

# GENERAL CATALOG



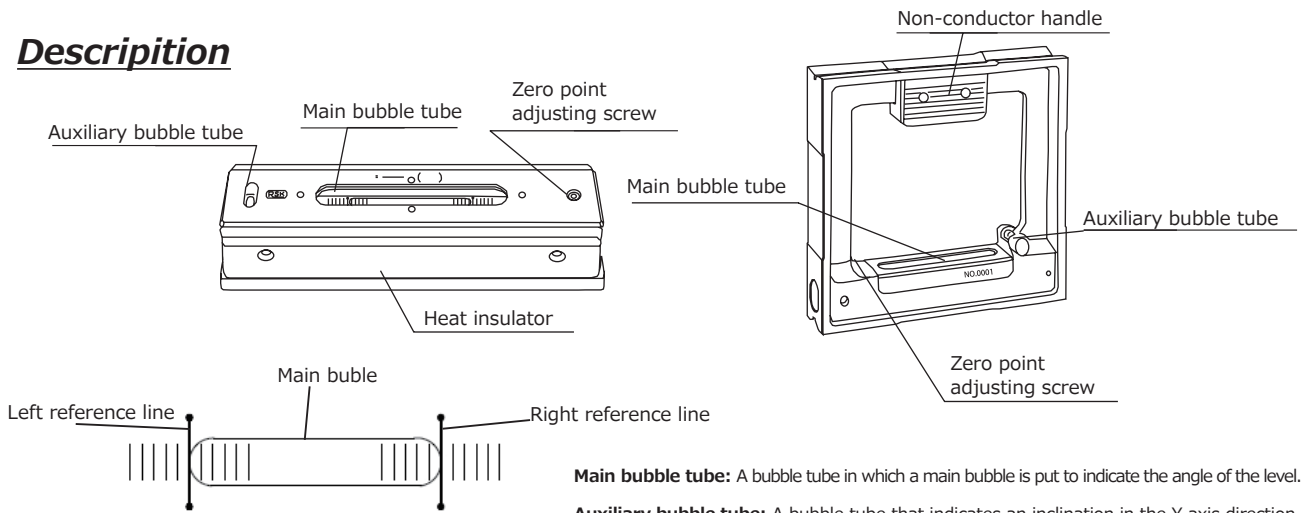
NIIGATA RIKEN SOKUHAN CO.,LTD.

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## Description



**Main bubble tube:** A bubble tube in which a main bubble is put to indicate the angle of the level.

**Auxiliary bubble tube:** A bubble tube that indicates an inclination in the Y-axis direction.

**Zero point adjusting screw:** A screw used for zero point adjustment of a level (centering of the main bubble) before use.

## Degree of Accuracy

Degree of accuracy indicates how closely the reading of a level agrees with the inclination of a place where a level is put.

The grade of a level (Grades A or B) indicates the degree of accuracy.

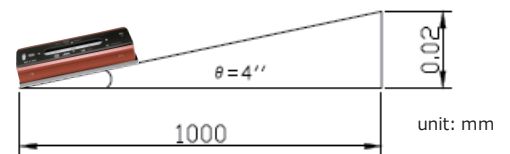
(For details of grades of accuracy, refer to page 13.)

Total range accuracy means allowable accuracy throughout the measuring range of a bubble tube. While, adjacent accuracy means the allowable accuracy between graduations. (Refer to JIS B 7510.)

	Sensitivity category	Grade A	Grade B
Full range accuracy	Class 1	± 0.5 graduations or less	± 0.7 graduations or less
	Class 2	± 0.3 graduations or less	± 0.5 graduations or less
	Class 3		
Adjacent accuracy	Class 1	0.2 graduations or less	0.5 graduations or less
	Class 2		
	Class 3		

## Sensitivity

JIS B 7510 prescribes that the sensitivity of a level is indicated with an inclination (a height or angle of a right triangle whose base is 1m) that moves the bubble in the main bubble tube by one graduation when the base is 1m. (Refer to the figure on the right.) Basically, levels are classified into three classes per sensitivity.



Class 1: 4 s (0.02 mm/m)

Class 2: 10 s (0.05 mm/m)

Class 3: 20 s (0.1 mm/m)

The measurable range of a level differs depending on the sensitivity.

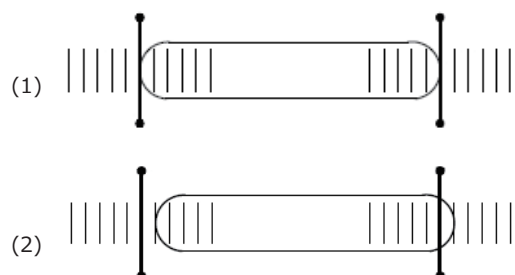
If an inclination of an item to be measured exceeds the measurable range of level, the bubble goes outside the graduations and therefore the inclination cannot be measured. Select an appropriate level according to your measurement requirements.

If five graduations are drawn on both sides of the left and right reference lines, the measurable range of the level is as follows:

	Class 1 (0.02mm/m)	Class 2 (0.05mm/m)	Class 3 (0.1mm/m)
Measurable range	± 0.1mm/m	± 0.25mm/m	± 0.5mm/m

Ex:

When the bubble in a class-1 level moves from the position shown in Fig. (1) to the position shown in Fig. (2), the bubble indicates an inclination of 4 seconds (a height difference of 0.02 m at a distance 1 m from the edge of the level).

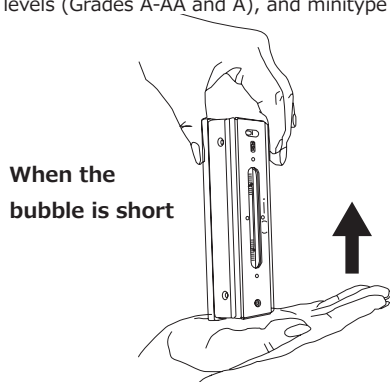


## Adjustment of bubble length

The length of the bubble in a level may vary depending on temperatures and vibrations.

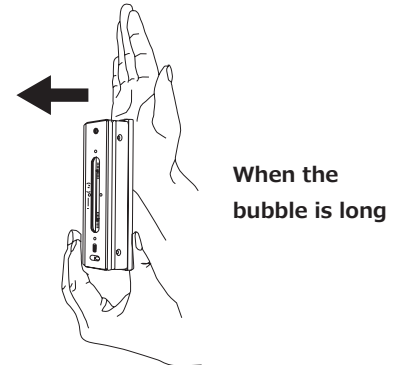
If the length of the bubble changes, an inclination cannot be measured accurately. Adjust the length with respect to the reference lines before use in accordance with the following procedure:

\* Levels whose bubble length can be adjusted are as follows: Square-shaped precision levels (Grades A-AA and A), flat-type precision levels (Grades A-AA and A), and minitype levels.



**When the bubble is short**

Face down the zero point adjusting screw and tap the side of a level. Small bubbles rise and therefore the main bubble is lengthened.



**When the bubble is long**

Face up the zero point adjusting screw and tap the back side of the zero point adjusting screw (measuring plane).

## Zero point adjustment (Centering of bubble)

Be sure to check the zero point of a precision level before use.

Turn around the level by 180° and then check whether the bubble stays in the same position.

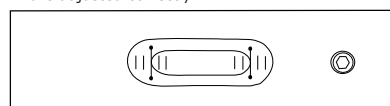
In cases (3) and (4), zero point adjustment is required.

In case (3), the position of the bubble differs by four graduations before and after the level is turned. Adjust the bubble position by turning the adjusting screw until the bubble moves back by two graduations (a half of the displacement).

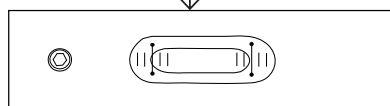
Repeat this procedures until the bubble stays in the same position when the level is turned around.

\* Note that an inclination cannot be indicated correctly when the temperature changes drastically or the measuring plane does not function normally (due to poor cleaning or the flatness of a surface plate).

(1) The zero points of the level and the surface plate are adjusted correctly.



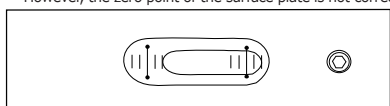
Turned around



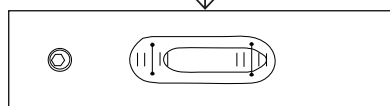
The bubble is centered with respect to the reference lines.

(2) The zero point of the level is adjusted correctly.

However, the zero point of the surface plate is not correct.

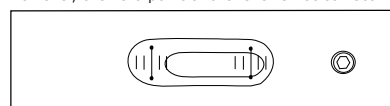


Turned around

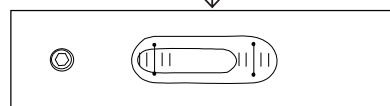


The right side of the surface plate is two graduations higher than the left side.

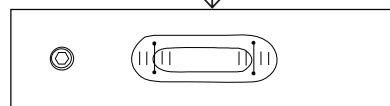
(3) The zero point of the surface plate is adjusted correctly. However, the zero point of the level is not correct.



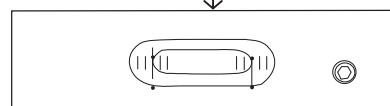
When the level is turned around, the zero point varies by four graduations.



In this case, adjust the position of the bubble by turning the adjusting screw until the bubble moves back by two graduations (a half of the variation).

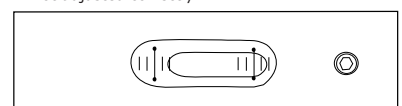


Turned around

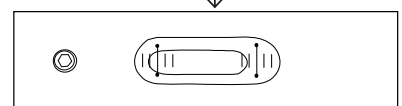


The zero points of the level and surface plate are adjusted correctly.

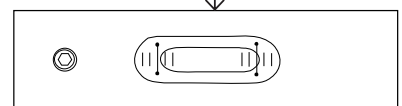
(4) The zero points of a level and a surface plate are not adjusted correctly.



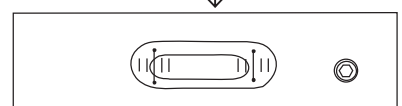
When the level is turned around, the zero point varies by three graduations.



In this case, adjust the position of the bubble by turning the adjusting screw until the bubble moves back by 1.5 graduations (a half of the variation).



Turned around



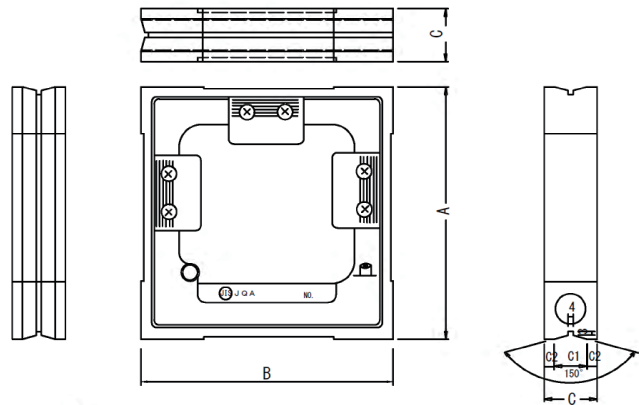
The left side of the surface plate is 0.5 graduation higher than the right

Stock No.541AA

## Precision square level (Grade A-AA)

- These levels have highly accurate squareness. They are ideal measurement standards for squareness measurements.
- Grade A-AA is our original standard. The measurement accuracy of Grade A-AA is better than JIS Grade A.
- These levels can measure the horizontality of cylindrical items.

■ Dimensional drawing Unit : mm



呼び寸	A	B	C	C1	C2
150	150	150	40	24	8
200	200	200	42	26	8
250	250	250	48	34	8
300	300	300	50	34	8

### Features

- These levels are manufactured and inspected in accordance with JIS B 7510.
- These levels have an "air chamber" to adjust the length of the bubbles. Even if the bubbles are or lengthened due to temperature changes, an inclination can be measured correctly by adjusting the length manually.

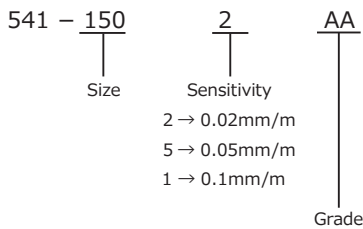
Material: Cast iron

Package: Wooden box or Carton

Accessories: Hexagonal wrench,

Certificate of inspection, and Instruction manual

### Configuration of stock number



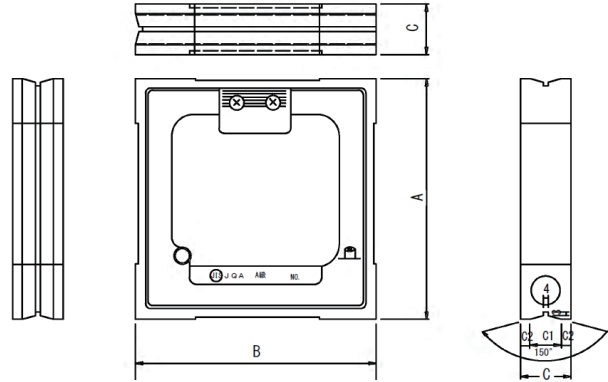
Product No	Stock No	Size (mm)	Sensitivity (mm/m)	Squareness (±μm)	Weight (kg)
01-02-150	541-1502AA	150	0.02	2.2	2.1
01-02-200	541-2002AA	200		3.0	3.8
01-02-250	541-2502AA	250		3.7	5.8
01-02-300	541-3002AA	300		4.5	7.5
01-05-150	541-1505AA	150	0.05	3.7	2.1
01-05-200	541-2005AA	200		5.0	3.8
01-05-250	541-2505AA	250		6.2	5.8
01-05-300	541-3005AA	300		7.5	7.5
01-10-150	541-1501AA	150	0.1	3.7	2.1
01-10-200	541-2001AA	200		5.0	3.8
01-10-250	541-2501AA	250		6.2	5.8
01-10-300	541-3001AA	300		7.5	7.5

Stock No.541A

## Precision square level (Grade A)

- They are ideal measurement standards for angularity measurements.
- Grade A is the highest accuracy grade among all grades prescribed by JIS.
- These levels can measure the horizontality of cylindrical items.

■ Dimensional drawing Unit : mm



呼心	A	B	C	C1	C2
150	150	150	40	24	8
200	200	200	42	26	8
250	250	250	48	34	8
300	300	300	50	34	8

### Features

- These levels are manufactured and inspected in accordance with JIS B 7510.
- These levels have an "air chamber" to adjust the length of the bubbles. Even if the bubbles are shortened or lengthened due to temperature changes, an inclination can be measured correctly by adjusting the length manually.

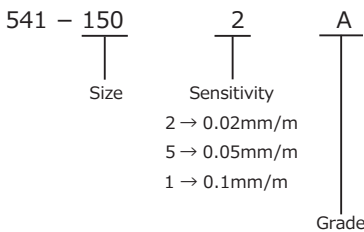
Material: Cast iron

Package: Wooden box or Carton

Accessories: Hexagonal wrench,

Certificate of inspection, and Instruction manual

### Configuration of stock number



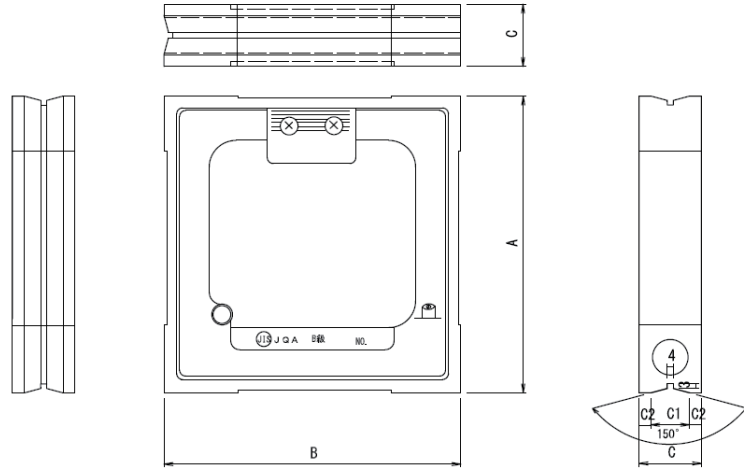
Product No	Stock No	Size (mm)	Sensitivity (mm/m)	Squareness (±μm)	Weight (kg)
02-02-150	541-1502A	150	0.02	2.2	2.1
02-02-200	541-2002A	200		3.0	3.8
02-02-250	541-2502A	250		3.7	5.8
02-02-300	541-3002A	300		4.5	7.5
02-05-150	541-1505A	150	0.05	3.7	2.1
02-05-200	541-2005A	200		5.0	3.8
02-05-250	541-2505A	250		6.2	5.8
02-05-300	541-3005A	300	7.5	7.5	
02-10-150	541-1501A	150	0.1	3.7	2.1
02-10-200	541-2001A	200		5.0	3.8
02-10-250	541-2501A	250		6.2	5.8
02-10-300	541-3001A	300		7.5	7.5

Stock No.541B

## Precision square level (Grade B)

• These levels can measure the horizontality of cylindrical items.

■ Dimensional drawing Unit : mm



呼び	A	B	C	C1	C2
150	150	150	40	24	8
200	200	200	42	26	8
250	250	250	50	34	8
300	300	300	50	34	8

### Features

• These levels are manufactured and inspected in accordance with JIS B 7510.

\* Levels of JIS Grade B do not have an air chamber.

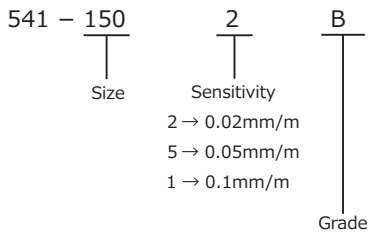
Material: Cast iron

Package: Wooden box or Carton

Accessories: Hexagonal wrench,

Certificate of inspection, and Instruction manual

### Configuration of stock number



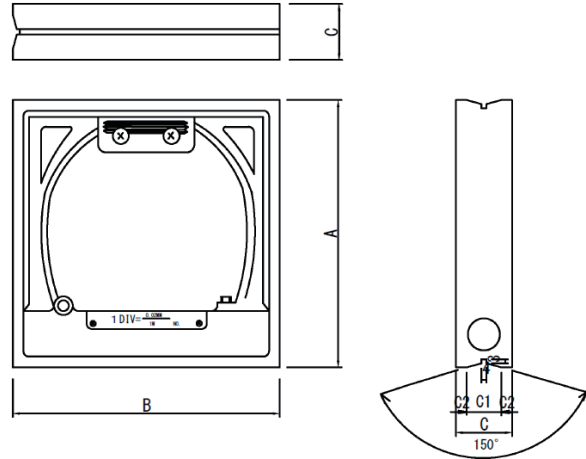
Product No	Stock No	Size (mm)	Sensitivity (mm/m)	Squareness (±μm)	Weight (kg)
03-02-150	541-1502B	150	0.02	3.0	2.1
03-02-200	541-2002B	200		4.0	3.8
03-02-250	541-2502B	250		5.0	5.8
03-02-300	541-3002B	300		6.0	7.5
03-05-150	541-1505B	150	0.05	5.2	2.1
03-05-200	541-2005B	200		7.0	3.8
03-05-250	541-2505B	250		8.7	5.8
03-05-300	541-3005B	300		10.5	7.5
03-10-150	541-1501B	150	0.1	5.2	2.1
03-10-200	541-2001B	200		7.0	3.8
03-10-250	541-2501B	250		8.7	5.8
03-10-300	541-3001B	300		10.5	7.5

Stock No.541

## Precision square level (Standard type)



■ Dimensional drawing Unit : mm



### Features

- These levels are manufactured in accordance with our company's standards.
- A level of a smaller size (100 mm) than JIS-standard products is also available.
- Total range accuracy: ± 2.0 graduations or less
- Flatness of the bottom, sides and top: 0.01 mm or less
- Squareness of the bottom to the both sides: 0.01 mm or less
- \* The accuracy of the V-shaped planes is not guaranteed.

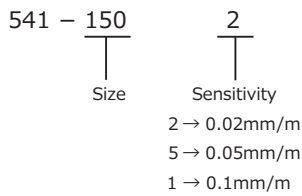
呼心	A	B	C	C1	C2
100	100	100	38	24	7
150	150	150	42	26	8
200	200	200	42	26	8
250	250	250	45	29	8
300	300	300	48	29	8

Material: Cast iron

Package: Wooden box or Carton

Accessories: Hexagonal wrench, Certificate of conformity

### Configuration of stock number



Product No	Stock No	Size (mm)	Sensitivity (mm/m)	Weight (kg)
04-02-100	541-1002	100	0.02	1.0
04-02-150	541-1502	150		2.1
04-02-200	541-2002	200		3.8
04-02-250	541-2502	250		5.8
04-02-300	541-3002	300		7.5
04-05-100	541-1005	100	0.05	1.0
04-05-150	541-1505	150		2.1
04-05-200	541-2005	200		3.8
04-05-250	541-2505	250		5.8
04-05-300	541-3005	300		7.5
04-10-100	541-1001	100	0.1	1.0
04-10-150	541-1501	150		2.1
04-10-200	541-2001	200		3.8
04-10-250	541-2501	250		5.8
04-10-300	541-3001	300		7.5

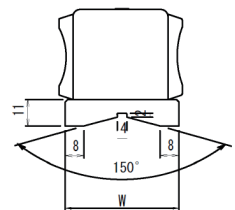
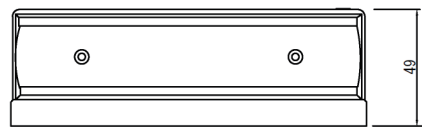
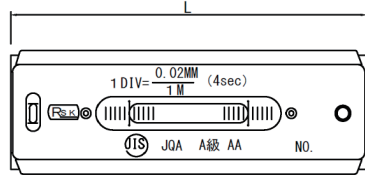


Stock No.542AA

## Precision flat level (Grade A-AA)

- Grade A-AA is our company' s standard. The measurement accuracy of Grade A-AA is better than JIS Grade A.
- These levels can be used as measurement standards for various horizontality checks.
- These levels can measure the horizontality of cylindrical items.

■ Dimensional drawing Unit : mm



呼び寸	150	200	250	300
L	150	200	250	300
W	45	48	48	50

### Features

- These levels are manufactured and inspected in accordance with JIS B 7510.
- These levels have an "air chamber" to adjust the length of the bubbles. Even if the bubbles are shortened or lengthened due to temperature changes, an inclination can be measured correctly by adjusting the length manually.
- The bottom of these levels (measuring planes) are hardened to increase wear resistance so that they can be used for a long time.

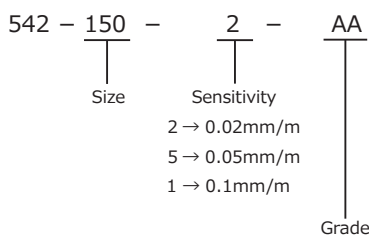
Material : SKS3 (measuring planes)

Package : Wooden box ,Carton

Accessories : Hexagonal wrench,

Certificate of inspection, and Instruction manual.

### Configuration of stock number



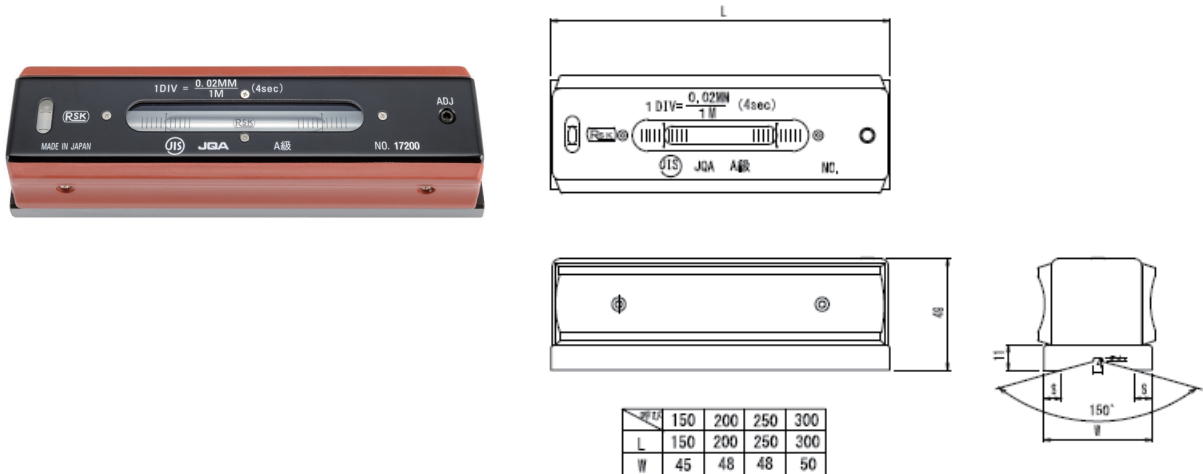
Product No	Stock No	Size (mm)	Sensitivity (mm/m)	Weight (kg)
05-02-150	542-1502AA	150	0.02	1.3
05-02-200	542-2002AA	200		1.7
05-02-250	542-2502AA	250		2.3
05-02-300	542-3002AA	300		2.8
05-05-150	542-1505AA	150	0.05	1.3
05-05-200	542-2005AA	200		1.7
05-05-250	542-2505AA	250		2.3
05-05-300	542-3005AA	300		2.8
05-10-150	542-1501AA	150	0.1	1.3
05-10-200	542-2001AA	200		1.7
05-10-250	542-2501AA	250		2.3
05-10-300	542-3001AA	300		2.8

Stock No.542A

## Precision flat level (Grade A)

- They are ideal measurement standards for angularity measurements.
- Grade A is the highest accuracy grade among all grades prescribed by JIS.
- These levels can measure the horizontality of cylindrical items.

■ Dimensional drawing Unit : mm



### Features

- These levels are manufactured and inspected in accordance with JIS B 7510.
- These levels have an "air chamber" to adjust the length of the bubbles. Even if the bubbles are shortened or lengthened due to temperature changes, an inclination can be measured correctly by adjusting the length manually.
- The bottom of these levels (measuring planes) are hardened to increase wear resistance so that they can be used for a long time.

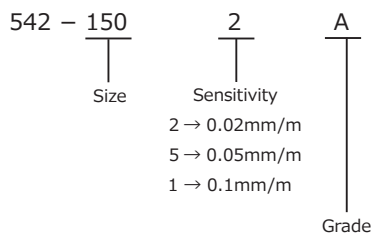
Material : SKS3 (measuring planes)

Package : Wooden box ,Carton

Accessories : Hexagonal wrench,

Certificate of inspection, and Instruction manual.

### Configuration of stock number



Product No	Stock No	Size (mm)	Sensitivity (mm/m)	Weight (kg)
06-02-150	542-1502A	150	0.02	1.3
06-02-200	542-2002A	200		1.7
06-02-250	542-2502A	250		2.3
06-02-300	542-3002A	300		2.8
06-05-150	542-1505A	150	0.05	1.3
06-05-200	542-2005A	200		1.7
06-05-250	542-2505A	250		2.3
06-05-300	542-3005A	300		2.8
06-10-150	542-1501A	150	0.1	1.3
06-10-200	542-2001A	200		1.7
06-10-250	542-2501A	250		2.3
06-10-300	542-3001A	300		2.8

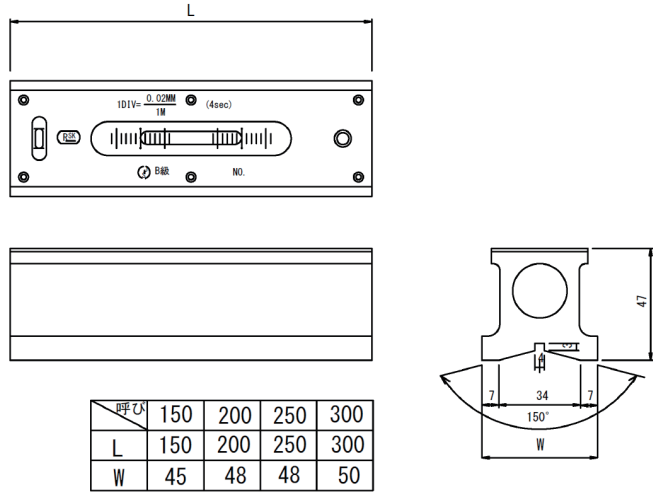
Stock No.542B

**Precision flat level (Grade B)**

- These levels can measure the horizontality of cylindrical items.



■ Dimensional drawing Unit : mm



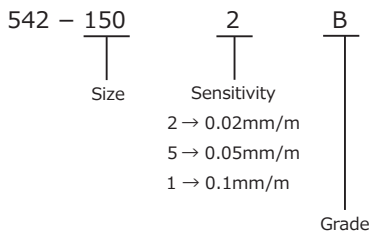
**Features**

- These levels are manufactured and inspected in accordance with JIS B 7510.

\* Levels of JIS Grade B do not have an air chamber.

Material : Cast iron  
 Package : Wooden box ,Carton  
 Accessories : Hexagonal wrench,  
 Certificate of inspection, and Instruction manual.

**Configuration of stock number**

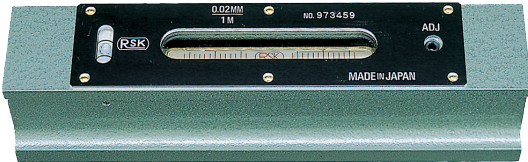


Product No	Stock No	Size (mm)	Sensitivity (mm/m)	Weight (kg)
07-02-150	542-1502B	150	0.02	1.3
07-02-200	542-2002B	200		1.7
07-02-250	542-2502B	250		2.3
07-02-300	542-3002B	300		2.8
07-05-150	542-1505B	150	0.05	1.3
07-05-200	542-2005B	200		1.7
07-05-250	542-2505B	250		2.3
07-05-300	542-3005B	300		2.8
07-10-150	542-1501B	150	0.1	1.3
07-10-200	542-2001B	200		1.7
07-10-250	542-2501B	250		2.3
07-10-300	542-3001B	300		2.8

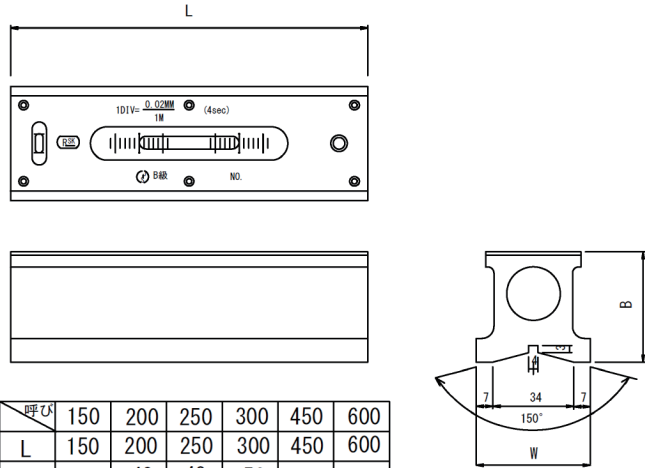
Stock No.542

## Precision flat level (Standard type)

- These are the most general-purpose levels for horizontality adjustment.



■ Dimensional drawing Unit : mm



呼び寸	150	200	250	300	450	600
L	150	200	250	300	450	600
W	45	48	48	50	52	52
B	47	47	47	47	50	50

### Features

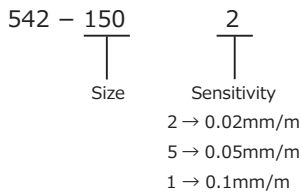
- These levels are manufactured in accordance with our company's standards.
- A level of a smaller size (100 mm) and bigger size(450mm and 600 mm) than JIS-standard products is also available.
- Total range accuracy:  $\pm 2.0$  graduations or less
- \* The accuracy of the V-shaped planes is not guaranteed.

Material : Cast iron

Package : Wooden box ,Carton

Accessories : Hexagonal wrench,Certificate of conformity

### Configuration of stock number



Product No	Stock No	Size (mm)	Sensitivity (mm/m)	Weight (kg)
08-02-100	542-1002	100	0.02	0.8
08-02-150	542-1502	150		1.3
08-02-200	542-2002	200		1.7
08-02-250	542-2502	250		2.3
08-02-300	542-3002	300		2.8
08-02-450	542-4502	450		4.5
08-02-600	542-6002	600		6.0
08-05-100	542-1005	100	0.05	0.8
08-05-150	542-1505	150		1.3
08-05-200	542-2005	200		1.7
08-05-250	542-2505	250		2.3
08-05-300	542-3005	300		2.8
08-05-450	542-4505	450		4.5
08-05-600	542-6005	600		6.0
08-10-100	542-1001	100	0.1	0.8
08-10-150	542-1501	150		1.3
08-10-200	542-2001	200		1.7
08-10-250	542-2501	250		2.3
08-10-300	542-3001	300		2.8
08-10-450	542-4501	450		4.5
08-10-600	542-6001	600		6.0

■ **About the accuracy of level**

Under the JIS standard, guarantee level is different from each grades.

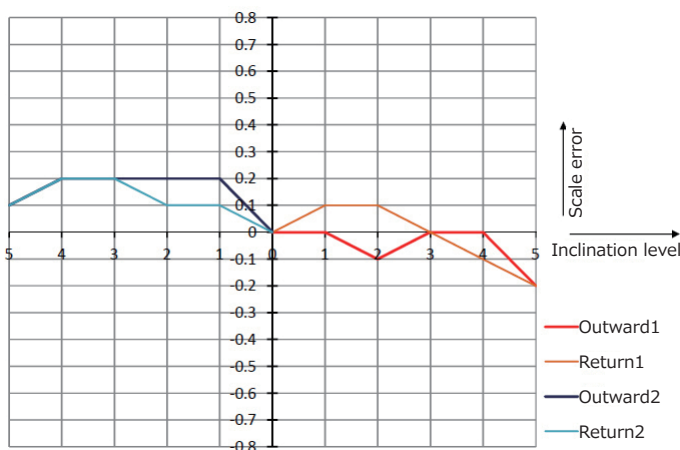
***Precision square level***

Item	Grade	Grade A-AA			Grade A (JIS B 7510)			Grade B (JIS B 7510)		
	Sensitivity	Class 1	Class 2	Class 3	Class 1	Class 2	Class 3	Class 1	Class 2	Class 3
Degree of Accuracy	Total range	± 0.2 graduations or less			± 0.5 graduations or less	± 0.3 graduations or less		± 0.7 graduations or less	± 0.5 graduations or less	
	Adjacent	0.2 graduations or less			0.2 graduations or less			0.5 graduations or less		
Squareness of the bottom to the both sides		0.015 mm /m or less	0.025 mm /m or less		0.015 mm /m or less	0.025 mm /m or less		0.02 mm /m or less	0.035 mm /m or less	
Parallelism v groove to surface with v groove		0.5 graduations or less			0.5 graduations or less			0.5 graduations or less		
Parallelism bottom to top side		0.5 graduations or less			0.5 graduations or less			0.5 graduations or less		
Flatness bottom to side surface		0.003 mm or less	0.005 mm or less		0.003 mm or less	0.005 mm or less		0.003 mm or less	0.005 mm or less	

***Precision flat level***

Item	Grade	Grade A-AA			Grade A (JIS B 7510)			Grade B (JIS B 7510)		
	Sensitivity	Class 1	Class 2	Class 3	Class 1	Class 2	Class 3	Class 1	Class 2	Class 3
Degree of Accuracy	Total range	± 0.2 graduations or less			± 0.5 graduations or less	± 0.3 graduations or less		± 0.7 graduations or less	± 0.5 graduations or less	
	Adjacent	0.2 graduations or less			0.2 graduations or less			0.5 graduations or less		
Parallelism v groove to surface with v groove		0.5 graduations or less			0.5 graduations or less			0.5 graduations or less		
Flatness bottom surface		0.003 mm or less	0.005 mm or less		0.003 mm or less	0.005 mm or less		0.003 mm or less	0.005 mm or less	

■ **Bubble tube accuracy inspection sheet**



• Grade A-AA, A and B levels are manufactured and inspected in accordance with JIS B 7510.

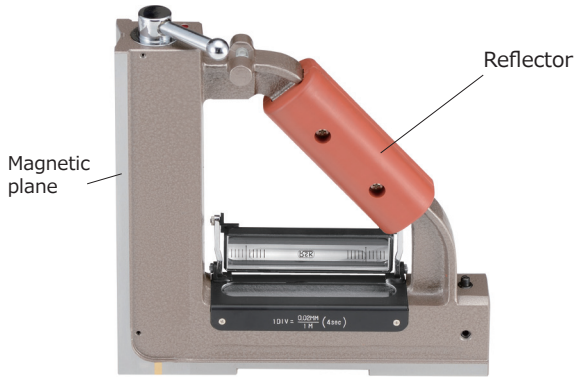
The figure on the left is an accuracy inspection sheet for bubble tubes.

For the grade-A precision square levels and precision flat levels (size: 200, 250 and 300 mm ), models with a sensitivity of 0.01 mm/m (2 seconds) are available.

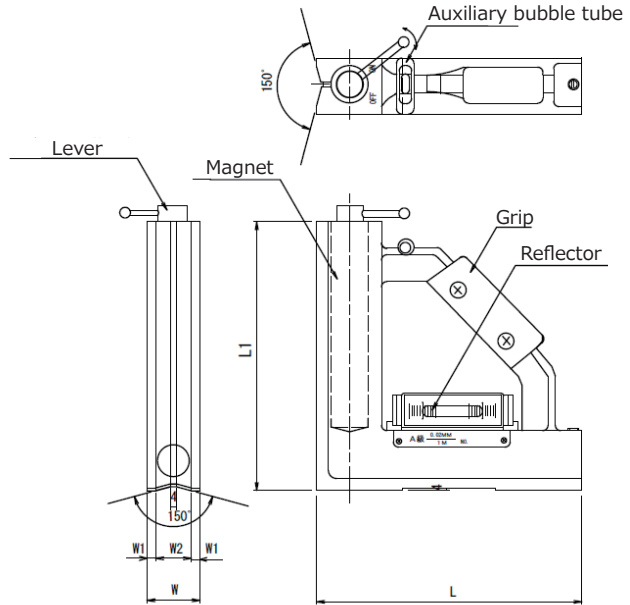
Stock No.583

Magnetic square precision level

- These levels can measure an inclination of columnar items.
- These levels have accuracy equivalent to JIS Grade A.



■ Dimensional drawing Unit : mm



Features

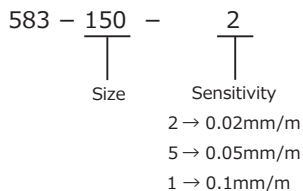
- By sticking magnetic planes to columnar items, the angularity can be measured with high accuracy.
- Since the magnetic plane sticks to an item to be measured, an indicated value can be read even when removing your hand. This allows for safer measurement in high places.
- A measured value can be read easily with the reflector.

Size	L	L 1	W	W1	W2
150	160	153	35	6.5	22
200	200	200	40	6.5	27
250	250	250	41	6.5	28



Material : Cast iron(Bottom) ,S50C (Magnetic plane)  
 Package : Wooden box ,Carton  
 Accessories : Hexagonal wrench, Certificate of inspection, and Instruction manual

Configuration of stock number



- \* For the smallest model (150 mm), a reflector is not provided.
- \* This level do not have an air chamber.

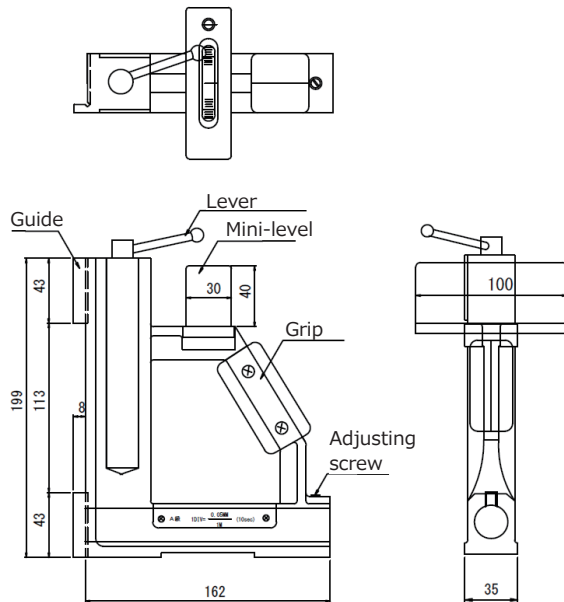
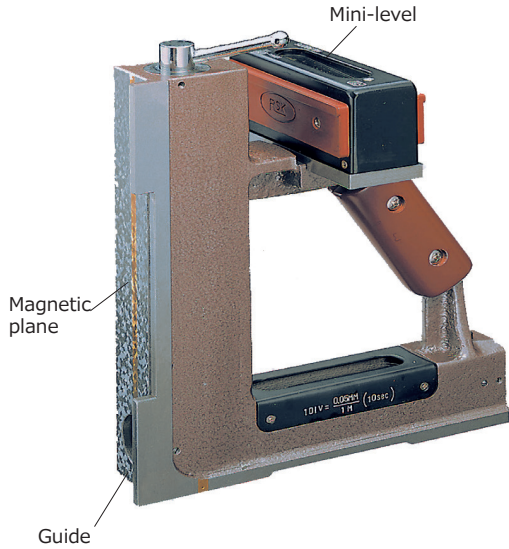
Product No	Stock No	Size (mm)	Sensitivity (mm/m)	Squareness ( ±μm)	Weight (kg)
09-02-150	583-1502	150	0.02	2.2	2.2
09-02-200	583-2002	200		3.0	3.2
09-02-250	583-2502	250		3.7	4.9
09-05-150	583-1505	150	0.05	3.7	2.2
09-05-200	583-2005	200		5.0	3.2
09-05-250	583-2505	250		6.2	4.9
09-10-150	583-1501	150	0.1	3.7	2.2
09-10-200	583-2001	200		5.0	3.2
09-10-250	583-2501	250		6.2	4.9

Stock No.583LM

**Magnetic square precision level for LM guide**

- These levels can be used to measure the squareness of devices with a linear-motion guideway.
- In the Y-axis direction, a mini - level that is equivalent to JIS Grade A is mounted to read correctly.
- These levels have accuracy equivalent to JIS Grade A.

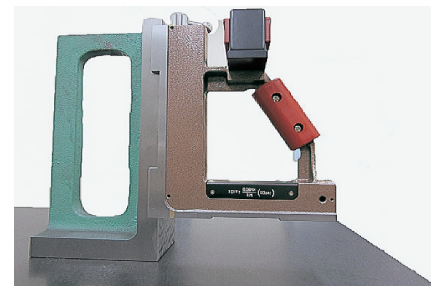
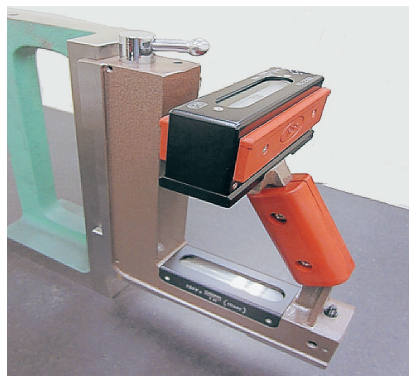
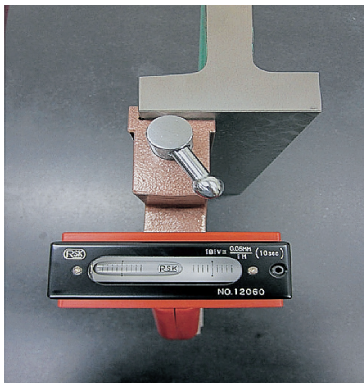
■ Dimensional drawing Unit : mm



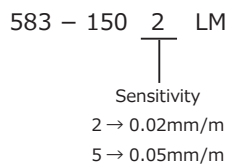
**Features**

- By applying the guide of the level to the side of a workpiece, the squareness can be measured correctly and easily.
- The magnetic plane is flat and does not have a V-groove to measure the squareness and straightness of devices with a linear-motion guideway.

\* This level do not have an air chamber.



**Configuration of stock number**



Material : Cast iron(Bottom), S50C (Magnetic plane)  
 Package : Wooden box  
 Accessories : Hexagonal wrench,  
 Certificate of inspection, and Instruction manual

Product No	Stock No	Size (mm)	Sensitivity (mm/m)	Squareness (±μm)	Weight (kg)
090-02-150	583-1502LM	150	0.02	2.2	3.4
090-05-150	583-1505LM		0.05	3.7	



# 584, 740

# Precision level

Stock No.584

## Mini-level

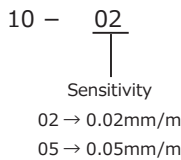
- Despite their small size of 100mm, these levels have accuracy equivalent to JIS Grade A.
- A leather case is attached to carry these levels and measure horizontality accurately outdoors.



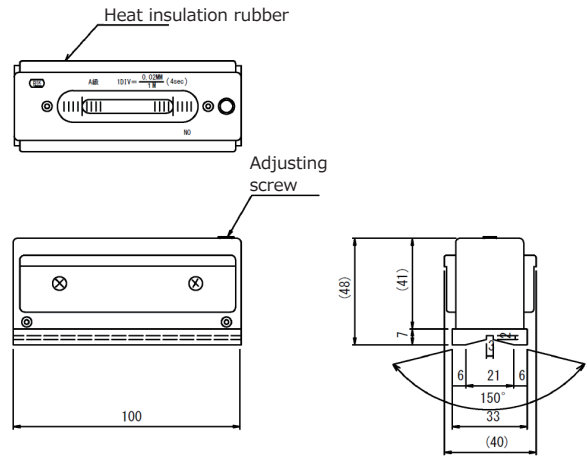
### Features

- These levels have an "air chamber" to manually adjust the length of the bubbles. The air chamber reduces measurement errors caused by temperature changes.
- To increase the wear resistance, the bottom of these levels is hardened. (Hardness: HS 65 or more)

### Configuration of stock number



### Dimensional drawing Unit : mm



Material : SKS3 (measuring planes)

Package : Leather case, Carton

Accessories : Hexagonal wrench,

Certificate of inspection, and instruction manual

Product No	Stock No	Size (mm)	Sensitivity (mm/m)	Weight (kg)
10-02	584-1002	100	0.02	0.5
10-05	584-1005		0.05	

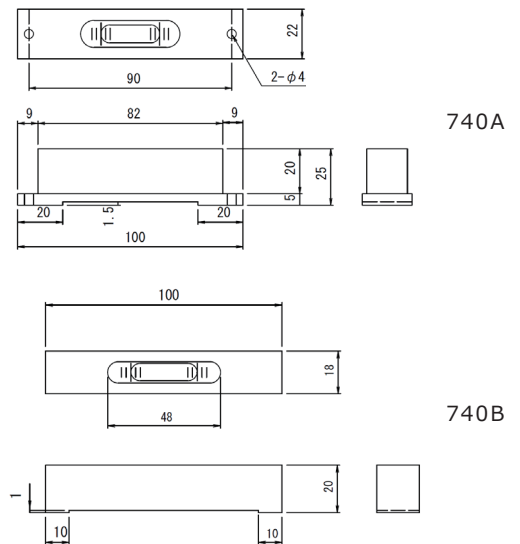
Stock No.740

## High-level

- These levels do not require centering of the bubbles.
- Just putting them on a place to measure, and the horizontality can be measured.
- These levels are the smallest of our products.
- They are optimal for measuring horizontality in a narrow space.



### Dimensional drawing Unit : mm



Material : Cast iron

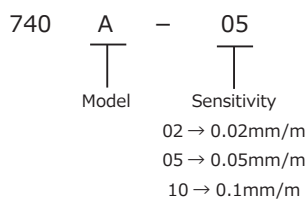
Package : Carton

Accessories : Certificate of conformity

### Features

- Model 740A has a hole (φ4) in both ends. It can be used with it fixed.
- Models 740A and 740B have accuracy equivalent to the flat-type levels for general works.

### Configuration of stock number



Product No	Stock No	Sensitivity (mm/m)	Weight (kg)
22-740A-05	740A05	0.05	0.19
22-740A-10	740A01	0.1	
22-740B-02	740B02	0.02	0.15
22-740B-05	740B05	0.05	
22-740B-10	740B01	0.1	



## Stock No.600

### Cross-test precision level(T-type)

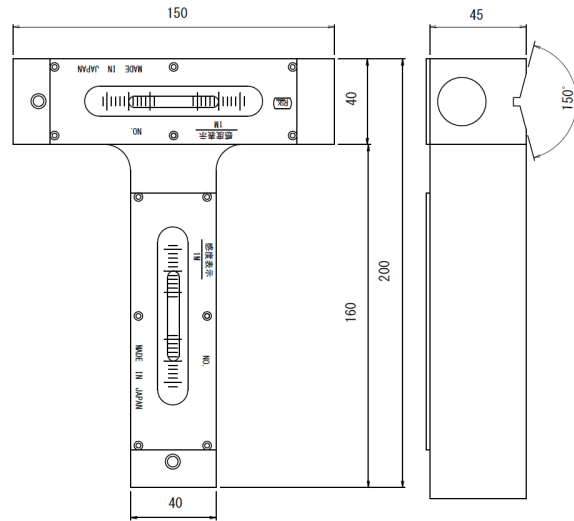
- The horizontality in the X-axis and Y-axis directions can be measured simultaneously only with these levels.



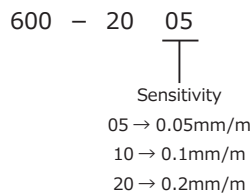
#### Features

- The horizontality of the X-axis and Y-axis on the same plane can be measured simultaneously.
- The vertical and horizontal bubble tubes have an adjusting screw, respectively, to center the bubbles.

■ Dimensional drawing Unit : mm



#### Configuration of stock number



Material : Cast iron  
 Package : Wooden box ,Carton  
 Accessories : Certificate of conformity

Product No	Stock No	Sensitivity (mm/m)	Weight (kg )
12-05	600-2005	0.05	2.7
12-10	600-2001	0.1	
12-20	600-2002	0.2	

## Stock No.252

### Portable level

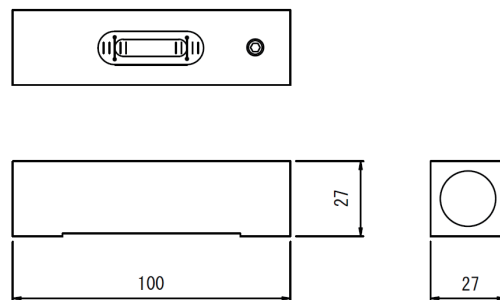
- Small level with emphasis on portability.



#### Features

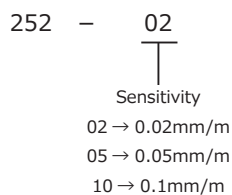
- Despite their small size, these levels have an adjusting screw to center the bubbles.
- These levels have accuracy equivalent to the flat-type levels for standard type.

■ Dimensional drawing Unit : mm



Material : Cast iron  
 Package : Carton  
 Accessories : Certificate of conformity

#### Configuration of stock number



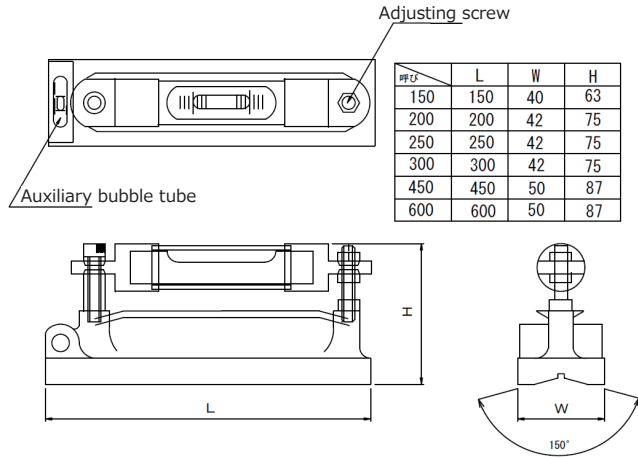
Product No	Stock No	Sensitivity (mm/m)	Weight (kg )
15-02	252-02	0.02	0.34
15-05	252-05	0.05	
15-10	252-10	0.1	

Stock No.543

## Adjustable bench level

- The bubble tubes are exposed for ease of reading.

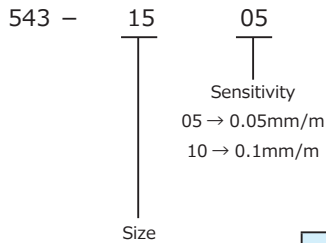
■ Dimensional drawing Unit : mm



### Features

- The sensitivity of these levels can be selected from among 0.05 mm/m and 0.1 mm/m.

### Configuration of stock number

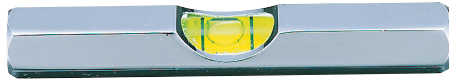


Material : Cast iron  
Package : Wooden box ,Carton  
Accessories : Certificate of conformity

Product No	Stock No	Size (mm)	Sensitivity (mm/m)	Weight (kg)
11-05-150	543-1505	150	0.05	0.9
11-05-200	543-2005	200		1.3
11-05-250	543-2505	250		1.7
11-05-300	543-3005	300		2.2
11-05-450	543-4505	450		4.5
11-05-600	543-6005	600		6.5
11-10-150	543-1501	150	0.1	0.9
11-10-200	543-2001	200		1.3
11-10-250	543-2501	250		1.7
11-10-300	543-3001	300		2.2
11-10-450	543-4501	450		4.5
11-10-600	543-6001	600		6.5

Stock No.572

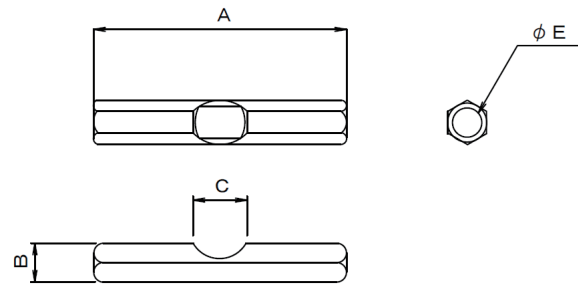
## Pocket level



### Features

- The surfaces of these levels are plated with nickel.
- Two sizes (65 mm and 90 mm) are available.

■ Dimensional drawing Unit : mm



呼び	A	B	C	φ E
65	65	10	14	7.5
90	90	12	26	9.2

Material : C3604

Package : Carton

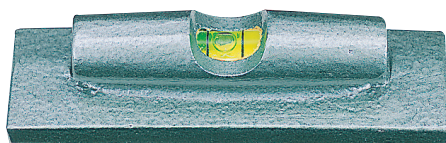
### Configuration of stock number

17 - 65  
|  
Size

Product No	Stock No	Size (mm)	Weight (kg)
17-65	572-65	65	0.04
17-90	572-90	90	0.05

Stock No.573

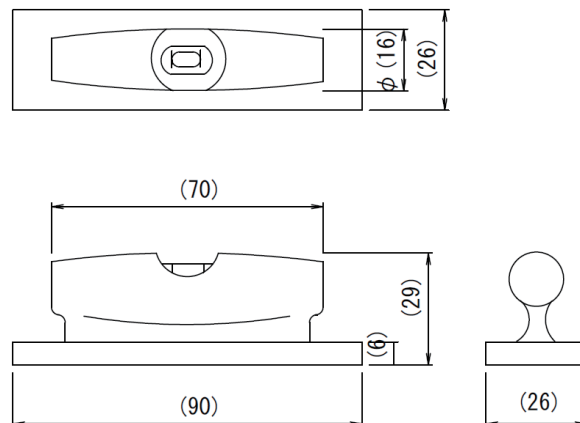
## Small bench level



### Features

- This is a small-sized level made of cast iron.

■ Dimensional drawing Unit : mm



Material : Cast iron

Package : Carton

Product No	Stock No	全長 (mm)	Weight (kg)
18-90	573-90	90	0.25

## Stock No.574

### Cross test level with vertical measurement

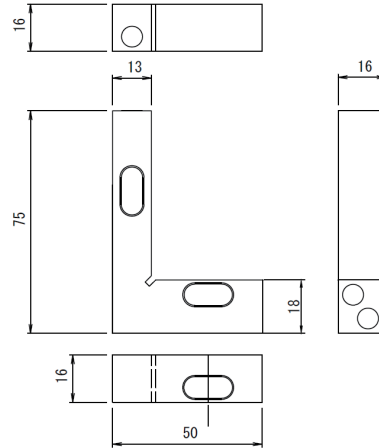
• A simplified level that is useful to measure the horizontality in the X-axis and Y-axis directions.



#### Features

- The cast-iron body is plated.
- The exterior and interior angles are grinded to ensure accuracy of measurements.

■ Dimensional drawing Unit : mm



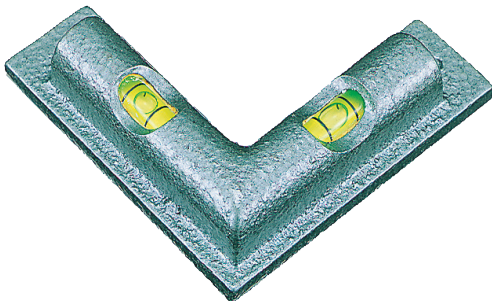
Material : Cast iron  
Package : Carton

Product No	Stock No	Weight (kg )
19-75	574-75HV	0.18

## Stock No.575

### Cross test level

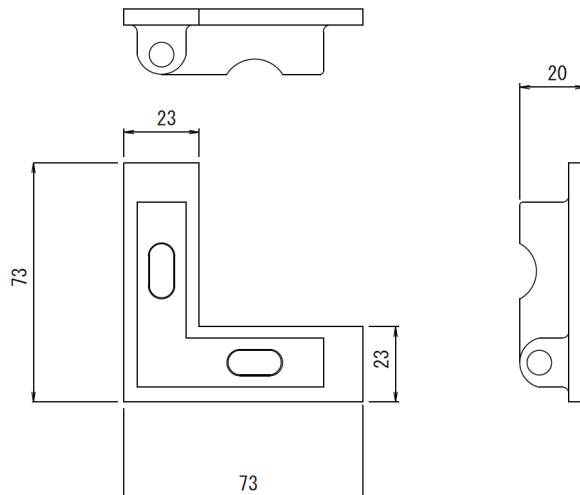
• A simplified level that is useful to measure the horizontality in the X-axis and Y-axis directions.



#### Features

- The main body is made of cast iron.

■ Dimensional drawing Unit : mm



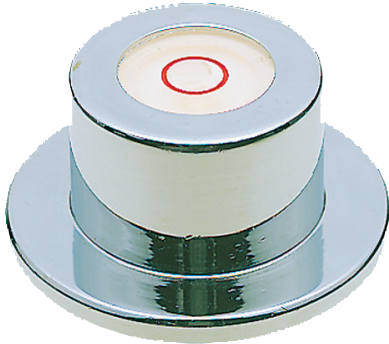
Material : Cast iron  
Package : Carton

Product No	Stock No	Weight (kg )
20-65	575-65	0.23

Stock No.576

## Round level

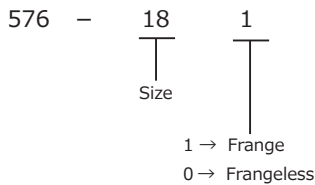
- Horizontality in all directions can be measured with the bubble under the circular glass.



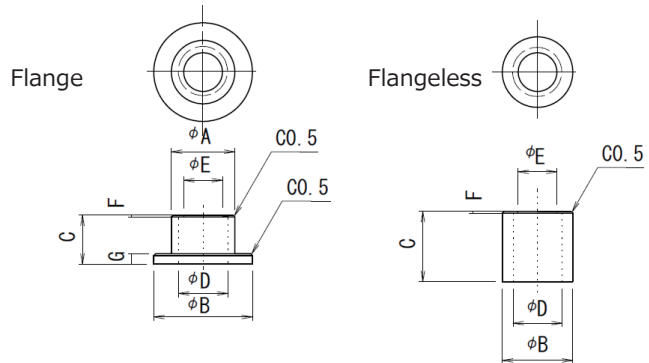
### Features

- Two types of circular levels (flanged and flangeless types) are available.
- By making holes in the flange, the flanged types can be fixed to various devices.  
(Making holes in the flange is also available by request.)

### Configuration of stock number



■ Dimensional drawing Unit : mm



呼び	A	B	C	D	E	F	G
Flange 18	18	28	14	14	11	0.5	3
Flange 20	20	30	15	14	11	0.5	3
Flange 24	24	35	18	17.5	15	0.5	3
Flange 25	25	38	18	17.5	15	0.5	3
Flangeless 20		20	20	14	11	0.5	
Flangeless 24		24	20	17.5	15	0.5	

Material : C3604

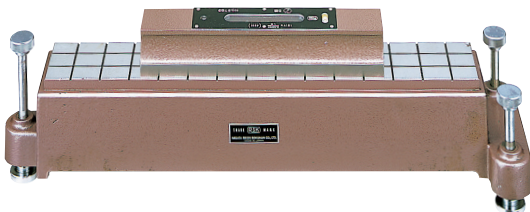
Package : Bubble wrap

Product No	Stock No	Size (mm)	Weight (kg)
21-1-18	576-181	18	0.02
21-1-20	576-201	20	0.03
21-1-24	546-241	24	0.05
21-1-25	576-251	25	0.08
21-2-20	576-200	20	0.04
21-2-24	576-240	24	0.05

Stock No.0501

## Centering adjuster

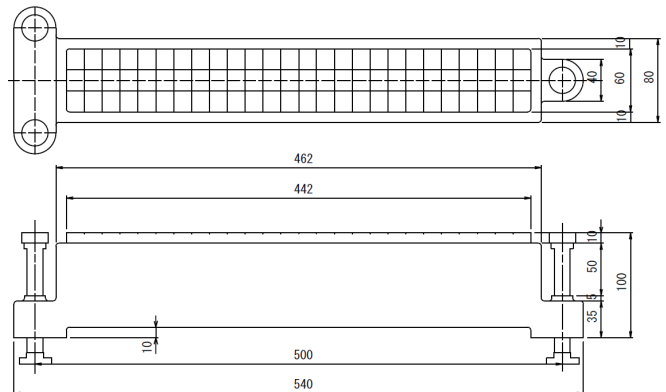
- This is a device for zero point adjustments (centering of bubbles).



### Features

- This equipment is supported at three points as a surface plate.  
The bubble of a level can be centered only with this equipment.
- Unlike the surface plate, this device is easy to carry.  
It is convenient for level adjustment at work sites.

■ Dimensional drawing Unit : mm



Material : Cast iron

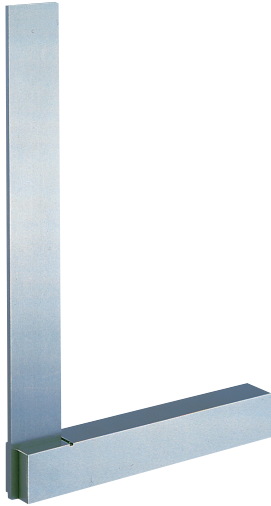
Package : Wooden box

Product No	Stock No	pitch (mm)	Weight (kg)
22-500	501	500	13

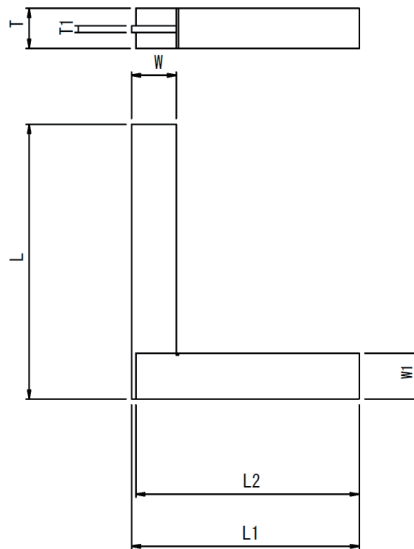
Stock No.546

## Precision square with base

- Since these squares stand on their bases, the stability of measurements is ensured.
- All grade-1 models are hardened. Grade-2 models are manufactured without hardening.



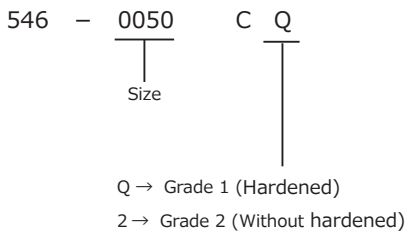
■ Dimensional drawing Unit : mm



寸法	L	L1	L2	W	W1	T	T1
50	50	40	38	14	13	10	2.5
75	75	50	48	16	15	13	2.5
100	100	70	67	20	18	15	2.5
150	150	100	97	24	22	18	3
200	200	130	126	29	26	22	4
250	250	164	160	30	26	22	4
300	300	200	196	35	32	27	4
400	400	204	200	40	40	30	5
450	450	280	276	45	40	30	5
500	500	300	295	46	45	35	5
600	600	325	318	50	55	35	6
750	750	400	393	58	63	50	8
1000	1000	550	540	65	80	65	10
1500	1500	620	607	80	90	65	10
2000	2000	830	815	100	105	70	12

Material : S50C (Grade 1), SS400 (Grade 2)  
 Package: Carton (50 ~ 400 mm) Wooden box (450 mm ~)

### Configuration of stock number



Product No	Stock No	Size	Squareness (±μm)	Straightness (μm)	Weight (kg)
23-1-0050	546-0050CQ	50	12.5	6.2	0.05
23-2-0050	546-0050C2		25.0	12.5	
23-1-0075	546-0075CQ	*75	13.7	6.8	0.1
23-2-0075	546-0075C2		27.5	13.7	
23-1-0100	546-0100CQ	*100	15.0	7.5	0.18
23-2-0100	546-0100C2		30.0	15.0	
23-1-0150	546-0150CQ	*150	17.5	8.7	0.4
23-2-0150	546-0150C2		35.0	17.5	
23-1-0200	546-0200CQ	*200	20.0	10.0	0.74
23-2-0200	546-0200C2		40.0	20.0	
23-1-0250	546-0250CQ	250	22.5	11.2	1.0
23-2-0250	546-0250C2		45.0	22.5	
23-1-0300	546-0300CQ	*300	25.0	12.5	1.7
23-2-0300	546-0300C2		50.0	25.0	
23-1-0400	546-0400CQ	400	30.0	15.0	2.5
23-2-0400	546-0400C2		60.0	30.0	
23-1-0450	546-0450CQ	450	32.5	16.2	3.2
23-2-0450	546-0450C2		65.0	32.5	
23-1-0500	546-0500CQ	*500	35.0	17.5	4.6
23-2-0500	546-0500C2		70.0	35.0	
23-1-0600	546-0600CQ	600	40.0	20.0	6.7
23-2-0600	546-0600C2		80.0	40.0	
23-1-0750	546-0750CQ	*750	47.5	23.7	12.3
23-2-0750	546-0750C2		95.0	47.5	
23-1-1000	546-1000CQ	*1000	60.0	30.0	29.6
23-2-1000	546-1000C2		120.0	60.0	
23-1-1500	546-1500CQ	1500	85.0	42.5	38.0
23-2-1500	546-1500C2		170.0	85.0	
23-1-2000	546-2000CQ	2000	110.0	55.0	66.7
23-2-2000	546-2000C2		220.0	110.0	

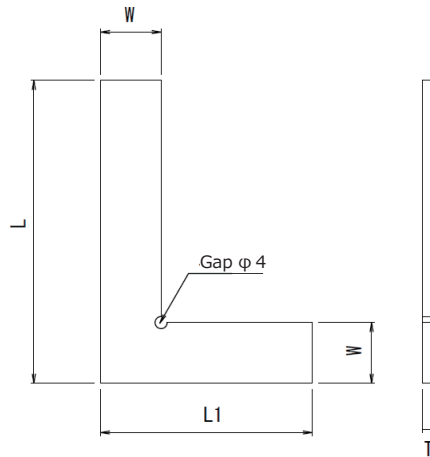
\*Dimensions indicated with an asterisk are compliant with JIS specifications.

Custom-made squares are also available by special order.

## Flat-type square

- These squares can be used laid down.
- All Grade-1 models are hardened. Grade-2 models are manufactured without hardening.

■ Dimensional drawing Unit : mm



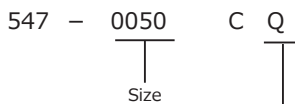
呼び	L	L1	W	T
50	50	40	15	3
75	75	50	18	3
100	100	70	20	4
150	150	100	25	5
200	200	130	25	6
250	250	165	30	6
300	300	200	30	6
400	400	200	40	8
450	450	235	40	8
500	500	300	40	8
600	600	300	50	10
750	750	400	50	10
1000	1000	550	60	12
1500	1500	750	80	14
2000	2000	1000	100	16

Material : S50C (both Grade 1 and Grade 2)

Package: Grade 1 Carton(50~400mm) Wooden box (450mm~)

Grade 2 Carton(50~450mm) Wooden box (500mm~)

### Configuration of stock number



Q → Grade 1 (Hardened)  
2 → Grade 2 (Without hardened)

Product No	Stock No	Size	Squareness (±μ m)	Straightness (μ m)	Weight (kg)
26-1-0050	547-0050CQ	50	12.5	6.2	0.04
26-2-0050	547-00502		25.0	12.5	
26-1-0075	547-0075CQ	*75	13.7	6.8	0.05
26-2-0075	547-00752		27.5	13.7	
26-1-0100	547-0100CQ	*100	15.0	7.5	0.08
26-2-0100	547-01002		30.0	15.0	
26-1-0150	547-0150CQ	*150	17.5	8.7	0.22
26-2-0150	547-01502		35.0	17.5	
26-1-0200	547-0200CQ	*200	20.0	10.0	0.35
26-2-0200	547-02002		40.0	20.0	
26-1-0250	547-0250CQ	250	22.5	11.2	0.54
26-2-0250	547-02502		45.0	22.5	
26-1-0300	547-0300CQ	*300	25.0	12.5	0.66
26-2-0300	547-03002		50.0	25.0	
26-1-0400	547-0400CQ	400	30.0	15.0	1.4
26-2-0400	547-04002		60.0	30.0	
26-1-0450	547-0450CQ	450	32.5	16.2	1.62
26-2-0450	547-04502		65.0	32.5	
26-1-0500	547-0500CQ	*500	35.0	17.5	1.91
26-2-0500	547-05002		70.0	35.0	
26-1-0600	547-0600CQ	600	40.0	20.0	3.3
26-2-0600	547-06002		80.0	40.0	
26-1-0750	547-0750CQ	*750	47.5	23.7	4.3
26-2-0750	547-07502		95.0	47.5	
26-1-1000	547-1000CQ	*1000	60.0	30.0	8.4
26-2-1000	547-10002		120.0	60.0	
26-1-1500	547-1500CQ	1500	85.0	42.5	19.1
26-2-1500	547-15002		170.0	85.0	
26-1-2000	547-2000CQ	2000	110.0	55.0	36.3
26-2-2000	547-20002		220.0	110.0	

\*Dimensions indicated with an asterisk are compliant with JIS specifications.

Custom-made squares are also available by special order.

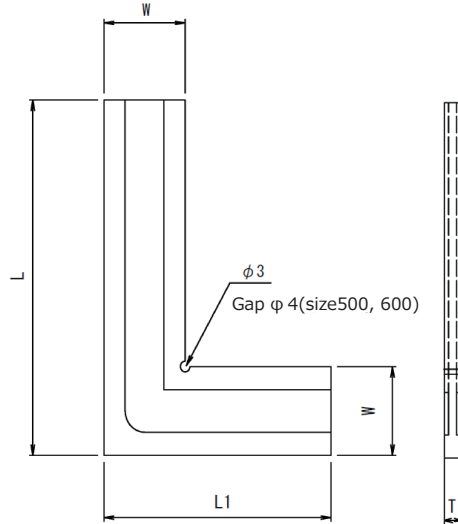
Stock No.548

I - type precision square

- These squares have the highest accuracy of any squares.
- All models are hardened.
- Use these squares as measurement standards for precision machines and measuring instruments.



■ Dimensional drawing Unit : mm



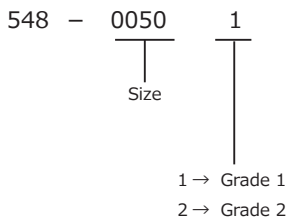
呼び寸	L	L1	W	T
50	50	40	16	4
75	75	50	18	4
100	100	70	25	6
150	150	100	30	8
200	200	130	35	10
250	250	165	40	10
300	300	200	40	15
500	500	300	55	20
600	600	350	60	23

Material : S50C(50 ~ 75 mm ), S45C(100 ~ 200mm)  
SK-3(250 mm~ )

Package : Wooden box

Accessories: Certificate of inspection, and  
Instruction manual (Grade 1)

Configuration of stock number



\*Dimensions indicated with an asterisk are compliant with JIS specifications.  
Custom-made squares are also available by special order.

Product No	Stock No	Size	Squareness (±μm)	Straightness (μm)	Weight (kg)
27-1-050	548-00501	50	2.5	1.2	0.04
27-2-050	548-00502		6.0	3.0	
27-1-075	548-00751	75	2.7	1.3	0.07
27-2-075	548-00752		6.5	3.2	
27-1-100	548-01001	*100	3.0	1.5	0.25
27-2-100	548-01002		7.0	3.5	
27-1-150	548-01501	*150	3.5	1.7	0.5
27-2-150	548-01502		8.0	4.0	
27-1-200	548-02001	*200	4.0	2.0	1.0
27-2-200	548-02002		9.0	4.5	
27-1-250	548-02501	250	4.5	2.2	1.5
27-2-250	548-02502		10.0	5.0	
27-1-300	548-03001	*300	5.0	2.5	2.5
27-2-300	548-03002		11.0	5.5	
27-1-500	548-05001	*500	7.0	3.5	5.2
27-2-500	548-05002		15.0	7.5	
27-1-600	548-06001	600	8.0	4.0	7.5
27-2-600	548-06002		17.0	8.5	

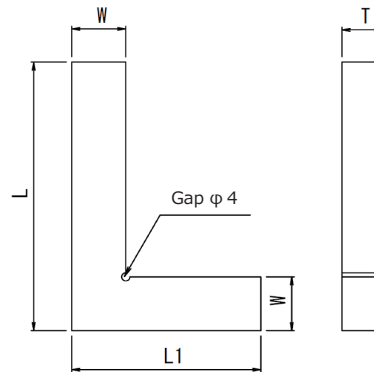
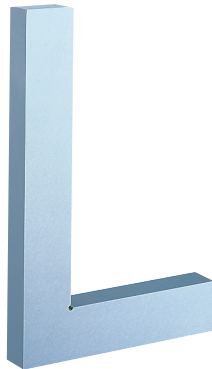


## Stock No.549

### Precision thick type square

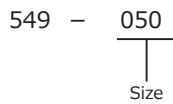
- The solid squares ensure stable measurement.
- All models are hardened.

■ Dimensional drawing Unit : mm



呼び	L	L1	W	T
50	50	40	15	10
75	75	50	18	12
100	100	70	20	15
125	125	80	20	15
150	150	100	25	20
200	200	130	30	20
250	250	145	35	25
300	300	170	35	25

#### Configuration of stock number



Product No	Stock No	Size	Squareness (±μm)	Weight (kg)
28-050	549-050	50	12.5	0.1
28-075	549-075	75	13.7	0.2
28-100	549-100	100	15.0	0.4
28-125	549-125	125	16.2	0.5
25-150	549-150	150	17.5	0.9
28-200	549-200	200	20.0	1.4
28-250	549-250	250	22.5	2.5
28-300	549-300	300	25.0	3.0

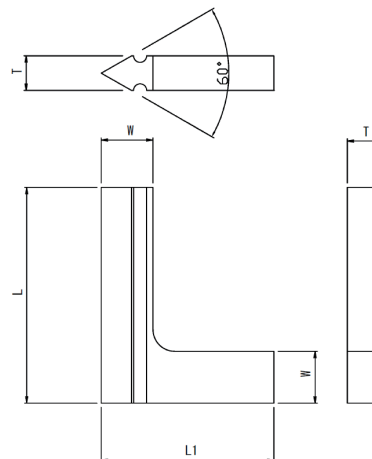
Material : S50C (50 ~ 75mm)  
S45C (100 ~ 300mm)  
Package : Wooden box

## Stock No.550

### Knife edged standard square (type - 1)

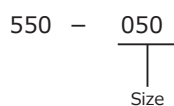
- The outside edges of these squares are formed into an inverted-V shape. These squares are used to check dimensional errors of workpieces by applying the triangular parts against the workpieces and checking light that passes through gaps between the squares and the workpieces.
- All models are hardened.

■ Dimensional drawing Unit : mm



呼び	L	L1	T	W
50	50	40	8	12
75	75	50	10	16
100	100	70	12	20
150	150	100	14	24
200	200	130	16	28
250	250	165	16	32
300	300	200	20	35

#### Configuration of stock number

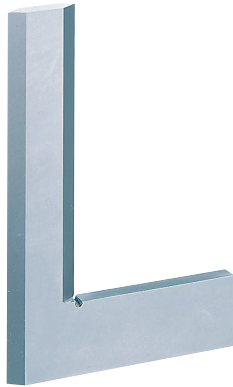


Product No	Stock No	Size	Squareness (±μm)	Weight (kg)
29-1-050	550-050	50	2.5	0.1
29-1-075	550-075	75	2.7	0.2
29-1-100	550-100	100	3.0	0.35
29-1-150	550-150	150	3.5	0.7
29-1-200	550-200	200	4.0	1.2
29-1-250	550-250	250	4.5	2.0
29-1-300	550-300	300	5.0	2.5

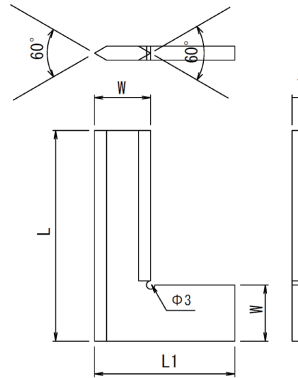
Material : S50C (50 ~ 75mm)  
S45C (100 ~ 300mm)  
Package : Wooden box

## Knife edged standard square (type - 3)

- Both sides of the measuring plane are edged.
- These squares have highly accurate angularity.
- All models are hardened.



■ Dimensional drawing Unit : mm



呼び	L	L1	W	T
50	50	40	15	4
75	75	50	20	5
100	100	70	25	6
150	150	100	30	8
200	200	130	35	10
250	250	165	35	10
300	300	200	40	15

Material : S50C (50 ~ 75mm)  
S45C (100 ~ 300mm)  
Package : Wooden box

### Configuration of stock number

549 - 050 3  
          |  
          Size

\*Dimensions indicated with an asterisk are compliant with JIS specifications.  
Custom-made squares are also available by special order.

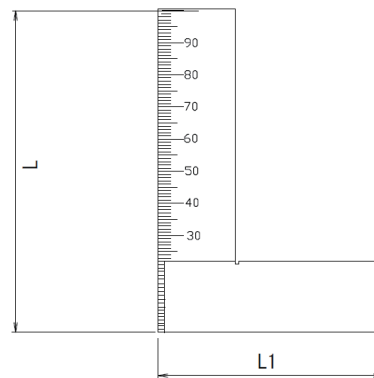
Product No	Stock No	Size	Squareness (± μ m)	Weight (kg)
29-3-050	550-0503	50	2.5	0.09
29-3-075	550-0753	75	2.7	0.2
29-3-100	550-1003	*100	3.0	0.27
29-3-150	550-1503	*150	3.5	0.5
29-3-200	550-2003	*200	4.0	1.1
29-3-250	550-2503	250	4.5	1.8
29-3-300	550-3003	*300	5.0	2.3

## Graduated precision square (type - C)

- Grade-1 squares with a stand. They are graduated in millimeters.
- All models are without hardened.

■ Dimensional drawing Unit : mm

\*Only one side of the squares is graduated.



呼び	L	L1
100	100	70
150	150	100
200	200	130
250	250	165
300	300	200
400	400	200
600	600	300
1000	1000	550

Material : SS400  
Package : Carton

### Configuration of stock number

569 - 0100 C  
          |  
          Size

Product No	Stock No	Size	Squareness (± μ m)	Weight (kg)
31-0100	569-0100C	100	15.0	0.18
31-0150	569-0150C	150	17.5	0.4
31-0200	569-0200C	200	20.0	0.74
31-0250	569-0250C	250	22.5	1.0
31-0300	569-0300C	300	25.0	1.7
31-0400	569-0400C	400	30.0	2.5
31-0600	569-0600C	600	40.0	6.7
31-1000	569-1000C	1000	60.0	29.6

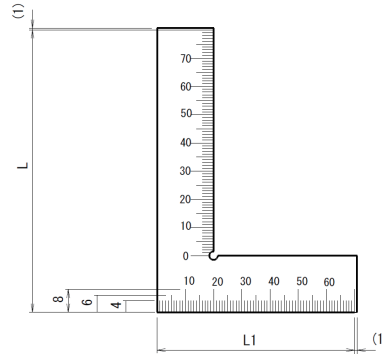
## Stock No.570

### Graduated precision square (type - E)

- Grade-1 flat-type squares graduated in millimeters.
- All models are without hardened.

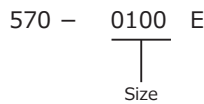
\*Only one side of the squares is graduated.

■ Dimensional drawing Unit : mm



呼び寸	L	L1
100	100	70
150	150	100
200	200	130
250	250	165
300	300	200
400	400	200
500	500	300
600	600	300
750	750	450
1000	1000	550

#### Configuration of stock number



Product No	Stock No	Size	Squareness ( $\pm \mu m$ )	Weight (kg)
32-0100	570-0100E	100	15.0	0.08
32-0150	570-0150E	150	17.5	0.22
32-0200	570-0200E	200	20.0	0.35
32-0250	570-0250E	250	22.5	0.54
32-0300	570-0300E	300	25.0	0.66
32-0400	570-0400E	400	30.0	1.4
32-0500	570-0500E	500	35.0	1.91
32-0600	570-0600E	600	40.0	3.3
32-0750	570-0750E	750	47.5	4.3
32-1000	570-1000E	1000	60.0	8.4

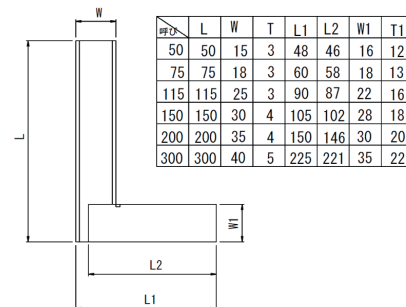
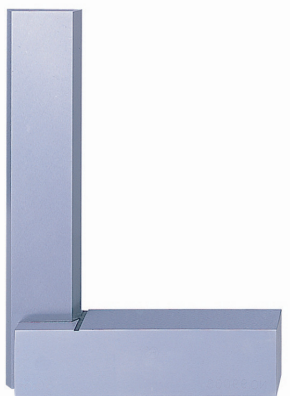
Material : S50C  
Package : Carton

## Stock No.571

### Double-edged square

- Both sides of the measuring plane are edged.
- All models are hardened.

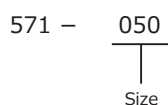
■ Dimensional drawing Unit : mm



呼び寸	L	W	T	L1	L2	W1	T1
50	50	15	3	48	46	16	12
75	75	18	3	60	58	18	13
115	115	25	3	90	87	22	16
150	150	30	4	105	102	28	18
200	200	35	4	150	146	30	20
300	300	40	5	225	221	35	22

Material : S50C (50 ~ 75mm)  
              S45C (100 ~ 300mm)  
Package : Carton

#### Configuration of stock number



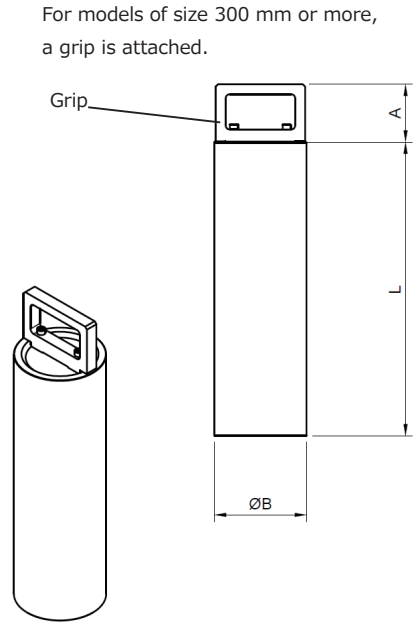
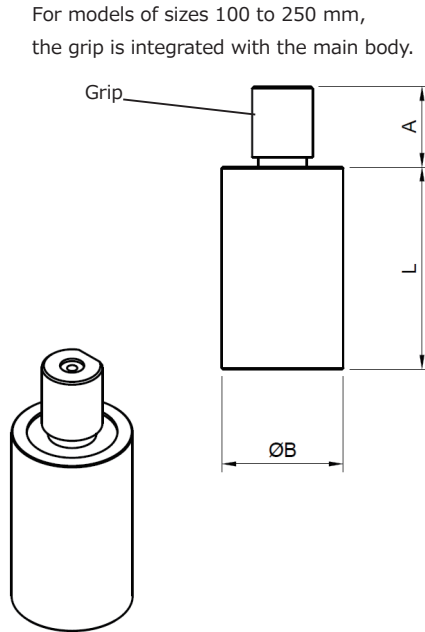
Product No	Stock No	Size	Squareness ( $\pm \mu m$ )	Weight (kg)
30-050	571-050	50	12.5	0.08
30-075	571-075	75	13.7	0.22
30-115	571-115	115	15.7	0.35
30-150	571-150	150	17.5	0.54
30-200	571-200	200	20.0	0.66
30-300	571-300	300	25.0	1.4

Stock No.551

## Cylindrical square

- These squares have the highest angularity of any squares.
- These squares are provided with a grip to prevent any effect from body heat when they are used.
- All models are hardened.

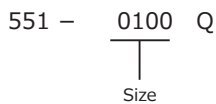
■ Dimensional drawing Unit : mm



Size(L)	φ B	A
100	60	40
150	70	50
200	80	60
250	90	75
300	100	71
350	110	72
400	120	72
500	130	87
600	160	89
800	200	110
1000	240	134
1200	250	134

Material : SKS3  
 Package : Wooden box  
 Accessories: Certificate of inspection, and  
 Instruction manual

### Configuration of stock number



Product No	Stock No	Size	Squareness (± μ m)	Weight (kg)
35-0100	551-0100Q	100	2.5	2.5
35-0150	551-0150Q	150	2.7	4.9
35-0200	551-0200Q	200	3.0	8.3
35-0250	551-0250Q	250	3.3	13
35-0300	551-0300Q	300	3.5	17
35-0350	551-0350Q	350	3.8	19.4
35-0400	551-0400Q	400	4.0	21
35-0500	551-0500Q	500	4.5	30.5
35-0600	551-0600Q	600	5.0	48
35-0800	551-0800Q	800	6.0	84.1
35-1000	551-1000Q	1000	7.0	170
35-1200	551-1200Q	1200	8.0	190

■ **About the accuracy of square**

$l$  = Size

High accuracy



Type	Grade	Squareness calculation formula
Cylindrical square	—	$\pm (2 + l / 200) \mu m$
Knife edged standard square (type- I and type-3)	—	$\pm (2 + l / 100) \mu m$
I- type square	1	
I- type square	2	$\pm (5 + l / 50) \mu m$
Flat type square	1	$\pm (10 + l / 20) \mu m$
Precision square with base		
Graduated precision square (type - C)	—	
Graduated precision square (type - E)		
Precision thick type square		
Double - edged square		
Flat type square	2	$\pm (20 + l / 10) \mu m$
Precision square with base		

Stock No.553

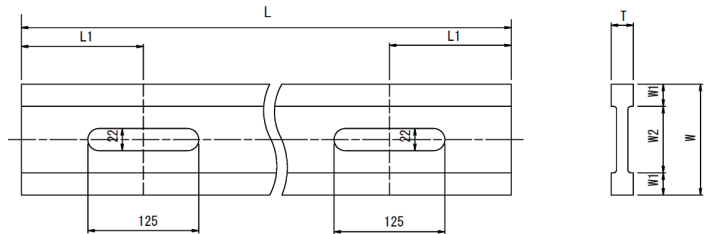
## I - beam type straight edge

- These straightedges can be used for measurements of flatness, parallelism, and straightness.
- Two types (Hardened, Without hardening) are available.

■ Dimensional drawing Unit : mm



\* For models of size 1500 mm or more, slots are made in the main bodies to hold them easily.



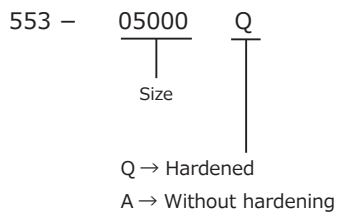
呼び	L	W	T	W1	W2	L1
500	500	50	10	10	30	—
750	750	50	10	10	30	—
1000	1000	60	12	12	36	—
1500	1500	70	15	12	46	335
2000	2000	90	18	16	58	446
2500	2500	100	18	18	64	558
3000	3000	120	22	20	80	670
3500	3500	130	22	20	90	780
4000	4000	140	25	20	100	892

Material : S50C

Package : Package Wooden box

Accessories: Certificate of inspection, and Instruction manual

### Configuration of stock number

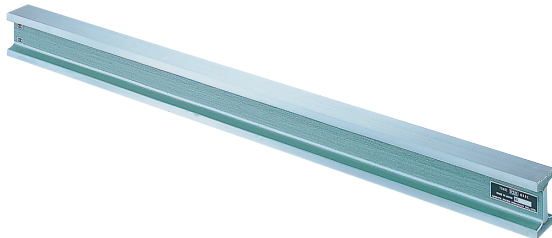


Product No	Stock No	Size	Straightness (μ m)	Weight (kg)
36-1-0500	553-0500Q	500	7.0	1.5
36-2-0500	553-0500A			
36-1-0750	553-0750Q	750	9.5	3.2
36-2-0750	553-0750A			
36-1-1000	553-1000Q	1000	12.0	5.0
36-2-1000	553-1000A			
36-1-1500	553-1500Q	1500	17.0	8.5
36-2-1500	553-1500A			
36-1-2000	553-2000Q	2000	22.0	18.5
36-2-2000	553-2000A			
36-1-2500	553-2500Q	2500	27.0	25.0
36-2-2500	553-2500A			
36-1-3000	553-3000Q	3000	32.0	44.0
36-2-3000	553-3000A			
36-1-3500	553-3500Q	3500	37.0	55.0
36-2-3500	553-3500A			
36-1-4000	553-4000Q	4000	42.0	75.0
36-2-4000	553-4000A			

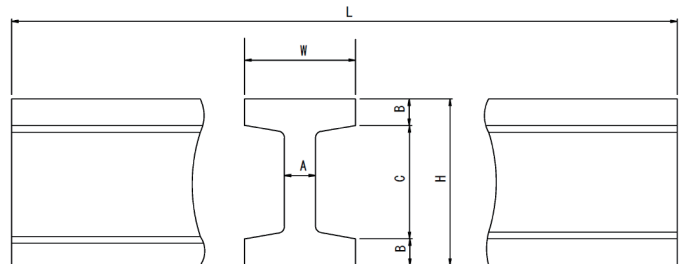
Stock No.554

## Wide type straight edge

- These straightedges have end panels 50 mm in width.
- By putting a level on them, the horizontality between two points can be measured.
- Two accuracy grades (Grades A and B) are available.
- Two types (Hardened, Without hardening) are available.



■ Dimensional drawing Unit : mm



\* For models of size 1500 mm or more, slots are made in the main bodies to hold them easily.

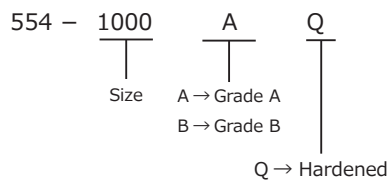
#	L	H	W	A	B	C
1000	1000	75	50	14	12	51
1500	1500	90		13	12	66
2000	2000	120		15	15	94
2500	2500	140		16	16	110
3000	3000	180	16	18	164	164
4000	4000	200				

Material : S50C

Package : Wooden box

Accessories: Certificate of inspection, and Instruction manual

### Configuration of stock number



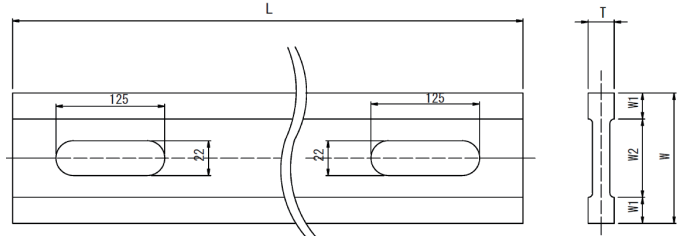
Product No	Stock No	Size	Straightness (μm)	Weight (kg)
37-1-1000	554-1000AQ	1000	6.0	16
37-2-1000	554-1000A		24.0	
37-3-1000	554-1000BQ			
37-4-1000	554-1000B			
37-1-1500	554-1500AQ	1500	8.0	26
37-2-1500	554-1500A		34.0	
37-3-1500	554-1500BQ			
37-4-1500	554-1500B			
37-1-2000	554-2000AQ	2000	10.0	43
37-2-2000	554-2000A		44.0	
37-3-2000	554-2000BQ			
37-4-2000	554-2000B			
37-1-2500	554-2500AQ	2500	12.0	63
37-2-2500	554-2500A		54.0	
37-3-2500	554-2500BQ			
37-4-2500	554-2500B			
37-1-3000	554-3000AQ	3000	14.0	90
37-2-3000	554-3000A		64.0	
37-3-3000	554-3000BQ			
37-4-3000	554-3000B			
37-1-4000	554-4000AQ	4000	18.0	140
37-2-4000	554-4000A		84.0	
37-3-4000	554-4000BQ			
37-4-4000	554-4000B			

Stock No.594

## Precision straight edge (type - I)

- These straightedges can be used for measurements of flatness, parallelism, and straightness.
- Two types (Hardened, Without hardening) are available.
- Two accuracy grades (Grades A and B) are available.

■ Dimensional drawing Unit : mm



The actual length of these straightedges is the effective length plus 40 mm. When using them, take a 20-mm margin on both sides into consideration.

- A special grade with accuracy better than Grade A is also available by request.

\* Exclude the 20-mm margin on both sides from the measured values.

- \* For models of size 1500 mm or more, slots are made in the main bodies to hold them easily.

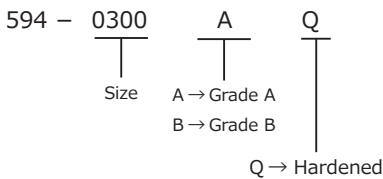
呼び	L	W	T	W1	W2
300	340	50	10	10	30
500	540	50	10	10	30
1000	1040	60	12	12	36
1500	1540	70	15	12	46
2000	2040	90	20	16	58
3000	3040	120	22	20	80

Material : SKS3

Package : Wooden box

Accessories: Certificate of inspection, and Instruction manual

### Configuration of stock number



Product No	Stock No	Size	Straightness and parallelism (μm)	Squareness of measurement surface to sides surface (±μm)	Weight (kg)
38-1-0300	594-0300AQ	300	3.2	30.0	1.3
38-2-0300	594-0300A				
38-3-0300	594-0300BQ		10.0	100.0	
38-4-0300	594-0300B				
38-1-0500	594-0500AQ	500	4.0	30.0	2.1
38-2-0500	594-0500A				
38-3-0500	594-0500BQ		14.0	100.0	
38-4-0500	594-0500B				
38-1-1000	594-1000AQ	1000	6.0	40.0	5.8
38-2-1000	594-1000A				
38-3-1000	594-1000BQ		24.0	150.0	
38-4-1000	594-1000B				
38-1-1500	594-1500AQ	1500	8.0	50.0	12.6
38-2-1500	594-1500A				
38-3-1500	594-1500BQ		34.0	200.0	
38-4-1500	594-1500B				
38-1-2000	594-2000AQ	2000	10.0	60.0	28.8
38-2-2000	594-2000A				
38-3-2000	594-2000BQ		44.0	250.0	
38-4-2000	594-2000B				
38-1-3000	594-3000AQ	3000	14.0	70.0	63.0
38-2-3000	594-3000A				
38-3-3000	594-3000BQ		64.0	300.0	
38-4-3000	594-3000B				



Stock No.595

## Rectangular shape straight edge

- These straightedges can be used for measurements of flatness, parallelism, and straightness.
- Two types (Hardened, Without hardening) are available.
- Two accuracy grades (Grades A and B) are available.

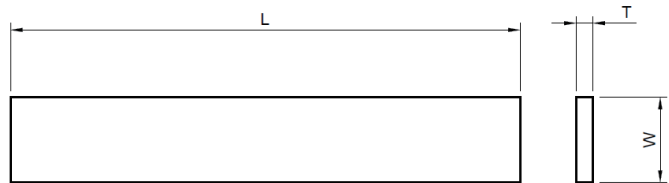


The actual length of these straightedges is the effective length plus 40 mm. When using them, take a 20-mm margin on both sides into consideration.

- A special grade with accuracy better than Grade A is also available by request.

\* Exclude the 20-mm margin on both sides from the measured values.

■ Dimensional drawing Unit : mm



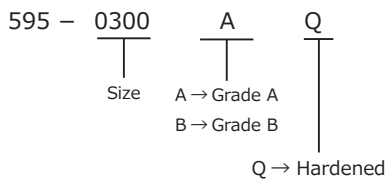
Size	L	W	T
300	340	50	10
500	540	50	10
1000	1040	60	12
1500	1540	70	15
2000	2040	90	20
3000	3040	120	22

Material : SKS3

Package : Wooden box

Accessories: Certificate of inspection, and Instruction manual

### Configuration of stock number



Product No	Stock No	Size	Straightness and parallelism (μm)	Squareness of measurement surface to sides surface (±μm)	Weight (kg)
39-1-0300	595-0300AQ	300	3.2	30.0	1.3
39-2-0300	595-0300A			100.0	
39-3-0300	595-0300BQ		10.0		
39-4-0300	595-0300B				
39-1-0500	595-0500AQ	500	4.0	30.0	2.1
39-2-0500	595-0500A			100.0	
39-3-0500	595-0500BQ		14.0		
39-4-0500	595-0500B				
39-1-1000	595-1000AQ	1000	6.0	40.0	5.8
39-2-1000	595-1000A			150.0	
39-3-1000	595-1000BQ		24.0		
39-4-1000	595-1000B				
39-1-1500	595-1500AQ	1500	8.0	50.0	12.6
39-2-1500	595-1500A			200.0	
39-3-1500	595-1500BQ		34.0		
39-4-1500	595-1500B				
39-1-2000	595-2000AQ	2000	10.0	60.0	28.8
39-2-2000	595-2000A			250.0	
39-3-2000	595-2000BQ		44.0		
39-4-2000	595-2000B				
39-1-3000	595-3000AQ	3000	14.0	70.0	63.0
39-2-3000	595-3000A			300.0	
39-3-3000	595-3000BQ		64.0		
39-4-3000	595-3000B				

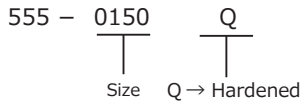
## Stock No.555

### Steel straight edge normal form

- These straightedges are optimal for scribing.
- Two types (Hardened, Without hardening) are available.
- The accuracy of one side is guaranteed. (Side A)



#### Configuration of stock number



Material : S50C  
 Package: Carton (150 ~ 600 mm)  
 Wooden box(750mm~)

Product No	Stock No	L (mm)	W (mm)	T (mm)	Straightness (μm)	Weight (kg)
41-1-0150	555-0150Q	150	25	3	13.0	0.08
41-2-0150	555-0150					
41-1-0200	555-0200Q	200	25	3	14.0	0.11
41-2-0200	555-0200					
41-1-0250	555-0250Q	250	30	4	15.0	0.3
41-2-0250	555-0250					
41-1-0300	555-0300Q	300	35	5	16.0	0.4
41-2-0300	555-0300					
41-1-0450	555-0450Q	450	40	5	19.0	0.7
41-2-0450	555-0450					
41-1-0500	555-0500Q	500	40	5	20.0	0.8
41-2-0500	555-0500					
41-1-0600	55-0600Q	600	40	5	22.0	0.9
41-2-0600	555-0600					
41-1-0750	555-0750Q	750	50	6	25.0	1.7
41-2-0750	555-0750					
41-1-1000	555-1000Q	1,000	50	6	30.0	2.6
41-2-1000	555-1000					
41-1-1500	555-1500Q	1,500	75	6	40.0	5.8
41-2-1500	555-1500					
41-1-2000	555-2000Q	2,000	85	8	50.0	11.0
41-2-2000	555-2000					
41-1-2500	555-2500Q	2,500	90	10	60.0	19.0
41-2-2500	555-2500					
41-1-3000	555-3000Q	3,000	100	10	70.0	24.0
41-2-3000	555-3000					

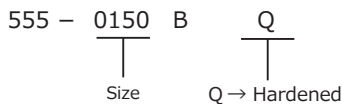
## Stock No.555B

### Steel straight edge bevel form

- These straightedges are optimal for scribing.
- Two types (Hardened, Without hardening) are available.
- The accuracy of one side (Side A) is guaranteed.



#### Configuration of stock number



Material : S50C  
 Package: Carton (150 ~ 600 mm)  
 Wooden box(750mm~)

Product No	Stock No	L (mm)	W (mm)	T (mm)	Straightness (μm)	Weight (kg)
40-1-0150	555-0150BQ	150	25	3	13.0	0.08
40-2-0150	555-0150B					
40-1-0200	555-0200BQ	200	25	3	14.0	0.1
40-2-0200	555-0200B					
40-1-0250	555-0250BQ	250	30	4	15.0	0.3
40-2-0250	555-0250B					
40-1-0300	555-0300BQ	300	35	5	16.0	0.4
40-2-0300	555-0300B					
40-1-0450	555-0450BQ	450	40	5	19.0	0.7
40-2-0450	555-0450B					
40-1-0500	555-0500BQ	500	40	5	20.0	0.8
40-2-0500	555-0500B					
40-1-0600	555-0600BQ	600	40	5	22.0	0.9
40-2-0600	555-0600B					
40-1-0750	555-0750BQ	750	50	6	25.0	1.6
40-2-0750	555-0750B					
40-1-1000	555-1000BQ	1,000	50	6	30.0	2.5
40-2-1000	555-1000B					
40-1-1500	555-1500BQ	1,500	75	6	40.0	5.5
40-2-1500	555-1500B					
40-1-2000	555-2000BQ	2,000	85	8	50.0	10.5
40-2-2000	555-2000B					
40-1-2500	555-2500BQ	2,500	90	10	60.0	18.0
40-2-2500	555-2500B					
40-1-3000	555-3000BQ	3,000	100	10	70.0	23.5
40-2-3000	555-3000B					

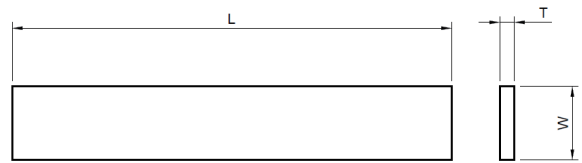
## Stock No.556

### Standard steel straight edge

- These straightedges can be used for measurements of flatness.
- Two types (Hardened, Without hardening) are available.



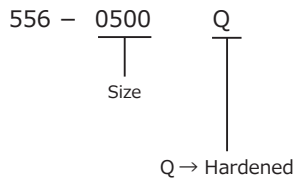
■ Dimensional drawing Unit : mm



Size	L	W	T
500	500	50	10
750	750	50	10
1000	1000	60	12
1500	1500	70	15
2000	2000	90	18
2500	2500	100	18
3000	3000	120	22

Product No	Stock No	Size	Straightness (μm)	Weight (kg)
42-1-0500	556-0500Q	500	7.0	2.0
42-2-0500	556-0500			
42-1-0750	556-0750Q	750	9.5	2.9
42-2-0750	556-0750			
42-1-1000	556-1000Q	1000	12.0	5.7
42-2-1000	556-1000			
42-1-1500	556-1500Q	1500	17.0	12.4
42-2-1500	556-1500			
42-1-2000	556-2000Q	2000	22.0	22.6
42-2-2000	556-2000			
42-1-2500	556-2500Q	2500	27.0	35.3
42-2-2500	556-2500			
42-1-3000	556-3000Q	3000	32.0	62.2
42-2-3000	556-3000			

#### Configuration of stock number

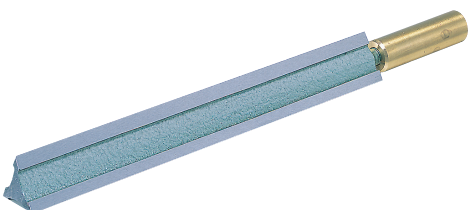


Material : S50C  
 Package : Wooden box  
 Accessories: Certificate of inspection,  
 and Instruction manual

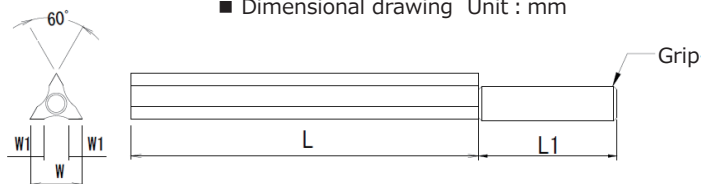
## Stock No.578

### Triangle straight edge for inspection

- Each edge has high straightness.
- The grips of these straight edges are made of nonconductive material to prevent any effect from body heat.
- All models are hardened.



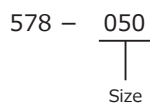
■ Dimensional drawing Unit : mm



Size	L	L1	W	W1
50	50	20	10	2.5
75	75	25	13	3.5
100	100	25	15	4
150	150	30	18	4
200	200	30	20	5
300	300	35	25	6

Material : S50C  
 Package : Wooden box

#### Configuration of stock number



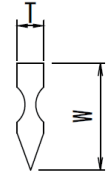
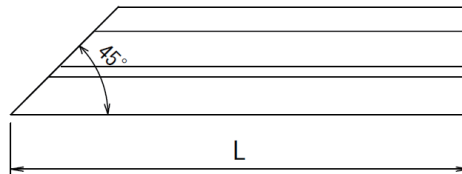
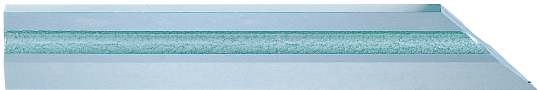
Product No	Stock No	Size	Straightness (μm)	Weight (kg)
45-050	578-050	50	1.2	0.03
45-075	578-075	75	1.3	0.06
45-100	578-100	100	1.4	0.09
45-150	578-150	150	1.6	0.19
45-200	578-200	200	1.8	0.29
45-300	578-300	300	2.2	0.56

Stock No.552

Knife type straight edge

- The edges of these straightedges are knife-edged.
- These straightedges can be applied to a workpiece straightly, so the straightness and flatness of the workpiece can be measured correctly.
- By lighting up workpieces, they can be measured more accurately.
- All models are hardened.

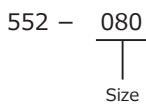
■ Dimensional drawing Unit : mm



呼び	L	W	T
80	80	23	7
100	100	24	7
125	125	25	7
150	150	25	7
200	200	30	8
250	250	30	8
300	300	32	9
400	400	35	9
500	500	40	10
600	600	40	10

Material : S50C  
Package : Wooden box

Configuration of stock number



Product No	Stock No	Size	Straightness (μm)	Weight (kg)
46-080	552-080	80	1.3	0.14
46-100	552-100	100	1.4	0.16
46-125	552-125	125	1.5	0.19
46-150	552-150	150	1.6	0.24
46-200	552-200	200	1.8	0.4
46-250	552-250	250	2.0	0.45
46-300	552-300	300	2.2	0.65
46-400	552-400	400	2.6	0.9
46-500	552-500	500	3.0	1.5
46-600	552-600	600	3.4	1.8

## Stock No.580A

### Straight edge with graduation (type - A)

- These straightedges are graduated in millimeters.
- The graduated sides are polished.
- Type A has a 20-mm margin on the left and right of the graduated sides.



Material : S50C  
Package : Wooden box

#### Configuration of stock number

580 - 0500 A  
|  
 Size

Product No	Stock No	L (mm)	W (mm)	T (mm)	Straightness (μm)	Weight (kg)
43-1-0500	580-0500A	540	32	6	50.0	0.8
43-1-0750	580-0750A	790	32	6	55.0	1.2
43-1-1000	580-1000A	1040	44	9	60.0	2.7
43-1-1500	580-1500A	1540	50	10	70.0	5.0
43-1-2000	580-2000A	2040	50	10	80.0	7.9

## Stock No.580B

### Straight edge with graduation (type - B)

- These straightedges are graduated in millimeters.
- The graduated sides are polished.
- Type B is graduated from the left end.



Material : S50C  
Package : Wooden box

#### Configuration of stock number

580 - 0500 B  
|  
 Size

Product No	Stock No	L (mm)	W (mm)	T (mm)	Straightness (μm)	Weight (kg)
43-2-0500	580-0500B	500	25	6	125.0	0.5
43-2-0750	580-0750B	750	25	6	138.0	0.8
43-2-1000	580-1000B	1000	32	6	150.0	1.5
43-2-1500	580-1500B	1500	38	6	175.0	2.7
43-2-2000	580-2000B	2000	44	9	200.0	6.0

■ **About the accuracy of straight edge**

$\ell$  = Size

High accuracy



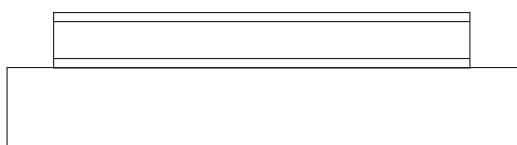
Type	Grade	Straightness calculation formula
Triangle type inspection straight edge	—	$(1 + \ell / 250) \mu\text{m}$
Knife type straight edge	—	
Precision straight edge (type - I)	A 級	$(2 + \ell / 250) \mu\text{m}$
Rectangular sharp straight edge		
Wide rype highest grade straight edge		
I - beam type highest grade straight edge	A 級	$(2 + \ell / 100) \mu\text{m}$
Standard steel straight edge		
Precision straight edge (type - I)	B 級	$(4 + \ell / 50) \mu\text{m}$
Rectangular sharp straight edge		
Wide rype highest grade straight edge		
Steel straight edge bevel form	—	$(10 + \ell / 50) \mu\text{m}$
Steel straight edge normal form		
Standard straight edge with gradutaion (type - A)	—	$(40 + \ell / 50) \mu\text{m}$
Standard straight edge with gradutaion (type - B)	—	$(100 + \ell / 20) \mu\text{m}$

**Straightness measurement method and deformation**

**caused by weight of the straightedge**

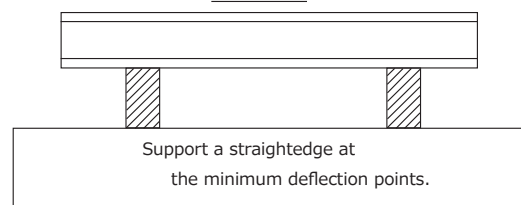
Note that when a straightedge is put on a plane as shown in Fig. (1), the plane is deformed by the weight of the straightedge and becomes exactly flat. With this method, the straightness of the plane cannot be measured correctly. To measure the straightness correctly, the measurement method shown in Fig. (2) is optimal.

Fig (1)



Geometrically perfect plane

Fig (2)



Support a straightedge at the minimum deflection points.

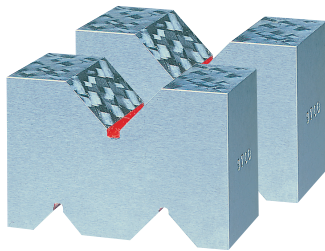
Geometrically perfect plane

Stock No.557

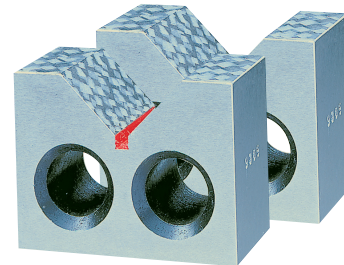
Cast iron precision V-blocks

- These blocks are optimal for accurate scribing and can be used as a measurement jig.
- Two-piece set.
- Standard and special grades are available depending on accuracy.

**Type - A Stock No.557A**



**Type - B Stock No.557B**



	Parallelism between bottom and V-plane(μm)	Parallelism and squareness of each plane( ±μm )
Grade A	5	5
Standard	10	10

	Parallelism between bottom and V-plane(μm)	Parallelism and squareness of each plane( ±μm )
Grade A	5	5
Standard	10	10

**Type - A**

Material : Cast iron  
Package : Dedicated storage box

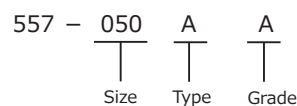
Product No	Stock No	Size	L (mm)	H (mm)	T (mm)	Weight (kg)
47-1-050	---	50	50	24	19	0.2
47-2-050	557-050A					
47-1-075	---	75	75	35	24	0.6
47-2-075	557-075A					
47-1-100	---	100	100	52	33	2.0
47-2-100	557-100A					
47-1-125	---	125	125	69	44	4.5
47-2-125	557-125A					
47-1-150	---	150	150	80	50	7.0
47-2-150	557-150A					
47-1-200	---	200	200	110	70	18.0
47-2-200	557-200A					

**Type - B**

Material : Cast iron  
Package : Dedicated storage box

Product No	Stock No	Size	L (mm)	H (mm)	T (mm)	Weight (kg)
47-3-050	---	50	50	32	24	0.4
47-4-050	557-050B					
47-3-075	---	75	75	60	32	1.5
47-4-075	557-075B					
47-3-100	---	100	100	67	41	2.5
47-4-100	557-100B					
47-3-125	---	125	125	79	51	3.4
47-4-125	557-125B					
47-3-150	---	150	150	89	63	8.1
47-4-150	557-150B					
47-3-200	---	200	200	140	102	22.2
47-4-200	557-200B					

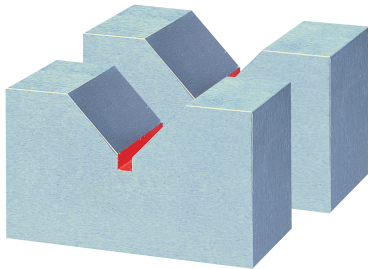
Configuration of stock number



Stock No.558

## Precision steel V-blocks

- If you want a measurement jig with higher accuracy, select this one.
- Two-piece set. (All of models are hardened.)
- Grade AA and grade A are available depending on accuracy.

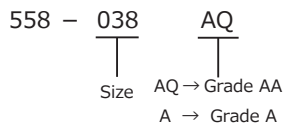


Material : S50C  
Package : Dedicated storage box

	Parallelism between bottom and V-plane(μm)	Parallelism and squareness of each plane( ±μ m)
Grade AA	3	3
Grade A	5	5

Product No	Stock No	Size	L (mm)	H (mm)	T (mm)	Weight (kg)
48-1-038	---	38	38	24	19	0.3
48-2-038	558-038Q					
48-1-050	---	50	50	28	22	0.5
48-2-050	558-050Q					
48-1-065	---	65	65	40	25	1.0
48-2-065	558-065Q					
48-1-075	---	75	75	50	35	1.9
48-2-075	558-075Q					
48-1-100	---	100	100	60	38	3.3
48-2-100	558-100Q					
48-1-125	---	125	125	70	45	6.0
48-2-125	558-125Q					
48-1-150	---	150	150	90	60	11.9
48-2-150	558-150Q					

### Configuration of stock number

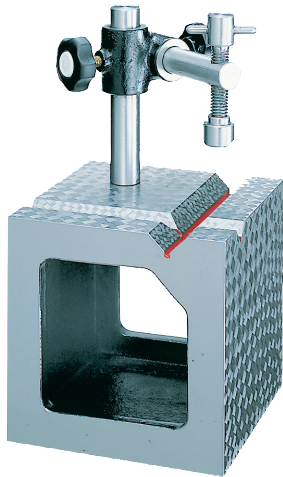




Stock No.559A,559B

## Box type V-block with v-groove clamp

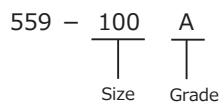
- When measuring a cylindrical workpiece, put the workpiece in the V-groove and fix it with the clamp.
- All surfaces of these blocks are scraped to ensure high parallelism and squareness.
- Grade A and Grade B are available depending on accuracy.



Material : S50C  
Package : Dedicated storage box

Product No	Stock No	Size	L × W × H (mm)	Squareness (±μm)	Parallelism (μm)	Weight (kg)
49-1-100	559-100A	100	100 × 100 × 100	7.0	7.0	3.7
49-2-100	559-100B			14.0	14.0	
49-1-125	559-125A	125	125 × 125 × 125	7.5	7.5	6.0
49-2-125	559-125B			15.0	15.0	
49-1-150	559-150A	150	150 × 150 × 150	8.0	8.0	10.3
49-2-150	559-150B			16.0	16.0	
49-1-200	559-200A	200	200 × 200 × 200	9.0	9.0	30.0
49-2-200	559-200B			18.0	18.0	
49-1-250	559-250A	250	250 × 250 × 250	10.0	10.0	48.0
49-2-250	559-250B			20.0	20.0	
49-1-300	559-300A	300	300 × 300 × 300	11.0	11.0	61.0
49-2-300	559-300B			22.0	22.0	

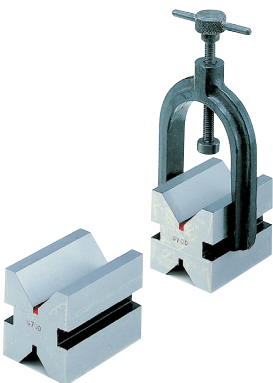
Configuration of stock number



Stock No.586

## Steel V-blocks with clamp

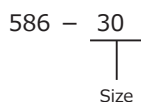
- These blocks are suitable as a jig for the centering of cylindrical workpieces and making of holes.
- The parallelism of the V-planes is within 10 μm.
- All models are hardened. (A clamp is attached to all models.)



Material : S50C  
Package : Dedicated storage box

Product No	Stock No	Size	H × W (mm)	L (mm)	Allowable diameter	Weight (kg)
50-30	586-30	30	30 × 30	40	φ 25	0.8
50-40	586-40	40	40 × 40	50	φ 30	1.5
50-50	586-50	50	50 × 50	60	φ 40	3.0
50-60	586-60	60	60 × 60	70	φ 50	4.5

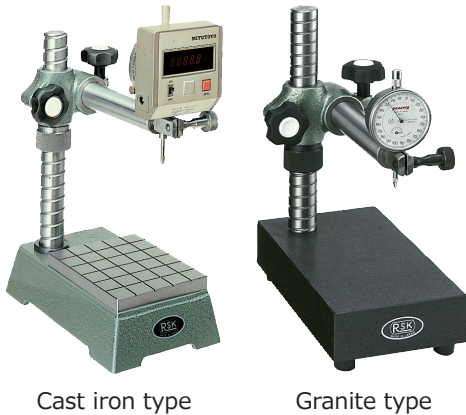
Configuration of stock number



Stock No.561

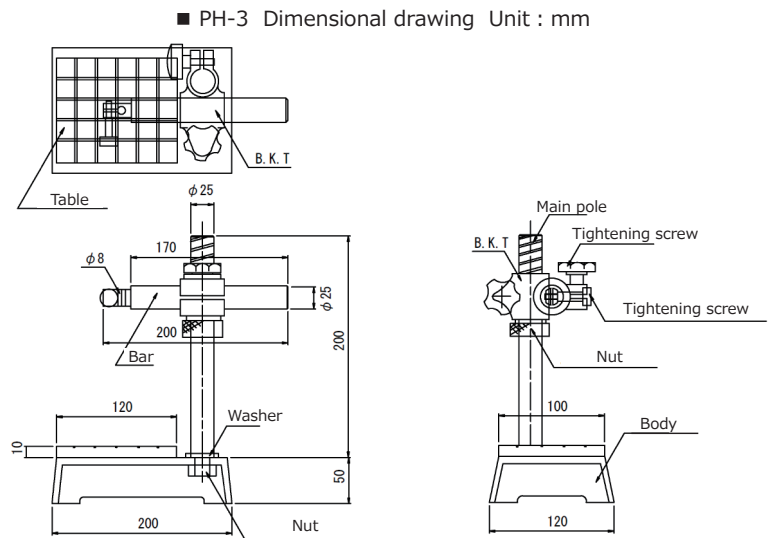
## PH-3

- These comparators are optimal for comparative measurements of the thickness of outer shapes.
- The base material can be selected from among cast iron and granite.



Cast iron type

Granite type



Material : PH-3 Cast iron(Body, B.K.T.), S50C (Table)  
 PH-3G Granite(Body),Cast iron( B.K.T.)  
 Package : Dedicated storage box

### Configuration of product code

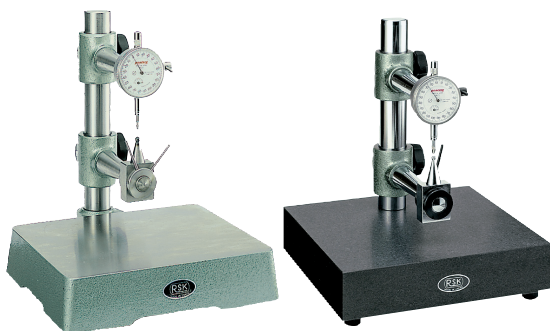
561 - PH3  
 └─ Blank → Cast iron  
 └─ G → Granite

Product No	Stock No	Bed size (mm)	Table size (mm)	Main post (mm)	Bar (mm)	Flatness (μ m)	Weight (kg)
53-1-3	561-PH3	200 × 120	120 × 100	φ 25 × 200	φ 25 × 200	5.0	6
53-2-3	561-PH3G	210 × 110					4.6

Stock No.561

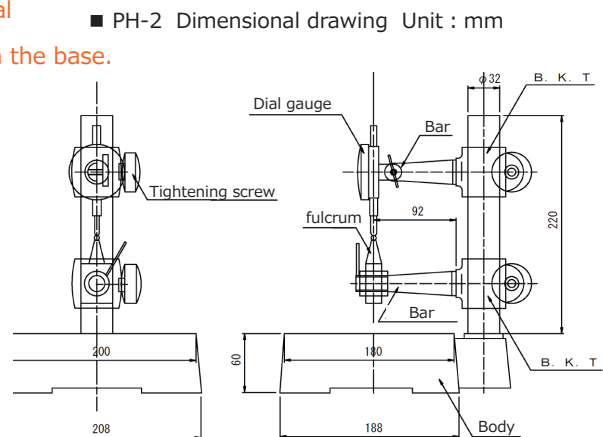
## PH-2

- These comparators have an intermediate shaft bearing. They can be used to measure the thickness of rings and pipes. These comparators can be used for general thickness measurement with the comparator removed from the base.



Cast iron type

Granite type



Material : PH-2 Cast iron (Body B.K.T.)  
 PH-2G Granite (Body), B.K.T. (Cast iron)  
 Package : Dedicated storage box

### Configuration of product code

561 - PH2  
 └─ Blank → Cast iron  
 └─ G → Granite

Product No	Stock No	Bed size (mm)	Main pole (mm)	Flatness (μ m)	Weight (kg)
53-1-2	561-PH2	200 × 180	φ 32 × 220	5.0	12
53-2-2	561-PH2G	230 × 210			

Stock No.561

## Universal model

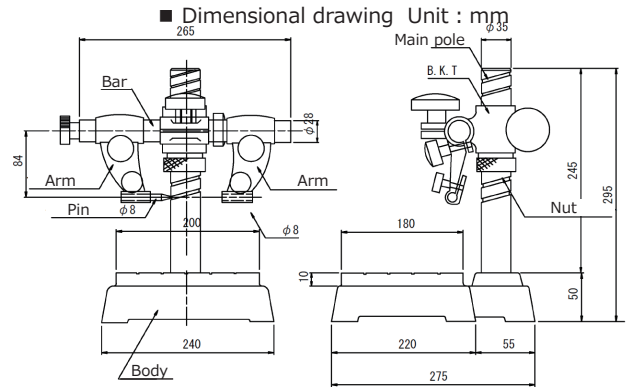
- These comparators can be used for comparative measurements of outside diameters of circular workpieces such as a gauge pin and piston ring.
- By using the attachment, these comparators can be used as vertical-type comparators.



Cast iron type



Granite type



Material : 561-U Cast iron(Body, Arm, B.K.T.), S50C (Table)  
 561-UG Granite (Body), Cast iron (Arm, B.K.T.)  
 Package : Dedicated storage box

### Configuration of product code

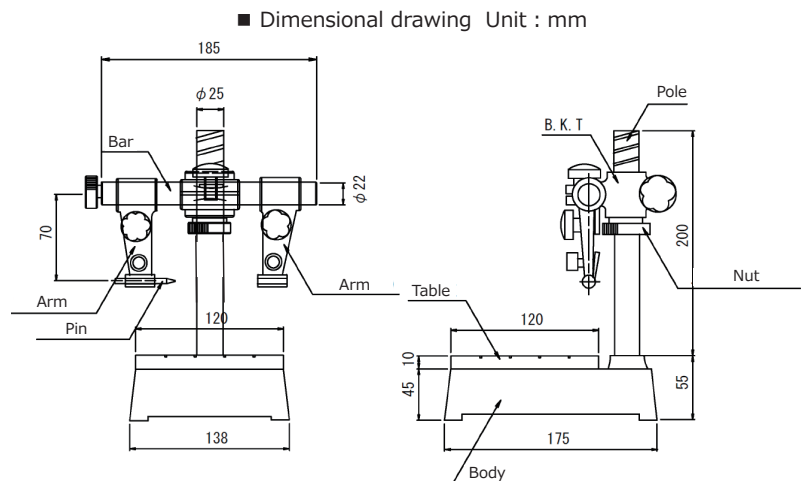
561 - U  
 U → Cast iron  
 UG → Granite

Product No	Stock No	Bed size (mm)	Pole (mm)	Bar (mm)	Flatness (μm)	Weight (kg)
53-1-1	561-U	200 × 180	φ 35 × 245	φ 28 × 265	5.0	16
53-2-1	561-UG	230 × 210				

Stock No.561

## Universal small model

- Compared with the universal type, this comparator is smaller in size.
- It is useful for comparative measurements of small-diameter workpieces.

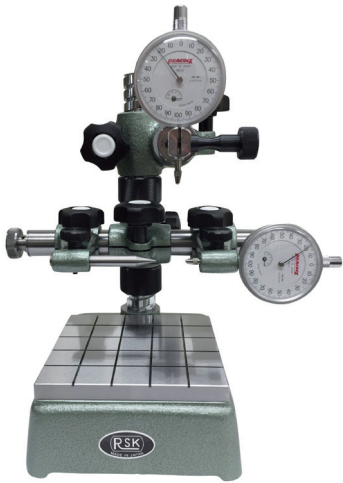


Material : Cast iron (Body, Arm), S50C (Table)  
 Package : Dedicated storage box

Product No	Stock No	Bed size (mm)	Table size (mm)	Pole (mm)	bar (mm)	Flatness (μm)	Weight (kg)
53-3-1	561-US	175 × 138	120 × 120	φ 25 × 200	φ 22 × 185	5.0	6

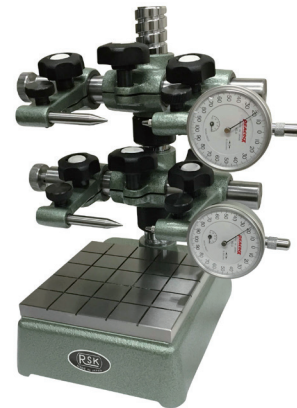
## Various combinations of dial comparators

- By combining various brackets and arms, the outside diameter and thickness can be measured simultaneously.
- Select optimal parts to suit your needs.

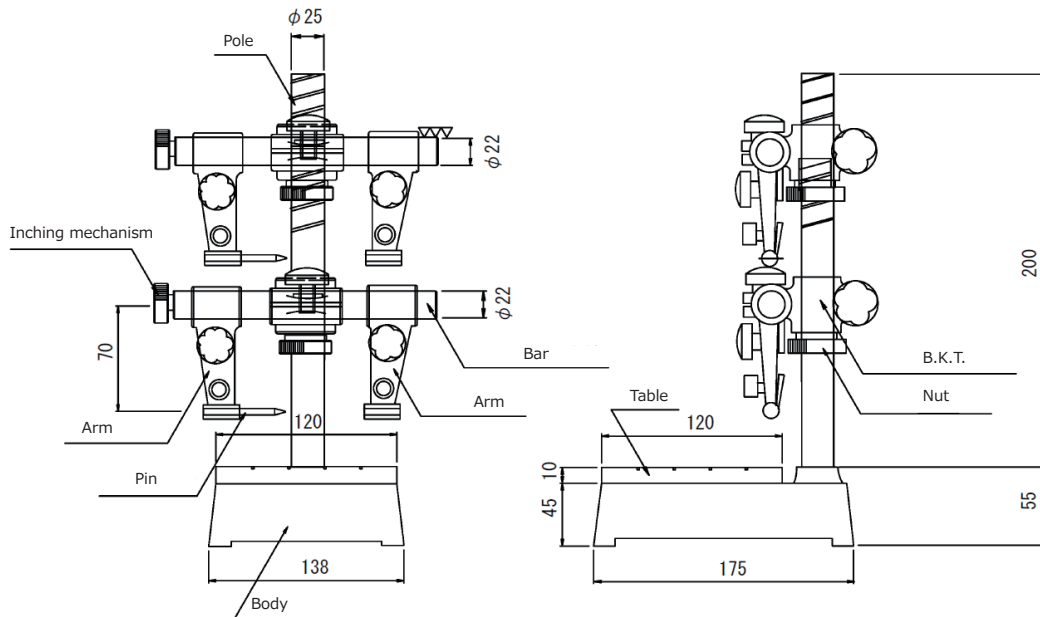


**PH-3S**

Combination of the upper metal fixture for PH-3 and the lower metal fixture and base for the universal type)



Combination of two pieces of small-sized universal dial comparators



Stock No.610

**Dial stand**

- These dial stands are optimal for comparative measurements of workpiece thickness.
- The brackets of RS-2 and RS-3 have an inching mechanism. They are useful for measurements requiring fine adjustments.



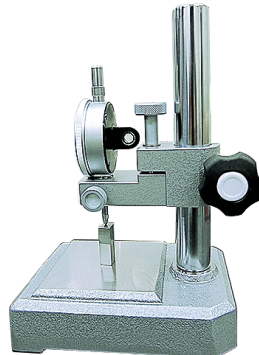
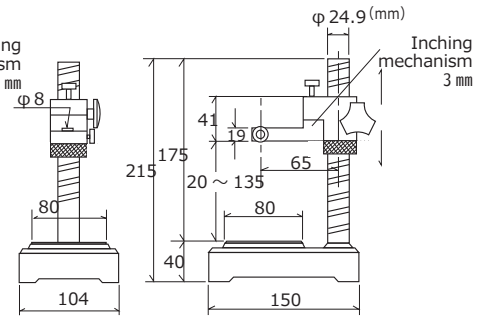
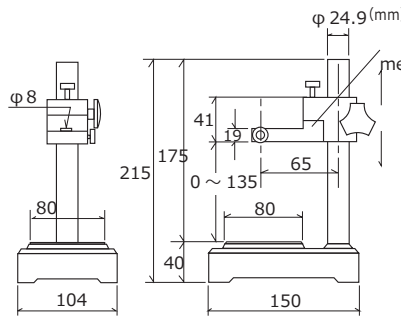
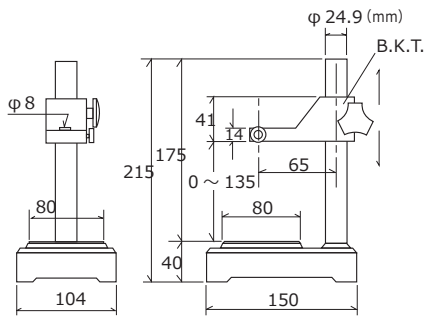
**RS - 1**



**RS - 2**



**RS - 3**



Material : Cast iron (Base, B.K.T.)

Package : Dedicated storage box

**Configuration of product code**

610 - RS 1  
 |  
 1 → RS-1  
 2 → RS-2  
 3 → RS-3

Product No	Stock No	Model	Base size (mm)	Measurable range (mm)	Fine movement range (mm)	Weight (kg)
54-1	610-RS1	RS-1	80 × 80	0 ~ 135	---	3.4
54-2	610-RS2	RS-2			3	
54-3	610-RS3	RS-3		20 ~ 135	3	

Stock No.562

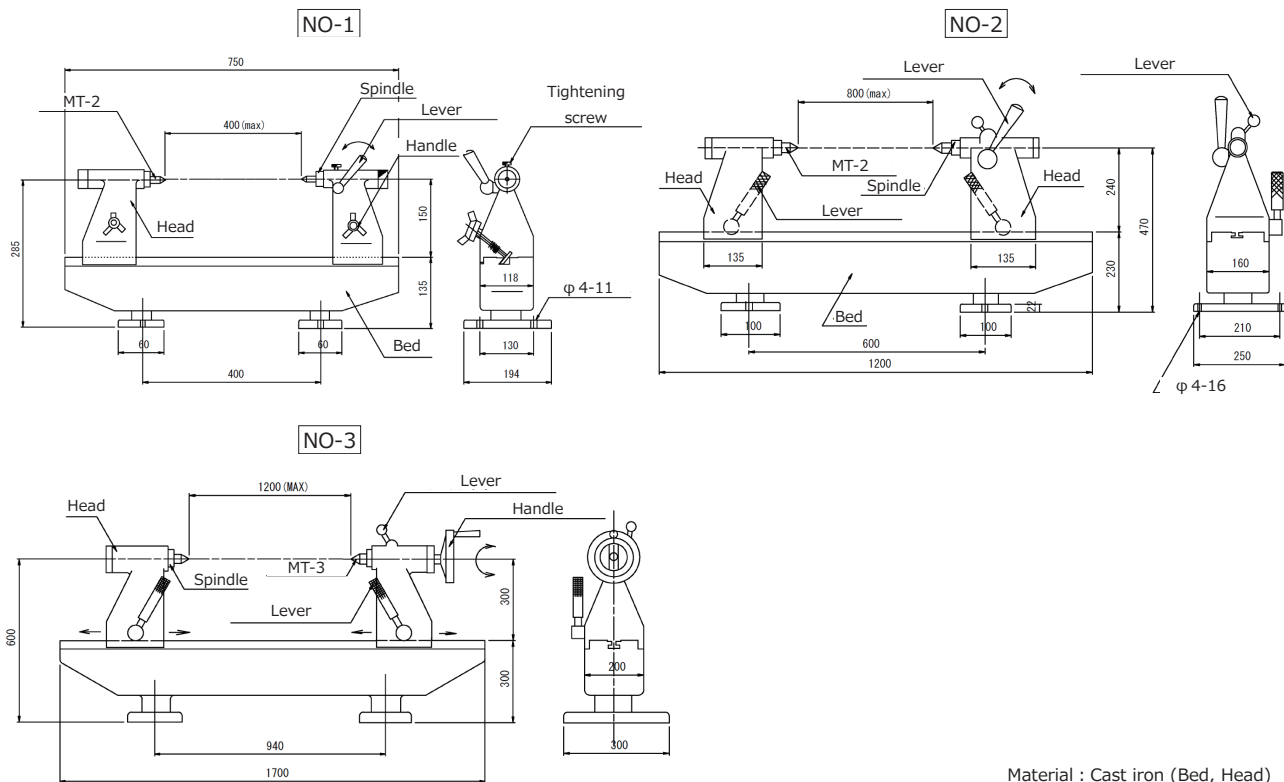
**Bench center standard model**

- These checkers are optimal for measurements of eccentricity and circularity of shafts and crankpins.
- \* A dedicated stand is attached to all models. A dial gauge and a test bar are not attached.
- \* Custom-made eccentricity checkers are also available by special order to suit your dimensional requirements.



Packing type (NO-1)

■ Dimensional drawing Unit : mm



Material : Cast iron (Bed, Head)  
 Package : Reinforced cardboard  
 Accessories: Certificate of inspection

**Configuration of product code**

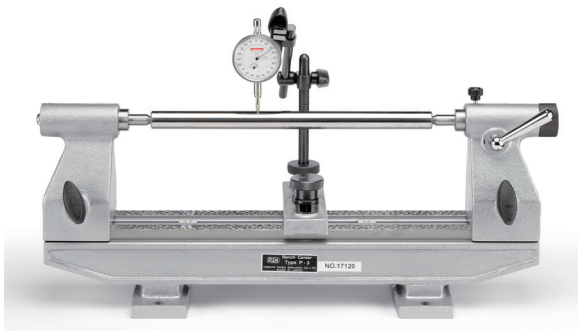
562 - 1  
 |  
 1 → NO-1  
 2 → NO-2  
 3 → NO-3

Product No	Stock No	Model	Center distance (mm)	Swing (mm)	Parallelism between center (μm)	Applicable center	Weight (kg)
55-1-1	562-1	NO-1	400	150	5.0	MT-2	42
55-1-2	562-2	NO-2	800	240	8.0	MT-2	120
55-1-3	562-3	NO-3	1200	300	10.0	MT-3	250

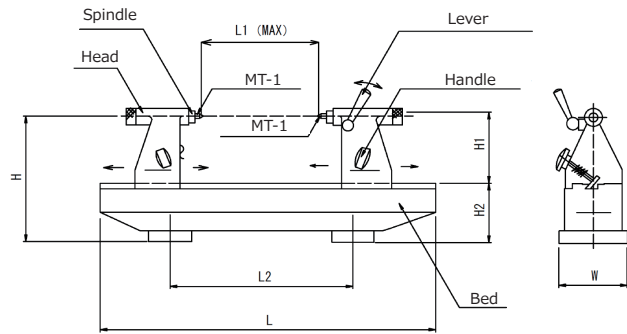
Stock No.563

## Bench center (type-P)

- These small-sized eccentricity checkers can be used on a surface plate or a table.
- \* A dedicated stand is attached to all models. A dial gauge and a test bar are not attached.
- \* Custom-made eccentricity checkers are also available by special order to suit your dimensional requirements.



■ Dimensional drawing Unit : mm



Material : Cast iron (Bed, Head)  
 Package : Reinforced cardboard  
 Accessories: Certificate of inspection

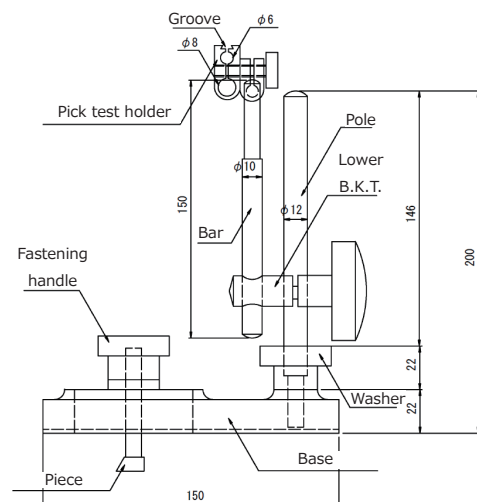
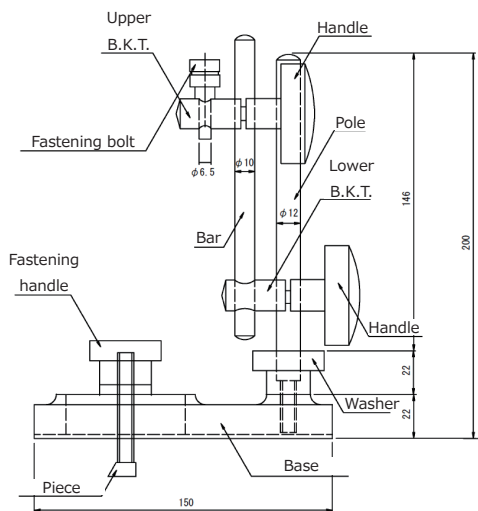
### Configuration of product code

563 - P1L  
 |  
 P1L → P-1  
 P2L → P-2  
 P3L → P-3

Product No	Stock No	Model	L (mm)	W (mm)	H2 (mm)	L1 (mm)	H1 (mm)	Parallelism between center (μ m)	Applicable center	Weight (kg)
55-2-1	563-P1L	P-1	380	120	65	150	110	5.0	MT-1	14
55-2-2	563-P2L	P-2	420	120	72	200	110	5.0	MT-1	16
55-2-3	563-P3L	P-3	530	130	90	300	110	5.0	MT-1	20

## About Dial Stands

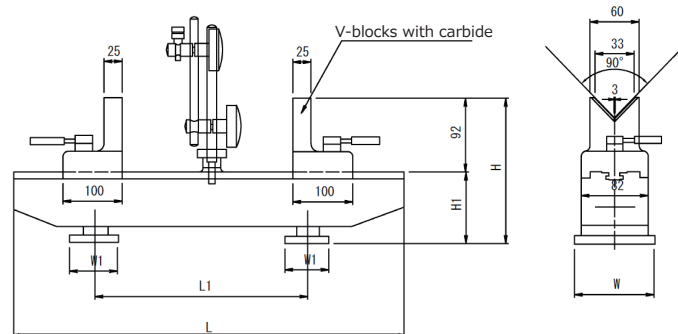
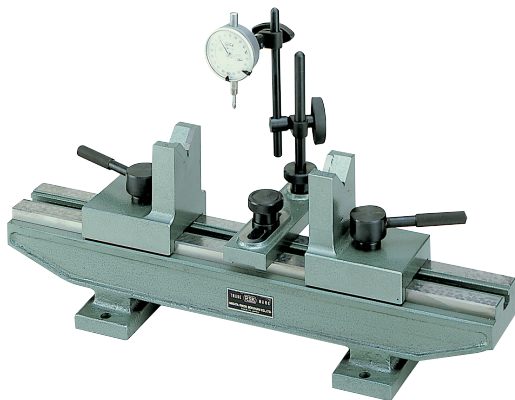
A dedicated dial stand is attached to the standard-type and type-P eccentricity checkers. (The figure on the left shows Type-P.) Depending on inspection conditions, use of multiple dial stands makes measurements faster and insures higher accuracy. A stand and fixtures for a lever-operated dial gauge are also available by order. (See the figure on the right.)



## Bench center with V-blocks carbide (Type-RV)

- These V-grooved eccentricity checkers can be used for inspections of workpieces without a center hole.
- In consideration of wear resistance, carbide is attached in the v-groove in which workpieces are put.
- These checkers can measure workpieces with a diameter of  $\phi 5$ - $\phi 40$ .
- \* A dedicated stand is attached to all models. A dial gauge and a test bar are not attached.

■ Dimensional drawing Unit : mm



Model	L	L 1	W	W 1	H	H 1
RV-1	380	200	120	42	157	65
RV-2	420	240	120	50	164	72
RV-3	530	280	130	60	182	90

Material : Cast iron (Bed, Head)  
 Package : Reinforced cardboard  
 Accessories: Certificate of inspection

### Configuration of product code

591 - RV1  
 |  
 RV1 → RV-1  
 RV2 → RV-2  
 RV3 → RV-3

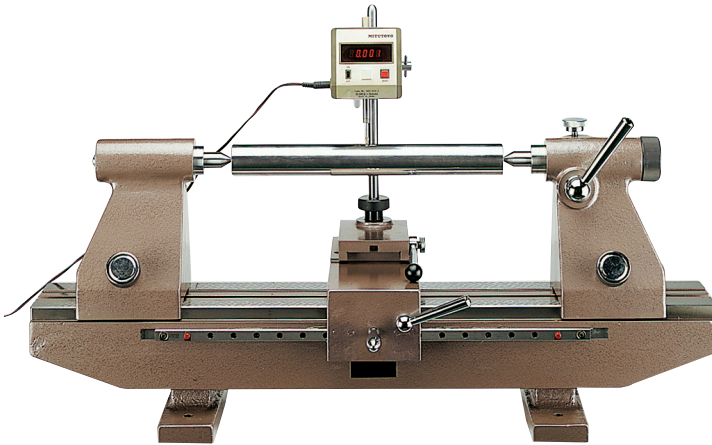
Product No	Stock No	Model	Distance between heads (mm)	Parallelism between center ( $\mu m$ )	Weight (kg)
55-3-1	591-RV1	RV-1	180	5.0	11
55-3-2	591-RV2	RV-2	230		13
55-3-3	591-RV3	RV-3	330		15



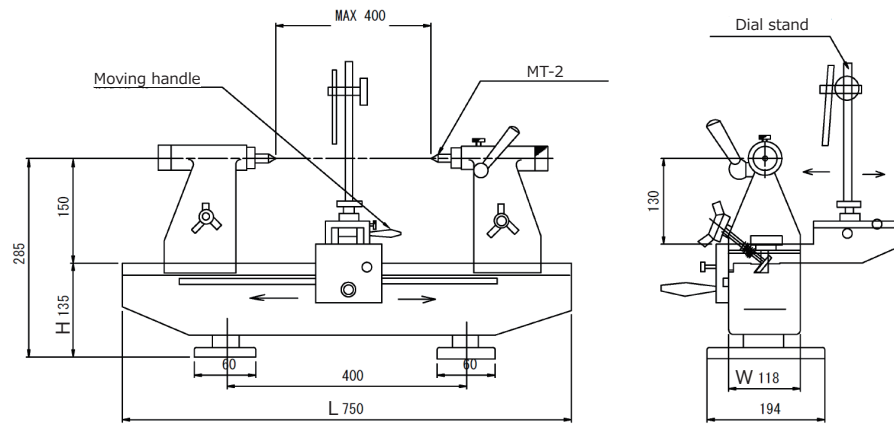
Stock No.562S

## Slide guide type bench center (Type-SG)

- The dial gauge stand can be moved right and left and backward and forward.
- The dial gauge stand can be moved horizontally and vertically to the center shaft. This checker can be used for inspections of the bending of shafts and the runout of shaft flanges.
- \* A dedicated stand is attached to all models. A dial gauge and a test bar are not attached.



■ Dimensional drawing Unit : mm



Material : Cast iron (Bed, Head)  
 Package : Reinforced cardboard  
 Accessories:Certificate of inspection

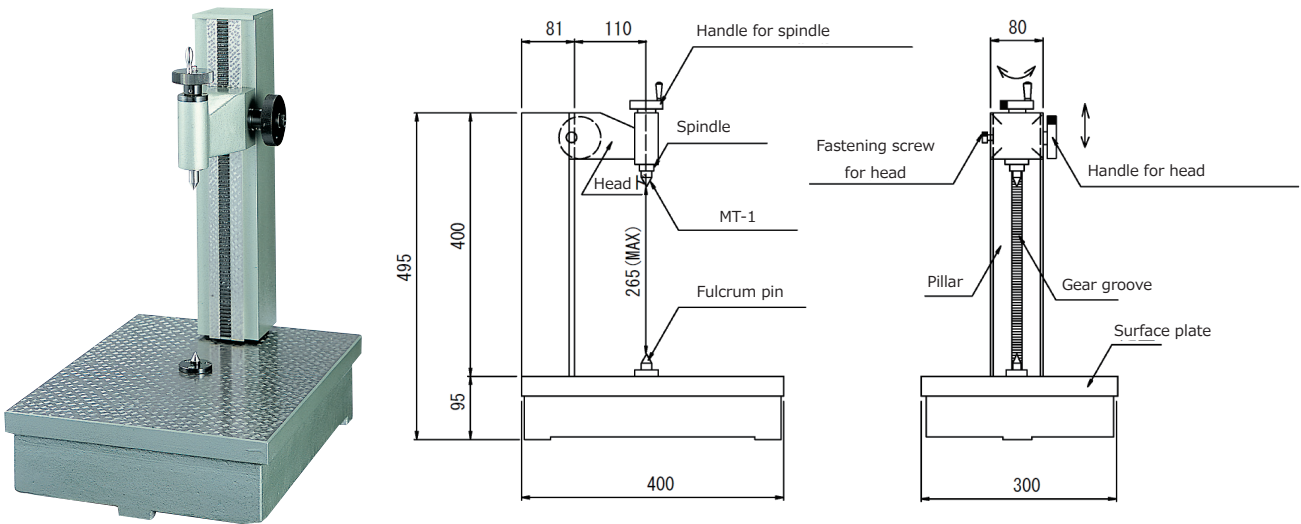
Product No	Stock No	L (mm)	W (mm)	H (mm)	Center distance (mm)	Swing (mm)	Parallelism between center( μm )	Applicable center	Weight (kg)
55-5-1	562-SG1	750	118	135	400	110	5.0	MT-2	60

Stock No.592

## Bench center vertical type (Type-VB)

- This is a vertical eccentricity checker.
- Put a cylindrical workpiece on the pointed gauge head on the base and measure the sides of the workpiece.
- The flatness of the surface plate is equivalent to JIS Grade 1.
- \* A dedicated stand is attached to all models. A dial gauge and a test bar are not attached.

■ Dimensional drawing Unit : mm



Material : Cast iron (Surface plate, Head,Pillar)  
 Package : Reinforced cardboard.  
 Accessories: Certificate of inspection

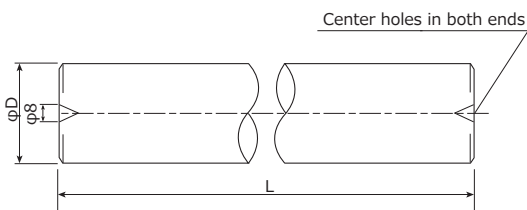
Product No	Stock No	Model	Size (mm)	Center distance (mm)	Squareness of center axis ( $\pm \mu m$ )	Applicable center	Weight (kg)
55-4-1	592-VB1	VB-1	400 × 300	265	5.0	MT-1	55

Stock No.600

## Test bar

- These test bars can be used as measurement standards for eccentricity checks.
- All models are Hardened.

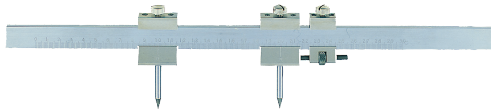
Material : SKS3  
 Package : Carton  
 Accessories: Certificate of inspection, and Instruction manual



Product No	Stock No	Size ( $\phi D \times L$ )	Cylindricity	Applicable bench center
55-6-150	600-P1	$\phi 20 \times 150$	2.0	P-1
55-6-200	600-P2	$\phi 20 \times 200$	2.0	P-2
55-6-300	600-P3	$\phi 25 \times 300$	3.0	P-3
55-6-400	600-NO1	$\phi 30 \times 400$	3.0	NO-1
55-6-800	600-NO2	$\phi 50 \times 800$	3.0	NO-2

Stock No.581

## Steel beam trammel with graduation



- These trammels are optimal for the scribing of circles and semicircles.
- The trammels are graduated in millimeters.

Material : SS400  
Package : Dedicated storage box

### Configuration of product code

581- 0300  
|  
Size

Product No	Stock No	Size (mm)	W (mm)	T (mm)	The points size (mm)
51-0300	581-0300	300	19	6	φ 6× 39
51-0500	581-0500	500	25		φ 10× 50
51-1000	581-1000	1000	32		
51-1500	581-1500	1500	32	9	φ 12× 68
51-2000	581-2000	2000	44		

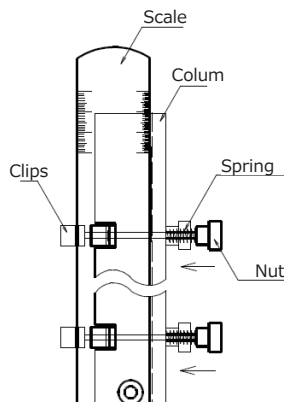
Stock No.560

## Scale holder

- These ruler stands hold a ruler to use it as a height gauge.
- A ruler is attached to B-1. For B-2 through B-6, a ruler is not attached.



B - 1      B - 2



- How to fix rulers: By clipping a ruler with the clips, the ruler can be fixed easily. (The clips are spring-loaded.)
- Usable rulers: Select an appropriate stand with reference to the table below. Any brand of standard ruler can be used.
- The clips (including springs and nuts) are replaceable and can be purchased separately.

Material : Cast iron (Base)  
Package : Dedicated storage box

### Configuration of product code

560 - B1  
|  
Model

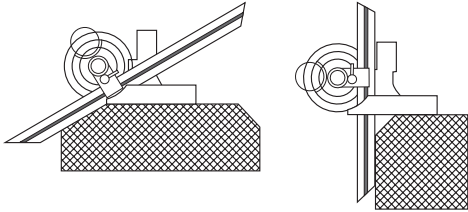
Product No	Stock No	Model	Height (mm)	L× W× H (mm)	Applicable scale(mm)	Weight (mm)
59-1	560-B1	B-1	300	70× 60× 70	Dedicated scale	1.2
59-2	560-B2	B-2	480	100× 100× 120	600	2.8
59-3	560-B3	B-3	700		1000	4.5
59-4	560-B4	B-4	1,300	300× 225× 300	1500	23.0
59-6	560-B6	B-6	1,750		2000	25.0

Stock No.495

## Universal bevel protractor



495D Grade-A



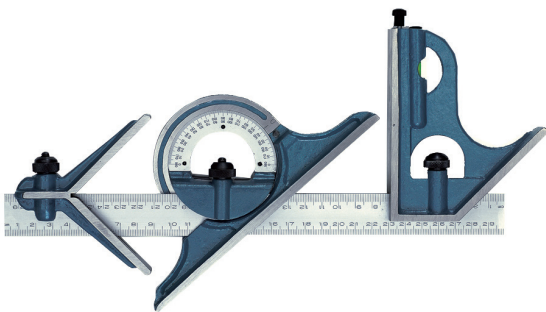
- This is a highly accurate protractor. The least graduation of the vernier is 5 minutes (1/12°).
- A magnifying glass is attached to read the measured value easily.
- Two types of blade (150 mm and 300 mm) are attached.

Material : S45C  
Package : Wooden box

Product No	Stock No	Blade squareness (μm)	Blade parallelism(μm)	Weight (kg)
56-2-495D	495-DA	10.0	10.0	0.62

Stock No.589

## Combination set



- A circular item centering jig, protractor and square (from the left) are attached to a ruler. This is an all-round ruler for scribing, measurements and adjustments.
- The ruler has graduations of 0.5 millimeters.

Material : Cast iron  
Package : Dedicated storage box

Product No	Stock No	Scale size (mm)	Weight (kg)
57-300	589-300	300	1.0

Stock No.565

## Micrometer stand



Type-R



Type-S

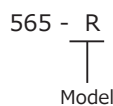


Type-Y

- Types S and Y can hold a micrometer of up to 25 mm.
- Type R can hold a micrometer of up to 200 mm.

Material : Cast iron  
Package : Dedicated storage box

### Configuration of product code



Product No	Stock No	Model	Weight (kg)
60-1	565-R	R形	0.9
60-2	565-S	S形	0.6
60-3	565-Y	Y形	0.8





*Supporting technology and trust*

**JIS certification No. JQ0308011**



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“Specifications subject to change without notice”

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