



# Operating Microscope OM-19

*Serving Your Vision*



Operating Microscope

# OM-19

Ultimate high-performance operating microscope  
ideal for cataract surgery



TAKAGI has been serving the vision of the global eye-care industry since 1955.

TAKAGI brand products are developed, designed and manufactured in Nagano, a region famed for its thriving precision manufacturing industry. Protecting eye health means protecting opportunities to see the beautiful things in the world. It is based on this belief that we take great joy and pride in making our instruments beautiful as well as functional. Our world-class technological capabilities, assured quality and outstanding service, make us trusted by ophthalmic professionals in more than 80 countries worldwide.

TAKAGI's operating microscopes have achieved clear resolution through a process of development focused on "visibility" and by leveraging their optical performance. In addition to a wide and bright field of view, light intensity can be adjusted to suit each particular case and the surgeon's own preference, and the interface is intuitive and easy to use.

The OM-19 is a high-performance operating microscope designed to meet the quality conditions required for cataract surgery and to cover all other necessary functions. TAKAGI has successfully developed the world's first operating microscope on which light intensity for red reflex and main illumination can be independently adjusted in response to each particular case and surgeon's preference. With a broad line-up of options, including a wide-angle fundus observation adapter, with a fundus observation device attached the OM-19 can also be used for retina and vitreous surgery.

# Usability

## Tilttable binocular tubes

To ensure optimal comfort for operating posture, tilttable binocular tubes that move 90° (from 0° in direct view to 90° in inclined view) are equipped as standard, helping to reduce fatigue during surgical procedures.

High-eyepoint eyepieces with a high-grade, multi-coating ensure a sharp and bright observation image.

## Wide range of filters included as standard

The OM-19 is equipped with a heat-absorbing filter, a blue correction filter, a blue cut filter, and a retina shield filter as standard, in order to ensure safe operation in various situations. The position of the filter switching knob on the side of the microscope tube makes it easy to access and switch filters.

The heat-absorbing filter is always set to shield the patient's eyes from heat by absorbing the highly penetrative infra-red rays that affect the retina and choroid.

The retina shield filter increases safety during retina and vitreous surgery, preventing any light from falling on the patient's retina by blocking the centre of light in the pupil area.

The blue cut filter cuts almost all blue light, so that illumination becomes yellow. This is a particularly safe colour for the retina.

The blue correction filter reduces the amount of blue LED light, providing illumination that is gentle on patients' eyes. Producing a colour tone similar to that of a halogen lamp, this filter helps to reduce blue light-induced eye hazard.

## Microscope head tilting mechanism

The OM-19 is equipped with a microscope head tilting mechanism to enable ease of use for glaucoma surgery. Equipped with a movement interlock system and a movement range of  $\pm 30^\circ$ , various aspects of the design focus on ease of operation.

## Easy-to-see operation panel

The operation panel is installed on the microscope arm, ensuring that it remains unobtrusive during surgery. Numerical values and adjustment status can be confirmed at a glance on the fluorescent colour display, enabling quick and intuitive adjustment.

From the operation panel it is possible to operate red reflex illumination on/off and illumination adjustment and main illumination on/off and illumination adjustment, as well as adjust focus speed, zoom speed, and X-Y speed. There are also X-Y and focus centring buttons on the console.

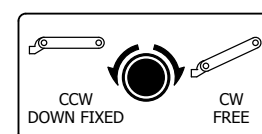
## Safety stop mechanism

Using the safety stop mechanism installed on the balance arm with just a single touch the lower limit position of the arm can be set to match the height of the operating table. For ease of access, a safety stopper knob is located on the underside of the balance arm.

## Foot controller

A total of 14 types of operating functions can be performed using the foot controller, including red reflex illumination on/off and illumination adjustment, main illumination on/off and illumination adjustment, coupling X-Y movement, focusing up/down, and zooming in/out. The pedal configuration can be changed according to surgical requirements and individual preference, helping to optimise operations.

The OM-19 foot controller has the highest IPX8 waterproof rating, greatly reducing the risk of damage or failure caused by liquids or cleaning materials getting inside.



# Rich variety of options

## Rotatable coaxial stereoscopic assistant microscope

Using the same optical path as the surgeon, this rotatable coaxial stereoscopic assistant microscope has an objective lens with the same deep depth of focus as the main microscope, and the eyepiece magnifications go up to 10x, providing a bright and wide field of view.

The focus function of the assistant microscope, which is separate to the main microscope, allows for independent focus adjustment, enabling the assistant to set and attain the optimal view.

In cases such as temporal incision cataract surgery when it is necessary to switch from side to side frequently, the assistant microscope can be simply rotated round to the required side, helping to facilitate surgery by ensuring ease of movement and eliminating the risk of damage due to the repeated attachment/detachment of equipment.

Total magnifications	3.3x	5.4x	8.7x
Field of view (diameter)	61	37	23



## Digital imaging accessories

By using the optional beam splitter (O11-03) and camera adapter (O08-11) a C-mount compatible CCD camera system can be connected. (Please use commercially available products for the CCD camera system.)

Speedy switching is made possible by the IN/OUT switching lever on the beam splitter.

The camera adapter is fitted with an aperture as standard, which can be used to regulate light coming through the lens to suit the photographic situation. When connected with imaging equipment it is possible to record images during surgical procedures. Please contact our Sales Department for details about compatible equipment.



## Monitor arm and Camera control rack

An LCD monitor can be attached to the microscope arm, integrating the monitor with the operating microscope in a space-saving configuration that leaves floor space free.

Also, the camera control unit can be stowed on the camera control rack, helping to maintain a safe environment and prevent accidents. The large-diameter casters with stoppers are fitted as standard and ensure stability of the main unit, making moving and fixing both easy and worry-free.

## Fundus observation device adapter

The OM-19 features high-performance optics that can be used to perform retina and vitreous surgery. In such cases it is necessary to attach a fundus observation device.

It is possible to attach OCULUS BIOM and Haag-Streit EIBOS devices. BIOM devices cannot be used in conjunction with the rotatable coaxial stereoscopic assistant microscope.

EIBOS devices can be used in conjunction with the rotatable coaxial stereoscopic assistant microscope.

\* Please contact our Sales Department for further details.



\* The monitor screen image is a composite image. Actual image quality may differ from the illustration.

# Optics and light source

## Adoption of new optics

The new red reflex illumination system ensures a better reflection from the fundus than previously possible, helping to further facilitate cataract surgery operations.

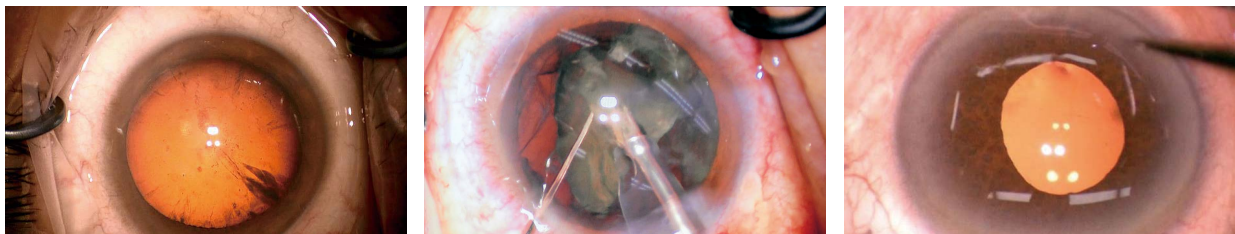
The wide-diameter objective lens on the OM-19 makes observation images brighter, meaning that it can be used not only for cataract surgery, but also for retina and vitreous surgery.

From the eyepieces to the objective lens optics are used to suppress chromatic aberration, which is an important consideration for microscopes. This helps achieve bright and sharp observation images with a deep depth of focus.



## High-intensity LED to match illumination

The new red reflex illumination system features high-intensity LED that ensures a better reflection from the fundus. The main illumination system uses high-intensity LED to focus on contrast and colour reproduction.



Thanks to the bright red reflex illumination, the red reflex can be seen extremely clearly.

Even during ultrasonic phacoemulsification and aspiration (PEA), which can weaken the red reflex illumination, the lens can be seen clearly due to the bright red reflex illumination.

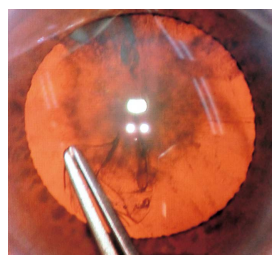
Sufficient red reflex illumination can also be obtained for small pupils. In addition, bright and stable red reflex illumination can always be obtained, even when the direction of the eye changes.\*  
\* If eye direction changes significantly, red reflex illumination becomes harder to obtain.

## Independent illumination systems

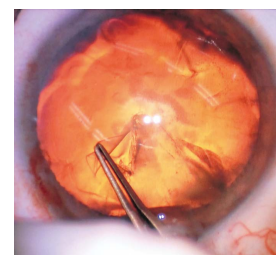
As red reflex illumination and main illumination light sources are independent of each other their light intensity can be adjusted separately to suit each particular case and the surgeon's own preference. Precise light intensity control can be implemented speedily and accurately.

Using red reflex and main illumination simultaneously enhances the 3D appearance of the image.

Using only red reflex illumination produces high contrast, enhanced images of the lens.



When using red reflex and main illumination



When using only red reflex illumination

## Applications for retina and vitreous surgery

For surgery that does not require red reflex illumination, such as retina and vitreous surgery, the OM-19 is fitted with a red reflex illumination on/off knob.

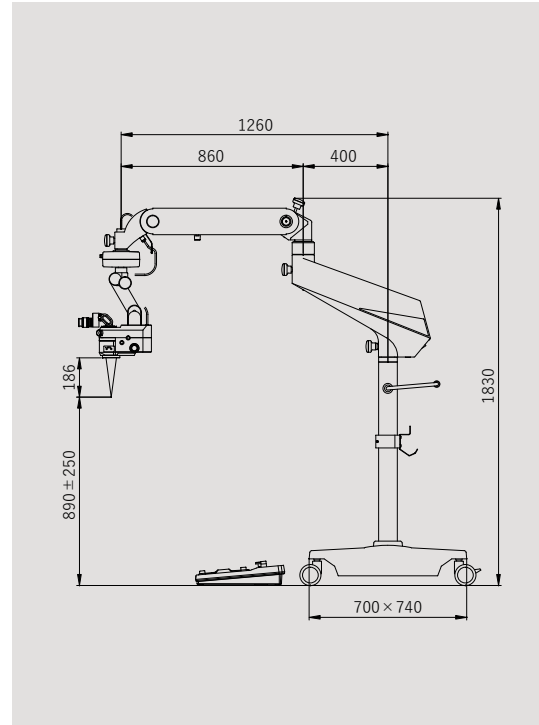
When red reflex illumination is switched off, the red reflex illumination mechanism can be withdrawn from the microscope optics, allowing retina and vitreous surgery to be performed using the OM-19's inherently bright optics.



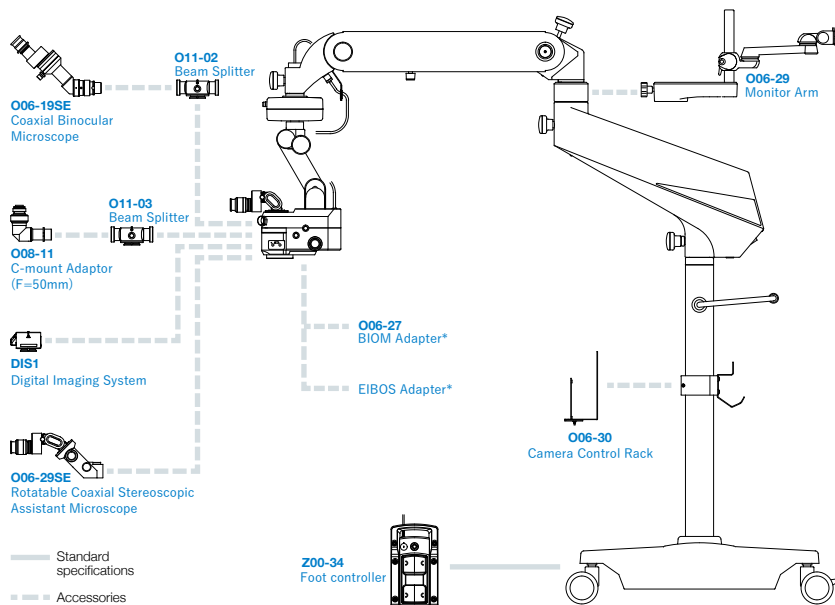
## Specifications

Model name	OM-19 Operating Microscope		
Microscope	Magnification changer	Motorised zoom magnification (zoom ratio 1:6)	
	Objective lens	F = 200 mm	
	Eyepieces	10x (high-eyepoint & wide-field)	
	Field of view (diameter)	58.8-9.8 mm	
	Binocular tube	Tilttable binocular tubes F = 170 mm	
	Total magnifications	3.4x-20.4x	
	Focusing	50 mm with motorised centring switch	
Illumination	X-Y movement	± 25 mm in each direction with motorised speed 1.6-3.3 mm/sec and centring control	
	Method	Direct illumination	
	Light intensity adjustment	9 steps (5 level display on gauge)	
	Light source	2 types of LED	
	Illuminated field (diameter)	60 mm	
Arm & Base	Red reflex illuminated field (diameter)	22 mm	
	Filters	Heat-absorbing / Blue correction / Blue cut / Retina shield	
	Type	Floor stand with 4 casters and 2 stoppers	
	Balance arm stroke	500 mm (vertical)	
	Maximum arm reach	1260 mm	
	Maximum load tolerance on arm	Up to 7.7 kg of accessories	
	Control panel	Zoom, focus, X-Y movement speed adjustment, focus and X-Y centring operations, illumination control	
	Foot controller	Wired 14 function control with IPX8 waterproof and dustproof performance	
	Others	Weight (excl. options)	156 kg
		Power input	125 VA
Power supply		AC 100-230 V, 50/60 Hz	
Electrical protection class		Class 1	

## Dimensions



## System Chart



## Accessories

Model number	Detailed information
DIS1	Beam splitter with built-in camera (possible to view images by connecting to a monitor)
O06-19SE	Coaxial assistant microscope
O06-27	OCULUS BIOM mounting adapter for retina and vitreous surgery
	Haag-Streit EIBOS mounting adapter for retina and vitreous surgery
O06-29	Image display monitor mounting arm
O06-29SE	Rotatable coaxial stereoscopic assistant microscope that is movable to the left and right of the surgeon
O06-30	Camera control unit storage rack
O08-11	TV camera mounting adapter with C-mount F = 50 mm (Adjustable aperture equipped)
O11-02	Beam splitter for mounting a camera or an assistant microscope (spectroscopic ratio ☞ 60 : ♂ 40)
O11-03	Beam splitter for mounting a camera or an assistant microscope (spectroscopic ratio ☞ 20 : ♂ 80)

\*Please contact our Sales Department for details about BIOM and EIBOS adapters.

To ensure safe and correct handling please read the user manual before using.

- Description and appearance as detailed in this brochure may be subject to change as improvements are made to products.
- Colours as they appear in brochure photographs may be slightly different to actual products due to lighting conditions when photographs were taken, or print colours.



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