

Linear Slide Unit

High Rigidity Precision Linear Slide Unit
Precision Linear Slide Unit
Linear Slide Unit

BWU · BSP(G)
BSU...A



High Rigidity Precision Linear Slide Unit

BWU



Points

● Simple limited linear motion guide structure

Small and simple limited stroke type structure incorporated with balls and retainer between integrated table and bed. With two-row four-point contact structure, stable accuracy and rigidity can be achieved even in applications where fluctuating load and complex load are applied.

● High accuracy

Simultaneous grinding process of two-row track grooves is applied to table and bed, which provides small processing errors and realizes linear motion of high accuracy.

● Smooth operations

As each component is finished with accuracy without recirculation resistance of the balls, light and smooth operations are obtained.

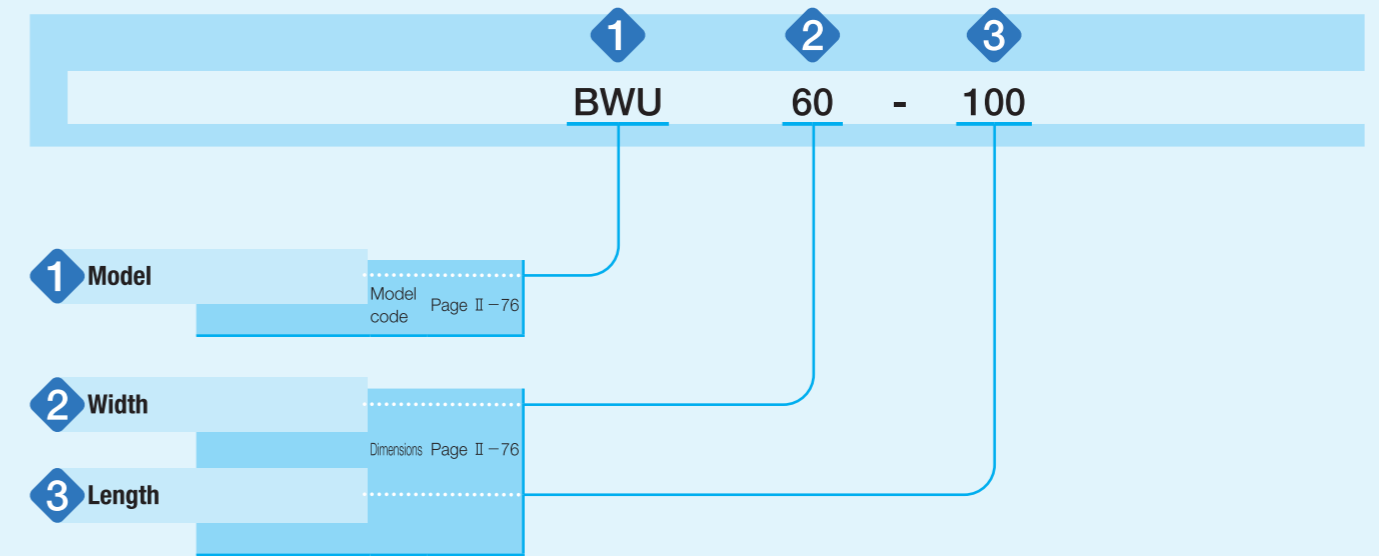
● Stainless steel selections for excellent corrosion resistance

Stainless steel highly resistant to corrosion is used for all steel components, so that they are suitable for applications where rust prevention oil is not preferred, such as in a cleanroom environment.

Identification Number and Specification

Example of an identification number

The specification of BWU series is indicated by the identification number. Indicate the identification number, consisting of a model code and dimensions for each specification to apply.



Identification Number and Specification

| | | |
|-----------------|--|---|
| 1 Model | High Rigidity Precision Linear Slide Unit (BWU series) | : BWU |
| | For applicable models, width and length, see Table 1. | |
| 2 Width | 6, 8, 10, 12, 17, 25, 30, 40, 60 | Indicate the table width in mm. For applicable models, width and length, see Table 1. |
| 3 Length | | Indicate the table length in mm. For applicable models, width and length, see Table 1. |

Table 1 Width and length of BWU series

unit: mm

| Shape | Model | Width | Length | | | | | | | | | | | | |
|-------|-------|-------|--------|----|----|----|----|----|----|----|----|----|----|-----|-----|
| | | | 10 | 15 | 20 | 25 | 30 | 40 | 45 | 60 | 75 | 80 | 90 | 100 | 120 |
| | BWU | 6 | ○ | - | ○ | - | ○ | - | - | - | - | - | - | - | - |
| | | 8 | ○ | - | ○ | - | ○ | - | - | - | - | - | - | - | - |
| | | 10 | - | ○ | - | ○ | - | ○ | - | - | - | - | - | - | - |
| | | 12 | - | - | ○ | - | ○ | - | ○ | - | - | - | - | - | - |
| | | 17 | - | - | ○ | - | ○ | - | ○ | - | - | - | - | - | - |
| | | 25 | - | - | - | - | ○ | - | ○ | ○ | ○ | - | - | - | - |
| | | 30 | - | - | - | - | ○ | - | ○ | ○ | ○ | - | ○ | - | - |
| | | 40 | - | - | - | - | - | ○ | - | ○ | ○ | - | ○ | - | ○ |
| 60 | - | - | - | - | - | - | - | - | ○ | - | ○ | - | ○ | ○ | |

Allowable Load

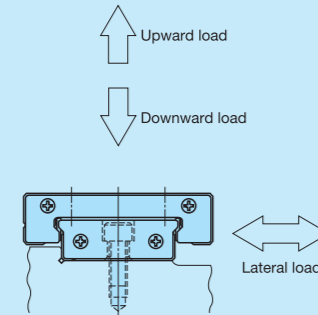
Allowable load refers to load of smooth rolling motion on contact surface to which maximum contact stress is applied and the sum of whose elastic deformation of rolling elements and raceway is small.

Therefore, use applied load within the allowable load range if very smooth rolling motion and high accuracy are required.

Load Direction and Load Rating

The BWU series must be used with its load rating corrected in accordance to the load direction. The basic dynamic load rating and basic static load rating shown in the dimension table should be corrected to values in Table 2.

Table 2 Load ratings corrected for load direction

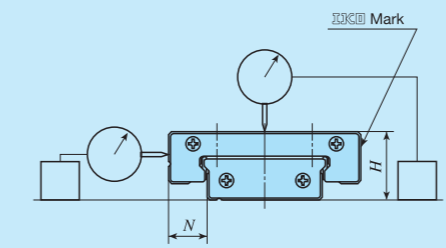


| Load rating and load direction | Basic dynamic load rating | | | Basic static load rating | | |
|--------------------------------|---------------------------|--------|---------|--------------------------|--------|------------|
| | Load direction | | | Load direction | | |
| Width | Downward | Upward | Lateral | Downward | Upward | Lateral |
| 6~60 | C | C | 1.19C | C_0 | C_0 | 1.19 C_0 |

Accuracy

Accuracy of the BWU series is indicated in Table 3 and Table 4.

Table 3 Accuracy



unit: mm


| Item | Tolerance and allowance |
|---------------------------------|-------------------------|
| Dim. H tolerance | ± 0.040 |
| Dim. N tolerance | ± 0.050 |
| Parallelism at the table center | See Table 4 |
| Parallelism on the table side | See Table 4 |

Table 4 Running accuracy

unit: μm

| Nominal length L mm | Parallelism at the table center ⁽¹⁾ | Parallelism on the table side ⁽²⁾ | |
|-----------------------|--|--|------|
| | | | Over |
| — | 50 | 4 | 6 |
| 50 | 80 | 5 | 8 |
| 80 | 120 | 6 | 9 |

Notes ⁽¹⁾ Parallelism at the center of the table represents parallelism of height when the table is stroked.

⁽²⁾ Parallelism at the side of the table represents parallelism of the side (the opposite side of ) when the table is stroked.

Preload

Preload for the BWU series is adjusted to proper preload state.

Lubrication

Grease is not pre-packed in the BWU series, so please perform adequate lubrication as needed.

Upon delivery, anti-rust oil is applied. Therefore, perform cleaning with clean solution before mounting and apply high-quality lubrication oil or grease before use. For grease lubrication, use of high-quality lithium-soap base grease is recommended.

Since no grease nipple or oil hole is provided, apply grease directly to the raceway part of the bed when supplying the grease.

Dust Protection

No dust protection seal is provided for BWU series. For applications in other than clean environment, cover the entire unit with a protective case, etc. to prevent harmful foreign substances such as dust and particles from outside from entering.

Precaution for Use

1 Handling

When high running accuracy is required, set the load point at the center of the table (or bed) and use with sufficient stroke length.

For the BWU series, the retainer may be deviated from the right position due to offset load or irregular and high-velocity motion, etc. Fully stroke it once in certain operating time or certain number of reciprocating motion to correct the retainer position.

Since there is no built-in mechanical stopper to regulate linear motion in the event of collision, install a stopper mechanism in proximity if risk of overstroke exists.

The fixing thread depth of mounting screws for table must not exceed the maximum fixing thread depth indicated in the table of dimensions. Since the mounting screw hole for the table is penetrated, the bed or retainer will be pushed by the screw if the fixing thread depth is too deep, and the running accuracy and life may be adversely affected.

2 Operating temperature

As synthetic resin components are not used for the BWU series, it may be used at high temperature. However, when it exceeds 100°C, contact IKO.

3 Maximum velocity

Operating velocity should not exceed 30 m/min during operation.

Precaution for Mounting

1 Reference mounting surface

Reference mounting surface of the BWU series is the opposite side of the IKO Mark. (See Fig. 1)

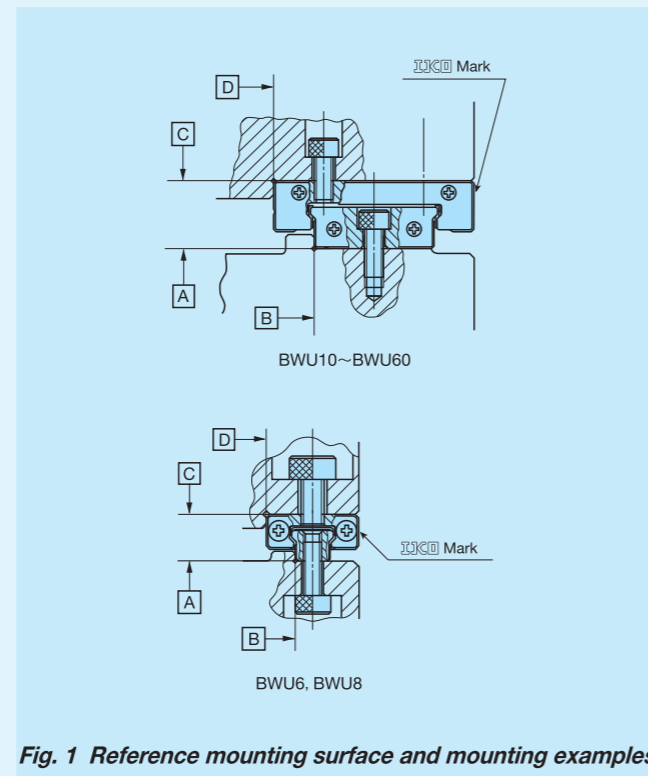


Fig. 1 Reference mounting surface and mounting examples

2 Typical mounting structure

As indicated in Fig.1, reference mounting surfaces B and D, and mounting surfaces A and C are precisely ground. Therefore, by machining the reference mounting surface of the mating member and the mounting surface, such as machine or device, to high accuracy and mounting them properly, stable linear motion with high accuracy is realized. For the opposite corner of the mating reference mounting, it is recommended to have relieved fillet as indicated in the illustration in Table 5. The value indicated in Table 5 is recommended for the shoulder height on the mating side.

Table 5 Shoulder height

unit: mm

| Width | Shoulder height of the table side h_1 | Shoulder height of the bed side h_2 |
|-------|--|--|
| 6 | 1 | 0.5 |
| 8 | 1.2 | 0.8 |
| 10 | 1.2 | 0.8 |
| 12 | 1.5 | 0.8 |
| 17 | 2.5 | 1.2 |
| 25 | 2.5 | 1.5 |
| 30 | 3 | 2 |
| 40 | 3 | 2.5 |
| 60 | 4 | 2.5 |

3 When lateral load is the primary load

As indicated in Fig. 2, firmly fix the sides of the table and bed with pressure plates.

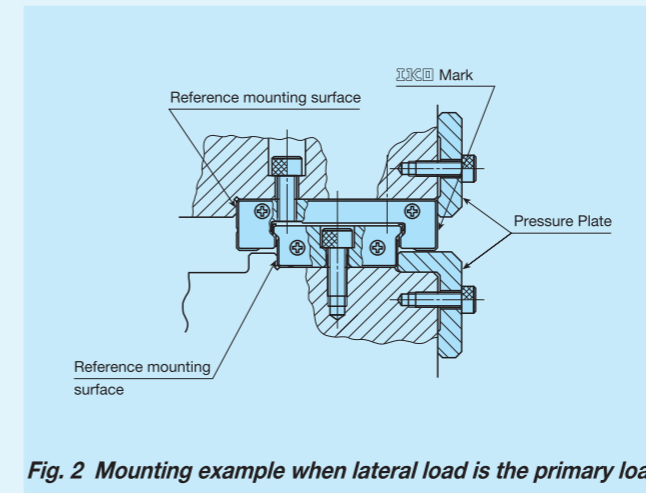


Fig. 2 Mounting example when lateral load is the primary load

4 Tightening torque for fixing screw

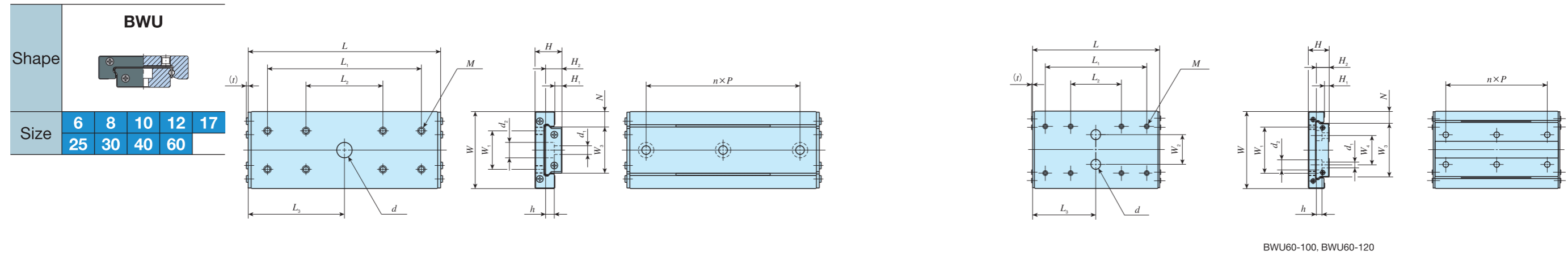
Typical tightening torque for mounting of the BWU series to the steel mating member material is indicated in Table 6. If the mating member material is cast iron or aluminum alloy, reduce the tightening torque depending on the strength characteristics of the mating member material.

Table 6 Tightening torque for fixing screw

| Bolt size | Tightening torque N · m |
|-----------|----------------------------|
| M1 ×0.25 | 0.04 |
| M1.4×0.3 | 0.10 |
| M1.6×0.35 | 0.15 |
| M2 ×0.4 | 0.31 |
| M3 ×0.5 | 1.1 |
| M4 ×0.7 | 2.5 |

Remark: The tightening torque is calculated based on property division A2-70 of stainless steel hexagon socket head bolt.

IKO High Rigidity Precision Linear Slide Unit



BWU60-100, BWU60-120

| Identification number | Mass (Ref.) g | Nominal dimensions mm | | | | | | Table mounting dimensions mm | | | | | | | Bed mounting dimensions mm | | | | | | | | | | Basic dynamic load rating C N | Basic static load rating C ₀ N | Allowable load F N | Static moment rating T ₀ N·m | |
|---------------------------|------------------|-----------------------|-----|----------------|-----|-----|-----------------------|------------------------------|----------------|----------------|------|-----------------------------|----------------|----------------|----------------------------|------|----------------|----------------|----------------|-----|-----|----------------|----------------|-----|-------------------------------------|---|--------------------------|---|------|
| | | W | H | H ₁ | N | L | Maximum stroke length | W ₁ | L ₁ | L ₂ | M | Maximum fixing thread depth | W ₂ | L ₃ | d | t | W ₃ | H ₂ | W ₄ | n | P | d ₁ | d ₂ | h | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | C |
| BWU 6- 10 | 1.0 | 6 | 3.2 | 0.7 | 2 | 10 | 3 | - | 10 | - | M1.4 | 0.8 | - | - | - | 0.46 | 2 | 1.9 | - | 1 | 4 | M1.0 Through | - | - | 154 | 181 | 60.2 | 0.21 | |
| BWU 6- 20 | 2.2 | | | | | 20 | 11 | | | | | | | | | | | | | 18 | 10 | | | | 8 | 252 | 361 | 120 | 0.42 |
| BWU 6- 30 | 3.3 | | | | | 30 | 16 | | | | | | | | | | | | | 26 | 13 | | | | 10 | 355 | 587 | 196 | 0.68 |
| BWU 8- 10 | 1.7 | 8 | 4 | 1 | 2.5 | 10 | 4 | - | 5.5 | - | M2 | 0.8 | - | - | - | 0.45 | 3 | 2.6 | - | 1 | 5 | M1.6 Through | - | - | 203 | 212 | 70.6 | 0.36 | |
| BWU 8- 20 | 3.5 | | | | | 20 | 16 | | | | | | | | | | | | | 21 | 10 | | | | 292 | 353 | 118 | 0.60 | |
| BWU 8- 30 | 5.2 | | | | | 30 | 20 | | | | | | | | | | | | | 31 | 15 | | | | 442 | 635 | 212 | 1.1 | |
| BWU 10- 15 ⁽¹⁾ | 3.2 | 10 | 4 | 1 | 3 | 15 | 8 | - | 6.5 | - | M2 | 0.8 | - | 7.5 | 3 | - | 0.45 | 4 | 2.6 | - | 1 | 5 | 1.8 | 2.8 | 0.75 | 249 | 282 | 94.1 | 0.62 |
| BWU 10- 25 ⁽¹⁾ | 5.7 | | | | | 25 | 16 | | | | | | | | | | | | | | 26 | 13 | | | | 370 | 494 | 165 | 1.1 |
| BWU 10- 40 ⁽¹⁾ | 9.0 | | | | | 40 | 22 | | | | | | | | | | | | | | 26 | 13 | | | | 572 | 917 | 306 | 2.0 |
| BWU 12- 20 ⁽²⁾ | 6.2 | 12 | 4.5 | 1 | 3 | 20 | 16 | - | 8 | - | M2 | 1.1 | - | - | - | 0.45 | 6 | 2.8 | - | 1 | 7.5 | 2.4 | 4 | 1.5 | 292 | 353 | 118 | 1.1 | |
| BWU 12- 30 ⁽²⁾ | 9.5 | | | | | 30 | 20 | | | | | | | | | | | | | 31 | 15 | | | | 442 | 635 | 212 | 2.0 | |
| BWU 12- 45 ⁽²⁾ | 14.1 | | | | | 45 | 30 | | | | | | | | | | | | | 31 | 15 | | | | 603 | 988 | 329 | 3.2 | |
| BWU 17- 20 | 15.0 | 17 | 8 | 1.5 | 5 | 20 | 14 | 12 | 10 | - | M2 | 3 | - | 10 | 4.5 | - | 0.8 | 7 | 5 | - | 1 | 7.5 | 2.4 | 4.2 | 2.3 | 588 | 635 | 212 | 2.5 |
| BWU 17- 30 | 23.7 | | | | | 30 | 19 | | | | | | | | | | | | | | 30 | 20 | | | | 874 | 1 110 | 370 | 4.4 |
| BWU 17- 45 | 35.4 | | | | | 45 | 29 | | | | | | | | | | | | | | 30 | 20 | | | | 1 200 | 1 750 | 582 | 6.9 |
| BWU 25- 30 | 40.6 | 25 | 9 | 1.8 | 5.5 | 30 | 23 | 10 | 15 | - | M3 | 2.5 | - | - | - | 0.9 | 14 | 5.2 | - | 1 | 15 | 3.5 | 6 | 3.2 | 783 | 953 | 318 | 7.1 | |
| BWU 25- 45 | 62.5 | | | | | 45 | 28 | | | | | | | | | | | | | 55 | 25 | | | | 1 200 | 1 750 | 582 | 13.0 | |
| BWU 25- 60 | 84.3 | | | | | 60 | 38 | | | | | | | | | | | | | 55 | 25 | | | | 1 490 | 2 380 | 794 | 17.7 | |
| BWU 25- 75 | 104 | | | | | 75 | 48 | | | | | | | | | | | | | 55 | 25 | | | | 1 760 | 3 020 | 1 010 | 22.5 | |
| BWU 30- 30 | 64.4 | 30 | 12 | 3.4 | 6 | 30 | 23 | 14 | 15 | - | M3 | 3 | - | - | - | 1.0 | 18 | 7.5 | - | 1 | 15 | 3.5 | 6.5 | 4.5 | 1 270 | 1 410 | 470 | 13.4 | |
| BWU 30- 45 | 99.1 | | | | | 45 | 29 | | | | | | | | | | | | | 55 | 25 | | | | 1 920 | 2 540 | 847 | 24.1 | |
| BWU 30- 60 | 133 | | | | | 60 | 35 | | | | | | | | | | | | | 55 | 25 | | | | 2 490 | 3 670 | 1 220 | 34.9 | |
| BWU 30- 75 | 165 | | | | | 75 | 47 | | | | | | | | | | | | | 55 | 25 | | | | 2 880 | 4 520 | 1 510 | 42.9 | |
| BWU 30- 90 | 199 | | | | | 90 | 59 | | | | | | | | | | | | | 55 | 25 | | | | 3 250 | 5 360 | 1 790 | 50.9 | |
| BWU 40- 40 | 136 | | | | | 40 | 14 | | | | | | | | | | | | | 3.5 | 8 | | | | 40 | 31 | 20 | 20 | - |
| BWU 40- 60 | 209 | 60 | 39 | 80 | 40 | | | 3 100 | 3 970 | 1 320 | 50.0 | | | | | | | | | | | | | | | | | | |
| BWU 40- 80 | 281 | 80 | 47 | 80 | 40 | | | 4 010 | 5 730 | 1 910 | 72.2 | | | | | | | | | | | | | | | | | | |
| BWU 40-100 | 346 | 100 | 63 | 80 | 40 | | | 4 640 | 7 060 | 2 350 | 88.9 | | | | | | | | | | | | | | | | | | |
| BWU 60- 60 | 363 | 60 | 16 | 3.6 | 9 | 60 | 34 | 36 | 40 | - | M4 | 4 | - | - | - | 1.1 | 42 | 10 | 23 | 1 | 40 | 4.5 | 8 | 4.5 | 4 740 | 5 690 | 1 900 | 124 | |
| BWU 60- 80 | 487 | | | | | 80 | 45 | | | | | | | | | | | | | 80 | 40 | | | | 5 930 | 7 820 | 2 610 | 171 | |
| BWU 60-100 | 597 | | | | | 100 | 56 | | | | | | | | | | | | | 80 | 40 | | | | 7 020 | 9 960 | 3 320 | 217 | |
| BWU 60-120 | 723 | | | | | 120 | 68 | | | | | | | | | | | | | 80 | 40 | | | | 8 050 | 12 100 | 4 030 | 264 | |

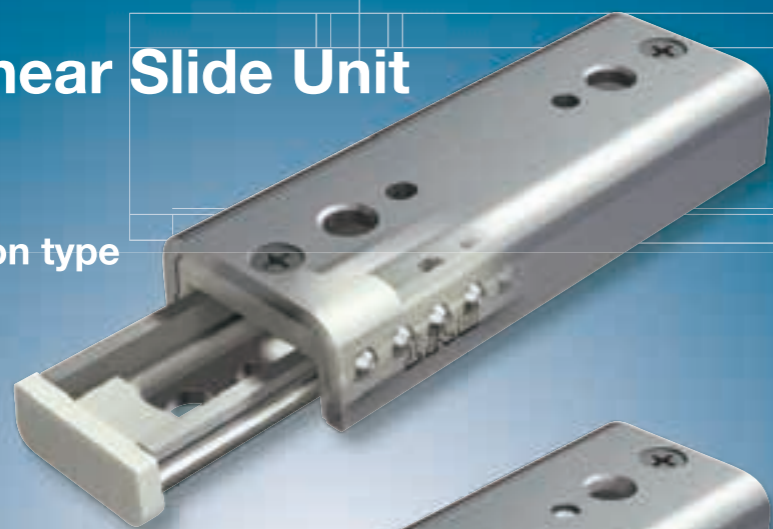
Notes (1) Bed mounting bolts (cross-recessed pan head screw for precision equipment M1.6×5) are appended.
 (2) Bed mounting bolts (cross-recessed pan head screw for precision equipment M2×4) are appended.

BWU · BSP(G)
BSU · A

Precision Linear Slide Unit

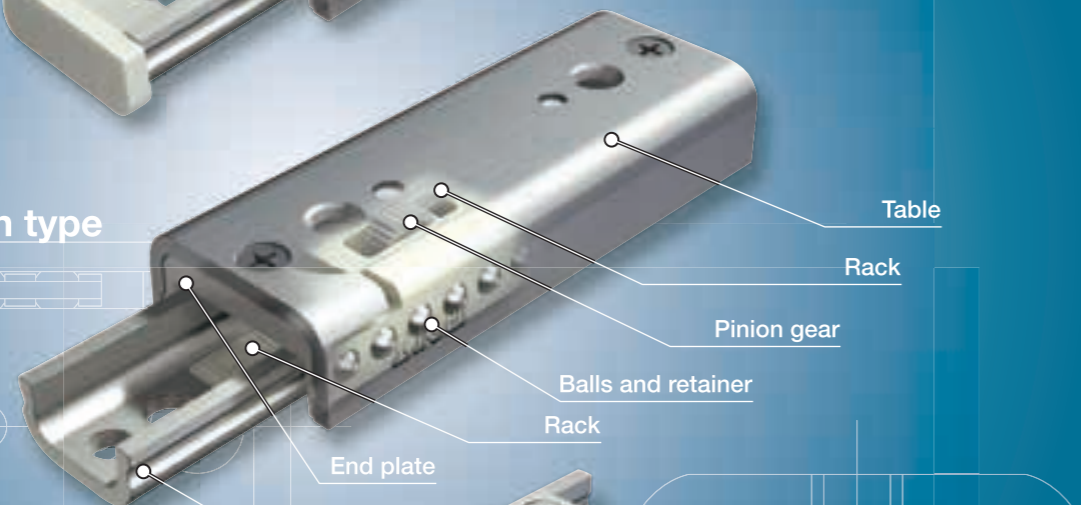
Limited linear motion type

BSP



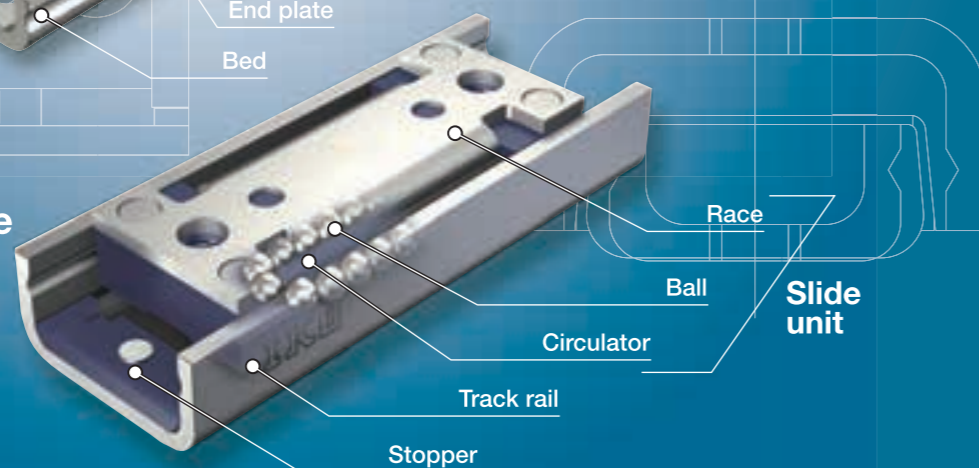
Built-in rack & pinion type

BSPG



Endless linear motion type

BSR



Identification Number and Specification

Example of an identification number

The specifications of BSP, BSPG and BSR are indicated by the identification number. Indicate the identification number, consisting of a model code, dimensions, a material code, and a clearance code for each specification to apply.

| | 1 | 2 | 3 | 4 | 5 |
|--|------|----|----|----|----------------|
| | BSP | 15 | 50 | SL | T ₁ |
| | BSPG | 12 | 35 | SL | T ₁ |
| | BSR | 20 | 60 | SL | T ₁ |

- 1 **Model** Model code Page II-85
- 2 **Width** Dimensions Page II-85
- 3 **Length**
- 4 **Material type** Material code Page II-85
- 5 **Clearance amount** Clearance code Page II-85

BWU · BSP(G)
BSU...A

Points

1 Light weight and compact

Weight is saved by precise forming of stainless steel plate to U shape and integration of the way and mounting surface, and downsizing was realized by functional allocation of parts.

2 Stable performance

With simple two-row four-point contact structure, motion accuracy with stable load carrying capacity and high motion accuracy can be achieved for load in every direction.

3 Quiet and smooth operations

The excellent retaining and guiding mechanism of the ball and precisely-finished raceway realizes very quiet and smooth operations. High response characteristics and positioning accuracy are obtained for micro-feeding operation as well.

4 High safety

Since non-combustible or self-extinguishing materials are used for all synthetic resin components, they may be used for wide range of applications including household office automation equipment that requires incombustibility.

5 Stainless steel selections for excellent corrosion resistance


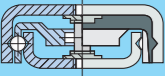
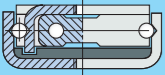
Stainless steel highly resistant to corrosion is used for all steel components, so that they are suitable for applications where rust prevention oil is not preferred, such as in a cleanroom environment.

Identification Number and Specification

| | | | |
|---|-----------------------------|-----------------------------|--------|
| 1 Model | Precision Linear Slide Unit | Limited linear motion type | : BSP |
| | | Built-in rack & pinion type | : BSPG |
| | | Endless linear motion type | : BSR |
| For applicable models and width, see Table 1. | | | |

| | | |
|----------------|---|---------------------------|
| 2 Width | 7, 10, 12, 15, 20, 25 | Indicate the width in mm. |
| | For applicable models and width, see Table 1. | |

Table 1 Models and width

| Shape | Model | Characteristics | Width | | | | | |
|--|-------|---|-------|----|----|----|----|----|
| | | | 7 | 10 | 12 | 15 | 20 | 25 |
| Limited linear motion type  | BSP | Retainer made of special synthetic resin is used to prevent interference noise from contact of balls. This type performs very smooth and light limited linear motion without stick-slip. | ○ | ○ | — | ○ | ○ | ○ |
| Built-in rack & pinion type  | BSPG | A pinion gear assembled in the retainer integrated with two-row ball raceway is engaged with the racks fixed to the table and bed to prevent creeping of retainer position. Like BSP, this type also performs smooth linear motion. | — | — | ○ | ○ | ○ | ○ |
| Endless linear motion type  | BSR | The ball circulation structure made of special synthetic resin realizes quiet and smooth endless linear motion according to the length of a track rail. | — | — | ○ | ○ | ○ | ○ |

| | | |
|-----------------|--|----------------------------|
| 3 Length | | Indicate the length in mm. |
| | | |

| | | | |
|------------------------|----------------------|------|---|
| 4 Material type | Stainless steel made | : SL | Stainless steel (SL) can be specified only for the material type. |
| | | | |

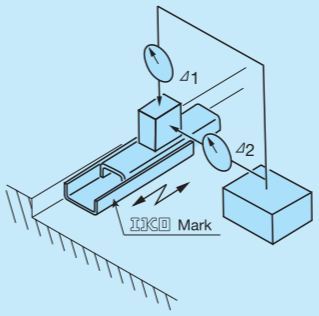
| | | | |
|---------------------------|--------------------------|------------------|--|
| 5 Clearance amount | Standard | : No symbol | For details of clearance amount, see Table 2. |
| | T ₁ Clearance | : T ₁ | Typically, apply the standard clearance for use in small frictional resistance and the clearance adjusted to the clearance code T ₁ for applications requiring high linear motion accuracy. |

Table 2 Clearance of raceways unit: μm

| Type and code | Clearance of raceways |
|----------------------|-----------------------|
| Standard (no symbol) | 0 ~ +4 |
| T ₁ | -4 ~ 0 |

Accuracy

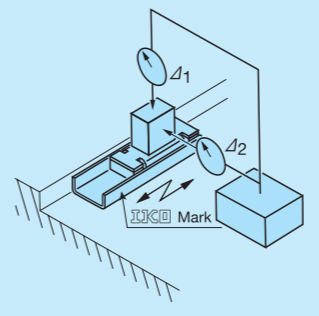
Table 3 Running accuracy for BSP and BSPG



unit: μm

| Stroke length mm | | Parallelism at the bed center against the table mounting surface Δ ₁ | Parallelism at the bed center against the table reference mounting surface Δ ₂ |
|------------------|-------|---|---|
| Over | Incl. | | |
| — | 18 | 3 | 6 |
| 18 | 30 | 4 | 8 |
| 30 | 50 | 5 | 10 |
| 50 | 80 | 6 | 12 |

Table 4 Running accuracy for BSR



unit: μm

| Stroke length mm | | Parallelism at the slide unit center against the track rail mounting surface Δ ₁ | Parallelism at the slide unit center against the track rail reference mounting surface Δ ₂ |
|------------------|-------|---|---|
| Over | Incl. | | |
| — | 18 | 3 | 6 |
| 18 | 30 | 4 | 8 |
| 30 | 50 | 5 | 10 |
| 50 | 80 | 6 | 12 |

Lubrication

Grease is not pre-packed in the BSP and BSR, so please perform adequate lubrication as needed.

Upon delivery, anti-rust oil is applied. Therefore, perform cleaning with clean solution before mounting, apply high-quality lubrication oil or grease to the raceway, and conduct shakedown before use.

The BSPG is packed with special grease applied to the raceway and rack and pinion. In general applications, keep cleanliness and mount it as it is.

Precaution for Use

1 Applied load

For use with stable and high running accuracy, it is recommended to use applied load around 20% or lower of the basic static load rating.

2 Handling

When high running accuracy is required for BSP and BSPG, set the load point at the center of the table (or bed) and use with sufficient stroke length.

For the BSP, the retainer may be deviated from the right position due to offset load or irregular and high-velocity motion, etc. Fully stroke it once in certain operating time or certain number of reciprocating motion to correct the retainer position. If it is difficult to correct the retainer position, use BSPG or BSR.

Since BSP, BSPG and BSR have no built-in mechanical stopper to regulate linear motion in the event of collision, install a stopper mechanism in proximity if risk of overstroke exists.

3 Operating temperature

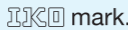
The maximum operating temperature is 120°C and temperature up to 100°C is allowed for continuous operation. However, when it exceeds 100°C, contact IKO.

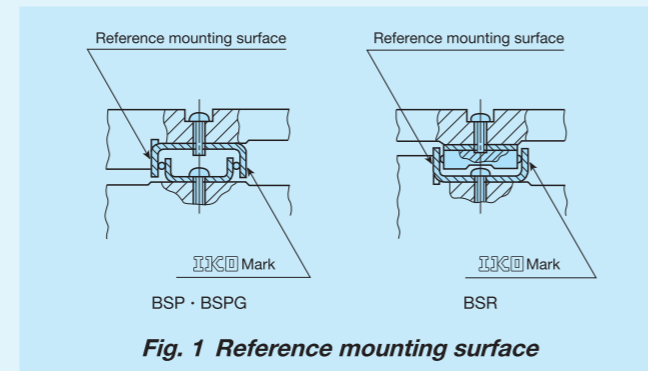
4 Maximum velocity

Operating velocity should not exceed 30 m/min during operation.

Precaution for Mounting

1 Reference mounting surface

Reference mounting surface is the opposite side of the  mark.



2 Typical mounting structure

The mating surface to mount BSP, BSPG and BSR should be finished to high accuracy as much as possible so as not to affect the motion accuracy.

For the opposite corner of the mating reference mounting, it is recommended to have relieved fillet as indicated in Fig. 1, but you may also mount it based on R_1 dimension indicated in Table 5. The value indicated in Table 5 is recommended for the shoulder height on the mating side.

3 Mounting

The fixing thread depth of fixing screws must not exceed the maximum fixing thread depth indicated in the dimension table.

When mounting BSP and BSPG, use female screws of the table and bed, or insert screws smaller by one size to the female screws. However, note that BSP 715 SL through BSP 740 SL cannot be mounted from the inside of the table and bed.

When mounting the track rail of BSR, use female screws of the track rail or insert screws smaller by one size to the female screws. However, note that BSR 1530 SL through BSR 2040 SL cannot be mounted from the inside of the track rail. In addition, when BSR 1230 SL through BSR 1260 SL are to be mounted from the inside of the track rail, contact IKO.

Table 5 Shoulder height and corner radius of the reference mounting surface

unit: mm

| Identification number | | | Shoulder height h_s | Corner radius R_1 (maximum) |
|-----------------------|---------|--------|--------------------------|----------------------------------|
| — | — | BSR 12 | 2.5 | 0.5 |
| BSP 7 | — | — | 3 | |
| BSP 10 | — | — | 4 | |
| — | BSPG 12 | — | 5 | |
| BSP 15 | BSPG 15 | BSR 15 | 6 | |
| BSP 20 | BSPG 20 | BSR 20 | — | |
| BSP 25 | BSPG 25 | BSR 25 | — | — |

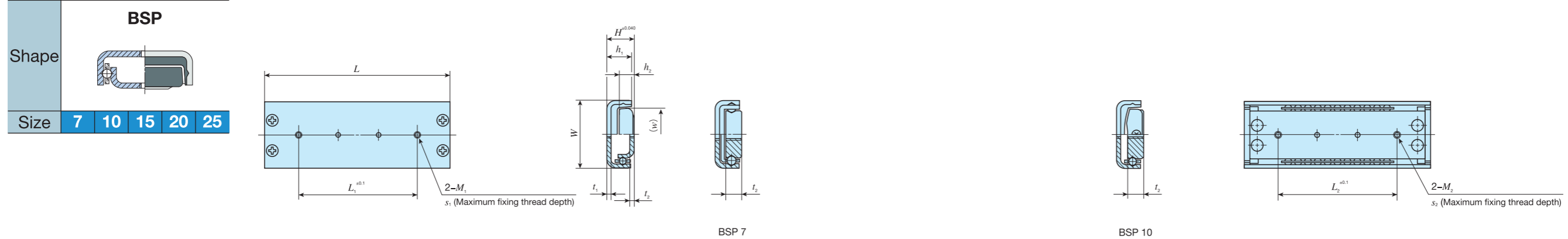
4 Tightening torque for fixing screw

If the fixing force of BSP, BSPG and BSR toward the mating surface is too strong, performance and accuracy are adversely affected. Although it depends on material, rigidity and finishing condition of the mating surface, it is generally recommended to use smaller tightening torque for fixing screws and use value comparable to Table 6. In addition, use a stopper measure such as adhesive agent if fixing screw may be loosened by vibration, etc.

Table 6 Tightening torque for fixing screw

| Bolt size | Tightening torque N · m |
|-------------|----------------------------|
| M2 × 0.4 | 0.065 |
| M2.3 × 0.4 | 0.10 |
| M2.6 × 0.45 | 0.15 |
| M3 × 0.5 | 0.24 |

Limited linear motion type



| Identification number | Mass (Ref.) g | Nominal dimensions mm | | | | Table mounting dimensions mm | | | | | | Bed mounting dimensions mm | | | | | | Basic dynamic load rating C N | Basic static load rating C ₀ N |
|----------------------------|------------------|--------------------------|----|-----|-----------------------|---------------------------------|----------------|---|----------------|----------------|------|-------------------------------|----------------|---|----------------|----------------|-------|-------------------------------------|---|
| | | W | H | L | Maximum stroke length | L ₁ | M ₁ | Maximum fixing thread depth s ₁ | h ₁ | t ₁ | w | L ₂ | M ₂ | Maximum fixing thread depth s ₂ | h ₂ | t ₂ | | | |
| BSP 7 15 SL ⁽¹⁾ | 2.1 | 7 | 4 | 15 | 9 | 5 | M2 | 1 | 3.4 | 0.9 | 3.6 | 5 | M2 | 2 | - | 2 | 93.3 | 42.0 | |
| BSP 7 20 SL ⁽¹⁾ | 2.8 | | | 20 | | 10 | | | | | | 10 | | | | | 134 | 70.0 | |
| BSP 7 30 SL ⁽¹⁾ | 4.2 | | | 30 | | 20 | | | | | | 20 | | | | | 170 | 98.0 | |
| BSP 7 40 SL ⁽¹⁾ | 5.6 | | | 40 | | 30 | | | | | | 30 | | | | | 203 | 126 | |
| BSP 10 25 SL | 6.2 | 10 | 6 | 25 | 15 | 15 | M2.6 | 1.5 | 5.8 | 1.1 | 6.2 | 15 | M2.6 | 2.7 | 3.7 | 2.7 | 340 | 156 | |
| BSP 10 35 SL | 8.8 | | | 35 | | 25 | | | | | | 25 | | | | | 398 | 194 | |
| BSP 10 45 SL | 11.3 | | | 45 | | 35 | | | | | | 35 | | | | | 453 | 233 | |
| BSP 15 30 SL | 11 | 15 | 8 | 30 | 22 | 14 | M3 | 2.5 | 7 | 1.2 | 11.2 | 14 | M3 | 3 | 4.5 | 1.2 | 395 | 194 | |
| BSP 15 40 SL | 14.7 | | | 40 | | 24 | | | | | | 24 | | | | | 550 | 311 | |
| BSP 15 50 SL | 18.4 | | | 50 | | 32 | | | | | | 34 | | | | | 644 | 389 | |
| BSP 15 60 SL | 22.1 | | | 60 | | 40 | | | | | | 40 | | | | | 732 | 467 | |
| BSP 20 40 SL | 23.7 | 20 | 10 | 40 | 22 | 24 | M3 | 3.2 | 9 | 1.4 | 16 | 24 | M3 | 3.5 | 6.2 | 1.4 | 726 | 386 | |
| BSP 20 50 SL | 29.7 | | | 50 | | 28 | | | | | | 34 | | | | | 866 | 496 | |
| BSP 20 60 SL | 35.7 | | | 60 | | 34 | | | | | | 40 | | | | | 998 | 606 | |
| BSP 20 70 SL | 41.7 | | | 70 | | 40 | | | | | | 45 | | | | | 1 120 | 717 | |
| BSP 20 80 SL | 47.6 | | | 80 | 53 | 50 | | | | | | 50 | | | | | 1 180 | 772 | |
| BSP 25 50 SL | 37.6 | 25 | 10 | 50 | 26 | 34 | M3 | 3.5 | 9 | 1.6 | 20.5 | 34 | M3 | 3 | 5.7 | 1.6 | 866 | 496 | |
| BSP 25 60 SL | 45.3 | | | 60 | | 32 | | | | | | 40 | | | | | 998 | 606 | |
| BSP 25 70 SL | 52.9 | | | 70 | | 40 | | | | | | 45 | | | | | 1 120 | 717 | |
| BSP 25 80 SL | 60.5 | | | 80 | | 51 | | | | | | 50 | | | | | 1 180 | 772 | |
| BSP 25 100 SL | 75.8 | | | 100 | 63 | 60 | | | | | | 60 | | | | | 1 410 | 992 | |

Note (1) BSP 715 SL through BSP 740 SL cannot be mounted from the inside of the table and bed.

IKO Precision Linear Slide

Built-in rack & pinion type

| | | | | |
|-------|------|----|----|----|
| Shape | BSPG | | | |
| Size | 12 | 15 | 20 | 25 |



| Identification number | Mass (Ref.) g | Nominal dimensions mm | | | | Table mounting dimensions mm | | | | | | Bed mounting dimensions mm | | | | | | Basic dynamic load rating C N | Basic static load rating C ₀ N |
|-----------------------|------------------|--------------------------|----|-----|-----------------------|---------------------------------|----------------|---|----------------|----------------|----------------|-------------------------------|----------------|----------------|---|----------------|----------------|--|--|
| | | W | H | L | Maximum stroke length | L ₁ | M ₁ | Maximum fixing thread depth s ₁ | h ₁ | t ₁ | L _b | w | L ₂ | M ₂ | Maximum fixing thread depth s ₂ | h ₂ | t ₂ | | |
| BSPG 12 25 SL | 6.5 | 12 | 6 | 25 | 14 | 15 | M2.6 | 2 | 5.2 | 1.2 | 23.6 | 7.6 | 15 | M2.6 | 2 | 3 | 1 | 244 | 131 |
| BSPG 12 35 SL | 9.0 | | | 35 | 24 | 24 | | | | | 33.6 | | 24 | | | | | 299 | 175 |
| BSPG 12 45 SL | 11.6 | | | 45 | 34 | 34 | | | | | 43.6 | | 34 | | | | | 350 | 219 |
| BSPG 15 40 SL | 15.8 | 15 | 8 | 40 | 24 | 24 | M3 | 2.5 | 7 | 1.2 | 37 | 9.6 | 24 | M3 | 3 | 4.5 | 1.2 | 550 | 311 |
| BSPG 15 50 SL | 19.6 | | | 50 | 32 | 34 | | | | | 47 | | 34 | | | | | 644 | 389 |
| BSPG 15 60 SL | 23.5 | | | 60 | 40 | 40 | | | | | 57 | | 40 | | | | | 732 | 467 |
| BSPG 20 40 SL | 25.5 | 20 | 10 | 40 | 22 | 24 | M3 | 3.2 | 9 | 1.4 | 37 | 13.8 | 24 | M3 | 3.5 | 6.2 | 1.4 | 726 | 386 |
| BSPG 20 50 SL | 31.8 | | | 50 | 28 | 34 | | | | | 47 | | 34 | | | | | 866 | 496 |
| BSPG 20 60 SL | 38.1 | | | 60 | 34 | 40 | | | | | 57 | | 40 | | | | | 998 | 606 |
| BSPG 20 70 SL | 44.4 | | | 70 | 40 | 45 | | | | | 67 | | 45 | | | | | 1 120 | 717 |
| BSPG 20 80 SL | 50.5 | | | 80 | 47 | 50 | | | | | 77 | | 50 | | | | | 1 240 | 827 |
| BSPG 25 50 SL | 40.3 | 25 | 10 | 50 | 26 | 34 | M3 | 3.5 | 9 | 1.6 | 46 | 18.4 | 34 | M3 | 3 | 5.7 | 1.6 | 866 | 496 |
| BSPG 25 60 SL | 48.3 | | | 60 | 32 | 40 | | | | | 56 | | 40 | | | | | 998 | 606 |
| BSPG 25 70 SL | 56.2 | | | 70 | 38 | 45 | | | | | 66 | | 45 | | | | | 1 120 | 717 |
| BSPG 25 80 SL | 64.1 | | | 80 | 44 | 50 | | | | | 76 | | 50 | | | | | 1 240 | 827 |
| BSPG 25 100 SL | 80.0 | | | 100 | 56 | 60 | | | | | 96 | | 60 | | | | | 1 460 | 1 050 |

BWU · BSP(G)
BSU...A

IKO Precision Linear Slide

Endless linear motion type

| | | | | |
|-------|-----|----|----|----|
| Shape | BSR | | | |
| Size | 12 | 15 | 20 | 25 |

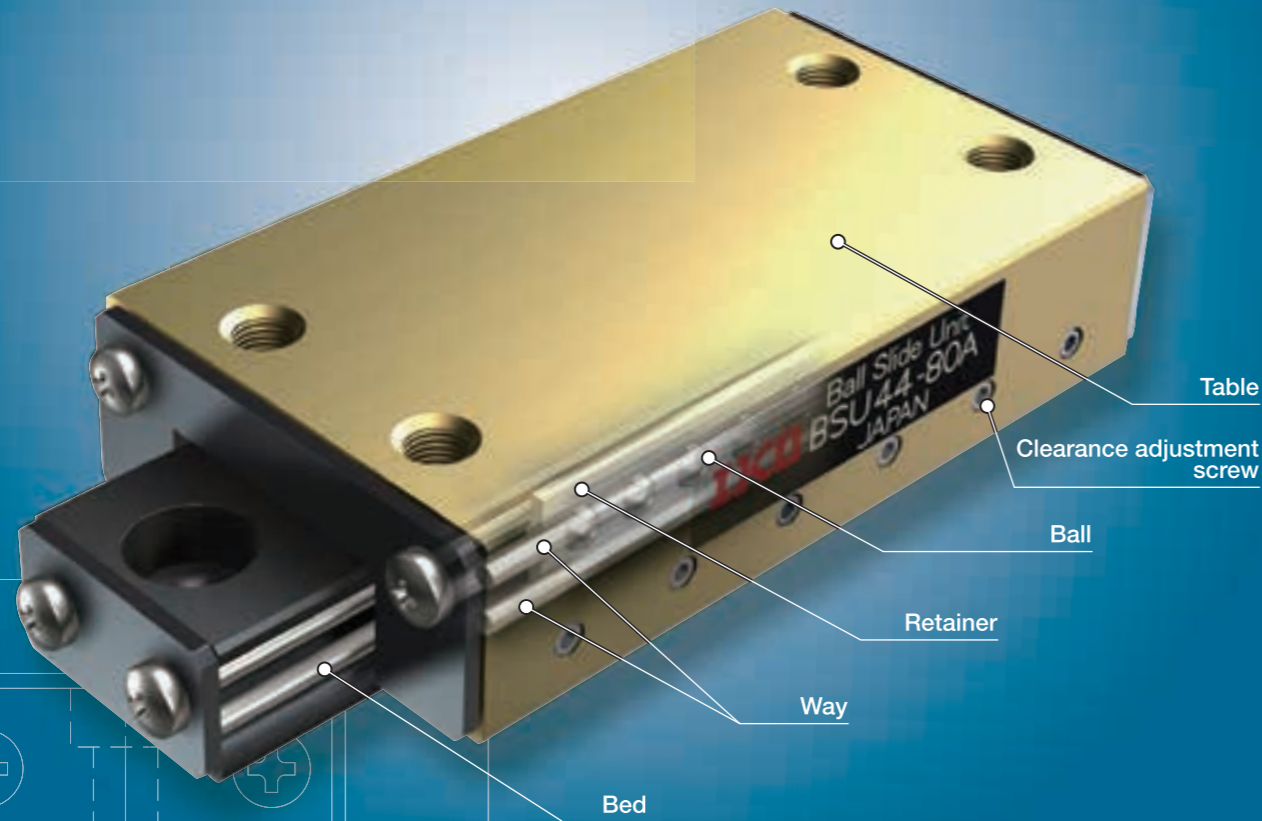


| Identification number | Mass (Ref.) g | Nominal dimensions mm | | | | Slide Unit mm | | | Mounting dimensions | | | Track rail mounting dimensions mm | | | | Basic dynamic load rating C N | Basic static load rating C ₀ N | |
|-----------------------------|------------------|--------------------------|-----|-----|-----------------------|------------------|----------------|----------------|---------------------|---|----------------|--------------------------------------|----------------|---|---|--|--|----------------|
| | | W | H | L | Maximum stroke length | w | L ₀ | L ₁ | M ₁ | Maximum fixing thread depth s ₁ | t ₁ | L ₂ | M ₂ | Maximum fixing thread depth s ₂ | h | | | t ₂ |
| BSR 12 30 SL ⁽¹⁾ | 5.8 | 12 | 4.5 | 30 | 13 | 9.8 | 21.5 | 15 | M2 | 1.3 | 0.9 | 15 | M2 | 1.6 | 4 | 0.9 | 214 | 140 |
| BSR 12 40 SL ⁽¹⁾ | 7.0 | | | 40 | 23 | | | | | | | 20 | | | | | | |
| BSR 12 50 SL ⁽¹⁾ | 8.2 | | | 50 | 33 | | | | | | | 34 | | | | | | |
| BSR 12 60 SL ⁽¹⁾ | 9.3 | | | 60 | 43 | | | | | | | 40 | | | | | | |
| BSR 15 30 SL ⁽²⁾ | 12.6 | 15 | 8 | 30 | 10 | 12.2 | 30 | 24 | M3 | 1.8 | 1 | 14 | M3 | 3 | 7 | 1.2 | 543 | 311 |
| BSR 15 40 SL | 14.8 | | | 40 | 20 | | | | | | | 24 | | | | | | |
| BSR 15 50 SL | 17.1 | | | 50 | 30 | | | | | | | 34 | | | | | | |
| BSR 15 60 SL | 19.3 | | | 60 | 40 | | | | | | | 40 | | | | | | |
| BSR 20 40 SL ⁽²⁾ | 27.6 | 20 | 10 | 40 | 12 | 16.8 | 40 | 32 | M3 | 2.2 | 1.4 | 24 | M3 | 3.5 | 9 | 1.4 | 921 | 551 |
| BSR 20 50 SL | 31.1 | | | 50 | 22 | | | | | | | 34 | | | | | | |
| BSR 20 60 SL | 34.6 | | | 60 | 32 | | | | | | | 40 | | | | | | |
| BSR 20 70 SL | 38.1 | | | 70 | 42 | | | | | | | 45 | | | | | | |
| BSR 20 80 SL | 41.6 | 25 | 10 | 80 | 52 | 21.4 | 50 | 42 | M3 | 2.4 | 1.6 | 50 | M3 | 3.5 | 9 | 1.6 | 1 170 | 772 |
| BSR 25 70 SL | 53.8 | | | 70 | 33 | | | | | | | 45 | | | | | | |
| BSR 25 80 SL | 58.4 | | | 80 | 43 | | | | | | | 50 | | | | | | |
| BSR 25 100 SL | 67.4 | | | 100 | 63 | | | | | | | 60 | | | | | | |

Notes ⁽¹⁾ When BSR 1230 SL through BSR 1260 SL are to be mounted from the inside of the track rail, contact IKO.
⁽²⁾ BSR 1530 SL and BSR 2040 SL cannot be mounted from the inside of the track rail.

Linear Slide Unit

BSU...A



Points

● Light weight linear motion guide unit

Since the product uses aluminum alloy for table and bed, it is a light weight and compact limited linear motion guide unit.

● Easy mounting

Since the product is properly preloaded, it can easily gain a stable linear motion only by fixing it against precisely grounded mounting surface with bolts.

● Smooth operations

Since the ball is guided by the retainer made of synthetic resin and rotates on high accuracy round shank way, it can obtain a light and smooth motion.

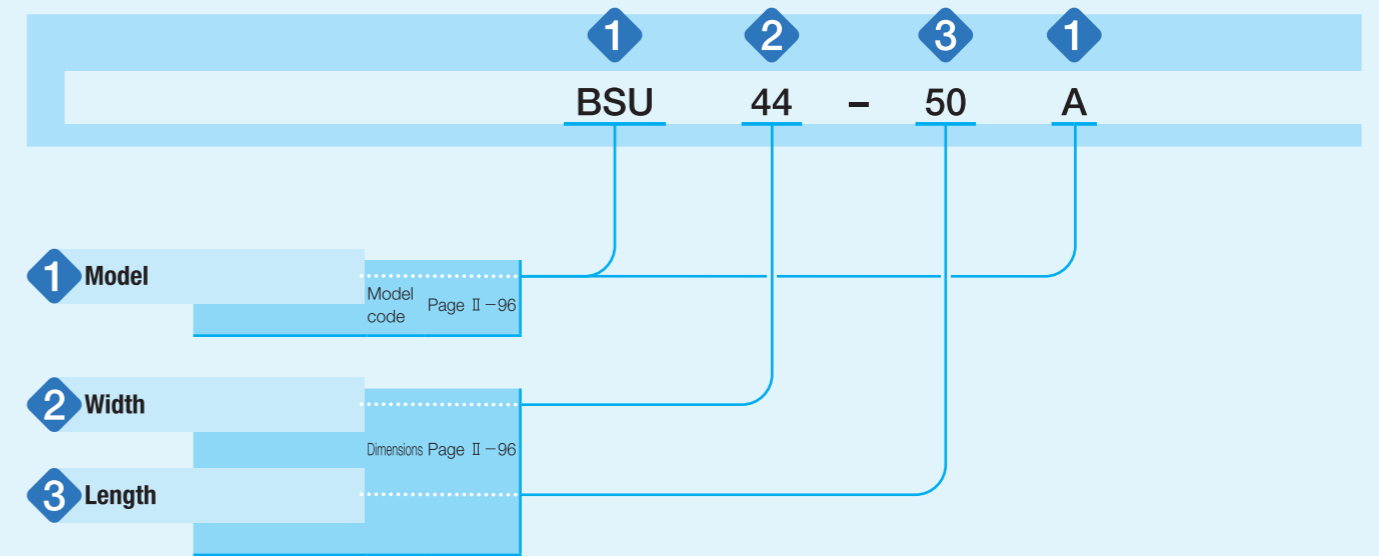
● Excellent corrosion resistance

The ball and way are made of stainless steel and the surface of table and bed have anodic oxidization coating, allowing high corrosion resistance.

Identification Number and Specification

Example of an identification number

The specification of BSU...A series is indicated by the identification number. Indicate the identification number, consisting of a model code and dimensions for each specification to apply.



Identification Number and Specification

| | | |
|----------|---|--|
| 1 Model | Linear Slide Unit | : BSU...A |
| | For applicable models, width and length, see Table 1. | |
| 2 Width | 44, 66 | Indicate the table width in mm. For applicable models, width and length, see Table 1. |
| 3 Length | | Indicate the length in mm. For applicable models, width and length, see Table 1. |

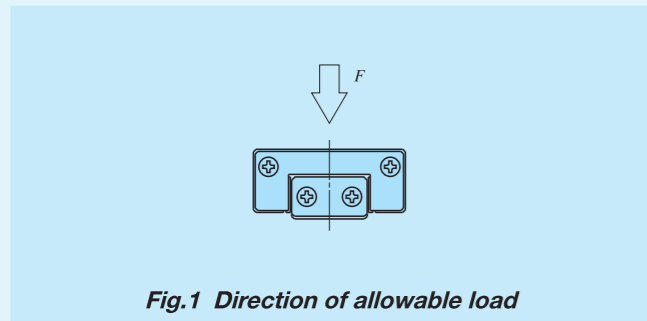
Table 1 Width and length of BSU...A series

unit: mm

| Shape | Model | Width | Length | | | | |
|-------|---------|-------|--------|----|-----|-----|-----|
| | | | 50 | 80 | 100 | 125 | 150 |
| | BSU...A | 44 | ○ | ○ | ○ | — | — |
| | | 66 | — | — | ○ | ○ | ○ |

Allowable Load

Allowable load refers to load of smooth rolling motion on contact surface to which maximum contact stress is applied and the sum of whose elastic deformation of rolling elements and raceway is small.



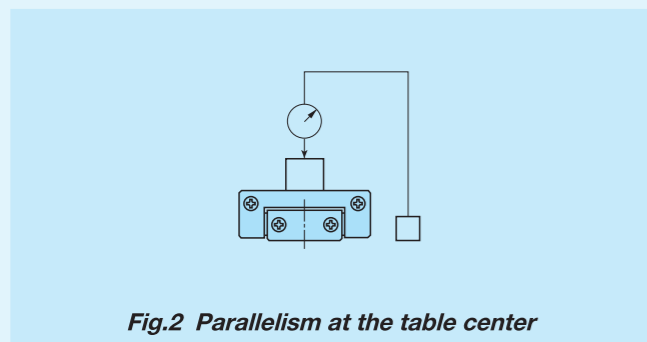
Lubrication

Grease is not pre-packed in the BSU...A series, so perform adequate lubrication as needed. Perform cleaning with clean solution before mounting and apply high-quality lubrication oil or grease to the raceway before use.

Accuracy

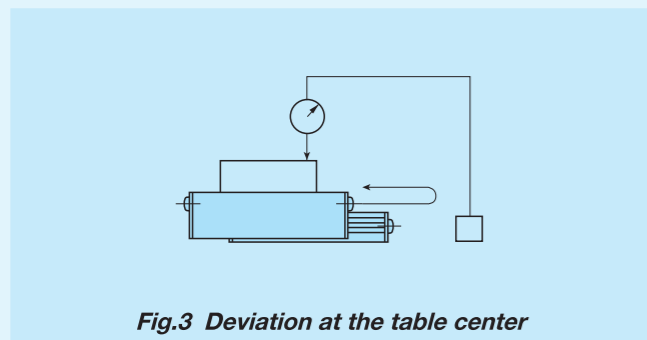
1 Running accuracy

Parallelism at the table center against the bed mounting surface (see Fig. 2): 10 μm / 10 mm



2 Allowance of deviation at the table center

Deviation at the table center after stroking the table and returning to the same position (see Fig. 3): 1.5 μm



Precaution for Use

1 Handling

When high running accuracy is required, set the load point at the center of the table (or bed) and use with sufficient stroke length.

For the BSU...A series, the retainer may be deviated from the right position due to offset load or irregular and high-velocity motion, etc. Fully stroke it once in certain operating time or certain number of reciprocating motion to correct the retainer position.

Since BSU...A series have small allowable load F , handling requires special care. Especially when clearance adjustment is performed, too much tightening of clearance adjustment screw will create impression on ball or way, which can adversely affect the friction, noise and vibration of the bearing. When performing clearance adjustment, gradually rotate the clearance adjustment screw by checking the motion status and paying special attention.

2 Operating temperature

The table and bed of BSU...A series are made of aluminum alloy, and the clearance may change by the operating temperature. When using in the temperature outside the normal temperature, contact IKO. When using in wide operating temperature range, it is recommended to use IKO High Rigidity Precision Linear Slide Unit.

3 Maximum velocity

Operating velocity should not exceed 30 m/min during operation.

Precaution for Mounting

1 Mounting

The fixing thread depth of fixing screws must not exceed the maximum fixing thread depth indicated in the dimension table. Since the fixing screw hole for the table is penetrated, the bed or retainer will be pushed by the screw if the fixing thread depth is too deep, and the running accuracy and life may be adversely affected.

2 Tightening torque for fixing screw

Typical tightening torque for mounting of the BSU...A series to the steel mating member material is indicated in Table 2. If the mating member material is cast iron or aluminum alloy, reduce the tightening torque depending on the strength characteristics of the mating member material.

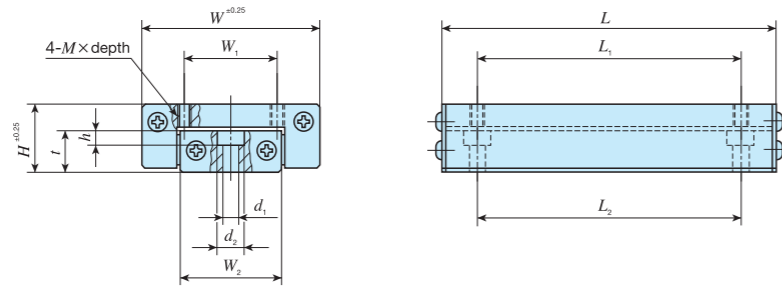
Table 2 Tightening torque for fixing screw

| Bolt size | Tightening torque N · m |
|-----------|----------------------------|
| M5×0.8 | 5.0 |

Remark: The tightening torque is calculated based on property division A2-70 of stainless steel hexagon socket head bolt.

IKO Linear Slide Unit

| | | |
|-------|---------|----|
| Shape | BSU...A | |
| | | |
| Size | 44 | 66 |



| Identification number | Mass (Ref.) g | Nominal dimensions mm | | | | Table mounting dimensions mm | | | | Bed mounting dimensions mm | | | | | Allowable load <i>F</i> N |
|-----------------------|------------------|--------------------------|----------|----------|---------------|---------------------------------|-----------------------|-----------------|-----------------------|-------------------------------|-----------------------|-----------------------|-----------------------|----------|---------------------------------|
| | | <i>H</i> | <i>W</i> | <i>L</i> | Stroke length | <i>W</i> ₁ | <i>L</i> ₁ | <i>M</i> ×depth | <i>W</i> ₂ | <i>t</i> | <i>L</i> ₂ | <i>d</i> ₁ | <i>d</i> ₂ | <i>h</i> | |
| BSU 44- 50 A | 110 | 20 | 44 | 50 | 25 | 20 | 35 | M5×7 | 21.8 | 12.3 | 35 | 5.3 | 10 | 5.3 | 98.1 |
| BSU 44- 80 A | 175 | | | 80 | 50 | | 65 | | | | 65 | | | | 177 |
| BSU 44-100 A | 220 | | | 100 | 75 | | 85 | | | | 85 | | | | 235 |
| BSU 66-100 A | 420 | 25 | 66 | 100 | 50 | 35 | 75 | M5×8 | 37 | 16 | 75 | 5.3 | 10 | 5.3 | 265 |
| BSU 66-125 A | 525 | | | 125 | 75 | | 100 | | | | 100 | | | | 392 |
| BSU 66-150 A | 625 | | | 150 | 100 | | 125 | | | | 125 | | | | 510 |

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 BSU...A