------------------|------------------|----------|----------|
| SV5                                       | 05K~22K | 05K~22K |         |         |     |     | 08CK~64BK<br>11EK~18EK | 18B,<br>20B~32B  |          |          |
| SV6                                       |         |         | 05K~22K | 05K~22K |     |     |                        |                  | 08CK~22K | 08CK~22K |
| SV2                                       | 05~22   | 05~22   |         |         |     |     | 08C~32B<br>11E~18E     | 16BK,<br>20B~64B |          |          |
| SV3                                       |         |         | 05~22   | 05~22   |     |     |                        |                  | 08C~22   | 08C~56B  |

Example of application with cylindrical roller bearing



Example of application with deep groove ball bearing



## 5. Allowable Speed

Greater bearing speed leads to higher bearing temperature owing to friction heat occurring within the bearing. When the bearing is heated beyond a specific limit, a bearing failure such as seizure occurs, and the bearing cannot maintain stable operation any more. The limiting bearing speed where a bearing can operate without developing heat beyond a particular limitation is called allowable speed (rpm). This varies depending on the type and size of bearing, type of cage, as well as loading, lubricating and cooling conditions.

The bearing tables in this brochure summarize the typical allowable bearing speeds either with grease or oil lubrication. However, these values assume that:

- An NTN standard design bearing having correct internal clearance is correctly installed.
- The bearing is lubricated with quality lubricant, and the lubricant is replenished or replaced at correct intervals.
- The bearing is operated under normal loading conditions ( $P \leq 0.09C_r$ ,  $F_a/F_r \leq 0.3$ ), and at a normal operating temperature.

Note, however, that rolling elements may fail to rotate smoothly under a load of  $P \leq 0.04C_{or}$ . For advice against this problem, contact NTN Engineering. Also, note that the allowable speed of deep groove ball bearing having a contact seal (model LLU) or low-torque seal (model LLH) is governed by the peripheral speed of the seal. The allowable speed of a bearing that is used under severe

operating conditions can be determined by multiplying the allowable speed of that bearing in a bearing table by an adjustment factor in Fig. 5.1.

The allowable speed of a plummer block with a bearing varies depending on the seal type used. For example, in the case of a plummer block having a contact seal, its allowable speed is restricted by the allowable peripheral speed of the seal. Fig. 5.2 provides a guideline for selecting allowable peripheral speeds of various seals.

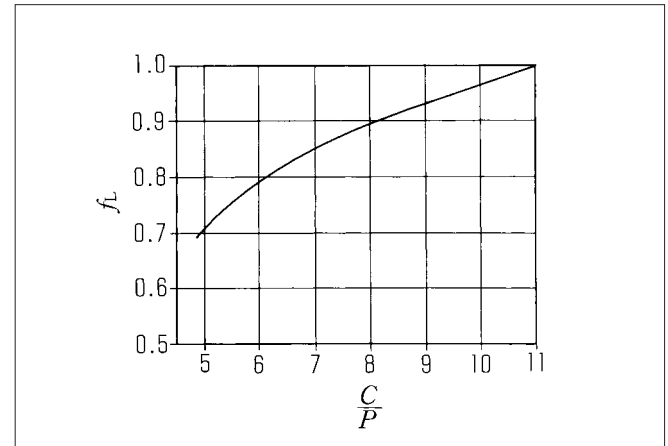


Fig. 5.1 Values of adjustment factor  $f_L$  dependent on bearing load

$C$ : Basic dynamic load rating  $N$

$P$ : Dynamic equivalent load  $N$

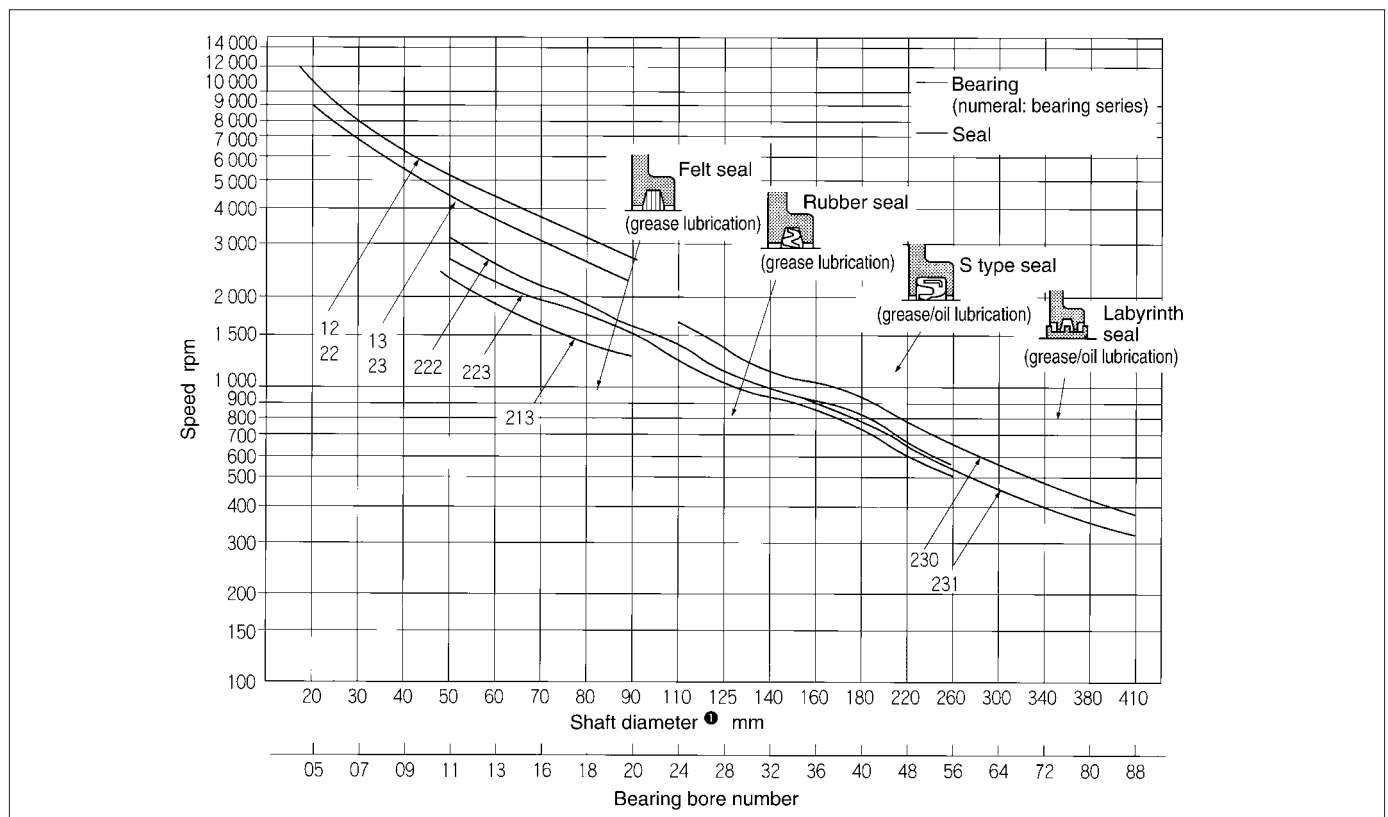


Fig. 5.2 Allowable speed of bearing vs. allowable peripheral speed of seal  $n_o$

- 1 Determine the allowable speed of the seal of a cylindrical bore bearing by referring to the shaft diameter at the contact surface of the seal. In the plotting above, the allowable speeds of the seal are indicated as shaft speeds (rpm).

## 6. Bearing Seals

The purposes of bearing seals are to prevent lubricant from leaking out and to protect the bearing against ingress of dust and moisture.

An appropriate bearing seal is selected considering the lubricant type (grease or oil) and the peripheral speed of the seal.

The seal type of NTN plummer blocks can be either contact or non-contact type. The contact type is available as felt seals and rubber seals, while the non-contact type as labyrinth seals. Also, special combination seals are available for applications under severe operating conditions involving, for example, heavy air-borne dust.

### 6.1 Contact seals

#### (1) Rubber seal (Fig. 6.1)

Rubber seals are typically used for grease lubrication, and their allowable peripheral speed, as a guideline, ranges from 5 to 6 m/s.

Usually, the material of rubber seals is nitrile rubber. However, to cope with demanding ambient temperatures, the materials in **Table 6.1** are also available.

#### (2) Felt seal (Fig. 6.2)

Felt seals are compatible with rubber seals, but must be used for grease lubrication only.

Felt seals are not suitable for dusty or moist environments. Their allowable peripheral speed, as a guideline, is 4 m/s max. A felt seal can be cut into two pieces that are respectively fitted into the seal grooves on the upper and lower plummer block housings. This feature greatly simplifies the assembly procedure for plummer blocks.

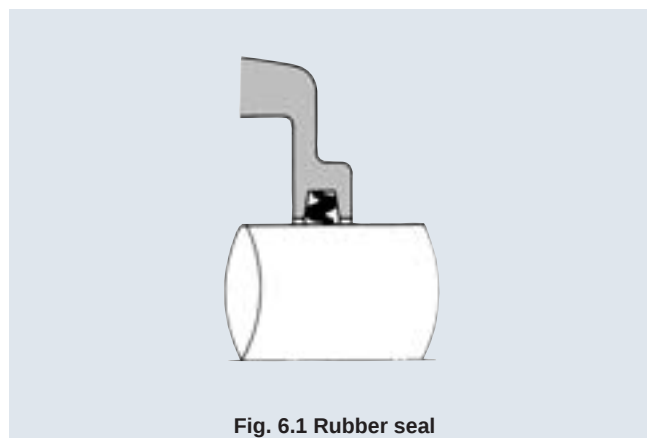


Fig. 6.1 Rubber seal

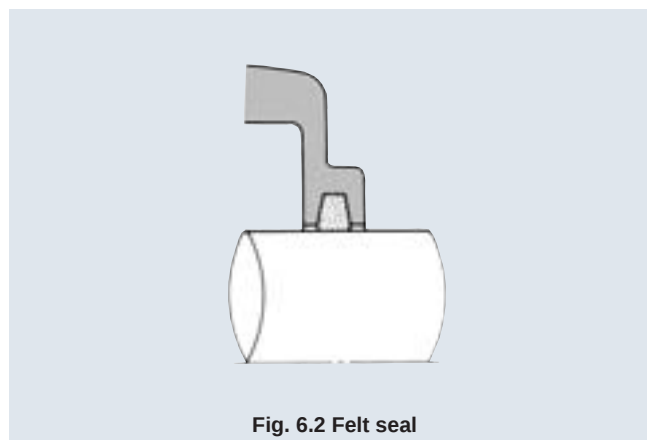


Fig. 6.2 Felt seal

Table 6.1 Types and features of rubber seal materials

| Seal material         | Wear resistance | Oil resistance | Acid resistance | Alkali resistance | Water resistance | Recommended operating temperature range °C | Features                                                                                                                                                                                                                                                        |
|-----------------------|-----------------|----------------|-----------------|-------------------|------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nitrile rubber (NBR)  | ◎               | ◎              | ○               | ○                 | ○                | — 25<br>+100                               | Nitrile rubber (NBR) resists virtually all oil types and also features good wear resistance. Thus, this material is most commonly used as an oil seal material. It can be used in ordinary machinery operating under virtually any normal operating conditions. |
| Acrylic rubber (ACM)  | ◎               | ◎              | △               | ×                 | △                | — 15<br>+130                               | Boasts excellent heat resistance and oil resistance, but is rather vulnerable to alkali or water. Thus, the scope of its applications is limited.                                                                                                               |
| Silicone rubber (VMQ) | ○               | ○              | △               | ×                 | ○                | — 50<br>+220                               | Boasts excellent heat resistance and cold resistance. However, it cannot be used together with extreme pressure grease or spindle oil.                                                                                                                          |
| Fluororubber (FKM)    | ◎               | ◎              | ◎               | △                 | ○                | — 10<br>+220                               | Inert to virtually all oil or chemical types. Its properties are well balanced. Therefore, it features wider operating conditions range. To sum up, this is a superior oil seal material.                                                                       |

◎: Excellent, ○: Good, △: Fair, ×: Poor (must not be used)

## (3) S grease seal (Fig. 6.3)

The S grease seal (synthetic rubber seal with spring) excels in sealing performance and is well suited for grease or oil lubrication. Custom specification variants can be used in a plummer block.

Its recommended peripheral speed falls within a range of 10 to 12 m/s. The surface roughness and hardness of the shaft in contact with this sealing material necessitates special attention.



Fig. 6.4 Labyrinth seal

## 6.2 Non-contact seals

### (1) Labyrinth seal (Fig. 6.4)

The labyrinth seal used in the bore of plummer blocks -- SD31...TS and SD32...TS series-- comprise a labyrinth ring that is fitted into the bore of the plummer block. A labyrinth seal is used in clearance fit to a shaft (h9) together with an O-ring so that it can be readily installed and can follow expansion/compression of the shaft.

This seal type excels in sealing performance, and can be used for grease or oil lubrication.

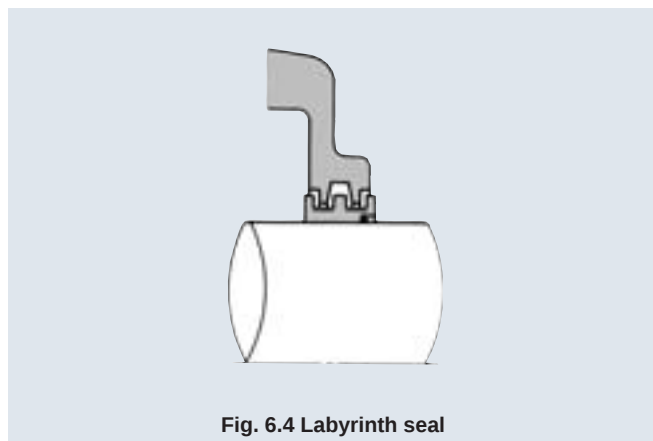


Fig. 6.4 Labyrinth seal

### (2) Special labyrinth seal (Fig. 6.5)

The special labyrinth seals such as those in Fig. 6.5 are very useful for applications where heavy soil and dust are present.

The plummer blocks used in conjunction with this seal type are manufactured per custom specifications. For further information, contact NTN Engineering.

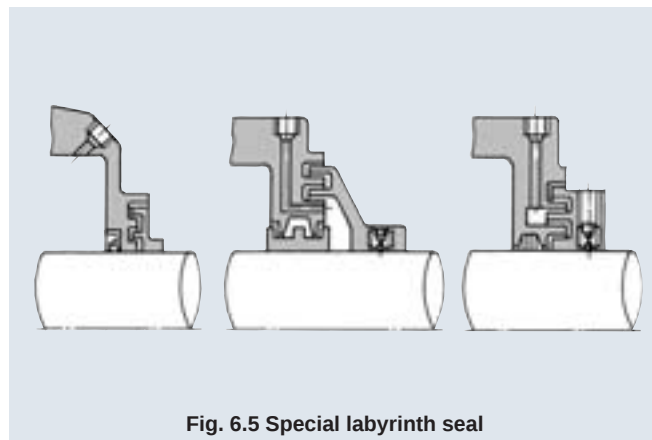


Fig. 6.5 Special labyrinth seal

### Shaft design specification for the area in contact with the seal

The quality of a shaft section in contact with the seal lip greatly affects the sealing performance of the seal. Therefore, strictly adhere to the design standard for shafts in Table 6.2.

Table 6.2 Shaft design standard

| Criterion              | Design standard                                                                              | Remarks                                                    |
|------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Hardness               | HRC30~40                                                                                     |                                                            |
| Surface roughness      | 0.8Ra or smaller                                                                             | The finish surface should be finish-ground without infeed. |
| Chamfering at end face | The end face to which a seal is fitted must be tapered and the sharp corner must be rounded. |                                                            |

## 6.3 Combination seals

The combination seals used for the SBG series are unique seals that comprise both of an oil seal and labyrinth seal and are installed in the bore of a plummer block. They are used in environments where heavy dust and contaminants are present.

For better sealing effect, the labyrinth seal is often filled with grease.

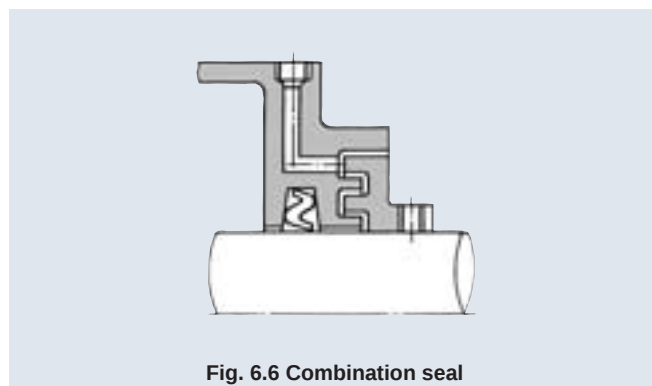


Fig. 6.6 Combination seal

**With a continuous or intermittent lubrication scheme, lubricant can tend to leak. Use a seal that positively offers reliable sealing.**

## 7. Shaft Design

### 7.1 Bearing-to-shaft fit

The tolerance requirements of the shaft outside diameter differs between a bearing with an adapter and a cylindrical bore bearing each mounted to a plummer block. **Table 7.1** summarizes the recommended bearing-to-shaft fits.

A bearing with an adapter is installed to a shaft by means of an adapter. A cylindrical bore bearing is usually positioned in interference fit by a shaft shoulder and secured with a nut and washer. For this application, the shaft is provided with threading and washer groove as illustrated in **Fig. 7.1**.

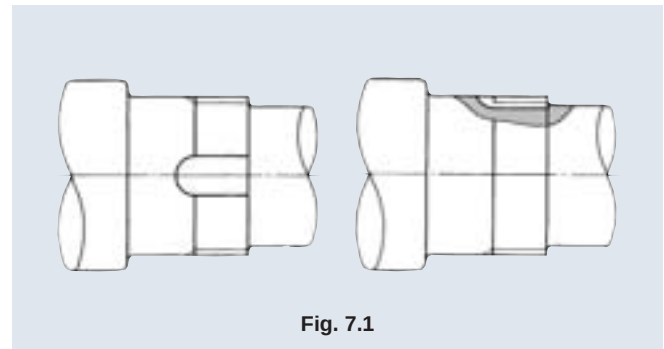


Fig. 7.1

Table 7.1 Recommended bearing-to-shaft fit

| Bearing bore type                             | Load condition                  | Shaft outside diameter                              |                                                                                            | Shaft type and tolerance class | Remarks                                                                                                                                                                                 |
|-----------------------------------------------|---------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                                 | Self-aligning ball bearing                          | Self-aligning roller bearing                                                               |                                |                                                                                                                                                                                         |
| Tapered bore (complete with adapter assembly) | Various loads                   | All bearing sizes                                   |                                                                                            | H9/IT5                         | The tolerance class for transmission shafts may be h10/IT7. "IT5" or IT7" means that the shaft form tolerance (circularity, cylidricity, etc.) must satisfy tolerance class IT5 or IT7. |
| Cylindrical bore                              | Light load and fluctuating load | over 18, incl. 100<br>over 100, incl. 200           | —<br>—                                                                                     | J6<br>k6                       | Light load essentially means a load as small as 6 to 7% the basic dynamic load rating.<br>$P_r \leq 0.07C_r$                                                                            |
|                                               | Normal load                     | over 18, incl. 100<br>over 100, incl. 200<br>—<br>— | —<br>over 40, incl. 65<br>over 65, incl. 100<br>over 100, incl. 140<br>over 140, incl. 280 | k5<br>m5<br>m6<br>n6<br>p6     | Normal load is a load that satisfies $0.06C_r < P_r \leq 0.12C_r$ .                                                                                                                     |
|                                               | Heavy load and shock load       | —<br>—<br>—                                         | over 50, incl. 100<br>over 100, incl. 140<br>over 140                                      | n6<br>p6<br>r6                 | Heavy load is a load that satisfies $P_r > 0.12C_r$ . For this type of application, use a bearing whose clearance is greater than normal clearance.                                     |

### 7.2 Mounting dimensions

To be able to correctly seat a cylindrical bore bearing to the shaft shoulder, the height and fillet radius  $r_{as}$  of the shoulder must be greater than the chamfering  $r_{s \min}$  of the bearing as specified in **Table 7.2**.

If the bearing is used on the shaft end, the configuration must be designed such that the shaft end does not interfere with the face of bearing bore. For reference, **Table 7.3** provides the wall thickness values at the bearing bore.

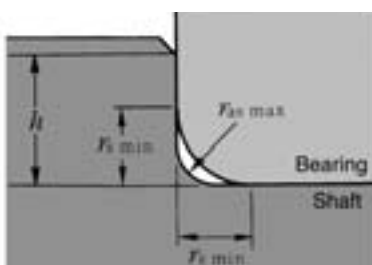
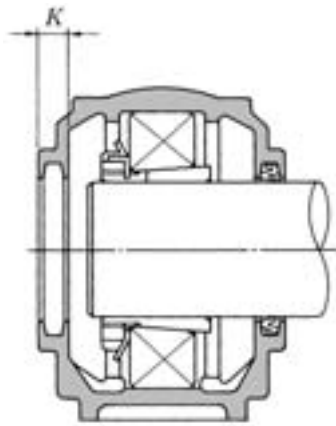


Table 7.2 Fillet radius and shoulder height of shaft

Unit: mm

| Chamfer dimension<br>$r_{s \min}$ mm | Shoulder height $h_s$ ❶<br>(min) | Fillet radius<br>$r_{as \max}$ |
|--------------------------------------|----------------------------------|--------------------------------|
| 1                                    | 2.75                             | 1                              |
| 1,1                                  | 3.5                              | 1                              |
| 1,5                                  | 4.25                             | 1.5                            |
| 2                                    | 5                                | 2                              |
| 2,1                                  | 6                                | 2                              |
| 2,5                                  | 6                                | 2                              |
| 3                                    | 7                                | 2.5                            |
| 4                                    | 9                                | 3                              |
| 5                                    | 11                               | 4                              |
| 6                                    | 14                               | 5                              |
| 7,5                                  | 18                               | 6                              |
| 9,5                                  | 22                               | 8                              |

❶ The shoulder height must be greater than that specified when the shaft is subjected to a greater axial load.



**Table 7.3 Wall thickness at the bearing bore**

| (1) Unit: mm   |          |                |          |                |          | (2) Unit: mm   |          |                |          |                |          |
|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|
| Bearing number | <i>K</i> | Bearing number | <i>K</i> | Bearing number | <i>K</i> | Bearing number | <i>K</i> | Bearing number | <i>K</i> | Bearing number | <i>K</i> |
| SN 506         | 11       | SN 606         | 11       | SN 206         | 11       | SD 534         | 44       | SD3340         | 44       | SN3024         | 20       |
| 507            | 11       | 607            | 11       | (SNZ) 207      | 11       | 536            | 44       | 3344           | 48       | 3026           | 20       |
| 508            | 11       | 608            | 11       | 208            | 13       | 538            | 48       | 3348           | 48       | 3028           | 22       |
| 509            | 11       | 609            | 11       | 209            | 13       | 540            | 48       | 3352           | 54       | 3030           | 22       |
|                |          |                |          |                |          | 544            | 54       | 3356           | 54       | 3032           | 22       |
| SN 510         | 11       | SN 610         | 11       | SN 210         | 13       | SD 548         | 52       | SD3360         | 58       | SN3034         | 24       |
| 511            | 14       | 611            | 14       | (SNZ) 211      | 14       | 552            | 58       | 3364           | 58       | 3036           | 24       |
| 512            | 14       | 612            | 14       | 212            | 16       | 556            | 58       | 3368           | 60       | 3038           | 24       |
| 513            | 14       | 613            | 14       | 213            | 16       | 560            | 60       | 3372           | 60       |                |          |
| 515            | 14       | 615            | 14       | 214            | 16       | 564            | 60       | 3376           | 60       |                |          |
| SN 516         | 16       | SN 616         | 16       | SN 215         | 16       | SD 634         | 48       | SD3440         | 48       | SN3122         | 20       |
| 517            | 16       | 617            | 16       | (SNZ) 216      | 17       | 636            | 48       | 3444           | 48       | 3124           | 20       |
| 518            | 16       | 618            | 16       | 217            | 17       | 638            | 54       | 3448           | 54       | 3126           | 20       |
| 519            | 16       | 619            | 16       | 218            | 18       | 640            | 54       | 3452           | 52       | 3128           | 22       |
| 520            | 18       | 620            | 18       | 219            | 18       | 644            | 58       | 3456           | 58       | 3130           | 22       |
| SN 522         | 20       | SN 622         | 20       | SN 220         | 20       | SD 648         | 58       | SD3460         | 58       | SN3132         | 24       |
| 524            | 20       | 624            | 20       | (SNZ) 222      | 22       | 652            | 60       | 3464           | 60       | 3134           | 24       |
| 526            | 20       | 626            | 20       | 224            | 22       | 656            | 60       | 3468           | 60       | 3136           | 24       |
| 528            | 23       | 628            | 23       | 226            | 22       |                |          |                |          | 3138           | 24       |
| 530            | 23       | 630            | 23       | 228            | 23       |                |          |                |          |                |          |
| SN 532         | 25       | SN 632         | 25       | SN 230         | 23       |                |          |                |          |                |          |
|                |          |                |          | (SNZ) 232      | 25       |                |          |                |          |                |          |

Note: The dimensions for model SN3 are the same as those of model SN2.

Note: For SD31TS and SD32TS, *K*=37 mm.

The dimensions for SD30 and SD31 are the same as those of SD33 and SD34.

## 8. Lubrication

### 8.1 Grease lubrication

Usually, plunger blocks are lubricated with grease. Grease lubrication leads to good sealing performance and simpler seal design.

#### (1) Characteristics of grease

Grease is prepared by mixing base oil such as mineral oil or synthetic oil with thickener. The characteristics of grease vary depending on types and combination of various additives.

The typical grease types and their characteristics are summarized in **Table 8.1**.

Depending on the intended application, a grease of appropriate consistency number is used as summarized in **Table 8.2**.

**Table 8.2 Grease consistency**

| NLGI consistency number | JIS (ATM) worked penetration | Applications                |
|-------------------------|------------------------------|-----------------------------|
| 0                       | 355~385                      | Centralized lubrication     |
| 1                       | 310~340                      | Centralized lubrication     |
| 2                       | 265~295                      | General or capped bearing   |
| 3                       | 220~250                      | General or high temperature |
| 4                       | 175~205                      | Special application         |

#### (2) Grease volume

When grease is packed into a bearing, the inside of the bearing is first filled with grease. During this course, the grease must be also filled into the inside guide way of the bearing cage.

As a guideline, the recommended volume of grease filled in plunger blocks is given below.

General application

.....About 1/3 to 1/2 the empty space

Relatively high speed application

.....About 1/2 the empty space

Low speed application

.....More than 1/2 the empty space

The volume of grease should be carefully selected as it can lead to overheating of the bearing, outward leakage from the seal, or ingress of dust.

The recommended volume of grease commonly filled in the applicable bearings are summarized in **Table 8.3**.

**Table 8.3 (1) Volume of grease filled into models SN5 and SN6**

| Bearing number | Grease volume (g) | Bearing number | Grease volume (g) |
|----------------|-------------------|----------------|-------------------|
| SN506          | 20~ 30            | SN606          | 27~ 41            |
| SN507          | 30~ 45            | SN607          | 35~ 52            |
| SN508          | 37~ 55            | SN608          | 50~ 75            |
| SN509          | 37~ 55            | SN609          | 75~ 110           |
| SN510          | 47~ 70            | SN610          | 100~ 150          |
| SN511          | 55~ 80            | SN611          | 110~ 160          |
| SN512          | 80~ 120           | SN612          | 130~ 190          |
| SN513          | 100~ 150          | SN613          | 160~ 240          |
| SN515          | 130~ 190          | SN615          | 230~ 350          |
| SN516          | 140~ 210          | SN616          | 250~ 380          |
| SN517          | 170~ 260          | SN617          | 320~ 480          |
| SN518          | 260~ 390          | S618           | 370~ 550          |
| SN519          | 250~ 370          | S619           | 470~ 700          |
| SN520          | 330~ 500          | S620           | 500~ 750          |
| SN522          | 470~ 700          | S622           | 700~1 000         |
| SN524          | 550~ 850          | S624           | 950~1 400         |
| SN526          | 650~ 950          | S626           | 1 100~1 600       |
| SN528          | 800~1 200         | S628           | 1 300~2 000       |
| SN530          | 1 100~1 600       | S630           | 1 600~2 400       |
| SN532          | 1 300~2 000       | S632           | 1 800~2 700       |

**Table 8.3 (2) Volume of grease filled into model SD**

| Bearing number | Grease volume (g) | Bearing number | Grease volume (g) |
|----------------|-------------------|----------------|-------------------|
| SD3340         | 1 400~ 2 100      | SD534          | 1 500~ 2 300      |
| SD3344         | 1 700~ 2 600      | SD536          | 1 800~ 2 700      |
| SD3348         | 2 000~ 3 000      | SD538          | 1 900~ 2 900      |
| SD3352         | 2 700~ 4 000      | SD540          | 2 300~ 3 400      |
| SD3356         | 3 400~ 5 100      | SD544          | 3 000~ 4 500      |
| SD3360         | 3 500~ 5 700      | SD548          | 3 700~ 5 600      |
| SD3364         | 4 300~ 6 400      | SD552          | 4 800~ 7 200      |
| SD3368         | 5 600~ 8 400      | SD556          | 6 000~ 9 000      |
| SD3372         | 6 300~ 9 400      | SD560          | 6 700~10 000      |
| SD3376         | 6 600~ 9 900      | SD564          | 9 300~14 000      |
| SD3440         | 1 500~ 2 200      | SD634          | 1 900~ 2 900      |
| SD3444         | 2 300~ 3 400      | SD636          | 2 500~ 3 700      |
| SD3448         | 2 300~ 3 500      | SD638          | 2 700~ 4 000      |
| SD3452         | 2 700~ 4 000      | SD640          | 3 300~ 5 000      |
| SD3456         | 3 200~ 4 800      | SD644          | 3 800~ 5 700      |
| SD3460         | 4 400~ 6 600      | SD648          | 5 400~ 8 100      |
| SD3464         | 5 100~ 7 700      | SD652          | 6 500~ 9 800      |
| SD3468         | 6 700~1 0000      | SD656          | 8 700~13 000      |

**Table 8.3 (3) Volume of grease filled into models SN30 and SN31**

| Bearing number | Grease volume (g) | Bearing number | Grease volume (g) |
|----------------|-------------------|----------------|-------------------|
| SN3024         | 260~ 390          | SN3122         | 260~ 380          |
| SN3026         | 370~ 550          | SN3124         | 350~ 550          |
| SN3028         | 420~ 650          | SN3126         | 400~ 600          |
| SN3030         | 490~ 750          | SN3128         | 470~ 700          |
| SN3032         | 650~1 000         | SN3130         | 700~1 000         |
| SN3034         | 800~1 200         | SN3132         | 850~1 300         |
| SN3036         | 1 000~1 500       | SN3134         | 950~1 400         |
| SN3038         | 1 000~1 500       | SN3136         | 1 100~1 700       |
|                |                   | SN3138         | 1 300~2 000       |

### 9. Handling the Plummer Blocks and Bearings

Rolling bearings are precision components. To maintain their accuracies, they must be handled very carefully. In particular, they must be kept clean, not be subjected to strong impact, and be protected against possible rusting.

Plummer blocks also need similar handling practices.

#### 9.1 Inspection before installation

Before installing a bearing and a plummer block, the following points must be thoroughly checked and inspected.

- (1) Prepare installation tools, measuring instruments, oil stone, lubricant and factory cloth. Before the installation work, remove dust and impurities from these tools. **(Fig. 9.1)**

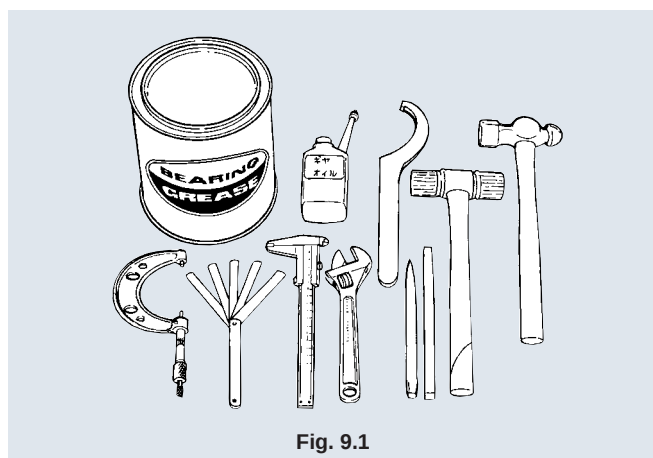


Fig. 9.1

- (2) Make sure that the shaft is free from bends or other damages and that it has been dimensioned and formed as specified. **(Fig. 9.2)**

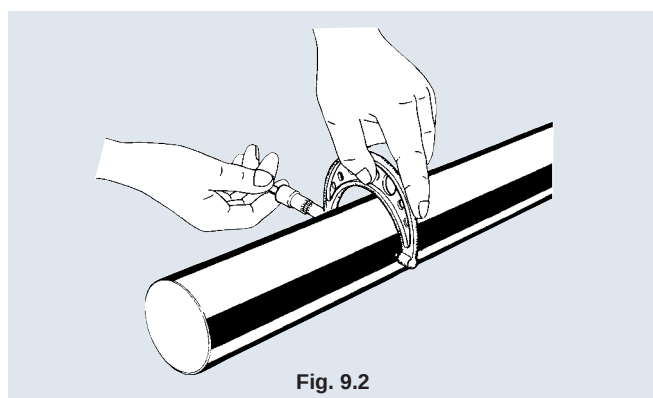


Fig. 9.2

- (3) Remove dent marks (even though very small) from the mating faces with an oil stone or fine emery paper. Check that the contact face to the seal has specified surface roughness (0.8a). Wipe dust away from the shaft with clean factory cloth.
- (4) Remove possible dust and metal chips from the inside of plummer block. **(Fig. 9.3)**

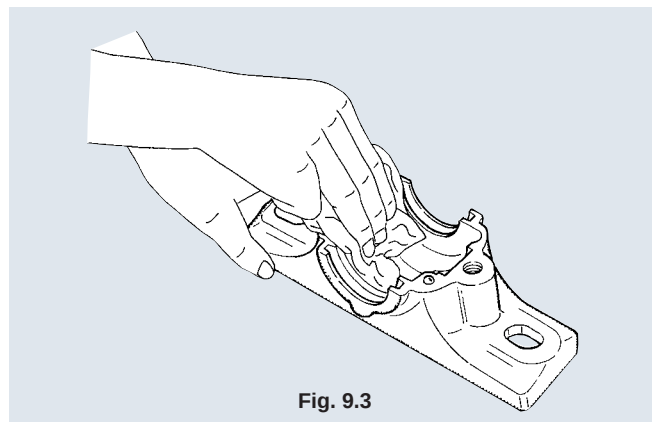


Fig. 9.3

- (5) Check the flatness of the mounting face of the plummer block. (When placed on a frame, the plummer block must be stably seated.)

#### 9.2 Preparation for installing the bearing

- (1) Unpack the bearing just before the installation work.
- (2) If the bearing is to be grease-lubricated, the rust-proof coating on it may remain unremoved. If it is to be oil-lubricated, remove the coating with benzene or kerosene.
- (3) For a bearing with an adapter, check its radial clearance before the installation work. To do so, place it on a flat work bench, and fit a thickness gage between the uppermost roller and the raceway surface on the outer ring to measure the clearance **(Fig. 9.4)**. Do not force the thickness gage in or turn the bearing. Otherwise, the resultant clearance measurement will be greater than the actual clearance.

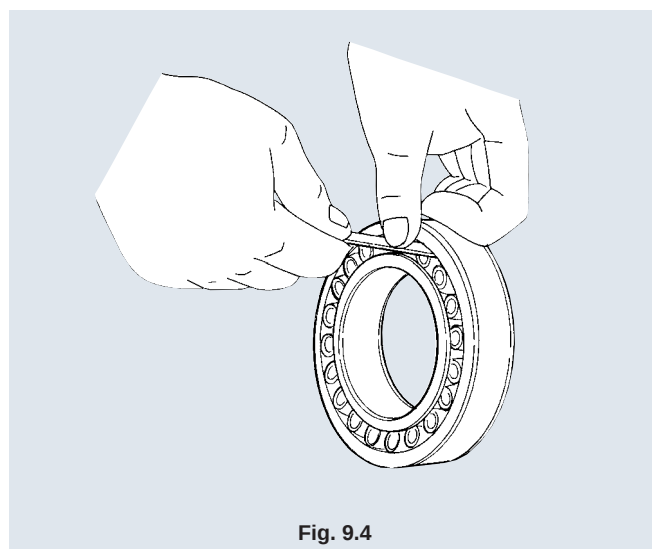
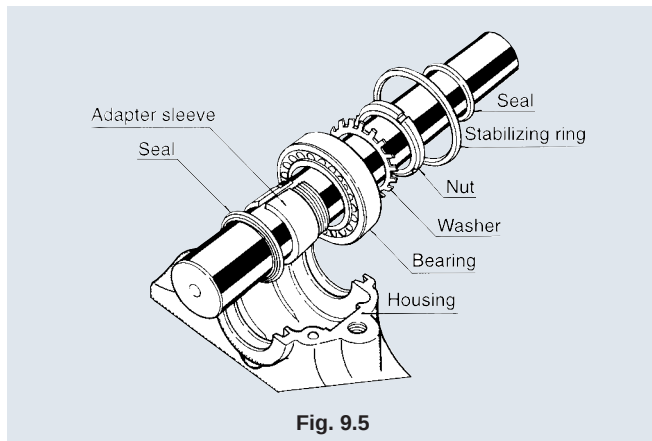


Fig. 9.4

## 9.3 Installation of the bearing and associated components

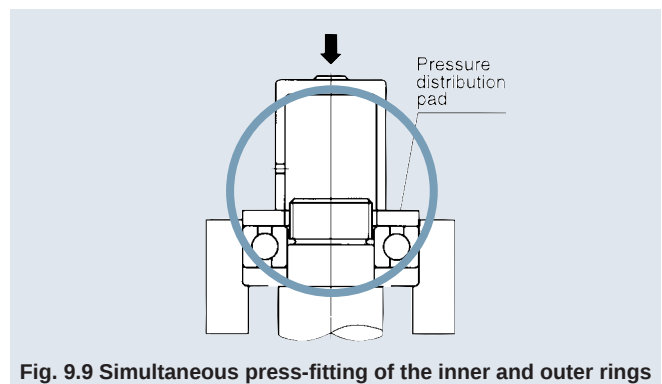
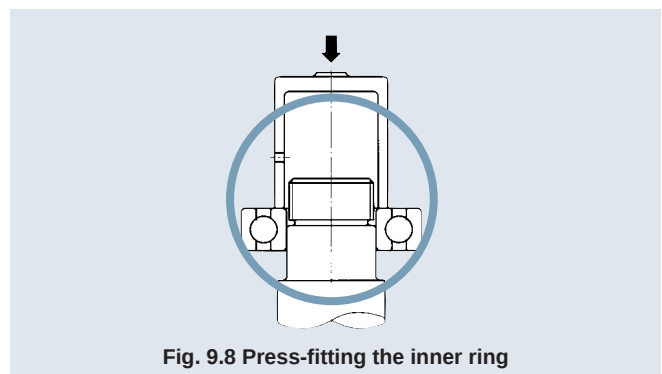
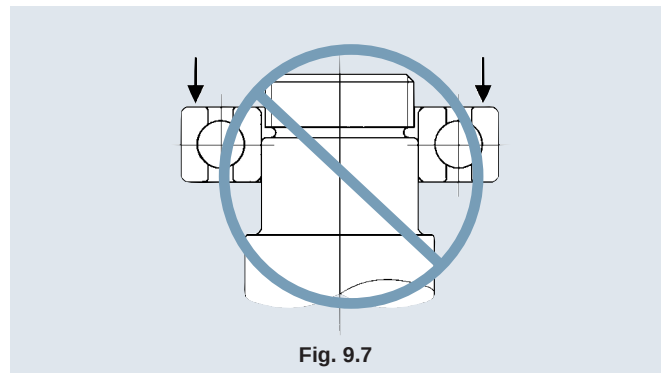
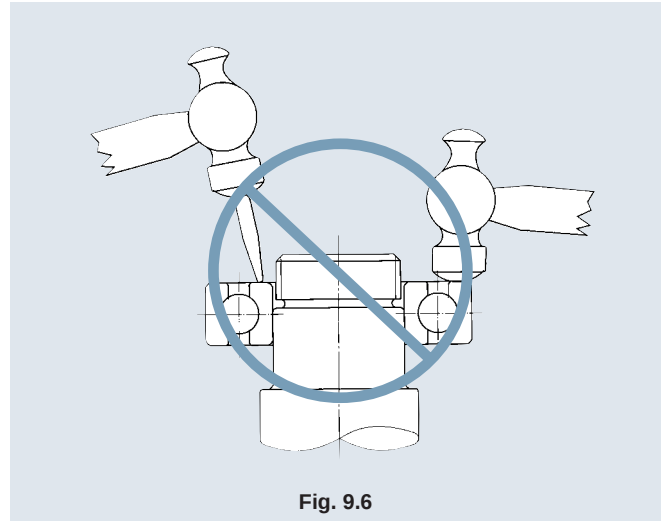
Once careful checking is complete, install the bearing and associated components. For the positional relationship, see **Fig. 9.5**.



When a bearing is installed onto a shaft or into a housing, do not directly hit its end face with a hammer or drift as shown in **Fig. 9.6**. Otherwise, its design performance can be lost. Always evenly exert force around the entire bearing ring face. Also, do not apply force to one bearing ring (for example, outer ring) as in **Fig. 9.7** to convey the force via the rolling elements to the other bearing ring (inner ring) to install the latter. Otherwise, a dent mark or other damage can occur on either or both rings.

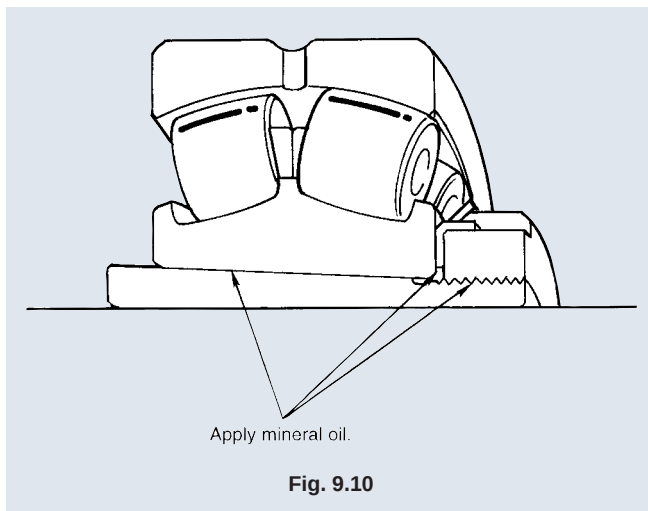
When installing a cylindrical bore bearing, whose interference is relatively small, its whole inner ring can be uniformly press-fitted at an ordinary temperature as illustrated in **Fig. 9.8**. Usually, the inner ring is press-fitted by tapping the sleeve with a hammer. However, when many bearings must be installed at a time, a mechanical or hydraulic press will be helpful.

When installing a non-separable bearing to the shaft and housing at a time, apply a press-fitting force to both the inner and outer rings by using a pressure distribution pad as in **Fig. 9.9**.



## 9.3.1 Bearing with an adapter

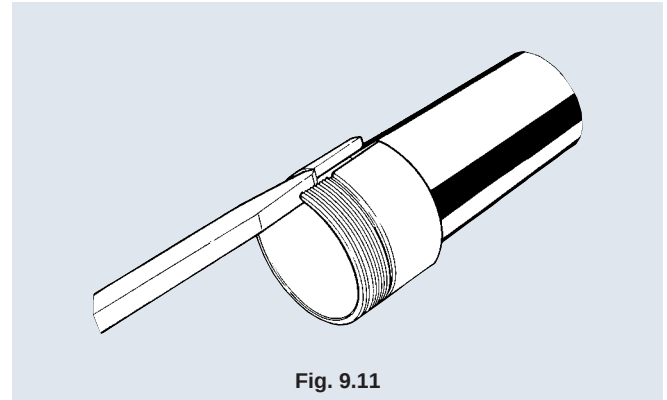
- (1) Thinly apply highly viscous mineral oil to the taper, threading and the chamfered face of the nut (see **Fig. 9.10**) before press-fitting. In particular, apply molybdenum bisulfide paste to these areas on a large bearing. This prevents scuffing, and allows easy bearing removal. Before the installation work, remove oil from the shaft and the bore face of sleeve with a clean factory cloth.



**Fig. 9.10**

- (2) Mount the adapter to a correct position considering the dimension  $B_1$ ,  $B_2$  or  $B_3$  in the bearing table. When fitting the adapter sleeve onto the shaft, open

the slit with a flat-blade screwdriver for easy fitting.  
**Fig. 9.11**



**Fig. 9.11**

- (3) Fit the bearing over the adapter sleeve on the shaft as tight as possible, so that the bearing inner ring is fully seated onto the taper on adapter sleeve.
- (4) Lightly tighten the nut until the sleeve is seated on the shaft.
- (5) When fully tightening a self-aligning ball bearing, make sure that its radial clearance becomes approximately 1/2 that before fitting. For a self-aligning roller bearing, tighten the nut while measuring its radial clearance with a thickness gage so that the reduction of radial internal clearance value in **Table 9.1** is reached. Make sure that an installed self-aligning ball bearing can turn smoothly by hand (ss **Figs. 9.12 and 9.13**).

**Table 9.1 Installation of tapered bore self-aligning roller bearings**

Unit: mm

| Nominal bearing<br>bore diameter<br>$d$<br>over      incl. |     | Reduction of radial<br>internal clearance<br><br>min      max |       | Axial displacement drive up |      |                            |      | Minimum allowable<br>residual clearance<br><br>CN      C3      C4 |       |       |
|------------------------------------------------------------|-----|---------------------------------------------------------------|-------|-----------------------------|------|----------------------------|------|-------------------------------------------------------------------|-------|-------|
|                                                            |     |                                                               |       | Taper 1/12<br>min      max  |      | Taper 1/30<br>min      max |      |                                                                   |       |       |
| 30                                                         | 40  | 0.02                                                          | 0.025 | 0.35                        | 0.4  | —                          | —    | 0.015                                                             | 0.025 | 0.04  |
| 40                                                         | 50  | 0.025                                                         | 0.03  | 0.4                         | 0.45 | —                          | —    | 0.02                                                              | 0.03  | 0.05  |
| 50                                                         | 65  | 0.03                                                          | 0.035 | 0.45                        | 0.6  | —                          | —    | 0.025                                                             | 0.035 | 0.055 |
| 65                                                         | 80  | 0.04                                                          | 0.045 | 0.6                         | 0.7  | —                          | —    | 0.025                                                             | 0.04  | 0.07  |
| 80                                                         | 100 | 0.045                                                         | 0.055 | 0.7                         | 0.8  | 1.75                       | 2.25 | 0.035                                                             | 0.05  | 0.08  |
| 100                                                        | 120 | 0.05                                                          | 0.06  | 0.75                        | 0.9  | 1.9                        | 2.25 | 0.05                                                              | 0.065 | 0.1   |
| 120                                                        | 140 | 0.065                                                         | 0.075 | 1.1                         | 1.2  | 2.75                       | 3    | 0.055                                                             | 0.08  | 0.11  |
| 140                                                        | 160 | 0.075                                                         | 0.9   | 1.2                         | 1.4  | 3                          | 3.75 | 0.055                                                             | 0.09  | 0.13  |
| 160                                                        | 180 | 0.08                                                          | 0.1   | 1.3                         | 1.6  | 3.25                       | 4    | 0.06                                                              | 0.1   | 0.15  |
| 180                                                        | 200 | 0.09                                                          | 0.11  | 1.4                         | 1.7  | 3.5                        | 4.25 | 0.07                                                              | 0.1   | 0.16  |
| 200                                                        | 225 | 0.1                                                           | 0.12  | 1.6                         | 1.9  | 4                          | 4.75 | 0.08                                                              | 0.12  | 0.18  |
| 225                                                        | 250 | 0.11                                                          | 0.13  | 1.7                         | 2    | 4.25                       | 5    | 0.09                                                              | 0.13  | 0.2   |
| 250                                                        | 280 | 0.12                                                          | 0.15  | 1.9                         | 2.4  | 4.75                       | 6    | 0.1                                                               | 0.14  | 0.22  |
| 280                                                        | 315 | 0.13                                                          | 0.16  | 2                           | 2.5  | 5                          | 6.25 | 0.11                                                              | 0.15  | 0.24  |
| 315                                                        | 355 | 0.15                                                          | 0.18  | 2.4                         | 2.8  | 6                          | 7    | 0.12                                                              | 0.17  | 0.26  |
| 355                                                        | 400 | 0.17                                                          | 0.21  | 2.6                         | 3.3  | 6.5                        | 8.25 | 0.13                                                              | 0.19  | 0.29  |
| 400                                                        | 450 | 0.2                                                           | 0.24  | 3.1                         | 3.7  | 7.75                       | 9.25 | 0.13                                                              | 0.2   | 0.31  |
| 450                                                        | 500 | 0.21                                                          | 0.26  | 3.3                         | 4    | 8.25                       | 10   | 0.16                                                              | 0.23  | 0.35  |
| 500                                                        | 560 | 0.24                                                          | 0.3   | 3.7                         | 4.6  | 9.25                       | 11.5 | 0.17                                                              | 0.25  | 0.36  |
| 560                                                        | 630 | 0.26                                                          | 0.33  | 4                           | 5.1  | 10                         | 12.5 | 0.2                                                               | 0.29  | 0.41  |
| 630                                                        | 710 | 0.3                                                           | 0.37  | 4.6                         | 5.7  | 11.5                       | 14.5 | 0.21                                                              | 0.31  | 0.45  |

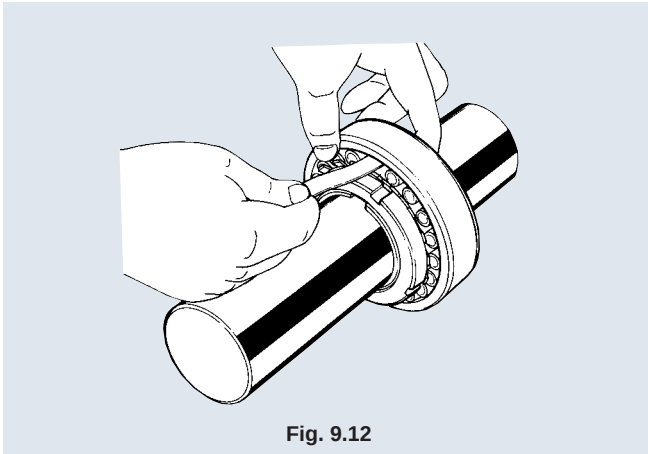


Fig. 9.12

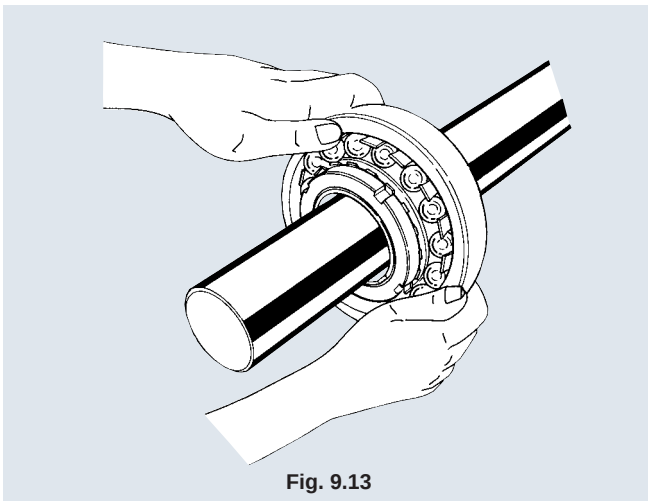


Fig. 9.13

- (6) To tighten the nut, use a spanner wrench illustrated in **Fig. 9.14**. When tightening the nut with a hammer and a drift, be sure that the chip from the drift does not enter the bearing.

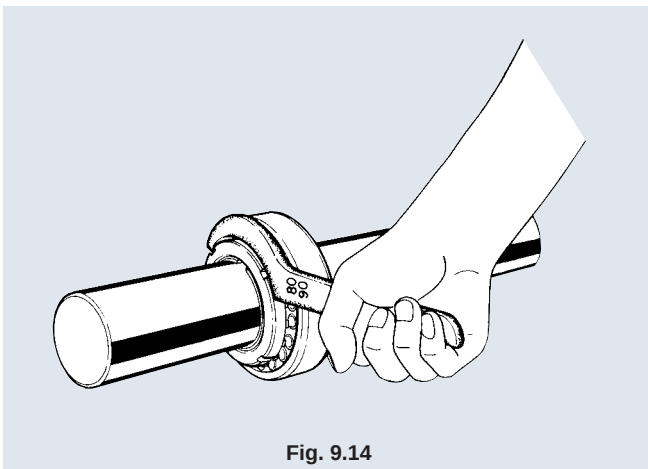


Fig. 9.14

- (7) If it is difficult to tighten a large bearing by manual force, use a hydraulic nut or ram for easier assembly. (See **Fig. 9.15**.)

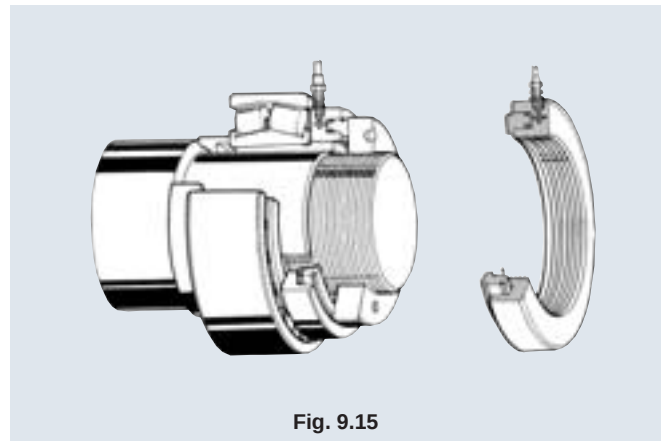


Fig. 9.15

- (8) Make sure the bearing clearance is as specified, then bend one tab on the washer that corresponds with the cutout on the circumference of the nut to maintain the adjustment (**Fig. 9.16**). Do not loosen the nut to allow the cutout to match the tab.

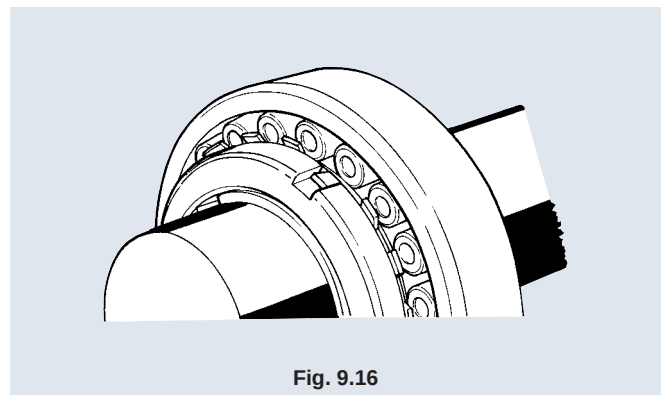


Fig. 9.16

- (9) When a large bearing is installed to a shaft, its outer ring will be deformed by its own weight into an elliptical form. The clearance measurement at the lowest point on a deformed bearing will be greater than a true clearance. Remember that a radial clearance value measurement at this point will result in excessively large tightening allowance.

- (10) The adapter used on a large bearing whose bore number is 44 or greater is a lock plate type (**Fig. 9.17**). For this arrangement, first tighten the nut, then fit the lock plate into the cutout on the nut. In this case too, do not loosen the nut to allow the cutout to match the lock plate. Once the lock plate is seated in the cutout, secure the adjustment with a spring washer and a hexagonal nut.

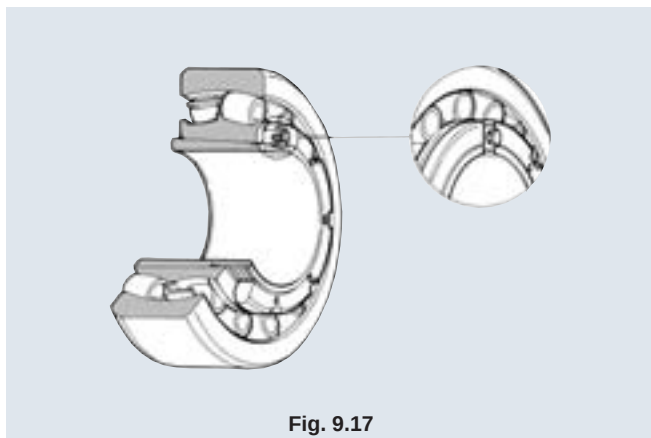


Fig. 9.17

## 9.3.2 Cylindrical bore bearing

### (1) Press-fitting

- a. It is recommended that a small bearing of smaller tightening allowance be press-fitted by forcing a press-fitting jig onto the end face of inner ring. (See Fig. 9.18.)

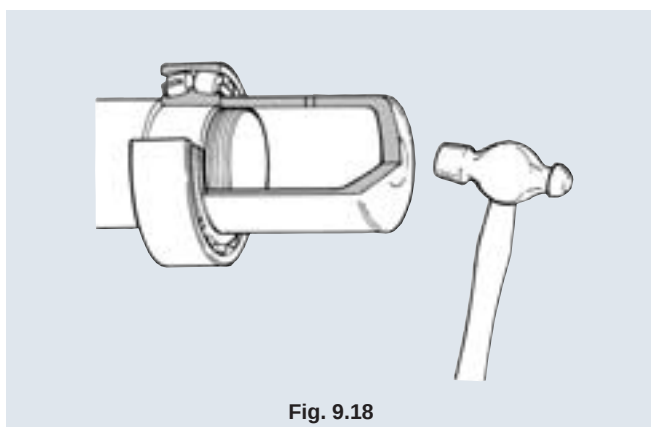


Fig. 9.18

- b. For easy fitting, apply mineral oil or molybdenum bisulfide lubricant to fitting surfaces on the shaft and bearing. During the press-fitting work, make sure that the bearing inner ring is not tilted.

### (2) Shrink-fitting

- a. To install a medium or large bearing, a shrink-fitting technique can be conveniently employed. The heating temperature for shrink-fitting can be selected from Fig. 9.19 based on the bearing dimensions and tightening allowance requirements. Remember the temperature of the bearing must not exceed 120°C.
- b. Usually, the bearing is heated in oil (Fig. 9.20). However, it may be heated in a heater.
- c. The oil used as a heating medium is clean machine oil #1 or transformer oil #1. The heating oil bath must be amply sized and contain sufficient amount of oil. Be careful not to allow the bearing to directly contact the vessel.

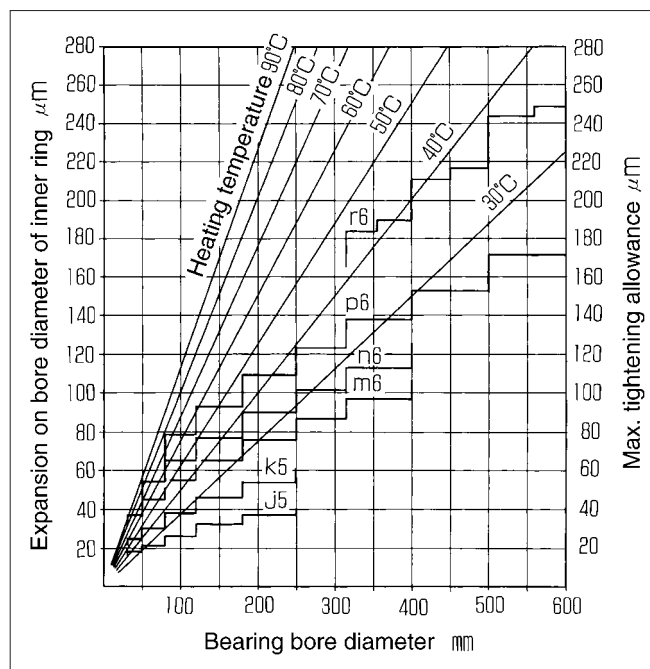


Fig. 9.19

- d. After fitting the bearing onto a shaft, allow it to cool off. Note that the bearing will also shrink in the axial direction. To avoid gap occurrence between the bearing face and the shaft shoulder, force the bearing against the shaft shoulder until the bearing and shaft have fully cooled down. Alternatively, tap the bearing several times in the axial direction through a jig to bring the bearing in close contact with the shaft before the bearing and shaft have fully cooled down.

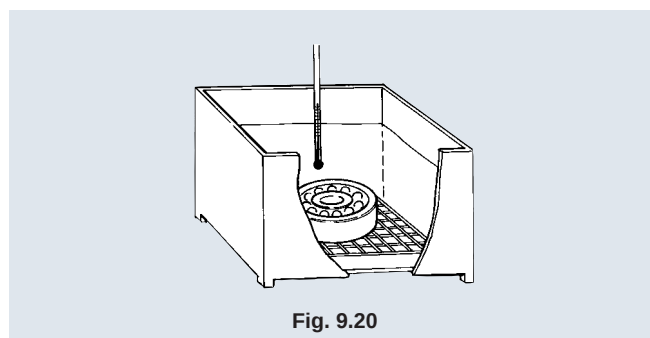


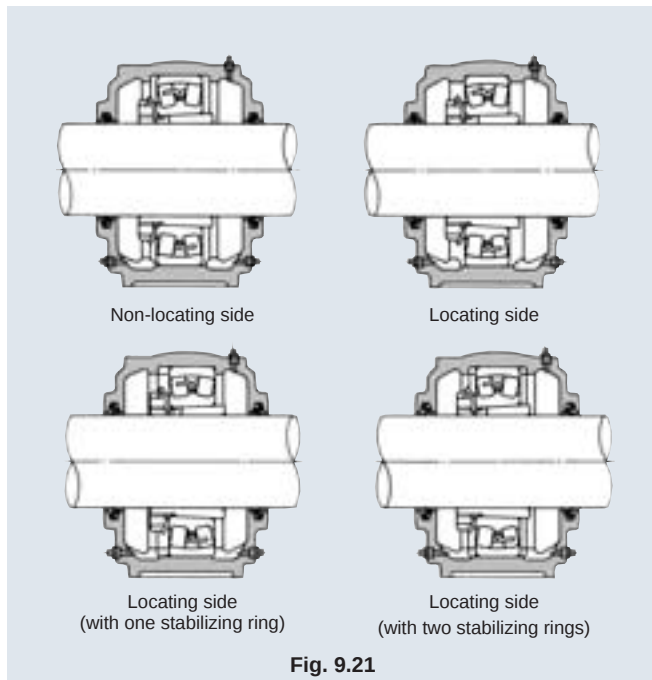
Fig. 9.20

- e. Make sure the bearing is fully seated on the shaft shoulder. Then, insert the washer and nut over the shaft, and secure the bearing by tightening the nut. Once the nut has been fully tightened, bend a tab on the washer and fit it into the cutout on the nut. If a tab cannot be readily fitted into the cutout, further turn the nut until the tab meets the cutout.

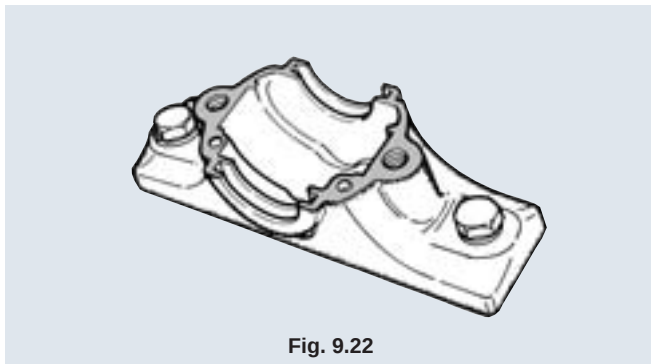
## 9.4 Assembling the plummer blocks

When installing two or more plummer blocks on a shaft, use one block to locate the outer ring of a bearing in the axial direction, and arrange the other block (s) so that the outer ring (s) of bearing (s) in the latter block (s) can move freely in the axial direction. (See **Fig. 9.21.**)

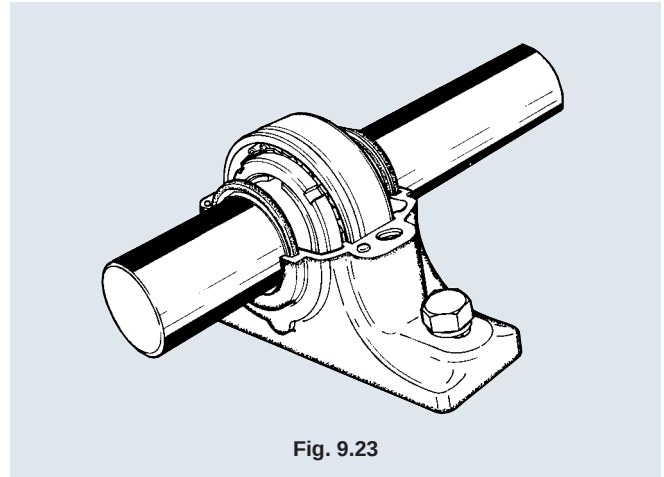
Once the bearing has been installed to the shaft and the associated components have been inserted over the shaft, assemble the plummer blocks according to the following procedure.



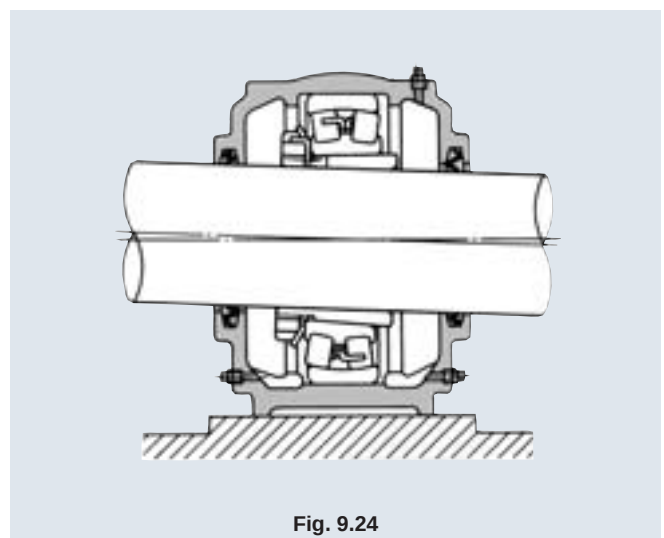
- (1) Temporarily install the lower plummer block housing to the frame. (See **Fig. 9.22.**)



- (2) Fit the locating bearing into the lower plummer block housing, together with the seal and stabilizing ring. (See **Fig. 9.23.**)



- (3) Adjust the position of the plummer block of the non-locating bearing to center the bearing to the bearing seating.  
If the plummer block is to be used in a high temperature environment, carefully position the bearing considering the thermal expansion of the shaft.
- (4) Once the bearing is correctly located, check the squareness of the plummer block relative to the shaft (make sure the face of bearing inner ring is parallel with that of the outer ring). Only then, fully tighten the nut. Remember a larger mounting error can cause the seal to fail or the shaft to interfere with the bearing bore, leading to non-smooth running (**Fig. 9.24**). If such a problem occurs, correct the mounting seat, and then, install the lower plummer block housing.



- (5) If the bearing is lubricated with grease, fill the bearing interior with grease, and apply grease to the mating surfaces of the upper and lower plummer block housings. Also, apply grease to the sliding surface of the seal. In the case of a self-aligning roller bearing, incline the outer ring to allow a sufficient volume of grease to be packed into the gaps between the rollers and the cage. (For the volume of grease, refer to Section 11.)
- (6) In the case of oil-lubricated bearings, fill the oil up to the center of the lowest rolling element. (See **Fig. 9.25.**)

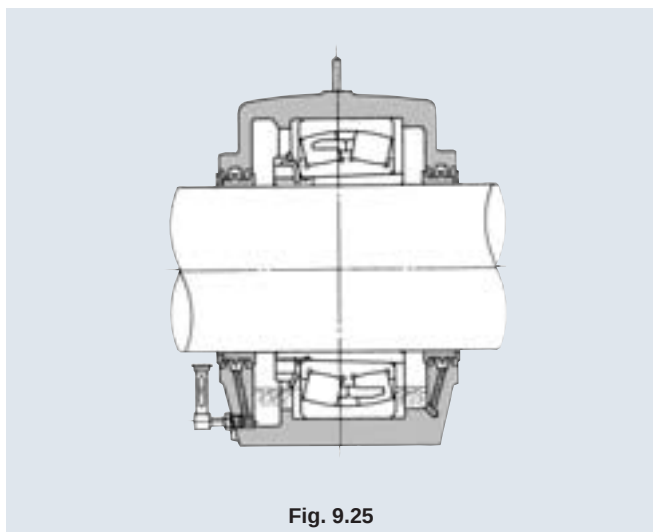


Fig. 9.25

- (7) After filling with lubricant, check the mating surfaces between the upper and lower plummer block housings are stably in contact with each other. Remember to apply grease to the mating surfaces on the plummer block housings to ensure reliable sealing and rust-proofing. Then, fully tighten the tightening bolt. (See **Fig. 9.26.**)

Note that either the upper or lower housing of a particular plummer block is incompatible with the lower or upper housing of another plummer block. Do not confuse the like housings.

Knock pin seats (**Fig. 9.27**) are provided at the corners of the bed so locking knock pins can be driven into these seats. Use these seats when intending to install a plummer block with utmost precision.

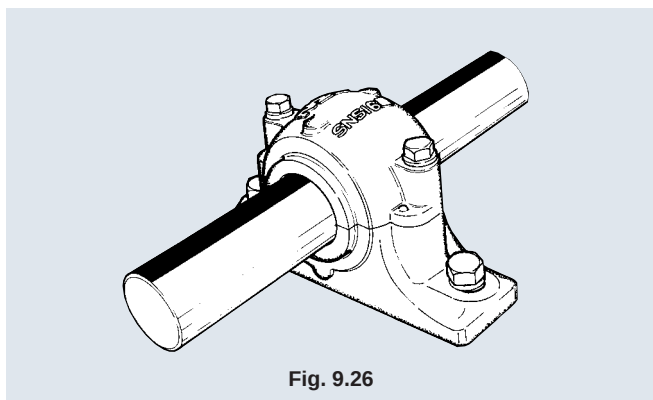


Fig. 9.26

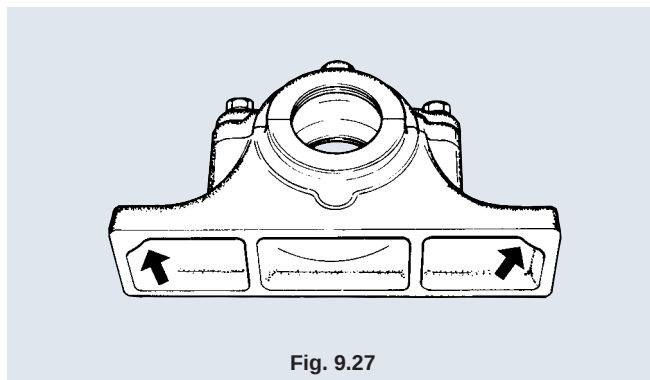


Fig. 9.27

### 9.5 Running inspection

Once the bearing arrangement has been assembled, make sure the assembly work has been correctly achieved by following the procedure below.

- (1) First, turn the bearing by hand to check that the bearing and seal are free from any irregularities.
  - a. Non-smooth touch: Trapped dust or scratch
  - b. Irregular torque: Abnormal interference
  - c. Excessively large running torque:
    - Too small bearing clearance, poor flatness of mounting seat
- (2) Next, run the bearing by power. Begin with no load and at lower speed.
  - a. Abnormal noise:
    - Dust, dent mark, or poor lubrication
  - b. Vibration:
    - Greater misalignment, or excessively large residual clearance
- (3) Run the bearing under normal operating conditions to check for temperature rise on the bearing. The possible causes to abnormal temperature rise with bearings are as follows:
  - a. Allowable speed has been exceeded.
  - b. Overloading
  - c. Too small residual clearance
  - d. Negative clearance owing to excessive expansion or compression with the shaft
  - e. Warped plummer block owing to poor flatness with the mounting seat
  - f. Poor lubrication (excessive or insufficient lubricant, inappropriate lubrication method of lubricant)
  - g. Too great tightening allowance for the contact seal, or interference with rotating components such as those around the labyrinth seal

If any irregularity is found as a result of running inspection, determine and remove the cause. Then, reperform the running inspection to make sure the bearing runs normally.

## 9.6 Maintenance and inspection

To be able to use a bearing to its design life and avoid any accident, check the following points at regular intervals.

- (1) Running sound on bearing
- (2) Temperature on bearing or plumber block
- (3) Vibration on shaft
- (4) Leaking grease or worn oil seal
- (5) Loose tightening and mounting bolts
- (6) Trouble-free operation of the lubrication system, and loosening or leakage with piping

If the bearing arrangement must be inspected while it is at a standstill, check it for the following points:

- (1) Check appearance the of bearing for any irregularity.
- (2) Fouling of grease, or contaminants (dust or steel dust) in grease
- (3) Loose adapter sleeve
- (4) Worn or damaged seal

## 9.7 Bearing disassembly

### 9.7.1 Bearing with adapter

Straighten the bent tab on the washer, and loosen the nut by two to three turns. Place a drift to a face of the nut. Lightly tap the drift to turn the sleeve (**Fig. 9.28**). Once the sleeve is shifted in the axial direction, the bearing can be easily removed.

Note, however, when the nut has been excessively loosened and only a few ridges remain engaged, and if the nut is further tapped, the threading on the sleeve or nut may be stripped.

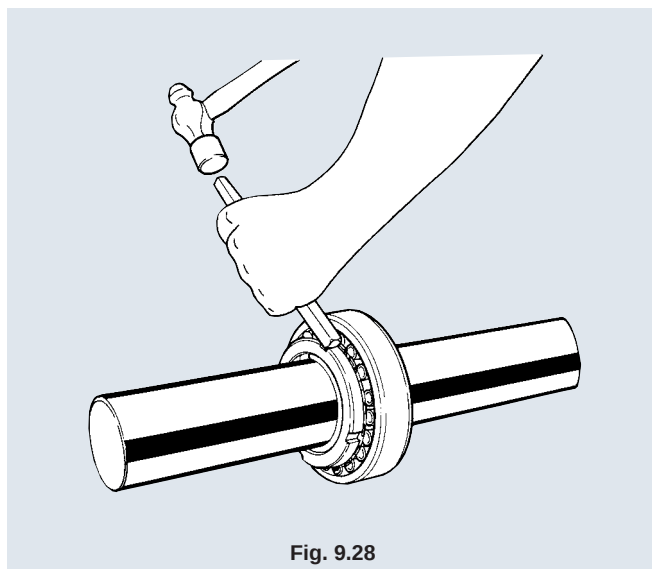


Fig. 9.28

### 9.7.2 Cylindrical bore bearing

Usually, a cylindrical bore bearing is interference-fitted. Thus, the bearing is simply drawn out by placing a jig to the face of the inner ring and exerting a force as illustrated in **Fig. 9.29** with a hand press. However, be careful not to apply a force to the outer ring. A puller such as that shown in **Fig. 9.30** is often used. When using this tool, make sure that the jig is fully engaged with the face of the inner ring.

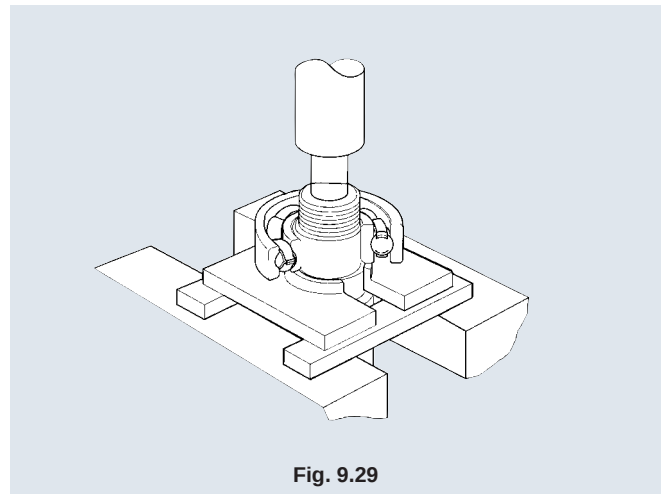


Fig. 9.29

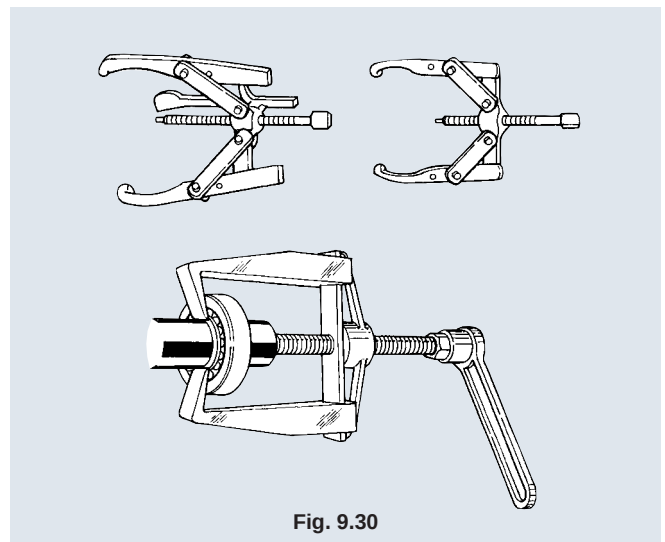


Fig. 9.30

### 9.8 Cleaning the bearing

Clean the removed bearing with diesel oil or kerosene. Use two vessels: one for rough cleaning and the other for finish cleaning. Prepare a cleaning station that has a metal screen as illustrated in **Fig. 9.31** so that the bearing does not directly contact the fouling on the bottom of vessel. In rough cleaning, virtually all oil and foreign matters should be removed from the bearing which should be immediately transferred to the finish vessel. The finish vessel must be provided with a filter unit to maintain the cleaning agent clean.

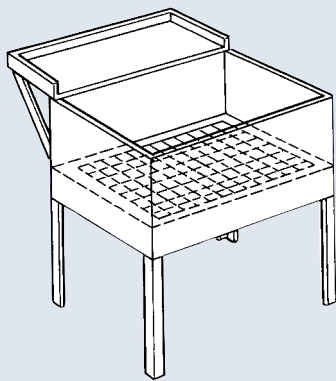
Once cleaned, the bearing must be immediately rust-proofed.

The bearings (which have been carefully removed) must be checked whether they can be reused. The judging criterion for reuse should be determined considering the following criteria through a trial-and-error basis.

- (1) Scheduled operating duration to next regular inspection
- (2) Importance of the machine that uses the bearing in question
- (3) Operating conditions such as loading and bearing speed
- (4) Severity of damage on the rolling contact surface
- (5) Tendency of increasing bearing clearance and wear on the cage
- (6) Loss in accuracy, etc.

### 9.9 Storing the bearing

When storing a bearing, pay particular attention to rust prevention. Note that the rust-proofing grease in the bearing will run away at a temperature of 50 to 60°C. Therefore, store a bearing in a dry, cool location at a height at least 30 cm above the floor. Remember that wooden crate attracts moisture. Thus, immediately unpack the delivered bearings, and store them on shelves.



**Fig. 9.31**

## Index of Bearing Tables

### Split type

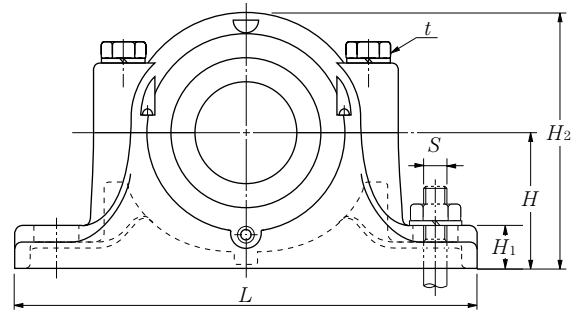
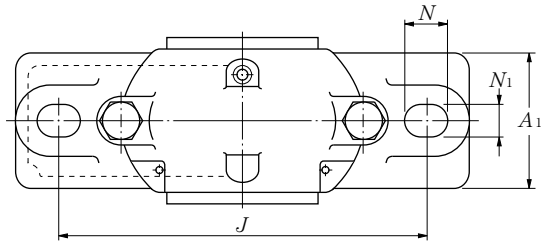
|                         |    |
|-------------------------|----|
| SN5 .....               | 34 |
| SN6·S6 .....            | 36 |
| SN30·SN31 .....         | 38 |
| SNZ2 .....              | 40 |
| SNZ3·SZ3 .....          | 42 |
| SD5·SD5G·SD6·SD6G ..... | 44 |
| SD30·SD30G .....        | 46 |
| SD31·SD31G .....        | 48 |
| SD2·SD2G·SD3·SD3G ..... | 50 |

### Unit type

|           |    |
|-----------|----|
| SV5 ..... | 52 |
| SV2 ..... | 56 |

# Plummer Blocks SN5

Standard type / For bearing with adapter assembly



$d_1$  25~140mm

| Shaft dia.<br>mm<br>$d_1$ | Bearing numbers    | Abutment and fillet dimensions |     |     |       |     |     |     |       |       |       |      |                       | Approx.<br><br>$S$<br>nominal number | Mass<br><br>kg<br>(approx.) |
|---------------------------|--------------------|--------------------------------|-----|-----|-------|-----|-----|-----|-------|-------|-------|------|-----------------------|--------------------------------------|-----------------------------|
|                           |                    | $D$                            | $H$ | $J$ | $N_1$ | $N$ | $A$ | $L$ | $A_1$ | $H_1$ | $H_2$ | $g$  | $t$<br>nominal number |                                      |                             |
| 25                        | SN506              | 62                             | 50  | 150 | 15    | 20  | 77  | 185 | 52    | 22    | 90    | 30   | M8                    | M12                                  | 1.7                         |
| 30                        | SN507              | 72                             | 50  | 150 | 15    | 20  | 82  | 185 | 52    | 22    | 95    | 33   | M10                   | M12                                  | 2.2                         |
| 35                        | SN508              | 80                             | 60  | 170 | 15    | 20  | 85  | 205 | 60    | 25    | 110   | 33   | M10                   | M12                                  | 2.6                         |
| 40                        | SN509              | 85                             | 60  | 170 | 15    | 20  | 85  | 205 | 60    | 25    | 112   | 31   | M10                   | M12                                  | 2.8                         |
| 45                        | SN510              | 90                             | 60  | 170 | 15    | 20  | 90  | 205 | 60    | 25    | 115   | 33   | M10                   | M12                                  | 3.0                         |
| 50                        | SN511              | 100                            | 70  | 210 | 18    | 23  | 95  | 255 | 70    | 28    | 130   | 33   | M12                   | M16                                  | 4.0                         |
| 55                        | SN512              | 110                            | 70  | 210 | 18    | 23  | 105 | 255 | 70    | 30    | 135   | 38   | M12                   | M16                                  | 4.5                         |
| 60                        | SN513              | 120                            | 80  | 230 | 18    | 23  | 110 | 275 | 80    | 30    | 150   | 43   | M12                   | M16                                  | 5.6                         |
| 65                        | SN515              | 130                            | 80  | 230 | 18    | 23  | 115 | 280 | 80    | 30    | 155   | 41   | M12                   | M16                                  | 6.0                         |
| 70                        | SN516              | 140                            | 95  | 260 | 22    | 27  | 120 | 315 | 90    | 32    | 175   | 43   | M16                   | M20                                  | 9.0                         |
| 75                        | SN517              | 150                            | 95  | 260 | 22    | 27  | 125 | 320 | 90    | 32    | 185   | 46   | M16                   | M20                                  | 9.3                         |
| 80                        | SN518              | 160                            | 100 | 290 | 22    | 27  | 145 | 345 | 100   | 35    | 195   | 62.4 | M16                   | M20                                  | 12                          |
| 85                        | SN519 <sup>①</sup> | 170                            | 112 | 290 | 22    | 27  | 140 | 345 | 100   | 35    | 210   | 53   | M16                   | M20                                  | 14                          |
| 90                        | SN520              | 180                            | 112 | 320 | 26    | 32  | 160 | 380 | 110   | 40    | 218   | 70.3 | M20                   | M24                                  | 17                          |
| 100                       | SN522              | 200                            | 125 | 350 | 26    | 32  | 175 | 410 | 120   | 45    | 240   | 80   | M20                   | M24                                  | 20                          |
| 110                       | SN524              | 215                            | 140 | 350 | 26    | 32  | 185 | 410 | 120   | 45    | 270   | 86   | M20                   | M24                                  | 23                          |
| 115                       | SN526              | 230                            | 150 | 380 | 28    | 36  | 190 | 445 | 130   | 50    | 290   | 90   | M24                   | M24                                  | 29                          |
| 125                       | SN528              | 250                            | 150 | 420 | 33    | 42  | 205 | 500 | 150   | 50    | 305   | 98   | M24                   | M30                                  | 37                          |
| 135                       | SN530              | 270                            | 160 | 450 | 33    | 42  | 220 | 530 | 160   | 60    | 325   | 106  | M24                   | M30                                  | 42                          |
| 140                       | SN532              | 290                            | 170 | 470 | 33    | 42  | 235 | 550 | 160   | 60    | 345   | 114  | M24                   | M30                                  | 48                          |

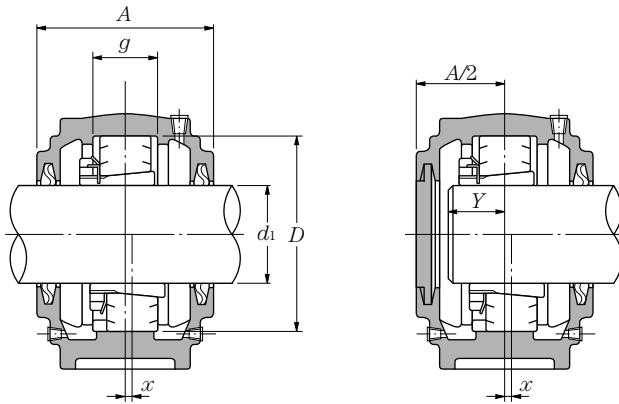
① The numeral in nominal number of the setting ring represents the outside diameter  $T$  and width dimension.

② Though not JIS part number, SN519 complies with JIS.

③ Dimension  $Y$  is an approximate distance from the bearing center to the shaft end for shaft end configuration.

④ 11 through 18 for bearing series 222 are also applicable to type E self-aligning roller bearings. For details, contact NTN Engineering.

NOTE: 1) Sizes SN524 and greater are equipped with lifting eye bolts.



| Self-aligning<br>ball bearings | Nominal number                 |        |                                                               |                        | Approx.<br>mm<br>Y <sup>⑤</sup> | Seal<br>number | shaft<br>dia.<br>mm<br>d <sub>1</sub> |
|--------------------------------|--------------------------------|--------|---------------------------------------------------------------|------------------------|---------------------------------|----------------|---------------------------------------|
|                                | setting<br>washer <sup>①</sup> | number | spherical roller<br>bearings                                  | setting<br>washer      |                                 |                |                                       |
| 1206K;H206X<br>2206K;H306X     | SR 62X 7<br>SR 62X10           | 2<br>1 | —                                                             | —                      | 18<br>20                        | ZF6            | 25                                    |
| 1207K;H207X<br>2207K;H307X     | SR 72X 8<br>SR 72X10           | 2<br>1 | —                                                             | —                      | 19<br>22                        | ZF7            | 30                                    |
| 1208K;H208X<br>2208K;H308X     | SR 80X 7.5<br>SR 80X10         | 2<br>1 | 22208CK;H308X                                                 | SR80X10                | 1                               | ZF8            | 35                                    |
| 1209K;H209X<br>2209K;H309X     | SR 85X 6<br>SR 85X 8           | 2<br>1 | 22209CK;H309X                                                 | SR85X 8                | 1                               | ZF9            | 40                                    |
| 1210K;H210X<br>2210K;H310X     | SR 90X 6.5<br>SR 90X10         | 2<br>1 | 22210CK;H310X                                                 | SR90X10                | 1                               | ZF10           | 45                                    |
| 1211K;H211X<br>2211K;H311X     | SR100X 6<br>SR100X 8           | 2<br>1 | 22211BK;H311X <sup>④</sup>                                    | SR100X 8               | 1                               | ZF11           | 50                                    |
| 1212K;H212X<br>2212K;H312X     | SR110X 8<br>SR110X10           | 2<br>1 | 22212BK;H312X <sup>④</sup>                                    | SR110X10               | 1                               | ZF12           | 55                                    |
| 1213K;H213X<br>2213K;H313X     | SR120X10<br>SR120X12           | 2<br>1 | 22213BK;H313X <sup>④</sup>                                    | SR120X12               | 1                               | ZF13           | 60                                    |
| 1215K;H215X<br>2215K;H315X     | SR130X 8<br>SR130X10           | 2<br>1 | 22215BK;H315X <sup>④</sup>                                    | SR130X10               | 1                               | ZF15           | 65                                    |
| 1216K;H216X<br>2216K;H316X     | SR140X 8.5<br>SR140X10         | 2<br>1 | 22216BK;H316X <sup>④</sup>                                    | SR140X10               | 1                               | ZF16           | 70                                    |
| 1217K;H217X<br>2217K;H317X     | SR150X 9<br>SR150X10           | 2<br>1 | 22217BK;H317X <sup>④</sup>                                    | SR150X10               | 1                               | ZF17           | 75                                    |
| 1218K;H218X<br>2218K;H318X     | SR160X16.2<br>SR160X11.2       | 2<br>2 | 22218EK;H318X<br>22218BK;H318X <sup>④</sup><br>23218BK;H2318X | SR160X11.2<br>SR160X10 | 2<br>1                          | ZF18           | 80                                    |
| 1219K;H219X<br>2219K;H319X     | SR170X10.5<br>SR170X10         | 2<br>1 | 22219BK;H319X                                                 | SR170X10               | 1                               | ZF19           | 85                                    |
| 1220K;H220X<br>2220K;H320X     | SR180X18.1<br>SR180X12.1       | 2<br>2 | 22220BK;H320X<br>23220BK;H2320X                               | SR180X12.1<br>SR180X10 | 2<br>1                          | ZF20           | 90                                    |
| 1222K;H222X<br>2222K;H322X     | SR200X21<br>SR200X13.5         | 2<br>2 | 22222BK;H322X<br>23222BK;H2322X                               | SR200X13.5<br>SR200X10 | 2<br>1                          | ZF22           | 100                                   |
| —                              | —                              | —      | 22224BK;H3124X<br>23224BK;H2324X                              | SR215X14<br>SR215X10   | 2<br>1                          | ZF24           | 110                                   |
| —                              | —                              | —      | 22226BK;H3126<br>23226BK;H2326                                | SR230X13<br>SR230X10   | 2<br>1                          | ZF26           | 115                                   |
| —                              | —                              | —      | 22228BK;H3128<br>23228BK;H2328                                | SR250X15<br>SR250X10   | 2<br>1                          | ZF28           | 125                                   |
| —                              | —                              | —      | 22230BK;H3130<br>23230BK;H2330                                | SR270X16.5<br>SR270X10 | 2<br>1                          | ZF30           | 135                                   |
| —                              | —                              | —      | 22232BK;H3132<br>23232BK;H2332                                | SR290X17<br>SR290X10   | 2<br>1                          | ZF32           | 140                                   |

2) Fill and drain plugs:  
Size: SN506-SN520.....PT1/8  
SN522-SN532.....PT1/4

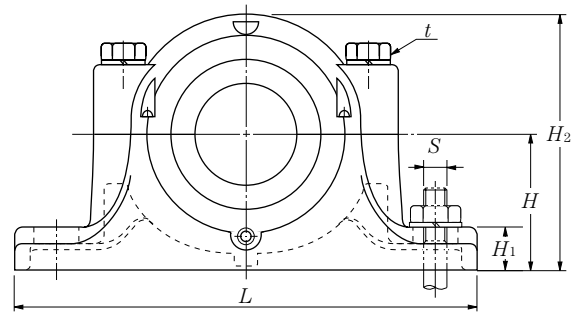
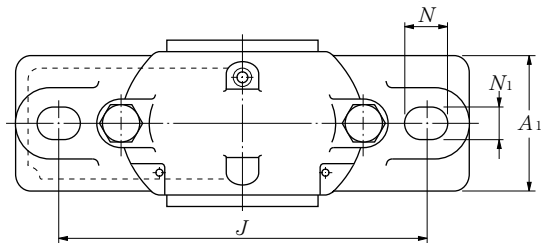
3) Dimension X indicates a deviation of the bearing center relative to the  
plummer block center, and its value is 1/2 the width of the setting washer.

4) As an adaptor for bearing series 12, series H2 as well as series H3 can be  
used.

5) Materials of setting washers:  
SR62-SR250 Die-casting zinc alloy, category 2, ZDC2  
SR270-SR290 Gray cast iron, category 3, FC200

# Plummer Blocks SN6·S6

Standard type / For bearing with adapter assembly

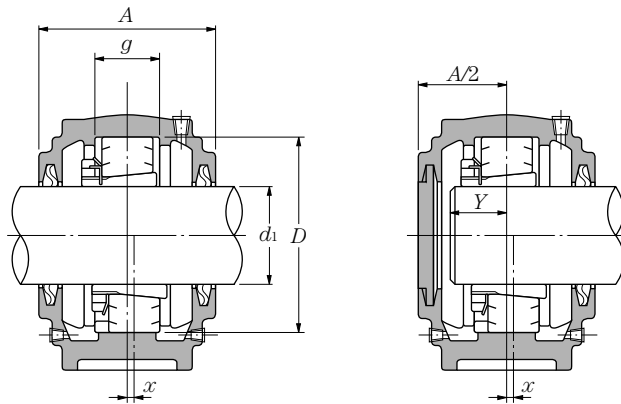


$d_1$  25~140mm

| Shaft dia.<br>mm<br>$d_1$ | Bearing numbers | Abutment and fillet dimensions |     |     |       |     |     |     |       |       |       |     |                       | Approx.<br><br>$S$<br>nominal number | Mass<br><br>kg<br>(approx.) | Nominal number<br><br>Self-aligning ball bearings |
|---------------------------|-----------------|--------------------------------|-----|-----|-------|-----|-----|-----|-------|-------|-------|-----|-----------------------|--------------------------------------|-----------------------------|---------------------------------------------------|
|                           |                 | $D$                            | $H$ | $J$ | $N_1$ | $N$ | $A$ | $L$ | $A_1$ | $H_1$ | $H_2$ | $g$ | $t$<br>nominal number |                                      |                             |                                                   |
| 25                        | SN606           | 72                             | 50  | 150 | 15    | 20  | 82  | 185 | 52    | 22    | 95    | 37  | M10                   | M12                                  | 2.3                         | 1306K;H306X<br>2306K;H2306X                       |
| 30                        | SN607           | 80                             | 60  | 170 | 15    | 20  | 90  | 205 | 60    | 25    | 110   | 41  | M10                   | M12                                  | 3.0                         | 1307K;H307X<br>2307K;H2307X                       |
| 35                        | SN608           | 90                             | 60  | 170 | 15    | 20  | 95  | 205 | 60    | 25    | 115   | 43  | M10                   | M12                                  | 3.1                         | 1308K;H308X<br>2308K;H2308X                       |
| 40                        | SN609           | 100                            | 70  | 210 | 18    | 23  | 105 | 255 | 70    | 28    | 130   | 46  | M12                   | M16                                  | 4.4                         | 1309K;H309X<br>2309K;H2309X                       |
| 45                        | SN610           | 110                            | 70  | 210 | 18    | 23  | 115 | 255 | 70    | 30    | 135   | 50  | M12                   | M16                                  | 5.0                         | 1310K;H310X<br>2310K;H2310X                       |
| 50                        | SN611           | 120                            | 80  | 230 | 18    | 23  | 120 | 275 | 80    | 30    | 150   | 53  | M12                   | M16                                  | 5.8                         | 1311K;H311X<br>2311K;H2311X                       |
| 55                        | SN612           | 130                            | 80  | 230 | 18    | 23  | 125 | 280 | 80    | 30    | 155   | 56  | M12                   | M16                                  | 7.7                         | 1312K;H312X<br>2312K;H2312X                       |
| 60                        | SN613           | 140                            | 95  | 260 | 22    | 27  | 130 | 315 | 90    | 32    | 175   | 58  | M16                   | M20                                  | 9.8                         | 1313K;H313X<br>2313K;H2313X                       |
| 65                        | SN615           | 160                            | 100 | 290 | 22    | 27  | 140 | 345 | 100   | 35    | 195   | 65  | M16                   | M20                                  | 12                          | 1315K;H315X<br>2315K;H2315X                       |
| 70                        | SN616           | 170                            | 112 | 290 | 22    | 27  | 145 | 345 | 100   | 35    | 212   | 68  | M16                   | M20                                  | 15                          | 1316K;H316X<br>2316K;H2316X                       |
| 75                        | SN617           | 180                            | 112 | 320 | 26    | 32  | 155 | 380 | 110   | 40    | 218   | 70  | M20                   | M24                                  | 17                          | 1317K;H317X<br>2317K;H2317X                       |
| 80                        | S618            | 190                            | 112 | 320 | 26    | 35  | 160 | 400 | 110   | 33    | 230   | 74  | M20                   | M24                                  | 21                          | 1318K;H318X<br>2318K;H2318X                       |
| 85                        | S619            | 200                            | 125 | 350 | 26    | 35  | 170 | 420 | 120   | 36    | 245   | 77  | M20                   | M24                                  | 24                          | 1319K;H319X<br>2319K;H2319X                       |
| 90                        | S620            | 215                            | 140 | 350 | 26    | 35  | 175 | 420 | 120   | 38    | 280   | 83  | M20                   | M24                                  | 29                          | 1320K;H320X<br>2320K;H2320X                       |
| 100                       | S622            | 240                            | 150 | 390 | 28    | 38  | 190 | 460 | 130   | 40    | 300   | 90  | M24                   | M24                                  | 38                          | 1322K;H322X<br>2322K;H2322X                       |
| 110                       | S624            | 260                            | 160 | 450 | 33    | 42  | 205 | 540 | 160   | 50    | 325   | 96  | M24                   | M30                                  | 47                          | —                                                 |
| 115                       | S626            | 280                            | 170 | 470 | 33    | 42  | 215 | 560 | 160   | 50    | 350   | 103 | M24                   | M30                                  | 54                          | —                                                 |
| 125                       | S628            | 300                            | 180 | 520 | 35    | 45  | 235 | 630 | 170   | 55    | 375   | 112 | M30                   | M30                                  | 70                          | —                                                 |
| 135                       | S630            | 320                            | 190 | 560 | 35    | 45  | 245 | 680 | 180   | 55    | 395   | 118 | M30                   | M30                                  | 75                          | —                                                 |
| 140                       | S632            | 340                            | 200 | 580 | 42    | 52  | 255 | 710 | 190   | 60    | 415   | 124 | M30                   | M36                                  | 80                          | —                                                 |

- ① The numeral in nominal number of the setting ring represents the outside diameter and width dimension.  
 ② Dimension  $Y$  is an approximate distance from the bearing center to the shaft end for shaft end configuration.

NOTE: 1) Sizes S618 and greater are equipped with lifting eye bolts.  
 2) Fill and drain plugs:  
 Size: SN606-SN617·····PT1/8  
 S618-S632·····PT1/4

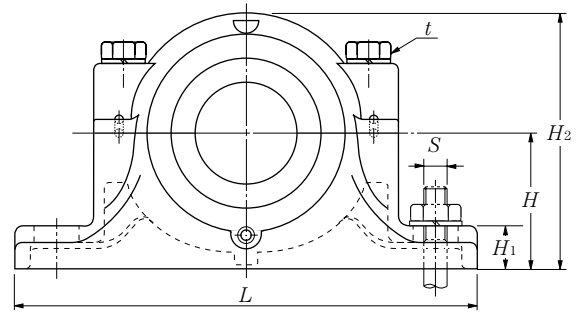
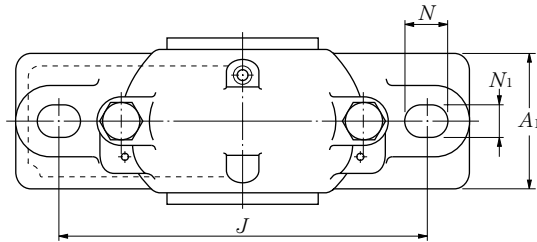


| setting<br>washer ① | Nominal number |                              | setting<br>washer | Approx.<br>mm<br>Y ② | Seal<br>number | shaft<br>dia.<br>mm<br>d <sub>1</sub> |
|---------------------|----------------|------------------------------|-------------------|----------------------|----------------|---------------------------------------|
|                     | number         | spherical roller<br>bearings | number            |                      |                |                                       |
| SR 72X 9            | 2              | —                            | —                 | 19                   | ZF6            | 25                                    |
| SR 72X10            | 1              | —                            | —                 | 23                   |                |                                       |
| SR 80X10            | 2              | —                            | —                 | 21                   | ZF7            | 30                                    |
| SR 80X10            | 1              | —                            | —                 | 26                   |                |                                       |
| SR 90X10            | 2              | 21308CK;H308X                | SR 90X10          | 23                   | ZF8            | 35                                    |
| SR 90X10            | 1              | 22308CK;H2308X               | SR 90X10          | 28                   |                |                                       |
| SR100X10.5          | 2              | 21309CK;H309X                | SR100X10.5        | 25                   | ZF9            | 40                                    |
| SR100X10            | 1              | 22309CK;H2309X               | SR100X10          | 31                   |                |                                       |
| SR110X11.5          | 2              | 21310CK;H310X                | SR110X11.5        | 27                   | ZF10           | 45                                    |
| SR110X10            | 1              | 22310CK;H2310X               | SR110X10          | 34                   |                |                                       |
| SR120X12            | 2              | 21311K;H311X                 | SR120X12          | 29                   | ZF11           | 50                                    |
| SR120X10            | 1              | 22311BK;H2311X               | SR120X10          | 36                   |                |                                       |
| SR130X12.5          | 2              | 21312K;H312X                 | SR130X12.5        | 31                   | ZF12           | 55                                    |
| SR130X10            | 1              | 22312BK;H2312X               | SR130X10          | 39                   |                |                                       |
| SR140X12.5          | 2              | 21313K;H313X                 | SR140X12.5        | 33                   | ZF13           | 60                                    |
| SR140X10            | 1              | 22313BK;H2313X               | SR140X10          | 40                   |                |                                       |
| SR160X14            | 2              | 21315K;H315X                 | SR160X14          | 36                   | ZF15           | 65                                    |
| SR160X10            | 1              | 22315BK;H2315X               | SR160X10          | 45                   |                |                                       |
| SR170X14.5          | 2              | 21316K;H316X                 | SR170X14.5        | 39                   | ZF16           | 70                                    |
| SR170X10            | 1              | 22316BK;H2316X               | SR170X10          | 48                   |                |                                       |
| SR180X14.5          | 2              | 21317K;H317X                 | SR180X14.5        | 41                   | ZF17           | 75                                    |
| SR180X10            | 1              | 22317BK;H2317X               | SR180X10          | 50                   |                |                                       |
| SR190X15.3          | 2              | 21318K;H318X                 | SR190X15.3        | 42                   | ZF18           | 80                                    |
| SR190X 9.5          | 1              | 22318BK;H2318X               | SR190X 9.5        | 52                   |                |                                       |
| SR200X15.8          | 2              | 21319K;H319X                 | SR200X15.8        | 44                   | ZF19           | 85                                    |
| SR200X 9.5          | 1              | 22319BK;H2319X               | SR200X 9.5        | 55                   |                |                                       |
| SR215X17.8          | 2              | 21320K;H320X                 | SR215X17.8        | 46                   | ZF20           | 90                                    |
| SR215X 9.5          | 1              | 22320BK;H2320X               | SR215X 9.5        | 59                   |                |                                       |
| SR240X19.8          | 2              | 21322K;H322X                 | SR240X19.8        | 48                   | ZF22           | 100                                   |
| SR240X 9.5          | 1              | 22322BK;H2322X               | SR240X 9.5        | 63                   |                |                                       |
| —                   | —              | 22324BK;H2324X               | SR260X 9.5        | 67                   | ZF24           | 110                                   |
| —                   | —              | 22326BK;H2326                | SR280X 9.5        | 72                   | ZF26           | 115                                   |
| —                   | —              | 22328BK;H2328                | SR300X 9.5        | 77                   | ZF28           | 125                                   |
| —                   | —              | 22330BK;H2330                | SR320X 9.5        | 82                   | ZF30           | 135                                   |
| —                   | —              | 22332BK;H2332                | SR340X 9.5        | 88                   | ZF32           | 140                                   |

3) Dimension X indicates a deviation of the bearing center relative to the plummer block center, and its value is 1/2 the width of the setting washer.

# Plummer Blocks SN30·SN31

Standard type / For bearing with adapter assembly



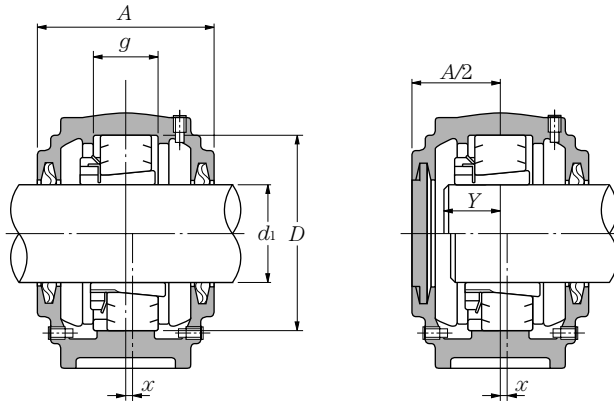
$d_1$  110~170mm

| Shaft dia.<br>mm<br>$d_1$ | Bearing numbers | Abutment and fillet dimensions |     |     |       |     |     |     |       |       |       |     |                       | Approx.<br><br>$S$<br>nominal number |
|---------------------------|-----------------|--------------------------------|-----|-----|-------|-----|-----|-----|-------|-------|-------|-----|-----------------------|--------------------------------------|
|                           |                 | $D$                            | $H$ | $J$ | $N_1$ | $N$ | $A$ | $L$ | $A_1$ | $H_1$ | $H_2$ | $g$ | $t$<br>nominal number |                                      |
| 110                       | SN3024          | 180                            | 112 | 320 | 26    | 32  | 150 | 380 | 110   | 40    | 217   | 56  | M20                   | M24                                  |
| 115                       | SN3026          | 200                            | 125 | 350 | 26    | 32  | 160 | 410 | 120   | 45    | 240   | 62  | M20                   | M24                                  |
| 125                       | SN3028          | 210                            | 140 | 350 | 26    | 32  | 170 | 410 | 120   | 45    | 260   | 63  | M20                   | M24                                  |
| 135                       | SN3030          | 225                            | 150 | 380 | 28    | 36  | 175 | 445 | 130   | 50    | 283   | 66  | M24                   | M24                                  |
| 140                       | SN3032          | 240                            | 150 | 390 | 28    | 36  | 190 | 460 | 130   | 50    | 290   | 70  | M24                   | M24                                  |
| 150                       | SN3034          | 260                            | 160 | 450 | 33    | 42  | 200 | 530 | 160   | 60    | 310   | 77  | M24                   | M30                                  |
| 160                       | SN3036          | 280                            | 170 | 470 | 33    | 42  | 210 | 550 | 160   | 60    | 330   | 84  | M24                   | M30                                  |
| 170                       | SN3038          | 290                            | 170 | 470 | 33    | 42  | 210 | 550 | 160   | 60    | 335   | 85  | M24                   | M30                                  |

|     |        |     |     |     |    |    |     |     |     |    |     |     |     |     |
|-----|--------|-----|-----|-----|----|----|-----|-----|-----|----|-----|-----|-----|-----|
| 100 | SN3122 | 180 | 112 | 320 | 26 | 32 | 155 | 380 | 110 | 40 | 217 | 66  | M20 | M24 |
| 110 | SN3124 | 200 | 125 | 350 | 26 | 32 | 165 | 410 | 120 | 45 | 240 | 72  | M20 | M24 |
| 115 | SN3126 | 210 | 140 | 350 | 26 | 32 | 170 | 410 | 120 | 45 | 260 | 74  | M20 | M24 |
| 125 | SN3128 | 225 | 150 | 380 | 28 | 36 | 180 | 445 | 130 | 50 | 283 | 78  | M24 | M24 |
| 135 | SN3130 | 250 | 150 | 420 | 33 | 42 | 200 | 500 | 150 | 50 | 295 | 90  | M24 | M30 |
| 140 | SN3132 | 270 | 160 | 450 | 33 | 42 | 215 | 530 | 160 | 60 | 315 | 96  | M24 | M30 |
| 150 | SN3134 | 280 | 170 | 470 | 33 | 42 | 220 | 550 | 160 | 60 | 330 | 98  | M24 | M30 |
| 160 | SN3136 | 300 | 180 | 520 | 33 | 42 | 230 | 610 | 170 | 70 | 355 | 106 | M30 | M30 |
| 170 | SN3138 | 320 | 190 | 560 | 33 | 42 | 240 | 650 | 180 | 70 | 375 | 114 | M30 | M30 |

- ① The numeral in nominal number of the setting ring represents the outside diameter and width dimension.  
 ② Dimension  $Y$  is an approximate distance from the bearing center to the shaft end for shaft end configuration.

NOTE: 1) Sizes SN3028 and greater and sizes SN3126 and greater are equipped with lifting eye bolts.  
 2) Fill and drain plugs:  
 Size: PT1/4



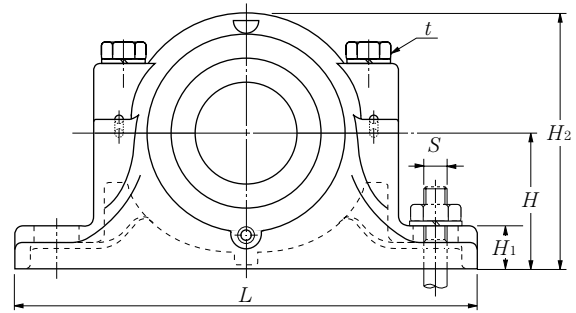
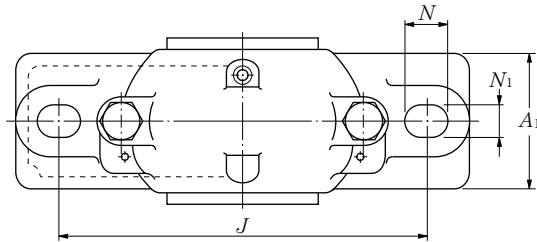
| Mass<br>kg<br>(approx.) | Nominal number               |                                          |   | Approx.<br>mm<br>Y <sup>②</sup> | Seal<br>number | shaft<br>dia.<br>mm<br>d <sub>1</sub> |
|-------------------------|------------------------------|------------------------------------------|---|---------------------------------|----------------|---------------------------------------|
|                         | spherical roller<br>bearings | setting<br>washer <sup>①</sup><br>number |   |                                 |                |                                       |
| 17                      | 23024BK;H3024X               | SR180X10                                 | 1 | 47                              | ZF24           | 110                                   |
| 20                      | 23026BK;H3026                | SR200X10                                 | 1 | 51                              | ZF26           | 115                                   |
| 25                      | 23028BK;H3028                | SR210X10                                 | 1 | 53                              | ZF28           | 125                                   |
| 30                      | 23030BK;H3030                | SR225X10                                 | 1 | 56                              | ZF30           | 135                                   |
| 33                      | 23032BK;H3032                | SR240X10                                 | 1 | 61                              | ZF32           | 140                                   |
| 46                      | 23034BK;H3034                | SR260X10                                 | 1 | 66                              | ZF34           | 150                                   |
| 52                      | 23036BK;H3036                | SR280X10                                 | 1 | 70                              | ZF36           | 160                                   |
| 52                      | 23038BK;H3038                | SR290X10                                 | 1 | 72                              | ZF38           | 170                                   |

|    |                |          |   |    |      |     |
|----|----------------|----------|---|----|------|-----|
| 18 | 23122BK;H3122X | SR180X10 | 1 | 51 | ZF22 | 100 |
| 21 | 23124BK;H3124X | SR200X10 | 1 | 55 | ZF24 | 110 |
| 26 | 23126BK;H3126  | SR210X10 | 1 | 57 | ZF26 | 115 |
| 32 | 23128BK;H3128  | SR225X10 | 1 | 60 | ZF28 | 125 |
| 40 | 23130BK;H3130  | SR250X10 | 1 | 68 | ZF30 | 135 |
| 45 | 23132BK;H3132  | SR270X10 | 1 | 74 | ZF32 | 140 |
| 51 | 23134BK;H3134  | SR280X10 | 1 | 76 | ZF34 | 150 |
| 63 | 23136BK;H3136  | SR300X10 | 1 | 81 | ZF36 | 160 |
| 76 | 23138BK;H3138  | SR320X10 | 1 | 86 | ZF38 | 170 |

3) Dimension X indicates a deviation of the bearing center relative to the plummer block center, and its value is 1/2 the width of the setting washer.

# Plummer Blocks SNZ2

Stepped bore type / For cylindrical bore bearing



d<sub>1</sub> 30~160mm

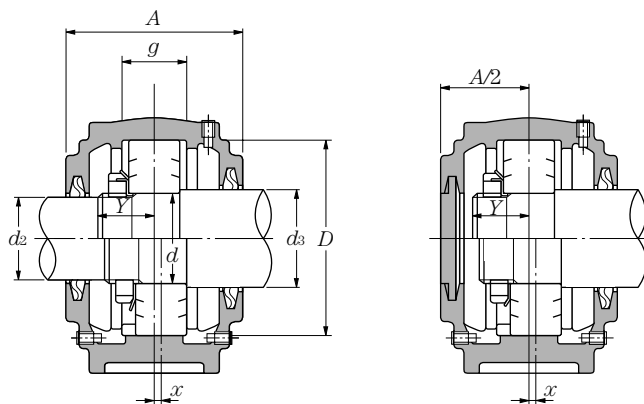
| Shaft dia.<br>mm |                |                | Bearing numbers | Abutment and fillet dimensions |     |     |                |    |     |     |                |                |                |      | Approx.<br><br>S<br>nominal<br>number | Mass<br><br>kg<br>(approx.) | Nominal<br>number<br>Self-aligning<br>ball bearings |
|------------------|----------------|----------------|-----------------|--------------------------------|-----|-----|----------------|----|-----|-----|----------------|----------------|----------------|------|---------------------------------------|-----------------------------|-----------------------------------------------------|
| d                | d <sub>2</sub> | d <sub>3</sub> |                 | D                              | H   | J   | N <sub>1</sub> | N  | A   | L   | A <sub>1</sub> | H <sub>1</sub> | H <sub>2</sub> | g    | t<br>nominal<br>number                |                             |                                                     |
| 30               | 25             | 35             | SNZ206          | 62                             | 50  | 150 | 15             | 20 | 77  | 185 | 52             | 22             | 90             | 30   | M 8                                   | 1.8                         | 1206<br>2206                                        |
| 35               | 30             | 45             | SNZ207          | 72                             | 50  | 150 | 15             | 20 | 82  | 185 | 52             | 22             | 95             | 33   | M10                                   | 2.2                         | 1207<br>2207                                        |
| 40               | 35             | 50             | SNZ208          | 80                             | 60  | 170 | 15             | 20 | 85  | 205 | 60             | 25             | 110            | 33   | M10                                   | 2.9                         | 1208<br>2208                                        |
| 45               | 40             | 55             | SNZ209          | 85                             | 60  | 170 | 15             | 20 | 85  | 205 | 60             | 25             | 112            | 31   | M10                                   | 3.2                         | 1209<br>2209                                        |
| 50               | 45             | 60             | SNZ210          | 90                             | 60  | 170 | 15             | 20 | 90  | 205 | 60             | 25             | 115            | 33   | M10                                   | 3.4                         | 1210<br>2210                                        |
| 55               | 50             | 65             | SNZ211          | 100                            | 70  | 210 | 18             | 23 | 95  | 255 | 70             | 28             | 130            | 33   | M12                                   | 4.5                         | 1211<br>2211                                        |
| 60               | 55             | 70             | SNZ212          | 110                            | 70  | 210 | 18             | 23 | 105 | 255 | 70             | 30             | 135            | 38   | M12                                   | 5.4                         | 1212<br>2212                                        |
| 65               | 60             | 75             | SNZ213          | 120                            | 80  | 230 | 18             | 23 | 110 | 275 | 80             | 30             | 150            | 43   | M12                                   | 6.2                         | 1213<br>2213                                        |
| 70               | 60             | 80             | SNZ214          | 125                            | 80  | 230 | 18             | 23 | 115 | 275 | 80             | 30             | 155            | 44   | M12                                   | 6.7                         | 1214<br>2214                                        |
| 75               | 65             | 85             | SNZ215          | 130                            | 80  | 230 | 18             | 23 | 115 | 280 | 80             | 30             | 155            | 41   | M12                                   | 7.6                         | 1215<br>2215                                        |
| 80               | 70             | 90             | SNZ216          | 140                            | 95  | 260 | 22             | 27 | 120 | 315 | 90             | 32             | 175            | 43   | M16                                   | 9.4                         | 1216<br>2216                                        |
| 85               | 75             | 95             | SNZ217          | 150                            | 95  | 260 | 22             | 27 | 125 | 320 | 90             | 32             | 185            | 46   | M16                                   | 10                          | 1217<br>2217                                        |
| 90               | 80             | 100            | SNZ218          | 160                            | 100 | 290 | 22             | 27 | 145 | 345 | 100            | 35             | 195            | 62.4 | M16                                   | 13                          | 1218<br>2218<br>—                                   |
| 95               | 85             | 110            | SNZ219          | 170                            | 112 | 290 | 22             | 27 | 140 | 345 | 100            | 35             | 210            | 53   | M16                                   | 16                          | 1219<br>2219                                        |
| 100              | 90             | 115            | SNZ220          | 180                            | 112 | 320 | 26             | 32 | 160 | 380 | 110            | 40             | 218            | 70.3 | M20                                   | 18                          | 1220<br>2220<br>—                                   |
| 110              | 100            | 125            | SNZ222          | 200                            | 125 | 350 | 26             | 32 | 175 | 410 | 120            | 45             | 240            | 80   | M20                                   | 23                          | 1222<br>2222<br>—                                   |
| 120              | 110            | 135            | SNZ224          | 215                            | 140 | 350 | 26             | 32 | 185 | 410 | 120            | 45             | 270            | 86   | M20                                   | 25                          | —                                                   |
| 130              | 115            | 145            | SNZ226          | 230                            | 150 | 380 | 28             | 36 | 190 | 445 | 130            | 50             | 290            | 90   | M24                                   | 32                          | —                                                   |
| 140              | 125            | 155            | SNZ228          | 250                            | 150 | 420 | 33             | 42 | 205 | 500 | 150            | 50             | 305            | 98   | M24                                   | 41                          | —                                                   |
| 150              | 135            | 165            | SNZ230          | 270                            | 160 | 450 | 33             | 42 | 220 | 530 | 160            | 60             | 325            | 106  | M24                                   | 49                          | —                                                   |
| 160              | 140            | 175            | SNZ232          | 290                            | 170 | 470 | 33             | 42 | 235 | 550 | 160            | 60             | 345            | 114  | M24                                   | 57                          | —                                                   |

① The numeral in nominal number of the setting ring represents the outside diameter and width dimension.

② Dimension Y is an approximate distance from the bearing center to the shaft

end for shaft end configuration.

NOTE: 1) Sizes SNZ224 and greater are equipped with lifting eye bolts.



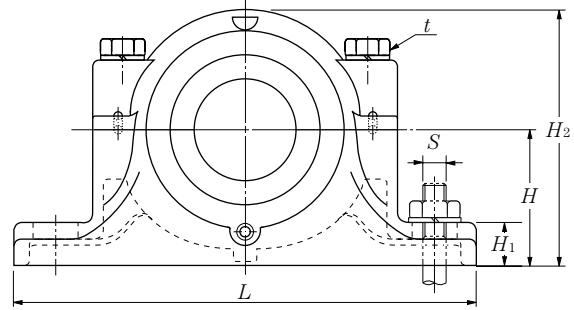
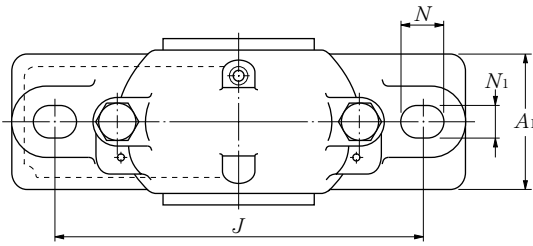
| Nominal number                |             |                              |                        |        |      | Approx. | Seal number    |                           | shaft<br>dia.<br>mm<br><i>d</i> |     |
|-------------------------------|-------------|------------------------------|------------------------|--------|------|---------|----------------|---------------------------|---------------------------------|-----|
| setting<br>washer ❶           |             | spherical roller<br>bearings | setting<br>washer      |        | nut  | washer  | mm<br>Y ❷      | ( <i>d</i> <sub>2</sub> ) | ( <i>d</i> <sub>3</sub> )       |     |
|                               | number      |                              |                        | number |      |         |                |                           |                                 |     |
| SR 62X 7<br>SR 62X10          | 2<br>1      | —                            | —                      | —      | AN06 | AW06    | 18<br>20       | ZF 6                      | ZF 8                            | 30  |
| SR 72X 8<br>SR 72X10          | 2<br>1      | —                            | —                      | —      | AN07 | AW07    | 19<br>22       | ZF 7                      | ZF10                            | 35  |
| SR 80X 7.5<br>SR 80X10        | 2<br>1      | 22208C                       | SR 80X10               | 1      | AN08 | AW08    | 21<br>23       | ZF 8                      | ZF11                            | 40  |
| SR 85X 6<br>SR 85X 8          | 2<br>1      | 22209C                       | SR 85X 8               | 1      | AN09 | AW09    | 22<br>24       | ZF 9                      | ZF12                            | 45  |
| SR 90X 6.5<br>SR 90X10        | 2<br>1      | 22210C                       | SR 90X10               | 1      | AN10 | AW10    | 24<br>25       | ZF10                      | ZF13                            | 50  |
| SR100X 6<br>SR100X 8          | 2<br>1      | 22211B                       | SR100X 8               | 1      | AN11 | AW11    | 25<br>27       | ZF11                      | ZF15                            | 55  |
| SR110X 8<br>SR110X10          | 2<br>1      | 22212B                       | SR110X10               | 1      | AN12 | AW12    | 26<br>29       | ZF12                      | ZF16                            | 60  |
| SR120X10<br>SR120X12          | 2<br>1      | 22213B                       | SR120X12               | 1      | AN13 | AW13    | 28<br>32       | ZF13                      | ZF17                            | 65  |
| SR125X10<br>SR125X13          | 2<br>1      | 22214B                       | SR125X13               | 1      | AN14 | AW14    | 28<br>32       | ZF13                      | ZF18                            | 70  |
| SR130X 8<br>SR130X10          | 2<br>1      | 22215B                       | SR130X10               | 1      | AN15 | AW15    | 30<br>33       | ZF15                      | ZF19                            | 75  |
| SR140X 8.5<br>SR140X10        | 2<br>1      | 22216B                       | SR140X10               | 1      | AN16 | AW16    | 32<br>36       | ZF16                      | ZF20                            | 80  |
| SR150X 9<br>SR150X10          | 2<br>1      | 22217B                       | SR150X10               | 1      | AN17 | AW17    | 34<br>38       | ZF17                      | ZF21                            | 85  |
| SR160X16.2<br>SR160X11.2<br>— | 2<br>2<br>— | 22218B<br>23218B             | SR160X11.2<br>SR160X10 | 2<br>1 | AN18 | AW18    | 35<br>40<br>46 | ZF18                      | ZF22                            | 90  |
| SR170X10.5<br>SR170X10        | 2<br>1      | 22219B                       | SR170X10               | 1      | AN19 | AW19    | 37<br>43       | ZF19                      | ZF24                            | 95  |
| SR180X18.1<br>SR180X12.1<br>— | 2<br>2<br>— | 22220B<br>23220B             | SR180X12.1<br>SR180X10 | 2<br>1 | AN20 | AW20    | 39<br>45<br>52 | ZF20                      | ZF26                            | 100 |
| SR200X21<br>SR200X13.5<br>—   | 2<br>2<br>— | 22222B<br>23222B             | SR200X13.5<br>SR200X10 | 2<br>1 | AN22 | AW22    | 42<br>50<br>58 | ZF22                      | ZF28                            | 110 |
| —                             | —           | 22224B<br>23224B             | SR215X14<br>SR215X10   | 2<br>1 | AN24 | AW24    | 53<br>62       | ZF24                      | ZF30                            | 120 |
| —                             | —           | 22226B<br>23226B             | SR230X13<br>SR230X10   | 2<br>1 | AN26 | AW26    | 57<br>65       | ZF26                      | GS33                            | 130 |
| —                             | —           | 22228B<br>23228B             | SR250X15<br>SR250X10   | 2<br>1 | AN28 | AW28    | 60<br>70       | ZF28                      | GS35                            | 140 |
| —                             | —           | 22230B<br>23230B             | SR270X16.5<br>SR270X10 | 2<br>1 | AN30 | AW30    | 65<br>76       | ZF30                      | GS37                            | 150 |
| —                             | —           | 22232B<br>23232B             | SR290X17<br>SR290X10   | 2<br>1 | AN32 | AW32    | 71<br>83       | ZF32                      | GS39                            | 160 |

2) Fill and drain plugs:  
Size: SNZ206-SNZ220.....PT1/8  
SNZ222-SNZ232.....PT1/4

3) Dimension X indicates a deviation of the bearing center relative to the plummer block center, and its value is 1/2 the width of the setting washer.

# Plummer Blocks SNZ3·SZ3

Stepped bore type / For cylindrical bore bearing



d<sub>1</sub> 30~160mm

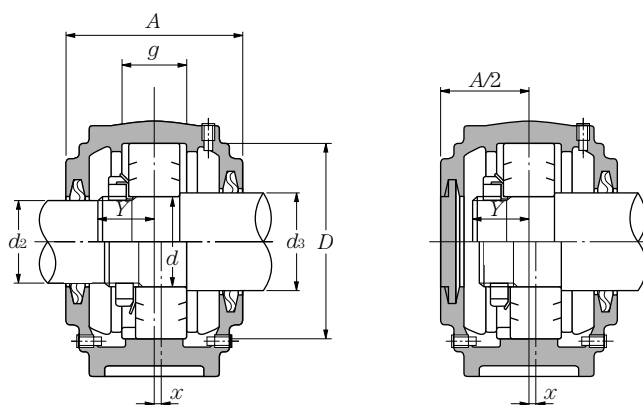
| Shaft dia.<br>mm |                |                | Bearing numbers | Abutment and fillet dimensions |     |     |                |    |     |     |                |                |                |     |                     | Approx.<br>S<br>nominal number | Mass<br>kg<br>(approx.) | Nominal number<br>Self-aligning ball bearings |
|------------------|----------------|----------------|-----------------|--------------------------------|-----|-----|----------------|----|-----|-----|----------------|----------------|----------------|-----|---------------------|--------------------------------|-------------------------|-----------------------------------------------|
| d                | d <sub>2</sub> | d <sub>3</sub> |                 | D                              | H   | J   | N <sub>1</sub> | N  | A   | L   | A <sub>1</sub> | H <sub>1</sub> | H <sub>2</sub> | g   | t<br>nominal number |                                |                         |                                               |
| 30               | 25             | 35             | SNZ306          | 72                             | 50  | 150 | 15             | 20 | 82  | 185 | 52             | 22             | 95             | 37  | M10                 | M12                            | 2.1                     | 1306<br>2306                                  |
| 30               | 25             | 40             | SNZ306X         | 72                             | 50  | 150 | 15             | 20 | 82  | 185 | 52             | 22             | 95             | 37  | M10                 | M12                            | 2.1                     | 1306<br>2306                                  |
| 35               | 30             | 45             | SNZ307          | 80                             | 60  | 170 | 15             | 20 | 90  | 205 | 60             | 25             | 110            | 41  | M10                 | M12                            | 3.1                     | 1307<br>2307                                  |
| 40               | 35             | 50             | SNZ308          | 90                             | 60  | 170 | 15             | 20 | 95  | 205 | 60             | 25             | 115            | 43  | M10                 | M12                            | 3.5                     | 1308<br>2308                                  |
| 45               | 40             | 55             | SNZ309          | 100                            | 70  | 210 | 18             | 23 | 105 | 255 | 70             | 28             | 130            | 46  | M12                 | M16                            | 4.8                     | 1309<br>2309                                  |
| 50               | 45             | 60             | SNZ310          | 110                            | 70  | 210 | 18             | 23 | 115 | 255 | 70             | 30             | 135            | 50  | M12                 | M16                            | 5.6                     | 1310<br>2310                                  |
| 55               | 50             | 65             | SNZ311          | 120                            | 80  | 230 | 18             | 23 | 120 | 275 | 80             | 30             | 150            | 53  | M12                 | M16                            | 6.6                     | 1311<br>2311                                  |
| 60               | 55             | 70             | SNZ312          | 130                            | 80  | 230 | 18             | 23 | 125 | 280 | 80             | 30             | 155            | 56  | M12                 | M16                            | 7.9                     | 1312<br>2312                                  |
| 65               | 60             | 75             | SNZ313          | 140                            | 95  | 260 | 22             | 27 | 130 | 315 | 90             | 32             | 175            | 58  | M16                 | M20                            | 11                      | 1313<br>2313                                  |
| 70               | 60             | 80             | SNZ314          | 150                            | 95  | 260 | 22             | 27 | 130 | 320 | 90             | 32             | 185            | 61  | M16                 | M20                            | 12                      | 1314<br>2314                                  |
| 75               | 65             | 85             | SNZ315          | 160                            | 100 | 290 | 22             | 27 | 140 | 345 | 100            | 35             | 195            | 65  | M16                 | M20                            | 13                      | 1315<br>2315                                  |
| 80               | 70             | 90             | SNZ316          | 170                            | 112 | 290 | 22             | 27 | 145 | 345 | 100            | 35             | 212            | 68  | M16                 | M20                            | 16                      | 1316<br>2316                                  |
| 85               | 75             | 95             | SNZ317          | 180                            | 112 | 320 | 26             | 32 | 155 | 380 | 110            | 40             | 218            | 70  | M20                 | M24                            | 18                      | 1317<br>2317                                  |
| 85               | 75             | 100            | SNZ317X         | 180                            | 112 | 320 | 26             | 32 | 155 | 380 | 110            | 40             | 218            | 70  | M20                 | M24                            | 18                      | 1317<br>2317                                  |
| 90               | 80             | 100            | SZ318           | 190                            | 112 | 320 | 26             | 35 | 160 | 400 | 110            | 33             | 230            | 74  | M20                 | M24                            | 21                      | 1318<br>2318                                  |
| 90               | 80             | 105            | SZ318X          | 190                            | 112 | 320 | 26             | 35 | 160 | 400 | 110            | 33             | 230            | 74  | M20                 | M24                            | 21                      | 1318<br>2318                                  |
| 95               | 85             | 110            | SZ319           | 200                            | 125 | 350 | 26             | 35 | 170 | 420 | 120            | 36             | 245            | 77  | M20                 | M24                            | 23                      | 1319<br>2319                                  |
| 100              | 90             | 115            | SZ320           | 215                            | 140 | 350 | 26             | 35 | 175 | 420 | 120            | 38             | 280            | 83  | M20                 | M24                            | 32                      | 1320<br>2320                                  |
| 110              | 100            | 125            | SZ322           | 240                            | 150 | 390 | 28             | 38 | 190 | 460 | 130            | 40             | 300            | 90  | M24                 | M24                            | 42                      | 1322<br>2322                                  |
| 120              | 110            | 135            | SZ324           | 260                            | 160 | 450 | 33             | 42 | 205 | 540 | 160            | 50             | 325            | 96  | M24                 | M30                            | 61                      | —                                             |
| 130              | 115            | 150            | SZ326           | 280                            | 170 | 470 | 33             | 42 | 215 | 560 | 160            | 50             | 350            | 103 | M24                 | M30                            | 68                      | —                                             |
| 140              | 125            | 160            | SZ328           | 300                            | 180 | 520 | 35             | 45 | 235 | 630 | 170            | 55             | 375            | 112 | M30                 | M30                            | 95                      | —                                             |
| 150              | 135            | 170            | SZ330           | 320                            | 190 | 560 | 35             | 45 | 245 | 680 | 180            | 55             | 395            | 118 | M30                 | M30                            | 110                     | —                                             |
| 160              | 140            | 180            | SZ332           | 340                            | 200 | 580 | 42             | 52 | 255 | 710 | 190            | 60             | 415            | 124 | M30                 | M36                            | 130                     | —                                             |

① The numeral in nominal number of the setting ring represents the outside diameter and width dimension.

② Dimension Y is an approximate distance from the bearing center to the shaft

end for shaft end configuration.

NOTE: 1) Sizes SZ318 and greater are equipped with lifting eye bolts.



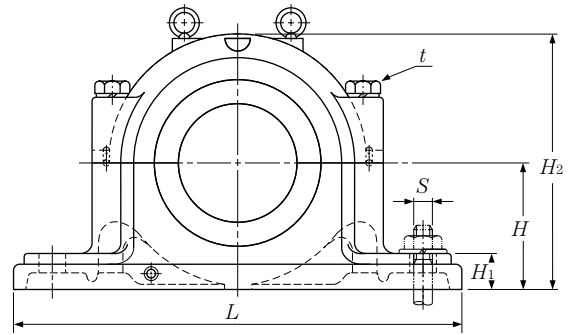
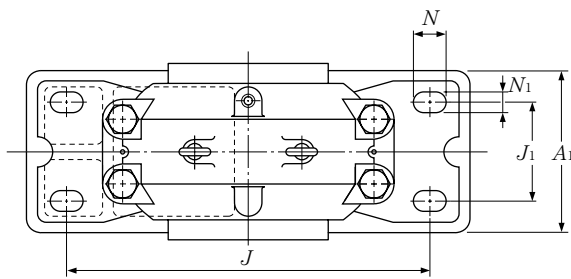
| Nominal number           |        |                           |                          |        |              | Approx.  | Seal number       |                   | shaft     |
|--------------------------|--------|---------------------------|--------------------------|--------|--------------|----------|-------------------|-------------------|-----------|
| setting washer ①         | number | spherical roller bearings | setting washer number    | nut    | washer       | mm Y ②   | (d <sub>2</sub> ) | (d <sub>3</sub> ) | dia. mm d |
| SR 72X 9<br>SR 72X10     | 2<br>1 | —                         | — —                      | AN06   | AW06         | 19<br>23 | ZF6               | ZF8               | 30        |
| SR 72X 9<br>SR 72X10     | 2<br>1 | —                         | — —                      | AN06   | AW06         | 19<br>23 | ZF6               | ZF9               | 30        |
| SR 80X10<br>SR 80X10     | 2<br>1 | —                         | — —                      | AN07   | AW07         | 21<br>26 | ZF7               | ZF10              | 35        |
| SR 90X10<br>SR 90X10     | 2<br>1 | 21308C<br>22308C          | SR 90X10<br>SR 90X10     | 2<br>1 | AN08<br>AW08 | 23<br>28 | ZF8               | ZF11              | 40        |
| SR100X10.5<br>SR100X10   | 2<br>1 | 21309C<br>22309C          | SR100X10.5<br>SR100X10   | 2<br>1 | AN09<br>AW09 | 25<br>31 | ZF9               | ZF12              | 45        |
| SR110X11.5<br>SR110X10   | 2<br>1 | 21310C<br>22310C          | SR110X11.5<br>SR110X10   | 2<br>1 | AN10<br>AW10 | 27<br>34 | ZF10              | ZF13              | 50        |
| SR120X12<br>SR120X10     | 2<br>1 | 21311<br>22311B           | SR120X12<br>SR120X10     | 2<br>1 | AN11<br>AW11 | 29<br>36 | ZF11              | ZF15              | 55        |
| SR130X12.5<br>SR130X10   | 2<br>1 | 21312<br>22312B           | SR130X12.5<br>SR130X10   | 2<br>1 | AN12<br>AW12 | 31<br>39 | ZF12              | ZF16              | 60        |
| SR140X12.5<br>SR140X10   | 2<br>1 | 21313<br>22313B           | SR140X12.5<br>SR140X10   | 2<br>1 | AN13<br>AW13 | 33<br>40 | ZF13              | ZF17              | 65        |
| SR150X13<br>SR150X10     | 2<br>1 | 21314<br>22314B           | SR150X13<br>SR150X10     | 2<br>1 | AN14<br>AW14 | 34<br>42 | ZF13              | ZF18              | 70        |
| SR160X14<br>SR160X10     | 2<br>1 | 21315<br>22315B           | SR160X14<br>SR160X10     | 2<br>1 | AN15<br>AW15 | 36<br>45 | ZF15              | ZF19              | 75        |
| SR170X14.5<br>SR170X10   | 2<br>1 | 21316<br>22316B           | SR170X14.5<br>SR170X10   | 2<br>1 | AN16<br>AW16 | 39<br>48 | ZF16              | ZF20              | 80        |
| SR180X14.5<br>SR180X10   | 2<br>1 | 21317<br>22317B           | SR180X14.5<br>SR180X10   | 2<br>1 | AN17<br>AW17 | 41<br>50 | ZF17              | ZF21              | 85        |
| SR180X14.5<br>SR180X10   | 2<br>1 | 21317<br>22317B           | SR180X14.5<br>SR180X10   | 2<br>1 | AN17<br>AW17 | 41<br>50 | ZF17              | ZF22              | 85        |
| SR190X15.3<br>SR190X 9.5 | 2<br>1 | 21318<br>22318B           | SR190X15.3<br>SR190X9.5  | 2<br>1 | AN18<br>AW18 | 42<br>52 | ZF18              | ZF22              | 90        |
| SR190X15.3<br>SR190X 9.5 | 2<br>1 | 21318<br>22318B           | SR190X15.3<br>SR190X 9.5 | 2<br>1 | AN18<br>AW18 | 42<br>52 | ZF18              | ZF23              | 90        |
| SR200X15.8<br>SR200X 9.5 | 2<br>1 | 21319<br>22319B           | SR200X15.8<br>SR200X 9.5 | 2<br>1 | AN19<br>AW19 | 44<br>55 | ZF19              | ZF24              | 95        |
| SR215X17.8<br>SR215X 9.5 | 2<br>1 | 21320<br>22320B           | SR215X17.8<br>SR215X 9.5 | 2<br>1 | AN20<br>AW20 | 46<br>59 | ZF20              | ZF26              | 100       |
| SR240X19.8<br>SR240X 9.5 | 2<br>1 | 21322<br>22322B           | SR240X19.8<br>SR240X 9.5 | 2<br>1 | AN22<br>AW22 | 48<br>63 | ZF22              | ZF28              | 110       |
| — —                      | — —    | 22324B                    | SR260X9.5                | 1      | AN24<br>AW24 | 67       | ZF24              | ZF30              | 120       |
| — —                      | — —    | 22326B                    | SR280X9.5                | 1      | AN26<br>AW26 | 72       | ZF26              | ZF34              | 130       |
| — —                      | — —    | 22328B                    | SR300X9.5                | 1      | AN28<br>AW28 | 77       | ZF28              | ZF36              | 140       |
| — —                      | — —    | 22330B                    | SR320X9.5                | 1      | AN30<br>AW30 | 82       | ZF30              | ZF38              | 150       |
| — —                      | — —    | 22332B                    | SR340X9.5                | 1      | AN32<br>AW32 | 88       | ZF32              | ZF40              | 160       |

2) Fill and drain plugs:  
Size: SNZ306-SNZ317.....PT1/8  
SZ318-SZ332.....PT1/4

3) Dimension X indicates a deviation of the bearing center relative to the plummer block center, and its value is 1/2 the width of the setting washer.

# Plummer Blocks SD5·SD5G·SD6·SD6G

For heavy load, double rubber sealed type / For bearing with adapter assembly



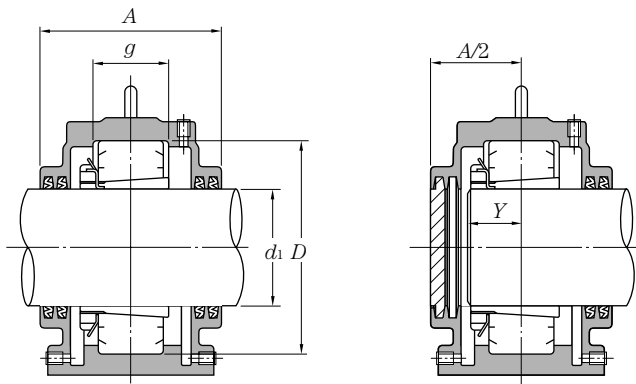
$d_1$  150~300mm

| Shaft dia.<br>mm<br>$d_1$ | Bearing numbers |            | Abutment and fillet dimensions |     |     |       |       |     |           |      |       |       |       |       |                       |                       | Approx. |
|---------------------------|-----------------|------------|--------------------------------|-----|-----|-------|-------|-----|-----------|------|-------|-------|-------|-------|-----------------------|-----------------------|---------|
|                           | free side       | fixed side | $D$                            | $H$ | $J$ | $J_1$ | $N_1$ | $N$ | mm<br>$A$ | $L$  | $A_1$ | $H_1$ | $H_2$ | $g$ ① | $t$<br>nominal number | $S$<br>nominal number |         |
| 150                       | SD534           | SD534G     | 310                            | 180 | 510 | 140   | 32    | 52  | 270       | 620  | 230   | 60    | 360   | 96    | M24                   | M30                   |         |
| 160                       | SD536           | SD536G     | 320                            | 190 | 540 | 150   | 32    | 52  | 280       | 650  | 240   | 60    | 380   | 96    | M24                   | M30                   |         |
| 170                       | SD538           | SD538G     | 340                            | 200 | 570 | 160   | 35    | 55  | 290       | 700  | 260   | 65    | 400   | 102   | M30                   | M30                   |         |
| 180                       | SD540           | SD540G     | 360                            | 210 | 610 | 170   | 35    | 55  | 300       | 740  | 270   | 65    | 420   | 108   | M30                   | M30                   |         |
| 200                       | SD544           | SD544G     | 400                            | 240 | 680 | 190   | 40    | 60  | 330       | 820  | 300   | 70    | 475   | 118   | M30                   | M36                   |         |
| 220                       | SD548           | SD548G     | 440                            | 260 | 740 | 200   | 42    | 62  | 340       | 880  | 310   | 85    | 515   | 130   | M36                   | M36                   |         |
| 240                       | SD552           | SD552G     | 480                            | 280 | 790 | 210   | 42    | 62  | 370       | 940  | 340   | 85    | 560   | 140   | M36                   | M36                   |         |
| 260                       | SD556           | SD556G     | 500                            | 300 | 830 | 230   | 50    | 70  | 390       | 990  | 370   | 100   | 590   | 140   | M36                   | M42                   |         |
| 280                       | SD560           | SD560G     | 540                            | 325 | 890 | 250   | 50    | 70  | 410       | 1060 | 390   | 100   | 640   | 150   | M36                   | M42                   |         |
| 300                       | SD564           | SD564G     | 580                            | 355 | 930 | 270   | 57    | 77  | 440       | 1110 | 420   | 110   | 690   | 160   | M42                   | M48                   |         |

|     |       |        |     |     |     |     |    |    |     |       |     |     |     |     |     |     |  |
|-----|-------|--------|-----|-----|-----|-----|----|----|-----|-------|-----|-----|-----|-----|-----|-----|--|
| 150 | SD634 | SD634G | 360 | 210 | 610 | 170 | 35 | 55 | 300 | 740   | 270 | 65  | 420 | 130 | M30 | M30 |  |
| 160 | SD636 | SD636G | 380 | 225 | 640 | 180 | 40 | 60 | 320 | 780   | 290 | 70  | 450 | 136 | M30 | M36 |  |
| 170 | SD638 | SD638G | 400 | 240 | 680 | 190 | 40 | 60 | 330 | 820   | 300 | 70  | 475 | 142 | M30 | M36 |  |
| 180 | SD640 | SD640G | 420 | 250 | 710 | 200 | 42 | 62 | 350 | 860   | 320 | 85  | 500 | 148 | M36 | M36 |  |
| 200 | SD644 | SD644G | 460 | 280 | 770 | 210 | 42 | 62 | 360 | 920   | 330 | 85  | 550 | 155 | M36 | M36 |  |
| 220 | SD648 | SD648G | 500 | 300 | 830 | 230 | 50 | 70 | 390 | 990   | 370 | 100 | 590 | 165 | M36 | M42 |  |
| 240 | SD652 | SD652G | 540 | 325 | 890 | 250 | 50 | 70 | 410 | 1 060 | 390 | 100 | 640 | 175 | M36 | M42 |  |
| 260 | SD656 | SD656G | 580 | 355 | 930 | 270 | 57 | 77 | 440 | 1 110 | 420 | 110 | 690 | 185 | M42 | M48 |  |

- ① Dimension  $g$  represents the bearing seat width for free-side bearing.  
Dimension for fixed-side (code G) is 0.5 mm greater than the bearing width dimension.
- ② Dimension  $Y$  is an approximate distance from the bearing center to the shaft end for shaft end configuration.

NOTE: 1) Fill and drain plugs:  
Size: PT3/8

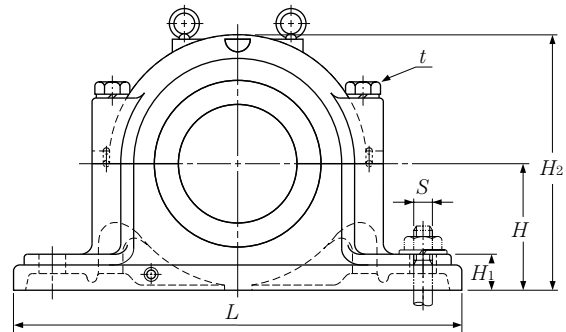
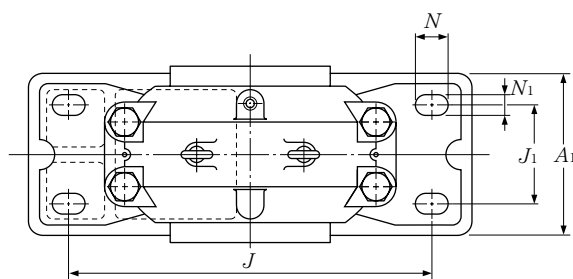


| Mass<br>kg<br>(approx.) | Nominal number<br>spherical roller<br>bearings | Approx.<br>mm<br>$Y$ ② | Seal<br>number | shaft<br>dia.<br>mm<br>$d_1$ |
|-------------------------|------------------------------------------------|------------------------|----------------|------------------------------|
| 95                      | 22234BK;H3134                                  | 75                     | ZF34           | <b>150</b>                   |
| 110                     | 22236BK;H3136                                  | 76                     | ZF36           | <b>160</b>                   |
| 130                     | 22238BK;H3138                                  | 80                     | ZF38           | <b>170</b>                   |
| 150                     | 22240BK;H3140                                  | 84                     | ZF40           | <b>180</b>                   |
| 210                     | 22244BK;H3144                                  | 90                     | ZF44           | <b>200</b>                   |
| 240                     | 22248BK;H3148                                  | 98                     | ZF48           | <b>220</b>                   |
| 320                     | 22252BK;H3152                                  | 105                    | ZF52           | <b>240</b>                   |
| 370                     | 22256BK;H3156                                  | 107                    | ZF56           | <b>260</b>                   |
| 460                     | 22260BK;H3160                                  | 114                    | ZF60           | <b>280</b>                   |
| 560                     | 22264BK;H3164                                  | 122                    | ZF64           | <b>300</b>                   |

|     |               |     |      |            |
|-----|---------------|-----|------|------------|
| 150 | 22334BK;H2334 | 92  | ZF34 | <b>150</b> |
| 180 | 22336BK;H2336 | 96  | ZF36 | <b>160</b> |
| 210 | 22338BK;H2338 | 100 | ZF38 | <b>170</b> |
| 240 | 22340BK;H2340 | 104 | ZF40 | <b>180</b> |
| 300 | 22344BK;H2344 | 109 | ZF44 | <b>200</b> |
| 370 | 22348BK;H2348 | 116 | ZF48 | <b>220</b> |
| 460 | 22352BK;H2352 | 123 | ZF52 | <b>240</b> |
| 560 | 22356BK;H2356 | 130 | ZF56 | <b>260</b> |

# Plummer Blocks SD30·SD30G

For heavy load, double rubber sealed type / For bearing with adapter assembly



$d_1$  150~450mm

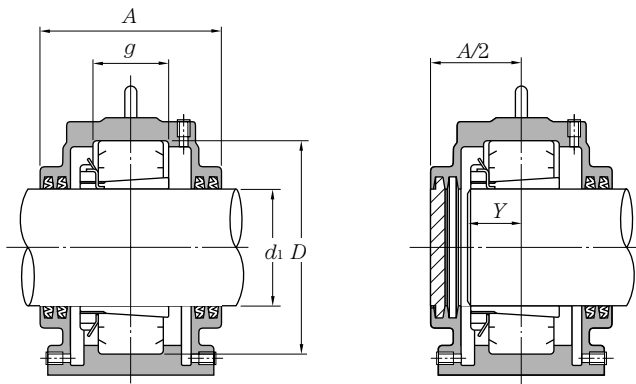
| Shaft dia.<br>mm<br>$d_1$ | Bearing numbers ① |            | Abutment and fillet dimensions |     |       |       |       |     |           |       |       |       |       |       |                       |                       | Approx. |
|---------------------------|-------------------|------------|--------------------------------|-----|-------|-------|-------|-----|-----------|-------|-------|-------|-------|-------|-----------------------|-----------------------|---------|
|                           | free side         | fixed side | $D$                            | $H$ | $J$   | $J_1$ | $N_1$ | $N$ | mm<br>$A$ | $L$   | $A_1$ | $H_1$ | $H_2$ | $g$ ② | $t$<br>nominal number | $S$<br>nominal number |         |
| 150                       | SD3034            | SD3034G    | 260                            | 160 | 450   | 110   | 32    | 42  | 230       | 540   | 200   | 50    | 320   | 77    | M24                   | M30                   |         |
| 160                       | SD3036            | SD3036G    | 280                            | 170 | 470   | 120   | 32    | 42  | 250       | 560   | 220   | 50    | 340   | 84    | M24                   | M30                   |         |
| 170                       | SD3038            | SD3038G    | 290                            | 170 | 470   | 120   | 32    | 42  | 250       | 560   | 220   | 50    | 345   | 85    | M24                   | M30                   |         |
| 180                       | SD3040            | SD3040G    | 310                            | 180 | 510   | 140   | 32    | 52  | 270       | 620   | 250   | 60    | 360   | 92    | M24                   | M30                   |         |
| 200                       | SD3044            | SD3044G    | 340                            | 200 | 570   | 160   | 35    | 55  | 290       | 700   | 280   | 65    | 400   | 100   | M30                   | M30                   |         |
| 220                       | SD3048            | SD3048G    | 360                            | 210 | 610   | 170   | 35    | 55  | 300       | 740   | 290   | 65    | 420   | 102   | M30                   | M30                   |         |
| 240                       | SD3052            | SD3052G    | 400                            | 240 | 680   | 190   | 40    | 60  | 340       | 820   | 320   | 70    | 475   | 114   | M30                   | M36                   |         |
| 260                       | SD3056            | SD3056G    | 420                            | 250 | 710   | 200   | 42    | 62  | 350       | 860   | 340   | 85    | 500   | 116   | M36                   | M36                   |         |
| 280                       | SD3060            | SD3060G    | 460                            | 280 | 770   | 210   | 42    | 62  | 360       | 920   | 350   | 85    | 550   | 128   | M36                   | M36                   |         |
| 300                       | SD3064            | SD3064G    | 480                            | 280 | 790   | 210   | 42    | 62  | 380       | 940   | 360   | 85    | 560   | 131   | M36                   | M36                   |         |
| 380                       | SD3080            | SD3080G    | 600                            | 365 | 960   | 270   | 57    | 77  | 430       | 1 140 | 420   | 120   | 710   | 158   | M42                   | M48                   |         |
| 400                       | SD3084            | SD3084G    | 620                            | 375 | 980   | 270   | 57    | 77  | 430       | 1 160 | 420   | 120   | 735   | 160   | M42                   | M48                   |         |
| 410                       | SD3088            | SD3088G    | 650                            | 390 | 1 040 | 280   | 57    | 77  | 460       | 1 220 | 450   | 125   | 765   | 167   | M42                   | M48                   |         |
| 430                       | SD3092            | SD3092G    | 680                            | 405 | 1 040 | 310   | 57    | 77  | 470       | 1 220 | 460   | 130   | 790   | 173   | M42                   | M48                   |         |
| 450                       | SD3096            | SD3096G    | 700                            | 415 | 1 100 | 320   | 57    | 77  | 485       | 1 270 | 470   | 130   | 820   | 175   | M42                   | M48                   |         |

① SD3068, SD3072 and SD3076 are respectively identical to SD3368, SD3372 and SD3376 in terms of dimensions. For this reason, specify "SD3368," "SD3372" or "SD3376" when ordering SD3068, SD3072 or SD3076.

② Dimension  $g$  represents the bearing seat width for free-side bearing. Dimension for fixed-side (code G) is 0.5 mm greater than the bearing width dimension.

③ Dimension  $Y$  is an approximate distance from the bearing center to the shaft end for shaft end configuration.

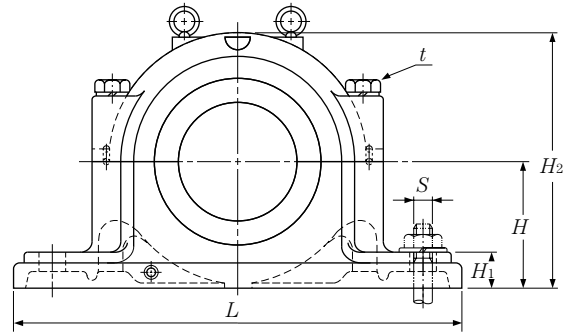
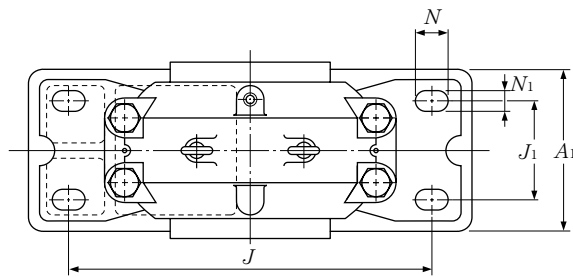
NOTE: 1) Fill and drain plugs:  
Size: PT3/8



| Mass<br>kg<br>(approx.) | Nominal number<br>spherical roller<br>bearings | Approx.<br>mm<br>Y ④ | Seal<br>number | shaft<br>dia.<br>mm<br>d <sub>1</sub> |
|-------------------------|------------------------------------------------|----------------------|----------------|---------------------------------------|
| 70                      | 23034BK;H3034                                  | 66                   | ZF34           | <b>150</b>                            |
| 80                      | 23036BK;H3036                                  | 70                   | ZF36           | <b>160</b>                            |
| 85                      | 23038BK;H3038                                  | 72                   | ZF38           | <b>170</b>                            |
| 100                     | 23040BK;H3040                                  | 76                   | ZF40           | <b>180</b>                            |
| 130                     | 23044BK;H3044                                  | 79                   | ZF44           | <b>200</b>                            |
| 150                     | 23048BK;H3048                                  | 84                   | ZF48           | <b>220</b>                            |
| 210                     | 23052BK;H3052                                  | 90                   | ZF52           | <b>240</b>                            |
| 240                     | 23056BK;H3056                                  | 95                   | ZF56           | <b>260</b>                            |
| 300                     | 23060BK;H3060                                  | 105                  | ZF60           | <b>280</b>                            |
| 320                     | 23064BK;H3064                                  | 108                  | ZF64           | <b>300</b>                            |
| 620                     | 23080BK;H3080                                  | 131                  | GS80           | <b>380</b>                            |
| 690                     | 23084BK;H3084                                  | 132                  | GS84           | <b>400</b>                            |
| 800                     | 23088BK;H3088                                  | 144                  | GS88           | <b>410</b>                            |
| 870                     | 23092BK;H3092                                  | 147                  | GS92           | <b>430</b>                            |
| 980                     | 23096BK;H3096                                  | 148                  | GS96           | <b>450</b>                            |

# Plummer Blocks SD31・SD31G

For heavy load, double sealed type / For bearing with adapter assembly



$d_1$  150~400mm

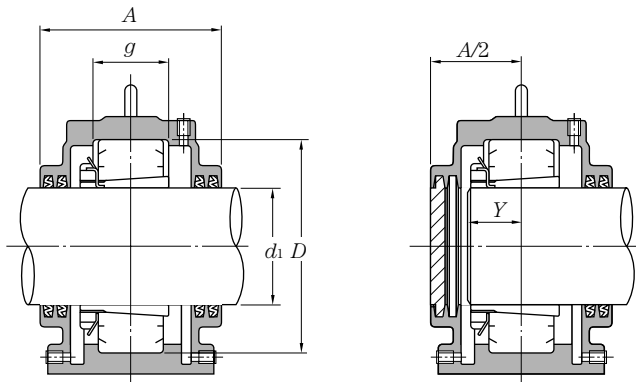
| Shaft<br>dia.<br>mm<br>$d_1$ | Bearing numbers ① |            | Abutment and fillet dimensions |     |       |       |       |     |           |       |       |       |       |       |                          |                          | Approx. |
|------------------------------|-------------------|------------|--------------------------------|-----|-------|-------|-------|-----|-----------|-------|-------|-------|-------|-------|--------------------------|--------------------------|---------|
|                              | free side         | fixed side | $D$                            | $H$ | $J$   | $J_1$ | $N_1$ | $N$ | mm<br>$A$ | $L$   | $A_1$ | $H_1$ | $H_2$ | $g$ ② | $t$<br>nominal<br>number | $S$<br>nominal<br>number |         |
| 150                          | SD3134            | SD3134G    | 280                            | 170 | 470   | 120   | 35    | 42  | 250       | 560   | 220   | 50    | 340   | 98    | M24                      | M30                      |         |
| 160                          | SD3136            | SD3136G    | 300                            | 180 | 520   | 140   | 35    | 52  | 270       | 630   | 250   | 55    | 365   | 106   | M30                      | M30                      |         |
| 170                          | SD3138            | SD3138G    | 320                            | 190 | 560   | 140   | 35    | 55  | 310       | 680   | 270   | 55    | 385   | 114   | M30                      | M30                      |         |
| 180                          | SD3140            | SD3140G    | 340                            | 200 | 570   | 160   | 35    | 55  | 310       | 700   | 280   | 65    | 400   | 122   | M30                      | M30                      |         |
| 200                          | SD3144            | SD3144G    | 370                            | 225 | 640   | 180   | 40    | 60  | 320       | 780   | 310   | 70    | 450   | 130   | M30                      | M36                      |         |
| 220                          | SD3148            | SD3148G    | 400                            | 240 | 680   | 190   | 40    | 60  | 330       | 820   | 320   | 70    | 475   | 138   | M30                      | M36                      |         |
| 240                          | SD3152            | SD3152G    | 440                            | 260 | 740   | 200   | 42    | 62  | 360       | 880   | 350   | 85    | 515   | 154   | M36                      | M36                      |         |
| 260                          | SD3156            | SD3156G    | 460                            | 280 | 770   | 210   | 42    | 62  | 360       | 920   | 350   | 85    | 550   | 156   | M36                      | M36                      |         |
| 280                          | SD3160            | SD3160G    | 500                            | 300 | 830   | 230   | 50    | 70  | 390       | 990   | 380   | 100   | 590   | 170   | M36                      | M42                      |         |
| 300                          | SD3164            | SD3164G    | 540                            | 325 | 890   | 250   | 50    | 70  | 430       | 1 060 | 400   | 100   | 640   | 186   | M36                      | M42                      |         |
| 340                          | SD3172            | SD3172G    | 600                            | 365 | 960   | 310   | 57    | 77  | 470       | 1 140 | 460   | 120   | 710   | 202   | M42                      | M48                      |         |
| 360                          | SD3176            | SD3176G    | 620                            | 375 | 980   | 320   | 57    | 77  | 500       | 1 160 | 490   | 120   | 735   | 204   | M42                      | M48                      |         |
| 380                          | SD3180            | SD3180G    | 650                            | 390 | 1 040 | 340   | 57    | 77  | 520       | 1 220 | 510   | 125   | 765   | 210   | M42                      | M48                      |         |
| 400                          | SD3184            | SD3184G    | 700                            | 420 | 1 070 | 380   | 57    | 77  | 560       | 1 250 | 550   | 135   | 820   | 234   | M42                      | M48                      |         |

① SD3168 is identical to SD3468 in terms of dimensions. For this reason, specify "SD3468" when ordering SD3168.

② Dimension  $g$  represents the bearing seat width for free-side bearing.  
Dimension for fixed-side (code G) is 0.5 mm greater than the bearing width dimension.

③ Dimension  $Y$  is an approximate distance from the bearing center to the shaft end for shaft end configuration.

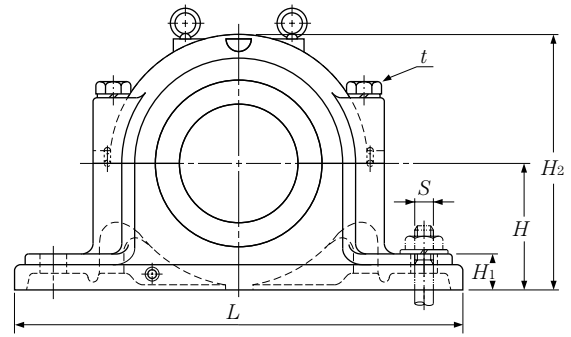
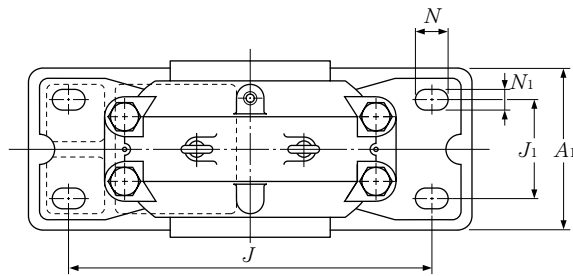
NOTE: 1) Fill and drain plugs:  
Size: PT3/8



| Mass<br>kg<br>(approx.) | Nominal number<br>spherical roller<br>bearings | Approx.<br>mm<br>Y ⑤ | Seal<br>number | shaft<br>dia.<br>mm<br>d <sub>1</sub> |
|-------------------------|------------------------------------------------|----------------------|----------------|---------------------------------------|
| 75                      | 23134BK;H3134                                  | 76                   | ZF34           | <b>150</b>                            |
| 94                      | 23136BK;H3136                                  | 81                   | ZF36           | <b>160</b>                            |
| 110                     | 23138BK;H3138                                  | 86                   | ZF38           | <b>170</b>                            |
| 130                     | 23140BK;H3140                                  | 91                   | ZF40           | <b>180</b>                            |
| 180                     | 23144BK;H3144                                  | 96                   | ZF44           | <b>200</b>                            |
| 210                     | 23148BK;H3148                                  | 102                  | ZF48           | <b>220</b>                            |
| 240                     | 23152BK;H3152                                  | 112                  | ZF52           | <b>240</b>                            |
| 310                     | 23156BK;H3156                                  | 115                  | ZF56           | <b>260</b>                            |
| 400                     | 23160BK;H3160                                  | 124                  | ZF60           | <b>280</b>                            |
| 480                     | 23164BK;H3164                                  | 135                  | ZF64           | <b>300</b>                            |
| 630                     | 23172BK;H3172                                  | 159                  | GS72           | <b>340</b>                            |
| 850                     | 23176BK;H3176                                  | 162                  | GS76           | <b>360</b>                            |
| 960                     | 23180BK;H3180                                  | 167                  | GS80           | <b>380</b>                            |
| 1 080                   | 23184BK;H3184                                  | 187                  | GS84           | <b>400</b>                            |

# Plummer Blocks SD2·SD2G·SD3·SD3G

Heavy load, stepped bore type / For cylindrical bore bearing



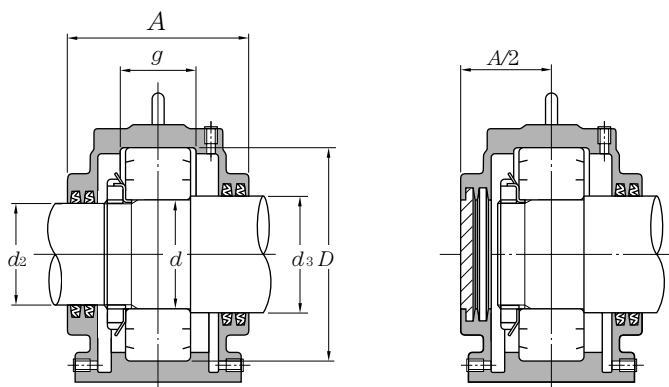
$d_1$  170~320mm

| Shaft dia.<br>mm |       |       | Bearing numbers |            | Abutment and fillet dimensions |     |     |       |       |     |           |       |       |       |       |       |                       |                             | Approx. |  |
|------------------|-------|-------|-----------------|------------|--------------------------------|-----|-----|-------|-------|-----|-----------|-------|-------|-------|-------|-------|-----------------------|-----------------------------|---------|--|
| $d$              | $d_2$ | $d_3$ | free side       | fixed side | $D$                            | $H$ | $J$ | $J_1$ | $N_1$ | $N$ | mm<br>$A$ | $L$   | $A_1$ | $H_1$ | $H_2$ | $g$ ① | $t$<br>nominal number | mm<br>$S$<br>nominal number |         |  |
| 170              | 160   | 190   | SD234           | SD234G     | 310                            | 180 | 510 | 140   | 32    | 52  | 270       | 620   | 230   | 60    | 360   | 96    | M24                   | M30                         |         |  |
| 180              | 170   | 200   | SD236           | SD236G     | 320                            | 190 | 540 | 150   | 32    | 52  | 280       | 650   | 240   | 60    | 380   | 96    | M24                   | M30                         |         |  |
| 190              | 180   | 210   | SD238           | SD238G     | 340                            | 200 | 570 | 160   | 35    | 55  | 290       | 700   | 260   | 65    | 400   | 102   | M30                   | M30                         |         |  |
| 200              | 190   | 220   | SD240           | SD240G     | 360                            | 210 | 610 | 170   | 35    | 55  | 300       | 740   | 270   | 65    | 420   | 108   | M30                   | M30                         |         |  |
| 220              | 210   | 240   | SD244           | SD244G     | 400                            | 240 | 680 | 190   | 40    | 60  | 330       | 820   | 300   | 70    | 475   | 118   | M30                   | M36                         |         |  |
| 240              | 230   | 260   | SD248           | SD248G     | 440                            | 260 | 740 | 200   | 42    | 62  | 340       | 880   | 310   | 85    | 515   | 130   | M36                   | M36                         |         |  |
| 260              | 250   | 280   | SD252           | SD252G     | 480                            | 280 | 790 | 210   | 42    | 62  | 370       | 940   | 340   | 85    | 560   | 140   | M36                   | M36                         |         |  |
| 280              | 260   | 300   | SD256           | SD256G     | 500                            | 300 | 830 | 230   | 50    | 70  | 390       | 990   | 370   | 100   | 590   | 140   | M36                   | M42                         |         |  |
| 300              | 280   | 320   | SD260           | SD260G     | 540                            | 325 | 890 | 250   | 50    | 70  | 410       | 1 060 | 390   | 100   | 640   | 150   | M36                   | M42                         |         |  |
| 320              | 300   | 340   | SD264           | SD264G     | 580                            | 355 | 930 | 270   | 57    | 77  | 440       | 1 110 | 420   | 110   | 690   | 160   | M42                   | M48                         |         |  |

|     |     |     |       |        |     |     |     |     |    |    |     |       |     |     |     |     |     |     |  |  |
|-----|-----|-----|-------|--------|-----|-----|-----|-----|----|----|-----|-------|-----|-----|-----|-----|-----|-----|--|--|
| 170 | 160 | 190 | SD334 | SD334G | 360 | 210 | 610 | 170 | 35 | 55 | 300 | 740   | 270 | 65  | 420 | 130 | M30 | M30 |  |  |
| 180 | 170 | 200 | SD336 | SD336G | 380 | 225 | 640 | 180 | 40 | 60 | 320 | 780   | 290 | 70  | 450 | 136 | M30 | M36 |  |  |
| 190 | 180 | 210 | SD338 | SD338G | 400 | 240 | 680 | 190 | 40 | 60 | 330 | 820   | 300 | 70  | 475 | 142 | M30 | M36 |  |  |
| 200 | 190 | 220 | SD340 | SD340G | 420 | 250 | 710 | 200 | 42 | 62 | 350 | 860   | 320 | 85  | 500 | 148 | M36 | M36 |  |  |
| 220 | 210 | 240 | SD344 | SD344G | 460 | 280 | 770 | 210 | 42 | 62 | 360 | 920   | 330 | 85  | 550 | 155 | M36 | M36 |  |  |
| 240 | 230 | 260 | SD348 | SD348G | 500 | 300 | 830 | 230 | 50 | 70 | 390 | 990   | 370 | 100 | 590 | 165 | M36 | M42 |  |  |
| 260 | 250 | 280 | SD352 | SD352G | 540 | 325 | 890 | 250 | 50 | 70 | 410 | 1 060 | 390 | 100 | 640 | 175 | M36 | M42 |  |  |
| 280 | 260 | 300 | SD356 | SD356G | 580 | 355 | 930 | 270 | 57 | 77 | 440 | 1 110 | 420 | 110 | 690 | 185 | M42 | M48 |  |  |

- ① Dimension  $g$  represents the bearing seat width for free-side bearing.  
Dimension for fixed-side (code G) is 0.5 mm greater than the bearing width dimension.
- ② Dimension  $Y$  is an approximate distance from the bearing center to the shaft end for shaft end configuration.

NOTE: 1) Fill and drain plugs:  
Size: PT3/8

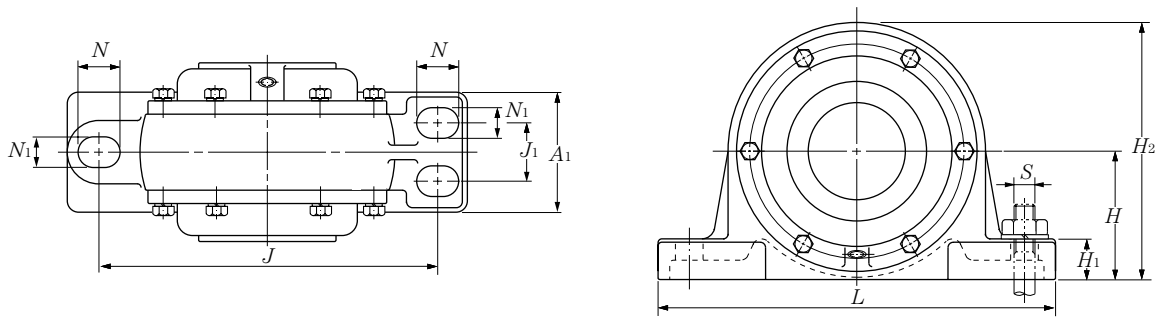


| Mass<br>kg<br>(approx.) | Nominal number               |      |        | Approx.<br>mm<br>Y <sup>●</sup> | Seal number       |                   | shaft<br>dia.<br>mm<br>d |
|-------------------------|------------------------------|------|--------|---------------------------------|-------------------|-------------------|--------------------------|
|                         | spherical roller<br>bearings | nut  | washer |                                 | (d <sub>2</sub> ) | (d <sub>3</sub> ) |                          |
| 95                      | 22234B                       | AN34 | AW34   | 75                              | ZF36              | ZF42              | <b>170</b>               |
| 110                     | 22236B                       | AN36 | AW36   | 76                              | ZF38              | ZF44              | <b>180</b>               |
| 130                     | 22238B                       | AN38 | AW38   | 80                              | ZF40              | ZF46              | <b>190</b>               |
| 150                     | 22240B                       | AN40 | AW40   | 84                              | ZF42              | ZF48              | <b>200</b>               |
| 210                     | 22244B                       | AN44 | AL44   | 90                              | ZF46              | ZF52              | <b>220</b>               |
| 240                     | 22248B                       | AN48 | AL44   | 98                              | GS50              | ZF56              | <b>240</b>               |
| 320                     | 22252B                       | AN52 | AL52   | 105                             | ZF54              | ZF60              | <b>260</b>               |
| 370                     | 22256B                       | AN56 | AL52   | 107                             | ZF56              | ZF64              | <b>280</b>               |
| 460                     | 22260B                       | AN60 | AL60   | 114                             | ZF60              | ZF68              | <b>300</b>               |
| 560                     | 22264B                       | AN64 | AL64   | 122                             | ZF64              | GS72              | <b>320</b>               |

|     |        |      |      |     |      |      |            |
|-----|--------|------|------|-----|------|------|------------|
| 150 | 22334B | AN34 | AW34 | 92  | ZF36 | ZF42 | <b>170</b> |
| 180 | 22336B | AN36 | AW36 | 96  | ZF38 | ZF44 | <b>180</b> |
| 210 | 22338B | AN38 | AW38 | 100 | ZF40 | ZF46 | <b>190</b> |
| 240 | 22340B | AN40 | AW40 | 104 | ZF42 | ZF48 | <b>200</b> |
| 300 | 22344B | AN44 | AL44 | 109 | ZF46 | ZF52 | <b>220</b> |
| 370 | 22348B | AN48 | AL44 | 116 | GS50 | ZF56 | <b>240</b> |
| 460 | 22352B | AN52 | AL52 | 123 | ZF54 | ZF60 | <b>260</b> |
| 560 | 22356B | AN56 | AL52 | 130 | ZF56 | ZF64 | <b>280</b> |

# Plummer Blocks SV5

Unit type standard / For bearing with adapter assembly

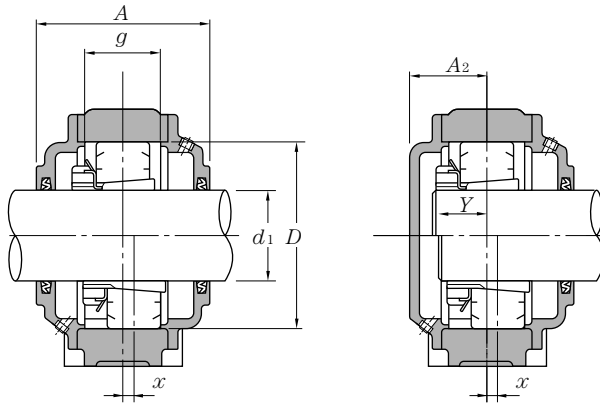


$d_1$  20~135mm

| Shaft dia.<br>mm<br>$d_1$ | Bearing numbers | BAS code ② |       | Nominal number              |                           | Abutment and fillet dimensions |     |     |       |             |     |     |     |       |
|---------------------------|-----------------|------------|-------|-----------------------------|---------------------------|--------------------------------|-----|-----|-------|-------------|-----|-----|-----|-------|
|                           |                 | main body  | cover | self-aligning ball bearings | spherical roller bearings | $D$                            | $H$ | $J$ | $J_1$ | mm<br>$N_1$ | $N$ | $L$ | $A$ | $A_1$ |
| 20                        | SV505           | V052       | 052C  | 1205K<br>2205K              | —<br>—                    | 52                             | 45  | 130 | —     | 16          | 20  | 165 | 73  | 46    |
| 25                        | SV506           | V062       | 062C  | 1206K<br>2206K              | —<br>—                    | 62                             | 50  | 150 | —     | 16          | 20  | 185 | 80  | 52    |
| 30                        | SV507           | V072       | 072C  | 1207K<br>2207K              | —<br>—                    | 72                             | 56  | 150 | —     | 16          | 20  | 185 | 85  | 52    |
| 35                        | SV508           | V080       | 080C  | 1208K<br>2208K              | —<br>22208CK              | 80                             | 60  | 170 | —     | 16          | 20  | 205 | 95  | 60    |
| 40                        | SV509           | V085       | 085C  | 1209K<br>2209K              | —<br>22209CK              | 85                             | 63  | 170 | —     | 16          | 23  | 205 | 98  | 60    |
| 45                        | SV510           | V090       | 090C  | 1210K<br>2210K              | —<br>22210CK              | 90                             | 67  | 170 | —     | 16          | 23  | 205 | 100 | 60    |
| 50                        | SV511           | V100       | 100C  | 1211K<br>2211K              | —<br>22211BK              | 100                            | 71  | 210 | —     | 16          | 23  | 255 | 106 | 70    |
| 55                        | SV512           | V110       | 110C  | 1212K<br>2212K              | —<br>22212BK              | 110                            | 80  | 210 | —     | 21          | 25  | 255 | 112 | 70    |
| 60                        | SV513           | V120       | 120C  | 1213K<br>2213K              | —<br>22213BK              | 120                            | 85  | 230 | —     | 21          | 25  | 275 | 118 | 80    |
| 65                        | SV515           | V130       | 130C  | 1215K<br>2215K              | —<br>22215BK              | 130                            | 90  | 230 | —     | 21          | 25  | 280 | 118 | 80    |
| 70                        | SV516           | V140       | 140C  | 1216K<br>2216K              | —<br>22216BK              | 140                            | 100 | 260 | —     | 25          | 30  | 315 | 136 | 90    |
| 75                        | SV517           | V150       | 150C  | 1217K<br>2217K              | —<br>22217BK              | 150                            | 100 | 260 | —     | 25          | 30  | 315 | 140 | 90    |
| 80                        | SV518           | V160       | 160C  | 1218K<br>2218K<br>—         | —<br>22218BK<br>23218BK   | 160                            | 112 | 290 | —     | 25          | 30  | 345 | 150 | 100   |
| 85                        | SV519           | V170       | 170C  | 1219K<br>2219K              | —<br>22219BK              | 170                            | 112 | 290 | —     | 25          | 30  | 345 | 165 | 100   |
| 90                        | SV520           | V180       | 180C  | 1220K<br>2220K<br>—         | —<br>22220BK<br>23220BK   | 180                            | 125 | 320 | 56    | 23          | 32  | 380 | 170 | 110   |
| 100                       | SV522           | V200       | 200C  | 1222K<br>2222K<br>—         | —<br>22222BK<br>23222BK   | 200                            | 132 | 350 | 60    | 23          | 32  | 410 | 190 | 120   |
| 110                       | SV524           | V215       | 215C  |                             | 22224BK<br>23224BK        | 215                            | 140 | 350 | 60    | 23          | 32  | 410 | 190 | 120   |
| 115                       | SV526           | V230       | 230C  |                             | 22226BK<br>23226BK        | 230                            | 150 | 380 | 65    | 23          | 32  | 450 | 200 | 130   |
| 125                       | SV528           | V250       | 250C  |                             | 22228BK<br>23228BK        | 250                            | 160 | 420 | 80    | 23          | 32  | 500 | 218 | 150   |
| 135                       | SV530           | V270       | 270C  |                             | 22230BK<br>23230BK        | 270                            | 170 | 450 | 92    | 29          | 42  | 540 | 236 | 160   |

- ① The numeral in nominal number of the setting ring represents the outside diameter and width dimension.  
 ② The Japan Bearing Industrial Association Standard  
 ③ Dimension  $Y$  is an approximate distance from the bearing center to the shaft end for shaft end configuration.

- NOTE: 1) Sizes SV520 and greater are equipped with lifting eye bolts.  
 2) Dimension  $X$  indicates a deviation of the bearing center relative to the plummer block center, and its value is 1/2 the width of the setting washer.  
 3) An adaptor for bearing series 12, series H2 as well as series H3 can be used.



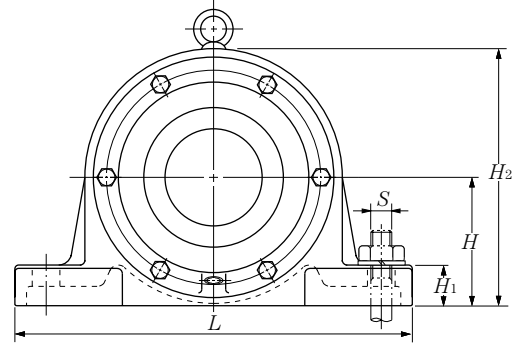
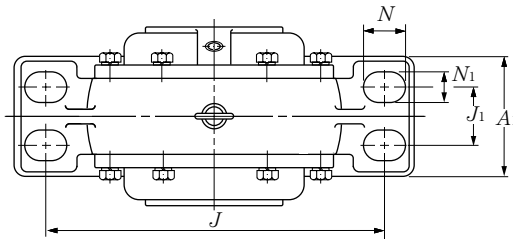
| Abutment and fillet dimensions |                                                                         |    |     |                                       | Mass | Nominal number |                          |                                      |             | Approx.          | Seal number | shaft dia.                  |
|--------------------------------|-------------------------------------------------------------------------|----|-----|---------------------------------------|------|----------------|--------------------------|--------------------------------------|-------------|------------------|-------------|-----------------------------|
| <i>g</i>                       | mm<br><i>A</i> <sub>2</sub> <i>H</i> <sub>1</sub> <i>H</i> <sub>2</sub> |    |     | Approx.<br><i>S</i><br>nominal number |      | kg             | Adapter                  | setting washer ❶<br>number           |             | mm<br><i>Y</i> ❷ |             | mm<br><i>d</i> <sub>1</sub> |
| 27                             | 31                                                                      | 22 | 85  | M14                                   | 2    | 2.1            | H205X<br>H305X           | SR 52X 6<br>SR 52X 9                 | 2<br>1      | 17<br>19         | ZF5         | 20                          |
| 30                             | 34                                                                      | 22 | 95  | M14                                   | 2    | 2.7            | H206X<br>H306X           | SR 62X 7<br>SR 62X10                 | 2<br>1      | 18<br>20         | ZF6         | 25                          |
| 33                             | 37.5                                                                    | 22 | 106 | M14                                   | 2    | 3.3            | H207X<br>H307X           | SR 72X 8<br>SR 72X10                 | 2<br>1      | 19<br>22         | ZF7         | 30                          |
| 37                             | 40.5                                                                    | 25 | 118 | M14                                   | 2    | 4.5            | H208X<br>H308X           | SR 80X 9.5<br>SR 80X 7               | 2<br>2      | 21<br>23         | ZF8         | 35                          |
| 39                             | 42.5                                                                    | 25 | 125 | M14                                   | 2    | 4.5            | H209X<br>H309X           | SR 85X10<br>SR 85X 8                 | 2<br>2      | 22<br>24         | ZF9         | 40                          |
| 39                             | 42.5                                                                    | 25 | 128 | M14                                   | 2    | 4.8            | H210X<br>H310X           | SR 90X 9.5<br>SR 90X 8               | 2<br>2      | 24<br>25         | ZF10        | 45                          |
| 42                             | 47                                                                      | 28 | 140 | M14                                   | 2    | 5.8            | H211X<br>H311X           | SR100X10.5<br>SR100X 8.5             | 2<br>2      | 25<br>27         | ZF11        | 50                          |
| 46                             | 47                                                                      | 30 | 155 | M18                                   | 2    | 6.8            | H212X<br>H312X           | SR110X12<br>SR110X 9                 | 2<br>2      | 26<br>29         | ZF12        | 55                          |
| 49                             | 50                                                                      | 30 | 165 | M18                                   | 2    | 9.5            | H213X<br>H313X           | SR120X13<br>SR120X 9                 | 2<br>2      | 28<br>32         | ZF13        | 60                          |
| 50                             | 50                                                                      | 30 | 175 | M18                                   | 2    | 10             | H215X<br>H315X           | SR130X12.5<br>SR130X 9.5             | 2<br>2      | 30<br>33         | ZF15        | 65                          |
| 56                             | 58                                                                      | 32 | 195 | M22                                   | 2    | 14             | H216X<br>H316X           | SR140X15<br>SR140X11.5               | 2<br>2      | 32<br>36         | ZF16        | 70                          |
| 56                             | 60                                                                      | 32 | 195 | M22                                   | 2    | 15             | H217X<br>H317X           | SR150X14<br>SR150X10                 | 2<br>2      | 34<br>38         | ZF17        | 75                          |
| 62                             | 65                                                                      | 35 | 224 | M22                                   | 2    | 20             | H218X<br>H318X<br>H2318X | SR160X16<br>SR160X11<br>SR160X 9.6   | 2<br>2<br>1 | 35<br>40<br>46   | ZF18        | 80                          |
| 62                             | 72.5                                                                    | 35 | 224 | M22                                   | 2    | 20             | H219X<br>H319X           | SR170X15<br>SR170X 9.5               | 2<br>2      | 37<br>43         | ZF19        | 85                          |
| 70                             | 75                                                                      | 40 | 243 | M20                                   | 4    | 26             | H220X<br>H320X<br>H2320X | SR160X18<br>SR180X12<br>SR180X 9.7   | 2<br>2<br>1 | 39<br>45<br>52   | ZF20        | 90                          |
| 82                             | 82                                                                      | 45 | 265 | M20                                   | 4    | 30             | H222X<br>H322X<br>H2322X | SR200X22<br>SR200X14.5<br>SR200X12.2 | 2<br>2<br>1 | 42<br>50<br>58   | ZF22        | 100                         |
| 82                             | 82                                                                      | 45 | 280 | M20                                   | 4    | 36             | H3124X<br>H2324X         | SR215X12<br>SR215X 6                 | 2<br>1      | 53<br>62         | ZF24        | 110                         |
| 86                             | 87                                                                      | 50 | 300 | M20                                   | 4    | 45             | H3126<br>H2326           | SR230X11<br>SR230X 6                 | 2<br>1      | 57<br>65         | ZF26        | 115                         |
| 94                             | 96                                                                      | 50 | 315 | M20                                   | 4    | 53             | H3128<br>H2328           | SR250X13<br>SR250X 6                 | 2<br>1      | 60<br>70         | ZF28        | 125                         |
| 103                            | 105                                                                     | 60 | 335 | M24                                   | 4    | 63             | H3130<br>H2330           | SR270X15<br>SR270X 7                 | 2<br>1      | 65<br>76         | ZF30        | 135                         |

4) Fill and drain plugs:  
Size: SV505-SV520.....PT1/8  
SV522-SV532.....PT1/4

5) When wanting a plummer block whose bore at the shaft end side is closed,  
add code M1 after the plummer block nominal number.

# Plummer Blocks SV5

Unit type standard / For bearing with adapter assembly

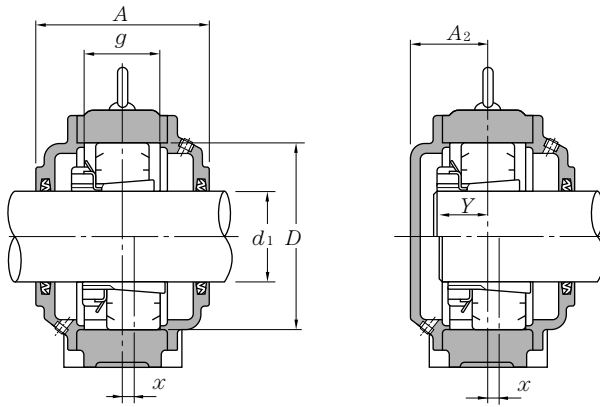


$d_1$  140~300mm

| Shaft dia.<br>mm<br>$d_1$ | Bearing numbers | BAS code ② |       | Nominal number              |                           | Abutment and fillet dimensions |     |     |       |             |     |                       |                       |       |
|---------------------------|-----------------|------------|-------|-----------------------------|---------------------------|--------------------------------|-----|-----|-------|-------------|-----|-----------------------|-----------------------|-------|
|                           |                 | main body  | cover | self-aligning ball bearings | spherical roller bearings | $D$                            | $H$ | $J$ | $J_1$ | mm<br>$N_1$ | $N$ | $L$<br>nominal number | $A$<br>nominal number | $A_1$ |
| 140                       | SV532           | V290       | 290C  |                             | 22232BK<br>23232BK        | 290                            | 190 | 470 | 92    | 29          | 50  | 560                   | 250                   | 170   |
| 150                       | SV534           | V310       | 310C  |                             | 22234BK<br>23234BK        | 310                            | 200 | 560 | 92    | 29          | 50  | 660                   | 258                   | 180   |
| 160                       | SV536           | V320       | 320C  |                             | 22236BK<br>23236BK        | 320                            | 200 | 560 | 92    | 29          | 50  | 660                   | 258                   | 180   |
| 170                       | SV538           | V340       | 340C  |                             | 22238BK<br>23238BK        | 340                            | 212 | 580 | 104   | 33          | 54  | 680                   | 300                   | 190   |
| 180                       | SV540           | V360       | 360C  |                             | 22240BK<br>23240BK        | 360                            | 224 | 610 | 130   | 33          | 54  | 740                   | 300                   | 224   |
| 200                       | SV544           | V400       | 400C  |                             | 22244BK<br>23244BK        | 400                            | 250 | 680 | 148   | 36          | 60  | 820                   | 330                   | 250   |
| 220                       | SV548           | V440       | 440C  |                             | 22248BK<br>23248BK        | 440                            | 280 | 740 | 166   | 40          | 66  | 880                   | 340                   | 280   |
| 240                       | SV552           | V480       | 480C  |                             | 22252BK<br>23252BK        | 480                            | 300 | 790 | 180   | 43          | 72  | 940                   | 370                   | 300   |
| 260                       | SV556           | V500       | 500C  |                             | 22256BK<br>23256BK        | 500                            | 315 | 830 | 190   | 43          | 72  | 990                   | 390                   | 315   |
| 280                       | SV560           | V540       | 540C  |                             | 22260BK<br>23260BK        | 540                            | 335 | 890 | 200   | 46          | 78  | 1 060                 | 410                   | 335   |
| 300                       | SV564           | V580       | 580C  |                             | 22264BK<br>23264BK        | 580                            | 355 | 930 | 215   | 49          | 84  | 1 110                 | 440                   | 355   |

- ① The numeral in nominal number of the setting ring represents the outside diameter and width dimension.  
 ② The Japan Bearing Industrial Association Standard  
 ③ Dimension  $Y$  is an approximate distance from the bearing center to the shaft end for shaft end configuration.

NOTE: 1) Sizes SV520 and greater are equipped with lifting eye bolts.  
 2) Dimension  $X$  indicates a deviation of the bearing center relative to the plummer block center, and its value is 1/2 the width of the setting washer.  
 3) An adaptor for bearing series 12, series H2 as well as series H3 can be used.



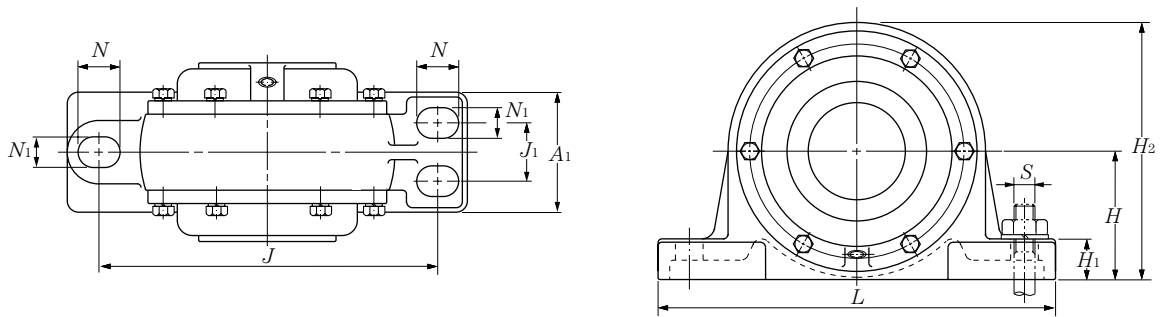
| Abutment and fillet dimensions |                                                                         |     |     |                                          | Mass | Nominal number |                        |        |                  | Approx. | Seal                        | shaft |
|--------------------------------|-------------------------------------------------------------------------|-----|-----|------------------------------------------|------|----------------|------------------------|--------|------------------|---------|-----------------------------|-------|
| <i>g</i>                       | mm<br><i>A</i> <sub>2</sub> <i>H</i> <sub>1</sub> <i>H</i> <sub>2</sub> |     |     | Approx.<br><i>S</i><br>nominal<br>number | kg   | Adapter        | setting<br>washer ❶    | number | mm<br><i>Y</i> ❸ | number  | mm<br><i>d</i> <sub>1</sub> |       |
| 113                            | 112                                                                     | 60  | 375 | M24 4                                    | 76   | H3132<br>H2332 | SR290X16.5<br>SR290X 9 | 2<br>1 | 71<br>83         | ZF32    | 140                         |       |
| 122                            | 116                                                                     | 65  | 405 | M24 4                                    | 89   | H3134<br>H2334 | SR310X18<br>SR310X12   | 2<br>1 | 75<br>87         | ZF34    | 150                         |       |
| 122                            | 116                                                                     | 65  | 405 | M24 4                                    | 100  | H3136<br>H2336 | SR320X18<br>SR320X10   | 2<br>1 | 76<br>89         | ZF36    | 160                         |       |
| 130                            | 137                                                                     | 65  | 425 | M27 4                                    | 110  | H3138<br>H2338 | SR340X19<br>SR340X10   | 2<br>1 | 80<br>94         | ZF38    | 170                         |       |
| 138                            | 136                                                                     | 85  | 450 | M27 4                                    | 130  | H3140<br>H2340 | SR360X20<br>SR360X10   | 2<br>1 | 84<br>99         | ZF40    | 180                         |       |
| 154                            | 151                                                                     | 95  | 500 | M30 4                                    | 196  | H3144<br>H2344 | SR400X23<br>SR400X10   | 2<br>1 | 90<br>108        | ZF44    | 200                         |       |
| 170                            | 156                                                                     | 100 | 560 | M33 4                                    | 260  | H3148<br>H2348 | SR440X25<br>SR440X10   | 2<br>1 | 98<br>118        | ZF48    | 220                         |       |
| 184                            | 173                                                                     | 105 | 600 | M36 4                                    | 318  | H3152<br>H2352 | SR480X27<br>SR480X10   | 2<br>1 | 105<br>127       | ZF52    | 240                         |       |
| 186                            | 185                                                                     | 110 | 630 | M36 4                                    | 336  | H3156<br>H2356 | SR500X28<br>SR500X10   | 2<br>1 | 107<br>130       | ZF56    | 260                         |       |
| 202                            | 196                                                                     | 115 | 670 | M39 4                                    | 433  | H3160<br>H2360 | SR540X31<br>SR540X10   | 2<br>1 | 114<br>160       | ZF60    | 280                         |       |
| 218                            | 211                                                                     | 120 | 710 | M42 4                                    | 507  | H3164<br>H2364 | SR580X34<br>SR580X10   | 2<br>1 | 122<br>151       | ZF64    | 300                         |       |

4) Fill and drain plugs:  
Size: SV505-SV520.....PT1/8  
SV522-SV532.....PT1/4

5) When wanting a plummer block whose bore at the shaft end side is closed,  
add code M1 after the plummer block nominal number.

# Plummer Blocks SV2

Unit type, stepped bore type / For cylindrical bore bearing

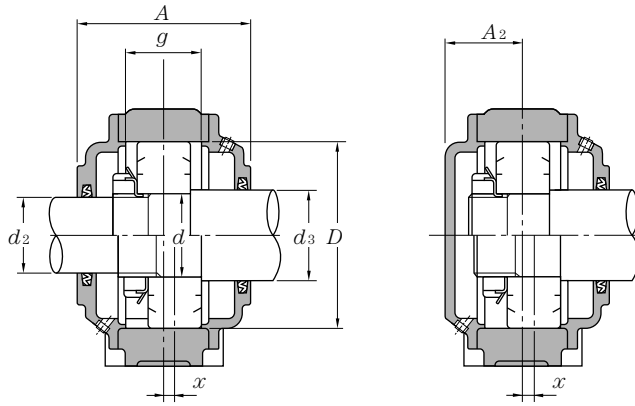


$d_1$  25~110mm

| Shaft dia. |       |       | Bearing numbers | BAS code ② |       | Nominal number              |                                 | Abutment and fillet dimensions |     |     |       |             |     |     |     |       |
|------------|-------|-------|-----------------|------------|-------|-----------------------------|---------------------------------|--------------------------------|-----|-----|-------|-------------|-----|-----|-----|-------|
| mm         | $d_2$ | $d_3$ |                 | main body  | cover | Self-aligning ball bearings | spherical roller bearings       | $D$                            | $H$ | $J$ | $J_1$ | mm<br>$N_1$ | $N$ | $L$ | $A$ | $A_1$ |
| 25         | 20    | 30    | SV205           | V052       | 052C  | 1205<br>2205                | —                               | 52                             | 45  | 130 | —     | 16          | 20  | 165 | 73  | 46    |
| 30         | 25    | 35    | SV206           | V062       | 062C  | 1206<br>2206                | —                               | 62                             | 50  | 150 | —     | 16          | 20  | 185 | 80  | 52    |
| 35         | 30    | 45    | SV207           | V072       | 072C  | 1207<br>2207                | —                               | 72                             | 56  | 150 | —     | 16          | 20  | 185 | 85  | 52    |
| 40         | 35    | 50    | SV208           | V080       | 080C  | 1208<br>2208                | —<br>22208C                     | 80                             | 60  | 170 | —     | 16          | 20  | 205 | 95  | 60    |
| 45         | 40    | 55    | SV209           | V085       | 085C  | 1209<br>2209                | —<br>22209C                     | 85                             | 63  | 170 | —     | 16          | 23  | 205 | 98  | 60    |
| 50         | 45    | 60    | SV210           | V090       | 090C  | 1210<br>2210                | —<br>22210C                     | 90                             | 67  | 170 | —     | 16          | 23  | 205 | 100 | 60    |
| 55         | 50    | 65    | SV211           | V100       | 100C  | 1211<br>2211                | —<br>22211B<br>22211E           | 100                            | 71  | 210 | —     | 16          | 23  | 255 | 106 | 70    |
| 60         | 55    | 70    | SV212           | V110       | 110C  | 1212<br>2212                | —<br>22212B<br>22212E           | 110                            | 80  | 210 | —     | 21          | 25  | 255 | 112 | 70    |
| 65         | 60    | 75    | SV213           | V120       | 120C  | 1213<br>2213                | —<br>22213B<br>22213E           | 120                            | 85  | 230 | —     | 21          | 25  | 275 | 118 | 80    |
| 70         | 60    | 80    | SV214           | V125       | 125C  | 1214<br>2214                | —<br>22214B<br>22214E           | 125                            | 90  | 230 | —     | 21          | 25  | 280 | 118 | 80    |
| 75         | 65    | 85    | SV215           | V130       | 130C  | 1215<br>2215                | —<br>22215B<br>22215E           | 130                            | 90  | 230 | —     | 21          | 25  | 280 | 118 | 80    |
| 80         | 70    | 90    | SV216           | V140       | 140C  | 1216<br>2216                | —<br>22216B<br>22216E           | 140                            | 100 | 260 | —     | 25          | 30  | 315 | 136 | 90    |
| 85         | 75    | 95    | SV217           | V150       | 150C  | 1217<br>2217                | —<br>22217B<br>22217E           | 150                            | 100 | 260 | —     | 25          | 30  | 315 | 140 | 90    |
| 90         | 80    | 100   | SV218           | V160       | 160C  | 1218<br>2218                | —<br>22218B<br>23218B<br>23218E | 160                            | 112 | 290 | —     | 25          | 30  | 345 | 150 | 100   |
| 95         | 85    | 110   | SV219           | V170       | 170C  | 1219<br>2219                | —<br>22219B                     | 170                            | 112 | 290 | —     | 25          | 30  | 345 | 165 | 100   |
| 100        | 90    | 115   | SV220           | V180       | 180C  | 1220<br>2220                | —<br>22220B<br>23220B           | 180                            | 125 | 320 | 56    | 23          | 32  | 380 | 170 | 110   |
| 110        | 100   | 125   | SV222           | V200       | 200C  | 1222<br>2222                | —<br>22222B<br>23222B           | 200                            | 132 | 350 | 60    | 23          | 32  | 410 | 190 | 120   |

- ① The numeral in nominal number of the setting ring represents the outside diameter and width dimension.  
 ② The Japan Bearing Industrial Association Standard  
 ③ Dimension  $Y$  is an approximate distance from the bearing center to the shaft end for shaft end configuration.

NOTE: 1) Sizes SV220 and greater are equipped with lifting eye bolts.  
 2) Dimension  $X$  indicates a deviation of the bearing center relative to the plummer block center, and its value is 1/2 the width of the setting washer.



| Abutment and fillet dimensions |                |                      |                |                                   | Mass<br>kg | Nominal number                       |             |      |        | Approx.<br>mm<br>Y <sup>③</sup> | Seal number       |                   | shaft<br>dia.<br>mm<br>d <sub>1</sub> |
|--------------------------------|----------------|----------------------|----------------|-----------------------------------|------------|--------------------------------------|-------------|------|--------|---------------------------------|-------------------|-------------------|---------------------------------------|
| g                              | A <sub>2</sub> | mm<br>H <sub>1</sub> | H <sub>2</sub> | Approx.<br>S<br>nominal<br>number |            | setting<br>washer <sup>①</sup>       | number      | nut  | washer |                                 | (d <sub>2</sub> ) | (d <sub>3</sub> ) |                                       |
| 27                             | 31             | 22                   | 85             | M14 2                             | 2.0        | SR 52X 6<br>SR 52X 9                 | 2<br>1      | AN05 | AW05   | 17<br>19                        | ZF 5              | ZF 7              | 25                                    |
| 30                             | 34             | 22                   | 95             | M14 2                             | 2.6        | SR 62X 7<br>SR 62X10                 | 2<br>1      | AN06 | AW06   | 18<br>20                        | ZF 6              | ZF 8              | 30                                    |
| 33                             | 37.5           | 22                   | 106            | M14 2                             | 3.1        | SR 72X 8<br>SR 72X10                 | 2<br>1      | AN07 | AW07   | 19<br>22                        | ZF 7              | ZF10              | 35                                    |
| 37                             | 40.5           | 25                   | 118            | M14 2                             | 4.3        | SR 80X 9.5<br>SR 80X 7               | 2<br>2      | AN08 | AW08   | 21<br>23                        | ZF 8              | ZF11              | 40                                    |
| 39                             | 42.5           | 25                   | 125            | M14 2                             | 4.3        | SR 85X10<br>SR 85X 8                 | 2<br>2      | AN09 | AW09   | 22<br>24                        | ZF 9              | ZF12              | 45                                    |
| 39                             | 42.5           | 25                   | 128            | M14 2                             | 4.6        | SR 90X 9.5<br>SR 90X 8               | 2<br>2      | AN10 | AW10   | 24<br>25                        | ZF10              | ZF13              | 50                                    |
| 42                             | 47             | 28                   | 140            | M14 2                             | 5.5        | SR100X10.5<br>SR100X 8.5             | 2<br>2      | AN11 | AW11   | 25<br>27                        | ZF11              | ZF15              | 55                                    |
| 46                             | 47             | 30                   | 155            | M18 2                             | 6.5        | SR110X12<br>SR110X 9                 | 2<br>2      | AN12 | AW12   | 26<br>29                        | ZF12              | ZF16              | 60                                    |
| 49                             | 50             | 30                   | 165            | M18 2                             | 9.5        | SR120X13<br>SR120X 9                 | 2<br>2      | AN13 | AW13   | 28<br>32                        | ZF13              | ZF17              | 65                                    |
| 50                             | 50             | 30                   | 175            | M18 2                             | 10         | SR125X13<br>SR125X 9.5               | 2<br>2      | AN14 | AW14   | 28<br>32                        | ZF13              | ZF18              | 70                                    |
| 50                             | 50             | 30                   | 175            | M18 2                             | 10         | SR130X12.5<br>SR130X 9.5             | 2<br>2      | AN15 | AW15   | 30<br>33                        | ZF15              | ZF19              | 75                                    |
| 56                             | 58             | 32                   | 195            | M22 2                             | 14         | SR140X15<br>SR140X11.5               | 2<br>2      | AN16 | AW16   | 32<br>36                        | ZF16              | ZF20              | 80                                    |
| 56                             | 60             | 32                   | 195            | M22 2                             | 15         | SR150X14<br>SR150X10                 | 2<br>2      | AN17 | AW17   | 34<br>38                        | ZF17              | ZF21              | 85                                    |
| 62                             | 65             | 35                   | 224            | M22 2                             | 20         | SR160X15<br>SR160X11<br>SR160X 9.6   | 2<br>2<br>1 | AN18 | AW18   | 35<br>40<br>46                  | ZF18              | ZF22              | 90                                    |
| 62                             | 72.5           | 35                   | 224            | M22 2                             | 20         | SR170X15<br>SR170X 9.5               | 2<br>2      | AN19 | AW19   | 37<br>43                        | ZF19              | ZF24              | 95                                    |
| 70                             | 75             | 40                   | 243            | M20 4                             | 26         | SR180X18<br>SR180X12<br>SR180X 9.7   | 2<br>2<br>1 | AN20 | AW20   | 39<br>45<br>52                  | ZF20              | ZF26              | 100                                   |
| 82                             | 82             | 45                   | 265            | M20 4                             | 30         | SR200X22<br>SR200X14.5<br>SR200X12.2 | 2<br>2<br>1 | AN22 | AW22   | 42<br>50<br>58                  | ZF22              | ZF28              | 110                                   |

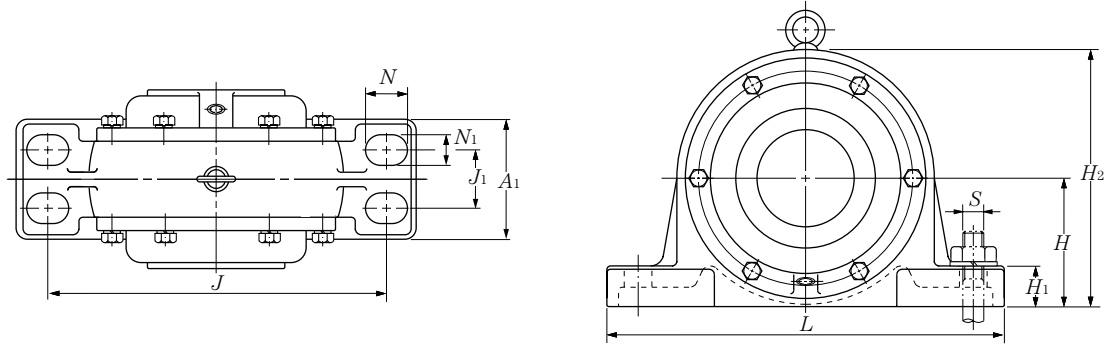
3) Fill and drain plugs:

Size: SV205-SV220.....PT1/8  
SV222-SV232.....PT1/4

4) When wanting a plummer block whose bore at the shaft end side is closed, add code M1 after the plummer block nominal number.

# Plummer Blocks SV2

Unit type, stepped bore type / For cylindrical bore bearing

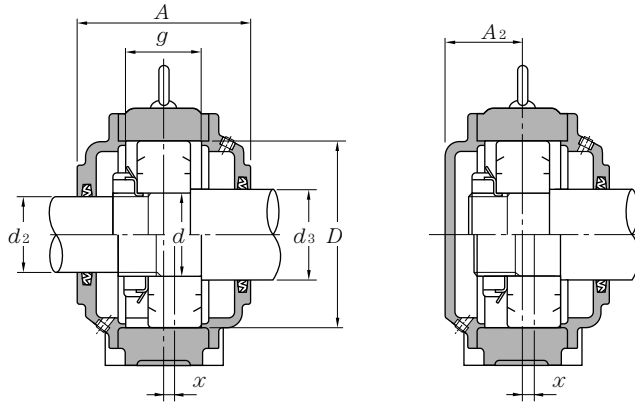


$d_1$  120~320mm

| Shaft dia. |                       |                       | Bearing numbers | BAS code ② |       | Nominal number              |                           | Abutment and fillet dimensions |          |          |                       |                             |          |          |          |                       |
|------------|-----------------------|-----------------------|-----------------|------------|-------|-----------------------------|---------------------------|--------------------------------|----------|----------|-----------------------|-----------------------------|----------|----------|----------|-----------------------|
| <i>d</i>   | <i>d</i> <sub>2</sub> | <i>d</i> <sub>3</sub> |                 | main body  | cover | Self-aligning ball bearings | spherical roller bearings | <i>D</i>                       | <i>H</i> | <i>J</i> | <i>J</i> <sub>1</sub> | mm<br><i>N</i> <sub>1</sub> | <i>N</i> | <i>L</i> | <i>A</i> | <i>A</i> <sub>1</sub> |
| 120        | 110                   | 135                   | SV224           | V215       | 215C  | —                           | 22224B<br>23224B          | 215                            | 140      | 350      | 60                    | 23                          | 32       | 410      | 190      | 120                   |
| 130        | 115                   | 145                   | SV226           | V230       | 230C  | —                           | 22226B<br>23226B          | 230                            | 150      | 380      | 65                    | 23                          | 32       | 450      | 200      | 130                   |
| 140        | 125                   | 155                   | SV228           | V250       | 250C  | —                           | 22228B<br>23228B          | 250                            | 160      | 420      | 80                    | 23                          | 32       | 500      | 218      | 150                   |
| 150        | 135                   | 165                   | SV230           | V270       | 270C  | —                           | 22230B<br>23230B          | 270                            | 170      | 450      | 92                    | 29                          | 42       | 540      | 236      | 160                   |
| 160        | 140                   | 175                   | SV232           | V290       | 290C  | —                           | 22232B<br>23232B          | 290                            | 190      | 470      | 92                    | 29                          | 50       | 560      | 250      | 170                   |
| 170        | 150                   | 190                   | SV234           | V310       | 310C  | —                           | 22234B<br>23234B          | 310                            | 200      | 560      | 92                    | 29                          | 50       | 660      | 258      | 180                   |
| 180        | 160                   | 200                   | SV236           | V320       | 320C  | —                           | 22236B<br>23236B          | 320                            | 200      | 560      | 92                    | 29                          | 50       | 660      | 258      | 180                   |
| 190        | 170                   | 210                   | SV238           | V340       | 340C  | —                           | 22238B<br>23238B          | 340                            | 212      | 580      | 104                   | 33                          | 54       | 680      | 300      | 190                   |
| 200        | 180                   | 230                   | SV240           | V360       | 360C  | —                           | 22240B                    | 360                            | 224      | 610      | 130                   | 33                          | 54       | 740      | 300      | 224                   |
| 220        | 200                   | 250                   | SV244           | V400       | 400C  | —                           | 22244B                    | 400                            | 250      | 680      | 148                   | 36                          | 60       | 820      | 330      | 250                   |
| 240        | 220                   | 260                   | SV248           | V440       | 440C  | —                           | 22248B                    | 440                            | 280      | 740      | 166                   | 40                          | 66       | 880      | 340      | 280                   |
| 260        | 240                   | 280                   | SV252           | V480       | 480C  | —                           | 22252B                    | 480                            | 300      | 790      | 180                   | 43                          | 72       | 940      | 370      | 300                   |
| 280        | 260                   | 300                   | SV256           | V500       | 500C  | —                           | 22256B                    | 500                            | 315      | 830      | 190                   | 43                          | 72       | 990      | 390      | 315                   |
| 300        | 280                   | 320                   | SV260           | V540       | 540C  | —                           | 22260B                    | 540                            | 335      | 890      | 200                   | 46                          | 78       | 1 060    | 410      | 335                   |
| 320        | 300                   | 340                   | SV264           | V580       | 580C  | —                           | 22264B                    | 580                            | 355      | 930      | 215                   | 49                          | 84       | 1 110    | 440      | 355                   |

- ① The numeral in nominal number of the setting ring represents the outside diameter and width dimension.  
 ② The Japan Bearing Industrial Association Standard  
 ③ Dimension  $Y$  is an approximate distance from the bearing center to the shaft end for shaft end configuration.

NOTE: 1) Sizes SV220 and greater are equipped with lifting eye bolts.  
 2) Dimension  $X$  indicates a deviation of the bearing center relative to the plummer block center, and its value is 1/2 the width of the setting washer.



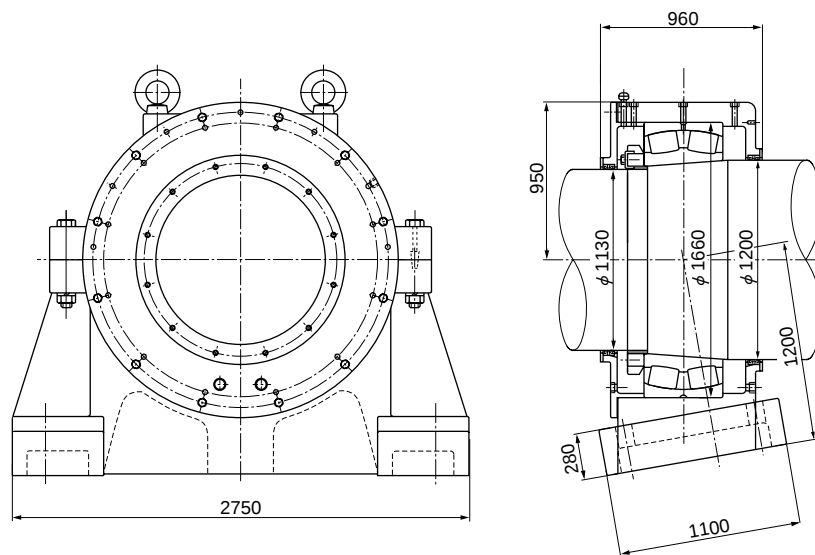
| Abutment and fillet dimensions |                |                      |                |                                   |        | Mass<br>kg | Nominal number                 |        |      |        | Approx.<br>mm<br>Y <sup>③</sup> | Seal number       |                   | shaft<br>dia.<br>mm<br>d <sub>1</sub> |
|--------------------------------|----------------|----------------------|----------------|-----------------------------------|--------|------------|--------------------------------|--------|------|--------|---------------------------------|-------------------|-------------------|---------------------------------------|
| g                              | A <sub>2</sub> | mm<br>H <sub>1</sub> | H <sub>2</sub> | Approx.<br>S<br>nominal<br>number | number |            | setting<br>washer <sup>①</sup> | number | nut  | washer |                                 | (d <sub>2</sub> ) | (d <sub>3</sub> ) |                                       |
| 82                             | 82             | 45                   | 280            | M20                               | 4      | 36         | SR215X12<br>SR215X 6           | 2<br>1 | AN24 | AW24   | 53<br>62                        | ZF24              | ZF30              | 120                                   |
| 86                             | 87             | 50                   | 300            | M20                               | 4      | 44         | SR230X11<br>SR230X 6           | 2<br>1 | AN26 | AW26   | 57<br>65                        | ZF26              | GS33              | 130                                   |
| 94                             | 96             | 50                   | 315            | M20                               | 4      | 52         | SR250X13<br>SR250X 6           | 2<br>1 | AN28 | AW28   | 60<br>70                        | ZF28              | GS35              | 140                                   |
| 103                            | 105            | 60                   | 335            | M24                               | 4      | 62         | SR270X15<br>SR270X 7           | 2<br>1 | AN30 | AW30   | 65<br>76                        | ZF30              | GS37              | 150                                   |
| 113                            | 112            | 60                   | 375            | M24                               | 4      | 75         | SR290X16.5<br>SR290X 9         | 2<br>1 | AN32 | AW32   | 71<br>83                        | ZF32              | GS39              | 160                                   |
| 122                            | 116            | 65                   | 405            | M24                               | 4      | 87         | SR310X18<br>SR310X12           | 2<br>1 | AN34 | AW34   | 75<br>87                        | ZF34              | ZF42              | 170                                   |
| 122                            | 116            | 65                   | 405            | M24                               | 4      | 98         | SR320X18<br>SR320X10           | 2<br>1 | AN36 | AW36   | 76<br>89                        | ZF36              | ZF44              | 180                                   |
| 130                            | 137            | 65                   | 425            | M27                               | 4      | 110        | SR340X19<br>SR340X10           | 2<br>1 | AN38 | AW38   | 80<br>94                        | ZF38              | ZF46              | 190                                   |
| 138                            | 136            | 85                   | 450            | M27                               | 4      | 130        | SR360X20                       | 2      | AN40 | AW40   | 84                              | ZF40              | GS50              | 200                                   |
| 154                            | 151            | 95                   | 500            | M30                               | 4      | 196        | SR400X23                       | 2      | AN44 | AL44   | 90                              | ZF44              | ZF54              | 220                                   |
| 170                            | 156            | 100                  | 560            | M33                               | 4      | 260        | SR440X25                       | 2      | AN48 | AL44   | 98                              | ZF48              | ZF56              | 240                                   |
| 184                            | 173            | 105                  | 600            | M36                               | 4      | 318        | SR480X27                       | 2      | AN52 | AL52   | 105                             | ZF52              | ZF60              | 260                                   |
| 186                            | 185            | 110                  | 630            | M36                               | 4      | 336        | SR500X28                       | 2      | AN56 | AL52   | 107                             | ZF56              | ZF64              | 280                                   |
| 202                            | 196            | 115                  | 670            | M39                               | 4      | 433        | SR540X31                       | 2      | AN60 | AL60   | 114                             | ZF60              | ZF68              | 300                                   |
| 218                            | 211            | 120                  | 710            | M42                               | 4      | 507        | SR580X34                       | 2      | AN64 | AL64   | 122                             | ZF64              | GS72              | 320                                   |

add code M1 after the plummer block nominal number.

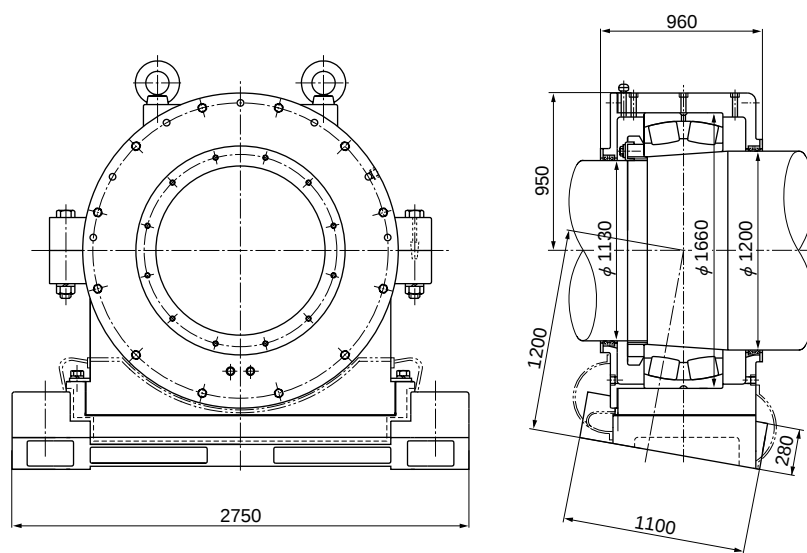
3) Fill and drain plugs:  
Size: SV205-SV220.....PT1/8  
SV222-SV232.....PT1/4

4) When wanting a plummer block whose bore at the shaft end side is closed,

## Specialized Plummer Block



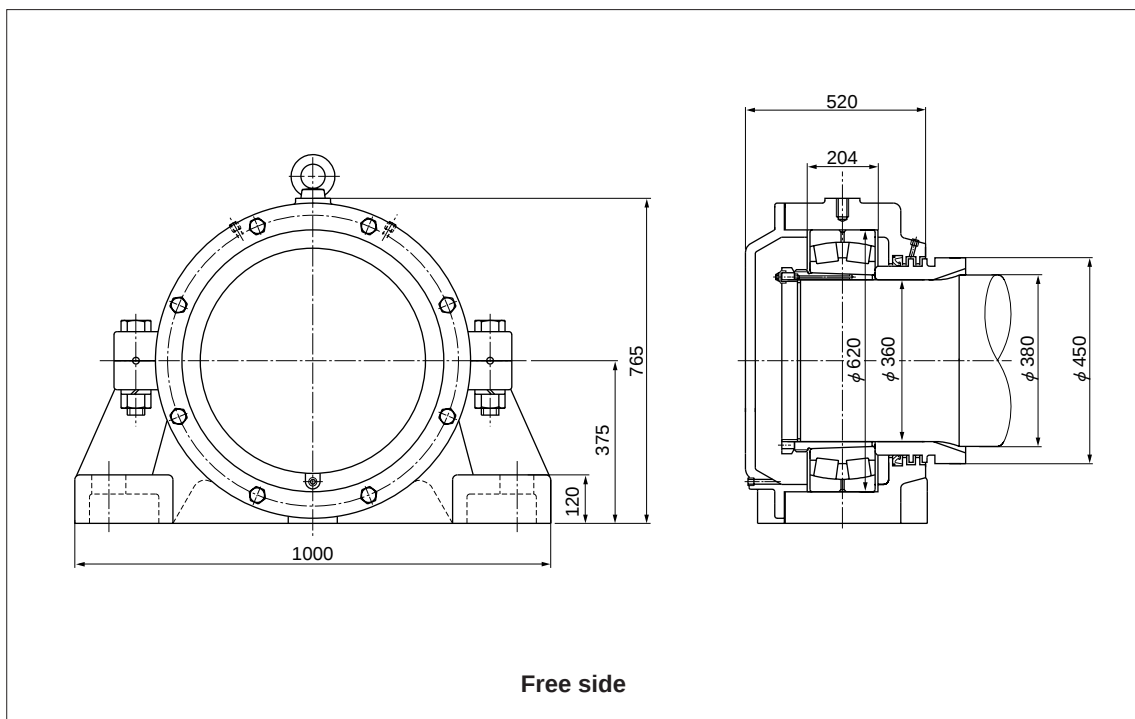
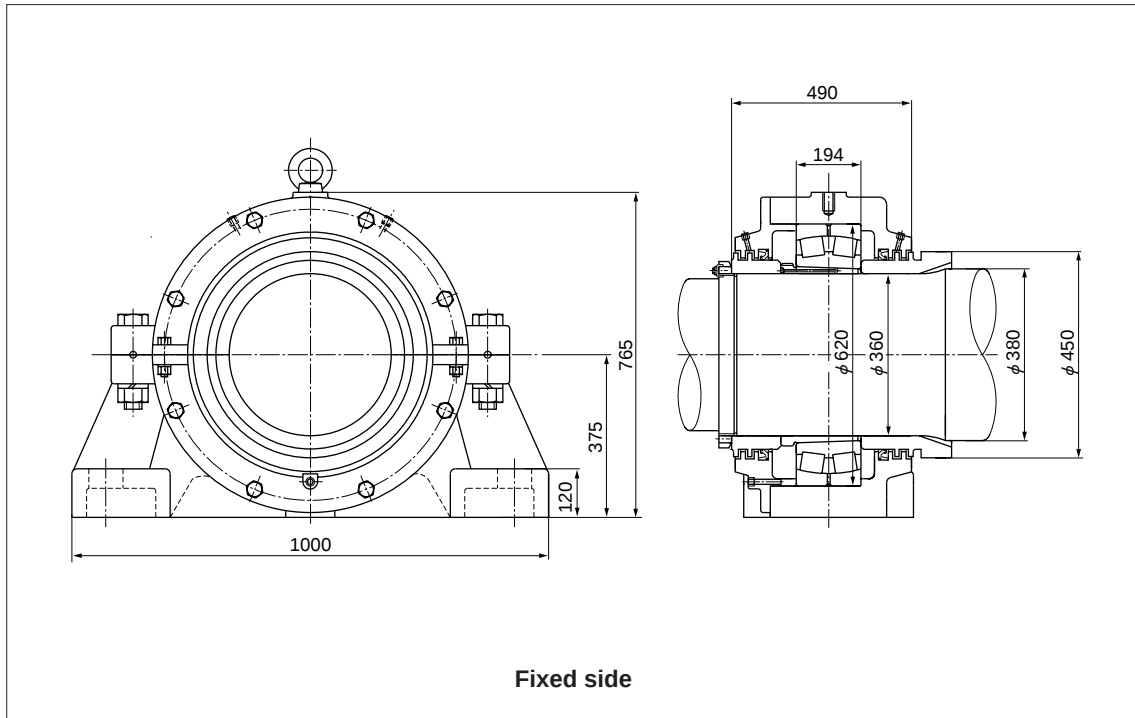
**Fixed side**



**Free side**

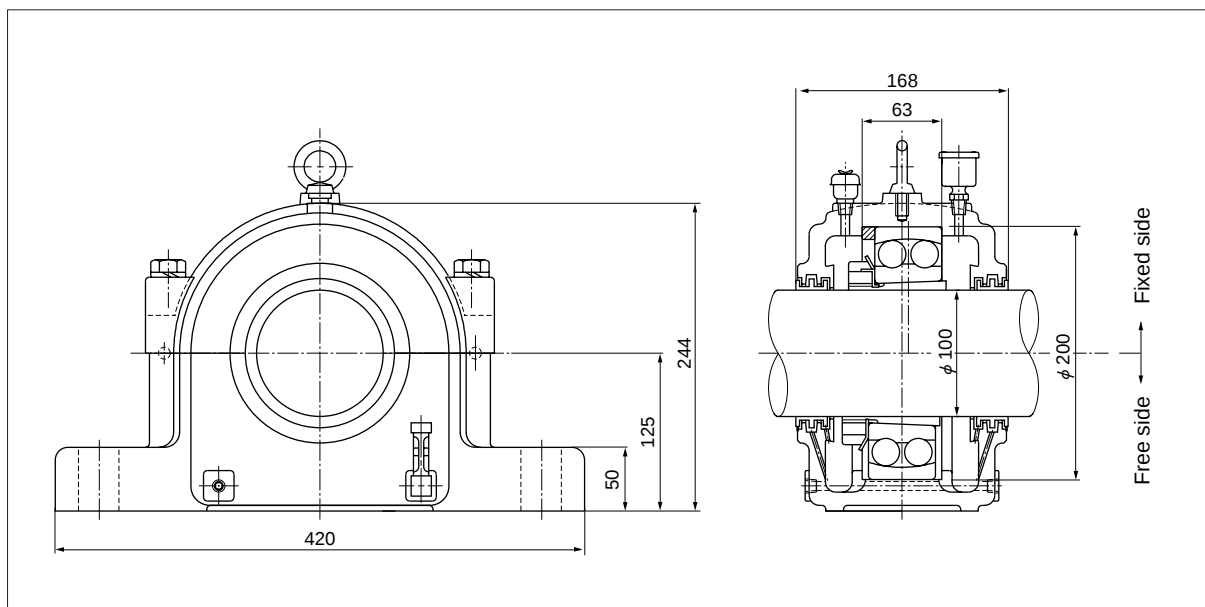
|                           |                                                              |
|---------------------------|--------------------------------------------------------------|
| <b>Number</b>             | Fixed side: 0S23601GN1Y545ZX1<br>Free side: 0S23602N1Y545ZX1 |
| <b>Bearing</b>            | 240/1180BK30                                                 |
| <b>Application</b>        | Tube dryer                                                   |
| <b>RPM</b>                | 6~12rpm                                                      |
| <b>Lubricating system</b> | Circulating oil                                              |

## Specialized Plummer Block

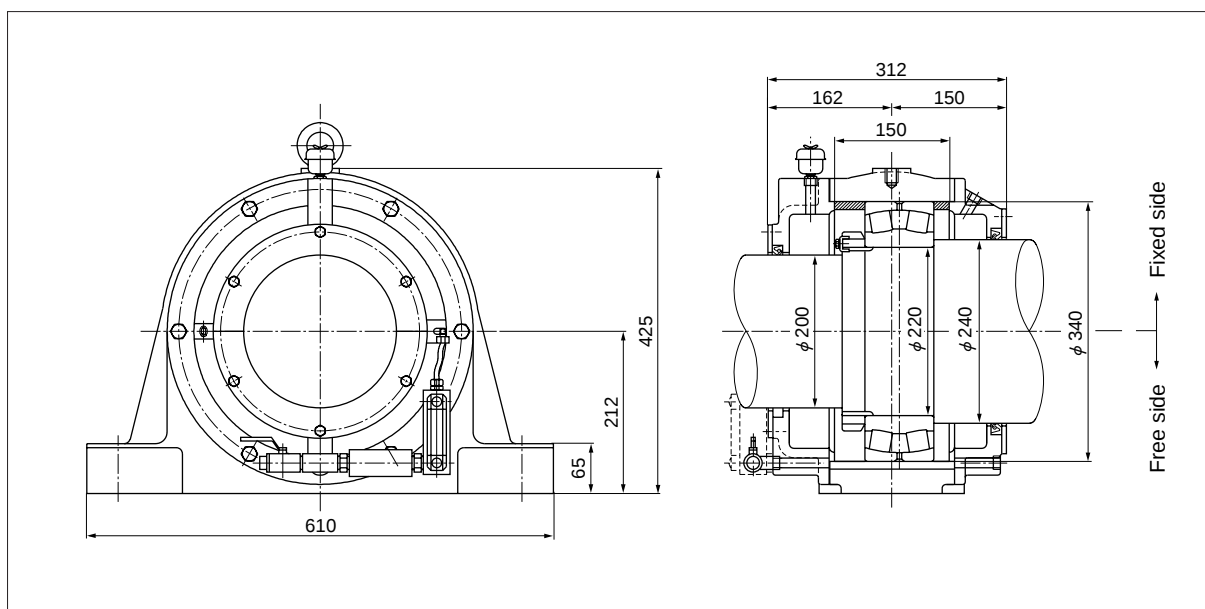


|                           |                                                          |
|---------------------------|----------------------------------------------------------|
| <b>Number</b>             | Fixed side: 1S7642GY851ZX1<br>Free side: 1S7642M1Y851ZX1 |
| <b>Bearing</b>            | 23176BK+AH3176H                                          |
| <b>Application</b>        | Sintering m                                              |
| <b>RPM</b>                | 3~4rpm                                                   |
| <b>Lubricating system</b> | Grease lubrication                                       |

## Specialized Plummer Block

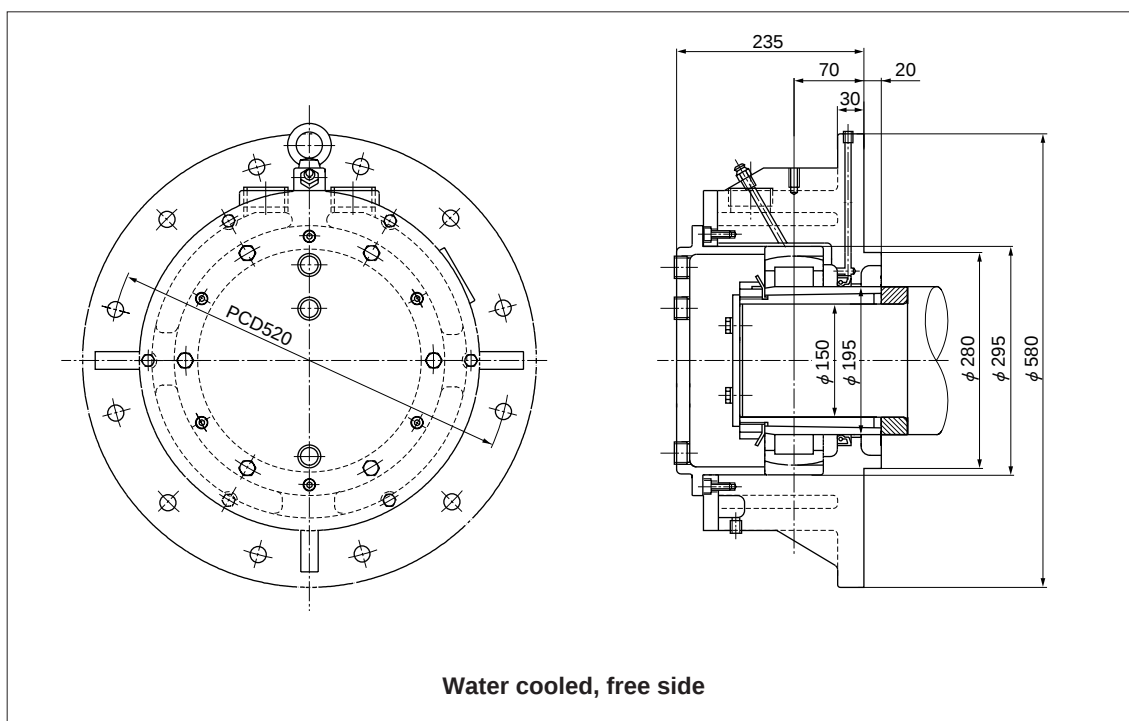
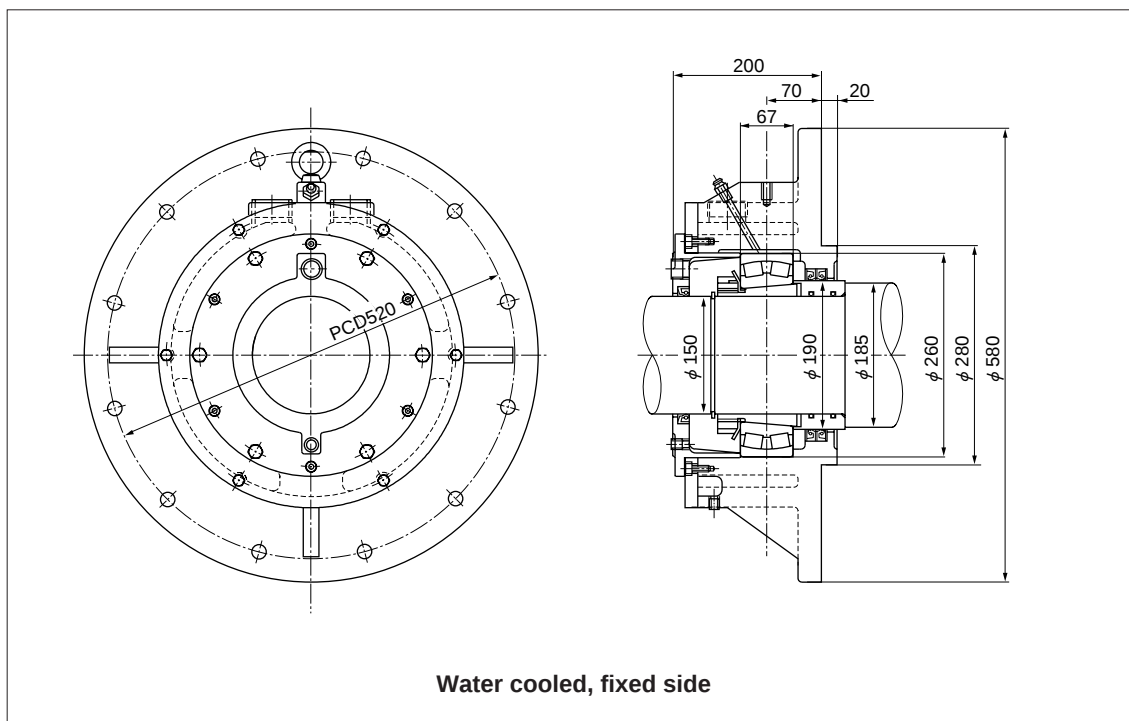


|                           |                                              |
|---------------------------|----------------------------------------------|
| <b>Number</b>             | Fixed side: 2S22B32GX1<br>Free Side: 2S22B32 |
| <b>Bearing</b>            | 2222KC3+H322X                                |
| <b>Application</b>        | Pump flywheel                                |
| <b>RPM</b>                | 1 480rpm                                     |
| <b>Lubricating system</b> | Oil bath                                     |



|                           |                                                          |
|---------------------------|----------------------------------------------------------|
| <b>Number</b>             | Fixed side: 0S4483Y892GX1ZX1<br>Free side: 0S4483Y892ZX1 |
| <b>Bearing</b>            | TS3-23044BF3C4+ANL44, ALL44                              |
| <b>Application</b>        | ID dryer                                                 |
| <b>RPM</b>                | 8rpm (MAX)                                               |
| <b>Lubricating system</b> | Oil bath                                                 |

## Specialized Plummer Block



|                           |                                                                  |
|---------------------------|------------------------------------------------------------------|
| <b>Number</b>             | Fixed side: FY3475GY133ZX1<br>Free side: FY3460M1Y133ZX1         |
| <b>Bearing</b>            | Fixed side: TS3-23034BKC4+H3034<br>Free side: TS2-R3431KC4+H9180 |
| <b>Application</b>        | CAPL                                                             |
| <b>RPM</b>                | 90rpm                                                            |
| <b>Lubricating system</b> | Grease lubrication                                               |