

# MANUAL INSTRUCTIONS

## MC ZENITAR-M 2.8/16 fish-eye lens

### Purpose

The MC ZENITAR-M 2.8/16 fish-eye lens is a short-focus, super wide-angle, compact lens intended for reflex cameras with M42X1 lens fitting and 24X36 mm frame size, as an interchangeable lens.

It is irreplaceable when taking pictures with a large field of view, such as architecture, landscape as well as group scenes.

The lens should be used for shooting on black-and-white, color and infrared films.

It is intended for use at a temperature of -15 to +45°C.

### Specifications

Focal length .....	16 mm
Relative aperture	
maximum .....	f/2.8
minimum .....	f/22
Angular field of view	
(to the frame diagonal) .....	180°
Flange/film distance .....	45.5 mm
Number of elements/groups .....	11/7
Lens fitting thread .....	M42X1
Light filter mounting	
thread .....	M26.5X0.5
Minimum taking distance .....	0.3 m
Length of the lens set on $\text{¥}$	
without caps (from the base	
face) .....	49 mm
Maximum diameter	
of the lens mount.....	63 mm
Weight without caps.....	0.31 kg

### Pre-starting Procedure

Before mounting the lens on to the camera remove the lens rear cap. Make sure of the light filter compensator 4 (a clear glass plate in holder, screwed into the lens) being mounted on the lens.

Set the ring with distance scale on " $\text{¥}$ ". Carefully screw the lens into the camera as far as it will go. In so doing central index mark 6 of fixed ring 3 will come along the camera vertical axle.

If you are going to shoot with a light filter, unscrew the light filter compensator 4 and replace it with a light filter you have selected screwing it into the lens as far as it will go. Shooting over, replace the light filter with the compensator screwing it into the lens as far as it will go.

### Operating Procedure

Before taking pictures remove the lens front cap.

Set the selected aperture on scale 2 against central index 6 on fixed ring 3. By rotating ring 1 focus the lens at the object to be photographed so that the image will be sharp in the view-finder. Focusing should be done at fully open diaphragm. On pressing the camera release button the lens automatic diaphragm will close down to a selected aperture and the shutter will fire. Shutter firing over, the diaphragm will restore to initial position.

When photographing groups of objects in different distances from the camera, make use of depth-of-field scale 3. Index marks on the depth-of-field scale, corresponding to the set aperture value, will indicate sharp image limits on the distance scale 1.

For instance, with the lens focused at 0.4 m and an aperture of 11 the image will be sharp within the range from 0.3 to 0.6 m.

When using infra-red film the visually obtained sharpness should be adjusted. To do this, focusing over, the value of scale 1, set against central index 6, should be set against index R. Because of large angular field of view of the lens, you should not make use of a lens hood since it may result in cutting the film. The most exciting feature of this lens is its considerable barrel-shaped distortion which results in distorting the shape of the object to be photographed in case the latter is not in the centre of the frame. The extensive straight lines passing through the frame centre are transmitted without distortion and the lines remote from the frame centre gain arched shape. If necessary, to minimize the distortion, such lines should be arranged as near to the frame centre as possible and if you want to obtain a special effect by distortion they should be far from the frame centre. When taking pictures of landscapes the distortion effect is scarcely marked. The lens is supplied with light filters. Yellow-green filter YG-2X is used to improve tone transmission when taking landscapes on black-and-white film at daylight and artificial illumination.

Yellow light filter Y-1.4X increases the contrast of the light blue sky and weak clouds. It is used as well for taking portraits outdoors.

Red light filter R-8X is used when taking pictures on infrared film. When photographing on black-and-white film the light filter allows to get daytime pictures as if taken at night since the sky and verdure are reproduced dark.

### Care of the Lens

Protect the lens from jolts, moisture, dust, sharp temperature fluctuations and long solar radiation effect (even closed in case).

When not in use, the front objective lens should be capped. Take care of the coated lens surfaces since they may be easily damaged at careless cleaning. Long-term effect of moisture may as well damage the coatings of the film. Allow the lens to warm-up closed in its case the moment it is brought indoors from cold to avoid sweating of its optical details. When taking pictures in frosty weather, it is better to keep the camera with lens under your street-clothes and take it out only for the time of shooting. Remove dust from the lens surfaces with a jet of air from a rubber bulb or with a clean soft degreased hairbrush. Dirt on the lens surfaces should be removed with a stick-held cotton wool wad free of hard inclusions. Moisten the wad slightly with rectified alcohol, petroleum or sulphuric ether or in a mixture of both. Do not clean the lens surfaces with other solvents. After moistening the wad should be dried with a clean white cloth. Optical surfaces should be cleaned in circular movements, gradually passing from the lens centre to its periphery. The wad should be often changed. Do not use a wad held on a metal stick since it may damage the lens.

Should the lens optical surfaces be too dirty to clean them yourself or should the lens come out of order, take it to a repair shop.

Do not disassemble the lens on your own.

The packed lens may travel by any kind of transport within the temperature interval from  $-50$  to  $+50^{\circ}$  C. The lens should be protected from atmospheric precipitation and transport damage.

After transportation in winter the lens should be kept packed at a room temperature of no less than 3h. The packed lens should be stored in a heating room at a temperature of  $+5$  to  $+40^{\circ}$ C and air relative humidity of no more than 80% at  $+25^{\circ}$  C, as well as when the air is free of acidic, alkaline and other corrosive impurities.

Before packing the lens, set the ring with distance scale on "∞" and with diaphragm scale on „22". When storing the lens should be capped on either sides.

Light filters should be stored in special seats.