

WESTLAB II

OWNER'S MANUAL



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Tips & Techniques

Troubleshooting the 40x Objective

One of the most common questions the Seiler technicians are asked is what to do when a 40x objective (400x magnification) won't focus or produces a poor image. A poor image on an objective can be caused from a number of problems. By following the simple procedure below, you will be able to troubleshoot about 90% of these problems and get the microscope back in operation:

1. Check the slide. The first step in troubleshooting the 40x objective is make sure the specimen slide is right side up. If the non-cover glass side of the slide is up to the 40x, there will not be enough working distance to focus through the thick glass.

2. Check the cover glass thickness. A cover glass number one (0.17mm thick) is recommended for maximum performance.

3. Make sure the objective is clean. Unscrew the 40x objective and examine it by using a magnifying glass to look at the front lens. To view the front lens, hold the objective in your left hand (if you are right-handed) under good desk lamp or in a well-lit room. Hold the objective vertical with the front lens up (toward the ceiling). Hold the magnifier close to your eye and focus on the very top of the objective. Slowly tilt the tip of the objective toward your eye and away from your eye. At some point you should be able to see dirt or oil on the lens.

To clean the lens, a cleaning solution for 35mm camera lens is recommended. Apply the solution to the dirty or oily lens area with a cotton tipped applicator. Do not rub or scrub the lens. Lightly rotate the applicator between your forefinger and thumb, moving around the lens area. Rotate about three or four times, then discard the dirty applicator. Repeat this at least one more time and then re-examine with the magnifier to check for dirt or oil. If debris is still present, repeat the cleaning procedure.

After cleaning with the solution, breathe warm air onto the lens and use a clean applicator to remove any moisture from the lens. Rotate the applicator lightly on the lens as you did when using the solution. Repeat this two or three times with a clean applicator each time. Re-examine with the magnifier for dirt or oil and repeat the cleaning procedure if debris is still present.

A substitute cleaning solution of mild soap mixed with a large amount of water can be used for temporary cleaning. Make sure the water is not too soapy. Clean cotton gauze can be used in place of cotton tipped applicators using 1" squares, but this generally cleans only the center of the field of view.

4. Call Seiler's Service Department. If the procedures described above do not improve the image of the 40x objective, our Service Department will be happy to provide further assistance.



1. GENERAL INSTRUCTIONS

1.1 Unpacking the microscope

All Seiler Westlab II microscopes are supplied in a shipping container. Keep this container for transports which might be necessary later. The Westlab II is fully assembled except for the eyepieces which are in a small clam shell-type box with other accessories and spares.

1.2 Assembling

Remove the Westlab II from its shipping container. The tube is 360° rotatable in its mount and can be rotated with the eyepieces according to the requirements either to the front or to the back.

Place the microscope on a sturdy table or desk, which grants firm and stable support. The microscope should be located in a clean atmosphere, avoiding places with excessive dust, moisture, heat or fumes. Moreover, the microscope should not be placed in front of a window, otherwise the daylight will fall in the eyepiece as diffusing light which makes observations difficult. Further, dust could pollute the optical parts when the window is opened.

When the microscope is in place, insert the eyepieces in the eyetubes of the tube.

IMPORTANT!

Before plugging the power supply cord in the socket, make sure that the transformer and the illumination kit are suitable for the given power supply (electric outlet). On the back of the base, there is attached a type label, specifying the Volt and the Hertz of your microscope. For each microscope, a spare bulb is included.

2. INSTRUCTIONS FOR OPERATION AND ADJUSTMENT

2.1 Optical set-up and illumination

2.1.1 Turn on the power switch and turn slowly — to get used to the halogen light, the brightness control knob which is positioned on the right side of the base. Place a specimen in the specimen guide and rotate the 10x objective into focus position.

2.1.2 Turn the substage condenser knob on the left side, below the microscope stage and move the condenser up to its top position. Check to make sure that the field iris diaphragm (optionally integrated in the special collector system for light output) and the aperture iris (integrated in the condenser) are fully opened. If you haven't ordered a Koehler illumination system, you should lower the condenser for approx. 1 mm from its top position. But this is only an approximate indication for maximum illumination!

2.1.3 Use the coarse advance knob to focus down near your specimen, then use the fine focus knob until the specimen can be seen in detail. Adjust the brightness of the integrated light source, using the brightness control knob located at the right-hand side of the base.

2.2 Set-up of tube

2.2.1 Move the slides on which the eyepiece tubes are mounted fully to the outer margin. Look into the eye-

pieces and press the eyepiece slides together, until the distance is perfect for your eyes and you can see one clear image when looking through both eyepieces (This is your personal interpupillary distance).

2.2.2 When this is done, note your personal value displayed on the distance indicating scale. Whenever starting observation, always remember to set to your personal distance before using the microscope. Because the interpupillary distance is different for each observer, every observer should make sure to adjust his personal interpupillary distance before starting observation.

For both the Compensation tube and the sliding tube!

2.2.3 Look with the left eye into the left eyepiece and focus a clear image of the specimen with the fine focus advance. Further, look with the right eye into the right eyepiece and adjust the optimum sharpness only through the interpupillary distance on the right eyepiece tube, without regulating the focusing knobs with your hands. In this way, you should see a clear, sharp and optimum centered image when looking into the eyepieces with both your eyes. It is very important to mind this settlement, otherwise you will soon feel tired.

2.2.4 Remove an eyepiece from the eyepiece tube, you can see the disc of light coming from the back of the objective in use. Close down the aperture iris, using the lever on the substage condenser, until only about 70 % - 80% of the disc of light observed remains visible (Please mind that the microscope is now set up for use with the 10x objective. Similar adjustment to those mentioned above should be made when using any of the other objectives, especially if you need maximum achievement from your optical system - i.e. for micro photography).

2.2.5 If you bring the 100x objective into focus (magnification 1000x with eyepiece 10x) and you want to achieve the highest possible useful magnification, a drop of immersion oil has to be applied on the specimen cover glass so that, when this objective is swung in and focused, both the specimen cover glass and the top of the 100x objective are in good, bubble-free contact. In case there are bubbles in the oil drop, a clear image will be possible only after a few seconds.

The best is to focus on the specimen first with the 40x objective, then swing the 40x objective from the focus, but not yet the 100x objective into focus, so to achieve a middle placing. You can see now the light point, which comes from the condenser to the specimen. Apply a drop of immersion oil on this light point and swing the 100x objective into focus.

2.2.6 The tension control knob is located at the right side of the base, behind the coarse advance wheel. It is intended to adjust the coarse advance tension easier or tougher according to your personal preference. Tension may be increased by turning the knob counter-clockwise. Lighter tension will be achieved by turning the knob clockwise. Please mind not to adjust the coarse advance too light, so the microscope stage will not lower itself which would mean to lose frequently the adjusted focusing sharpness.

2.2.7 On the coarse advance wheel at the left side of the stage, a lever is integrated with which you can fix the adjusted height of the microscope stage/specimen position. If you adjust the focusing sharpness for your specimen and then pull the lever in your direction you will arrest the coarse advance and cannot raise the microscope stage any further to the optics. If you change the specimen and you have to lower the stage, you simply place the new specimen on the stage and move it in direction to the optic until the previously adjusted specimen protection spot. There the stage will mechanically stop and you don't have to worry that the specimen might be damaged or destroyed.

This function is not only a security for specimen and optic, but also makes it easier to find the specimen position fast after a specimen change and therefore prevents to adjust the focusing sharpness for each new specimen under

observation, which is saving much time.

ATTENTION: If you use successively specimen trays and/or specimen glasses of different size, you have to change the specimen position control accordingly, because the different specimen sizes will cause different specimen focusing positions, too.

The specimen can be moved on the stage at the X- or Y-axis by turning the two ergonomic bottom-placed coaxial handling knobs. This stage has a detachable specimen holder. Span your specimen into this clamp carefully to avoid damage of the cover glass. You may clean the stage with a moistened cloth.

Standard sets are equipped with an Abbé Brightfield condenser, placed below the stage. An integrated aperture iris diaphragm is intended to change the contrast in your microscopic image. Please also mind the remarks under 2.3.3.

The aperture diaphragm is NOT intended to adjust the brightness!

Below the aperture diaphragm, there is a swing-off filter tray in which you can place either the day light filter blue or the green filter which are supplied for each set. You can swing the filter tray according to your requirements either in or out of the focus. For color photography, the real color of the specimen will change, but when a day light filter blue is used, the contrast may increase.

You should clean regularly the lens of the condenser. The best way is, to loosen the condenser screw carefully and pull the condenser down.

3. PHOTOGRAPHY AND TV

3.1 Photography

The photographic documentation of the microscopes visual images is most conveniently achieved by using either the monocular or the binocular phototube, which is offered for all Seiler Westlab II microscopes. The binocular phototube for the Westlab II is equipped with an integrated beam-splitter component which offers two positions by adjusting the pulling prism.

3.1.1 Either all the light comes through both of the eyepieces. This is achieved, if the lever is pushed entirely into the tube.

3.1.2 Or the lever is pulled out and so 80 % of the light will come through the photo tube on the film plane of the micro photography equipment. The rest of 20 % of the light will be sent into the binocular tube through both of the eyepieces for contemporary visual observation or image adjustment.

If you want to use the microphoto system CAT No. 410801 in connection with a standard 35 mm SLR camera model, you can choose a T2 camera adapter suitable for your camera from our wide range program of T2 camera adapter rings. In this case, please specify your camera model so we can supply the necessary T2 camera adapter.

Further, the mechanical compensation length between the eyepiece and the film plane in your camera can be changed, because the phototube makes it possible to achieve a sharpness compensation between the camera and the eyepiece, if the tube is gently either turned in or out. This has to be done only once.

For this, you first focus on the specimen for sharpness. Then you look through the finder of the camera attached on the phototube. Shouldn't there be a sharpness compensation, you simply either push gently the

tube pipe into the tube or out of the tube, until the sharpness compensation is achieved.

As you can use your 35 mm SLR camera body only WITHOUT objective, Seiler offers and recommends special, low magnification photo eyepieces. These special eyepieces make possible to achieve a maximum image section of the field of view of your specimen for use of the standard and economical 35 mm film format. Moreover, special eyepieces for use in the binocular tube with image format indicator are available. With these, when choosing the image section in the eyepiece, you can already see the area on which the film plane will be projected and photographed.

3.2 Photo camera adaption and operation

3.2.1 Mount your 35 mm SLR camera body to the Westlab II camera adapter. Place the photo eyepiece in the vertical phototube and then attach on the phototube the T2 camera adapter with the camera body. Fix all parts with the screws!

3.2.2 Pull the lever of the beam splitter, until it is pulled out in maximum position. Now, 80 % of the light is sent to the camera and 20 % to the eyepieces. At a monocular photo tube, the light relation is fixed at 50:50.

3.2.3 Adjust again correctly the sharpness of the image by looking through the eyepieces into the binocular tube. After this is done, look through the finder of your camera. In case the image in the camera finder is not optimally sharp, you can adjust it simply by turning the adjusting ring on the photo tube. Fix this adjusting ring and you have the security, that your photos will be a success.

To obtain successful microphotography, of course there have to be the best possible preconditions. That means, all previous described basic adjustments on your microscope have to be carried out correctly and the light conditions have to be optimally, too. Further, all mechanical parts on the phototube and on the camera have to be screwed tightly.

Set your camera on Automatic Mode now. You shouldn't handle the shutter directly at the release, because the result could be blurring at high magnifications. Therefore, the use of a cable release is recommended. Please mind to avoid any vibrations at the table or in the room at the moment of taking the photo. The auto-illumination which is integrated in the camera controls fully automatic the illumination procedure after opening of the shutter.

3.3 Micro television

For microscopic television the Seiler Westlab II CCTV-Mount adapter has to be used. Turn this adapter into the C-Mount wind of your TV camera. Further, attach the adapter with the TV camera on the vertical phototube. Please mind that you will have less stability problems and blurring effects the smaller and lighter your camera is designed. The adjustment of the length compensation has to be carried out as described at topic 3.

Please mind that a very high after-magnification factor occurs when a TV camera is used and that at most TV cameras only a small image section of the microscopical field of view can be seen on the monitor. To compensate this mostly, please use the CCTV adapter with tube factor 0,5x. With this you will obtain a nearly identical image section on the monitor, almost same as you see through the eyepiece. To be on the sure side, please place the specimen part which is most important for you in the center of the eyepiece's field of view. In this way you can be sure that also other observers will see the most important parts.

A correct, optimally centering of the microscope and the TV camera is essential to achieve a good image on the TV monitor. Please mind, that the adjustment of the contrast brightness and the real color on the monitor are very

important. Therefore, the best adjustment will be found out by experimentation.

Moreover, it is very important to adjust the brightness of the microscope illumination in a way that other observers will see on the screen a clear, light, but not too light image. Further the adjustment of the aperture diaphragm on the condenser will obtain a considerable increase of the contrast on the screen. But this shouldn't result in a change of structures and colors on the microscopic image!

You have to adapt these adjustments for each objective magnification, because more light is sent through a low magnifying objective which has a large front lens compared with an oil immersion objective with a small lens diameter.

IMPORTANT: By turning the video camera around, you can adjust to the right side the video image on the monitor, otherwise the image could result "upside-down".

By connecting with a video recorder, you can of course save video images.

4. MAINTENANCE AND CARE

4.1 Bulb replacement

If it is necessary to change the bulb of the illumination system, first remove the power plug from the socket.

Never work on the electrical system without removing the power cord from the power supply first.

The halogen bulb is plugged in a lamp housing in the floor of the base. The cover of the lamp house has to be fixed by a clamp screw which snaps in the floor of the base.

4.1.1 Pull out the clamp screw of the lamp housing wide enough, until the housing cover snaps open. Then open the housing cover. Now you can see the halogen bulb in the lamp socket.

4.1.2 Before pulling out by an ahead-movement the defective halogen bulb from the lamp socket, make sure that the bulb has already cooled down. If you aren't sure, wait a few minutes to avoid burning injuries because of the hot bulb. When pulling the bulb from the socket, this should be done gently but uninterrupted to avoid twisting of the contact pins which might even break them.

4.1.3 Pull off the cover plastic of the new bulb only as far that only the contact pins show off the plastic. Grip the halogen bulb at the glass body then (with the protection plastic still on it!) and insert the halogen bulb into the two contact sockets. Same as at the removing of the defective bulb, this shall be done gently and uninterrupted to avoid twisting of the contact pins. After the halogen bulb is placed in the lamp housing as deep as possible, pull off the protection cover by an ahead-movement and shut the lamp housing of your microscope by pushing in the clamp screw.

ATTENTION: Never touch the halogen bulb with bare fingers, because this will bring finger prints on the bulb. This could lead to a burn-in effect on the glass body which will be visible in the microscope.

After the cover of the lamp housing is screwed tightly to the base floor, plug in the power cord into the socket. Only then switch on the illumination. Never test a bulb while the cover of the lamp housing is still open. The bulb might explode because of a manufacturing error or because it was not inserted correctly!

In case it is necessary to change the fuse (replacement fuse is supplied with each microscope), the fuse holder is integrated in the base floor. First of all, the power supply has to be removed both from the microscope and from the power supply socket! Only use fine fuses with the output stated on the original fuse. Otherwise the electronic system might be damaged which will lead to loss of warranty.

Should the microscope be used by children or teenagers, the fuse and the bulb should be changed by authorized persons only!

4.2 Care

When the microscope is not used, always cover it with the plastic protection. Dust is an enemy of any optical, mechanical precision instrument. Always leave the eyepiece in the binocular or monocular tube. If there is no photo equipment attached to the phototube, cover the vertical phototube with an eyepiece protection cap, so no dust will come into the optic of the tube. In case the microscope is not used for some time, it is recommended to store it in a microscope case which is also available from us.

4.3. Cleaning

Clean the front of the objective lenses either with air from an air pressure can, with a very smooth brush or a smooth cloth. This should be carried out carefully, otherwise the surface could be damaged. To remove rests of immersion oil, finger prints or other pollution, use a smooth cloth and apply a few drops of alcohol (max. 50 %). After you have worked with a 100x objective, immersion oil should always be cleaned from the objective front lens immediately after use or end of work.

Before trying to clean the front lenses with alcohol or other aggressive means, first try a smooth, non-fussing cloth as described above. For this, remove the polluted objective from the objective nosepiece. By removing an eyepiece from the tube and turning the eyepiece upside-down so to use it as a “magnifying glass” holding it in a sharp angle to the front lens. In this way, you can easily see through this 10x-“magnifying glass”, if the objective front lens is clean or not. If not, repeat the procedure. Last, wipe the objective again, check the cleaning with the “magnifying glass” and insert the objective in the objective nosepiece again.

Usually, when the 100x oil immersion objective is used, also the previous objective 40x is polluted with immersion oil. It happens unnoticed, that while swinging back from the 100x objective to the 40x objective, the 40x objective gets in touch with the immersion oil, too, because of the less working distance. Therefore, it might be necessary to clean this objective in the same way as described above, too.

Painted spots or plastic parts should be cleaned with a moistened cloth. Please don't attempt adjustments or manipulations on integrated optical parts or mechanical components, because damage will lead to loss of warranty.

In case the microscope is defective or does not meet your requirements, or you need additional information concerning the handling, please contact Seiler Instrument Company.



The spanner wrench supplied is used to increase or decrease the tension on the coarse focus drive by turning clockwise to increase and vise-versa. This is used when the focus tends to drift on its own. See illustrations for location purposes.