

## Linear Slide Unit

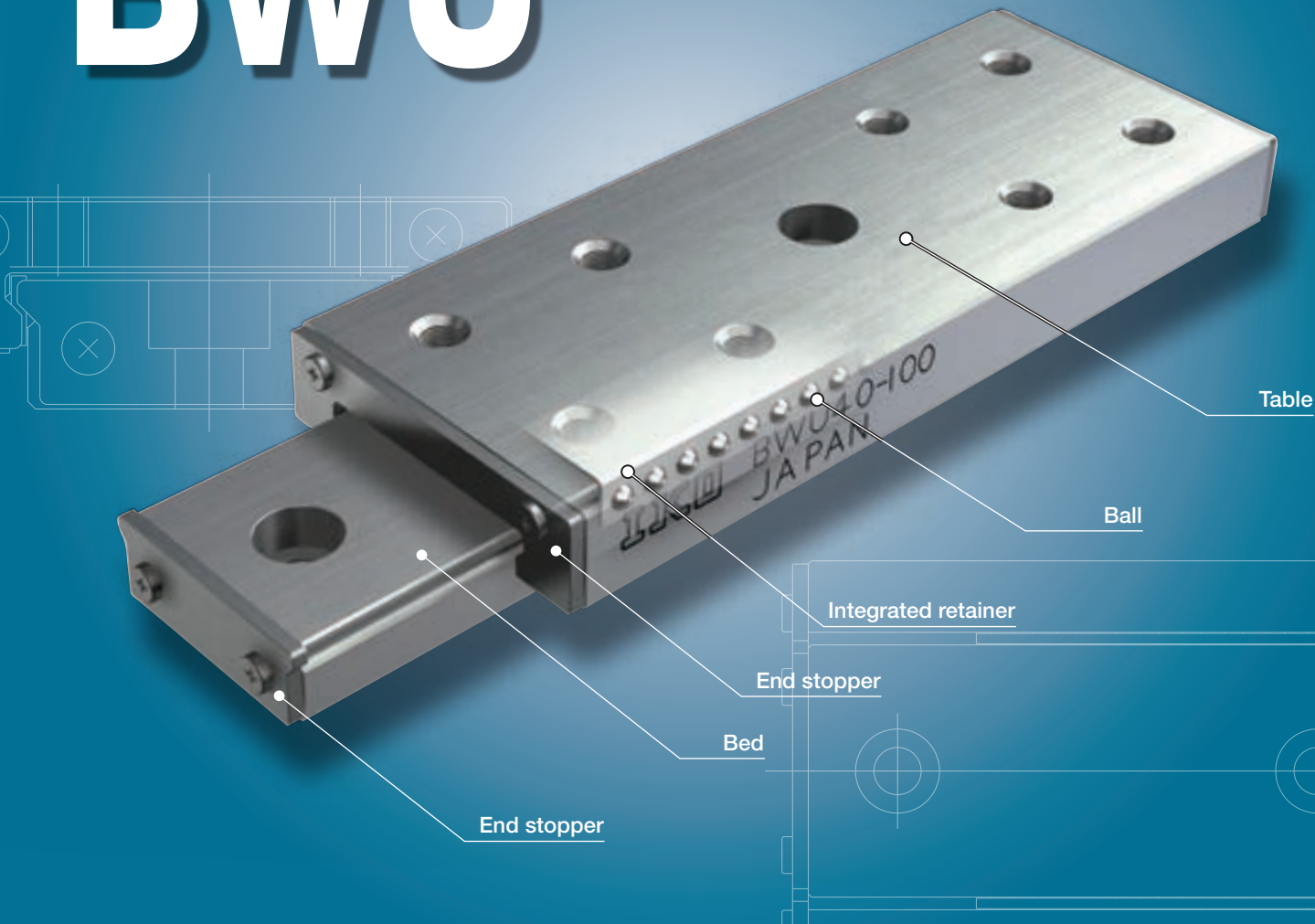
**High Rigidity Precision Linear Slide Unit**  
**Precision Linear Slide Unit**  
**Linear Slide Unit**

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.

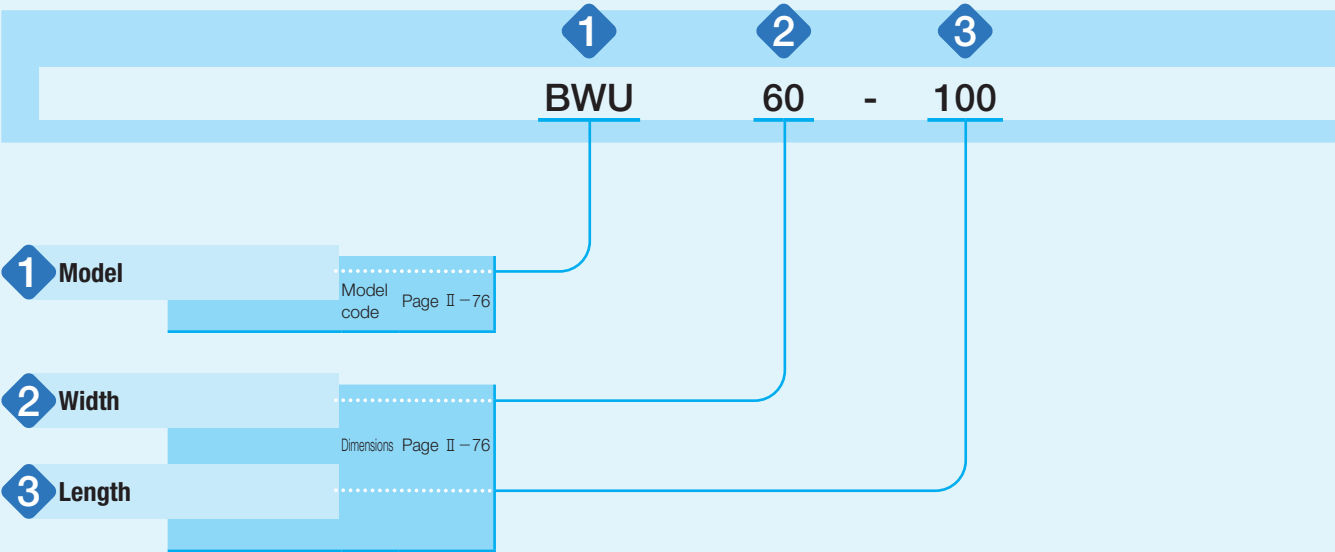
Stainless steel selections for excellent corrosion resistance

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

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	—	—	—	—	—	—	—	○	—	○	—	○	○

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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

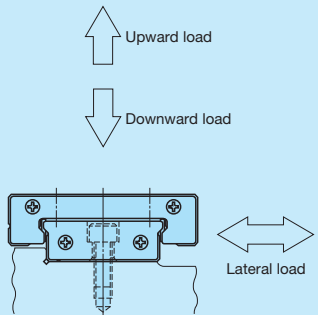
The BWU series must be used with its load rating corrected in accordance to the load direction. The basic dynamic load rating and basic static load rating shown in the dimension table should be corrected to values in Table 2.

Table 2 Load ratings corrected for load direction

Upward load

Downward load

Lateral load

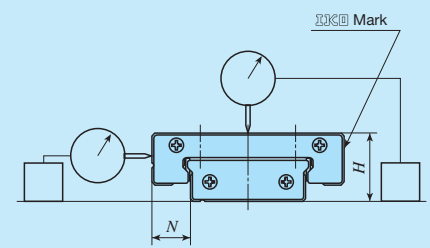


Load rating and load direction	Basic dynamic load rating			Basic static load rating		
	Load direction			Load direction		
	Downward	Upward	Lateral	Downward	Upward	Lateral
Width 6~60	C	C	1.19C	C <sub>0</sub>	C <sub>0</sub>	1.19C <sub>0</sub>

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 <sup>(1)</sup>	Parallelism on the table side <sup>(2)</sup>
Over	Incl.		
—	50	4	6
50	80	5	8
80	120	6	9

Notes <sup>(1)</sup> Parallelism at the center of the table represents parallelism of height when the table is stroked.  
<sup>(2)</sup> Parallelism at the side of the table represents parallelism of the side (the opposite side of Mark) 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.

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Precaution for Use

Precaution for Mounting

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.

① Reference mounting surface

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

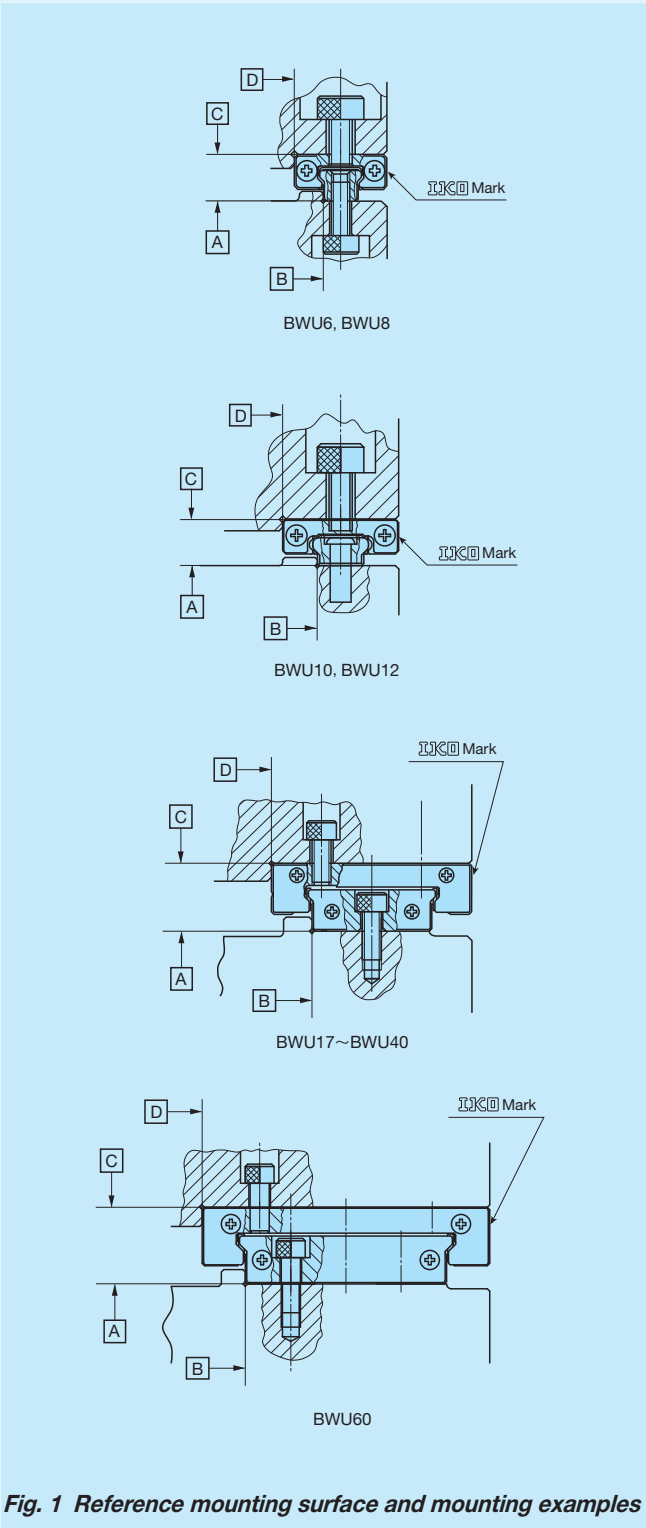
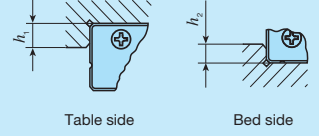


Fig. 1 Reference mounting surface and mounting examples

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.

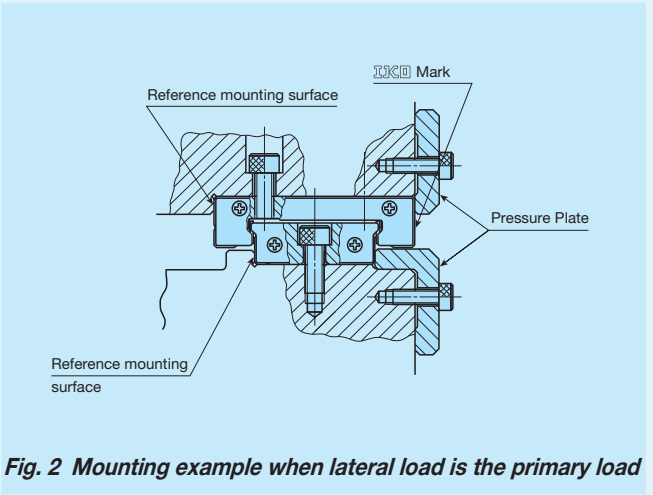


Fig. 2 Mounting example when lateral load is the primary load

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.

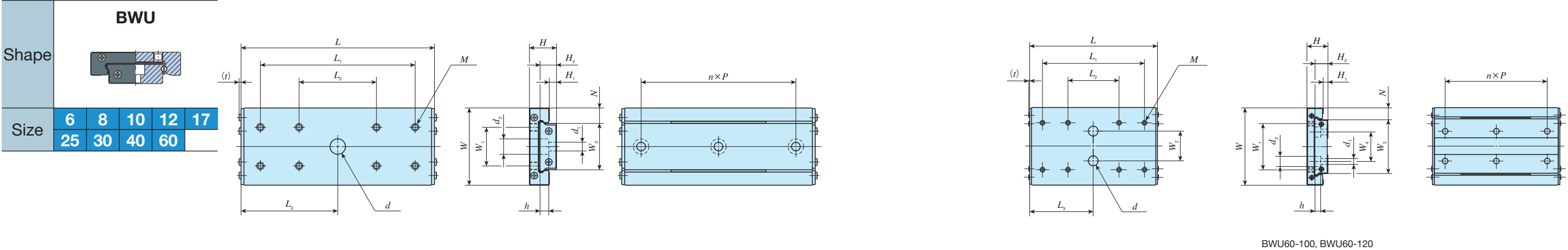
Table 6 Tightening torque for fixing screw

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.

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Identification number	Mass (Ref.)  g	Nominal dimensions mm						Table mounting dimensions mm										Bed mounting dimensions mm										Basic dynamic load rating  <i>C</i>  N	Basic static load rating  <i>C</i> <sub>0</sub>  N	Allowable load  <i>F</i>  N	Static moment rating  <i>T</i> <sub>0</sub>  N · m
		<i>W</i>	<i>H</i>	<i>H</i> <sub>1</sub>	<i>N</i>	<i>L</i>	Maximum stroke length	<i>W</i> <sub>1</sub>	<i>L</i> <sub>1</sub>	<i>L</i> <sub>2</sub>	<i>M</i>	Maximum fixing thread depth	<i>W</i> <sub>2</sub>		<i>L</i> <sub>3</sub>	<i>d</i>	<i>t</i>	<i>W</i> <sub>3</sub>	<i>H</i> <sub>2</sub>	<i>W</i> <sub>4</sub>	<i>n</i>	<i>P</i>	<i>d</i> <sub>1</sub>	<i>d</i> <sub>2</sub>	<i>h</i>						
BWU 6- 10	1.0	6	3.2	0.7	2	10	3	—	4	—	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		10												2	8				252	361	120	0.42		
BWU 6- 30	3.3					30	16		18												2	8				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	15		10												2	10				292	353	118	0.60		
BWU 8- 30	5.2					30	19		21												2	10				442	635	212	1.1		
BWU 10- 15 <sup>(1)</sup>	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 <sup>(1)</sup>	5.7					25	16		13						3	10					370	494				165	1.1				
BWU 10- 40 <sup>(1)</sup>	9.0					40	22		26						3	10					572	917				306	2.0				
BWU 12- 20 <sup>(2)</sup>	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 <sup>(2)</sup>	9.5					30	20		15						2	15					442	635				212	2.0				
BWU 12- 45 <sup>(2)</sup>	14.1					45	30		31						2	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		20						2	15					874	1 110				370	4.4				
BWU 17- 45	35.4					45	29		30						2	15					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		25												2	30				1 200	1 750	582	13.0		
BWU 25- 60	84.3					60	38		55												2	30				1 490	2 380	794	17.7		
BWU 25- 75	104					75	48		55												2	30				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		25												2	30				1 920	2 540	847	24.1		
BWU 30- 60	133					60	35		55												2	30				2 490	3 670	1 220	34.9		
BWU 30- 75	165					75	47		55												2	30				2 880	4 520	1 510	42.9		
BWU 30- 90	199					90	59		55												2	30				3 250	5 360	1 790	50.9		
BWU 40- 40	136	40	14	3.5	8	40	31	20	20	—	M4	4	—		—	—	1.0	24	8.5	—	1	20	4.5	8	4.5	2 040	2 210	735	27.8		
BWU 40- 60	209					60	39		40												2	40				3 100	3 970	1 320	50.0		
BWU 40- 80	281					80	47		80												2	40				4 010	5 730	1 910	72.2		
BWU 40-100	346					100	63		80												2	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	47		80												2	40				5 930	7 820	2 610	171		
BWU 60-100	597					100	56		80												2	40				7 020	9 960	3 320	217		
BWU 60-120	723					120	68		100												2	40				8 050	12 100	4 030	264		

Notes <sup>(1)</sup> Bed mounting bolts (cross-recessed pan head screw for precision equipment M1.6×5) are appended.

<sup>(2)</sup> Bed mounting bolts (cross-recessed pan head screw for precision equipment M2×4) are appended.



# Precision Linear Slide Unit

Limited linear motion type

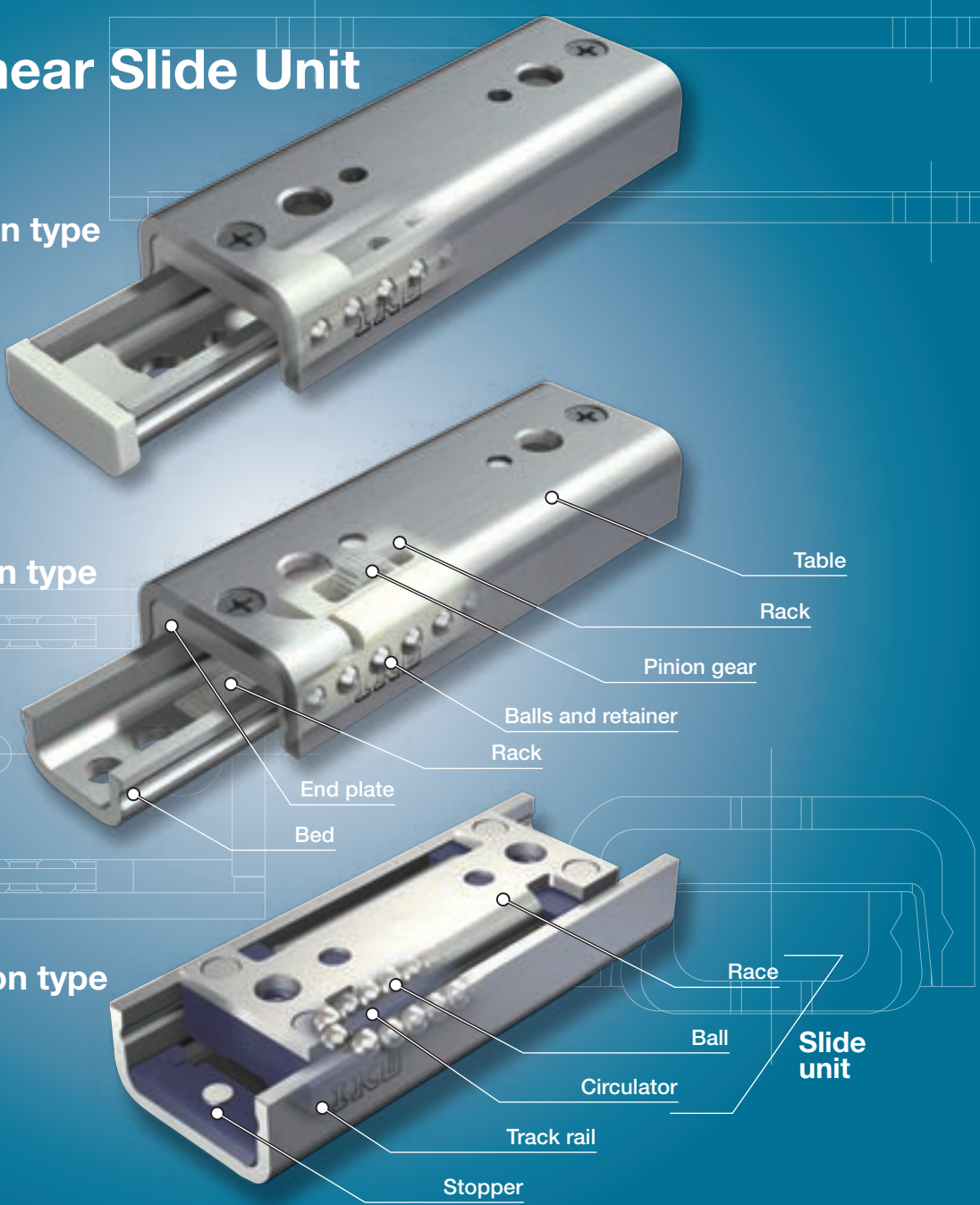
BSP

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 <sub>1</sub>
	BSPG	12	35	SL	T <sub>1</sub>
	BSR	20	60	SL	T <sub>1</sub>

1 Model

Model code

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2 Width

Dimensions

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3 Length

4 Material type

Material code

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5 Clearance amount

Clearance code

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# Points

## 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.

## 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.

## 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.

## 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.

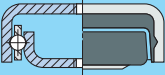
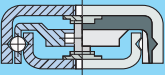
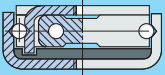
## Stainless steel selections for excellent corrosion resistance

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.	—	—	○	○	○	○

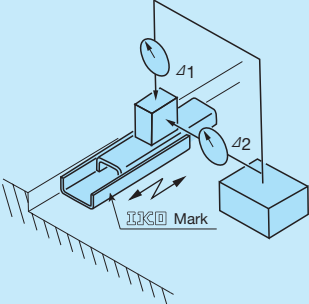
3	Length	Indicate the length in mm.	
4	Material type	Stainless steel made : SL	Stainless steel (SL) can be specified only for the material type.
5	Clearance amount	Standard : No symbol T <sub>1</sub> Clearance : T <sub>1</sub>	For details of clearance amount, see Table 2. Typically, apply the standard clearance for use in small frictional resistance and the clearance adjusted to the clearance code T <sub>1</sub> 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 <sub>1</sub>	−4 ~ 0

Accuracy

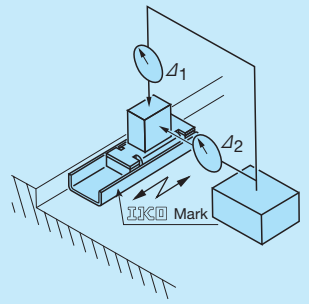
Table 3 Running accuracy for BSP and BSPG



unit: μm

Stroke length mm		Parallelism at the bed center against the table mounting surface Δ <sub>1</sub>	Parallelism at the bed center against the table reference mounting surface Δ <sub>2</sub>
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 <sub>1</sub>	Parallelism at the slide unit center against the track rail reference mounting surface Δ <sub>2</sub>
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 packaged with special grease applied to the raceway surface and rack and pinion, using a vaporizable rust-prevention film rather than rust prevention oil. In general applications, keep cleanliness and mount it as it is.

Precaution for Use


Precaution for Mounting

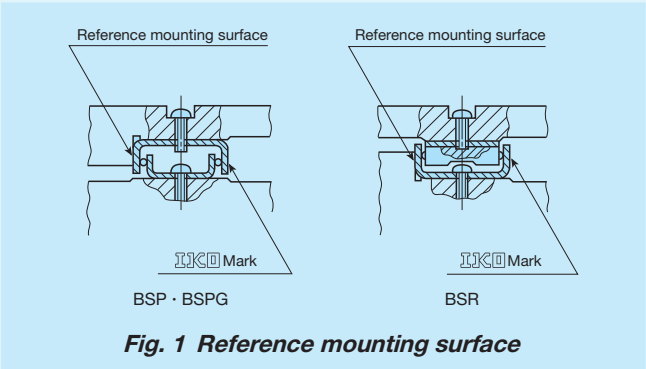
**① Applied load**  
For use with stable and high running accuracy, it is recommended to use applied load around 20% or lower of the basic static load rating.

**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.

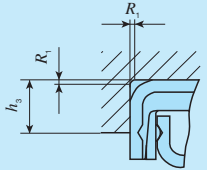
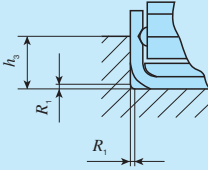
**① Reference mounting surface**  
Reference mounting surface is the opposite side of the  mark.



**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

				
BSP · BSPG			BSR	
			unit: mm	
Identification number			Shoulder height $h_3$	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		

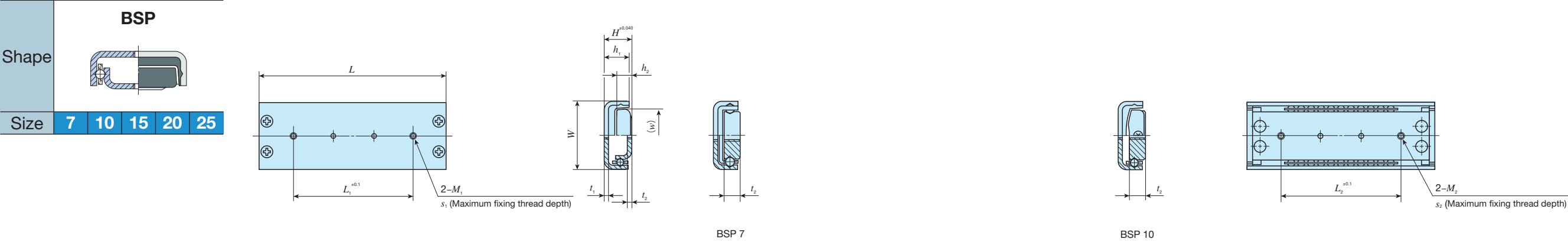
**④ Tightening torque for fixing screw**  
If the fixing force of BSP, BSPG and BSR toward the mating surface is too strong, performance and accuracy are adversely affected. Although it depends on material, rigidity and finishing condition of the mating surface, it is generally recommended to use smaller 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



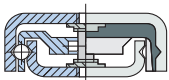
Limited linear motion type

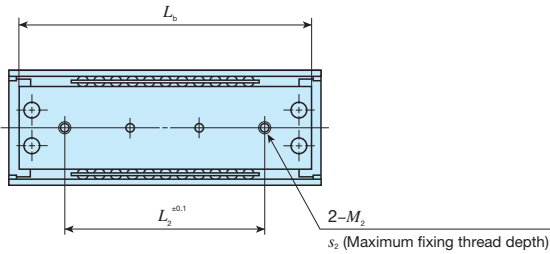
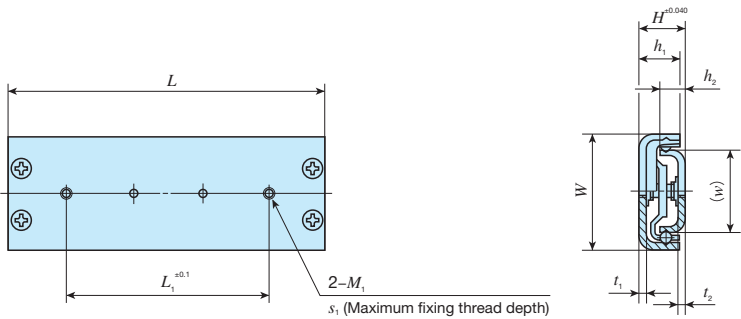


Identification number	Mass (Ref.)  g	Nominal dimensions mm				Table mounting dimensions mm						Bed mounting dimensions mm						Basic dynamic load rating  C  N	Basic static load rating  C <sub>0</sub>  N
		W	H	L	Maximum stroke length	L <sub>1</sub>	M <sub>1</sub>	Maximum fixing thread depth s <sub>1</sub>		h <sub>1</sub>	t <sub>1</sub>	w	L <sub>2</sub>	M <sub>2</sub>	Maximum fixing thread depth s <sub>2</sub>	h <sub>2</sub>	t <sub>2</sub>		
BSP 7 15 SL <sup>(1)</sup>	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 <sup>(1)</sup>	2.8			20		10							10					134	70.0
BSP 7 30 SL <sup>(1)</sup>	4.2			30		20							20					170	98.0
BSP 7 40 SL <sup>(1)</sup>	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	26	25							25					398	194
BSP 10 45 SL	11.3			45	38	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							24					550	311
BSP 15 50 SL	18.4			50	32	34							34					644	389
BSP 15 60 SL	22.1			60	40	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							34					866	496
BSP 20 60 SL	35.7			60	34	40							40					998	606
BSP 20 70 SL	41.7			70	40	45							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							40					998	606
BSP 25 70 SL	52.9			70	40	45							45					1 120	717
BSP 25 80 SL	60.5			80	51	50							50					1 180	772
BSP 25 100 SL	75.8			100	63	60							60					1 410	992

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

Built-in rack & pinion type

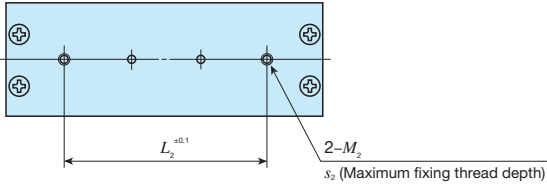
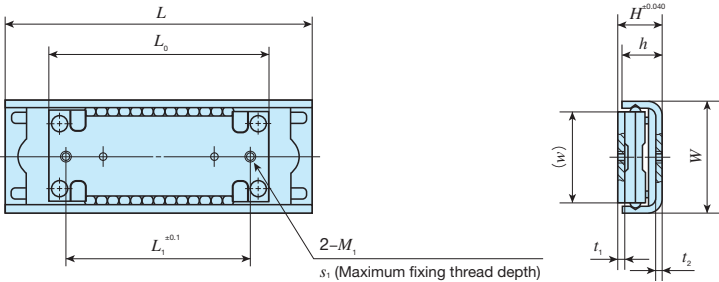
Shape	BSPG			
				
Size	12	15	20	25



Identification number	Mass (Ref.)  g	Nominal dimensions mm				Table mounting dimensions mm						Bed mounting dimensions mm							Basic dynamic load rating	Basic static load rating
		$W$	$H$	$L$	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 $s_2$	$h_2$	$t_2$	$C$  N	$C_0$  N
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

Endless linear motion type

Shape	BSR			
Size	12	15	20	25

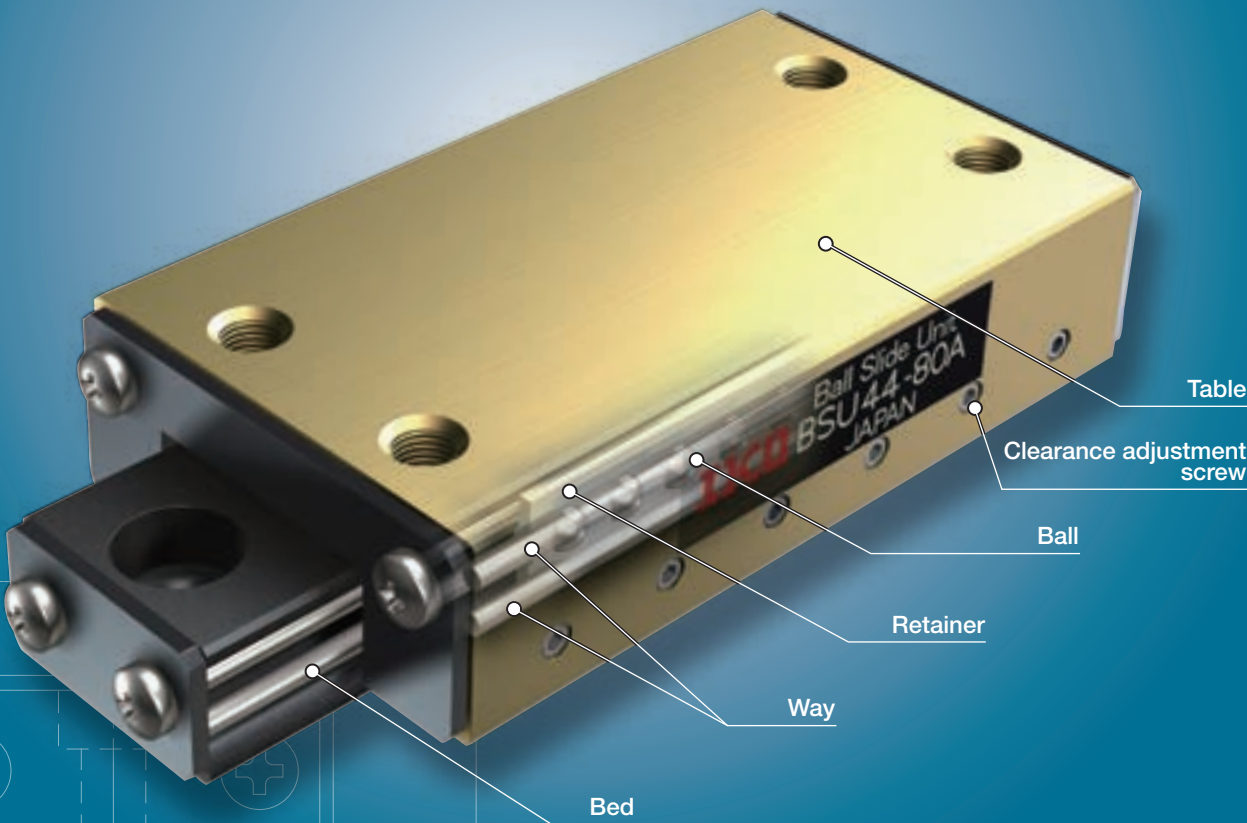


Identification number	Mass (Ref.) g	Nominal dimensions mm				Slide Unit mm				Mounting dimensions				Track rail mounting dimensions mm					Basic dynamic load rating C N	Basic static load rating C <sub>0</sub> N
		W	H	L	Maximum stroke length	w	L <sub>0</sub>	L <sub>1</sub>		M <sub>1</sub>	Maximum fixing thread depth s <sub>1</sub>	t <sub>1</sub>		L <sub>2</sub>	M <sub>2</sub>	Maximum fixing thread depth s <sub>2</sub>	h	t <sub>2</sub>		
BSR 12 30 SL <sup>(1)</sup>	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 <sup>(1)</sup>	7.0			40	23									20						
BSR 12 50 SL <sup>(1)</sup>	8.2			50	33									34						
BSR 12 60 SL <sup>(1)</sup>	9.3			60	43									40						
BSR 15 30 SL <sup>(2)</sup>	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 <sup>(2)</sup>	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 <sup>(1)</sup> When BSR 1230 SL through BSR 1260 SL are to be mounted from the inside of the track rail, contact IKO.  
<sup>(2)</sup> 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.

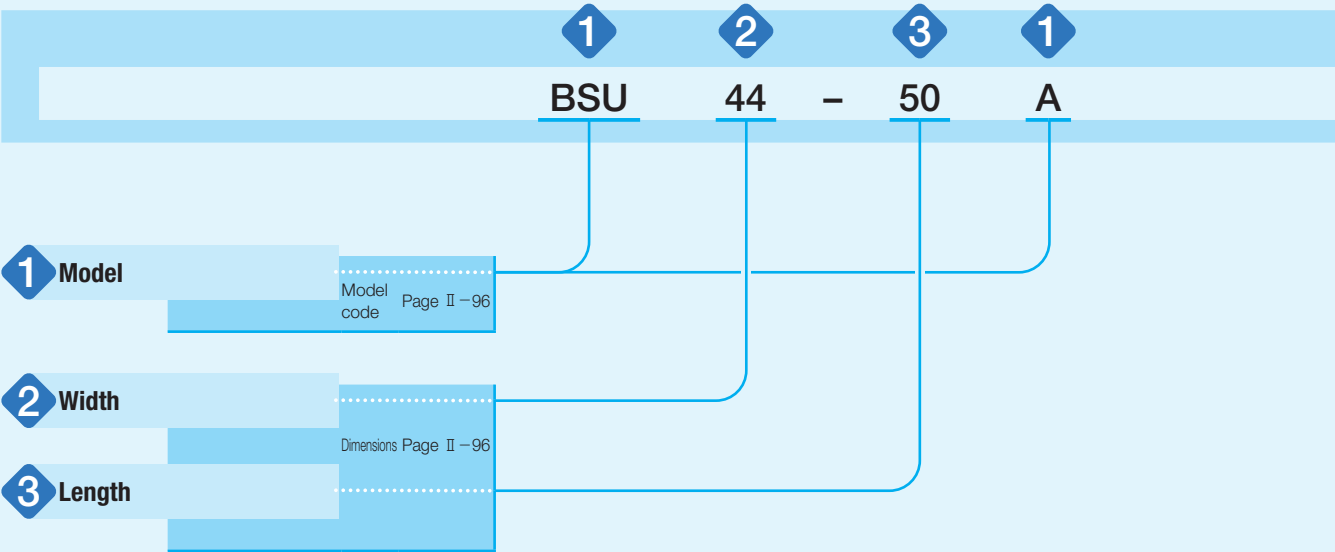
### ● Excellent corrosion resistance

The ball and way are made of stainless steel and the surface of table and bed have anodic oxidation 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.

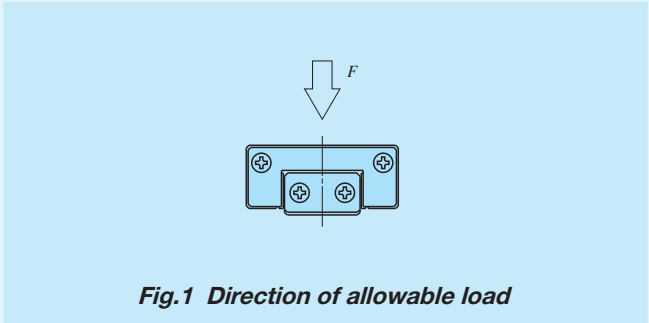


Fig.1 Direction of allowable load

# Accuracy

## 1 Running accuracy

Parallelism at the table center against the bed mounting surface (see Fig. 2): 10  $\mu\text{m}$  / 10 mm

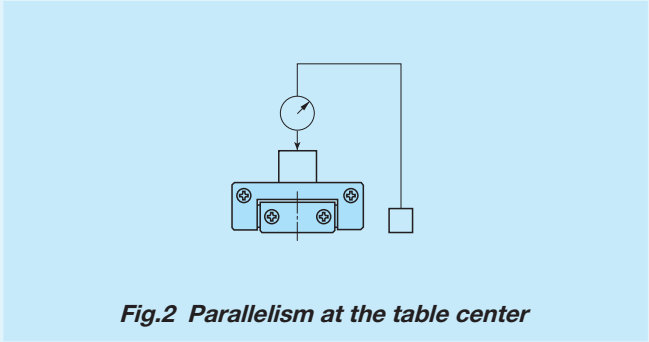


Fig.2 Parallelism at the table center

## 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  $\mu\text{m}$

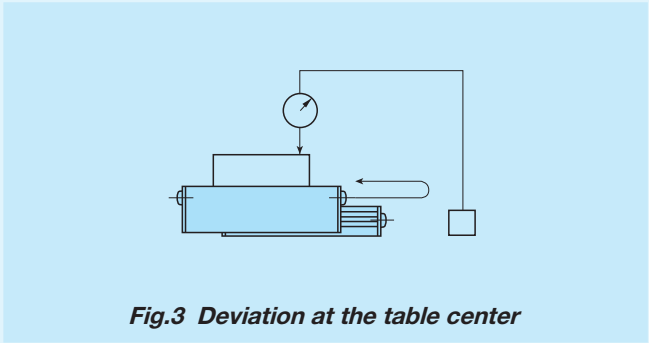


Fig.3 Deviation at the table center

# 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.

# 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.

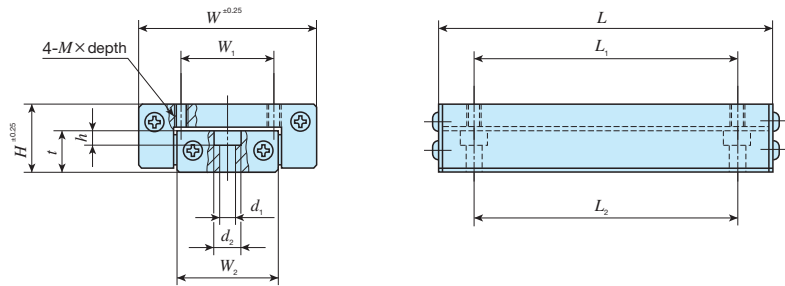
Table 2 Tightening torque for fixing screw

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.

BWU · BSP(G)  
BSU...A

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> <sub>1</sub>	<i>L</i> <sub>1</sub>		<i>M</i> ×depth	<i>W</i> <sub>2</sub>	<i>t</i>	<i>L</i> <sub>2</sub>	<i>d</i> <sub>1</sub>	<i>d</i> <sub>2</sub>	<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