



# Support Unit

Technical Information



TAIWAN EXCELLENCE  
GOLD AWARD 2013

## Crossed Roller Bearings



TAIWAN EXCELLENCE  
SILVER AWARD 2006

## Torque Motor Direct drive Motor



TAIWAN EXCELLENCE  
GOLD AWARD 2014, 2012, 2011,  
2009, 2008, 2005  
SILVER AWARD 2006, 2001, 1993

## Ball screws

- Ground/Rolled
- Super T Series
  - High Speed (High Dm-N Value/Super S Series)
  - For Heavy-Load Drive
  - Ecological & Economical lubrication Module E2
  - Rotating Nut (R1)
  - Energy-Saving & Thermal-Controlling (C1)
  - Recirculation Divide Series



## AC Servo Motors AC Servo Drives



TAIWAN EXCELLENCE  
GOLD AWARD 2004

## Linear Motor

- Coreless Type (LMC)



TAIWAN EXCELLENCE 2002

## Linear Actuator

- LAN for Hospital
- LAM for Industrial
- LAS Compact Size
- LAK Controller



TAIWAN EXCELLENCE  
GOLD AWARD 2010, 2003

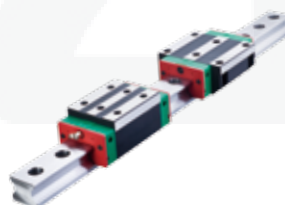
## Single Axis Robot

- For Semiconductor & Electronic (KK Series)
- For Automation (KS, KA Series)



TAIWAN EXCELLENCE  
SILVER AWARD 2009

## Linear Motor Air Bearing Platform



TAIWAN EXCELLENCE  
GOLD AWARD 2008  
SILVER AWARD 2007, 2002

## Linear Guideway

- HG/EG/RG/MG Type
- Ecological & Economical lubrication Module E2
  - Low Noise (Q1)
  - Air Jet (A1)

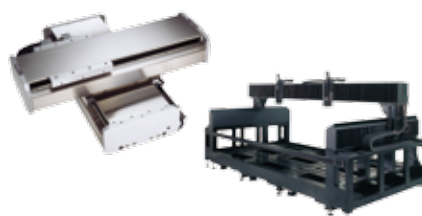


## Positioning Measurement System



TAIWAN EXCELLENCE 2004

## Positioning Guideway



## Linear Motor X-Y Robot Linear Motor Gantry

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# 1. Feature

HIWIN support units are composed of a bearing housing, bearing, holding lid, seal, lock nut and set screws. The support units can be used on fixed and supported ends of the ballscrew, which mounts the ballscrew in the desired position. Its compact size is easy to install, especially in the narrowed space. Since the bearings are greased and adjusted to the suitable position, there is no need for additional alignment or installation processes, which reduces installation time and maintenance.

HIWIN support units can be applied to automation and industrial machinery, and are classified into 11 types: AK, AF, BK, BF, EK, EF, FK, FF, LK, LF and LFA. For the machinery structures requiring higher axial thrust force, HIWIN recommends the WBK support unit series. The WBK is used for high load applications and better axial stiffness, which allows a machinery structure to hold accurate positioning under a heavy load. Currently the heavy load support units are classified into 3 assembly types, each offering different loading capabilities: DF, DFD, and DFF.

# 2. Characteristic

- Assembled with high accuracy and stiff angular bearings
- Anti-rust surface
- Compact size and easy installation in tight or narrow spaces
- Instant installation without additional processes
- Multiple sizes and types available
- Total solution- Available to ship with a HIWIN ballscrew assembly



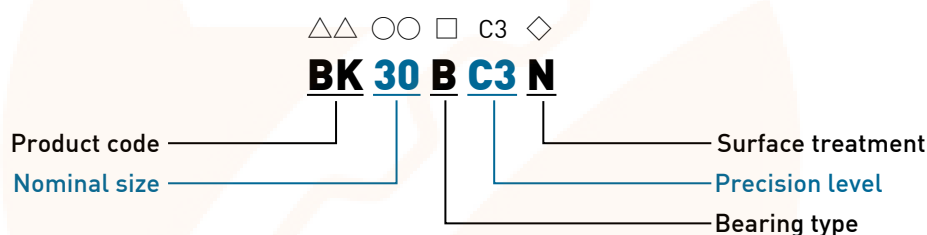
## 3. Standard Support Unit

### 3.1 Standard Support Unit introduction

Generally standard support units are applied in automation and industrial machinery. The support units can be classified into 2 types: fixed-end(AK, BK, EK, FK, LK), and supported-end(AF, BF, EF, FF, LF, LFA).

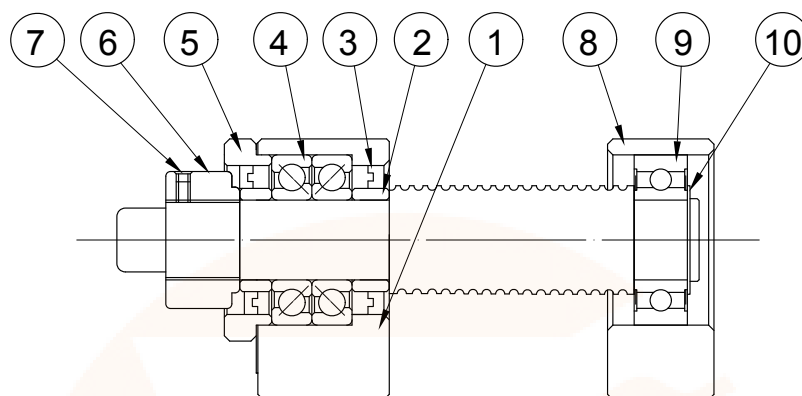
Ballscrews are the best choice to acquire a better transmission efficiency. Though ACME screws or similar sliding friction screws have worse machinery efficiency and waste more resources, standard support units can still be used to fix and support.

### 3.2 Specification code



1.  $\triangle\triangle$  : 11 Product codes can be classified as fixed-end AK, BK, EK, FK, LK and supported-end AF, BF, EF, FF, LF, LFA
2.  $\circ\circ$  : Nominal size of bearing bore. There are 2 digits and the units are in millimeters (mm). e.g. 30 refers to diameter 30mm, and 35 means diameter 35 mm. The nominal diameter of the supported-end refers to the nominal diameter opposite to the fixed-end; the inner diameter of the supported end is equal to or smaller than the nominal diameter.
3.  $\square$  : Bearing type. Blank refers to standard production which uses a 30 degree angular contact bearing. On shaft diameters over 20mm, a 40 degree angular contact bearing is available. Nominal diameters of 35mm and 40mm require higher radial loading and are only offered with the 40 degree angular contact bearing.
4. C3 : There are 3 precision classes C3, C5 and C7. It is suggested to use C3 support units with a C3 ballscrew, and C5 ballscrew can be used with C3 or C5 support units, which enables the support units precision to match the ballscrews precision. C7 ballscrews should only be used with C7 support units.
5.  $\diamond$  : There are 2 types of surface treatments available: blackening and nickel plating. Blank refers to blackening which is HIWIN standard. N refers to nickel plating, which is manufactured by order.

### 3.3 Structure chart



| Item | Description                                   |
|------|-----------------------------------------------|
| 1    | Bearing housing of fixed end                  |
| 2    | Collar                                        |
| 3    | Seal                                          |
| 4    | Angular contact ball bearing                  |
| 5    | Holding lid                                   |
| 6    | Lock nut                                      |
| 7    | Hexagonal socket-head setscrew with set piece |
| 8    | Bearing housing of supported end              |
| 9    | Deep groove ball bearing                      |
| 10   | Snap ring                                     |

Note: 1. Do not disassemble Item 1, 3-5 as they are installed and adjusted well, or the precision may be affected.

2. Standard bearing is pre-packed with #2 Li/Ca soap grease, any special requirement please contact HIWIN.

### 3.4 Purchasing guide

| Internal Diameter (mm) | Type  |      |       |       |       | Bearing | Available Axial Force (kN) | Max. Radial Load (kN) |
|------------------------|-------|------|-------|-------|-------|---------|----------------------------|-----------------------|
|                        | BK    | LK   | FK    | EK    | AK    |         |                            |                       |
| Φ 6                    | -     | -    | FK06  | EK06  | -     | 706A    | 0.73                       | 1.6                   |
| Φ 8                    | -     | LK08 | FK08  | EK08  | -     | 708A    | 1                          | 2.9                   |
| Φ 10                   | BK10  | LK10 | FK10  | EK10  | AK10  | 7000A   | 1.9                        | 5.2                   |
| Φ 12                   | BK12  | LK12 | FK12  | EK12  | AK12  | 7001A   | 2.1                        | 6                     |
| Φ 15                   | BK15  | LK15 | FK15  | EK15  | AK15  | 7002A   | 2.4                        | 6.9                   |
| Φ 17                   | BK17  | -    | FK17  | -     | -     | 7203A   | 4.1                        | 12                    |
| Φ 20                   | BK20  | -    | -     | -     | -     | 7004A   | 4.2                        | 13.2                  |
| Φ 20                   | -     | -    | FK20  | EK20  | AK20  | 7204A   | 5.8                        | 16.6                  |
| Φ 20                   | -     | -    | FK20B | EK20B | AK20B | 7204B   | 6.8                        | 15.6                  |
| Φ 25                   | BK25  | -    | FK25  | -     | AK25  | 7205A   | 7                          | 20.6                  |
| Φ 25                   | BK25B | -    | FK25B | -     | AK25B | 7205B   | 8                          | 18.8                  |
| Φ 30                   | BK30  | -    | FK30  | -     | -     | 7206A   | 9.8                        | 29.6                  |
| Φ 30                   | BK30B | -    | FK30B | -     | -     | 7206B   | 10.5                       | 27                    |
| Φ 35                   | BK35  | -    | -     | -     | -     | 7207B   | 14.4                       | 36.8                  |
| Φ 40                   | BK40  | -    | -     | -     | -     | 7208B   | 18                         | 46                    |

Note: 1. P5 bearing is used in C3 and C5 support unit; P0 bearing is used in C7 support unit.

2. Applied in light resultant axial force.

| Internal Diameter (mm) | Type |      |       |          |           |      | Bearing | Basic Static Load, C0 (kN) | Basic Dynamic Load, C (kN) |
|------------------------|------|------|-------|----------|-----------|------|---------|----------------------------|----------------------------|
|                        | BF   | LF   | LFA   | FF       | EF        | AF   |         |                            |                            |
| Φ 5                    | -    | -    | -     | FK05(C7) | EK05(C7)  | -    | 605     | 0.5                        | 1.3                        |
| Φ 6                    | -    | LF08 | -     | FF06     | EF06 EF08 | -    | 606ZZ   | 0.8                        | 2.2                        |
| Φ 8                    | BF10 | -    | -     | FF10     | EF10      | AF10 | 608ZZ   | 1.3                        | 3.3                        |
| Φ 10                   | BF12 | LF10 | -     | FF12     | EF12      | AF12 | 6000ZZ  | 1.9                        | 4.5                        |
| Φ 12                   | -    | -    | LFA12 | -        | -         | -    | 6801ZZ  | 1                          | 1.9                        |
| Φ 15                   | BF15 | LF15 | -     | FF15     | EF15      | AF15 | 6002ZZ  | 2.8                        | 5.6                        |
| Φ 15                   | -    | -    | LFA15 | -        | -         | -    | 6902ZZ  | 2.2                        | 4.3                        |
| Φ 17                   | BF17 | -    | -     | FF17     | -         | -    | 6203ZZ  | 4.8                        | 9.5                        |
| Φ 20                   | BF20 | -    | -     | -        | -         | -    | 6004ZZ  | 5                          | 9.4                        |
| Φ 20                   | -    | -    | -     | FF20     | EF20      | AF20 | 6204ZZ  | 6.6                        | 12.8                       |
| Φ 20                   | -    | -    | LFA20 | -        | -         | -    | 6804ZZ  | 2.4                        | 4                          |
| Φ 25                   | -    | -    | LFA25 | -        | -         | -    | 6005ZZ  | 5.8                        | 10.1                       |
| Φ 25                   | BF25 | -    | -     | FF25     | -         | AF25 | 6205ZZ  | 7.8                        | 14                         |
| Φ 30                   | BF30 | -    | -     | FF30     | -         | -    | 6206ZZ  | 11.3                       | 19.5                       |
| Φ 35                   | BF35 | -    | -     | -        | -         | -    | 6207ZZ  | 15.3                       | 25.7                       |
| Φ 40                   | BF40 | -    | -     | -        | -         | -    | 6208ZZ  | 17.9                       | 29.1                       |

### 3.5 Precision

Support unit C3, C5, C7 requires different precision level. The fixed-end support unit uses 30 or 40 degree angular contact bearings, and the supported –end unit uses a deep-groove bearing of series 6.

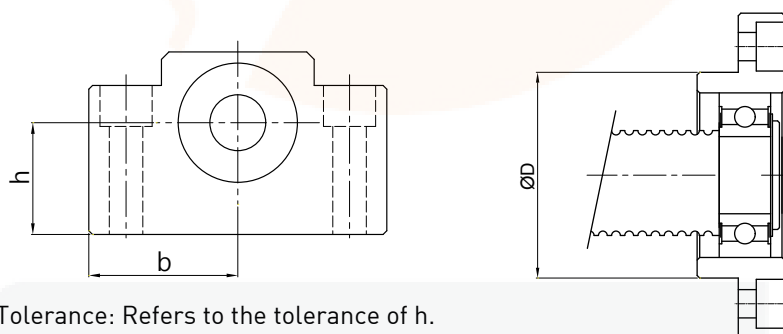
C3 fixed-end support units utilize a P5 bearing and uses a DF type bearing assembly. There's preload between 2 bearings to avoid movement of the ballscrew and backlash from the machine. C3 fixed and supported-end support units enable the shaft and the supports to maintain good turning precision after assembly due to the precise geometrical tolerances between the datum plane and the bearing.

C5 support units are also provided with P5 bearings, and uses the DF type bearing assembly. There's preload between 2 bearings to avoid movement of the ballscrew and backlash from the machine.

C7 support units are provided with P0 bearings, and there may or may not be preload between the 2 bearings which can result in varying backlash values per support unit, but due to the DF bearing assembly type, it can support the axial force of the shaft to avoid large movements while the shaft is enforced.

Moreover, the different support units will have different tolerances from standard side to the center, illustrated as below:

| Support Unit Level | Applied Ball Screw | Bearing Level | Bearing Preload | Distance Tolerance (b) (mm) | Height Tolerance (h) (mm) | Shaft Tolerance (ØD) (mm) |
|--------------------|--------------------|---------------|-----------------|-----------------------------|---------------------------|---------------------------|
| C3                 | C3                 | P5            | Preloaded       | ±0.015                      | ±0.01                     | g6                        |
| C5                 | C5 or C7           | P5            | Preloaded       | ±0.02                       | ±0.02                     | g6                        |
| C7                 | C7                 | P0            | N/A             | ±0.04                       | ±0.03                     | g8                        |



Height Tolerance: Refers to the tolerance of h.

Distance Tolerance: Refers to the tolerance of b.

Unit :  $\mu\text{m}$

| Shaft Diameter (mm) |     | Shaft Tolerance |     |      |     |
|---------------------|-----|-----------------|-----|------|-----|
|                     |     | g6              |     | g8   |     |
| high                | low | high            | low | high | low |
| 18                  | 30  | -7              | -20 | -7   | -40 |
| 30                  | 50  | -9              | -25 | -9   | -48 |
| 50                  | 80  | -10             | -29 | -10  | -56 |
| 80                  | 120 | -12             | -34 | -12  | -66 |

## 4. Heavy Load Support Unit

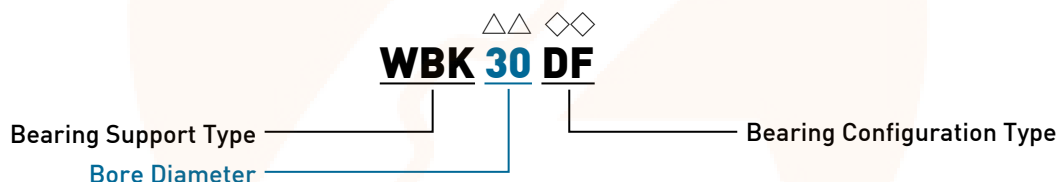
### 4.1 Introduction

Heavy Load Bearing Supports have excellent axial loading capabilities and can be applied in a wide range of industrial machines. The WBK utilizes 60-degree angular contact bearings, it handles higher axial load and high stiffness.

Rotation precision grade is P4 to meet positioning accuracy.

The heavy load bearing supports have three configuration types: DF, DFD, and DFF. DF is for general use and can bear both normal and opposite axial forces. DFD uses one bearing on one side and two on the opposite side, to enhance the loading capacity. DFF uses two bearings in both directions to increase each sides loading capacity. Customers can choose from different configuration types based on the axial loading capabilities needed for the application.

### 4.2 Specification

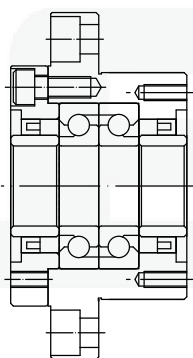


WBK : Bearing Support Type. WBK is the heavy load support unit for ballscrews.

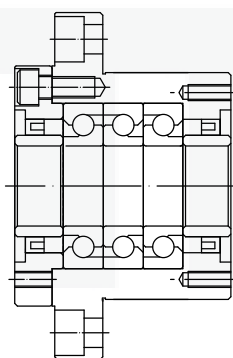
△△ : Bore diameter in millimeters (mm). Ex. 30 indicates a bore diameter of 30mm.

◇◇ : Bearing Configuration Type. There are three types which are DF, DFD, and DFF.

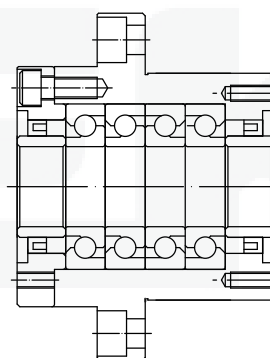
### 4.3 Type



DF Type



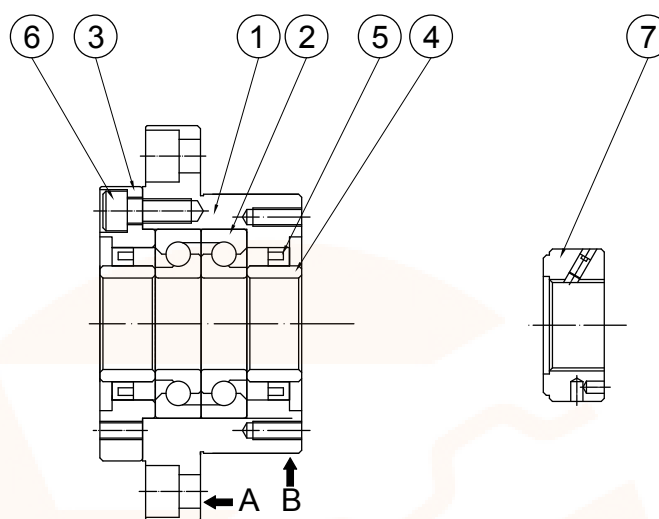
DFD Type



DFF Type

Note: Please contact HIWIN if the other combination types, like DB, are needed.

## 4.4 Heavy Load Support Unit composition



| Number | Item            | Quantity |
|--------|-----------------|----------|
| 1      | Bearing housing | 1        |
| 2      | Bearing         | 1 set    |
| 3      | Holding lid     | 1        |
| 4      | Collar          | 2        |
| 5      | Seal            | 2        |
| 6      | Set Screw       | 6 or 8   |
| 7      | Lock Nut        | 1        |

Note:1. Please use plane A and B as the datum plane while installing the support unit.

2. Please DO NOT disassemble items 1, 2, 3, 5 to avoid affecting accuracy.

3. Lubrication #2 Li/Ca soap grease is applied, please contact HIWIN engineers when special modifications are needed.

ZETEK

## 4.5 Dimensions for Heavy Load Support Unit

| Bore Dia.<br>(mm) | Spec.      | Basic Axial<br>Dynamic<br>Load (kN) | Permissible Axial Load<br>(kN) |          | Preload (kN) | Rigidity (N/<br>μm) | Max Torque<br>(N/m) |
|-------------------|------------|-------------------------------------|--------------------------------|----------|--------------|---------------------|---------------------|
|                   |            |                                     | Normal                         | Opposite |              |                     |                     |
| Φ 15              | WBK 15 DF  | 21.9                                | 26.6                           | 26.6     | 2.15         | 750                 | 0.19                |
| Φ 17              | WBK 17 DF  | 21.9                                | 26.6                           | 26.6     | 2.15         | 750                 | 0.19                |
| Φ 20              | WBK 20 DF  | 21.9                                | 26.6                           | 26.6     | 2.15         | 750                 | 0.19                |
| Φ 25              | WBK 25 DF  | 28.5                                | 40.5                           | 40.5     | 3.15         | 1000                | 0.29                |
|                   | WBK 25 DFD | 46.5                                | 81.5                           | 40.5     | 4.3          | 1470                | 0.39                |
|                   | WBK 25 DFF | 46.5                                | 81.5                           | 81.5     | 6.3          | 1960                | 0.49                |
| Φ 30              | WBK 30 DF  | 29.2                                | 43                             | 43       | 3.35         | 1030                | 0.3                 |
|                   | WBK 30 DFD | 47.5                                | 86                             | 43       | 4.5          | 1520                | 0.4                 |
|                   | WBK 30 DFF | 47.5                                | 86                             | 86       | 6.7          | 2010                | 0.5                 |
| Φ 35              | WBK 35 DF  | 31                                  | 50                             | 50       | 3.8          | 1180                | 0.34                |
|                   | WBK 35 DFD | 50.5                                | 100                            | 50       | 5.2          | 1710                | 0.45                |
|                   | WBK 35 DFF | 50.5                                | 100                            | 100      | 7.65         | 2350                | 0.59                |
| Φ 40              | WBK 40 DF  | 31.5                                | 52                             | 52       | 3.9          | 1230                | 0.36                |
|                   | WBK 40 DFD | 51.5                                | 104                            | 52       | 5.3          | 1810                | 0.47                |
|                   | WBK 40 DFF | 51.5                                | 104                            | 104      | 7.85         | 2400                | 0.61                |

Note: 1. 60° contact angle Ballscrew Bearings are adopted.

2. Surface blackening treatment. Please contact us when other surface treatments are needed.

# ZETEK

## 5. Shaft Diameters Available for Support Unit

| Ballscrew<br>Dia.(mm) | Bearing Support Spec. |      |      |      |      |        |                |      |      |      |      |        |
|-----------------------|-----------------------|------|------|------|------|--------|----------------|------|------|------|------|--------|
|                       | Fixed Side            |      |      |      |      |        | Supported Side |      |      |      |      |        |
|                       | BK                    | AK   | EK   | FK   | LK   | WBK    | BF             | AF   | EF   | FF   | LF   | LFA    |
| Φ 8                   | -                     | -    | EK06 | FK06 | -    | -      | -              | -    | EF06 | FF06 | -    | -      |
| Φ 10~Φ 12             | -                     | -    | EK08 | FK08 | LK08 | -      | -              | -    | EF08 | FF06 | LF08 | LFA 12 |
| Φ 10~Φ 15             | BK10                  | AK10 | EK10 | FK10 | LK10 | -      | BF10           | AF10 | EF10 | FF10 | LF12 | LFA 15 |
| Φ 14~Φ 18             | BK12                  | AK12 | EK12 | FK12 | LK12 | -      | BF12           | AF12 | EF12 | FF12 | LF12 | LFA 15 |
| Φ 20                  | BK15                  | AK15 | EK15 | FK15 | LK15 | WBK 15 | BF15           | AF15 | EF15 | FF15 | LF15 | LFA 20 |
| Φ 25~Φ 28             | BK17                  | -    | -    | FK17 | -    | WBK 17 | BF17           | -    | -    | FF17 | -    | -      |
|                       | BK20                  | AK20 | EK20 | FK20 | -    | WBK 20 | BF20           | AF20 | EF20 | FF20 | -    | LFA 25 |
| Φ 30~Φ 36             | BK25                  | AK25 | -    | FK25 | -    | WBK 25 | BF25           | AF25 | -    | FF25 | -    |        |
| Φ 40                  | BK30                  | -    | -    | FK30 | -    | WBK 30 | BF30           | -    | -    | FF30 | -    |        |
| Φ 45                  | BK35                  | -    | -    | -    | -    | WBK 35 | BF35           | -    | -    | -    | -    |        |
| Φ 50                  | BK40                  | -    | -    | -    | -    | WBK 40 | BF40           | -    | -    | -    | -    |        |

## 6. Standard Tighten Torque

| Standard Tighten Torque |                                            |                                    |                                |
|-------------------------|--------------------------------------------|------------------------------------|--------------------------------|
| Bolt Spec.              | Bolt-Sectional Pitch<br>(mm <sup>2</sup> ) | Standard Operating<br>Torque (N-m) | Standard Axial Tension<br>(kN) |
| M3                      | 5.03                                       | 0.63                               | 1.1                            |
| M4                      | 8.78                                       | 1.5                                | 1.9                            |
| M5                      | 14.2                                       | 3                                  | 3.0                            |
| M6                      | 20.1                                       | 5.2                                | 4.3                            |
| M8                      | 36.6                                       | 12.5                               | 7.8                            |
| M10                     | 58                                         | 24.5                               | 12.3                           |
| M12                     | 84.3                                       | 42                                 | 17.5                           |
| M16                     | 157                                        | 106                                | 33.2                           |

Note: Standard bolt stress: 210 (N/mm<sup>2</sup>)

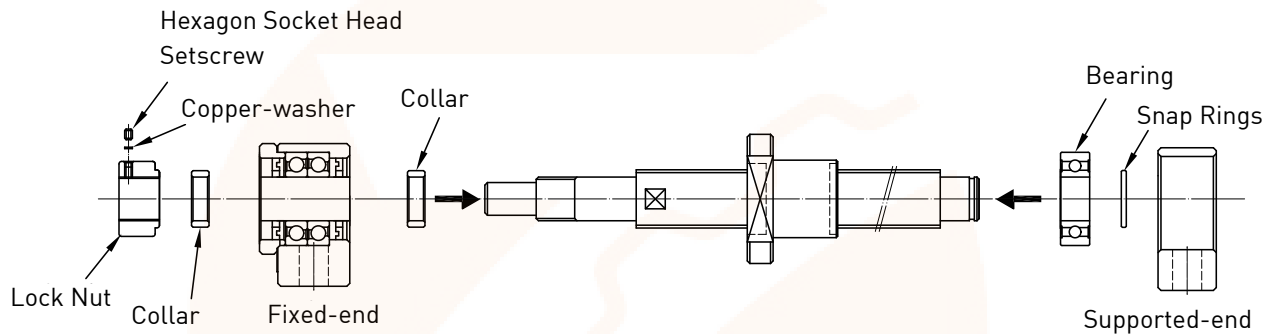
## 7. Mounting Procedure

### 7.1 Installing the Support Unit

Install the fixed-end support unit and collar onto the ballscrew shaft, then use a wrench to slightly fix the lock nut.

Notes: (1) Do not disassemble the bearing support.

(2) When inserting the screw shaft to the Support Unit, please be careful not to scrape the seal lip.



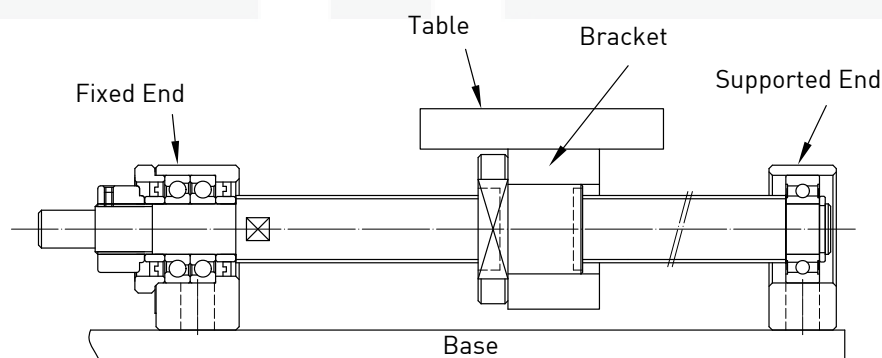
### 7.2 Installation onto the Table and the Base

1. When mounting the ballnut to the table, insert the nut into the bracket and temporarily fasten it.
2. Mount the bearing onto the ball screw shaft and fix it with the snap ring, and then put into the supported-end support unit.
3. Temporarily fasten the fixed-end and supported-end Support Unit to the base.

Move the table toward the fixed-end Support Unit to align the axial center.

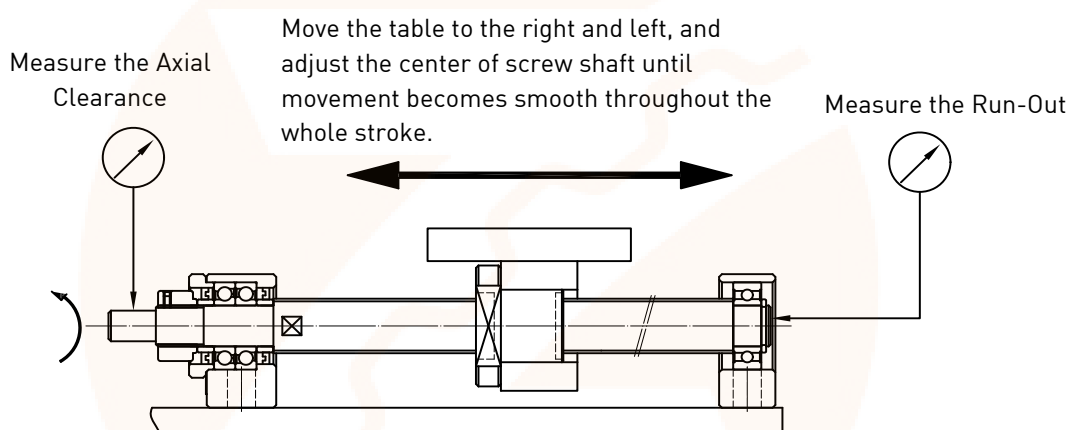
Adjust the position of each part until the nut can move smoothly, then lock the support unit tightly onto the base temporarily.

- ① Using the fixed-end Support Unit as the reference point: please design a clearance between the table or inside the bracket and ball screw nut for adjusting the height of ball screw shaft and nut.
- ② Using the table as the reference point:
  - Square type Support Unit – adjust by using a shim.
  - Round type Support Unit – Be careful of the clearance between the outer surface of the nut and the inner surface of the mounting section.



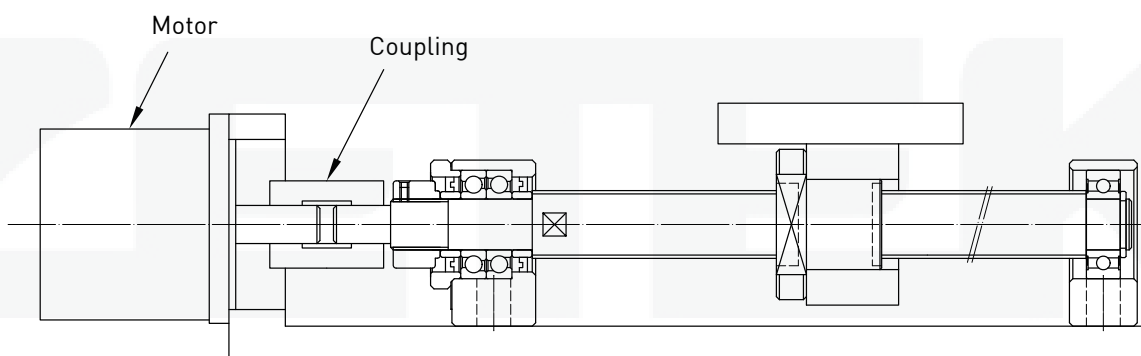
## 7.3 Checking the Accuracy and Fastening the Screw

1. Measure and adjust the accuracy of the fixed-end and use a wrench to lock the lock nut completely. Then secure the lock nut in place by tightening the Hexagonal socket-head setscrews.
2. Press the copper-washer with hexagonal set screw, please glue adhesive on it and then fully lock by wrench to prevent it from loosening. In addition, if the support units are being used under harsh conditions; Please contact HIWIN for details on preventing other parts from loosening.
3. Once properly aligned, use a wrench to lock the bolts of the fixed-end support unit, the bolts for the ballnut and the bolts of the supported-end support unit.



## 7.4 Connecting to the Motor

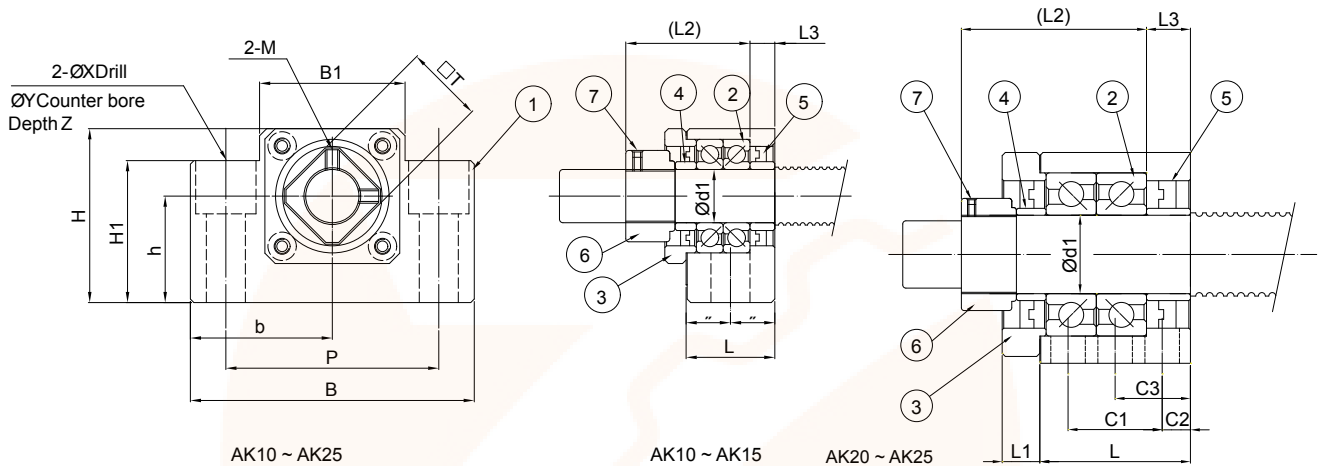
1. Fix the motor to the machine.
2. Connect the ballscrew to the motor using a motor coupling.
3. Test the motor operation after installation.



## 8. Product Specification

### 8.1 Standard Support Unit Specification

#### 8.1.1 AK Series



| Part No. | Part name                                     | Qty   |
|----------|-----------------------------------------------|-------|
| 1        | Housing                                       | 1     |
| 2        | Bearing                                       | 1 set |
| 3        | Holding lid                                   | 1     |
| 4        | Collar                                        | 2     |
| 5        | Seal                                          | 2     |
| 6        | Set screw                                     | 1     |
| 7        | Hexagonal socket-head setscrew with set piece | 2     |

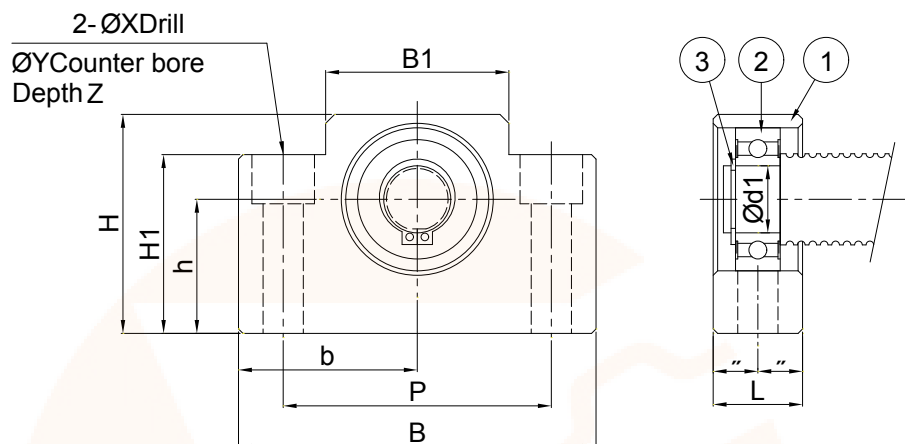


| Specification | Main dimensions (mm) |    |    |      |    |     |    |               |               |    |    |    |    |    |    |    |    |    |    |    |                |
|---------------|----------------------|----|----|------|----|-----|----|---------------|---------------|----|----|----|----|----|----|----|----|----|----|----|----------------|
|               | d1                   | L  | L1 | L2   | L3 | B   | H  | b<br>(Note 1) | h<br>(Note 1) | B1 | H1 | P  | X  | Y  | Z  | M  | T  | C1 | C2 | C3 | Weight<br>(kg) |
| AK10          | 10                   | 24 | 6  | 29.5 | 6  | 70  | 43 | 35            | 25            | 36 | 35 | 52 | 9  | 14 | 11 | M3 | 16 | -  | -  | -  | 0.5            |
| AK12          | 12                   | 24 | 6  | 29.5 | 6  | 70  | 43 | 35            | 25            | 36 | 35 | 52 | 9  | 14 | 11 | M4 | 19 | -  | -  | -  | 0.5            |
| AK15          | 15                   | 25 | 6  | 36   | 5  | 80  | 49 | 40            | 30            | 41 | 40 | 60 | 11 | 17 | 15 | M4 | 22 | -  | -  | -  | 0.65           |
| AK20          | 20                   | 42 | 10 | 50   | 10 | 95  | 58 | 47.5          | 30            | 56 | 45 | 75 | 11 | 17 | 15 | M4 | 30 | 22 | 10 | -  | 1.45           |
| AK25          | 25                   | 48 | 12 | 59   | 14 | 105 | 68 | 52.5          | 35            | 66 | 25 | 85 | 11 | -  | -  | M6 | 35 | 30 | 9  | 24 | 1.92           |

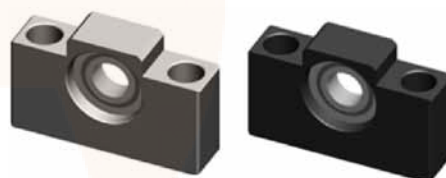
Note: 1. Tolerance of Height (h) and tolerance of Width (b) refer to the precision of standard bearing.

2. Specification are subject to change without notice.

## 8.1.2 AF Series



| Part No. | Part name | Qty |
|----------|-----------|-----|
| 1        | Housing   | 1   |
| 2        | Bearing   | 1   |
| 3        | Snap ring | 1   |

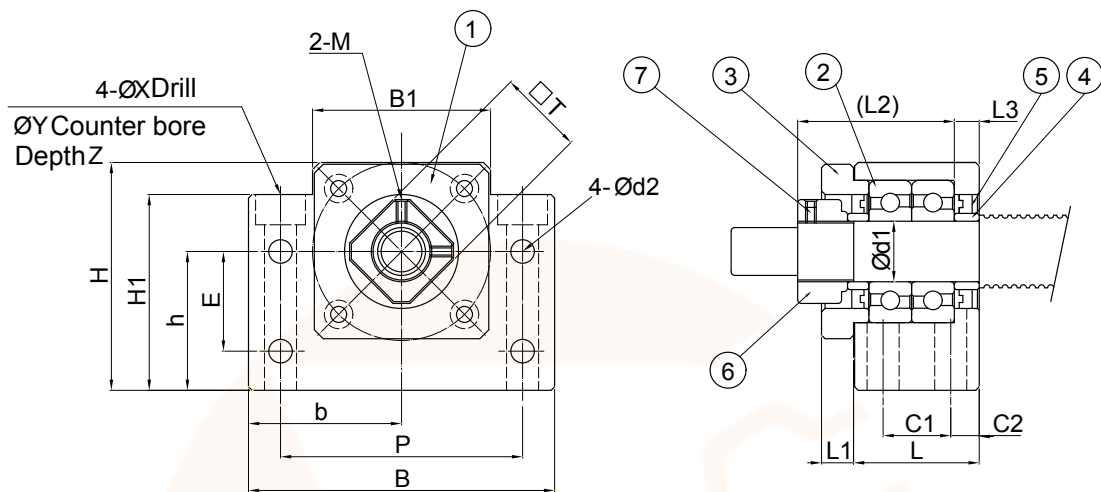


| Specification | Main dimensions (mm) |    |     |    |               |               |    |    |    |    |    |    |         |           | Weight (kg) |
|---------------|----------------------|----|-----|----|---------------|---------------|----|----|----|----|----|----|---------|-----------|-------------|
|               | d1                   | L  | B   | H  | b<br>(Note 1) | h<br>(Note 1) | B1 | H1 | P  | X  | Y  | Z  | Bearing | Snap ring |             |
| AF10          | 8                    | 20 | 70  | 43 | 35            | 25            | 36 | 35 | 52 | 9  | 14 | 11 | 608ZZ   | S08       | 0.37        |
| AF12          | 10                   | 20 | 70  | 43 | 35            | 25            | 36 | 35 | 52 | 9  | 14 | 11 | 6000ZZ  | S10       | 0.37        |
| AF15          | 15                   | 20 | 80  | 49 | 40            | 30            | 41 | 40 | 60 | 9  | 14 | 11 | 6002ZZ  | S15       | 0.45        |
| AF20          | 20                   | 26 | 95  | 58 | 47.5          | 30            | 56 | 45 | 75 | 11 | 17 | 15 | 6204ZZ  | S20       | 0.75        |
| AF25          | 25                   | 30 | 105 | 68 | 52.5          | 35            | 66 | 25 | 85 | 11 | -  | -  | 6205ZZ  | S25       | 0.95        |

Note: 1. Tolerance of Height (h) and tolerance of Width (b) refer to the precision of standard bearing.

2. Specification are subject to change without notice.

### 8.1.3 BK Series



| Part No. | Part name                                     | Qty   |
|----------|-----------------------------------------------|-------|
| 1        | Housing                                       | 1     |
| 2        | Bearing                                       | 1 set |
| 3        | Holding lid                                   | 1     |
| 4        | Collar                                        | 2     |
| 5        | Seal                                          | 2     |
| 6        | Set screw                                     | 1     |
| 7        | Hexagonal socket-head setscrew with set piece | 2     |

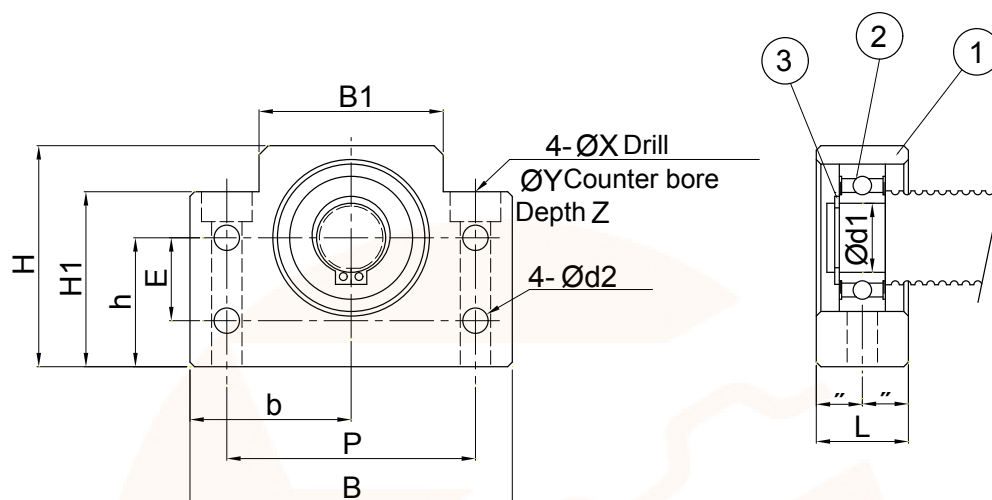


| Specification | Main dimensions (mm) |    |    |      |    |     |     |               |               |     |      |    |     |    |    |     |     |      |      |    |    |                |
|---------------|----------------------|----|----|------|----|-----|-----|---------------|---------------|-----|------|----|-----|----|----|-----|-----|------|------|----|----|----------------|
|               | d1                   | L  | L1 | L2   | L3 | B   | H   | b<br>(Note 1) | h<br>(Note 1) | B1  | H1   | E  | P   | C1 | C2 | d2  | X   | Y    | Z    | M  | T  | Weight<br>(kg) |
| BK10          | 10                   | 25 | 5  | 29.5 | 5  | 60  | 39  | 30            | 22            | 34  | 32.5 | 15 | 46  | 13 | 6  | 5.5 | 6.6 | 10.8 | 5    | M3 | 16 | 0.4            |
| BK12          | 12                   | 25 | 5  | 29.5 | 5  | 60  | 43  | 30            | 25            | 34  | 32.5 | 18 | 46  | 13 | 6  | 5.5 | 6.6 | 10.8 | 1.5  | M4 | 19 | 0.45           |
| BK15          | 15                   | 27 | 6  | 32   | 6  | 70  | 48  | 35            | 28            | 40  | 38   | 18 | 54  | 15 | 6  | 5.5 | 6.6 | 11   | 6.5  | M4 | 22 | 0.6            |
| BK17          | 17                   | 35 | 9  | 44   | 7  | 86  | 64  | 43            | 39            | 50  | 55   | 28 | 68  | 19 | 8  | 6.6 | 9   | 14   | 8.5  | M4 | 24 | 1.3            |
| BK20          | 20                   | 35 | 8  | 43   | 8  | 88  | 60  | 44            | 34            | 52  | 50   | 22 | 70  | 19 | 8  | 6.6 | 9   | 14   | 8.5  | M4 | 30 | 1.3            |
| BK25          | 25                   | 42 | 12 | 54   | 9  | 106 | 80  | 53            | 48            | 64  | 70   | 33 | 85  | 22 | 10 | 9   | 11  | 17   | 11   | M6 | 35 | 2.4            |
| BK30          | 30                   | 45 | 14 | 61   | 9  | 128 | 89  | 64            | 51            | 76  | 78   | 33 | 102 | 23 | 11 | 11  | 14  | 20   | 13   | M6 | 40 | 3.4            |
| BK35          | 35                   | 50 | 14 | 67   | 12 | 140 | 96  | 70            | 52            | 88  | 79   | 35 | 114 | 26 | 12 | 11  | 14  | 20   | 13   | M6 | 50 | 4.4            |
| BK40          | 40                   | 61 | 18 | 76   | 15 | 160 | 110 | 80            | 60            | 100 | 90   | 37 | 130 | 33 | 14 | 14  | 18  | 26   | 17.5 | M6 | 50 | 6.8            |

Note: 1. Tolerance of Height (h) and tolerance of Width (b) refer to the precision of standard bearing.

2. Specification are subject to change without notice.

## 8.1.4 BF Series



| Part No. | Part name | Qty |
|----------|-----------|-----|
| 1        | Housing   | 1   |
| 2        | Bearing   | 1   |
| 3        | Snap ring | 1   |

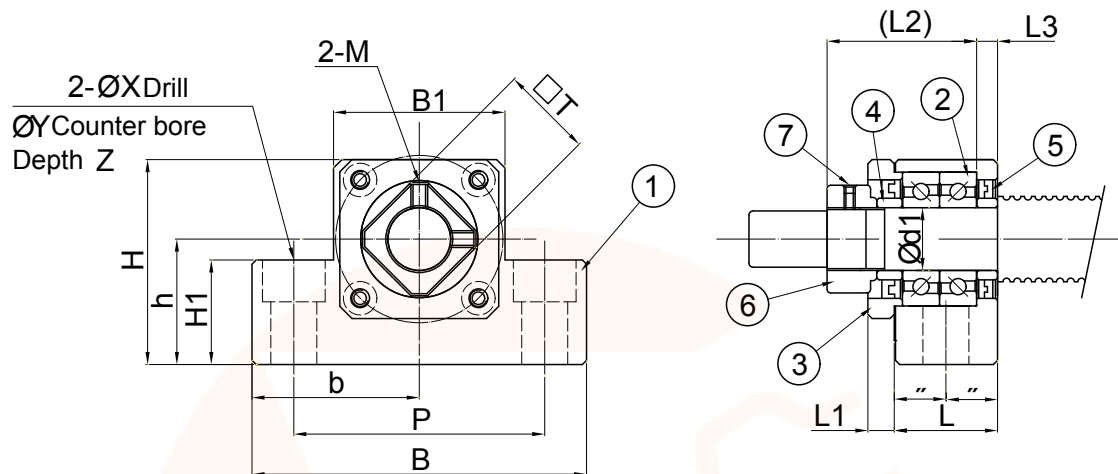


| Specification | Main dimensions (mm) |    |     |     |               |               |     |      |    |     |     |     |      |      |         |           | Weight (kg) |
|---------------|----------------------|----|-----|-----|---------------|---------------|-----|------|----|-----|-----|-----|------|------|---------|-----------|-------------|
|               | d1                   | L  | B   | H   | b<br>(Note 1) | h<br>(Note 1) | B1  | H1   | E  | P   | d2  | X   | Y    | Z    | Bearing | Snap ring |             |
| BF10          | 8                    | 20 | 60  | 39  | 30            | 22            | 34  | 32.5 | 15 | 46  | 5.5 | 6.6 | 10.8 | 5    | 608ZZ   | S08       | 0.3         |
| BF12          | 10                   | 20 | 60  | 43  | 30            | 25            | 34  | 32.5 | 18 | 46  | 5.5 | 6.6 | 10.8 | 1.5  | 6000ZZ  | S10       | 0.35        |
| BF15          | 15                   | 20 | 70  | 48  | 35            | 28            | 40  | 38   | 18 | 54  | 5.5 | 6.6 | 11   | 6.5  | 6002ZZ  | S15       | 0.4         |
| BF17          | 17                   | 23 | 86  | 64  | 43            | 39            | 50  | 55   | 28 | 68  | 6.6 | 9   | 14   | 8.5  | 6203ZZ  | S17       | 0.75        |
| BF20          | 20                   | 26 | 88  | 60  | 44            | 34            | 52  | 50   | 22 | 70  | 6.6 | 9   | 14   | 8.5  | 6004ZZ  | S20       | 0.77        |
| BF20H         | 20                   | 26 | 88  | 74  | 44            | 48            | 52  | 64   | -  | 70  | -   | 9   | 14   | 8.5  | 6004ZZ  | S20       | 1.02        |
| BF25          | 25                   | 30 | 106 | 80  | 53            | 48            | 64  | 70   | 33 | 85  | 9   | 11  | 17   | 11   | 6205ZZ  | S25       | 1.45        |
| BF30          | 30                   | 32 | 128 | 89  | 64            | 51            | 76  | 78   | 33 | 102 | 11  | 14  | 20   | 13   | 6206ZZ  | S30       | 1.95        |
| BF35          | 35                   | 32 | 140 | 96  | 70            | 52            | 88  | 79   | 35 | 114 | 11  | 14  | 20   | 13   | 6207ZZ  | S35       | 2.25        |
| BF40          | 40                   | 37 | 160 | 110 | 80            | 60            | 100 | 90   | 37 | 130 | 14  | 18  | 26   | 17.5 | 6208ZZ  | S40       | 3.3         |

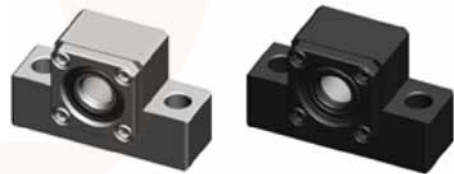
Note: 1. Tolerance of Height (h) and tolerance of Width (b) refer to the precision of standard bearing.

2. Specification are subject to change without notice.

## 8.1.5 EK Series



| Part No. | Part name                                     | Qty   |
|----------|-----------------------------------------------|-------|
| 1        | Housing                                       | 1     |
| 2        | Bearing                                       | 1 set |
| 3        | Holding lid                                   | 1     |
| 4        | Collar                                        | 2     |
| 5        | Seal                                          | 2     |
| 6        | Set screw                                     | 1     |
| 7        | Hexagonal socket-head setscrew with set piece | 2     |

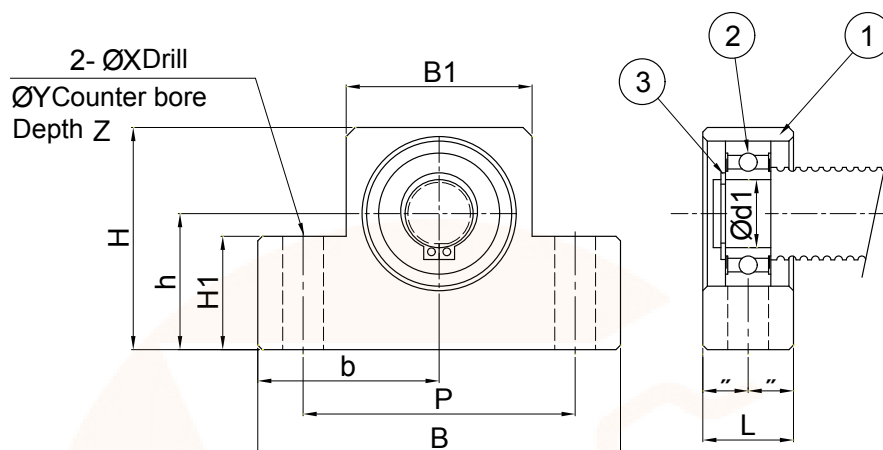


| Specification | Main dimensions (mm) |      |    |      |     |    |    |               |               |    |    |    |     |     |    |    |    | Weight (kg) |
|---------------|----------------------|------|----|------|-----|----|----|---------------|---------------|----|----|----|-----|-----|----|----|----|-------------|
|               | d1                   | L    | L1 | L2   | L3  | B  | H  | b<br>[Note 1] | h<br>[Note 1] | B1 | H1 | P  | X   | Y   | Z  | M  | T  |             |
| EK05          | 5                    | 16.5 | -  | 18.5 | 3.5 | 36 | 21 | 18            | 11            | 20 | 8  | 28 | 4.5 | -   | -  | M3 | 11 | 0.12        |
| EK06          | 6                    | 20   | -  | 22   | 3.5 | 42 | 25 | 21            | 13            | 18 | 20 | 30 | 5.5 | 9.5 | 11 | M3 | 12 | 0.18        |
| EK08          | 8                    | 23   | -  | 26   | 4   | 52 | 32 | 26            | 17            | 25 | 26 | 38 | 6.6 | 11  | 12 | M3 | 14 | 0.27        |
| EK10-1        | 10                   | 24   | 6  | 29.5 | 6   | 65 | 43 | 32.5          | 21            | 36 | 20 | 52 | 6.6 | -   | -  | M3 | 16 | 0.47        |
| EK10          | 10                   | 24   | 6  | 29.5 | 6   | 70 | 43 | 35            | 25            | 36 | 24 | 52 | 9   | -   | -  | M3 | 16 | 0.47        |
| EK12          | 12                   | 24   | 6  | 29.5 | 6   | 70 | 43 | 35            | 25            | 36 | 24 | 52 | 9   | -   | -  | M4 | 19 | 0.45        |
| EK15          | 15                   | 25   | 6  | 36   | 5   | 80 | 49 | 40            | 30            | 41 | 25 | 60 | 11  | -   | -  | M4 | 22 | 0.6         |
| EK20          | 20                   | 42   | 10 | 50   | 10  | 95 | 58 | 47.5          | 30            | 56 | 25 | 75 | 11  | -   | -  | M4 | 30 | 1.35        |

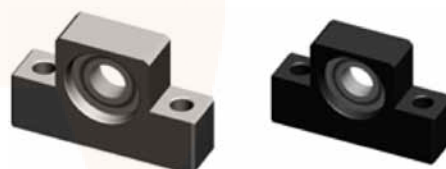
Note: 1. Tolerance of Height (h) and tolerance of Width (b) refer to the precision of standard bearing.

2. Specification are subject to change without notice.

## 8.1.6 EF Series



| Part No. | Part name | Qty |
|----------|-----------|-----|
| 1        | Housing   | 1   |
| 2        | Bearing   | 1   |
| 3        | Snap ring | 1   |

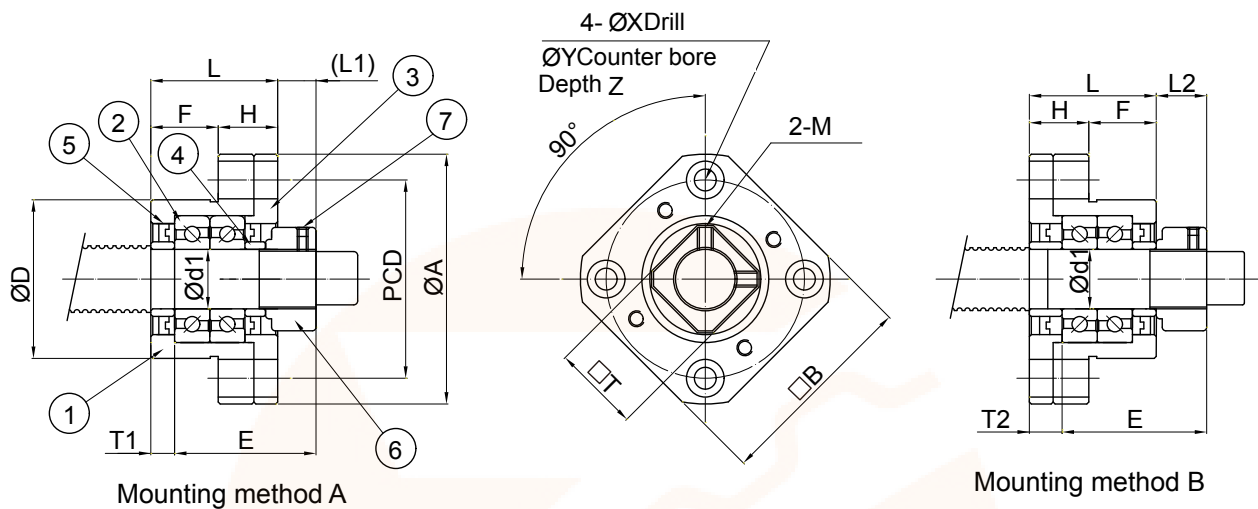


| Specification | Main dimensions (mm) |    |    |    |               |               |    |    |    |     |     |    |         |           | Weight (kg) |
|---------------|----------------------|----|----|----|---------------|---------------|----|----|----|-----|-----|----|---------|-----------|-------------|
|               | d1                   | L  | B  | H  | b<br>(Note 1) | h<br>(Note 1) | B1 | H1 | P  | X   | Y   | Z  | Bearing | Snap ring |             |
| EF06          | 6                    | 12 | 42 | 25 | 21            | 13            | 18 | 20 | 30 | 5.5 | 9.5 | 11 | 606ZZ   | S06       | 0.1         |
| EF08          | 6                    | 14 | 52 | 32 | 26            | 17            | 25 | 26 | 38 | 6.6 | 11  | 12 | 606ZZ   | S06       | 0.16        |
| EF10          | 8                    | 20 | 70 | 43 | 35            | 25            | 36 | 24 | 52 | 9   | -   | -  | 608ZZ   | S08       | 0.35        |
| EF12          | 10                   | 20 | 70 | 43 | 35            | 25            | 36 | 24 | 52 | 9   | -   | -  | 6000ZZ  | S10       | 0.35        |
| EF15          | 15                   | 20 | 80 | 49 | 40            | 30            | 41 | 25 | 60 | 9   | -   | -  | 6002ZZ  | S15       | 0.4         |
| EF20          | 20                   | 26 | 95 | 58 | 47.5          | 30            | 56 | 25 | 75 | 11  | -   | -  | 6204ZZ  | S20       | 0.65        |

Note: 1. Tolerance of Height (h) and tolerance of Width (b) refer to the precision of standard bearing.

2. Specification are subject to change without notice.

### 8.1.7 FK Series



| Part No. | Part name                                     | Qty   |
|----------|-----------------------------------------------|-------|
| 1        | Housing                                       | 1     |
| 2        | Bearing                                       | 1 set |
| 3        | Holding lid                                   | 1     |
| 4        | Collar                                        | 2     |
| 5        | Seal                                          | 2     |
| 6        | Set screw                                     | 1     |
| 7        | Hexagonal socket-head setscrew with set piece | 2     |

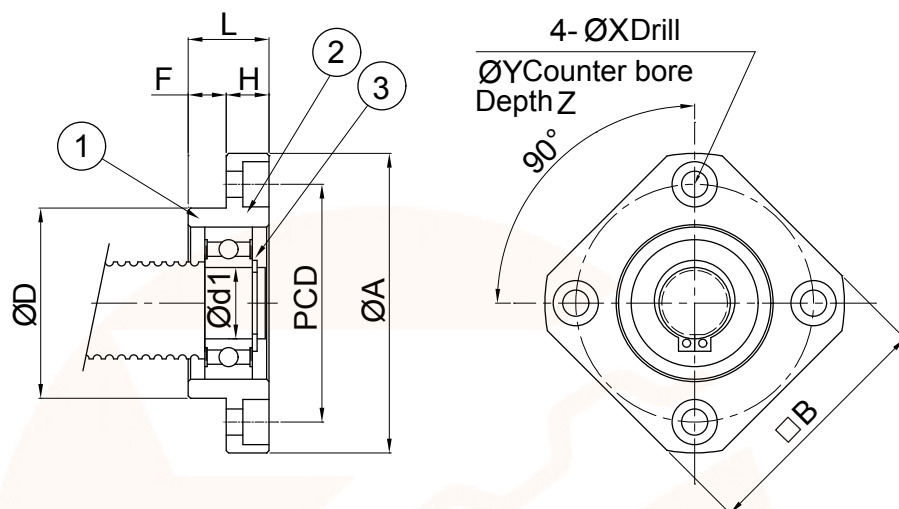


| Specification | Main dimensions (mm) |      |    |      |      |               |     |     |    |                      |     |                      |     |     |      |    |    |    |                |
|---------------|----------------------|------|----|------|------|---------------|-----|-----|----|----------------------|-----|----------------------|-----|-----|------|----|----|----|----------------|
|               | d1                   | L    | H  | F    | E    | D<br>(Note 1) | A   | PCD | B  | Mounting<br>method A |     | Mounting<br>method B |     | X   | Y    | Z  | M  | T  | Weight<br>(kg) |
|               |                      |      |    |      |      |               |     |     |    | L1                   | T1  | L2                   | T2  |     |      |    |    |    |                |
| FK05          | 5                    | 16.5 | 6  | 10.5 | 18.5 | 20            | 34  | 26  | 26 | 5.5                  | 3.5 | 5                    | 3   | 3.4 | 6.5  | 4  | M3 | 11 | 0.1            |
| FK06          | 6                    | 20   | 7  | 13   | 22   | 22            | 36  | 28  | 28 | 5.5                  | 3.5 | 6.5                  | 4.5 | 3.4 | 6.5  | 4  | M3 | 11 | 0.1            |
| FK08          | 8                    | 23   | 9  | 14   | 26   | 28            | 43  | 35  | 35 | 7                    | 4   | 8                    | 5   | 3.4 | 6.5  | 4  | M3 | 14 | 0.16           |
| FK10          | 10                   | 27   | 10 | 17   | 29.5 | 34            | 52  | 42  | 42 | 7.5                  | 5   | 8.5                  | 6   | 4.5 | 8    | 5  | M3 | 16 | 0.25           |
| FK12          | 12                   | 27   | 10 | 17   | 29.5 | 36            | 54  | 44  | 44 | 7.5                  | 5   | 8.5                  | 6   | 4.5 | 8    | 5  | M4 | 19 | 0.26           |
| FK15          | 15                   | 32   | 15 | 17   | 36   | 40            | 63  | 50  | 52 | 10                   | 6   | 12                   | 8   | 5.5 | 9.5  | 6  | M4 | 22 | 0.4            |
| FK17          | 17                   | 45   | 22 | 23   | 47   | 50            | 77  | 62  | 61 | 11                   | 9   | 14                   | 12  | 6.6 | 11   | 10 | M4 | 24 | 0.85           |
| FK20          | 20                   | 52   | 22 | 30   | 50   | 57            | 85  | 70  | 68 | 8                    | 10  | 12                   | 14  | 6.6 | 11   | 10 | M4 | 30 | 1.2            |
| FK25          | 25                   | 57   | 27 | 30   | 60   | 63            | 98  | 80  | 79 | 13                   | 10  | 20                   | 17  | 9   | 15   | 13 | M6 | 35 | 1.6            |
| FK30          | 30                   | 62   | 30 | 32   | 61   | 75            | 117 | 95  | 93 | 11                   | 12  | 17                   | 18  | 11  | 17.5 | 15 | M6 | 40 | 2.38           |

Note: 1. Diameter tolerance (D) refer to the precision of standard bearing.

2. Specification are subject to change without notice.

## 8.1.8 FF Series



| Part No. | Part name | Qty |
|----------|-----------|-----|
| 1        | Housing   | 1   |
| 2        | Bearing   | 1   |
| 3        | Snap ring | 1   |

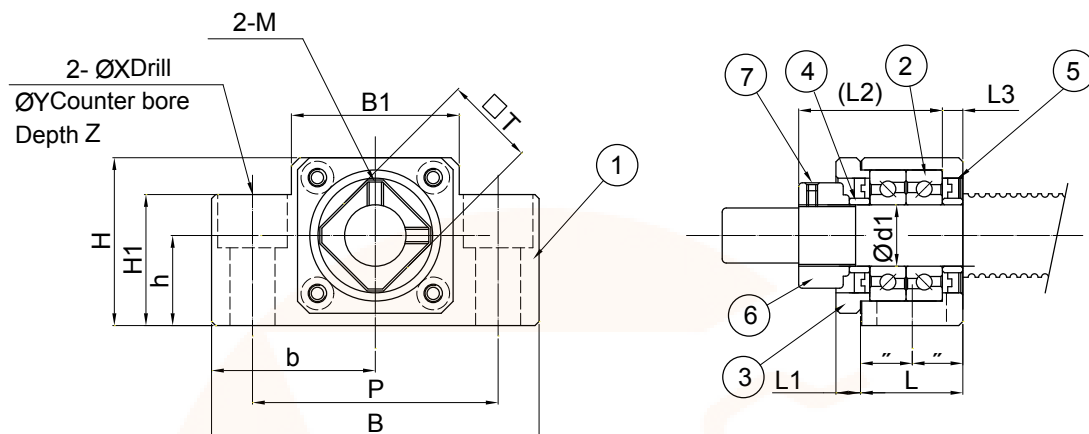


| Specification | Main dimensions (mm) |    |    |    |               |     |     |    |     |     |     |         |           |                |
|---------------|----------------------|----|----|----|---------------|-----|-----|----|-----|-----|-----|---------|-----------|----------------|
|               | d1                   | L  | H  | F  | D<br>(Note 1) | A   | PCD | B  | X   | Y   | Z   | Bearing | Snap ring | Weight<br>(kg) |
| FF06          | 6                    | 10 | 6  | 4  | 22            | 36  | 28  | 28 | 3.4 | 6.5 | 4   | 606ZZ   | S06       | 0.08           |
| FF10          | 8                    | 12 | 7  | 5  | 28            | 43  | 35  | 35 | 3.4 | 6.5 | 4   | 608ZZ   | S08       | 0.1            |
| FF12          | 10                   | 15 | 7  | 8  | 34            | 52  | 42  | 42 | 4.5 | 8   | 4   | 6000ZZ  | S10       | 0.15           |
| FF15          | 15                   | 17 | 9  | 8  | 40            | 63  | 50  | 52 | 5.5 | 9.5 | 5.5 | 6002ZZ  | S15       | 0.22           |
| FF17          | 17                   | 20 | 11 | 9  | 50            | 77  | 62  | 61 | 6.6 | 11  | 6.5 | 6203ZZ  | S17       | 0.35           |
| FF20          | 20                   | 20 | 11 | 9  | 57            | 85  | 70  | 68 | 6.6 | 11  | 6.5 | 6204ZZ  | S20       | 0.45           |
| FF25          | 25                   | 24 | 14 | 10 | 63            | 98  | 80  | 79 | 9   | 14  | 8.5 | 6205ZZ  | S25       | 0.66           |
| FF30          | 30                   | 27 | 18 | 9  | 75            | 117 | 95  | 93 | 11  | 17  | 11  | 6206ZZ  | S30       | 1.05           |

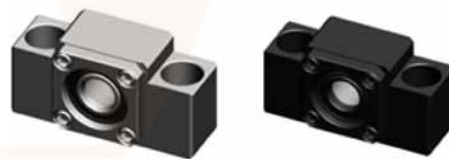
Note: 1. Diameter tolerance (D) refer to the precision of standard bearing.

2. Specification are subject to change without notice.

## 8.1.9 LK Series



| Part No. | Part name                                     | Qty  |
|----------|-----------------------------------------------|------|
| 1        | Housing                                       | 1    |
| 2        | Bearing                                       | 1set |
| 3        | Holding lid                                   | 1    |
| 4        | Collar                                        | 2    |
| 5        | Seal                                          | 2    |
| 6        | Set screw                                     | 1    |
| 7        | Hexagonal socket-head setscrew with set piece | 2    |

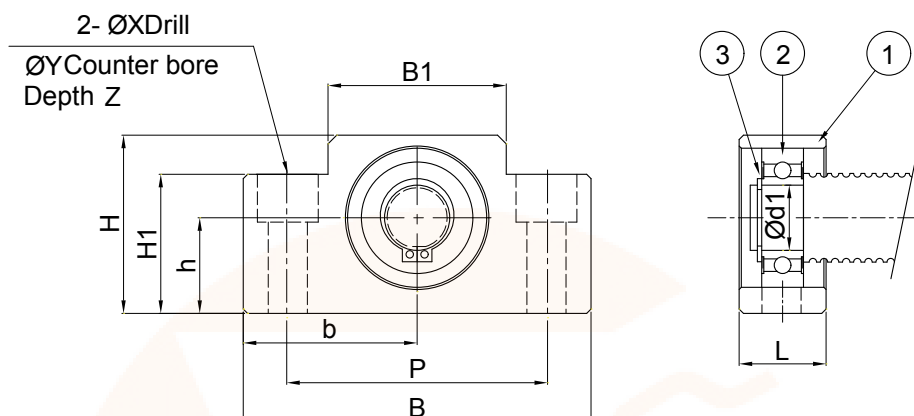


| Specification | Main dimensions (mm) |      |    |      |     |    |    |               |               |    |      |    |    |    |      |    |    | Weight (kg) |
|---------------|----------------------|------|----|------|-----|----|----|---------------|---------------|----|------|----|----|----|------|----|----|-------------|
|               | d1                   | L    | L1 | L2   | L3  | B  | H  | b<br>[Note 1] | h<br>[Note 1] | B1 | H1   | P  | X  | Y  | Z    | M  | T  |             |
| LK08          | 8                    | 22.5 | -  | 26   | 3.5 | 62 | 31 | 31            | 15.5          | 30 | 25.5 | 46 | 9  | 14 | 12.5 | M3 | 14 | 0.28        |
| LK10          | 10                   | 24   | 6  | 29.5 | 6   | 70 | 38 | 35            | 20            | 36 | 30   | 52 | 9  | 14 | 10   | M3 | 16 | 0.44        |
| LK12          | 12                   | 24   | 6  | 29.5 | 6   | 70 | 38 | 35            | 20            | 36 | 30   | 52 | 9  | 14 | 10   | M4 | 19 | 0.42        |
| LK15          | 15                   | 25   | 6  | 36   | 5   | 80 | 41 | 40            | 22            | 41 | 32   | 60 | 11 | 17 | 13   | M4 | 22 | 0.51        |

Note: 1. Tolerance of Height (h) and tolerance of Width (b) refer to the precision of standard bearing.

2. Specification are subject to change without notice.

## 8.1.10 LF Series



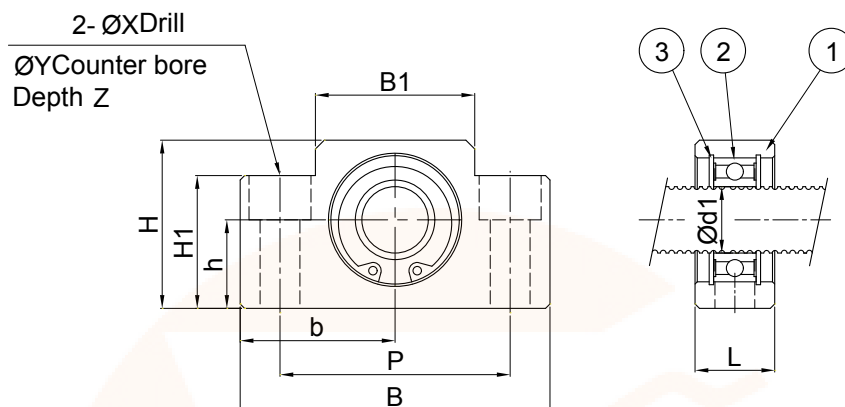
| Part No. | Part name | Qty |
|----------|-----------|-----|
| 1        | Housing   | 1   |
| 2        | Bearing   | 1   |
| 3        | Snap ring | 1   |



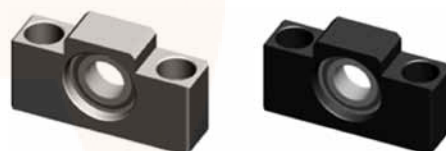
| Specification | Main dimensions (mm) |    |    |    |               |               |    |      |    |   |    |      |         |           |                |
|---------------|----------------------|----|----|----|---------------|---------------|----|------|----|---|----|------|---------|-----------|----------------|
|               | d1                   | L  | B  | H  | b<br>(Note 1) | h<br>(Note 1) | B1 | H1   | P  | X | Y  | Z    | Bearing | Snap ring | Weight<br>(kg) |
| LF08          | 6                    | 16 | 62 | 31 | 31            | 15.5          | 30 | 25.5 | 46 | 9 | 14 | 12.5 | 606ZZ   | S06       | 0.19           |
| LF12          | 10                   | 20 | 70 | 38 | 35            | 20            | 36 | 30   | 52 | 9 | 14 | 10   | 6000ZZ  | S10       | 0.3            |
| LF15          | 15                   | 20 | 80 | 41 | 40            | 22            | 41 | 32   | 60 | 9 | 14 | 11   | 6002ZZ  | S15       | 0.35           |

Note: 1. Tolerance of Height (h) and tolerance of Width (b) refer to the precision of standard bearing.  
2. Specification are subject to change without notice.

### 8.1.11 LFA Series



| Part No. | Part name | Qty |
|----------|-----------|-----|
| 1        | Housing   | 1   |
| 2        | Bearing   | 1   |
| 3        | Snap ring | 2   |



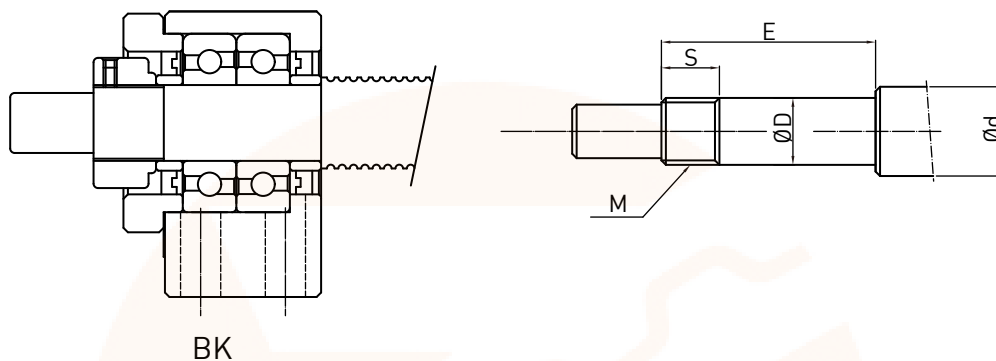
| Specification | Main dimensions (mm) |    |    |    |               |               |    |      |    |    |    |      |         |           | Weight (kg) |
|---------------|----------------------|----|----|----|---------------|---------------|----|------|----|----|----|------|---------|-----------|-------------|
|               | d1                   | L  | B  | H  | b<br>(Note 1) | h<br>(Note 1) | B1 | H1   | P  | X  | Y  | Z    | Bearing | Snap ring |             |
| LFA12         | 12                   | 18 | 62 | 31 | 31            | 15.5          | 30 | 25.5 | 46 | 9  | 14 | 12.5 | 6801ZZ  | R21       | 0.2         |
| LFA15         | 15                   | 18 | 70 | 38 | 35            | 20            | 36 | 30   | 52 | 9  | 14 | 10   | 6902ZZ  | R28       | 0.26        |
| LFA20         | 20                   | 22 | 80 | 41 | 40            | 22            | 41 | 32   | 60 | 11 | 17 | 13   | 6804ZZ  | R32       | 0.35        |
| LFA25         | 25                   | 22 | 95 | 58 | 47.5          | 30            | 56 | 45   | 75 | 11 | 17 | 15   | 6005ZZ  | R47       | 0.61        |

Note: 1. Tolerance of Height (h) and tolerance of Width (b) refer to the precision of standard bearing.

2. Specification are subject to change without notice.

## 8.1.12 Suggestive machining dimension for support units

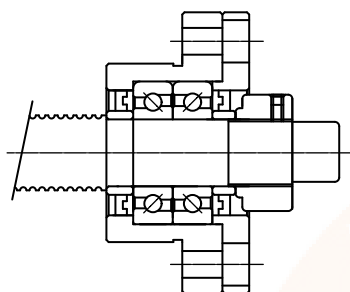
### • Fixed Side - BK Series



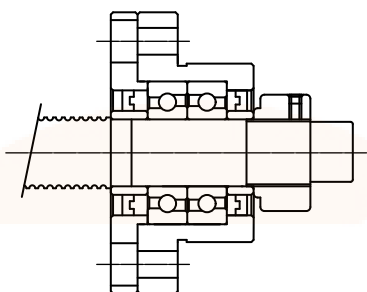
| Specification | Main dimensions (mm) |    |    |           |    |
|---------------|----------------------|----|----|-----------|----|
|               | d                    | D  | E  | M         | S  |
| BK10          | 10-15                | 10 | 36 | M10 x 1   | 12 |
| BK12          | 14-18                | 12 | 36 | M12 x 1   | 12 |
| BK15          | 20                   | 15 | 40 | M15 x 1   | 12 |
| BK17          | 25-28                | 17 | 53 | M17 x 1   | 17 |
| BK20          | 25-28                | 20 | 53 | M20 x 1   | 15 |
| BK25          | 30-36                | 25 | 66 | M25 x 1.5 | 20 |
| BK30          | 40                   | 30 | 73 | M30 x 1.5 | 25 |
| BK35          | 45                   | 35 | 82 | M30 x 1.5 | 26 |
| BK40          | 50                   | 40 | 94 | M40 x 1.5 | 30 |

Note: This chart is the suggestive specification(E,S,M) for ball screw end machining to match with the support units, for the rest of the specifications please refer to the ball screw manual.

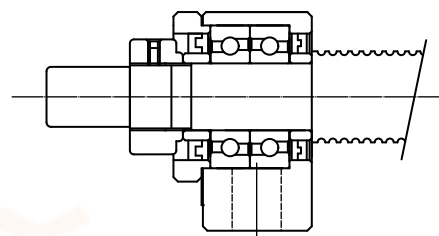
• Fixed Side - FK, EK, AK, LK Series



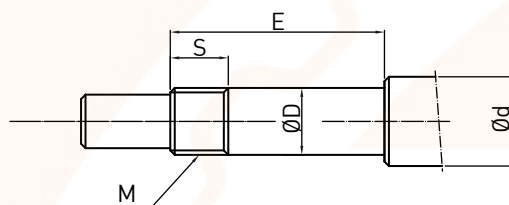
FK series mounting way A



FK series mounting way B



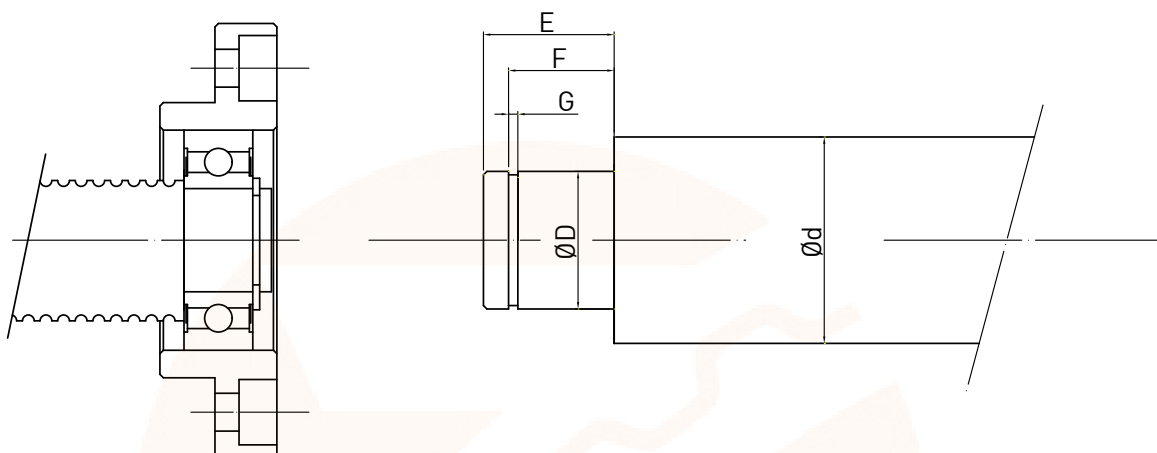
EK, AK, LK series  
mounting way B



| Specification |      |      |      | Main dimensions (mm) |    |    |           |    |
|---------------|------|------|------|----------------------|----|----|-----------|----|
| FK            | EK   | AK   | LK   | d                    | D  | E  | M         | S  |
| FK05          | EK05 | -    | -    | 8                    | 5  | 23 | M5 x 0.5  | 7  |
| FK06          | EK06 | -    | -    | 8                    | 6  | 28 | M6 x 0.75 | 8  |
| FK08          | EK08 | -    | LK08 | 10-12                | 8  | 32 | M8 x 1    | 10 |
| FK10          | EK10 | AK10 | LK10 | 10-15                | 10 | 36 | M10 x 1   | 12 |
| FK12          | EK12 | AK12 | LK12 | 14-18                | 12 | 36 | M12 x 1   | 12 |
| FK15          | EK15 | AK15 | LK15 | 20                   | 15 | 48 | M15 x 1   | 13 |
| FK17          | -    | -    | -    | 25-28                | 17 | 59 | M17 x 1   | 17 |
| FK20          | EK20 | AK20 | -    | 25-28                | 20 | 64 | M20 x 1   | 16 |
| FK25          | -    | AK25 | -    | 30-36                | 25 | 76 | M25 x 1.5 | 20 |
| FK30          | -    | -    | -    | 40                   | 30 | 73 | M30 x 1.5 | 25 |

Note: This chart is the suggestive specification(E,S,M) for ball screw end machining to match with the support units, for the rest of the specifications please refer to the ball screw manual.

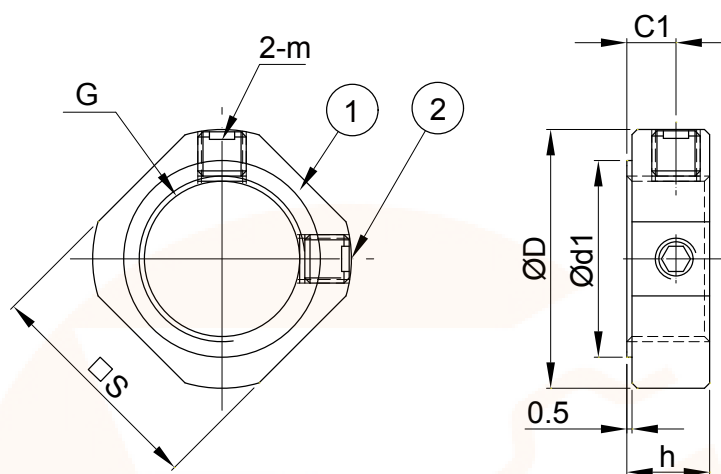
• Supported Side



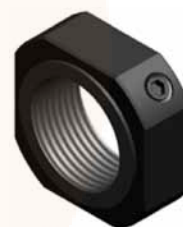
| Specification |      |        |      |      | Main dimensions (mm) |    |        |              |      |
|---------------|------|--------|------|------|----------------------|----|--------|--------------|------|
| FF            | EF   | BF     | AF   | LF   | d                    | D  | E      | F            | G    |
| FF06          | EF06 | -      | -    | -    | 8                    | 6  | 9      | 6.8          | 0.8  |
| -             | EF08 | -      | -    | LF08 | 10-12                | 6  | 9      | 6.8          | 0.8  |
| FF10          | EF10 | BF10   | AF10 | -    | 10-15                | 8  | 10     | 7.9          | 0.9  |
| FF12          | EF12 | BF12   | AF12 | -    | 14-18                | 10 | 11     | 9.15         | 1.15 |
| FF15          | EF15 | BF15   | AF15 | LF12 | 20                   | 15 | 13     | 10.15        | 1.15 |
| FF17          | -    | BF17   | -    | LF15 | 25-28                | 17 | 16     | 13.15        | 1.15 |
| FF20          | EF20 | (BF20) | AF20 | -    | 25-28                | 20 | 19(16) | 15.35(13.35) | 1.35 |
| FF25          | -    | BF25   | AF25 | -    | 30-36                | 25 | 20     | 16.35        | 1.35 |
| FF30          | -    | BF30   | -    | -    | 40                   | 30 | 21     | 17.75        | 1.75 |
| -             | -    | BF35   | -    | -    | 45                   | 35 | 22     | 18.75        | 1.75 |
| -             | -    | BF40   | -    | -    | 50                   | 40 | 23     | 19.95        | 1.95 |

Note: This chart is the suggestive specification(E,F,G) for ball screw end machining to match with the support units, for the rest of the specifications please refer to the ball screw manual.

### 8.1.13 Standard Lock Nut



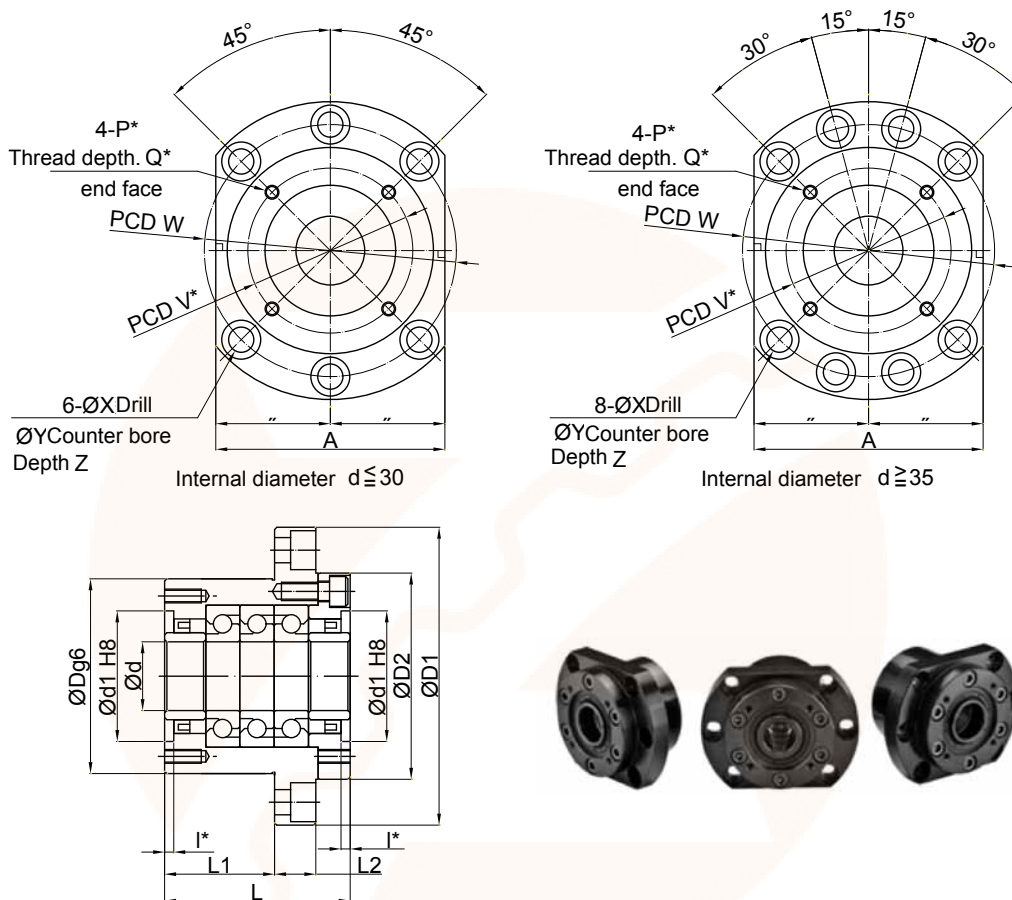
| Part No. | Part name                                     | Qty |
|----------|-----------------------------------------------|-----|
| 1        | Lock Nut                                      | 1   |
| 2        | Hexagonal socket-head setscrew with set piece | 2   |



| Specification | Main dimensions (mm) |     |    |    |      |           |    | Tightening Torque (N-m) |
|---------------|----------------------|-----|----|----|------|-----------|----|-------------------------|
|               | D                    | h   | d1 | m  | c1   | G         | s  |                         |
| M5 x 0.5      | 12.5                 | 5   | 8  | M3 | 2.7  | M5 x 0.5  | 11 | 2                       |
| M6 x 0.75     | 13.5                 | 5   | 9  | M3 | 2.7  | M6 x 0.75 | 12 | 3                       |
| M8 x 1.0      | 16                   | 6.5 | 11 | M3 | 4    | M8 x 1.0  | 14 | 7                       |
| M10 x 1.0     | 19                   | 8   | 13 | M3 | 5.5  | M10 x 1.0 | 16 | 13                      |
| M12 x 1.0     | 22                   | 8   | 16 | M4 | 5.5  | M12 x 1.0 | 19 | 18                      |
| M15 x 1.0     | 25                   | 8   | 19 | M4 | 4.75 | M15 x 1.0 | 22 | 28                      |
| M17 x 1.0     | 29                   | 13  | 21 | M4 | 9    | M17 x 1.0 | 24 | 50                      |
| M20 x 1.0     | 35                   | 11  | 27 | M4 | 7    | M20 x 1.0 | 30 | 80                      |
| M25 x 1.5     | 43                   | 15  | 32 | M6 | 10   | M25 x 1.5 | 35 | 145                     |
| M30 x 1.5     | 48                   | 20  | 37 | M6 | 14   | M30 x 1.5 | 40 | 280                     |
| M35 x 1.5     | 60                   | 21  | 47 | M6 | 14   | M35 x 1.5 | 50 | 400                     |
| M40 x 1.5     | 62                   | 25  | 47 | M6 | 18   | M40 x 1.5 | 50 | 620                     |

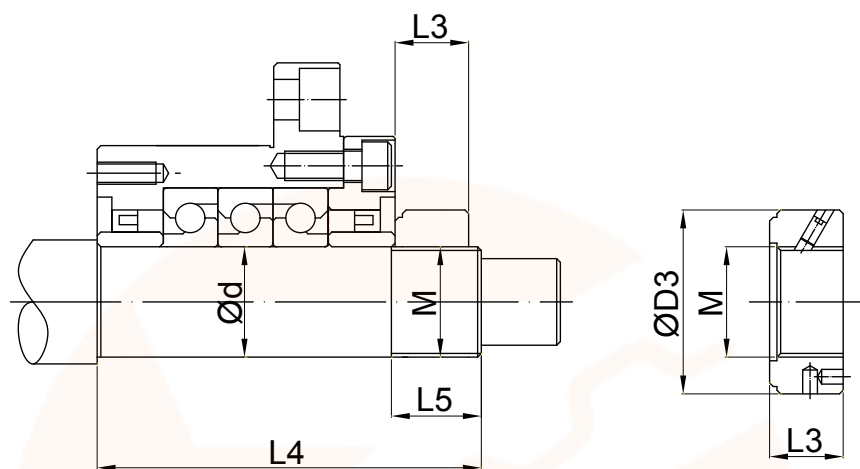
## 8.2 Heavy Load Support Unit Specification

### 8.2.1 WBK Series



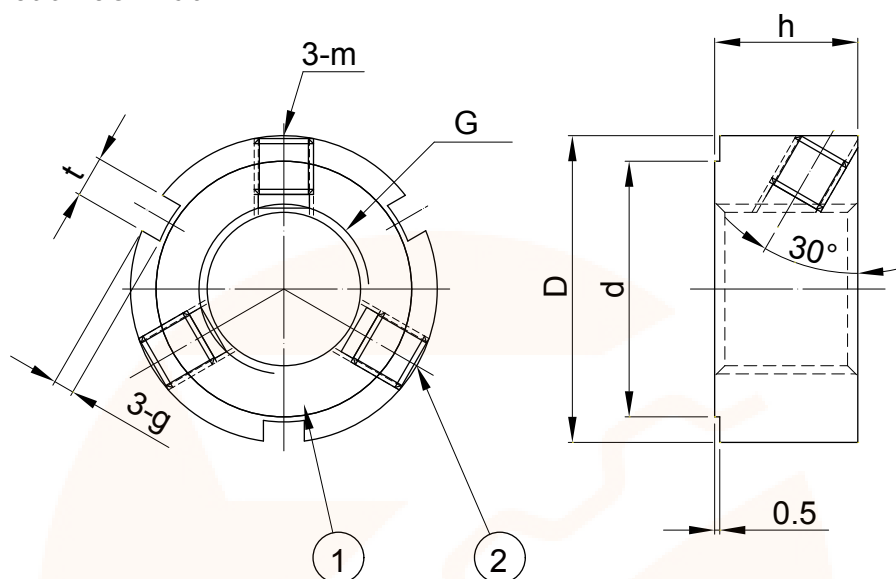
| Specification | Main dimensions (mm) |                                 |     |     |    |    |    |     |     |    |      |     |                             |    |    |    |    |             |
|---------------|----------------------|---------------------------------|-----|-----|----|----|----|-----|-----|----|------|-----|-----------------------------|----|----|----|----|-------------|
|               | d1                   | Dg6                             | D1  | D2  | L  | L1 | L2 | A   | W   | X  | Y    | Z   | d1 H8                       | I* | V* | P* | Q* | Weight (kg) |
| WBK15 DF      | 15                   | 70 <sup>-0.01<br/>-0.029</sup>  | 106 | 72  | 60 | 32 | 15 | 80  | 88  | 9  | 14   | 8.5 | 45 <sup>+0.039<br/>-0</sup> | 3  | 58 | M5 | 10 | 1.9         |
| WBK17 DF      | 17                   | 70 <sup>-0.01<br/>-0.029</sup>  | 106 | 72  | 60 | 32 | 15 | 80  | 88  | 9  | 14   | 8.5 | 45 <sup>+0.039<br/>-0</sup> | 3  | 58 | M5 | 10 | 1.9         |
| WBK20 DF      | 20                   | 70 <sup>-0.01<br/>-0.029</sup>  | 106 | 72  | 60 | 32 | 15 | 80  | 88  | 9  | 14   | 8.5 | 45 <sup>+0.039<br/>-0</sup> | 3  | 58 | M5 | 10 | 1.9         |
| WBK25 DF      | 25                   | 85 <sup>-0.012<br/>-0.034</sup> | 130 | 90  | 66 | 33 | 18 | 100 | 110 | 11 | 17.5 | 11  | 57 <sup>+0.046<br/>-0</sup> | 4  | 70 | M6 | 12 | 3.1         |
| WBK25 DFD     |                      |                                 |     |     | 81 | 48 |    |     |     |    |      |     |                             |    |    |    |    | 3.4         |
| WBK25 DFF     |                      |                                 |     |     | 96 | 48 |    |     |     |    |      |     |                             |    |    |    |    | 3.8         |
| WBK30 DF      | 30                   | 85 <sup>-0.012<br/>-0.034</sup> | 130 | 90  | 66 | 33 | 18 | 100 | 110 | 11 | 17.5 | 11  | 57 <sup>+0.046<br/>-0</sup> | 4  | 70 | M6 | 12 | 3           |
| WBK30 DFD     |                      |                                 |     |     | 81 | 48 |    |     |     |    |      |     |                             |    |    |    |    | 3.3         |
| WBK30 DFF     |                      |                                 |     |     | 96 | 48 |    |     |     |    |      |     |                             |    |    |    |    | 3.8         |
| WBK35 DF      | 35                   | 95 <sup>-0.012<br/>-0.034</sup> | 142 | 102 | 66 | 33 | 18 | 106 | 121 | 11 | 17.5 | 11  | 69 <sup>+0.046<br/>-0</sup> | 4  | 80 | M6 | 12 | 3.4         |
| WBK35 DFD     |                      |                                 |     |     | 81 | 48 |    |     |     |    |      |     |                             |    |    |    |    | 4.3         |
| WBK35 DFF     |                      |                                 |     |     | 96 | 48 |    |     |     |    |      |     |                             |    |    |    |    | 5           |
| WBK40 DF      | 40                   | 95 <sup>-0.012<br/>-0.034</sup> | 142 | 102 | 66 | 33 | 18 | 106 | 121 | 11 | 17.5 | 11  | 69 <sup>+0.046<br/>-0</sup> | 4  | 80 | M6 | 12 | 3.6         |
| WBK40 DFD     |                      |                                 |     |     | 81 | 48 |    |     |     |    |      |     |                             |    |    |    |    | 4.2         |
| WBK40 DFF     |                      |                                 |     |     | 96 | 48 |    |     |     |    |      |     |                             |    |    |    |    | 5.7         |

\* Specification are subject to change without notice.



| Internal diameter (mm) | Specification | Lock Nut |    |    | Support base installation part |     |    |
|------------------------|---------------|----------|----|----|--------------------------------|-----|----|
|                        |               | M        | D3 | L3 | d                              | L4  | L5 |
| Φ 15                   | WBK15 DF      | M15      | 30 | 14 | 15                             | 81  | 23 |
| Φ 17                   | WBK17 DF      | M17      | 32 | 16 | 17                             | 81  | 23 |
| Φ 20                   | WBK20 DF      | M20      | 38 | 16 | 20                             | 81  | 23 |
| Φ 25                   | WBK25 DF      | M25      | 38 | 18 | 25                             | 89  | 26 |
|                        | WBK25 DFD     |          |    |    |                                | 104 |    |
|                        | WBK25 DFF     |          |    |    |                                | 119 |    |
| Φ 30                   | WBK30 DF      | M30      | 45 | 18 | 30                             | 89  | 26 |
|                        | WBK30 DFD     |          |    |    |                                | 104 |    |
|                        | WBK30 DFF     |          |    |    |                                | 119 |    |
| Φ 35                   | WBK35 DF      | M35      | 52 | 18 | 35                             | 92  | 30 |
|                        | WBK35 DFD     |          |    |    |                                | 107 |    |
|                        | WBK35 DFF     |          |    |    |                                | 122 |    |
| Φ 40                   | WBK40 DF      | M40      | 58 | 20 | 40                             | 92  | 30 |
|                        | WBK40 DFD     |          |    |    |                                | 107 |    |
|                        | WBK40 DFF     |          |    |    |                                | 122 |    |

## 8.2.2 Heavy Load Lock Nut



| Part No. | Part name                                     | Qty |
|----------|-----------------------------------------------|-----|
| 1        | Lock Nut                                      | 1   |
| 2        | Hexagonal socket-head setscrew with set piece | 3   |

| Specification | Main dimensions (mm) |    |    |     |   |    |           | Tightening Torque (N-m) |
|---------------|----------------------|----|----|-----|---|----|-----------|-------------------------|
|               | D                    | h  | d  | g   | t | m  | G         |                         |
| M15 x 1.0     | 30                   | 14 | 25 | 2   | 4 | M5 | M15 x 1.0 | 52                      |
| M17 x 1.0     | 32                   | 16 | 27 | 2   | 4 | M5 | M17 x 1.0 | 74                      |
| M20 x 1.0     | 38                   | 16 | 33 | 2   | 4 | M6 | M20 x 1.0 | 118                     |
| M25 x 1.5     | 38                   | 18 | 33 | 2   | 5 | M6 | M25 x 1.5 | 188                     |
| M30 x 1.5     | 45                   | 18 | 40 | 2   | 5 | M6 | M30 x 1.5 | 260                     |
| M35 x 1.5     | 52                   | 18 | 47 | 2   | 5 | M8 | M35 x 1.5 | 340                     |
| M40 x 1.5     | 58                   | 20 | 52 | 2.5 | 6 | M8 | M40 x 1.5 | 500                     |



**ZETEK**