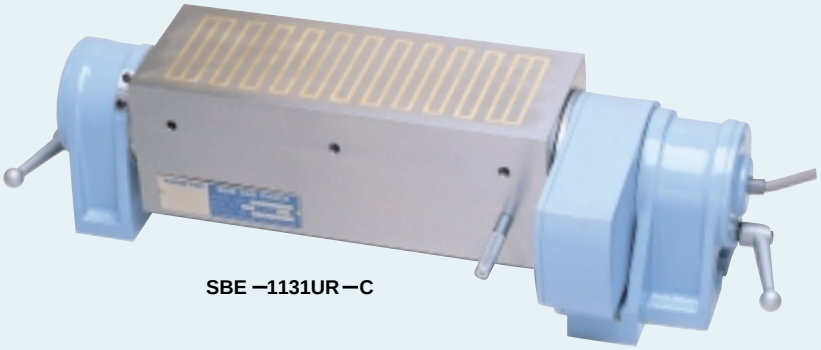
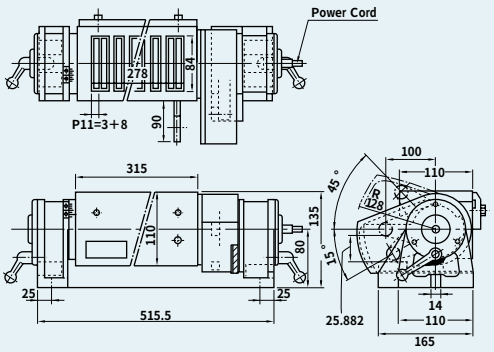
## Model SBE-U

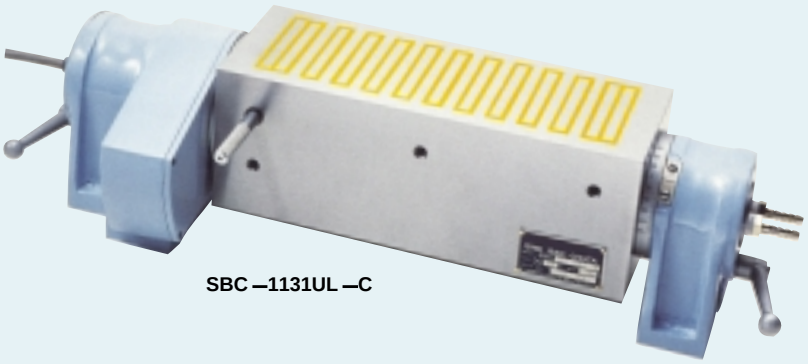


SBE —1131UR—C

〈Model SBE/SBC/SBEP dimensions〉

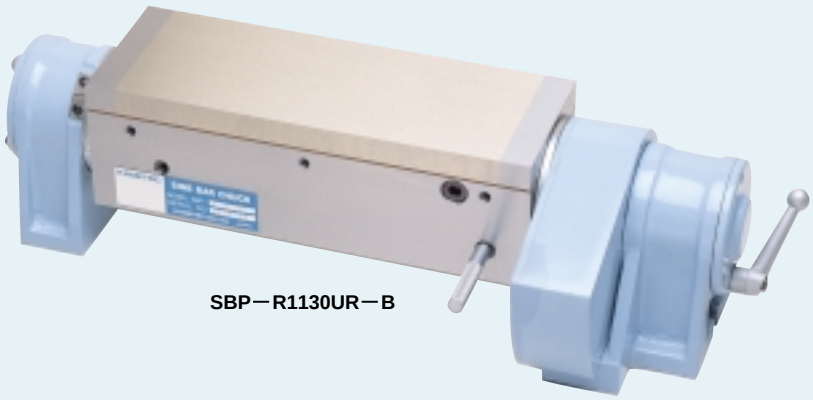



## Model SBC-U



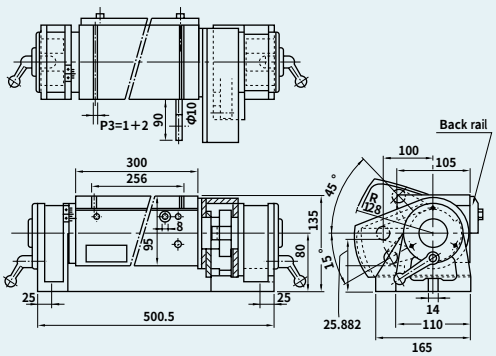
SBC —1131UL —C

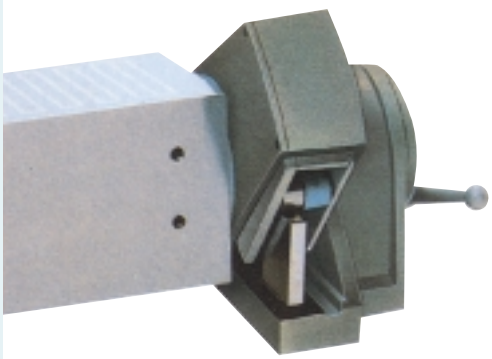
## Model SBP-U



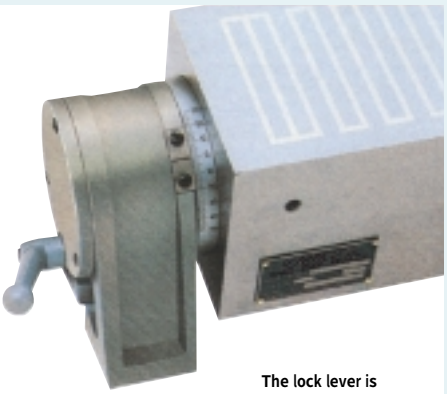
SBP—R1130UR—B

〈Model SBP dimensions〉



When the gange block setting area is on the right side, it is R type (photo) and when it is on the left side, L type.

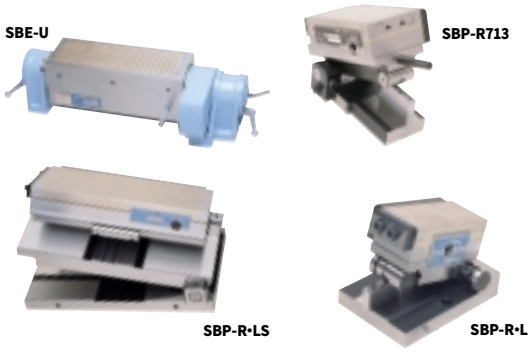


The lock lever is installed on each side.

## ■Type of Sine Bar Chucks

●Magnetic chuck with sine bar for high precision grinding and inspection.
●High precision finish with overall precision higher than 0.007 mm.

| Type | Model | Features | Remarks |
|---|---|---|---|
| Electromagnetic sine bar chuck | SBE-U | Dust cover provided for gage blocks | |
| Water-cooling type electromagnetic sine bar chuck | SBC-U | High precision water-cooling type | |
| Tilting electro permanent electromagnetic sine bar chuck | SBEP-U | Momentary power application for minimized heat generation | |
| Permanent magnetic sine bar chuck | SBP-U | Dust cover provided for gage blocks | |
| Double type permanent magnetic sine bar chuck | SBP-R•LS | Thin double type | |
| Single type permanent magnetic sine bar chuck | SBP-R•S | Thin single type | |
| Small type permanent magnetic sine bar chuck Universal indexing base | SBP-R•L | Small single type With electromagnetic chuck | |




※The permanent magnetic sine bar chuck comes with a gage blocks (for 0– setting) of 25.882 mm of JIS Class B.

## Rotary Type Electro Magnetic Sine Bar Chuck Model

Dust-proof cover with duplex construction is employed. This feature prevents chip from sticking to the gage block. Operation is made with the cover closed.

[Application]

Sine bar chuck suitable for grinding mold and high precison angling of jig, etc.

[Features]

●The Gauge block can be set on either right or left sides and adjustable to meet the rotating direction of the grinder grinding wheel.
●Chuck is smoothly tilted and easily operated.
●Clamp system is used to set delicate angle with one-touch operation.
●Lever can change position slightly by pulling it to shaft direction.
●Dust-proof cover is fixed at any desired place. This makes it easier to clean the gauge block stand, etc.
●Duplex construction of dust-proof cover allows operation with the cover closed and prevents chips from mixture even if the gauge block is set.
●Gauge block of JIS, B grade, 40mm, is supplied as accessories.

[mm (in)]

| Model | Nominal Dimension | Top Plate | | Height | | Tilting Angle | Angle Precision | Voltage | Current | Mass | Electro Chuck Master |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $B_1$ | $L_1$ | Min | Max | | | | | | |
| SBE-1131UR-C | 110 (4.33) ×315 (12.4) | 110 (4.33) | 315 (12.4) | 135 (5.31) | 210 (8.26) | −15°~+45° | 0.007/100 | DC90V | 0.3A | 36kg/80 lb | ES-M103A,ES-M305A EH-V105A,EH-V205A |
| SBE-1131UL-C | | | | | | | | | | | |

※The model having a gage block setting area on the right side is indicated by " R " and that on the left side indicated by " L ".
※For a combination of a rectifier and a demagnetizer,refer to the pages of electrical aquipment for electromagnetic chucks.

## Rotary Type Water-Cooling Electro Magnetic Sine Bar Chuck Model

[Application]

Constructed to enable real-time internal cooling of heat generated when power is applied to the electromagnet making these models suitable for higher precision grinding requirements.

[Features]

●Change in precision is minimized by feeding the coolant inside chuck to cool the coil and prevent temperature rise. Water flow 2 to 4 L/min.
●The mechanical functions and features are almost the same as those of Model SBE chucks.

[mm (in)]

| Model | Nominal Dimension | Top Plate | | Height | | Tilting Angle | Angle Precision | Voltage | Current | Mass | Electro Chuck Master |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $B_1$ | $L_1$ | Min | Max | | | | | | |
| SBC-1131UR-C | 110 (4.33) ×315 (12.4) | 110 (4.33) | 315 (12.4) | 135 (5.31) | 210 (8.26) | −15°~+45° | 0.007/100 | DC90V | 0.3A | 36kg/80 lb | ES-M103A,ES-M305A EH-V105A,EH-V205A |
| SBC-1131UL-C | | | | | | | | | | | |

※The model having a gage block setting area no the right side is indicated by " R " and that on the left side indicated by " L ".
※For a combination of a rectifier ad a demagnetizer,refer to the pages of electrical aquipment for electromagnetic chucks.

## Rotary Type Permanent Magnetic Sine Bar Chuck Model SBP-U

Dust-proof cover with duplex construction is employed. This feature prevents chip from sticking onto the gauge block. Operation is made with the cover closed.

[Application]

Sine bar chuck suitable for grinding mold and high precison angling of jig, etc.

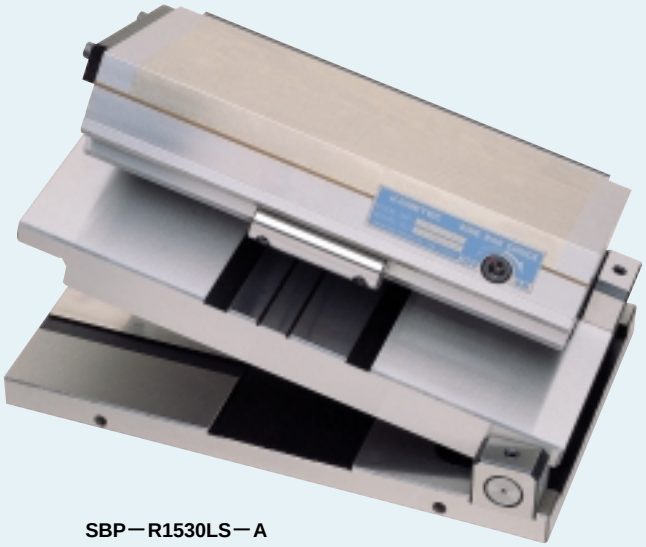
[Features]

●Chuck is easily operated with smooth tilting ability.
●Clamp system is used to set delicate angle with one-touch operation.
●Lever can change position slightly by pulling it to the shaft direction.
●Dust-proof cover is fixed at any desired place. This makes it easier to clean the gauge block atand, etc.
●Duplex construction of dust-proof cover allows operation with the cover closed and prevents chips from mixture even if the gauge block is set.
●Gauge block of JIS, B grade, 40mm, is supplied as accessories.

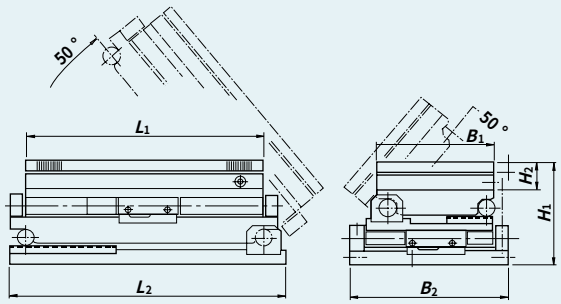
[mm (in)]

| Model | Nominal Dimension | Top Plate | | Height at max. tilting | Tilting Angle | Angle Precision | Mass |
|---|---|---|---|---|---|---|---|
| | | $B_1$ | $L_1$ | | | | |
| SBP-R1130UR-B | 105 (4.13) ×300 (11.8) | 105 (4.13) | 300 (11.8) | 210 (8.26) | −15°~+45° | 0.007/100 | 35kg/77 lb |

## Model SBP-R•LS

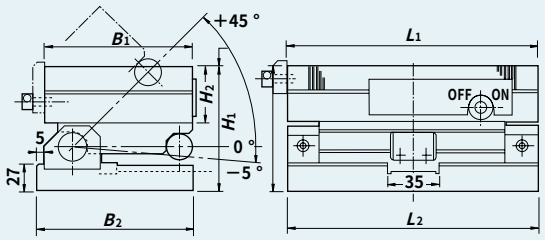


SBP－R1530LS－A



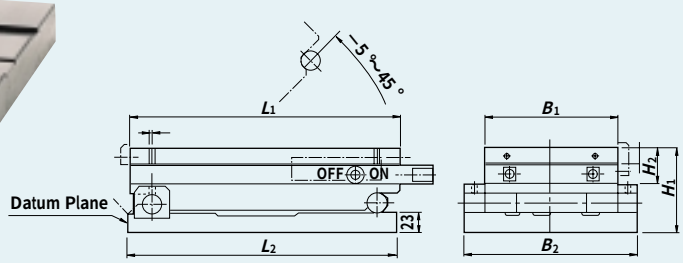

## Model SBP-R•S

SBP－R1530S－B




## Model SBP-R•L

SBP－R1530L－B



## Sine Bar Chuck Double Type Model SBP-R¥LS

Effective area of double type sine bar chuck is enlarged by employing the thin type permanent magnetic chuck. This increases the range of types usable by tilting works in length, breadth or composite angle.

[Features]

●Each part is designed to withstand the use for longer period in high precision finish within 0.007 mm same as single type.

[mm (in)]

| Model | Nominal Dimension | Top Plate | | Pole Pitch | Mounting Section | | Height | | Height at max. tilting | Tilting Angle | Angle Precision | Roller's center Distance | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $B_1$ | $L_1$ | $P$ | $B_2$ | $L_2$ | $H_1$ | $H_2$ | | | | | |
| SBP-R1018LS-A | 105 (4.13) × 175 (6.88) | 105 (4.13) | 175 (6.88) | 3 (1+2) 0.11 (0.03+0.07) | 166 (6.53) | 200 (7.87) | 129 (5.07) | 40 (1.57) | (248) (9.76) | 0°～50° (Precision guaranteed range 0°～45°) | 0.007／100 max. | Upper 75 (2.95) Lower 150 (5.90) | 18kg/ 40 lb |
| SBP-R1325LS-A | 130 (5.11) × 250 (9.84) | 130 (5.11) | 250 (9.84) | | 186 (7.32) | 300 (11.8) | | | (323) (12.7) | | | Upper 100 (3.93) Lower 250 (9.84) | 35kg/ 77 lb |
| SBP-R1515LS-A | 150 (5.90) × 150 (5.90) | 150 (5.90) | 150 (5.90) | | 200 (7.87) | 210 (8.26) | 130 (5.11) | | (264) (10.3) | | | Upper 125 (4.92) Lower 150 (5.90) | 25kg/ 55 lb |
| SBP-R1530LS-A | 150 (5.90) × 300 (11.8) | | 300 (11.8) | | 206 (8.11) | 345 (13.5) | | | (372) (14.6) | | | Upper 125 (4.92) Lower 300 (11.8) | 45kg/100 lb |

※Gange blocks are not included. A hexagonal wrench key is included.
※The pole pitch may be 1.5(0.5+1.0).

## Sine Bar Chuck Single Type Model SBP-R¥S

[Application]

Flat type for wide range of uses in height so thin as 81mm～106 mm. This single type chuck is finished in high precision within 5 micron by mounting thin type permanent magnetic chuck.

Entire sine bar section is made of special steel and ground in precision after hardening it.

High precision grinding and measurement is ensured for longer periods due to lapping finish of principal sections.

[Features]

●New type with thin permanent magnetic chuck.

●Easy to use and a large effective area is provided for machining the works.

[mm (in)]

| Model | Nominal Dimension | Top Plate | | Pole Pitch | Mounting Section | | Height | | Height at max. tilting | Tilting Angle | Angle Precision | Roller's center Distance | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $B_1$ | $L_1$ | $P$ | $B_2$ | $L_2$ | $H_1$ | $H_2$ | | | | | |
| SBP-R1018S-B | 105 (4.13) × 175 (6.88) | 105 (4.13) | 175 (6.88) | 3 (1+2) 0.11 (0.03+0.07) | 110 (4.33) | 175 (6.88) | 89 (3.50) | 40 (1.57) | (117) (4.60) | −5°～45° | 0.007／100 max. | 75 (2.95) | 9kg/ 20 lb |
| SBP-R1530S-B | 150 (5.90) × 300 (11.8) | 150 (5.90) | 300 (11.8) | | 160 (6.29) | 300 (11.8) | 96 (3.77) | | (172) (6.77) | | | 125 (4.92) | 27kg/ 60 lb |
| SBP-R1018S-B | 150 (5.90) × 450 (17.7) | | 450 (17.7) | | | 450 (17.7) | 100 (3.93) | | | | | | 48kg/106 lb |

※Gange blocks are not included. A hexagonal wrench key is included.

## Sine Bar Chuck Model SBP-R¥L

[Application]

This is a long-type permanent magnetic chuck with the shorter side as tilt axis, which ensures high-precision grinding and measurement. This is suitable for high-precision angle grinding on a mold grinding machine and so on.

[Features]

●A handle facilitates work tilted in the longitudinal direction.

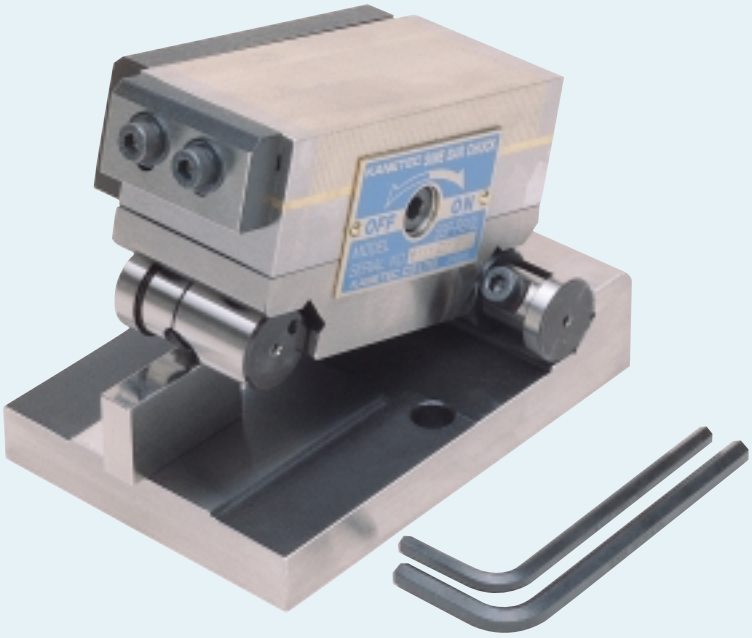
●The functional features and performance conform to the wide-type.

[mm (in)]

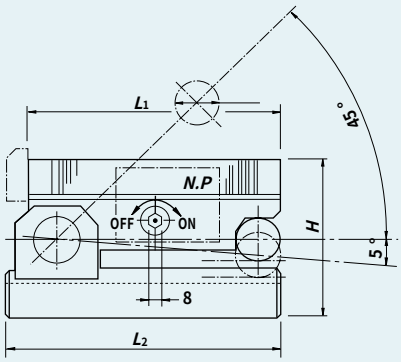
| Model | Nominal Dimension | Top Plate | | Pole Pitch | Mounting Section | | Height | | Height at max. tilting | Tilting Angle | Angle Precision | Roller's center Distance | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $B_1$ | $L_1$ | $P$ | $B_2$ | $L_2$ | $H_1$ | $H_2$ | | | | | |
| SBP-R1018L-B | 105 (4.13) × 175 (6.88) | 105 (4.13) | 175 (6.88) | 3 (1+2) 0.11 (0.03+0.07) | 151 (5.94) | 175 (6.88) | 89 (3.50) | 40 (1.57) | (175.5) (6.90) | −5°～45° | 0.007／100 max. | 125 (4.92) | 11kg/ 24 lb |
| SBP-R1530L-B | 150 (5.90) × 300 (11.8) | 150 (5.90) | 300 (11.8) | | 196 (7.71) | 300 (11.8) | 103 (4.05) | | (272) (10.7) | | | 250 (9.84) | 32kg/ 71 lb |

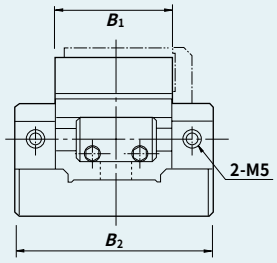
※Gange blocks are not included. The tilting base fixing screws are 6 mm wide across flats.A hexagonal wrench key is included.

## Model SBP-R•L



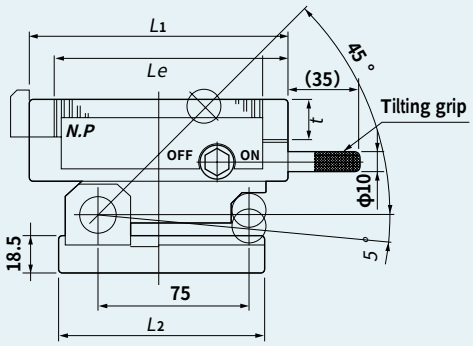
SBP－R510L－B

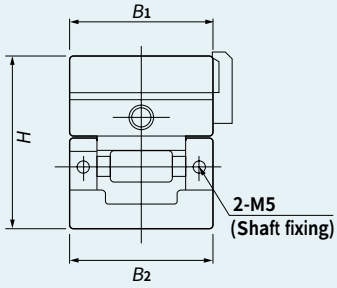



## Model SBP-R

SBP－R713L－B



## Sine Bar Chuck Mini Type Model SBP-R¥L

[Application]

Designed for easy use in mold-grinding and angle measurement of small works.

[Features]

- Compact and simple in construction for easy handling.
- The shaft can be secured so as to use it for grinding operation.
- Usable as sine bar by removing the pemranent magnetic chuck from chuck base.
  Eesy to clean up.

[mm (in)]

| Model | Nominal Dimension | Top Plate | | Pole Pitch | Mounting Section | | Height | Height at max. tilting | Tilting Angle | Angle Precision | Roller's center Distance | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $B_1$ | $L_1$ | $P$ | $B_2$ | $L_2$ | $H$ | | | | | |
| SBP-R510L-B | 45 (1.77) ×95 (3.74) | 45 (1.77) | 95 (3.74) | 3 (1+2) 0.11 (0.03+0.07) | 75 (2.95) | 103 (4.05) | 62 (2.44) | (114) (4.48) | −5 ∾45 ° | 0.007/100 max. | 75 (2.95) | 3kg/6.6 lb |

※No gage block is included.A hexagonal wrench key is included.

## Sine Bar Chuck Small Type Model SBP-R

Two types are available such as lengthy type (Model SBP-R713S) and breadthy type (Model SBP-R713L) as seen to the tilting angle.
Excellent precision and durability similar to thin type permanent magnetic sine bar chuck, but overall height is slightly higher.

[Application]

Easily usable for angle-grinding for high precision on the mold grinder, etc.

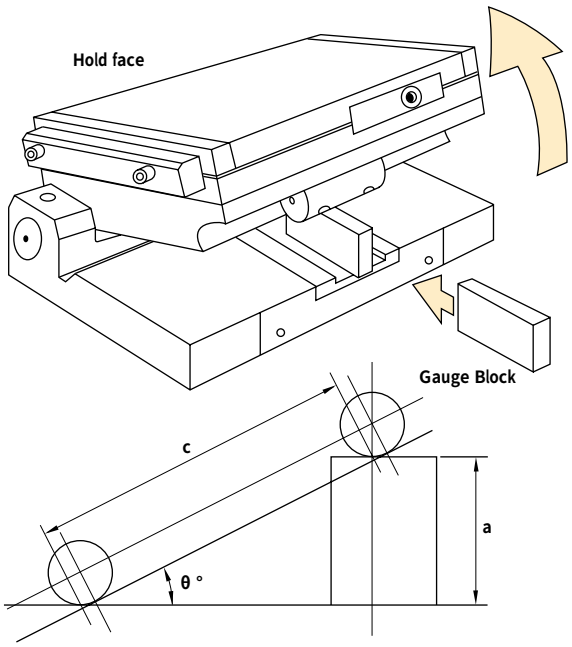
[Features]

- Thin type permanent magnetic chuck is applied.
- Polar pitch on the work face is shortened to 1.5 mm from conventional 10 mm so as to meet the grinding work of wide range from small pieces to thick work.

[mm (in)]

| Model | Nominal Dimension | Top Plate | | Pole Pitch | Mounting Section | | Height | Height at max. tilting | Tilting Angle | Angle Precision | Roller's center Distance | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $B_1$ | $L_1$ | $P$ | $B_2$ | $L_2$ | $H$ | | | | | |
| SBP-R713L-B | 75 (2.95) ×130 (5.11) | 75 (2.95) | 130 (5.11) | 3 (1+2) 0.11 (0.03+0.07) | 75 (2.95) | 103 (4.05) | 86 (3.38) | (124) (4.88) | −5 ∾45 ° | 0.007/100 max. | 75 (2.95) | 7kg/15.5 lb |
| SBP-R713S-B | 130 (5.11) × 75 (2.95) | 130 (5.11) | 75 (2.95) | | | | | (114) (4.48) | | | | |

※No gage block is included.A hexagonal wrench key is included.




## Mechanism of Angle Setting by Sine Bar Chuck

A gage block is used for setting the angle. In the case of fine angles, it is necessary to set small gaps such as 0.1mm and 0.15mm. Because gage blocks have physical limits, the setting reference plane is set in a groove 1mm in the negative side to enable setting of thin gaps such as 1.1mm and 1.15mm.

An angle is obtained by the trigonometric function using the gage block dimension as the vertical side (a) and the roller center distance (from the center of open/close fulcrum shaft to the center of reference bar on the open/close side) as the hypotenuse (c), as shown on the left.

$$\text{From } \sin\theta \fallingdotseq \frac{a}{c}$$

Select an approximate value from the function table for θ °.

When using a special angle repeatedly, a method is available which uses a special master gage made to the dimension "a," which determines an angle, obtained from the function table in advance.