VT Series INVERTED MICROSCOPE

INSTRUCTION MANUAL

MEIJI TECHNO CO., LTD.

JAPAN

1. UNPACKING, ASSEMBLY, PREPARATION FOR USE

1-1 UNPACKING

The shipping box contains four small boxes in witch microscope stand , viewing head, illuminator and mechanical stage are separately packed.

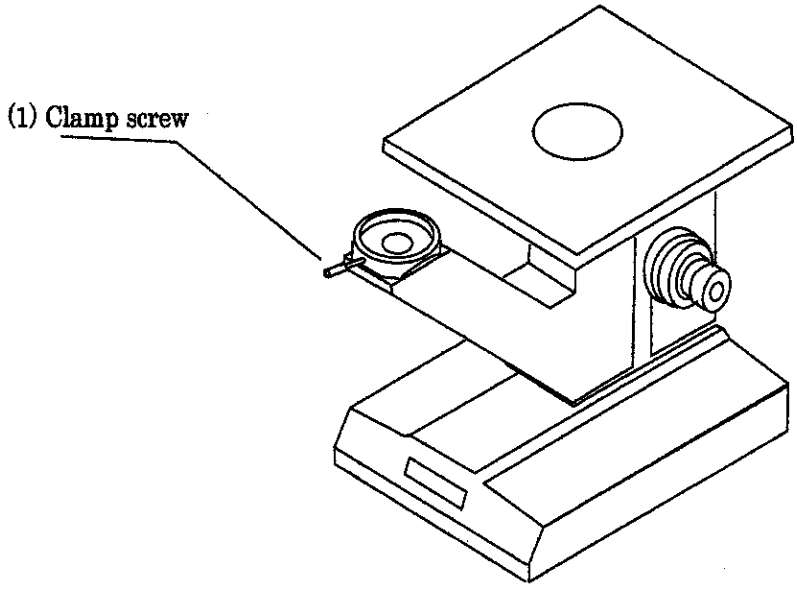
Unpack the microscope stand and the components carefully. Do not throw away any boxes or packing materials until the contents of the shipping box have been checked against the packing list sent with your order.

1- 2 ASSEMBLY

Place the microscope stand and parts on a study table or desk which gives firm and stable support. This should be located where the atmosphere is as clean as possible, avoiding places where there is excessive dust, moisture, heat or fumes.

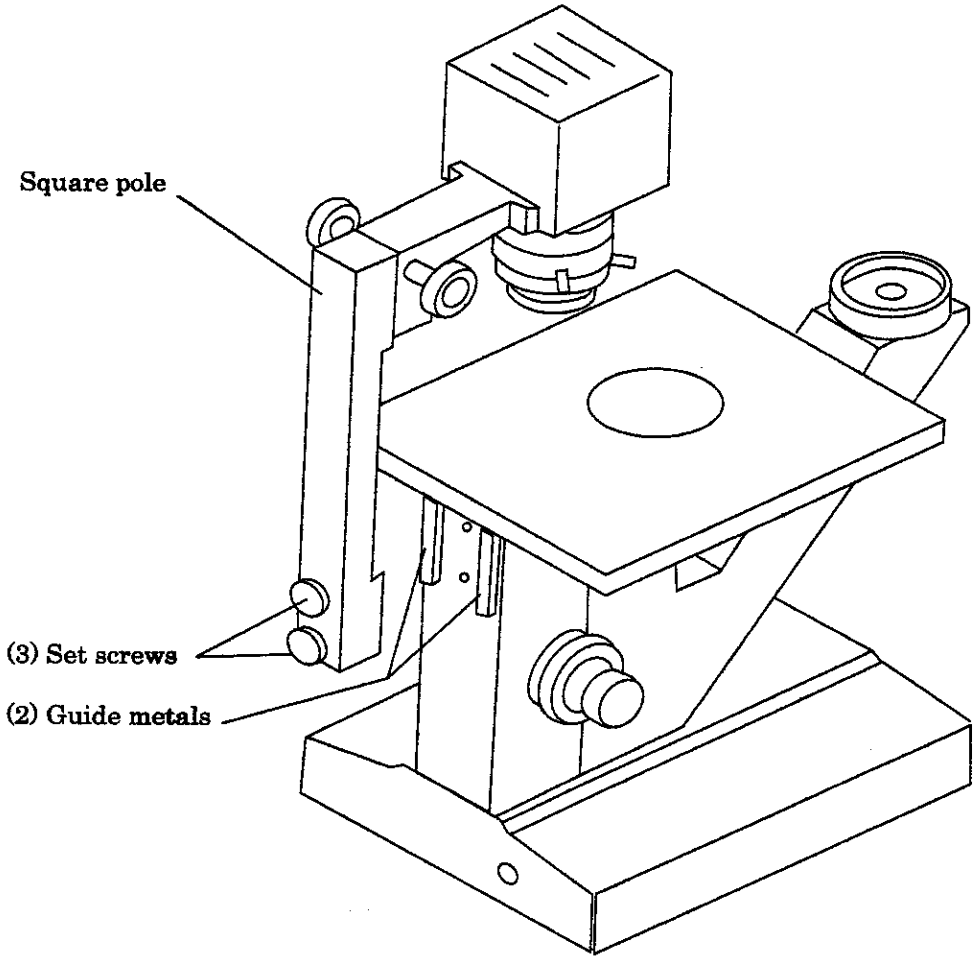
The viewing head should now be mounted on the microscope stand and clamped, when it is squared with the stand.

To mount the head, loosen the clamp screw (1) and insert the cone fitting of the head into the recess in the top of the limb and lock it with the clamp screw.



When in place insert eyepieces in the eyetubes of the viewing head and mount the objectives on the objective nosepiece, starting with the lowest magnification , then positioning the others to the right o f the next lowest magnification objective.

To mount the illuminator assembly, attach the square pole of the illuminator assembly vertically just between the two guide -metals(2) along the vertical stand rim and fix it firmly with the two set screws (3). And plug the illuminator into the receptacle lo cated on the heel of the base.



IMPORTANT: Before plugging the main cable onto any electric outlet, make sure that the transformer and illuminator supplied to you is suitable to the current available. (When shipped, voltage and cycles specification is labeled on the heel of the base.)

2 OPERATION INSTRUCTIONS

2-1 OPTICAL SET-UP AND ILLUMINATION

(i) Turn on the illuminator. Place the specimen you wish to examine on the microscope stage and rotate the 10X objective into position for focus.

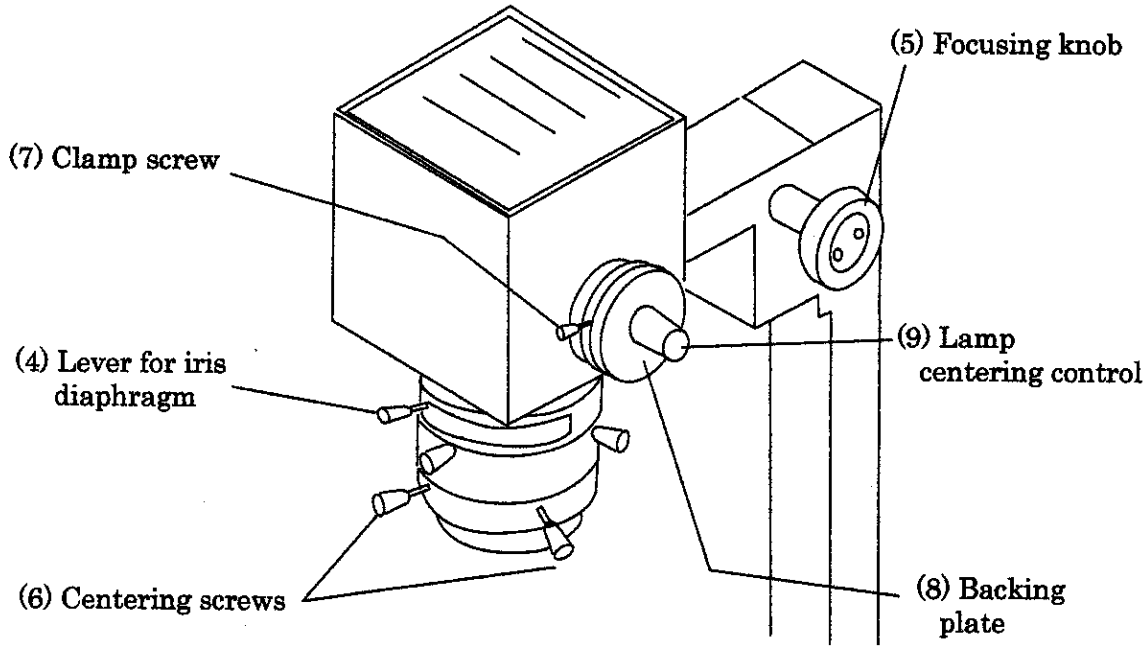
(ii) Open iris diaphragm fully by moving the lever(4) to the right end and move the illuminator up or down, using the rack and pinion focusing knobs(5) until entire field of view is illuminated.

(iii) Focus down on your specimen until detail can be seen. Adjust the brightness using the brightness control knob located at the right hand back of the base.

(iv) Your light source may require centering adjustment if the field of view seems unevenly illuminated. Centering controls(9) are located on the side of the light source housing. Also the condenser lens is centrable with two centering screws(6).

To move the bulb vertically, loosen the clamp screw(7) and turn the backing plate(8) clockwise or counterclockwise slightly.

To move the bulb horizontally, turn the lamp centering control (9).

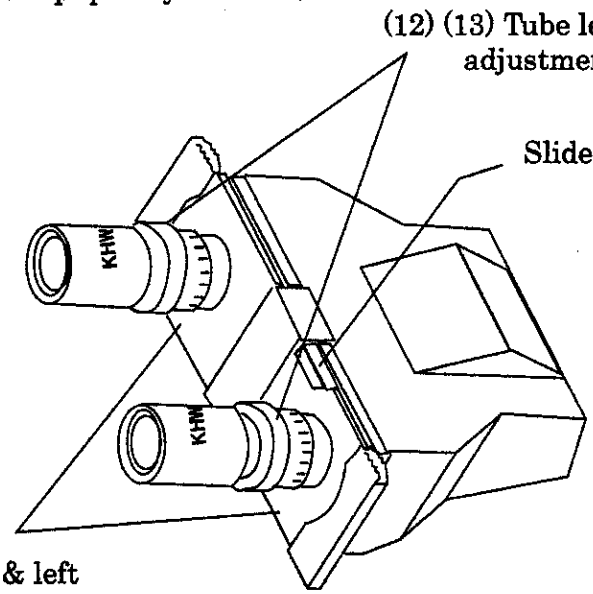


BINOCULAR ADJUSTMENT

Comment: Using a binocular head is much more efficient and less tiring than a monocular head, bit it must be adjusted correctly. When it is perfectly adjusted the images coming from the two eyepieces are "fused" into one clear image in eyes of observers.

After you have focused on the specimen, proceed as follow:

a. Move the slidews (10) (11) on which two eyepiece tube are mounted, in and out until the distance between them is exactly the same as the distance between the pupils of the observer eyes.
(This is the interpupillary distance)

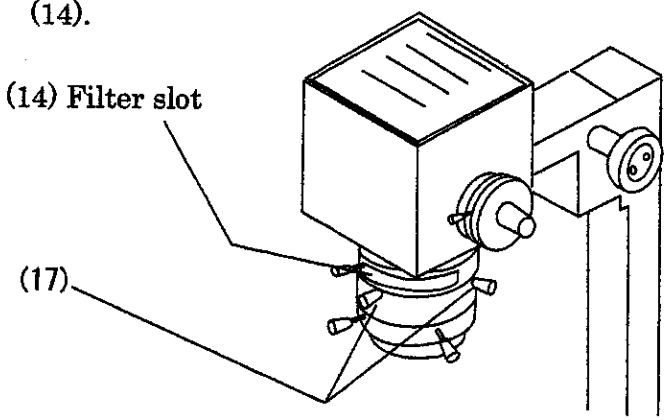


b. When this is done, note the dimension which is displayed on the upper end of the slider. Always remember to set to this distance when using the microscope. It will be different for different observers, so they will have to check the best setting for themselves.

c. To get the best focus with both eyes the eyetube heights should be adjusted to take into account the interpupillary distance mentioned in (a) and (b) above. First set the tube length adjustment rings (12) (13) to the reading which corresponds to the dimension shown in the slider scale. Do this for the left hand eyepiece only.Now focus to get the sharpest possible image in the left hand eyepiece, using the microscope fine adjustment. Then turn the right hand tube length adjustment ring (13) until the image is equally sharp in the viewer's right eye.
As these rings (12) (13) function also for dioptric correction, the dimension set may not, in this case, exactly correspond to the dimension on the scale.

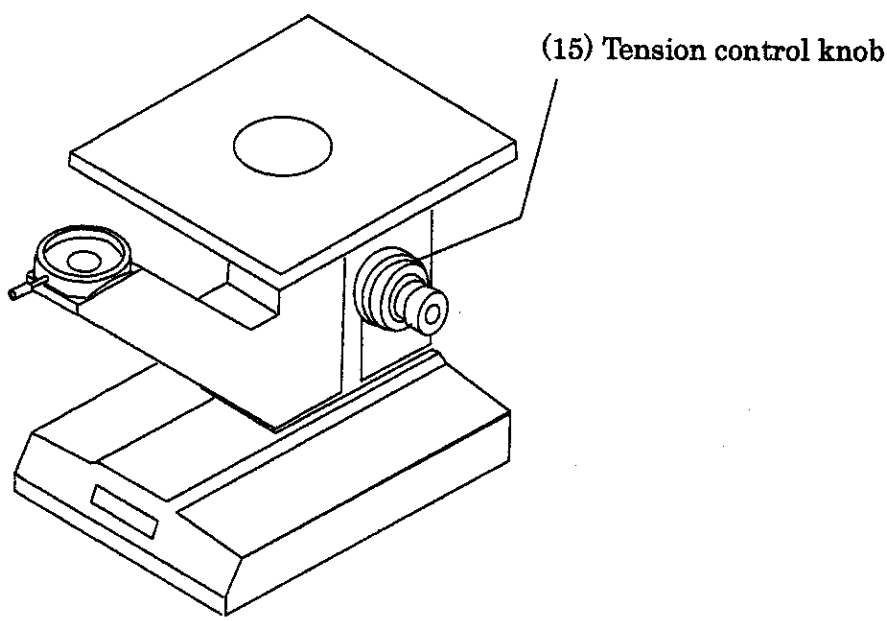
(v) Remove one of the eyepieces, observe the disc os light coming from the back of the objectives in use. Close down the aperture iris, using the lever of the iris, until only about 70%-80% of the disc of light observed remains visible. (Note that the microscope now is set for use with the 10X objectives. Similar adjustments to those mentioned above should be made when using of the objectives required.)

(vi) When necessary, use a filter inserting it into the filter slot (14).



(vii) The models VT-B-2 and VT-T-2 are supplied with the two condensers, one N.A. 0.30, WD 55mm and the other N.A. 0.55, WD 21mm. The N.A. 0.30 condenser is used for 40X objectives. The replacement of the condenser can be done by loosening the three set screws (17)

(viii) The tension control knob (15) is provided to allow the individual user to adjust the focus tension to his/her own preference. Tension may be increased by turning the knob counterclockwise.A lighter tension may be set by turning clockwise.



(vi) Centering should be carried out for each objective individually. Note that the 10X and 20X objectives use the same annulus in the phase annulus slider.

(vii) Once the centering of all the phase annuli is completed, replace the centering telescope with the microscope eyepiece. The phase contrast microscope is now ready to use.

4 PHOTOGRAPHY AND TELEVISION

4 - 1 PHOTOGRAPHY

Photographic documentation of microscope visual images is most conveniently achieved by using the trinocular (photo - binocular) bodies offered for use with MEIJI TECHNO microscopes.

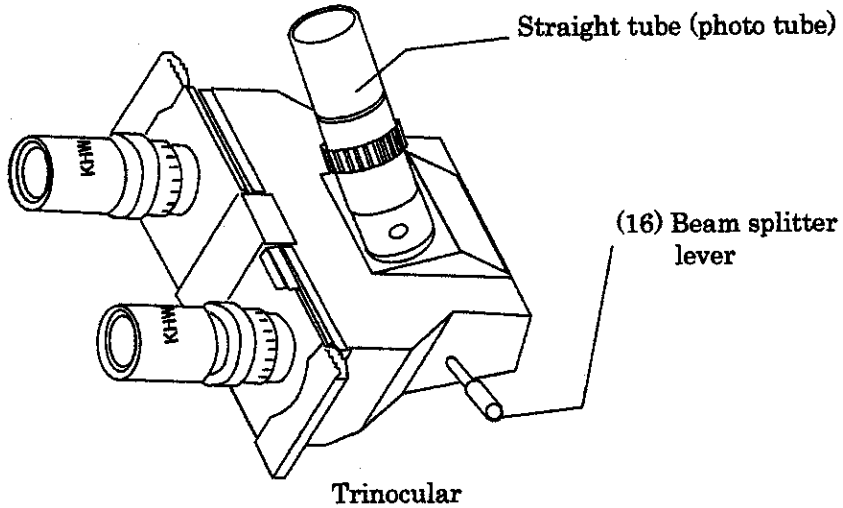
For 35mm SLR camera photography, the MA150/ 50 camera attachment or the MA150/60 camera attachment with finder is required as an adapter. T2 adapter ring suiting to your camera and a photo eyepiec e are also required. Special low - power photo eyepieces 2.5X, 3.3X and 5X are available and recommended – these will give you maximum field coverage on your specimen while using the convenient and economical 35mm film for mat.

CAMERA OPERATION

(i) Fix your 35mm SLR camera with the suitable T2 adapter ring and then on the MA150/50 or MA150/60 camera attachment and insert a photo eyepiece into the tube of the attacment, then mounting this assembly on the straight tube of the trinocular head.

(ii) Pull out the lever(16) on your trinocular head so as to send the image both to the camera and the visual eyepieces.

(iii) Rotate the adjustment ring on the straight tube so as to set correctly for optimum conditions of simultaneous visual observation and photography.



Trinocular

3 PHASE CONTRAST MICROSCOPY

The model VT-B-PC and VT-T-PC are equipped with the phase objectives and phase condenser.

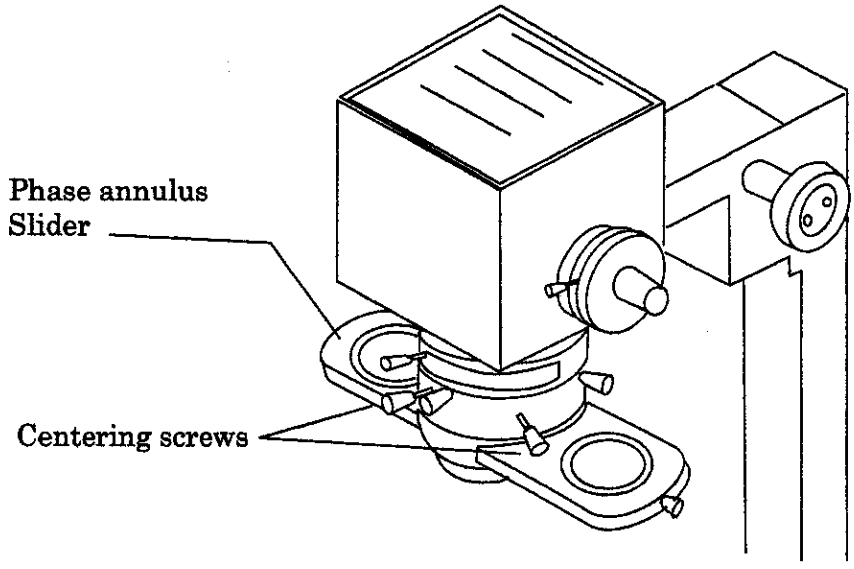
3-1 HOW TO USE

(i) Ensure that the phase annuli slider is in the bright field position by moving the slider to place the empty hole in the optical path.

(ii) Focus the specimen using the 10X phase objectives.

(iii) Move the phase annulus slider to bring the 10X phase annulus to the position.

(iv) Then replace the one of the eyepieces with the centering telescopes, and focus the condenser and objectives annulus. This is done by rotating the upper lens of the centering telescope



(v)

If the annulus of the slider and objective are completely overlapped, the phase annulus slider must be moved until overlap is achieved. This adjustment is effected by using two centering screws located just above the slider, which moves condenser mount. Complete concentricity is not required but complete overlap is.

4-2 TELEVISON

For television, the MA151/10 "C" mount adapter should be used, threaded into your TV camera, then onto the straight of the trinocular head must be replaced with the short supplied with the MA150/10 "C" mount adapter.

Adjustment can then proceed as per paragraph (iii) above. You should understand that the comparatively large magnification factors inherent in most TV camera/monitor system will restrict your fields of view(while b lowing up total magnification).

A correct optical set up and adjustment is, of course, crucial to obtain a good TV monitor image, but keep in mind that the monitor controls for brightness and contrast adjustment are also important and should also be experimented with in order to obtain the best monitor image.

5 MAINTAIN AND CARE

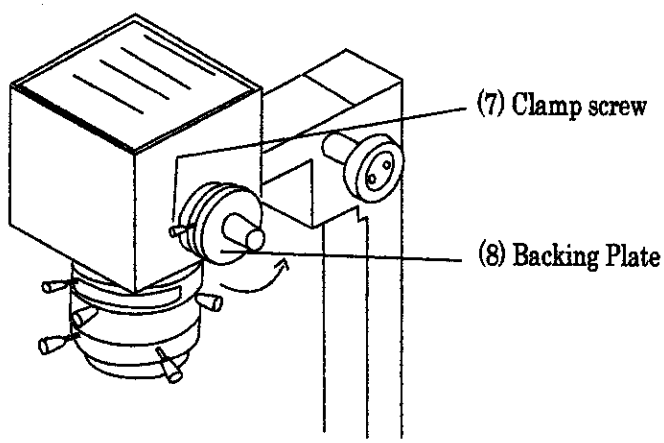
5-1 BULB REPLACEMENT

When chasing light bulbs in the illuminator, always disconnect the plug from the electrical source. Never work on the electrical system without first disconnecting. The bulb is held in a socket block inserted in the source housing

(i) To remove the socket block from the light source housing, loosen the clump screw (7) and turn the backing plate(8) clockwise to the slot. Then pull out the backing plate(8) from the light source housing.

(ii) After making cer tain the old bulb is cool to the touch, remove it by pulling straight out of its socket. Do not twist as the lamp pins may break off and become lodged in the socket.

(iii) Handle the new bulb only with tissue paper or the plastic in witch it is wrapped and insert the two pins into the two holes in the socket. DO NOT HANDLE WITH FINGERS, BULB MAY EXPLORE WHEN HEATED IF NOT HANDLE CORRECTLY.



5-2 CARE

Always cover the instrument with plastic dust cover provided, when the microscope is not in use.

Keep eyepieces in the microscope body at all times in order to prevent dust from falling on the internal optics.

Store the microscope in a safe, clean and dry place when not in use for an extended period of time.

5-3 Cleaning

Clean exposed lens surface carefully with a pressurized air source, soft brush or clean soft cloth. Too much finger pressure may damage lens coatings.

To remove oil, fingerprints and grease smudges, moisten the cleaning cloth with a very small amount of alcohol or xylene.

Immersion oil should always be promptly cleaned after every use.

Painted or plastic surface should be cleaned only witha cloth moistened with water and small amount of detergent.

DO NOT ATTEMPT TO MAKE ADJUSTMENTS TO THE INTERNAL OPTICS OR MECHANICS!!

If the microscope does not seem to be functioning properly or you have question about its operation, call your supplier (or an authorized repair service) for advice.

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