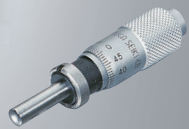



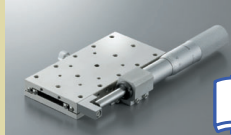
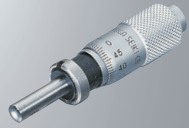

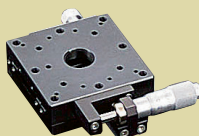
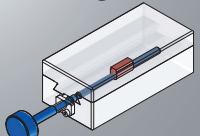

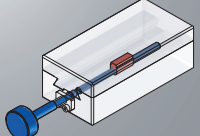

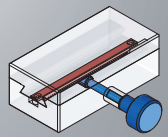




Selection Guide

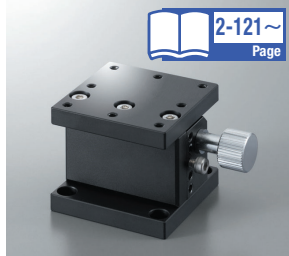
Travel distance per rotation	Feeding Type	Stage table size	Load capacity	Stroke (mm)				
				~13	~18	~50	~60	~360
<div>Fine positioning</div> <div>0.25 ~ 1.0mm</div>	<div>Micrometer</div>  <div>Feeding screw</div> 	<div>□25 ~ 60×120</div>	<div>4kgf ~ 35kgf</div>	<div>Linear ball guide (BXT series)</div>  <div>2-015~ Page</div> <div>* BXT series □40/□60 Stroke 13mm</div>	<div>Linear ball guide (SS stages)</div>  <div>2-013~ Page</div> <div>Stroke 6.4~25mm</div>			
					<div>Stroke 6.4~50mm</div>  <div>2-031~ Page</div>			
	<div>Micrometer</div>  <div>Feeding screw</div> 	<div>□25 ~ 120</div>	<div>4kgf ~ 20kgf</div>		<div>Cross roller guide</div>  <div>2-061~ Page</div> <div>Stroke 6.4~50mm</div>			
<div>4.2mm</div>	<div>Short lead feeding screw</div> 	<div>□25 ~ 60</div>	<div>2kgf ~ 5kgf</div>	<div>Dovetail type short lead feeding screw</div>  <div>2-095~ Page</div> <div>Stroke 10~18mm</div>				
	<div>Long lead feeding screw</div> 	<div>□40 ~ 40×80</div>		<div>Stroke 20~60mm</div> <div>2-095~ Page</div>  <div>Dovetail type long lead feeding screw</div>				
	<div>Rack and pinion</div> 	<div>□25 ~ 60×120</div>		<div>Dovetail type rack and pinion</div>  <div>2-095~ Page</div> <div>Stroke 10~100mm</div>				
<div>Move widely</div> <div>5 ~ 20mm</div>				<div>Stroke 50~360mm</div> <div>2-095~ Page</div>  <div>Dovetail type rack and rail</div>				

Horizontal Z-axis stage

Linear ball guide



Rack and pinion



Cross roller guide



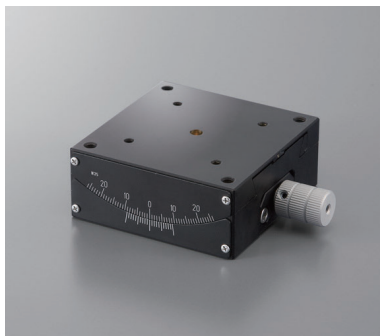
Laboratory jack



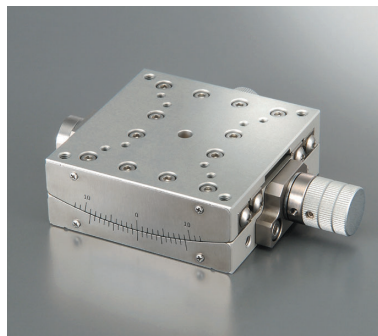
Goniometer stage



Dovetail



Cross roller (Worm type)



Cross roller (Micrometer)



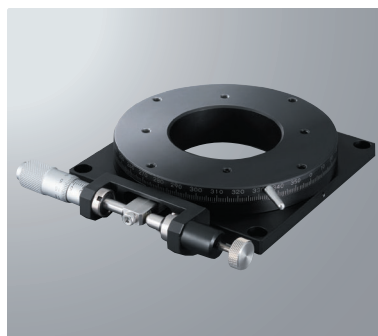
Rotation stage



Fitting



Cross roller bearing



Square



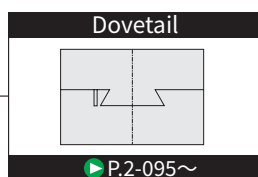
*Square P.2-169~

Manual Stages Lineup

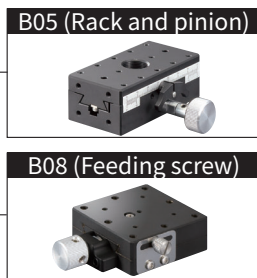
*A load capacity shows a numerical value of the single-axis.

Linear-motion
(slideway guide)

Guide mechanism



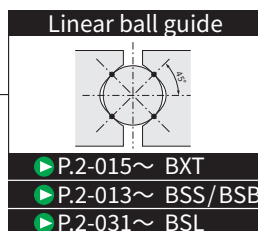
Distinctive model



Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Thin type	Travel distance per rotation of knob	Rigidity	Prices	Main materials
3~5 [29.4~49]	10~360	○	△	◎	○	○	Brass Aluminum
2~4 [19.6~39.2]	6~60	○	◎	○	○	◎	Brass Aluminum

Linear-motion (ball guide)

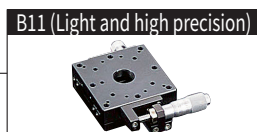
Guide mechanism



Distinctive model



Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Thin type	Resolution	Rigidity	Prices	Main materials
10~20 [98~196]	13	○	○	○	◎	◎	Steel
4~35 [39.2~343]	6.4~25	◎	◎	○	◎	○	Stainless
15~20 [147~196]	25~50	◎	◎	○	◎	○	Stainless



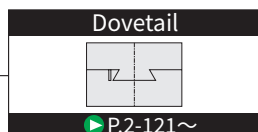
Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Thin type	Resolution	Rigidity	Prices	Main materials
1~20 [9.8~196]	6.4~50	◎	○	○	○	○	Aluminum
2~8 [19.6~78.4]	13~40	○	△	◎	○	△	Aluminum
4.6~6.0 [45~58.8]	13~25	◎	△	◎	○	△	Aluminum



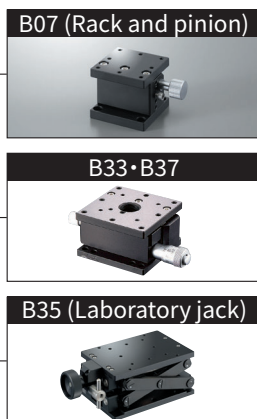
Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Thin type	Resolution	Rigidity	Prices	Main materials
15 [147]	128	○	△	△	○	△	Aluminum

Horizontal Z axis stage

Guide mechanism



Distinctive model



Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Travel distance per rotation of knob	Resolution	Rigidity	Prices	Main materials
0.7~1.5 [6.86~14.7]	8~18	○	◎	△	△	◎	Brass Aluminum
1~6 [9.8~58.8]	4~13	◎	○	○	○	○	Aluminum Stainless
7~10 [68.6~98]	40~70	△	◎	△	○	△	Aluminum

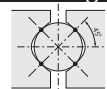


*A load capacity shows a numerical value of the single-axis.

Horizontal
Z axis stage

Guide mechanism

Linear ball guide



▶ P.2-055~

Distinctive model

BHE (Low prices)



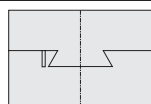
Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Resolution	Prices	Main materials
3~5 [29.4~49]	6~10	△	○	◎	Steel

Guide mechanism

Distinctive model

Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Resolution	Prices	Main materials
-------------------------------	-------------------------	-----------------	------------	--------	----------------

Dovetail



▶ P.2-137~

B54 (Worm gear)



Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Resolution	Prices	Main materials
1~6 [9.8~58.8]	16~50	○	○	○	Brass

B56 (Worm gear)



Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Resolution	Prices	Main materials
3~5 [29.4~49]	8~20	◎	○	△	Brass Aluminum

Cross roller guide



▶ P.2-149~

B58 (Micrometer)



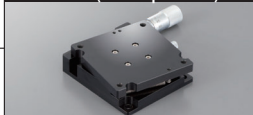
Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Resolution	Prices	Main materials
3~5 [29.4~49]	5~14	◎	◎	△	Aluminum

Guide mechanism

Distinctive model

Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Resolution	Prices	Main materials
-------------------------------	-------------------------	-----------------	------------	--------	----------------

BRE (Low prices)



Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Resolution	Prices	Main materials
1~3 [9.8~29.4]	20	△	○	◎	Aluminum

Fitting

▶ P.2-169~ BRE
▶ P.2-171~ B43

B43 (Fitting)



Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Resolution	Prices	Main materials
1~5 [9.8~49]	360	○	○	○	Aluminum

Bearing

▶ P.2-173~

B47 (Cross roller)



Load capacity (kgf [N])	Travel distance (mm)	Travel accuracy	Resolution	Prices	Main materials
5~6 [49~58.8]	360	○	◎	△	Aluminum Stainless

Gonio stage

Rotation stage

Unit

Combination with multi-axis



▶ P.2-175~

XYθ



XYZθ



XYZθxθy



Accessory

Micrometer (maintenance parts)



▶ P.2-177~

Feeding screw



Z-axis bracket



Adaptor plate



Guidance

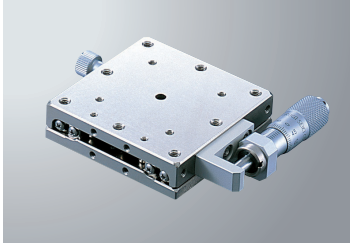
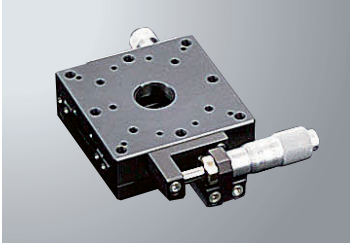
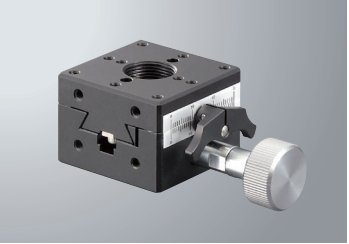
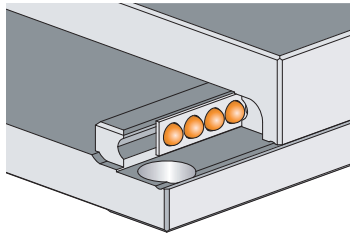
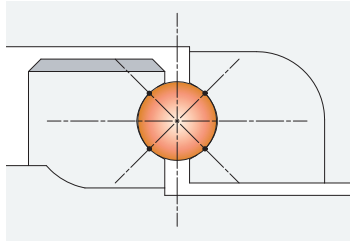
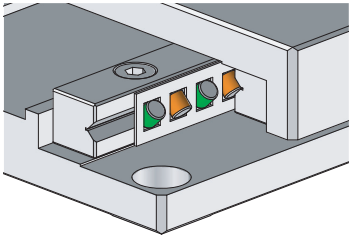
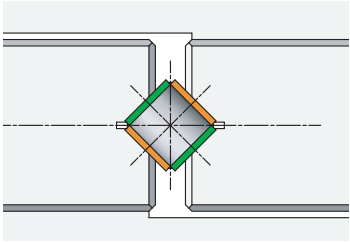
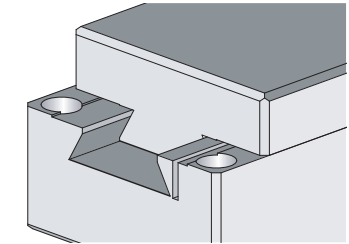
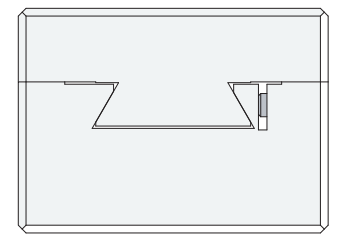
【Manual stages guidance】

- Selection guide P.2-001~
- Manual stage line-up P.2-003~
- How to read the specification table ... P.2-007~
- How to use P.2-008
- Options P.2-009~

【Related page】

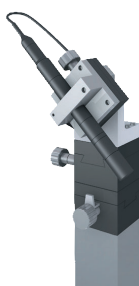
- Service and Guarantee P.001
- Inspections P.2-187~
- How to handle the stage P.021~
- Grease P.023~

Manual Stages Selection Guidance / Type and Feature

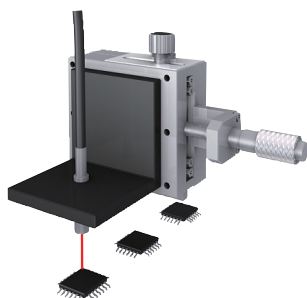
Series	Linear ball	Cross roller	Dovetail
Image			
Guide structure	  <ul style="list-style-type: none"> • 4-point contact rolling mechanism of Gothic arc groove and ball. 	  <ul style="list-style-type: none"> • Rolling mechanism of a V groove rail and roller. 	  <ul style="list-style-type: none"> • Sliding mechanism of male and female trapezoidal. (Fitting)
Feature	<ul style="list-style-type: none"> • Integrated travel guide and body. Thin type. • SS stages in stainless steel are high rigidity, high precision and high load capacity. • Also available black type. 	<ul style="list-style-type: none"> • Light weight (Aluminum) • High precision 	<ul style="list-style-type: none"> • Variety of strokes • Low price
Stages for use	Linear stage • Horizontal Z	Linear stage • Rotation • Horizontal Z • Goniometer	Linear stage • Horizontal Z • Goniometer

Application example

Alignment of CCD camera



Alignment of fiber sensor



Inspection or analysis jig for samples



Series	Feeding Type	Size (mm)	Travel distance per rotation (mm)	Load capacity (kgf) [N]	Material	Single-axis stroke (mm)											
						~5	~10	~15	~20	~30	~40	~50	~75	~100	~150	~250	~360
Linear ball P.2-013~	Micrometer Feeding screw	□25	0.05~1	~4 [~39.2]	Stainless Steel												
		□40		~10 [~98]													
		□50		~15 [~147]													
		□60		~20 [~196]													
		□70		~23 [~225]													
		□80		~27 [~264]													
		□100		~35 [~343]													
		40×80		~15 [~147]													
		60×120		~20 [~196]													
Cross roller P.2-061~	Micrometer Feeding screw	□25	0.05~1	~1 [~9.8]	Aluminum												
		□40		~2 [~19.6]													
		□60		~5 [~49]													
		□80		~10 [~98]													
		□100		~15 [~147]													
		□120		~20 [~196]													
		25×60		~2 [~19.6]													
		60×110		~8 [~78.4]													
Slide guide P.2-091~	Handle	□80	24	~15 [~147]	Aluminum												
Dovetail P.2-095~	Rack and rail	□40	20	~3 [~29.4]	Aluminum												
		□25	5~20	~3 [~29.4]	Brass												
	Rack and pinion	□40		~3 [~29.4]	Brass Aluminum												
		□60		~4 [~39.2]	Aluminum												
		40×80		~5 [~49]													
		60×120		~5 [~49]	Aluminum												
	Long lead feeding screw	□40	4.2	~2.5 [~24.5]	Brass Aluminum												
		40×80		~4 [~39.2]	Aluminum												
	Short lead feeding screw	□25	0.5	~3 [~29.4]	Brass												
		□40		~4 [~39.2]													
		□60		~4 [~39.2]													
		18×60		~2 [~19.6]	Aluminum												

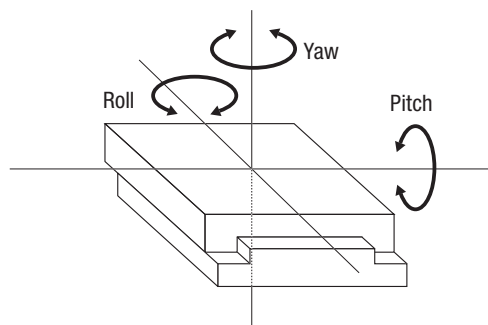
How to Read the Specification Table

- ① Model number
- ② Model number (Mirror operation type)
- ③ Stage table size
 - Show the size of stage table
- ④ Feeding position
 - Show Center, side, opposite side, L and R for feeding position
- ⑤ Travel distance
 - The point where the fixation surface(lower) and the traveling surface(upper) of the stage are the same in the standard and the position is indicated by \pm .
 - When the standard is not ensured, the full stroke is indicated.
 - Where there is both coarse motion and micromotion, each stroke is indicated.
- ⑥ Micrometer minimum reading
 - The minimum scale that can be read by the micrometer head and vernier scale, etc. For high resolution stages, the minimum reading of coarse motion and micromotion is separately described.
- ⑦ Travel guide
 - Dovetail
 - This is a method to be guided by sliding male and female trapezoid grooves.
 - The driving mechanisms include rack and pinion and feeding screw.
 - Linear ball guide
 - The stage body and guide are integrated.
 - This is a guiding method where the guide part has a Gothic arc groove and rolling balls
 - Crossed roller guide method
 - This is a rolling sliding guidance method using a Vgroove rail and crossed roller.
 - Slide guide
 - Unlimited track rolling guide is suitable for long stroke.
- ⑧ Load capacity
 - This is the weight that can be loaded on the center part of the stage.
 - When you exceed this load, the stage may not operate smoothly.
- ⑨ Tolerance moment load
 - The allowable maximum moment load on the upper surface of stage.
- ⑩ Moment rigidity
 - ▶ See page P.2-187~
- ⑪ Parallelism
 - ▶ See page P.2-187~
- ⑫ Motion parallelism
 - ▶ See page P.2-187~
- ⑬ Squareness
 - ▶ See page P.2-187~
- ⑭ Verticality
 - ▶ See page P.2-187~
- ⑮ Motion verticality
 - ▶ See page P.2-187~
- ⑯ Weight
 - Show the product weight.
- ⑰ Material
 - Especially show the finishing materials.
- ⑱ The provided screws
 - Attached screw size and number are shown.

	SPEC	
①	Model	B000-00
②	(Opposite hand)	
③	Stage table size	00×00mm
④	Feeding position	
⑤	Travel distance	00mm
⑥	Minimum reading of micrometer	00μm/Scale
⑦	Guide	
⑧	Load capacity	00kgf [00N]
⑨	Allowable load for moment	Pitch 00N・m
		Yaw 00N・m
		Roll 00N・m
⑩	Moment rigidity	Pitch 00"N・cm
		Yaw 00"N・cm
		Roll 00"N・cm
⑪	Parallelism	Within 00μm
⑫	Motion parallelism	Within 00μm
⑬	Squareness	Within 00μm
⑭	Verticality	Within 00μm
⑮	Motion verticality	Within 00μm
⑯	Weight	kg
⑰	Main material—Surface finishing	Aluminum—Black alumite processing
⑱	Provided screws (Hex socket screws)	○ of M○—○ ○

■ Definition of "pitching, yawing and rolling"

The Tolerance moment load and Moment rigidity in the specifications are quantified by the components shown in the following figure. Refer to the relevant components depending on the conditions.



Refer to the inspection rules for details of the specification items and inspection methods. (▶ P.2-187~)

How to use the manual stage

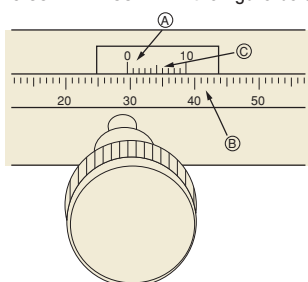
Fix the stage to an opposite base or stage and transfer with feed knob or micrometer.

Please refer how to read the scale as below.

How to read the scale.

How to read the vanier scale

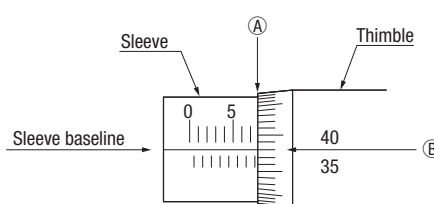
- ① Can be read the 0 point on the vanier scale (A) by 1mm units using the scale of (B). (Shows 29mm in the figure below)
- ② See the scale of (A), then (C) that is on a same position (B). (C) will be a value of 1mm units. (Shows 0.6mm in the figure below)
- ③ Total value of A and B become current position of stage.
 $(7.5\text{mm} + 0.38\text{mm} = 7.88\text{mm})$ in the figure below)



How to read the micrometer head

For the micrometer head 0.01mm reading

- ① Read the position of the thimble edge face from the sleeve by 0.5mm units.
 (Shows 7.5mm in the figure below)
- ② Read the value of thimble which position well matched sleeve basic line and thimble scale.
 (Shows 0.38mm in the figure below (B))



Notice regarding instructions about the installation posture

Must be put on flat surface for each production specification.

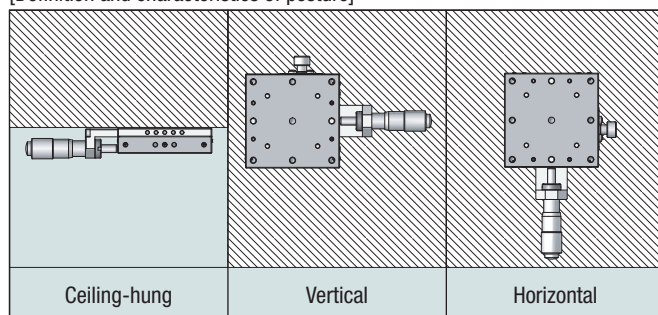
Pay attention in case of vertical, horizontal and ceiling-hung installation.

Load capacity and accuracy might be changed due to installation posture.

See belows, "Definition and characteristics of posture" for more information regarding usable or not.

We hope you find them useful but if you have any questions or need more information, please do not hesitate to contact us.

[Definition and characteristics of posture]



Classification		Ceiling-hung	Vertical	Horizontal
Linear-motion	Dovetail	○	○	○
	Linear ball guide	○	○	△
	Cross roller guide	○	○	△
	Horizontal Z-axis (Lever type)	×	△	△
Goniometer	Cross roller guide worm type	○	○	○
	Cross roller guide micrometer type	○	○	△
	Dovetail	○	○	○
Rotation	Cross roller guide	○	△	△
	Ball bearing	×	×	×
	Fitting	△	△	△

○ : Means usable, however load and moment is limited.

△ : Load and moment is limited, it may not lose characteristics in some usage or models

× : Not available

Opposite operating (Position of the clamp and micrometer)

Selectable opposite operating products for configuration symmetrical system or where is no enough space with same cost.

The configuration/orientation of the opposite operating is shown as belows.:

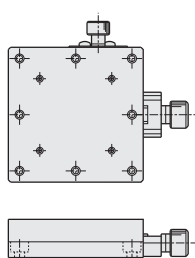
For single axis

Linely symmetric for the trace diagram.

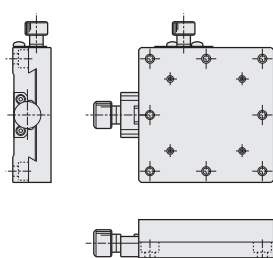
For combined or stage units

Linely symmetric for the trace diagram.

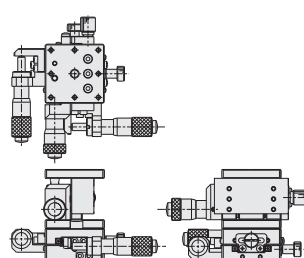
It combines with the standard type, if there is no opposite type in single axis.



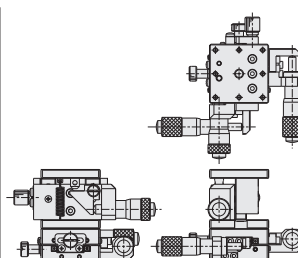
B08-111



Opposite hand: B08-111R



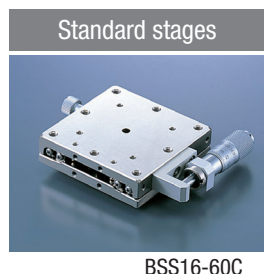
B72-40C



Opposite hand: B72-40CR

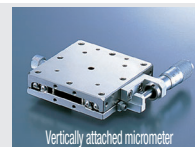
Option/Use for Both SS Stage and Cross Roller Guide Stage

Selectable various specification for your purpose



Feeding position/Opposite hand

Available variety of space, posture and operation.



Feeding Type

Cost reduction/
Change the screw pitch



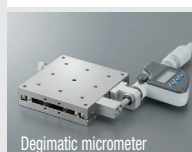
Prevention error operation/
Space-saving



Fine positioning/Minimum
memory 0.5μm



Easy reading with degimatic



Clamp Type

SS stage only

Reduce the fixing
misalignment



Improve the holding power



Grease

SS stage only

Selectable depending on your environment

Grease for clean environment

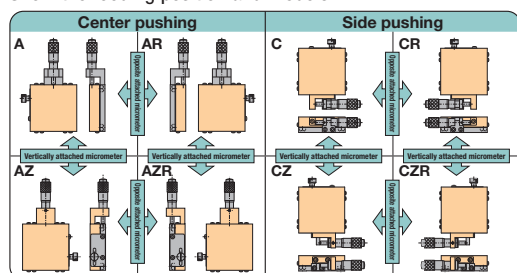
Grease for vacuum environment

* There exist some combinations of axis or option can't be provided.

Feeding Position

Selectable depending on your mounting space, mounting posture or operation direction.

Show the feeding position and models

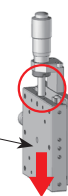


Vertically type (Z type)

Center pushing A type

Not available: Stage surface might be down due to over load weight in micrometer.

NG



Center pushing AZ type

Available: Stage surface can be kept due to acceptable load weight in micrometer.

OK



Stage surface doesn't go down because micrometer can keep the load weight even it will be mounted to upward.

Center/Side pushing

There are the center pushing type (A) and side pushing type © for each feeding types.

Right/left

Selectable from the configuration of line symmetry.

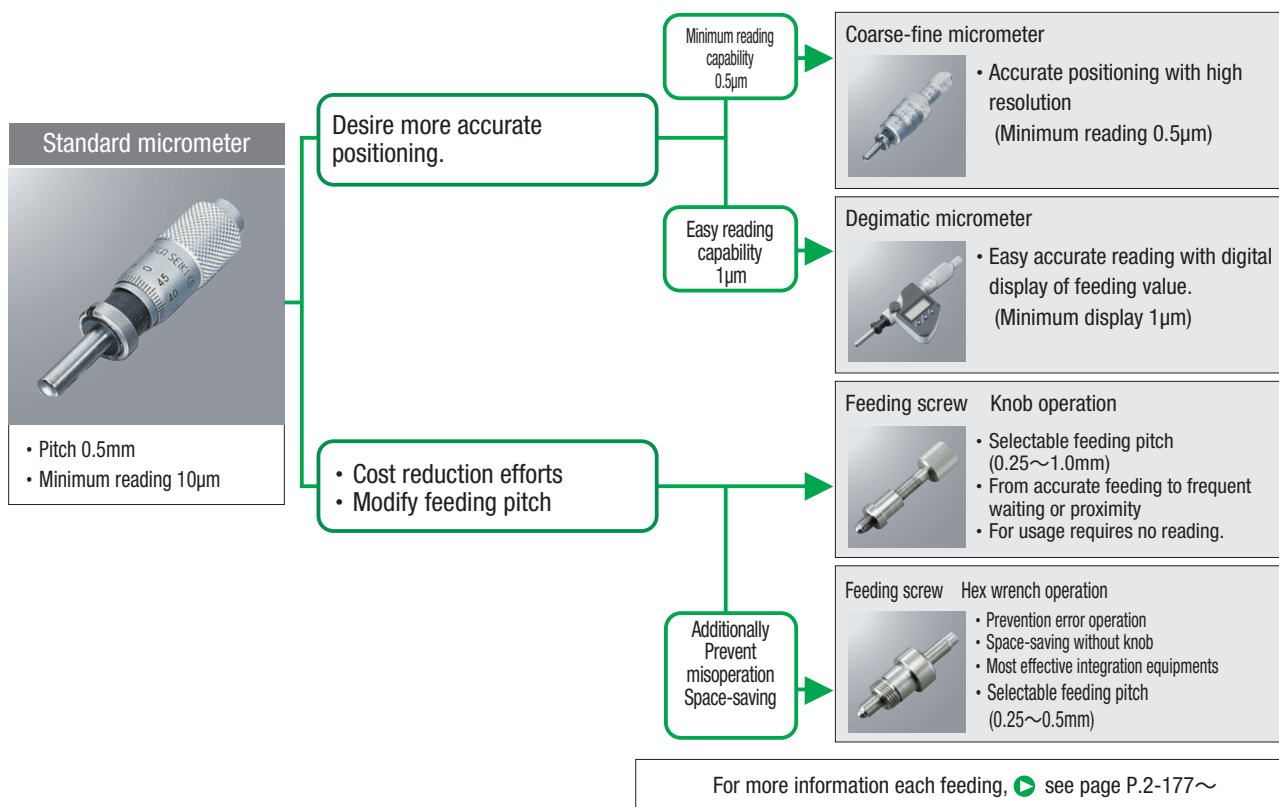
Available vertically mounting

Feeding position	Center				Side			
Mounting positioning Image								
Vertically attached micrometer	Standard		Vertically attached micrometer		Standard		Vertically attached micrometer	
Code	A	B	AZ	BZ	C	D	CZ	DZ
	AR	BR	AZR	BZR	CR	DR	CZR	DZR

SS stage only

Feeding Method

Selectable various feeding method depending on your purpose

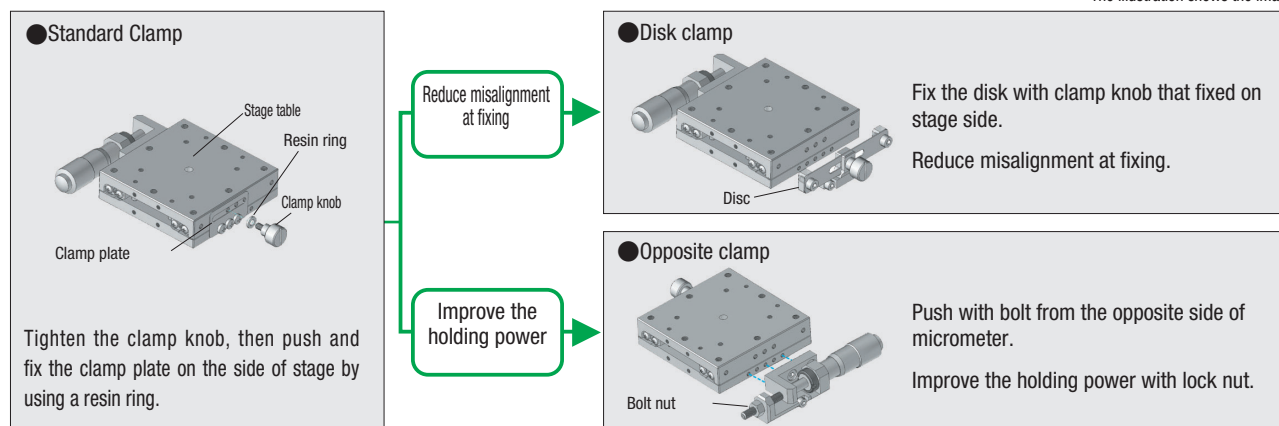


Clamp Type

Selectable a clamp type for your usage.

SS stage only

* The illustration shows the image



Grease

Selectable grease for environment and purpose

SS stage only

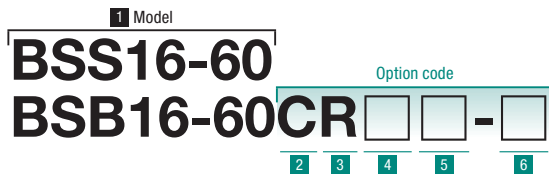
Code table for grease

At the end of the code	-J	-L
Compatible equipment	SS stage	
Grease	Grease for clean environment	Grease for the vacuum
Change the place	Only standard micrometer head (or feeding screw)*	Standard micrometer head (or feeding screw), guide or sliding part.
Grease model/maker	AFF/THK	FOMBLIN/Solvay Specialty Polymers Japan K.K
Range of available temperature	-40~120°C	-20~250°C

- SS stages are used clean environment grease (AFF) (except micrometer)
 Only micrometer changes when you want to change the specification to 「-J」.
- Not available when select coarse-fine micrometer or degimatic micrometer.
- Please refer the stage guidance for accuracy assurance and delivery date. (P.026)

Description of model number

You can order the various specifications by adding the option code after the standard model number.
Add the extra cost to the standard model.



Select the option code as below.

	2 Feeding position		3 Operating position				4 Feeding type (Not available feeding position B/D when selecting)						
Specification	A Standard micrometer	B Coarse-fine micrometer	Standard	Opposite attached micrometer	Vertically attached micrometer	Up/Down-Left/Right opposite	Standard micrometer (P=0.5mm)	Feeding screw (Knob) (P=0.5mm)	Feeding screw (Knob) (P=0.25mm)	Feeding screw (Knob) (P=1.0mm)	Feeding screw (Hex wrench) (P=0.5mm)	Feeding screw (Hex wrench) (P=0.25mm)	Degimatic micrometer
Code	A/C Center/Side	B/D Center/Side	Blank	R	Z	ZR	Blank	1	FP	LP	SH	FH	4

	5 Clamp type			6 Grease specification		
Specification	Standard clamp	Disk clamp	Opposite clamp	Standard grease	Clean environment grease AFF	Grease for the vacuum FOMBLIN
	<ul style="list-style-type: none"> Feeding position C = C/R and Feeding type Blank = FH = SH Not available combination use Z/R 		<ul style="list-style-type: none"> Available only Feeding position C = C/R and Feeding type Blank = FH = SH Not available combination use Z/R 		<ul style="list-style-type: none"> No feeding position B/D No feeding type 4. 	<ul style="list-style-type: none"> No feeding position B/D No feeding type 4.
Code	Blank	5	6	Blank	J	L

ⓘ A color of the parts may be silver due to the option model.

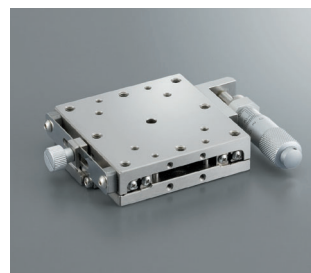
Selection example

Please select the option model after checking below chart.(see above for more details)

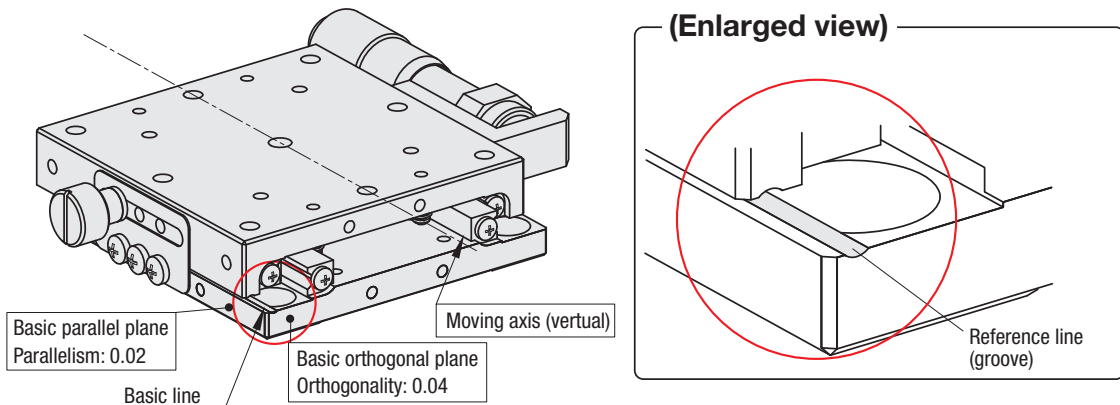
Linear ball Decision	Condition	Model
Main body	<ul style="list-style-type: none"> Travel distance:10mm Mounting load: approx.10kgf Size:60×60mm 	BSS16-60
Feeding position	Side pushing	BSS16-60C
Opposite type	Opposite attached micrometer	BSS16-60CR
Feeding type	Feeding screw: pitch 0.5mm	BSS16-60CR1
Clamp	Disc clamp	BSS16-60CR15
Grease	Clean grease	BSS16-60CR15-J

Goal

Model: BSS16-60CR15-J



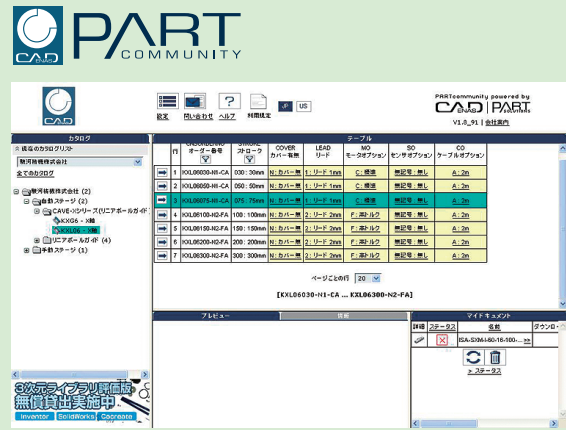
■For the standard attached surface



Our linear ball guide stage has the standard plane of parallelism and orthogonality to the moving axis.
Shows the standard plane as below.

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