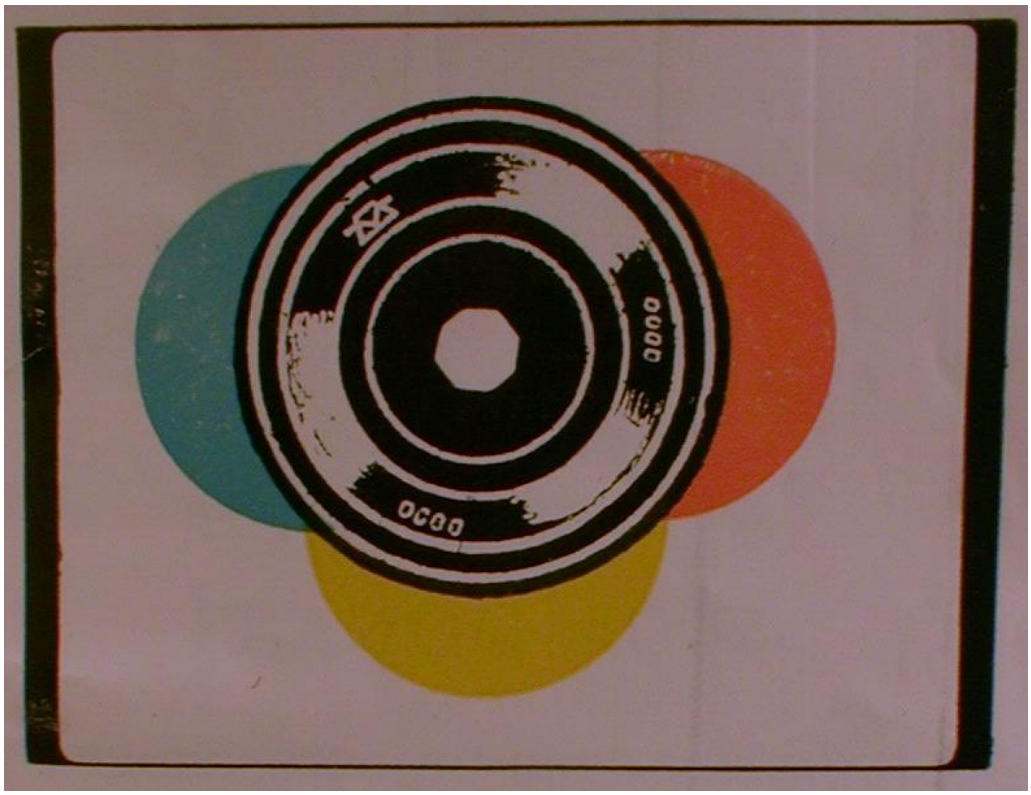


Photographic lens

HELIOS-40-2

User manual

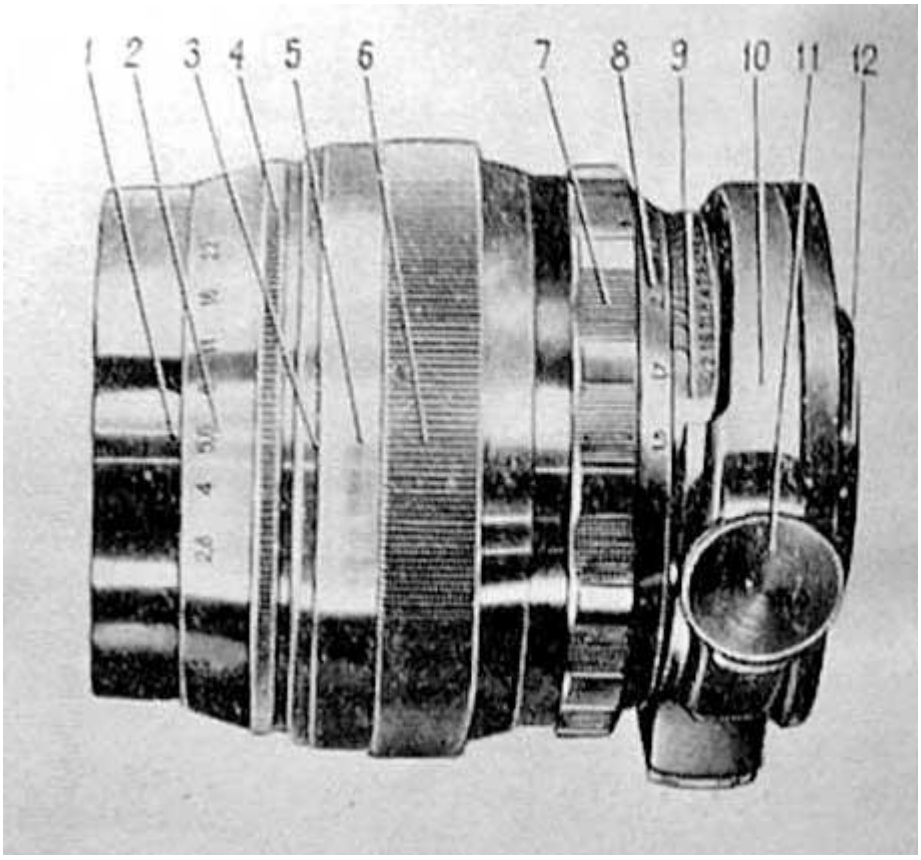
PURPOSE

The photographic lens “Helios-40-2” is interchangeable lens for “Zenit” series cameras. It has adjustable aperture value stopper.

The lens is fast, and it is purposed to shoot portraits, low light outdoor scenes, fast moving objects etc.

SPECIFICATIONS

Focal length	85mm
Angle of view	28°
Flange focal distance	45.5mm
Focusing range	From 0.8m to infinity
Aperture range	From 1:1.5 to 1:22
Mount thread	M42x1
Filters mount thread	M67x0.75
Dimensions (without caps)	82mm diameter, 95mm length
Weight (without caps)	1.185kg



1 – index mark of the aperture scale;2– the aperture scale; 3 – index mark of the aperture preset; 4 – ring of the aperture preset; 5 – index mark of the aperture; 6 – aperture ring; 7 – focusing ring; 8 – distance scale; 9 – depth-of-field scale; 10 – bracket; 11 – screw; 12 – the lens mount.

THE MOUNT FEATURES

The mount is made taking into account application field of the lens. Besides its focusing mount, it has the movable focusing mechanism mounted onto the bracket (10) which allows putting it onto a tripod with the camera oriented either vertically or horizontally relatively to the object. The position can be secured with the crew (11). Focusing is accomplished by rotating the ring (7) with the distance scale (8) on it. The distance scale index is central line of the depth-of-field scale (9) marked on the body of the lens.

To improve usability of the lens, there is mechanism of the aperture preset. This mechanism allows focusing with fully opened diaphragm that increases accuracy.

Construction of this mechanism allows adjusting position of the aperture value stopper by turning the ring (4) with aperture scale marked on it. Index of the preset is the point (1) marked on the lens body. Actual aperture value is set by turning the ring (6). The mount (12) has M42x1 thread to be connected with a camera.

The lens comes with three color filters that can be screwed into the front part of the lens, and two caps – front one and rear one.

COLOR FILTERS

The lens comes with three color filters: Y-1.4x, Y-2x, O-2.8x. They have M67x0.75 mount thread.

Light yellow filter Y-1.4x being used with ortho-iso-panchromatic film to give more natural proportions of illuminations of different colored objects. It is recommended to use it shooting portraits outdoors or nature views with large clouds on blue sky.

Dark yellow filter Y-2x absorbs most of blue rays, so it is rather useless for orthochromatic film, but it give sharp image on isochromatic and panchromatic film making light-blue sky more intense, and blue sky becomes dark.

Orange filter O-2.8x shouldn’t be used with orthochromatic film. It is used to shoot distant objects to eliminate atmospheric haze effect. It makes those distant objects much more sharp therefore, and it highlights cirrus and thin clouds.

PREPARATION FOR WORK

Remove the rear lens cap and make sure that threads of the lens and camera mount are clean. Handle the lens with care to avoid damage of the threads. The lens shold be screwed into the camera mount till stop, and tightened a bit.

OPERATION

Set the maximum aperture value with the ring (6). Both indexes (5) and (1) should be aligned after this. Turn the ring (4) to set limiting position of the aperture to a desired value – align the index mark (1) with the value on the aperture scale (2).

You should feel a click confirming that the ring (4) is set into a discrete position. Then you can focus the camera by the ground glass, turn the ring (6) till stop, and press the camera shutter release button.

When you turn the ring till stop (required aperture value is set therefore), index mark (5) become aligned with the index mark (3). Such aperture value preset mechanism provides increased focusing accuracy and quicker shots of pictures.

If you definitely know distance to the object, you can set this value turning the ring (7) so required value is set against the red index mark.

The distance should be measured from the film plane (close to the back side of the camera) to the object plane along optical axis of the lens.

If you need to shoot few objects located at different distances, you should check the depth-of-field scale (9). It consists of the value pairs marked symmetrically to both sides of the index mark. Each pair corresponds to a specific aperture value.

Against those values you can read distance range in which object will be sharp. These distances are called near and far limits of depth of field. For example, if the lens focus is set to 2.5m, and aperture value is set to 22, you will read values about 2m and 3.5m on the scale (8) against '22' marks.

With such settings, the lens will give sharp image of the objects in this distance range. Objects located closer that 2m and further than 3.5 will appear diffuse. Far limit of depth of field value can match infinity or even be beyond of it. In this case, all objects located from near limit to infinity will be sharp on the picture.

MAINTENANCE AND STORAGE

Protect the lens against strikes, vibration, dust, moisture, fingerprints and fast temperature changes. Put caps on it when it is not in use. Store the lens in its case.

Take care of the coated lens surfaces – it can be damaged during rough cleaning. Keep it clean. High humidity is dangerous for this coating layer – it can cause spots in the coating or damage it completely if the lens stored in high humidity environment too long.

If you bring the lens from cold into warm premise, do not open the case to avoid condensing of water on the glass. Let the lens warm up in the closed case. Even with damaged coating layer this lens will transmit more light and will give sharper image that non-coated lens of same type. Remember that the lens is complex precise device. Do not disassemble it is you don't have a skilled specialist and necessary tools to adjust it after assembling.

Dust should be removed with clean degreased hair brush. If you don't have such brush, you can use cotton piece on a stick or match, or clean flannel or cambric cloth. Dirt (fingerprints, condensate paths etc.) should be removed with a cotton wool moistured in ether or spirit a bit. Apply circular motion of the cotton wool proceeding from the lens center to the edge. Remember that some hard particles may present in the napkin or cotton wool. These particles can damage coating and even glass. So, use inner surface of the napkin after you unfold it.