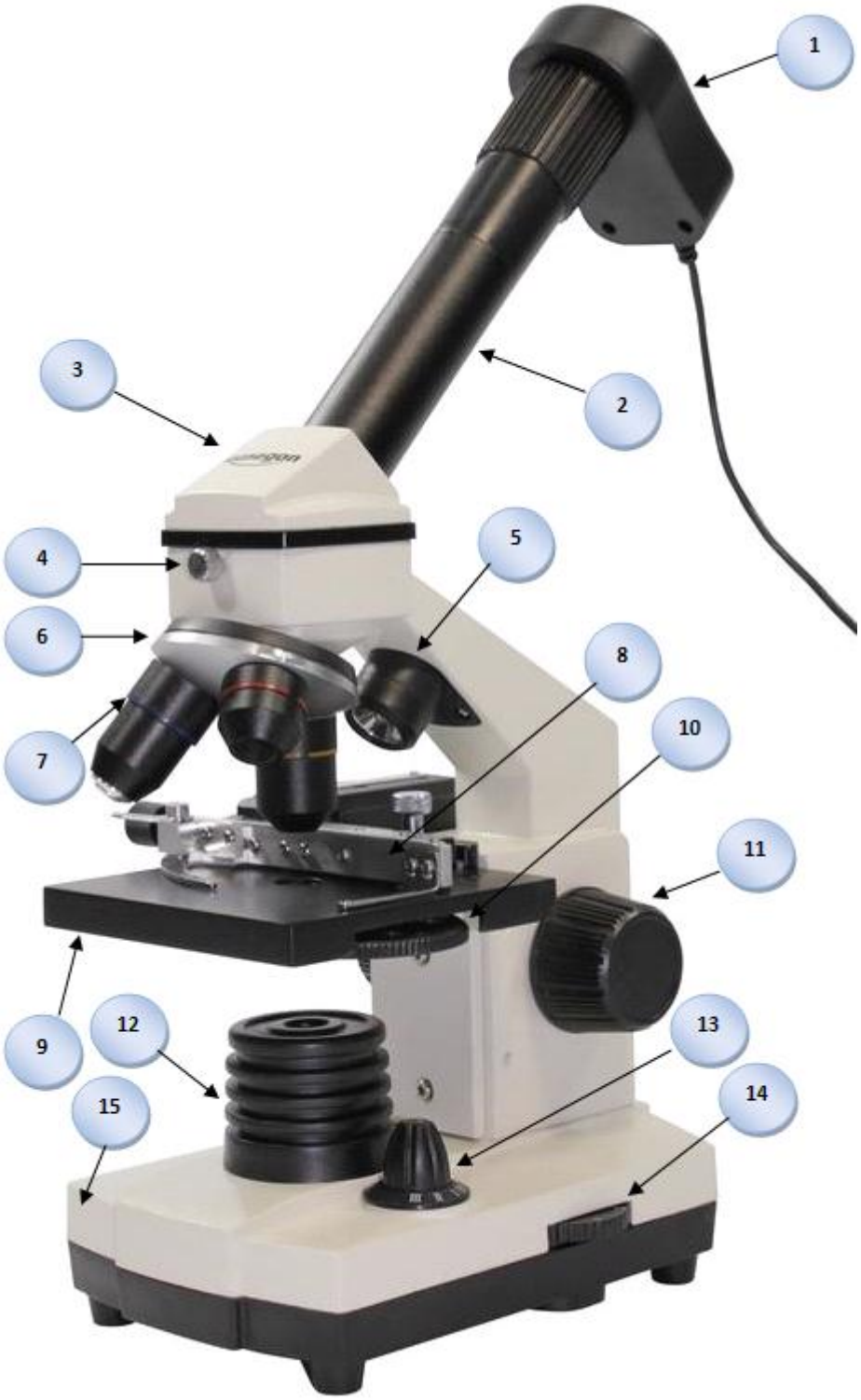
Omegon Microstar
Instruction manual

The Omegon Microstar with
its extensive accessories

The objective turret and objectives

The stage and mechanical stage


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15


a
b
c
d
e
f
g
h
i
j
h
l
m
n
o
p

The parts of the Omegon Microstar illustrated:

1 PC eyepiece	a software CD
2 45° angled eyepiece tube	b case with 5 prepared slides and 10
3 rotatable head	blank slides and coverslips
4 locking screw	c salt
5 incident light source	d gum
6 objective turret	e yeast
7 objectives, 4x/10x/40x	f shrimp eggs
8 mechanical stage	g Barlow lens
9 stage	h WF5x eyepiece
10 colour filter wheel	i WF16x eyepiece
11 focus knob	j lens attachment for incident lighting
12 substage light source	k hatchery
13 3-stage illumination switch	l blunt teasing needle
14 light intensity control wheel	m sharp teasing needle
15 base	n pipette
	o tweezers
	p scissors

Introduction

The Omegon Microstar microscope is fascinating piece of equipment which will let you to explore the microcosm. Getting started in this hobby is especially easy with this microscope as you are also provided with a comprehensive set of accessories. You can get started immediately!

Before venturing into the microscopic world, take a few minutes to make yourself familiar with the equipment and its accessories.

Place your microscope on a stable surface. It is best to arrange the place where you are going to work so that you can comfortably look through the microscope whilst sitting. The more relaxed you are while observing, the more fun you will have with your microscope.
The instrument needs a 220-230V power supply to operate it, so a plug socket should be within easy reach.

Get to know the parts of your microscope!

The carrying case – everything always handy

The Omegon Microstar comes in a sturdy carrying case which accommodates your microscope and all its accessories. We're sure you will be eager to start using your microscope immediately, but first take the time to have a look at all the individual items. Open the case, take out the microscope and put it on a

table. It would be best to take out the accessories too - these are held in a black material unit with attachments for the accessories.

Eyepieces, objectives and stage

Like every microscope, the Omegon Microstar has several different sections. The most important parts of the instrument are the eyepieces (h/i), the objectives (7) and the stage (9). The principle is very simple: The objective is positioned centrally over the stage, on which an object has been placed. The objective works like a magnifying glass; it produces an image of a particular focal length. The eyepiece is the element which you actually look through with your eye. It is usually constructed of several lenses and further magnifies the image produced by the objective. This allows you to see the smallest objects - making visible, for example, individual onion cells or the structure of a human hair.

The eyepieces (h/i) and objectives (7) always work together as a unit and go together like wheels to a car.

Looking through the Microstar

The top of the microscope consists of an eyepiece tube (2), angled at 45°, into which the eyepieces are inserted. Under this is the head (3), which uses a prism to allow more comfortable viewing. On the front of the head there is a small knurled thumb screw (4). If you loosen this a little, you can shift your viewing position to the right or left somewhat.

The objective turret

Just under the microscope head (3) is the objective turret (6). This has three sockets into which the three different objectives (7) are screwed. These have different lengths. The objectives are marked with different colours to allow you to differentiate between them more easily. If you carefully turn the objective turret (6), you will notice that it positively engages at certain positions. This means an objective is located in the correct position for observing.

The stage

You will place the specimen slides that you want to examine on the stage (9). The stage has an additional part, the mechanical stage (8), which has a spring-loaded clip on the right hand side. This is used to hold the slide (b) and locates it in the correct position. The mechanical stage (8) also has a millimetre scale and fine movement controls for the X and Y axes. Try turning both of these fine movement controls to see how the mechanical stage works. The stage (9) itself is always in a fixed position, which can be adjusted vertically however. In addition, you will find two large black focus knobs (11) on the left and right sides of the Omegon Microstar. Try turning one of these a small amount to see it moves the stage up or down.

Important: These focus knobs are used for focusing. Moving the stage allows you to find optimal sharpness.

Note: Never allow the objective and slide or stage to come into contact with each other.

Filter wheel with colour filters
On the side of the stage, you will find a filter wheel (10) with five different colour filters. These can improve contrast, particularly for colourless objects. Try them out to see which gives the best result for the object you are observing.

The Omegon Microstar illumination
You can see the LED lighting (5/12) in the lower half of the instrument. One white, very bright, LED provides optimal illumination for your slide. Your Omegon Microstar microscope has a three-stage illumination system:

1. substage illumination (12)
2. incident illumination (5)
3. substage plus incident illumination

The rotary switch (13) allows you to select between the following positions:
• OFF
• I for substage illumination only
• II for incident illumination only
• III for both

The entire lighting system can be steplessly adjusted via the light intensity control wheel (14) located on the left hand side. The control wheel has a scale of 1-8 for assisting adjustment.

The body of your Omegon Microstar microscope is constructed from metal; you hence possess a sturdy instrument which will provide you with many years of fun observing the microscopic world.

Getting started - Operating the Omegon Microstar

Find a comfortable place to sit for getting some real experience using the microscope. Plug the power supply provided with the accessories into a normal household mains socket. Connect the power supply's small plug to the socket in the microscope provided.

Tip: Before use, make sure that the light switch (13) is turned to the OFF position. Only turn this on after you have connected the power supply.

Practical observation
Before you finally start, always make sure that the stage (9) is right at the bottom of its travel. This is extremely important to avoid possible damage.

Eyepieces and magnification
Two eyepieces (h/i) marked WF5x and WF16x and a Barlow lens (g) are provided with the accessories. For observing, you must first insert the Barlow lens into the eyepiece tube (2) with its lens facing downward.

Now insert one of the eyepieces into the Barlow lens. Magnification is always calculated in conjunction with the objective on the objective turret that is used. The objectives have values of 4x, 10x and 40x.

You can work out the total magnification of the microscope as follows: Eyepiece magnification x objective magnification

So if you want to know, for example, what magnification you would get using the WF5x eyepiece with the 10x objective, the calculation looks like this:

Magnification= 5x X 10x = 50x
So there is a combined magnification of 50x

Always start with the smallest magnification: You will have a large focus range and are also protecting the microscope against possible damage. You can find the optimal sharpness by slowly turning one of the large focus knobs (11), which you will find on the left and right sides of the microscope.
Increase the magnification slowly, always step by step. This means you will only have to adjust the focus knob by small amounts.

You can increase the magnification both by rotating the turret (to change the objective) and by using a different eyepiece.

Note: Always ensure that there is sufficient clearance between the objective and the slide when changing magnification.

Magnification with the 2x Barlow lens:

Magnification	Eyepiece	Objective
40x	5x	4x
100x	5x	10x
128x	16x	4x
320x	16x	10x
400x	5x	40x
1280x	16x	40x

Your first test observation
Your Omegon Microstar comes with a case containing 5 prepared slides (b) as well as 10 blank slides and coverslips. With these, you are equipped to start doing real microscopy. For your first observation, select one of the prepared slides, e.g. the one labelled ‘Housefly’ (actually, the leg from a housefly).
It is best to hold the slide so that it is gripped between your thumb and index finger, firmly but not too tightly. Remember, the slide is made of glass so too much pressure could break it.

• Choose a comfortable position (it is best if you are sitting), with the microscope in front of you, and place the slide carefully on the stage. To do this, pull back the spring-loaded clip on the mechanical stage (8), insert the slide into the space for it, and allow the clip to slowly come in contact with the slide until it is gripped securely.

• The microscope is equipped for illuminating slides both from above and below. Illumination from above is better for opaque specimens. But, for the housefly leg, you will only need transmitted light - i.e. substage illumination. Simply turn switch (13) from the OFF position to position I. The substage LED lighting will immediately become visible.

• Make sure that the filter wheel disk (10) is adjusted in such a way that the light can pass through it. It is best not to start with a colour filter

• Now move the stage (9) carefully downwards until it reaches the bottom of its travel. Insert the WF5x (h) eyepiece into the eyepiece tube and turn the objective turret until the 4x objective engages in the correct position.

• You will already be able to see the fly leg with the naked eye. Now use the fine adjustments on the mechanical stage to position the fly leg in the light coming through the opening in the centre of the stage.

• Now look into the eyepiece using one eye. If the light is too bright, you can reduce it with the light intensity control (14). You may position your eye very close to the eyepiece. It is no problem if your eyelashes are lightly touching the eyepiece.

• While looking through the eyepiece, slowly turn the focus knob until you reach the point of sharpest focus. As you focus, the image may look completely white and blurred to start with, but then a shape will slowly appear. You will soon recognize it as being the fly leg. When the image is completely sharp, you will be able to see a brownish leg with countless hairs on it.

• You can use the mechanical stage to move the object around in the field of view. Now increase the magnification: Simply rotate the 10x objective into position. The leg will once again appear blurred, but after carefully turning

The focus knob you will be able to get it back sharply in focus. You will be astonished at how much extra detail you can now see at this magnification.

Tip: Be careful not to magnify too much! The highest magnification does not always produce the best result. Find which magnification gives the best image.

There are also dissecting instruments included in the accessories and four small bottles which contain gum, yeast, salt and shrimp eggs. There is also a simple microtome (not shown) provided, which you can use to make thin sections.

Important note: If the microscope is meant for a child, we recommend removing the microtome (black with razor-blade) and the teasing needles, or only allowing them to be used under the supervision of an adult.

This is just the beginning of your journey into the microscopic world. Keep exploring, there are many fascinating things to discover!

Preparing slides

You can now make your own slides for your microscope and be able to examine them closely. The simplest method is to prepare a fresh slide:

Preparing a slide

• Take a clean slide
• Use the pipette to the put a drop of water in the middle of the slide (distilled water is best)
• Use the tweezers to put an object into the water drop
• From the side, position a cover slip above the water drop and carefully lower it onto it

This type of slide preparation is only of short-term use. However, you can prepare a permanent slide using the 'Gum Media' provided. Instead of water, put a little 'Gum Media' on the slide, insert the object into it and place a cover slip on top. After the gum has cured, you will then have a permanent slide.

Installing the driver software

Note: Do not attach the camera to the microscope just yet. Install the software without the camera first

1 Insert the software CD into the CD drive
2. Wait until the CD starts up automatically
3. A menu will appear which allows you to install the driver and other software
4. Select 'Install MikrOcular', and click on 'Continue'
5. The driver files will now be installed, which can take a few minutes
6. A message will then appear that the 'Install Shield Wizard' has finished.
7. Click on 'Finish'. You can now exit the menu.
8. Restart the computer and then attach the camera to a USB port. The driver will now be assigned to the camera automatically and the camera can now be used.

Installing the PhotoImpression software

1. Insert the software CD into the CD drive. A selection menu starts automatically and a menu window appears
2. Select ‘Install PhotoImpression’ from the menu
3. Select the language you prefer, e.g. English, and click on ‘OK’
4. A welcome window will then appear, which you confirm with ‘Continue’
5. A license key is now required, which you will find on the CD envelope. Enter the key code and click on ‘Continue’.
6. The software will now be installed.
7. When the installation is complete after a few minutes, click on ‘Finish’.

You can now use the PhotoImpression software to take observe and take pictures with the camera.

How to observe using the PC eyepiece

• First, focus the object using a normal eyepiece. Then remove the eyepiece and the Barlow lens and insert the PC eyepiece into the eyepiece tube instead.
• Start the PhotoImpression software and select ‘Camera/Scanner’
• Select ‘Soc PC-Camera’. You will now see a live image from the microscope camera
• Turn the focus knob until the image is sharp
• You can take a picture with ‘Snap’ and save it with ‘Save’

Cleaning and care

You have acquired a high-quality instrument with the Omegon Microstar. Carefully treated, it will provide you with many years of good service. It is particularly important to protect the microscope from dust. After use, always put it back into the carrying case or use the protective cover included in the accessories.

If you remove an eyepiece, always remember to cover the eyepiece tube with the protective cap provided.

The objectives do not need to be unscrewed. Of course this also means that no dust can penetrate into their interiors.

If the lenses become dusty, carefully wipe them over with an optical dust brush. For persistent dirt you can use an optical cleaning agent or isopropyl alcohol from a pharmacy. Make sure that you use optical cleaning cloths or equivalent.

Occasionally, the stage may become soiled with liquid. In this case, it is best to immediately clean it off with paper kitchen towel.