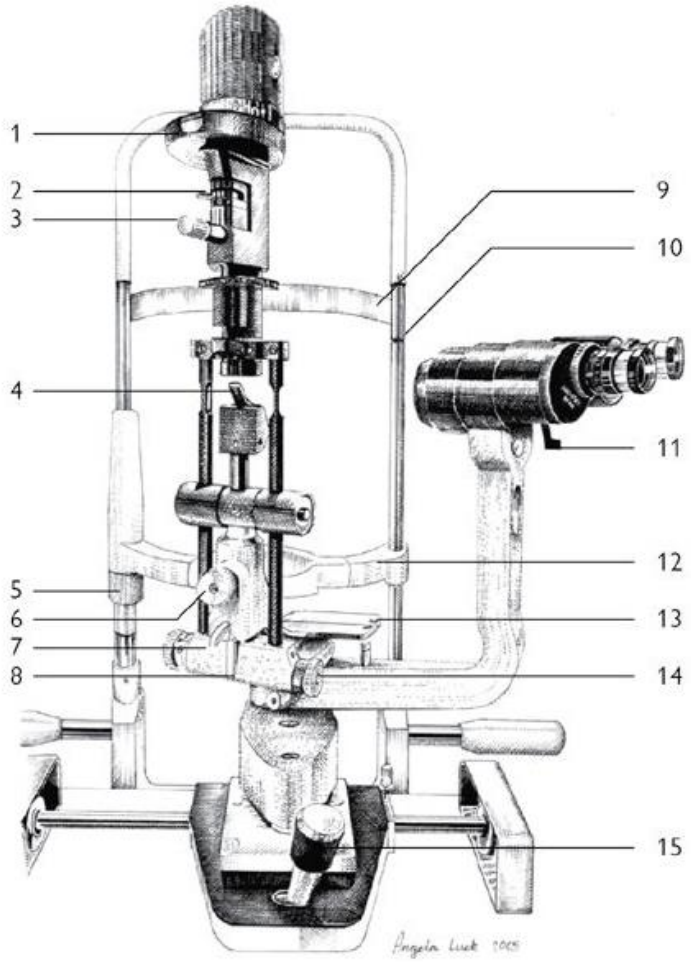
Slit-lamp overview

The slit-lamp provides excellent visualization of both the anterior segment and, with the help of additional lenses, the posterior segment of the eye. Advantages of the slit-lamp view are that it is magnified and stereoscopic.

Although basic slit-lamp skills are quickly gained, mastering its finer points enables one to use it to its full potential. Careful preparation of slit-lamp and patient is essential to optimize both quality of view and patient/ clinician comfort.



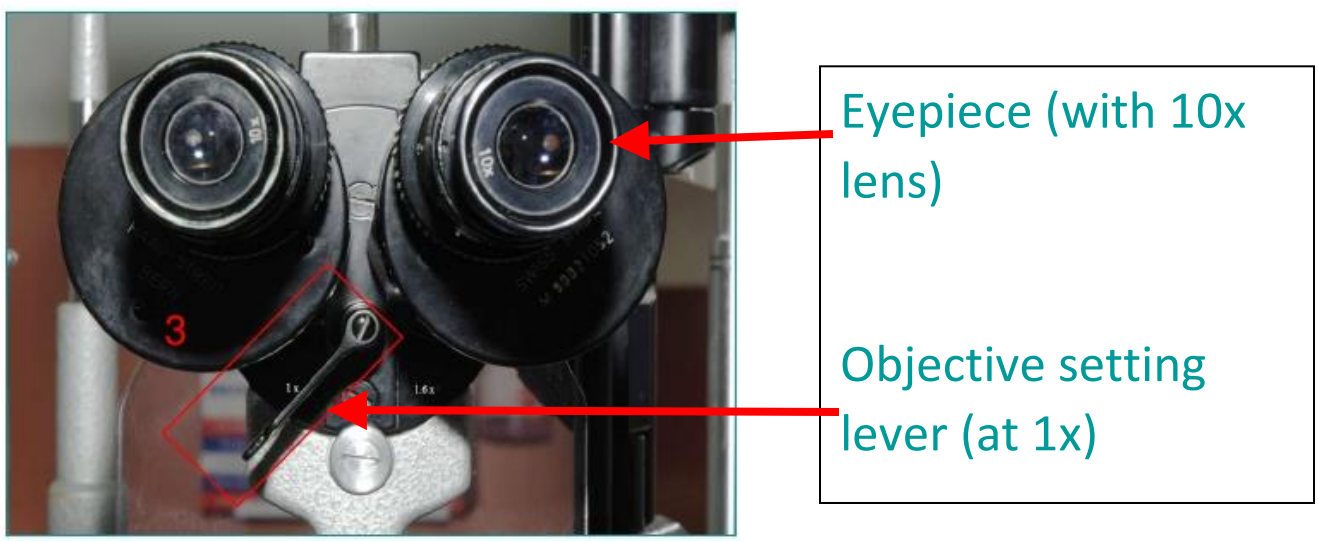
1	Indicator for beam height	9	Head band
2	Lever for selecting filters	10	Height marker (patient eye level)
3	Control for beam height	11	Lever for selecting magnification
4	Mirror	12	Chin rest
5	Control for chin rest height	13	Tonometer plate
6	Centring screw	14	Control for beam width
7	5° stops	15	Joystick
8	Latch for vertically tilting beam		

Optical and mechanical features

The slit lamp consists of a binocular compound microscope and an adjustable illumination system. Since it has a fixed focal plane, objects are brought into focus by moving the slit-lamp forward or back. Movement of the slit-lamp laterally (adjusted with the joystick) and vertically permits visualization of eye and adnexae without having to adjust patient position.

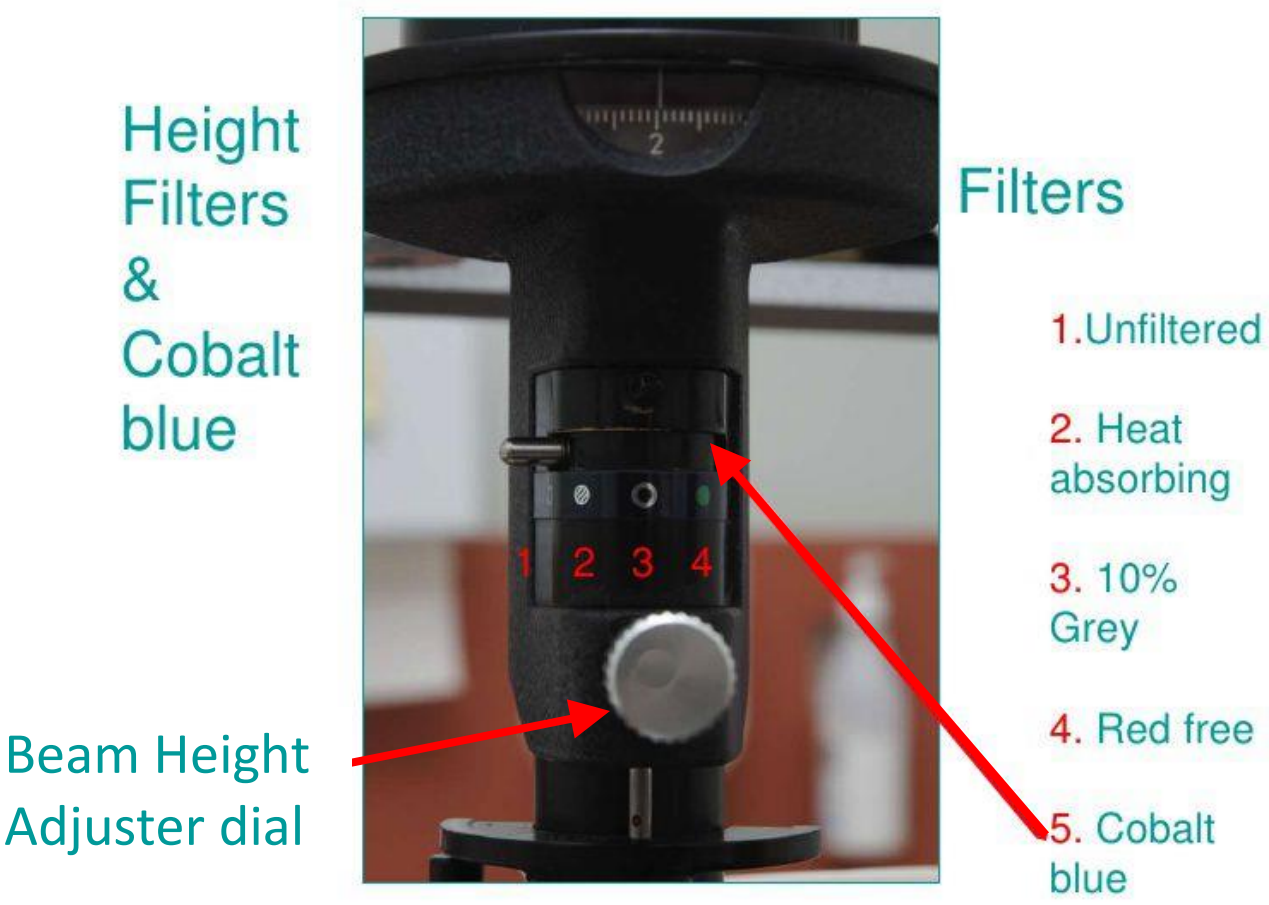
Magnification:

Most conventional slit-lamps have two objective settings (1 × and 1.6 ×) and two eyepiece options (10 × and 16 ×). The total magnification thus ranges from 10 × to 25 ×



Illumination: filters

The illumination can be adjusted by a series of filters

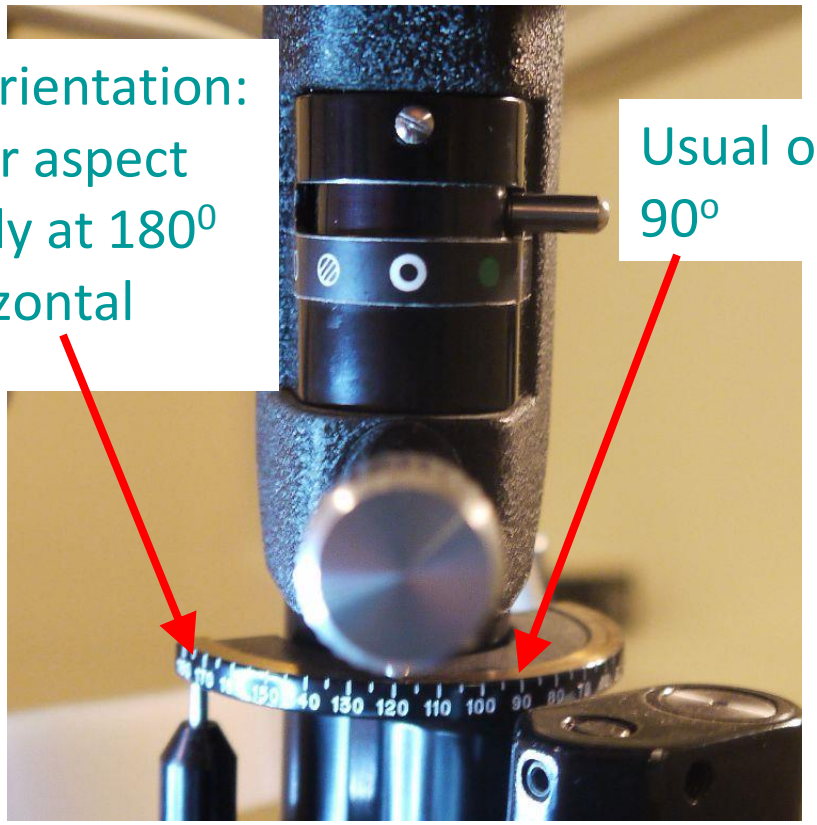


Options are unfiltered, heat-absorbing filter, 10% grey filter, red-free filter, and blue filter. In practice, the heat-absorbing filter is generally used for high illumination and the grey filter for lower illumination. The red-free filter increases visualization of the vitreous and retinal nerve fibre layer/ vasculature. The blue illumination filter is best combined with a yellow enhancement observational filter to maximize visualization of fluorescein; the blue filter may also assist detection of iron lines.

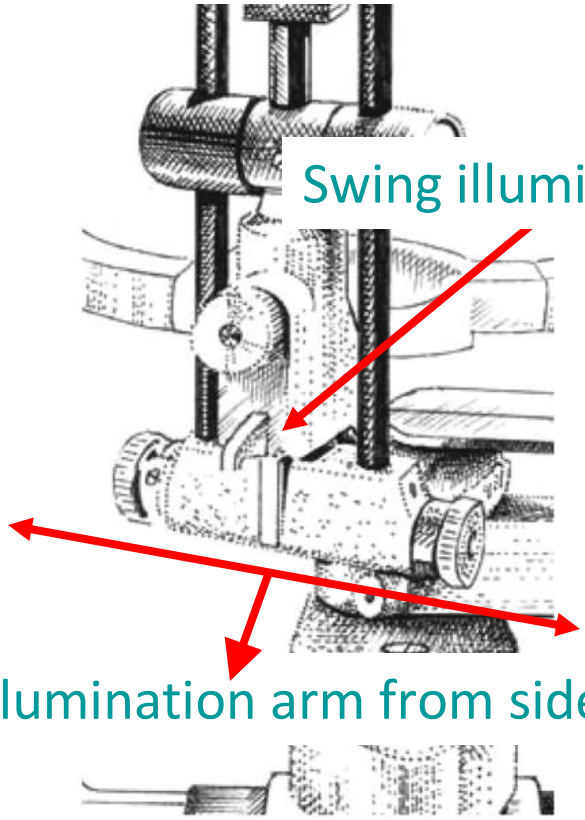
The beam height and width are adjusted by apertures; the beam height is incremented in mm and may be useful in measurement (e.g. disc size, corneal ulcer, etc.).

Illumination: orientation and angulation.

The orientation of the beam may be adjusted from vertical to horizontal (or any other angle) by swinging the superior aspect of the illumination arm to left or right (useful for gonioscopy or in measuring lesions).

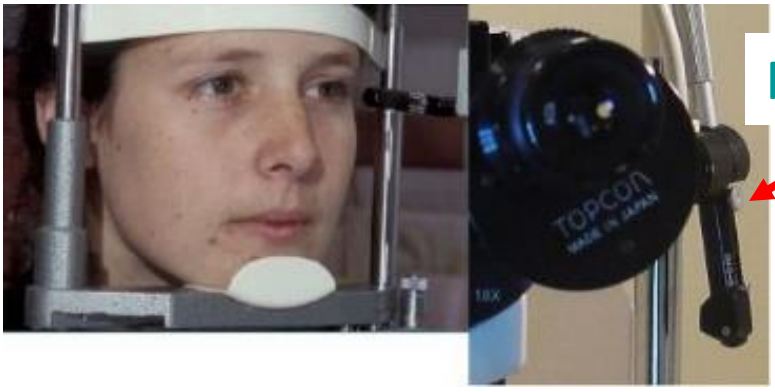


Angulation of the beam is achieved by swinging the whole illumination arm to the side (horizontal) or tilting the illumination arm upward (vertical)



Tilting the beam vertically may reduce troublesome reflections when using handheld lenses.

Fixation lamp

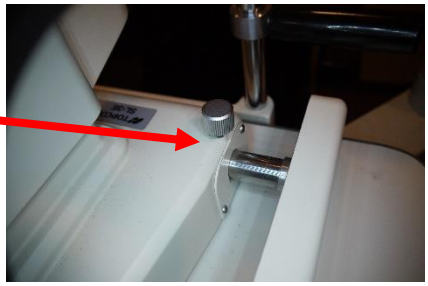


The fixation lamp is used to give something the patient can focus on. It helps them keep their gaze steady whilst you examine their eyes.

Set-up for each clinic

- Remove dust cover

- Unlock the slit-lamp



- Turn on the equipment

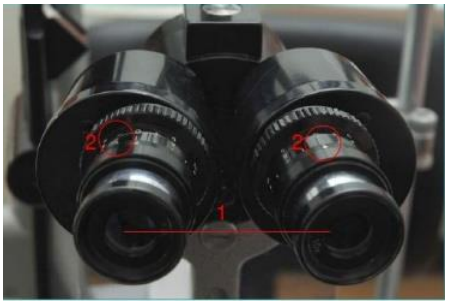
Slit lamp button

On button

Chair up and down buttons

Background light brightness dial

- Adjust the interpupillary distance (1).
- Adjust the eyepieces (2). Set the eyepieces to their maximum plus. Place the focusing rod (this is the back of the fixation lamp) in the centre column with the flat surface of the rod facing you. Adjust the slit-lamp beam to minimal thickness and maximum brightness to



optimize detection of defocus. For each eyepiece, in turn, viewing through the respective eye reduce the amount of plus until the slit first becomes clear.

- For each patient

Turn nob to adjust chin rest height.

- Adjust chin-rest until patient's eyes are at level of the marker (on the side of the head rest).

Examination

- Start examination with lowest magnification and low illumination. Rather than inadvertently dazzling your patient first, test the brightness, e.g. on your hand.
- Start examination with direct illumination (usually fairly thin beam 0.5 to 1mm wide and 10mm high, angled 30– 60 °).
- Examine in a methodical manner from 'outside in', i.e. orbit/ adnexae, lids, anterior segment:
- Throughout examination:
    - adjust illumination: adjust filter, orientation and angulation, and illumination technique (direct illumination, retroillumination) to optimize visualization;
    - adjust magnification: to optimize visualization (e.g. of cells in the anterior chamber (AC)).
- At the end of the examination, do not leave your patient stranded on the slit-lamp. Switch the slit-lamp off (for the sake of the patient and the bulb), and encourage the patient to sit back.
- **Lock the lamp up again**. This is IMPORTANT because it stops the delicate microscope crashing around when you move its table.
- Put the dust cover on AFTER you have turned the slit lamp off, moved the slit lamp out of the ay of the patient and put the overhead lights on.