



# SMZ172 Series

Stereomicroscope

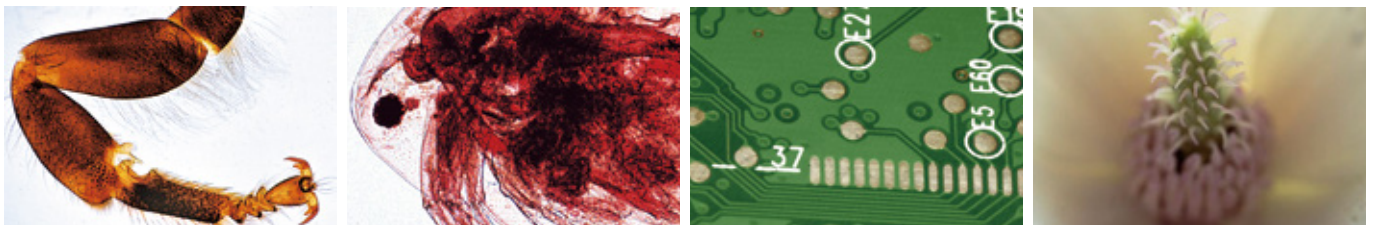
# MOTIC SMZ172 Series

The Motic SMZ172 series zoom stereomicroscope uses a Greenough optical system to provide users with high-quality stereoscopic images, making it a classic product in its category. Equipped with reflective and transmitted light sources, it ensures more uniform illumination while preventing excessive heating of the stage surface. With a high 1:6.7 zoom ratio and continuously adjustable magnification, an extra-long working distance, and high resolution, the SMZ172 series offers excellent value for money.

The SMZ172 Series offers high image clarity, true-to-life color reproduction, strong stereoscopic effect, and a wide field of view. With an eyepoint height of 370 mm and a 45-degree observation angle, it fully meets ergonomic requirements, ensuring that users can operate the instrument for extended periods without experiencing shoulder or neck discomfort. The SMZ172 Series is equipped with a comprehensive range of accessories, providing greater flexibility and diversity for routine applications.

**Illumination Modes:** Reflected light illumination, integrated vertical light source, LED point light source, zoom-adjustable and height-adjustable; equipped with oblique illumination and incident illumination for strong shadow effects. The dovetail slot accommodates dual gooseneck illuminators for multiple oblique lighting angles, producing varied shadow effects. A segmented LED ring light enables both shadow-free circular illumination and segmented oblique illumination. The base incorporates a switchable transmitted light source with two levels for brightfield and darkfield illumination.

**Application Fields:** External inspection and failure analysis in the electronics and semiconductor industries; fracture observation and dimensional measurement in the automotive industry; appearance observation and dimensional measurement in the lithium battery industry; micro-assembly and repair in the horology industry; as well as applications in biology, gemology, medicine and veterinary medicine, parasitology, botany, entomology, marine biology, geology and paleontology, forensic science, and criminal investigation.





SMZ172-B



SMZ172-T



SMZ172-i



SMZ172-B  
(with vertical-arm reflected  
LED illumination base)



SMZ172-T  
(with vertical-arm reflected  
LED illumination base)



SMZ172-i  
(with vertical-arm reflected  
LED illumination base)



SMZ172-B  
(with pillar-type base)



SMZ172-T  
(with pillar-type base)



SMZ172-i  
(with pillar-type base)



Dual gooseneck illuminator



Auxiliary objective



Combination polarizer



## Dual gooseneck illuminator

The dual gooseneck illuminator is inserted along the dovetail groove of the vertical arm travel slide and can be securely fixed at the bottom of the bracket. The dual goosenecks can be freely rotated 360° in any direction to meet user requirements.

## Auxiliary objective

Newly designed 0.35X, 0.5X, 0.75X, 1.5X, and 2X auxiliary objective lenses are available; you can select the appropriate configuration according to your requirements for working distance and total magnification. Operation is quick and convenient: simply screw on the auxiliary objective, then readjust the focusing mechanism position on the column to refocus.

## Combination polarizer

In the combination polarizer, the polarizer is mounted in the stage plate hole of the base, while the analyzer is fitted onto the decorative ring of the microscope body. Both the polarizer and the analyzer can rotate freely through 360°. The polarizer functions primarily by utilizing the principles of microscopic magnification and polarized light interference to observe and measure the optical properties of thin-section specimens, whether transparent or opaque, such as minerals or heterogeneous materials.

Coaxial illuminator



Ring illuminator



Darkfield illuminator



X-Y mechanical stage



Rotary stage



Independent polarizer



## Coaxial illuminator

Designed for observing specimens that cannot be effectively viewed under oblique or ring illumination—especially non-transmissive (high-reflective) specimens—it ensures uniform illumination across both sides of the field of view, with sufficient brightness to meet illumination requirements for magnifications ranging from 1.6X to 5X. After attaching the auxiliary objective, simply readjust the focusing mechanism position on the column to refocus accordingly.

## Ring illuminator

The high-brightness ring LED lamp can be directly mounted at the lower end of the main objective or an auxiliary objective.

## Darkfield illuminator

The SMZ172 provides you with a high-quality darkfield microscopy mode. Through this specialized illuminator, the transmitted light does not directly enter the imaging objective, thereby enhancing specimen contrast. This makes it particularly suitable for observing special specimens such as fibers and gemstones.

## X-Y mechanical stage

Install the mechanical stage onto the microscope base. By turning the larger and smaller knobs of the coaxial adjustment mechanism, the stage can be smoothly moved along both the X and Y axes.

## Rotary stage

The stage is installed in the stage plate hole of the base, allowing smooth parallel movement in any direction as well as full 360 ° planar rotation, making it convenient for observing tiny specimens.

## Independent polarizer

The polarizer of the independent polarizer can rotate freely through 360 °, while the analyzer can both rotate 360 ° and swing out of the optical path, meeting the requirements of different polarizing microscopy methods. The polarizer mainly utilizes the principle of polarized light interference to conduct polarizing observation and measurement of thin-section specimens, whether transparent or opaque, such as minerals and heterogeneous materials.

## Gemstone application accessories



Wire gem clamp



Flat-jaw gem clamp



Gem pointer

### Wire gem clamp

The wire gem clamp is an ideal fixture for diamonds, rubies, and sapphires. The wire gemstone clamp is made of stainless steel for a long service life. It causes minimal obstruction to the gemstone, allowing the stone to be observed to the greatest extent.

### Flat-jaw gem clamp

The flat-jaw gem clamp is an ideal fixture for irregularly shaped gemstones and jewelry. The flat-jaw gem clamp is crafted from stainless steel with a precision design, enabling it to securely hold irregular gemstone samples while providing appropriate gripping force, thereby preventing damage to the specimen.

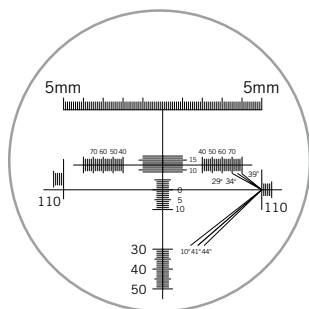
### Gem pointer

The gem pointer is used to quickly locate inclusions and cracks on the gemstone surface.

All three types of gem clamps employ a magnetic mounting method, ensuring ease of use.

### Gemstone stage plate set

The magnetic gemstone stage plate set can be attached to the stage area of the gem microscope base, providing a larger surface platform for rough-surfaced or oversized gemstones, while integrating fluorescent reflected illumination for gem inspection.



### Diamond proportion analysis kit

This complete kit allows for the efficient and accurate identification and measurement of the proportions of different parts of a diamond. It includes a magnetic diamond holder, a diamond proportion graticule, and a graticule eyepiece [10X].



### Immersion cell

The immersion cell enables quick and convenient detection of treated gemstone characteristics such as clarity enhancement, high-temperature high-pressure synthesis annealing, irradiation, and surface coloration. Immersion testing is particularly useful for identifying rubies.



### Diffuser

The diffuser makes it easier to observe growth striations and minute inclusions within gemstones.

## Contrast enhancement

### Polarizer

Using a polarizer allows for clearer observation of the crystalline characteristics of gemstones and inclusions.



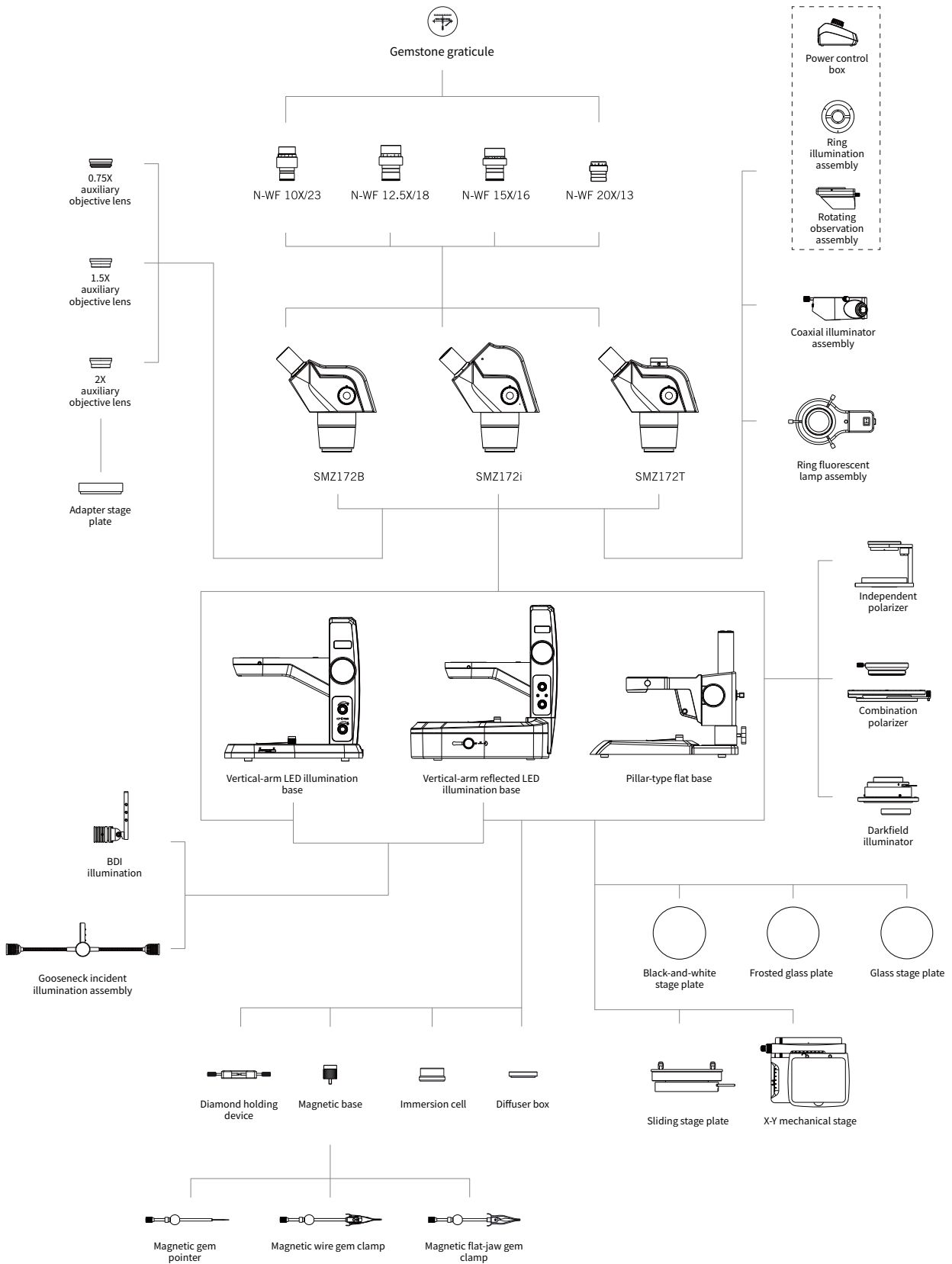
## SMZ172 series main technical parameter table

Model	SMZ172-B	SMZ172-T	SMZ172-i
Optical system	Greenough		
Observation angle	45°		
Zoom range of main unit (standard configuration)	0.75X-5.0X		
Zoom ratio	6.7:1		
Eyepiece (standard configuration)	Diopter adjustable WF10X		
Maximum field of view (standard configuration)	23mm		
Interpupillary distance	48mm-75mm		
Diopter adjustment	± 5° diopter		
Working distance (standard configuration)	110mm		
Depth of field (with standard configuration)	2.42~0.13		
Photo/video port (trinocular)	/	Compatible with: 0.5X adapter / 0.65X adapter / 1.0X adapter	/
Auxiliary objective lens (optional)	0.3X [WD =301mm]		
	0.5X [WD =191.8mm]		
	0.63X [WD =142.7mm]		
	0.75X [WD =128.6mm]		
	1.5X [WD =56.3mm]		
	2.0X [WD = 38.6mm]		
Maximum system magnification	200X		
Maximum system working distance	210mm		
Maximum system field of view	102.2mm		
Electrostatic discharge (ESD) protection	Yes		

## SMZ172 optical parameter table

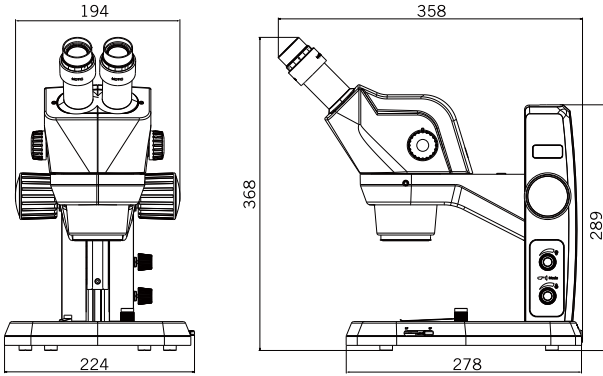
Eyepiece	Magnification setting (X)	Standard objective		Auxiliary objective											
				0.3X		0.5X		0.63X		0.75X		1.5X		2X	
		Working distance: 110 mm		Working distance: 301 mm		Working distance: 191.8 mm		Working distance: 142.7 mm		Working distance: 128.6 mm		Working distance: 56.3 mm		Working distance: 38.6 mm	
		Total magnification (X)	Field diameter $\Phi$ (mm)	Total magnification (X)	Field diameter $\Phi$ (mm)	Total magnification (X)	Field diameter $\Phi$ (mm)	Total magnification (X)	Field diameter $\Phi$ (mm)	Total magnification (X)	Field diameter $\Phi$ (mm)	Total magnification (X)	Field diameter $\Phi$ (mm)	Total magnification (X)	Field diameter $\Phi$ (mm)
10X/23	0.75	7.5	30.67	2.25	102.22	3.75	61.33	4.725	48.68	5.625	40.89	11.25	20.44	15	15.33
	1	10	23	3	76.67	5	46	6.3	36.51	7.5	30.67	15	15.33	20	11.5
	2	20	11.5	6	38.33	10	23	12.6	18.25	15	15.33	30	7.67	40	5.75
	3	30	7.67	9	25.56	15	15.33	18.9	12.17	22.5	10.22	45	5.11	60	3.83
	4	40	5.75	12	19.17	20	11.5	25.2	9.13	30	7.67	60	3.83	80	2.875
	5	50	4.6	15	15.33	25	9.2	31.5	7.30	37.5	6.13	75	3.07	100	8
15X/16	0.75	11.25	21.33	3.375	71.11	5.625	42.67	7.087	33.86	8.437	28.44	16.875	14.22	22.5	2.3
	1	15	16	4.5	53.33	7.5	32	9.45	25.40	11.25	21.33	22.5	10.67	30	4
	2	30	8	9	26.67	15	16	18.9	12.70	22.5	10.67	45	5.33	60	10.67
	3	45	5.33	13.5	17.78	22.5	10.67	28.35	8.47	33.75	7.11	67.5	3.56	90	2
	4	60	4	18	13.33	30	8	37.8	6.35	45	5.33	90	2.67	120	2.67
	5	75	3.2	22.5	10.67	37.5	6.4	47.25	5.08	56.25	4.27	112.5	2.13	150	1.6
20X/13	0.75	15	17.33	4.5	57.78	7.5	34.67	9.45	27.51	11.25	23.11	22.5	11.56	30	8.67
	1	20	13	6	43.33	10	26	12.6	20.64	15	17.33	30	8.67	40	6.5
	2	40	6.5	12	21.67	20	13	25.2	10.32	30	8.67	60	4.33	80	3.25
	3	60	4.33	18	14.44	30	8.67	37.8	6.88	45	5.78	90	2.89	120	2.17
	4	80	3.25	24	10.83	40	6.5	50.4	5.16	60	4.33	120	2.17	160	1.625
	5	100	2.6	30	8.67	50	5.2	63	4.13	75	3.47	150	1.73	200	1.3

# SMZ172 system diagram

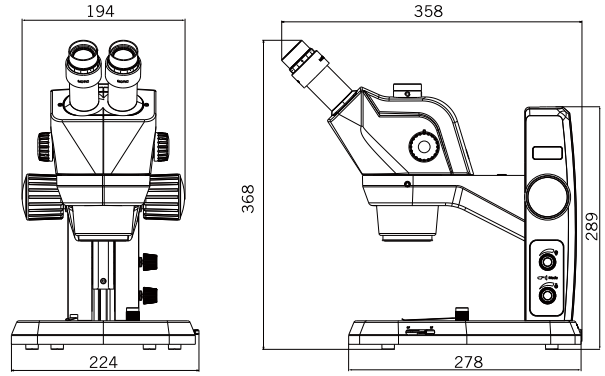


# SMZ172 dimensional drawing (Unit: mm)

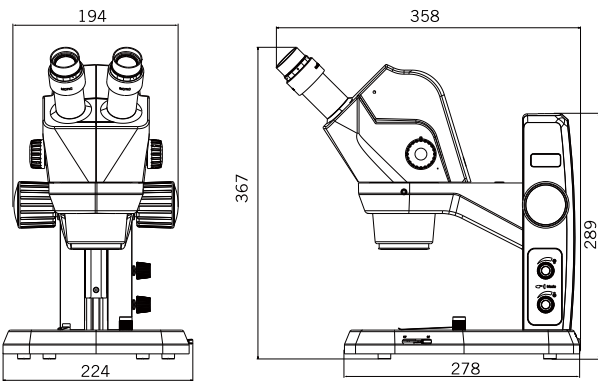
SMZ172-B



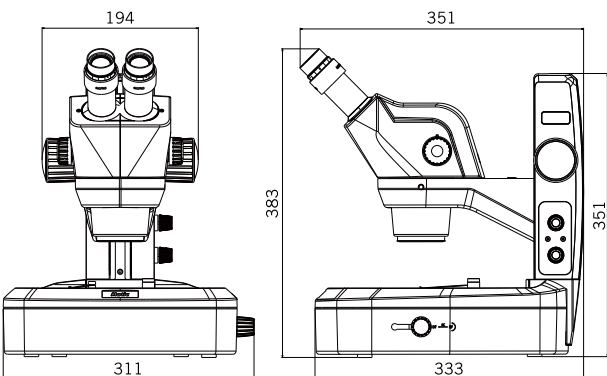
SMZ172-T



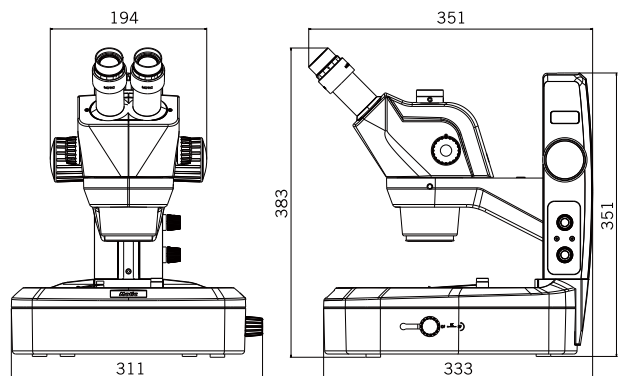
SMZ172-i



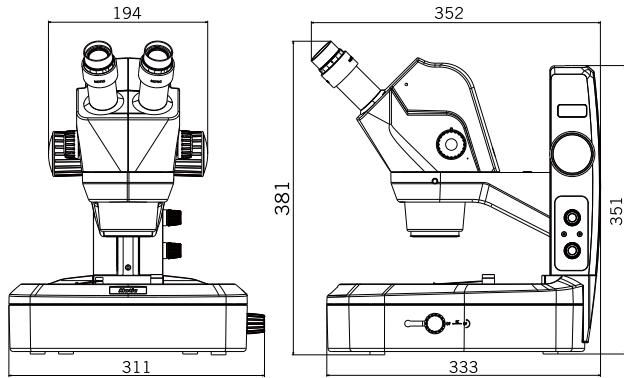
SMZ172-B (with vertical-arm reflected LED illumination base)



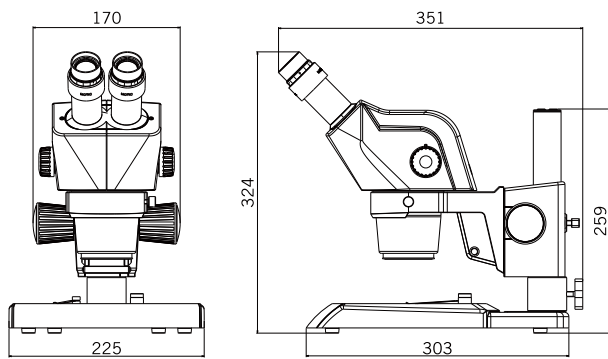
SMZ172-T (with vertical-arm reflected LED illumination base)



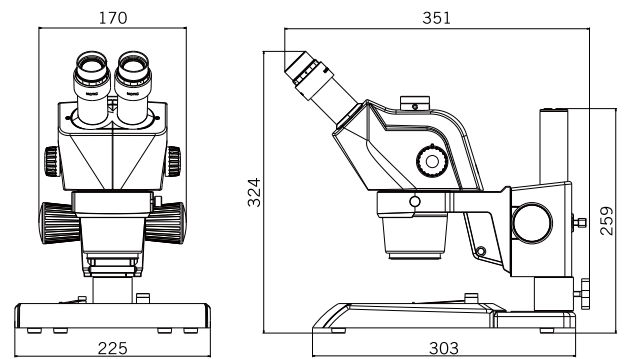
SMZ172-i (with vertical-arm reflected LED illumination base)



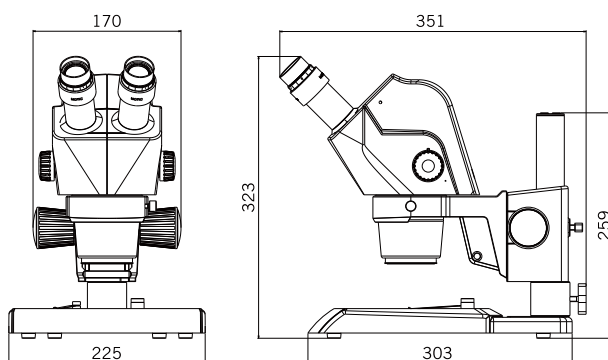
SMZ172-B (with pillar-type base)



SMZ172-T (with pillar-type base)



SMZ172-i (with pillar-type base)



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