MZPS0850 series parallel optics zoom stereo microscopes

INSTRUCTIONS

Honorific consumers:
Thank you for choosing to buy our product. Please read this instruction carefully before you use in order to use and maintain this product better.

NOTE:

1. Operation
   (1) As the microscope is a kind of exactitude instrument，always handles carefully, avoiding abrupt movement or impact during transportation or operation .
   (2) Avoid exposure to direct sunlight, high temperature and humidity, dust and vibration.
   (3) Avoid leaving dirt or fingerprints on the lens surfaces, lest should reduce the definition of image.

2. Cleaning and Storage
   (1) Clean all glass components by wiping gently with gauze or cotton. To remove fingerprints or oil smudges, wipe slightly with gauze moistened or cotton with a mixture of aether (70%) and alcohol (30%).

! Since solvents such as aether and alcohol are highly flammable, they must be handled carefully. Be sure to keep these chemicals away from open flames or potential sources of electrical equipment that is being switched on or off. Also remember to always use these chemicals only in a well-ventilated room.

   (2) Do not use organic solvent to wipe the surface of other components. Should be cleaned with a neutral detergent.
   (3) Never attempt to disassemble the instrument, so that reduce the performance of instrument.
   (4) When not in use, be sure to cover the instrument with the dust cover, and store in an area which is dry and hasn’t dust.

3. The power supply network should contact ground reliably.

CONTENTS:

1. Brief introduction

MZPS0850 series parallel optics zoom stereo microscopes include MZPS0850 (binocular) and MZPS0850T (trinocular), is characterized by Galileo optical system (parallel optics). Magnification range of zoom body is 0.8X~5X, the view highest magnification is 300X, magnification from low to high non-flash in focusing course, large depth of field, plane visual field, long working distance. It can match many kinds of stands and universal stands. Collocating trinocular beam splitter, can connect CCD camera, digital camera, film camera. It can match LED ring illuminator, ring fluorescent lamp, fiber illuminator. There are many magnification kinds of eyepieces、divisional eyepieces and objectives to select. It can be satisfied the demands of checking-up and analysis in modern biology, medicine, environment, farming, police, micro-electronics, semiconductors etc. fields. It can be extensively used in school, biology engineering and science research, the usual inspection of medical institution, the assembly, test, measurement and quality control in the industry.

2. Instruments list

MZPS0850 standard outfits list:

No.	Parts name	MZPS0850	MZPS0850T	Remark
1	ZPS0850 main body	●		
2	1X plane objective	●	●	
3	SD1 stand	●	●	
4	WF10X/22 eyepiece	●●	●●	
5	Eye shield	●●	●●	
6	Trinocular beam splitter		●	
7	Hexagon spanner for M4 bolts	●	●	For assembly

There are two type of models: PS-T1 trinocular beam splitter and PS-T2 tension bar trinocular beam splitter.

1.PS-T1 trinocular beam splitter, the eyepiece observation is: Left 50% , right 50% beam of light;

2. PS-T2 tension bar trinocular beam splitter, the eyepiece observation is: Left 100%, is right 0% (or 100%) beam of light.

MZPS0850 optional attachments:

Sort	Code, name of parts	Remark
Eyepiece	WF5X, WF10X/22, SWF15X, SWF20X, SWF30X eyepieces and divisional eyepieces	
Objective	PS-W0.5 0.5X achromatic objective PS-W0.7 0.7X achromatic objective PS-W1.5 1.5X achromatic objective	
Trinocular beam splitter	PS-T1 trinocular beam splitter PS-T2 tension bar trinocular beam splitter	
Digital camera junction	DT01 digital camera junction	According to different type of digital camera to make
Photo adapter	PT01 photo adapter	Be fit for 135 film camera
CCD adapter	C1.0 1X CCD adapter C0.5 0.5X CCD adapter CDM1.0 1X stage micrometer CCD adapter	C-mount
Auxiliary illuminator	LED ring illuminator Ring fluorescent lamp Fiber illuminator	The match size of ring illuminator is Φ62.
Stage	S7650 Mechanical stages	
Stand	Our company various of stands	
Universal stands	Various of universal stands	

3. Technology data

a. Basic data

Parts		Technical spec	Remark
Main body of microscope	Optical system	Parallel optics zoom	
	Objective magnification	0.8X~5X	
	Working distance	91mm	Match 1X plane objective
	The inclined angle between emission optical axis and level	45°	
	Interpupillary distance adjustment range(with WF10X/22)	50mm~76mm	
	Binocular diopter adjustment range	±6 diopter	
	WF10X/22 diameter of visual field	Φ22mm	
	Trinocular beam splitter	PS-T1 trinocular beam splitter, the eyepiece observation is: Left 100%, right 50% beam of light; PS-T2 tension bar trinocular beam splitter, the eyepiece observation is: Left 100%, is right 0% (or 100%) beam of light.	
Stand	The measurement to match the main body of microscope	The measurement to match between the main body and the support is Φ 76mm	
	Focus	Rack-and-pinion drive on ball bearing guides, focusing handwheel tension adjustment, focusing range of round post is 50mm, and the height is 240mm. The focusing range of square post is 100mm.	
	Stage	Φ95mm frosted white on one side and black on the other side.	
Light source stand	SD2, SD4, SD6, SD8, SD14, SD16	The up illuminator source: Halogen Lamp (6V/10W) adjustment lighteness; The down illuminator source: Fluorescent Lamp (5W) AC input 220V50Hz or 110V60Hz	
	SD17, SD18, SD19, SD20	The up and down illuminators are white LED illumination, adjustment lighteness, The input voltage of wide range: AC90V~260V, 47~63Hz	

b. Optical data

View data:

Total view magnification = objective zoom magnification（0.8~5）× eyepiece magnification ×objective magnification

Object field diameter = eyepiece field diameter ÷ objective zoom magnification（0.8~5）÷ objective magnification

Eyepieces \ Objectives		0.5X	0.7X	1X	1.5X
5X/Φ22	Total magnification	2X~12.5X	2.8X~17.5X	4X~25X	6X~37.5X
	Field diameter（mm）	Φ55~Φ8.8	Φ39.3~Φ6.3	Φ27.5~Φ4.4	Φ18.33~Φ2.93
10X/Φ22	Total magnification	4X~25X	5.6X~35X	8X~50X	12X~75X
	Field diameter（mm）	Φ55~Φ8.8	Φ39.3~Φ6.3	Φ27.5~Φ4.4	Φ18.33~Φ2.93
15X/Φ17	Total magnification	6X~37.5X	8.4X~52.5X	12X~75X	18X~112.5X
	Field diameter（mm）	Φ42.5~Φ6.8	Φ30.36~Φ4.86	Φ21.25~Φ3.4	Φ14.17~Φ2.27
20X/Φ14	Total magnification	8X~50X	11.2X~70X	16X~100X	24X~150X
	Field diameter（mm）	Φ35~Φ5.6	Φ25~Φ4	Φ17.5~Φ2.8	Φ11.67~Φ1.87
30X/Φ9	Total magnification	12X~75X	16.8X~105X	24X~150X	36X~225X
	Field diameter（mm）	Φ22.5~Φ3.6	Φ16.1~Φ2.57	Φ11.25~Φ1.8	Φ7.5~Φ1.2
Working distance (mm)		186	135	91	40

Video displaying data:

Total video magnification = Optical magnification × Digital magnification

Optical magnification = objective zoom magnification（0.8~5）× CCD adapter magnification × objective magnification

Digital magnification = The size of display screen diagonal ÷ The size of CCD camera plate diagonal

Object field of video = The size of CCD camera plate ÷ objective zoom magnification（0.8~5）÷ objective magnification

The size of CCD camera plate diagonal:

1/3″CCD：6mm (3.6×4.8)； 1/2″CCD：8mm(4.8×6.4)； 2/3″CCD：11mm(6.6×8.8).

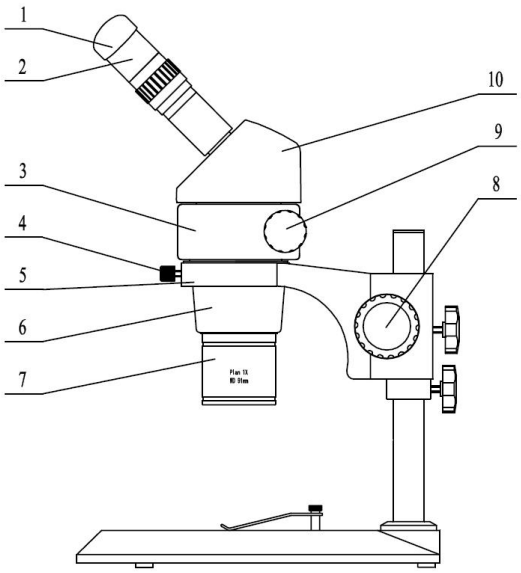
Objective	CCD adapter			
		0.3X	0.5X	1X
0.5X	Optical magnification	0.12X～0.75X	0.2X～1.25X	0.4X～2. 5X
	Field of video (mm)	30X40～4.8X6.4	18X24～2.88X3.84	9X12～1.44X1.92
0.7X	Optical magnification	0.168X～1.05X	0.28X～1.75X	0.56X～3.5X
	Field of video (mm)	21.4X28.6～3.43X4.57	12.86X17.1～2.06X2.74	6.43X8.57～1.03X1.37
1X	Optical magnification	0.24X～1.5X	0.4X～2. 5X	0.8X～5X
	Field of video (mm)	15X20～2.4X3.2	9X12～1.44X1.92	4.5X6～0.72X0.96
1.5X	Optical magnification	0.36X～2.25X	0.6X～3.75X	1.2X～7.5X
	Field of video (mm)	10X13.33～1.6X2.13	6X8～0.96X1.28	3X4～0.48X0.64

Note:

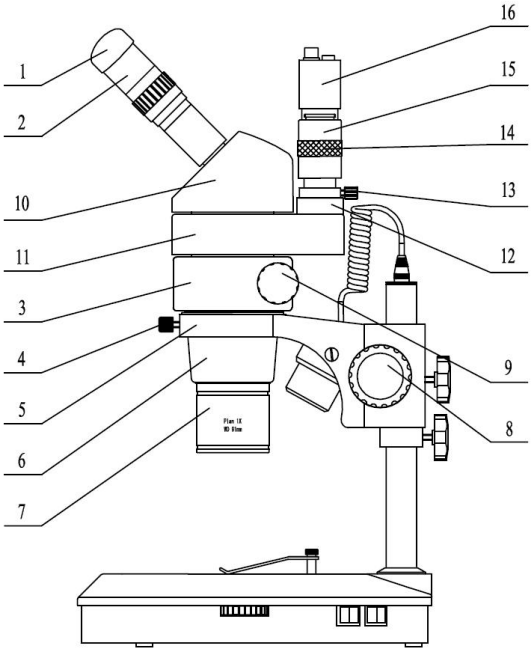
a. The field of video is based on 1/3" CCD adapter.

b. The consumers should read the corresponding optical data in list according to which they buy, such as the magnifications of objective and CCD adapter, the specs of CCD camera and monitor.

4. Nomenclature



MZPS0850



ZPS0850 + PS-T1 + SD2 + C1.0 + CCD

（MZPS0850 main body + Trinocular beam splitter
+ SD2 stand+ 1X CCD adapter + CCD camera）

Figure 1

1. Eye shield	2. Eyepiece	3. Main body	4. Bolt
5. Support	6. Objective cover	7. Objective	8. Focusing handwheel
9. Zoom control knob	10. Binocular head	11. Trinocular beam splitter	12. Straight drawtube
13. Bolt	14. Focusing ring	15. CCD adapter	16. CCD camera

5. Assembly

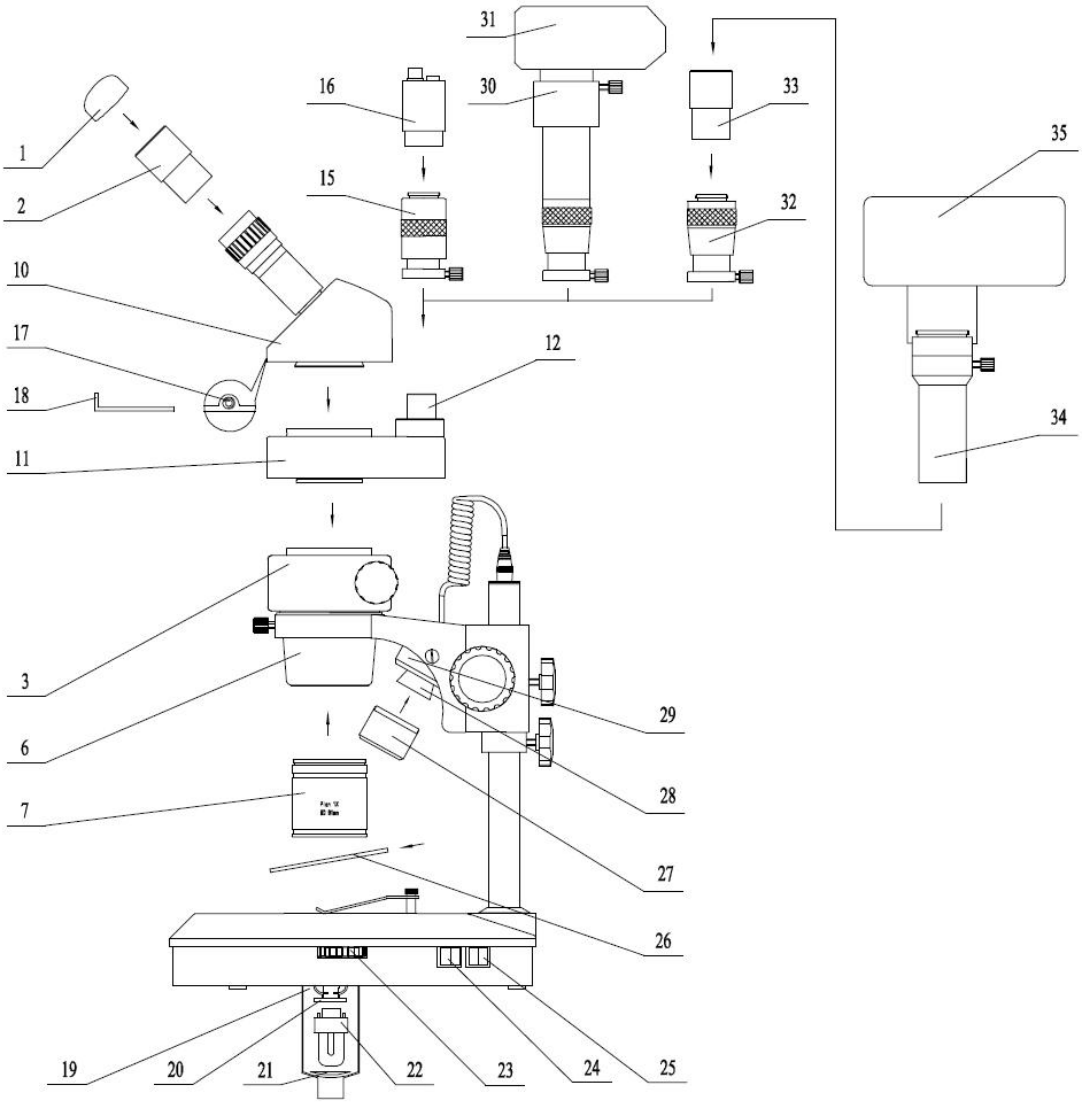


Figure 2

1. Eye shield
2. Eyepiece
3. Main body
6. Objective cover
7. Objective
10. Binocular head
11. Trinocular beam splitter
12. Straight drawtube
15. CCD adapter
16. CCD camera
17. Bolt
18. Hexagon spanner
19. Activity panel
20. Lamp holder
21. The active part of activity panel
22. Fluorescence lamp
23. The up illuminator adjusting knob
24. The switch of up illuminator
25. The switch of down illuminator
26. Stage
27. Lamp-chimney
28. Halogen lamp
29. Lamp holder
30. Data camera adapter
31. Digital camera
32. The down junction
33. Photography eyepiece
34. The up junction
35. Film camera

Please see Figure 1, Figure 2 to assemble.

Note：

① When you assemble, make sure that the bottom long trough 33 of trinocular beam splitter 11 dead against the orientation bolt 34 of main body (Figure 3)3，similarly the connection between binocular head 10 and trinocular beam splitter 11 or main body 3 has the same configuration. Then twist bolt 17 by hexagon ring spanner.
Then twist bolt by hexagon spanner.

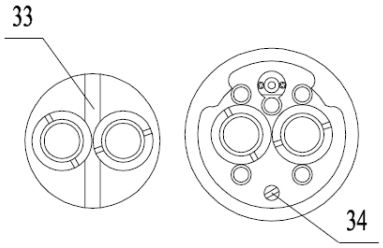


Figure 3

② The fluorescent lamp 22 of the down illuminator source haven't installed, please install the fluorescent lamp before use. Open the activity panel 19, insert the fluorescent lamp into Lamp holder 20 (Figure 2).

③ Install achromatic objective:
Install 0.5X or 0.7X achromatic objective, we should rotate off 1X plane objective first.
1.5X achromatic objective is installed under 1X plane objective to use.

6. Operation

(1) Diopter adjustment and focus (Figure 1, Figure 3)

A. Adjust left and right eyepiece drawtubes to "0" diopter.
B. Twist the zoom control knob 9, make the objective magnification to the maximal.
C. Adjust focusing handwheel 8, observe the specimen clearly by right eyepiece.
D. Twist the zoom control knob 9, make the objective magnification to the minimal.
E. If the image is not clear, twist the right diopter adjusting ring 34 to make it clear.
F. Twist the zoom control knob 9, make the objective magnification to the maximal. If the image is not clear, repeat step (C) to (E). That needs diopter adjustment more exactly.
G. Twist the zoom control knob 9, make the objective magnification to the minimal. Twist the left diopter adjusting ring 35 to make the image clear.

Every user does adjustment according to above steps, then can gain clear image in every magnification from maximal to minimal.

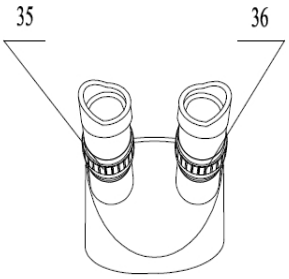


Figure 4

(2) Straight drawtube focusing adjustment (Figure 1, Figure 4)

Trinocular beam splitter straight drawtube can connect CCD adapter, digital camera, 135 film camera. (For tension bar trinocular beam splitter, we need to pull out the tension bar first, then we can do video observing or taking pictures.) In order to make the image clear by straight drawtube and binocular vision at the same time, we need adjust the extent of CCD adapter (or digital camera junction, photo adapter).

The method is as follows:

A. After above diopter adjustment and focus, don't twist

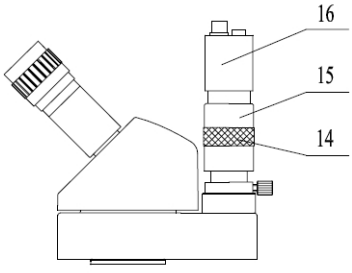


Figure 5

focusing handwheel 8.

B. Twist the zoom control knob 9, make the objective magnification to the minimal.

C. If straight drawtube CCD camera display unclear image, twist CCD adapter adjusting ring 14 to make the image clear.

D. Turn CCD adapter 15, make the image direction of straight drawtube displaying and binocular vision consistent.

If match digital camera and 135 film camera, focusing adjustment use the same method.

(3) Adjusting the interpupillary distance (Figure 6)

Turn the left, right drawtubes 37, 38 by both hands gently to change binocular interpupillary horizontal distance, in order to fit for binocular vision.

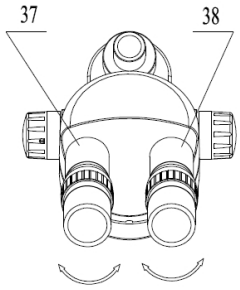


Figure 6

(4) Adjusting magnification (Figure 1)

Twist the zoom control knob 9, it can obtain the needed magnification.

(5) Focusing handwheel tension adjustment (Figure 7)

A. Grasp left handwheel, adjust right handwheel deasil (or anticlockwise), can get bigger (or less) tension.

B. According to step A adjust focusing handwheel can make the handwheel tension bigger slowly, make sure microscope main body doesn't fall because of itself gravity or involuntary change, make operation more convenient.

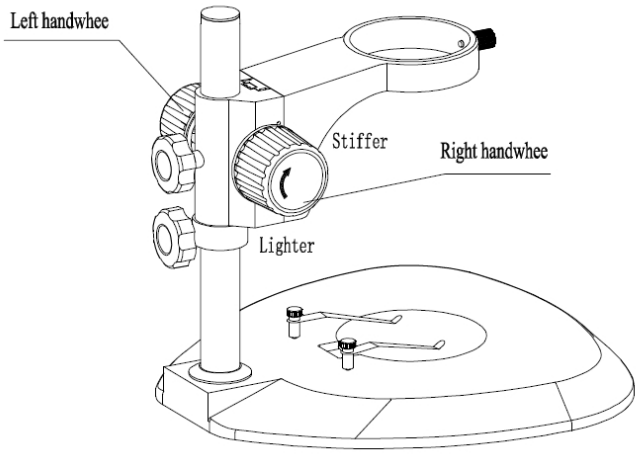


Figure 7

(6) Light source adjustment（SD2, SD4, SD6, SD8, SD14, SD16）

Open the switch of up illuminator 24 or low illuminator 25 to choose use one of them or

both. Turn lighteness adjusting knob 23, can adjust the up illuminator to the appropriate lighteness. Swing the lamp-chimney of the up illuminator, can change to the fit light angle.

7. Malfunction servicing guidance

Malfunction symptom	Reason	Eliminate method
The image by binocular vision is not clear at the same time.	The interpupillary distance is not adjusted correctly.	Correct the interpupillary distance.
	Diopter adjustment is incomplete.	Complete diopter adjustment.
	The right and left eyepieces are different.	Replace and mount the same eyepieces.
Unclear image	Stains or dust have accumulated on the objective.	Clean the objective thoroughly.
The up illuminator is not light.	The halogen lamp is bad.	Change a new halogen lamp: twist the lamp-chimney27 off, pull out the broken halogen lamp then infix the new one.
The down illuminator is not light.	The fluorescent lamp is bad.	Change a new fluorescent lamp: **1.** Relax bolt 4, then take out the microscope main body. **2.** Let the stand lie down, press the active part of activity panel 21 to open the activity panel 19, pull out the broken fluorescent lamp, then infix the new one. Close the activity panel.