# INSTRUCTIONS

# AHBS3

## RESEARCH PHOTOMICROGRAPHIC MICROSCOPE SYSTEM

## AUTOMATIC VERSION

VANOX

## TECHNICAL SHEET NO. 2

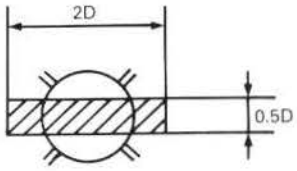
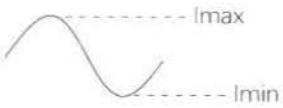
## AUTO FOCUS (AF) INSTRUCTIONS

OLYMPUS®

AX5714

# CONTENTS

# 1 SPECIFICATIONS

| Item | Description | Remarks |
|---|---|---|
| 1. Compatible System | Transmitted light brightfield illumination for biological uses. | |
| 2. Standard Range of Objective Magnification | SPlan 1 x – 40X<br>SPlan Apo 4 x – 40X | |
| 3. AF Sensor Range | An area of the reticle circle, indicated by the diagonal lines, within the field of view of the 5X photoeyepiece.<br>  <br><br>Note:<br>Regardless of the photoeyepiece magnification, the AF sensor automatically measures with the 5X eyepiece. Especially when viewing through the 2.5X, 3.3X and 4X eyepieces, the specimen should be placed at the center of the stage. | D = Diameter of reticle circle |
| 4. Specimen Requirements | | |
| 4-1 Specimen slide thickness | 0.8 – 1.4 mm | |
| 4-2 Specimen size | 20 µm min. (with 1X objective)<br>10 µm min. (with 2X objective)<br>5 µm min. (with 4X objective)<br>2 µm min. (with 10X objective)<br>1 µm min. (with 20X objective)<br>0.5 µm min. (with 40X objective) | |
| 4-3 Density and contrast | Transmittance of specimen in brightfield should exceed 3% and contrast should exceed 10% and 25% in terms of brightness difference at 1X – 10X magnifications and 20X – 40X magnifications, respectively. | Transmittance = $\frac{\text{Emitted light}}{\text{Incident light}} \times 100\ (\%)$<br>Contrast = $\frac{(\text{Imax} - \text{Imin})}{\text{Ibac}} \times 100\ (\%)$<br>  <br><br>where Ibac = Brightness at the moment when adjustment data is input. |
| 4-4 Pattern | Repetitive image details should be present in a specimen (e.g. micrometer, rulings). | |
| 4-5 Color | Spectral range should be between 460 and 650 nm. | |
| 4-6 Specimen thickness | With specimens measuring 3 µm or thicker, the desired specimen plane may not be able to be brought completely into focus. | |

# 2 OPERATION

## 1. For Normal AF Operation

To assure normal AF operation, be sure to take the following precautions:

**1. Optical components should be mounted and the optical axis correctly adjusted.**

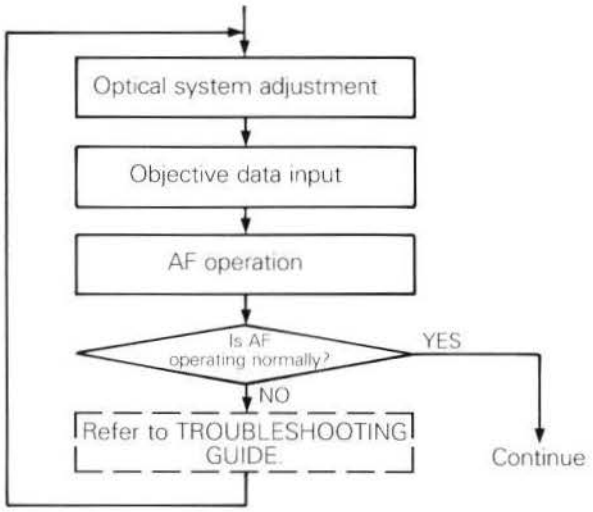
For further details, refer to the Assembly Instructions.

**2. Objective data should be correctly entered.**

For details, refer to the Assembly Instructions.

**3. AF should be activated only under the correct conditions.**

To make maximum use of AF functions, strictly observe the above precautions. If any irregularities are found in AF operation, check the above again.



## 2. Requirements for Objective Data Input and AF Operation (Precautions)

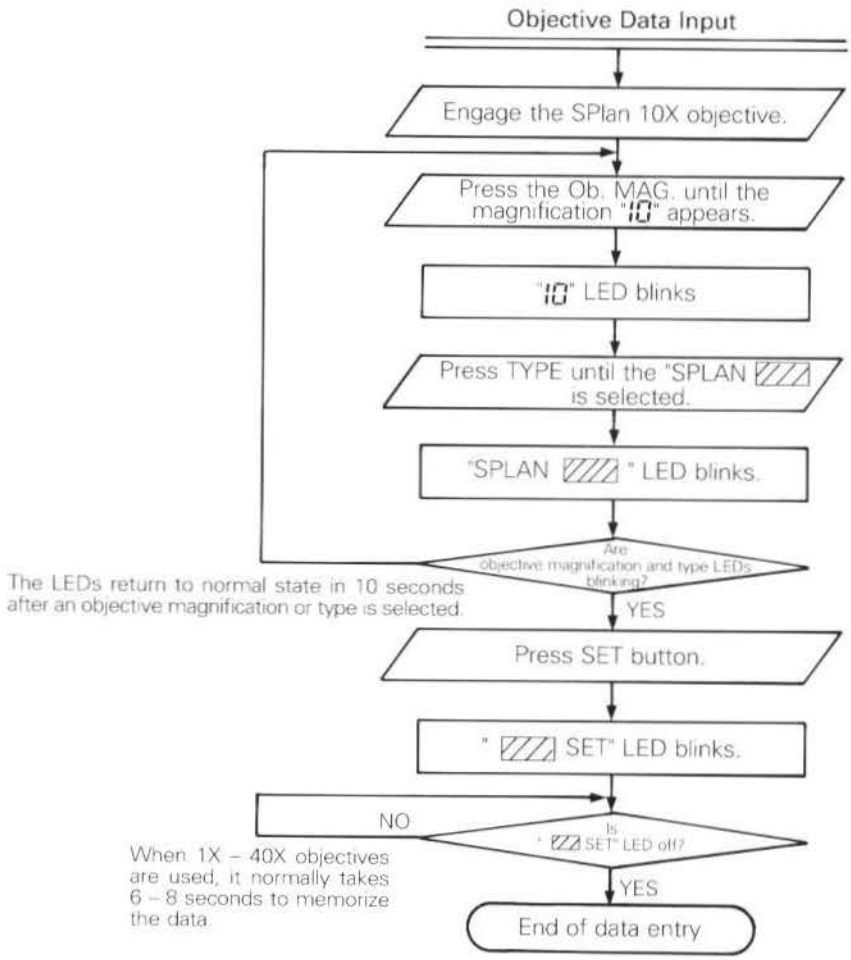
When entering objective data and/or activating the AF operation, ascertain that the following requirements are met:

| Item | Requirements |
|---|---|
| 1. Specimen*1 | ① The specimen slide is removed from the light path (during data input). |
| 2. Objective*2 | ① Revolving nosepiece is clamped tightly with the nosepiece clamping screw.<br>② Objectives are firmly seated in the nosepiece.<br>③ Objective front lens is free from dust and dirt. |
| 3. Filters | ① LBD filter is engaged (with the LBD filter holder knob pushed in).<br>② Other filters are disengaged. |
| 4. Condenser Turret | ① The condenser turret is correctly inserted into the microscope stand and clamped with the Allen® screw.<br>② The field iris diaphragm is correctly centered with the 40X objective.<br>③ The field iris diaphragm is correctly adjusted with the 40X objective. |
| 5. Light Path | ① Light path is not blocked by specimen holders, etc.<br>② No reticles are inserted into light path.<br>③ The 100%-light-to-camera knob is pushed in (NORMAL condition). |
| 6. Bulb*2 | ① The designated halogen bulb (12V 100W HAL-L) is used. |

Note: *1 The requirements for objective data input and activating the AF operation are identical, except placing the specimen in the light path.
*2 When objectives or bulbs are replaced, be sure to input new data.

### 3. Objective Data Input

A flowchart for entering the objective data (using an SPlan 10X objective for example) is shown below.

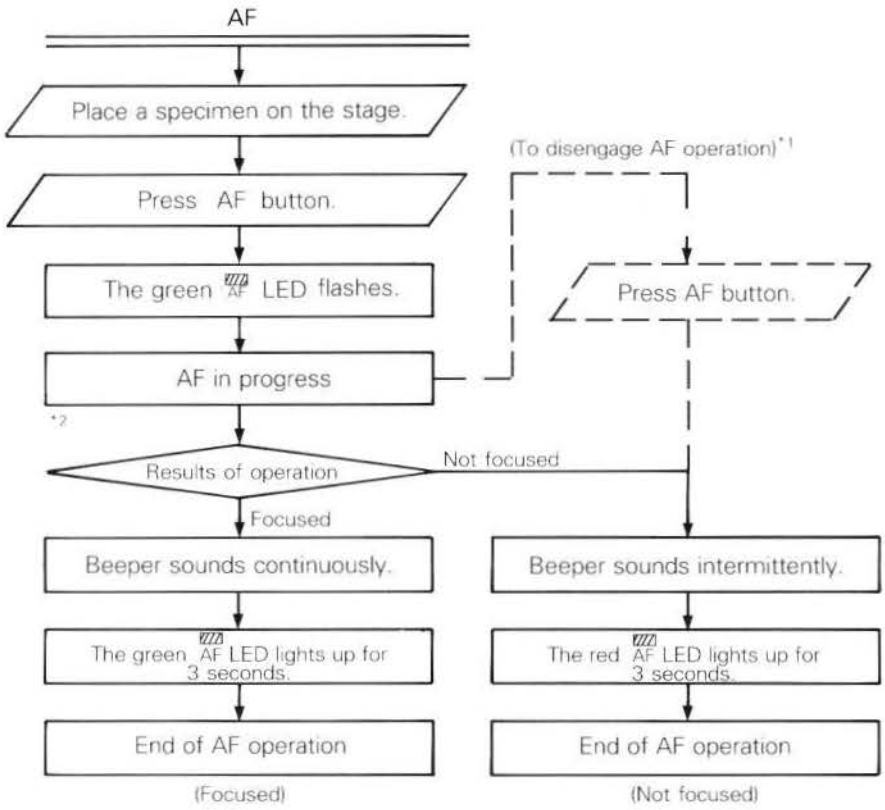



Enter the objective magnification and type data, respectively, for other objectives.

**Note**: The above flowchart is effective only when the requirements for entering objective data, discussed previously, are met.
If these requirements are not met, enter the data again under the correct conditions.

## 4. AF Operation

The AF operatoin flowchart and accompanying footnotes are shown below:




Note: The above flowchart is effective only when requirements for activating AF operations, discussed previously, are met.

*1 To disengage AF operation, press the AF button while auto focus procedure is in progress.

*2 Use manual focusing if the specimen conditions are not conducive for auto focusing.

# 3 TROUBLESHOOTING GUIDE

If you are unable to obtain full AF performance from your microscope, please consult the table below to troubleshoot.

The guide given below is divided into two sections — data input and AF operation. If any irregularities are found in AF operation, check both sections. If problems still remain after taking remedies, consult your nearest Olympus office.

## 1. Entering the Objective Data

| Symptom | Cause | Remedy | Remarks |
|---|---|---|---|
| a) Response is slow when initially entering the objective data for auto focus. (It takes over 10 seconds.) | The specimen slide is in the light path. | Remove. | |
| | Field iris diaphragm is not centered (when 40X objective is in use.) | Center correctly. | |
| | A filter other than LBD is engaged. | Disengage. | |
| | LBD filter is not engaged. | Engage (push in). | |
| | Light path is blocked by an obstacle. | Remove the obstacle. | Specimen holders and other obstacles. |
| | Incorrect data are entered. | Enter new data. | See note *1 below. |
| | Objectives have been replaced. | Enter new data. | |
| | 100%-light-to-camera knob is pulled out. | Push it in all the way. | |
| | Reticle is engaged. | Disengage. | |
| b) Data SET button is inoperative. | Light source is switched OFF. | Press the low voltage selector button "PHOTO" or "MAX". | |
| | Another procedure is in progress. | Press the button after the procedure is complete. | AF operation, photomicrography, light path selection, etc. |
| | Nosepiece is not engaged correctly. | Rotate nosepiece until it clicks. | |

Note: *1 Response may still be slow under the following conditions. However, if correct remedy is taken, the response will return to normal when the new data are entered properly.

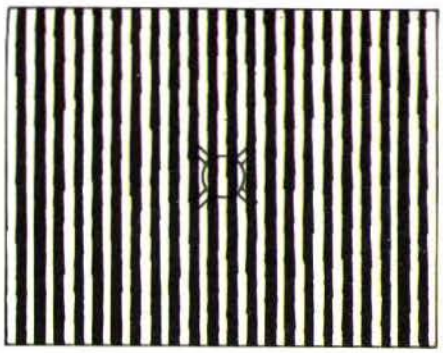
Example
① Data was modified with the SPlan 1X and SPlan 10X objectives mixed up.
② Data was originally entered without engaging the LBD filter. To correct this, engage LBD filter and re-enter data.

2. AF Operation

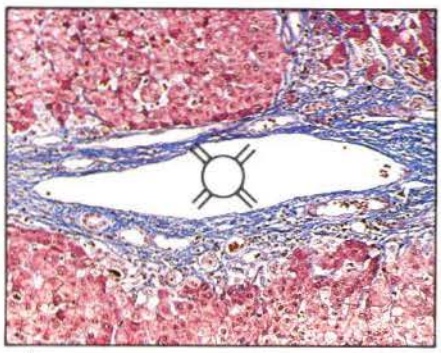
| Symptom | Cause | Remedy | Remarks |
|---|---|---|---|
| a) AF button is inoperative. | Light source is switched OFF. | Press the low voltage selector switch "PHOTO" or "MAX". | |
| | Nosepiece is not correctly engaged. | Click into place. | |
| | 60X or higher power objective is engaged. | Replace with 40X or lower power objective. | |
| | Another procedure is in progress. | Press the AF button after the procedure is finished. | |
| b) Image is out of focus. | AF button is mistakenly pressed while AF operation is in progress. | AF operation stops. Press AF buttojn again, to re-activate AF procedure. | |
| | 100%-light-to-camera knob is pulled out. | Push it in all the way. | |
| | LBD filter is not engaged. | Engage (push in). | |
| | A filter other than LBD is engaged. | Disengage (pull out). | |
| | Field iris diaphragm is considerably off-center. | Center correctly. | |
| | Light path is blocked by an obstacle. | Remove the obstacle. | Specimen holders, etc. |
| | Focusing reticle is in the light path. | Remove. | |
| | Bulb was replaced. | Enter new data. | |
| | Objectives were replaced. | Enter new data. | |
| | Incorrect objective data was input. | Enter new data. | Incorrect objective type, etc. |
| | Dirty objective front lens | Clean. | |
| | Frosted surface is in focus. | Lower the stage and press the AF button. | With 10X or higher power objectives. |
| | Specimen is upside down. | Turn the specimen right side up. | |
| | Dirty specimen | Clean. | |
| | Specimen is too thick or too thin. | Focus manually. | |
| | Specimen conditons do not match auto focus requirements. | Focus manually. | See sample photos. |
| | Objective correction collar is not adjusted properly with SPlan Apo 40X objective. | Adjust the correction collar. | |

# 4 SAMPLE PHOTOS

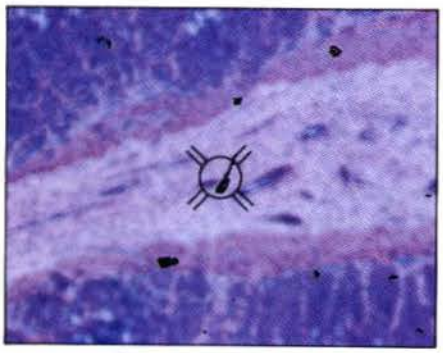
Auto focus cannot be activated:



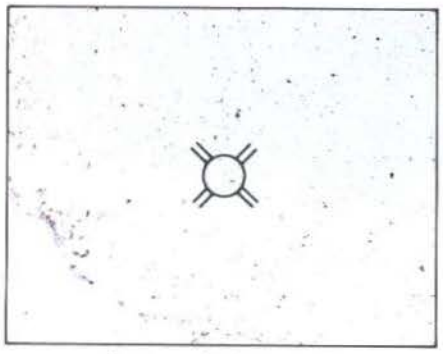
Repetitive structures in specimen



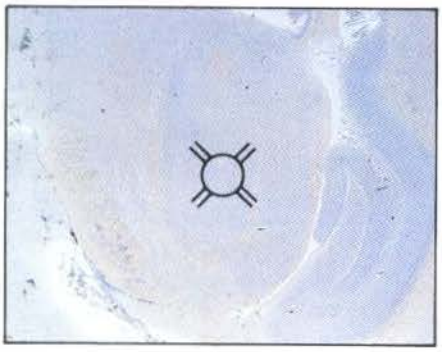
No specimen is present at the sensor section



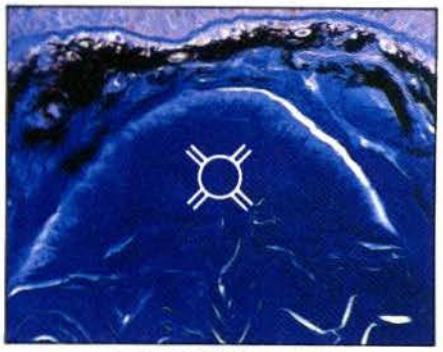
Focus is on dust particle



Specimen details too small

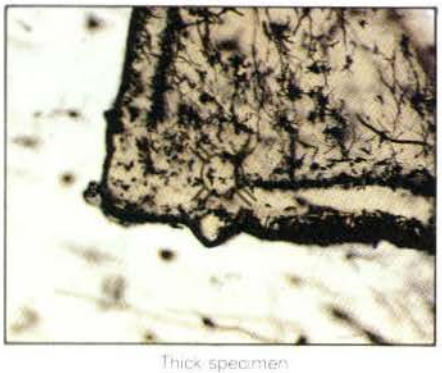


Low contrast (light color)

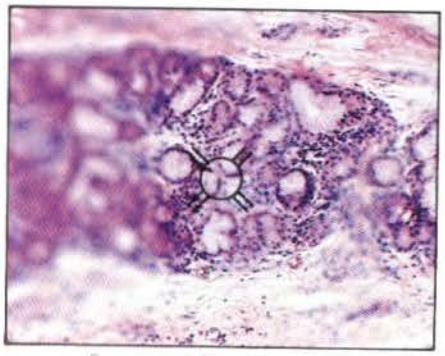


Low contrast (dark color)

Auto focus can be activated, but image is partially focused:



Thick specimen



Specimen with irregular surfaces

OLYMPUS TOKYO

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The design of the product is under constant review and whilst every effort is made to keep this manual up to date, the right is reserved to change specifications and equipment at any time without prior notice.



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