

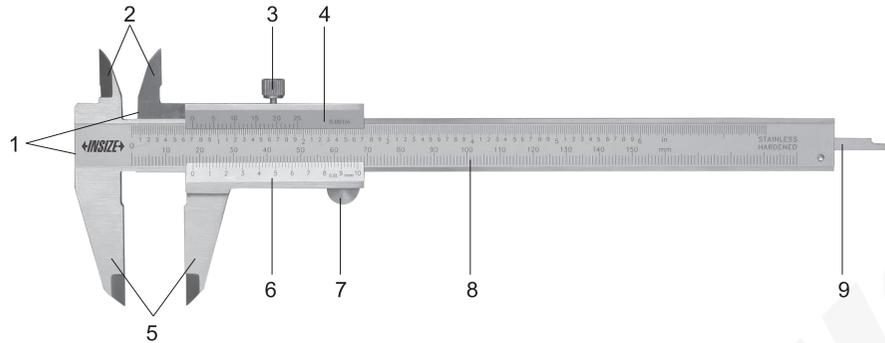


# OPERATION INSTRUCTION

## Vernier Caliper

Caution: Do not measure the workpiece if it is rotating, this is dangerous and measuring faces will be worn out.

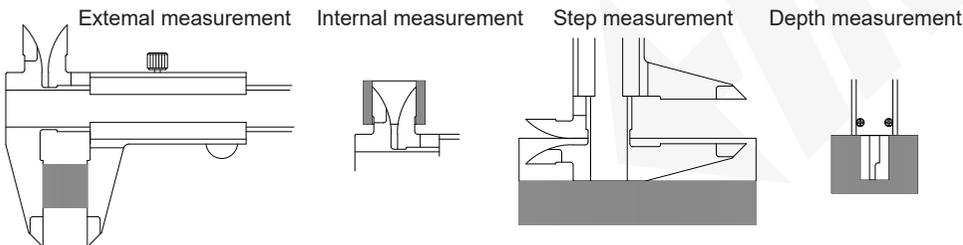
Graduation: 0.02mm/0.001"  
Accuracy: ±0.03mm (range: 0-300mm/0-12")



- 1-Step measuring faces
- 2-Internal measuring jaws
- 3-Locking screw
- 4-Slider
- 5-External measuring jaws

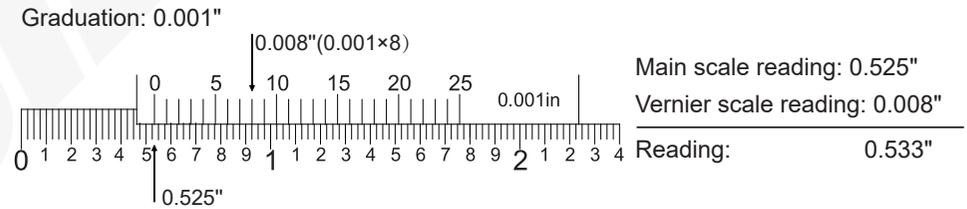
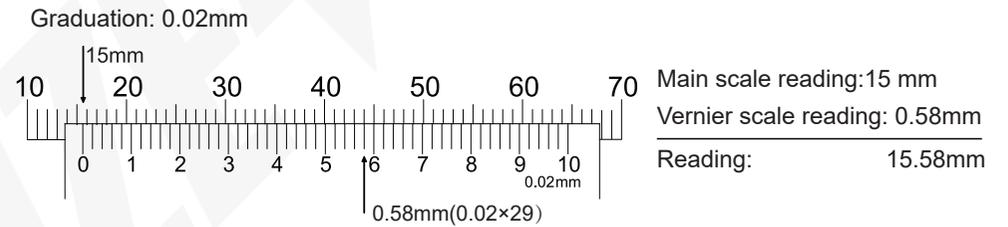
- 6-Vernier with vernier scale
- 7-Thumb clamp
- 8-Beam
- 9-Depth measuring bar

### 1. Measurement



2. Please clean the measuring faces and beam with soft cloth, then close the external jaws, make sure that the zero lines of the vernier and main scales coincide and there is no slit observed between the jaws against the light.

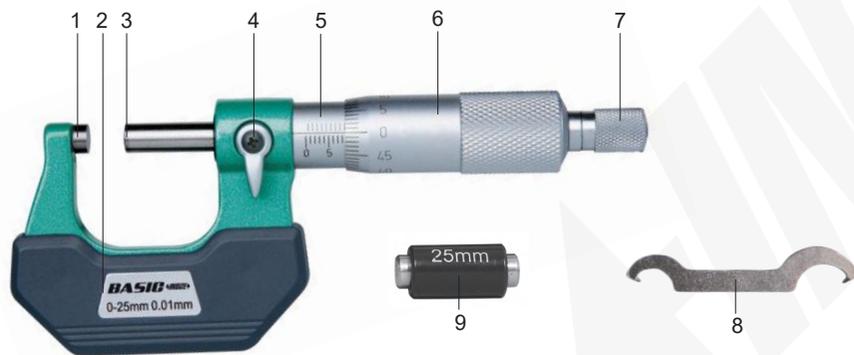
3. To get accurate measurement, it is necessary to control the force. During measurement, please always apply constant and proper force on the thumb clamp. The measuring jaws should "hold" the workpiece and can still "slide" on the workpiece.  
4. The reading is obtained by adding the reading of the vernier scale to that of the main scale. Take the vernier scale reading at the graduation which coincides with the one on the main scale. Details please refer to following figures.



Code	Range	Accuracy
3202-25A	0-25mm	4μm
3202-50A	25-50mm	4μm
3202-75A	50-75mm	5μm
3202-100A	75-100mm	5μm
3202-125A	100-125mm	6μm
3202-150A	125-150mm	6μm
3202-175A	150-175mm	7μm
3202-200A	175-200mm	7μm

### Micrometer set

Code	Range	Micrometers included
3202-753A	0-75mm	3202-25A, 3202-50A, 3202-75A
3202-1004A	0-100mm	3202-25A, 3202-50A, 3202-75A, 3202-100A
3202-1506A	0-150mm	3202-25A, 3202-50A, 3202-75A, 3202-100A, 3202-125A, 3202-150A



- 1-Anvil
- 3-Carbide measuring probe
- 5-Sleeve
- 7-Ratchet stop
- 9-Setting anvil(except 0-25mm)

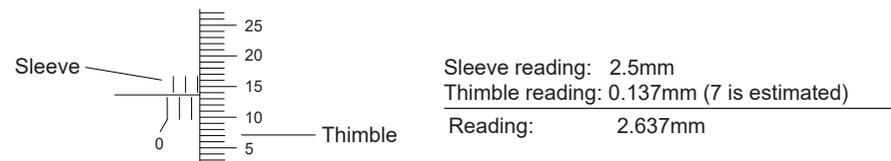
- 2-Frame
- 4-locking screw
- 6-Thimble
- 8-Spanner

- Calibration the outside micrometers before measuring:
    - Clean the measuring surface of the micrometer with soft cloth.
    - Loosen the locking screw, rotate the thimble, when the two measuring surface are closed, but not in contact, rotate the ratchet stop, and reading after hearing squeak. If the zero position has deviation, use the spanner to set zero.
    - For the micrometers above 25mm, do calibration with setting standard. Same as the above method.
- How to sue spanner:
- Tighten the locking screw, use spanner to rotate sleeve (Fig.1), adjust the reading to be zero.
  - Finish calibration.



Fig.1

- Measurement:
  - During measurement, make sure there are no cutting chips or other debris on the measuring faces and workpiece surface, or it will lead to inaccurate results.
  - Rotate the micrometer to be slightly larger than the measured workpiece, put the workpiece into the micrometer, rotating the thimble. When the measuring surface is in contact with the workpiece to rotate the ratchet stop .Then get the reading after hear squeak.
3. During reading, the line of sight should be perpendicular to the scale surface to avoid parallax. The reading results are as follows:



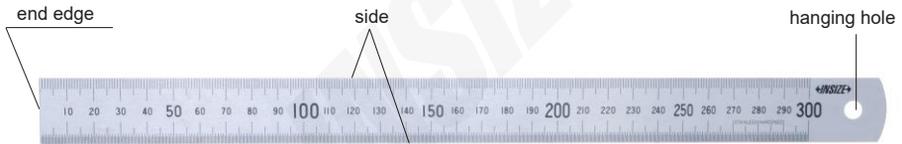
- Notes:
  - During storage, a gap of 0.1mm to 1mm shall be left between the measuring surfaces, and the outside micrometers shall not be stored in a clamped state.
  - After a long time to store the outside micrometers, the spindle has a protective oil film, use dust-free cloth to wipe the oil film before measuring.



# OPERATION INSTRUCTION STEEL RULER(ECONOMIC TYPE)

Graduation: 0.5mm, 1mm, 1/64", 1/32", 1/16"

Code	Range	Accuracy	Remark
7110-150	150mm/6"	±0.18mm	metric graduation on front and inch graduation on back
7110-200	200mm/8"	±0.18mm	
7110-300	300mm/12"	±0.27mm	
7110-3001	300mm/12"	±0.27mm	
7110-500	500mm/20"	±0.40mm	
7110-600	600mm/24"	±0.50mm	
7110-1000	1000mm/40"	±0.50mm	metric and inch graduation on front
7110-1200	1200mm/48"	±0.80mm	
7110-1500	1500mm/60"	±1.00mm	
7110-2000	2000mm/80"	±1.00mm	



## 1. Measurement:

- Before measurement, wipe the steel ruler and the surface of the measured workpiece clean with a clean soft cloth.
- When using, the zero mark on the left end should be used as the measurement reference.
- When measuring, the ruler should be placed upright and not tilted.

## 2. Precautions:

After using the steel ruler, wipe off the dirt on the ruler surface and place it flat on the workbench or hang the ruler with the hanging hole on the right end to prevent deformation of the steel ruler.

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