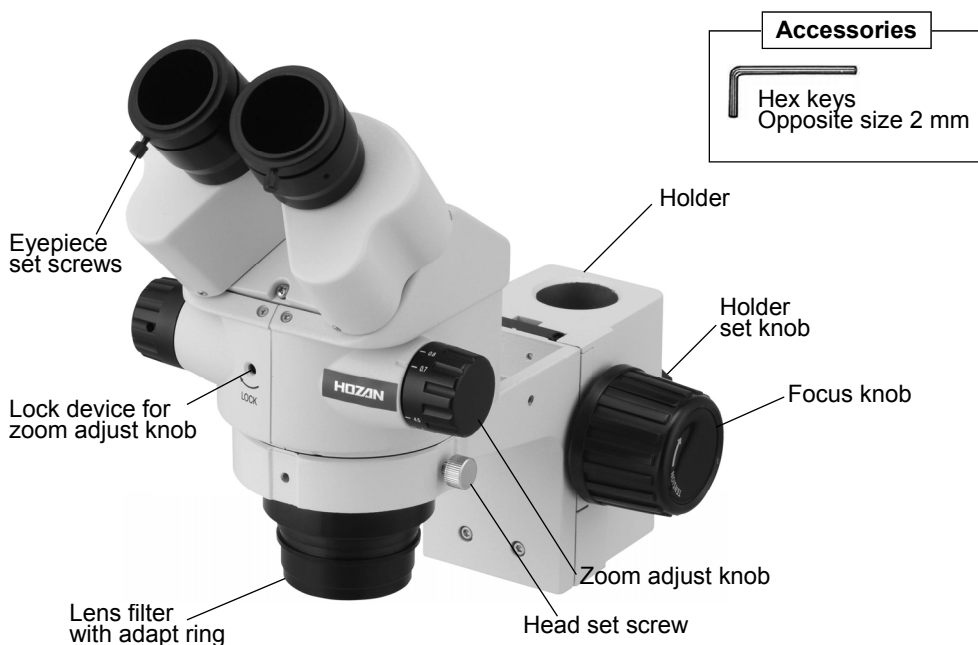


L-461 STEREO HEAD SCOPE (Zoom Type)

Thank you for purchasing the HOZAN L-461 STEREO HEAD SCOPE (Zoom type). With proper care and handling, this fine instrument will provide years of trouble-free operation. Please read this entire instruction manual carefully before attempting to place this instrument in service. Please keep this instruction manual available for reference.

Identification of parts and contents



Specifications

Objectives	0.7-4.5X(zoom ratio 6.4)
Eyesight adjustment	Independent left and right, ± 5 Dptr
Working distance	84mm (attaching lens filter w. adapt ring)
Focusing	Raise/lower stereo head (range 50 mm)
Stereo head type	45° inclined tube
Pupil distance range	54-75mm · left/right interlocking
Weight	2.4kg

Optional parts such as Eyepieces (L-546-10) and Standard Table (L-462) or others are necessary for using this unit as a microscope.

Warning and caution symbols

These symbols are used throughout the instruction manual to alert the user to potential safety hazards as follows :

⚠ Warning ... Notice when incorrect handling could cause the user's death or serious injury.

⚠ Caution ... Notice when incorrect handling could cause injury to the user or material damage.

Even if the instructions do not have **⚠ Caution** mark, there are some possibilities for a serious situation. Follow the instructions.

Precautions

⚠ Warning

- Do not unnecessarily remove the stereo head or the holder from the post or the holder. If it becomes necessary to remove them, hold them with both hands to prevent dropping them and possibly causing injury to personnel.

⚠ Caution

1. Do not disassemble or modify the L-461 yourself, otherwise this could cause a malfunction.
2. Protect the unit against physical shock or vibration during transport. Otherwise, this could cause a malfunction.
3. Do not expose the unit to prolonged direct sunlight, high temperature, high humidity, or dust. Such exposure could cause a malfunction.

Note

- Do not allow any dust or fingerprints to get on the lens and the lens filter, to get clear images. (Refer to "Daily care" on page 5.)

Preparation

First, make sure that the contents are complete.

- 1 Settle the table sold separately on the inspecting place.
- 2 Mount the holder at the low end on the post.
Turn toward the front, then securely tighten the holder set knob.



Preparation

3

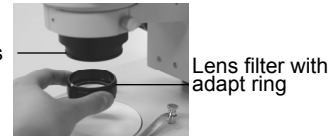
Mount the head.
Turn toward the front and secure the head set screw into any female screws, right, left or front.



4

Remove the cap from the objectives and attach the lens filter accompanied by the adapt ring.

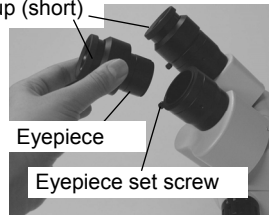
Objectives



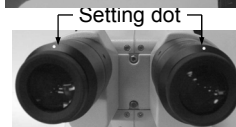
5

Remove the caps from the barrels. Then, loosen the eyepiece set screws and insert the eyepieces sold separately into the barrels.

Eyecup (short)



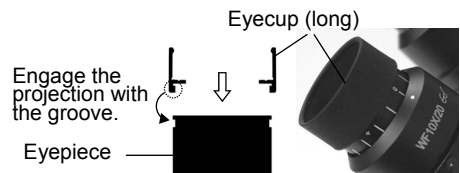
Drive the eyepiece set screws gently so that the eyepieces stay and the setting dot [•] of them, refer to the photo, point at the zenith.



Please use eyecups (long) if necessary.

< How to attach the eyecup (long) >

1. Remove the eyecup (short) .
2. Attach the eyecup (long) as shown in the illustration.



Choose to suit

Eyecup (short)

- for persons in spectacles

Eyecup (long)

- for persons in contact lenses or without spectacles

Bringing inspector's cheekbones at eyecups (long) stabilizes his/her eye points.

- for blocking the slanting rays

Operation

- 1 Be agreed "0" of the graduation with each setting dot, refer to the photo, of both the eyepieces.



- 2 Adapt the eyepiece distance with your pupil distance to view a single circle of the field. The stereo barrels will rotate drawing arcs interlocking with (refer to the photo).



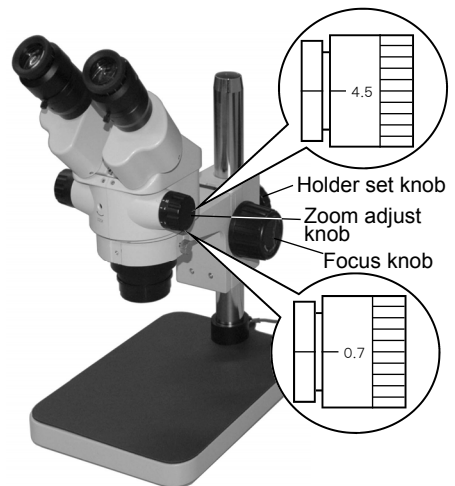
- 3 Place an object just under the objectives. Prepare lighting apparatus such as Hozan's L-711 LED LIGHT (refer to page 6) if necessary.

- 4 Adjust the zoom adjust knob to 4.5 maximum magnification.

- 5 Adjust for proper focus with the focus knob while looking with both eyes. If the focus knob does not focus enough, move the holder up and down under loosening the holder set knob.

Always aim the same point if the surface of the object is not simply flat, otherwise the working distance* could differ from before and this could not come into focus.

*Working distance means the dimension from the top of lens filter to the object.



Caution

Loosen the holder set knob while supporting the holder with one hand when move it up and down. Otherwise, the holder could fall down suddenly damaging the unit, the object and the operator.

- 6 Adjust the zoom adjust knob to 0.7.

Operation

7 If the image is out of focus, it is due to the difference of right and left eyesight. First, turn the draw tube for proper focus by looking with the dominant eye while closing the other eye. Then, adjust the other eyepiece similarly.

Proceed to procedure **8** if the image looking with both eyes is in focus.

If the image is still not in focus, adjust each eyepiece again.

Regarding “-” “+” of the graduation

A nearsighted person should turn to minus side and a farsighted person should turn to plus side.

8 Treat procedures **4** to **7** and check if the image is in focus.

Repeat these procedures so that a clear image can be obtained whenever the zoom magnification is changed.

9 Store putting a dust sheet on after use.

Taking notes of sight adjust value can omit procedure **7** when the next work.

Adjusting the tightness of the focus knob

The tightness of the focus knob for vertical movement can be adjusted.

Turn the right focus knob counterclockwise while holding the left focus knob securely to decrease the tightness, or turn it clockwise to increase the tightness.

*Do not loosen unnecessarily, otherwise the stereo head could suddenly slide down.

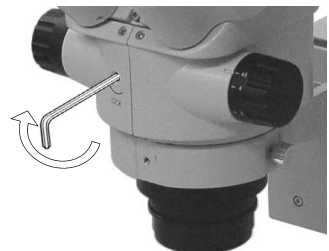
Lock device for zoom adjust knob

The zoom adjust knob can be locked.

This is useful when a uniform magnification is required e.g. using the measurement function of Hozan's L-830 USB CAMERA, refer to below.

Insert the hex key 2mm provided into the opening, then turn clockwise as the arrow indicated under the opening. To release, turn counterclockwise against the arrow.

*Do not try to turn the zoom adjust knob under locked state, otherwise this could cause a malfunction.



Related products

Use only the following optional accessories manufactured by HOZAN.

Lighting systems

L-711 LED light

The light has few fluctuations of brightness and no flicker at all.



L-711

Various lighting systems can be used. Please refer to our catalog or web catalog.

Option lenses

L-546-10 Eyepieces (10X), standard

L-546-20 Eyepieces (20X)

- A pair per pack
- With eyecups (long & short)
- * Eyecups (short) are attached when ship.



L-546-10



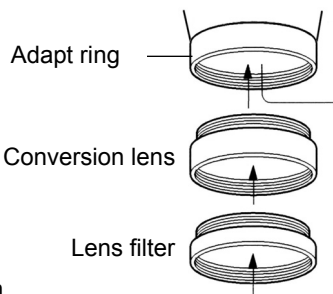
L-546-20

L-57-0.5 Conversion lens (0.5X)

L-57-1.5 Conversion lens (1.5X)

L-57-2.0 Conversion lens (2X)

To install, first remove the lens filter, then replace the conversion lens and lens filter. Do not remove the adapt ring.



The magnification, field of view and working distance gotten when combining eyepieces, objectives and conversion lenses are follows.

Magnification table

Standard item

Objective	0.7-4.5X											
Conversion lens	No			L-57-0.5			L-57-1.5			L-57-2		
Eyepiece	Magnification X	Field of view mm ϕ	Working distance mm	Magnification X	Field of view mm ϕ	Working distance mm	Magnification X	Field of view mm ϕ	Working distance mm	Magnification X	Field of view mm ϕ	Working distance mm
L-546-10 (Standard)	7-45	28.5-4.4	84	3.5-22.5	57.1-8.9	160	10.5-67.5	19.0-2.9	43	14-90	14.3-2.2	26
L-546-20	14-90	14.3-2.2		7-45	28.5-4.4		21-135	9.5-1.5		28-180	7.1-1.1	

*The "working distance" is the distance from the end of the filter to the subject.

L-846 Lens unit

L-846-3 Adapter

Connecting the microscope and a digital camera with C mount, images of the full field being seen actually through the microscope are taken in high-definition.



L-846



L-846-3

Daily care

Lenses

- Wipe away any dust gently with a soft cloth or a piece of gauze.
- Clean away fingerprints or oil stains with a cloth which is lightly soaked in IPA or denatured alcohol (such as ethyl alcohol or methyl alcohol).
 - * Alcohol is extremely flammable, so handle it with care.

Stereo head and plastic parts

- Wipe with a soft, dry cloth.
Do not use any organic solvents such as thinner, alcohol or ether.
- When out of use for an extended period, store this unit in a dry dust-free place.

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