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Zenit-12XP User Manual

English technical translation rebuilt from the original Russian Zenitcamera HTML archive.

Source: <https://www.zenitcamera.com/mans/zenit-12xp/zenit-12xp.html>



ZENIT-12xp user guide cover

Source note: the original Russian page states that this text is identical to the original 1985 instruction, was converted to text, and was specially prepared for HTML format in 2002. Notes that are not part of the manual were indicated separately in the original. This edition translates the manual text and preserves figure numbering.

1. General instructions

1.1. Purpose of the camera and its advantages

The Zenit-12xp is a 35 mm single-lens reflex camera intended for various amateur photography on black-and-white and colour photographic film. It can also be used for special

photography, including reproduction work, close-up photography of small objects from short distances, macrophotography, microscope photography, and similar applications.

The camera accepts interchangeable lenses with M42 x 1 screw mounting thread and a flange focal distance of 45.5 mm.

The camera has the following advantages:

- a semi-automatic exposure-metering device with measurement of light passing through the lens, the TTL system, provides correct exposure both with the standard lens and when interchangeable lenses, filters, supplementary close-up lenses, or extension rings are used;
- light-emitting diodes in the viewfinder signal correct exposure setting and are equally visible both at full working aperture and when the lens is stopped down;
- the instant-return viewing mirror allows continuous observation of the subject before and after exposure;
- the fast lens is equipped with an automatic diaphragm mechanism which closes the aperture at the moment the shutter operates;
- the fully open diaphragm gives maximum viewfinder image brightness, important during viewing and focusing;
- focusing can be carried out either by the microprism/microraster or by the matted surface;
- rapid exposure setting and simplified film loading reduce preparation time before photographing;
- the built-in self-timer allows the photographer to appear among friends or to make a self-portrait;
- the hidden rear-cover lock, linked with the rewind knob, improves the reliability of rear-cover locking and the convenience of loading the camera;
- a plug socket and central contact allow flash lamps to be used either with a cable or without a cable;
- the recessed rewind sleeve simplifies film rewinding.

Before using the camera, study this description carefully. It contains a short description of the camera and the main rules for using it. This description is not a textbook of photography.

The construction of your camera may differ slightly from the description below as a result of technical development.

1.2. Instructions for handling the camera

The camera is a precise optical-mechanical instrument. Handle it carefully, keep it clean, and protect it from knocks, dust, moisture, and sudden temperature changes.

If the camera has been brought from cold into a warm room, do not hurry to remove it from its case; allow parts, especially optical parts, to warm gradually so that they do not fog.

Do not touch optical parts with your fingers, as this can damage coated surfaces. Wipe coated optical surfaces with clean soft fabric or cotton wool slightly moistened with rectified alcohol or ether. Clean mirror and focusing surfaces only when absolutely necessary, using a very soft dry brush and never using wet cleaning agents.

Store the camera in its closed case with the lens cap fitted. Do not remove the lens from the camera unnecessarily, to avoid dirt and dust entering the camera or reaching optical surfaces.

Load and unload the camera indoors or in shade if possible, avoiding direct sunlight or strong artificial light. Always cock the shutter fully to the stop. This prevents skipped frames during exposure.

Do not leave the camera with the shutter cocked for a long time, since this may worsen shutter operation.

Do not try to rotate the shutter-speed dial so that the index passes through the short interval between 500 and B, and do not rotate the film-speed dial so that its index passes through the unnumbered interval of the scale.

When photographing in freezing weather, do not leave the camera in the open air. Carry it, for example, under outer clothing and take it out only for photographing.

Because the camera is a complex instrument, all repair and corresponding adjustments must be carried out only in repair workshops.

2. Technical data

Parameter	Value
Frame size	24 x 36 mm
Film used	35 mm perforated film
Film length in cassette	1.65 m
Number of frames	36
Shutter speeds	1/30 to 1/500 s, B by hand, and long exposure
Standard lens options	Helios-44M-4, MC Helios-44M-4, Helios-44M, MC Helios-44M
Focal length	58 mm
Maximum relative aperture	1:2
Aperture scale	2 to 16
Distance scale	0.5 m to infinity for Helios-44M-4 / MC Helios-44M-4; 0.55 m to infinity for Helios-44M / MC Helios-44M
Lens to camera screw mount	M42 x 1
Filter thread	M52 x 0.75
Hood fitting	54 mm diameter
Viewfinder image field	20 x 28 mm
Eyepiece magnification	4.3x
Camera flange focal distance	45.5 mm
Tripod socket	1/4 inch

Parameter	Value
Overall dimensions without case	136 x 100 x 93 mm
Supply voltage	3 V, 2 x 1.5 V
Power sources	Two Mallory D386, Seiko SB-B8, SC-32 or similar cells
Weight	0.95 kg

Author's certificates: No. 102683, No. 150360, No. 153652, No. 178682, No. 366447, No. 476534.

3. Camera layout

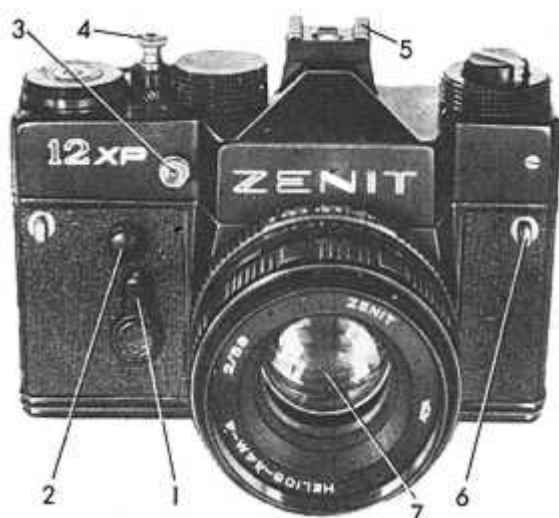


Fig. 3.1

Fig. 3.1 1 - self-timer lever; 2 - self-timer start button; 3 - plug socket for flash lamp; 4 - release button with cable-release socket; 5 - shoe for attaching flash lamp and other photographic accessories; 6 - strap lug; 7 - lens.

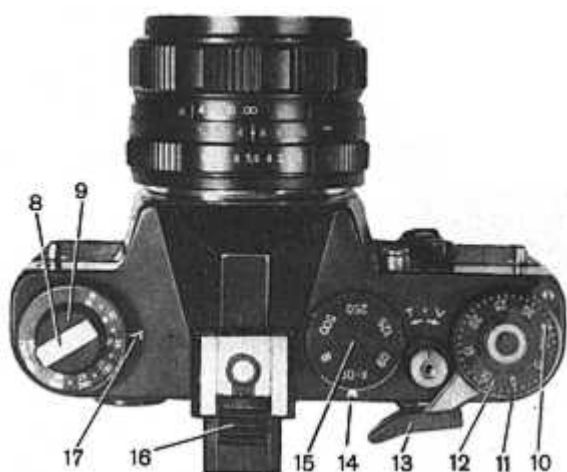


Fig. 3.2

Fig. 3.2 8 - film rewind handle; 9 - film rewind knob; 10 - lug of the frame-counter dial; 11 - frame-counter index; 12 - frame-counter dial with scale; 13 - shutter-cocking and film-

transport lever; 14 - shutter-speed index; 15 - shutter-speed dial; 16 - protective insert; 17 - film-speed index.

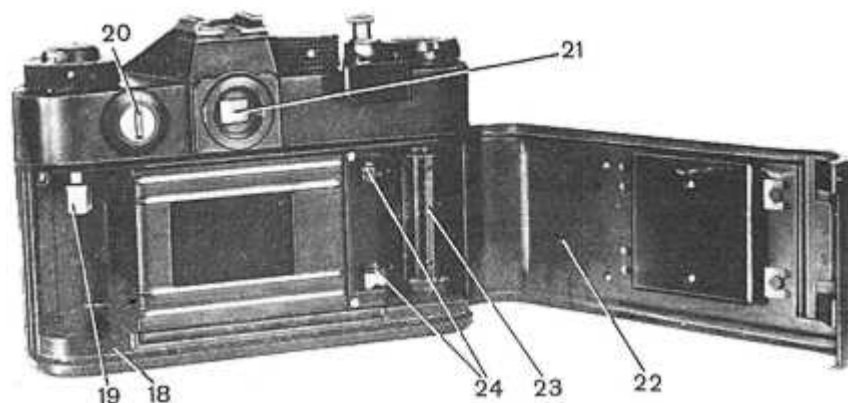


Fig. 3.3

Fig. 3.3 18 - cassette chamber; 19 - cassette-spool driver; 20 - battery-compartment plug; 21 - viewfinder eyepiece; 22 - camera rear cover; 23 - take-up spool; 24 - teeth of the measuring roller.



Fig. 3.4



Fig. 3.5



Fig. 3.6

Figs. 3.4-3.6 25 - recessed rewind sleeve; 26 - film-speed dial; 27 - film-speed scale; 28 - lens retaining ring; 29 - aperture scale; 30 - depth-of-field scale; 31 - distance scale; 32 - focusing ring; 33 - aperture-setting ring; 34 - pusher.

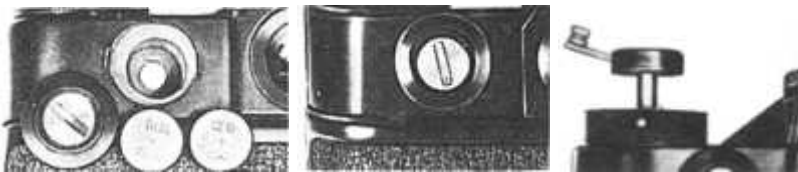
4. Operating the camera

4.1. Loading the camera

Insert the power cells into the camera as follows. Turn plug 20 counter-clockwise so that its slot is horizontal, remove the plug from the socket, and remove used cells if present. Insert new cells into the socket. Insert each cell with the plus sign outward, upward.

Close the socket with the plug, positioning the slot horizontally, and turn it clockwise by 90 degrees so that the slot becomes vertical.

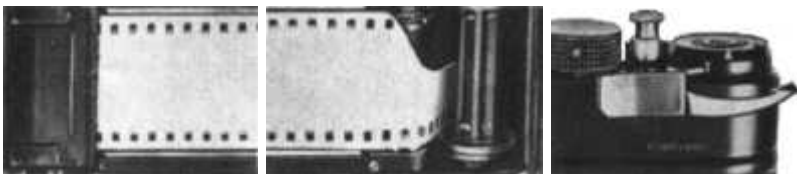
Check whether the light indication is working. Looking through the viewfinder eyepiece, press release button 4 to the perceptible stop. If one or both LEDs light, the power supply is working normally.



Load film as follows:

1. Swing out rewind handle 8 and pull rewind knob 9 upward to the stop. The rear cover must open.
2. Place the film cassette in chamber 18.
3. Lower rewind knob 8 until it locks, turning it slightly if necessary so that spool driver 19 enters the cassette.
4. Pull the film leader from the cassette approximately to the edge of the camera, insert it into the slot of take-up spool 23, and make sure that a tooth of measuring roller 24 enters a perforation hole in the film.
5. Close rear cover 22, pressing it firmly so that the lock engages.
6. To advance unexposed film to the frame aperture, cock and release the shutter twice. Before the second shutter release, set 0 on frame-counter dial 12 opposite index 11 by rotating the dial with short lug 10 projecting above its surface.

If the film is wound tightly in the cassette, the rewind knob will rotate when the shutter is cocked. If the film is loosely wound, the knob may not rotate on the first frames.



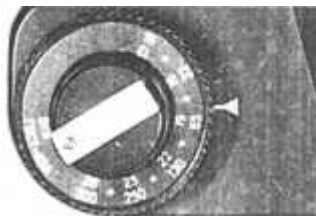


Fig. 4.7

1. Set the speed of the loaded film by turning dial 26 until the corresponding film-speed number aligns with the index. You will feel the dial lock. Remember that an incorrectly set film-speed value will result in incorrect exposure.

The marks on the film-speed dial allow intermediate film-speed values to be set according to the comparison table.

Film speed comparison table

GOST	16		22	32		45	65		90	130		180	250		350	500
ASA	16	20	25	32	40	50	64	80	100	125	160	200	250	320	400	500
DIN	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

Note from the source page: the table corresponds to the old GOST standard in force before 1 January 1987.

4.2. Setting shutter speed

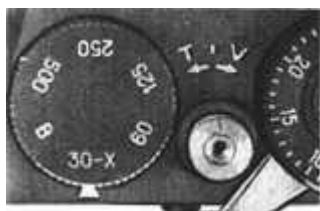


Fig. 4.8

Turn shutter-speed dial 15 so that the selected speed is opposite the index on the camera top plate. You will feel the dial lock. The numbers on the shutter-speed scale denote shutter speeds in the corresponding fractions of a second. B denotes a hand-controlled exposure. The 1/30 s speed is marked 30-X. X means this speed is used when photographing with a flash lamp.

Shutter speed may be set before or after cocking the shutter. When photographing on B, the shutter remains open while release button 4 is held down. Long exposures are obtained by locking the pressed button by turning it counter-clockwise to the stop, position T.

After the required exposure time has passed, turn release button 4 back to the middle position and release it. The shutter will close. For hand exposures it is advisable to use a cable release screwed into the thread of the release button. The camera should be mounted on a tripod.

4.3. Setting the aperture

Set the selected lens aperture value opposite the index by turning aperture-setting ring 33. If the camera is equipped with the Helios-44M lens, first set the diaphragm-mode switch to A.

Setting the aperture when photographing with the self-timer has certain special features, described in the section on self-timer photography.

4.4. Focusing

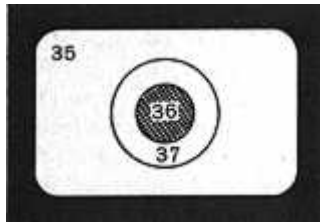


Fig. 4.9

The camera viewfinder has Fresnel lens 35. In its centre are two focusing aids: microraster 36 located in the middle of the field, and an annular field of matte surface 37.

While observing the subject, rotate the focusing ring to obtain the sharpest image on microraster 36 or in the annular matte field. For the best sharpness, focusing is recommended with the diaphragm fully open. The best sharpness is obtained when the image is seen clearly, without ripple in the microraster field. The matte-surface field is used mainly for micro- and macro-photography or at small diaphragm openings when the microraster loses sensitivity.

Focusing is also possible without looking into the viewfinder. Rotate focusing ring 32 to set, opposite the large index of scale 30, the distance from the subject to the film. The small index marked with the Latin letter R is used when photographing on infrared material. If focusing on infrared material has been done by the microraster or matte surface, make the correction by setting the obtained distance value opposite the R index.

After focusing, scales 30 and 31 can be used to determine the distances from the film to the front and rear limits of the sharply imaged space. For example, if the lens is focused at 3 m and the aperture used is 8, then on scale 31 opposite the two 8 marks of scale 30 one can read that the image will be sharp from 2.3 to 4.5 m.

Approximate depth-of-field limits at the aperture set by ring 33 can also be assessed visually. After setting the aperture, stop down the lens by pressing the release button to the perceptible stop and, looking through the viewfinder eyepiece, assess image sharpness in the matte ring area.

4.5. Setting exposure with the exposure-metering device

The semi-automatic exposure-metering device measures light that has passed into the camera through the lens, the TTL system. This allows you to set exposure with high accuracy by adjusting shutter speed or aperture according to subject brightness and the sensitivity of the film material used. This advantage is fully retained when using interchangeable lenses, filters, supplementary close-up lenses, and extension rings.

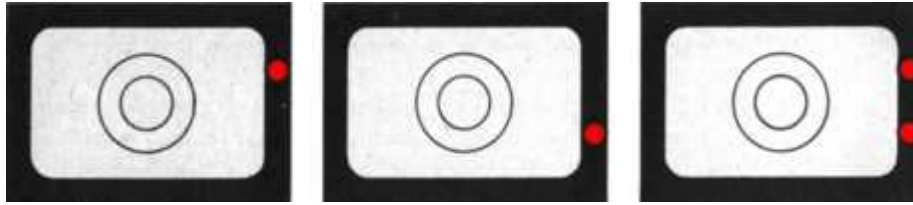


Fig. 4.10

Looking into the viewfinder eyepiece so that the full frame is clearly visible, press release button 4 to the perceptible stop, but not far enough to operate the shutter if it is cocked, and hold the button there.

In the right-hand part of the viewfinder the LEDs are visible. If the upper LED lights, the exposure is excessive; if the lower LED lights, the exposure is insufficient.

By turning aperture-setting ring 33 and shutter-speed dial 15, find the point at which both LEDs blink. This corresponds to the most accurate combination of shutter speed and aperture for correct exposure.

If simultaneous blinking of both LEDs cannot be obtained, and switching speed and aperture between adjacent values simply changes illumination from one LED to the other, either of those values may be used. In that case the exposure will be practically correct within the permissible tolerance.

4.6. Taking the photograph

After carrying out the preparatory operations, and after making sure that focusing, exposure setting, and framing are correct, make the exposure by pressing the release button smoothly.

Remember that a sharp press of the release button will inevitably shake the camera at the moment of exposure and may spoil the picture through image blur.

If photographing from a tripod with a very long exposure, set shutter-speed dial 15 to B. After pressing release button 4, with the shutter already cocked, turn it counter-clockwise to the stop, position T. At the end of the exposure, turn the button back to the middle position and release it; the shutter will close.

When photographing subjects, the marks on the release button and on the shield, between the T and V indices, must be on the same line.

4.7. Unloading the camera



Fig. 4.11

When the frame counter has counted 36 frames, rewind the film back into the cassette:

1. Release the shutter by pressing release button 4.
2. Press sleeve 25 downward to the stop.

3. Swing out handle 8 and rotate it in the direction of the arrow until the film comes free from the take-up spool. Rotate the handle smoothly, without strong jerks and not too quickly, to avoid static-electricity marks on the film.
4. Pull rewind knob 9 fully upward, open the rear cover, and remove the cassette.
5. Turn cocking lever 13 and, while holding the teeth of measuring roller 24 with a finger, make sure that the latter has engaged.

4.8. Self-timer photography

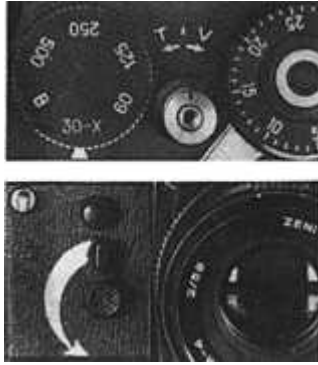


Fig. 4.12

For self-timer photography, set the camera on a tripod, then:

1. Focus.
2. Press release button 4 to the perceptible stop and turn it clockwise, position V. Pressing and turning the release button is required to stop down the lens manually, because during self-timer operation the diaphragm does not close automatically.

Before photographing with the Helios-44M lens it is not necessary to press and lock the release button; it is sufficient to set the diaphragm-mode switch to M.

1. Set the aperture and shutter speed.
2. Cock the shutter.
3. Wind the self-timer mechanism by turning lever 1 downward to the stop.
4. Press self-timer start button 2 and take the selected place in front of the lens.

The camera shutter operates no earlier than after 7 seconds.

4.9. Flash photography



Fig. 4.13

The camera shutter is synchronized with electronic flash lamps, X synchronization.

For connection to a flash lamp, the camera has plug socket 3 on the front wall. The camera construction also provides cordless connection with flash lamps designed for such connection. For this the camera has shoe 5. Before installing a flash lamp on the camera, remove protective insert 16 from shoe 5.

For flash photography, set the shutter speed to 1/30 s. The aperture is determined according to the instructions in the flash-lamp operating manual.

4.10. Interchangeable lenses and close-up photography



Fig. 4.14

The camera accepts interchangeable lenses with M42 x 1 screw mounting thread and a flange focal distance of 45.5 mm.

Lenses marked MC have multilayer anti-reflection coating on optical surfaces. This gives improved suppression of reflections, halos, glare, and light spots when photographing against the light with a large subject brightness range, and improves colour rendition.

If an interchangeable lens has no automatic diaphragm mechanism, diaphragm control is manual. With long-focus lenses, slight cutting of the left and right frame edges is possible.

With special equipment, the camera can be used to reproduce a drawing, manuscript, or photograph. For reproduction, use extension rings installed between the camera body and lens. One or more rings are used to obtain the required reproduction scale.

Use extension rings with a pusher with lenses that do not have a manual diaphragm-mode switch, for example Helios-44M-4. Use rings without pushers with lenses whose diaphragm is set manually; set the diaphragm-mode switch to M.

Interchangeable lenses

Lens	Focal length, mm	Relative aperture	Angle of field	Closest focusing distance, m
Mir-10A	28	1:3.5	75 degrees	0.20
Mir-1	37	1:2.8	60 degrees	0.24
MC Industar-61 L/Z	50	1:2.8	45 degrees	0.30
Jupiter-9	85	1:2	28 degrees	1.00
Helios-40-2	85	1:1.5	28 degrees	0.80
Tair-11A	135	1:2.8	18 degrees	1.20
Jupiter-6-2	180	1:2.8	14 degrees	2.00
Jupiter-21A	200	1:4	12 degrees	1.70
Tair-3A	300	1:4.5	8 degrees	2.20
ZM-5A	500	1:8	5 degrees	4.00
MC MTO-11AM	1000	1:10	2 degrees 30 minutes	10.00