Belarussian Optical-Mechanical Union

Vileyskiy Factory “Zenit”

“AGAT 18K” CAMERA

INSTRUCTION MANUAL

0245.00.00.000-02 RE

Translated by Spaqin

ATTENTION! In your camera you set the exposure using the weather symbols, which correspond to the following types of photographing conditions at daylight for middle latitudes.

Subject on snow, in mountains, at the sea in bright sunlight.

Bright sunlight or sun in light mist, harsh shadows.

Sun in mist, soft shadows.

Light cloudiness, no shadows.

Cloudy or in shadows under open, bright sky.

Very cloudy, thunderstorms.

Interiors, at 1 meter from the window, without direct sunlight.

1. General information

"Agat 18K" is a modern compact scale camera [1], designed for a wide circle of amateur photographers for taking pictures with black and white or color 35mm films.

Single-coated lens with ample optical characteristics and a wide angle of view, optical viewfinder and plenty of exposure settings, operated with a shutter-diaphragm mechanism, let you take pictures in diverse settings.

A distinctive characteristic of this camera is a simplified exposure setting process, using only symbols; being able of transferring film "from cassette to cassette", and also locking the shutter release button with the lens cover on.

Before using the camera, please get familiar with the device, read carefully instructions of handling and operating procedures in this manual. Compliance with these rules will ensure proper exploitation of the camera for many coming years.

As a result of constant improvement of the construction of the camera, there may be slight discrepancies between this manual and your device.

At the moment of purchase of the camera, demand a check of its working condition from the seller. Make sure that in the certificate of acceptance and in the warranty card there are stamps of the store, seller's signature and selling date. Check the completeness of the package.

[1] scale camera – synonymous to viewfinder camera (no focusing help)

REMEMBER! The lens cannot be removed. Any attempts to remove the lens may result in damage to the camera.

The camera works in temperatures between -15°C to +45°C. Maximum relative humidity the device was designed for is 85% at 25°C.

2. Technical specifications

Frame format, mm . . .	18x24
Number of frames . . .	72
Lens	“Industar-104”
Focal length, mm . . .	28
Minimum aperture . . .	1:2,8
Limits of focus, m . . .	from 0,9 to ∞
Range of exposure parameters . .	from 1:2,8 and 1/60s to 1:16 and 1/250s
Range of film sensitivity in ISO . .	from 25 to 1600
Setting exposure . . .	using weather symbols
Filter thread diameter according to GOST 3933-75	M22,5x0,5

Dimensions of the shutter cable release connector	GOST 8189-78
Overall size, mm, not bigger than . .	95x60x45
Mass, kg, no more than . . .	0,13

The camera was built using copyrighted patents of USSR No. 215546, 36647, 1170410, industrial model certificate No. 17485.

Total mass of non-ferrous metals:

aluminum and aluminum alloys, kg	0,032
copper and copper based alloys, kg	0,0063

3. Contents of the box

Item	*Count*	*Note*
Camera	1	
Lens cover on a lanyard	1	Put on the lens already
Hot shoe cover	1	Installed on the camera body
Take-up spool	1	Installed inside the camera
Instruction manual	1	
Packaging box	1	

4. Camera device

The camera consists of two separate parts: the body with all the mechanisms and the removable cover with the viewfinder.

On the body with the mechanisms are installed: lens, shutter, film transport knob connected to the receiving take-up spool, shutter cocking gear, shutter release button, rewind enable button and a hotshoe.

The lens cover on a lanyard is attached to the removable cover.

The camera has a frame skipping lock, disallowing accidental multiple exposures.

Focusing of the lens is achieved by turning the distance scale, and setting the exposure is done by rotating the ring with the weather symbols.

With this camera, you can transport film “from cassette to cassette” without the need of rewinding the film.

The controls and functional elements are shown on the figures 1; 2; 3; 4.

1 – shutter release button

2 – film rewind lever

3 – film winding knob

4 – film transport lock button

5 – hotshoe

6 – hotshoe cover

7 – viewfinder (front lens)

8 – main lens

9 – focusing ring

10 – film sensitivity ring

11 – depth of field ring

12 – exposure setting ring

13 – removable cover

14 – removable cover lock slider

15 – shutter winder gear

16 – take-up spool

17 – film counter window

18 – viewfinder window

19 – folding film pressure plate

20 – tripod mount

21 – lens cover

General view

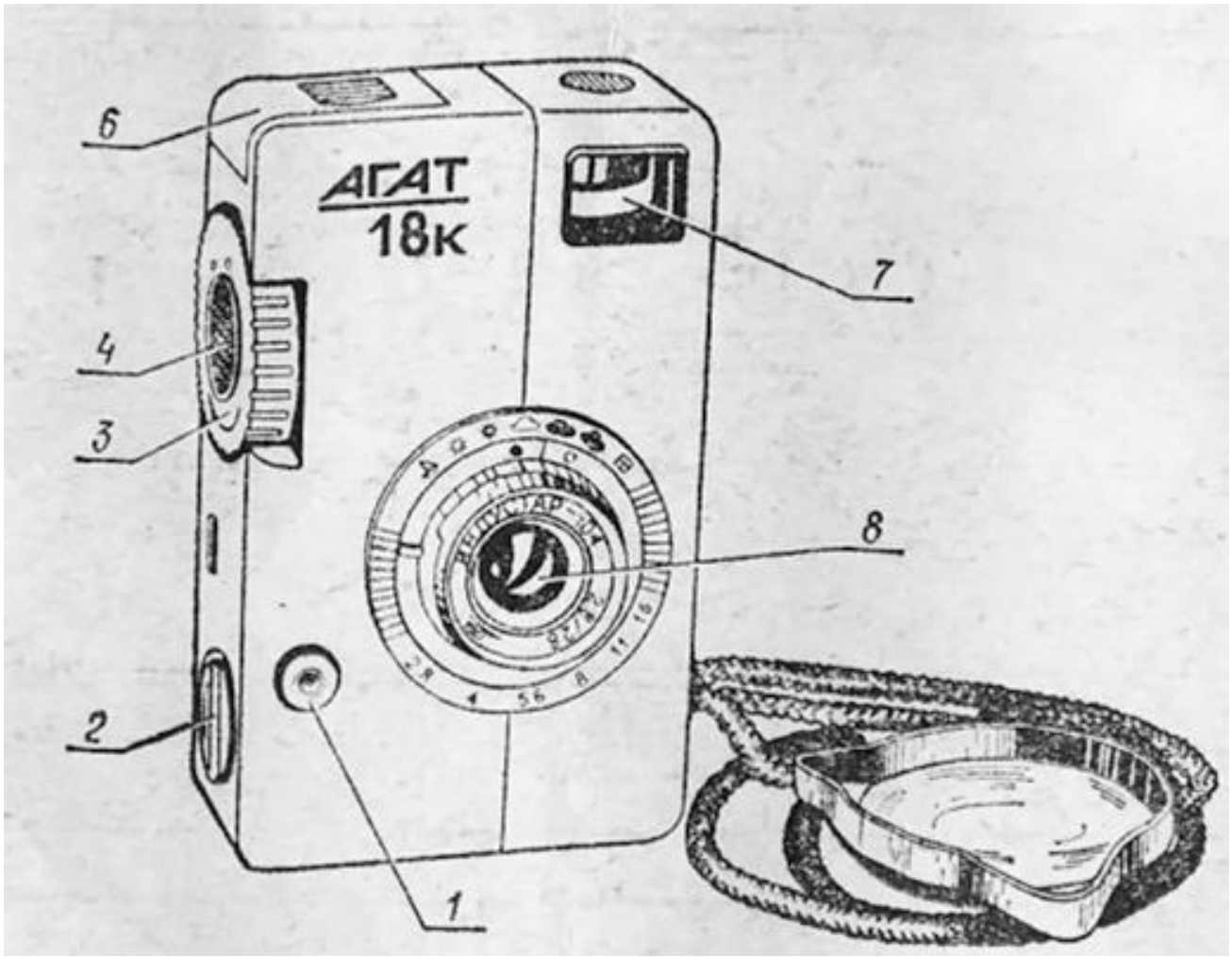


Figure 1

View from the lock slider

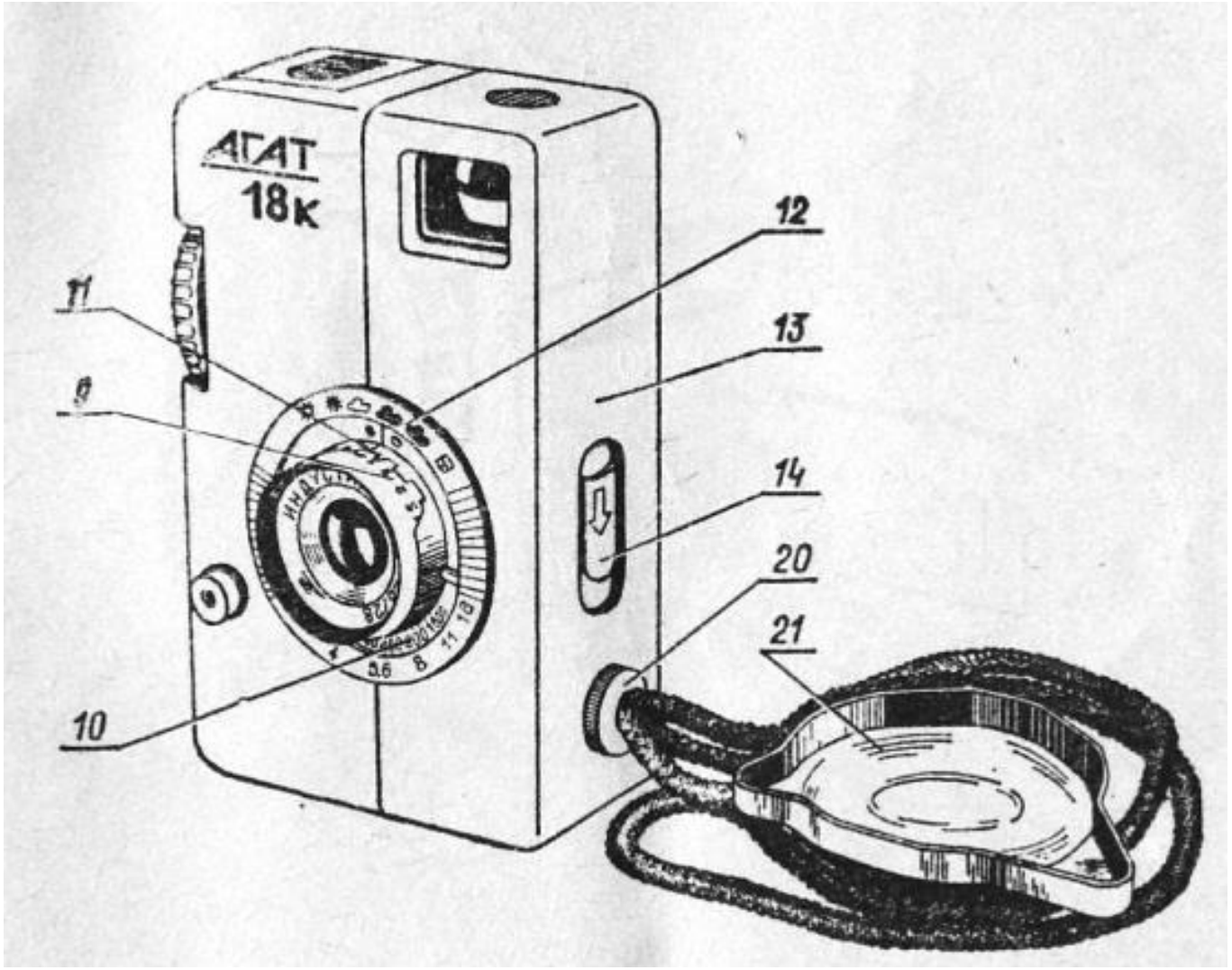


Figure 2

Camera with the cover removed

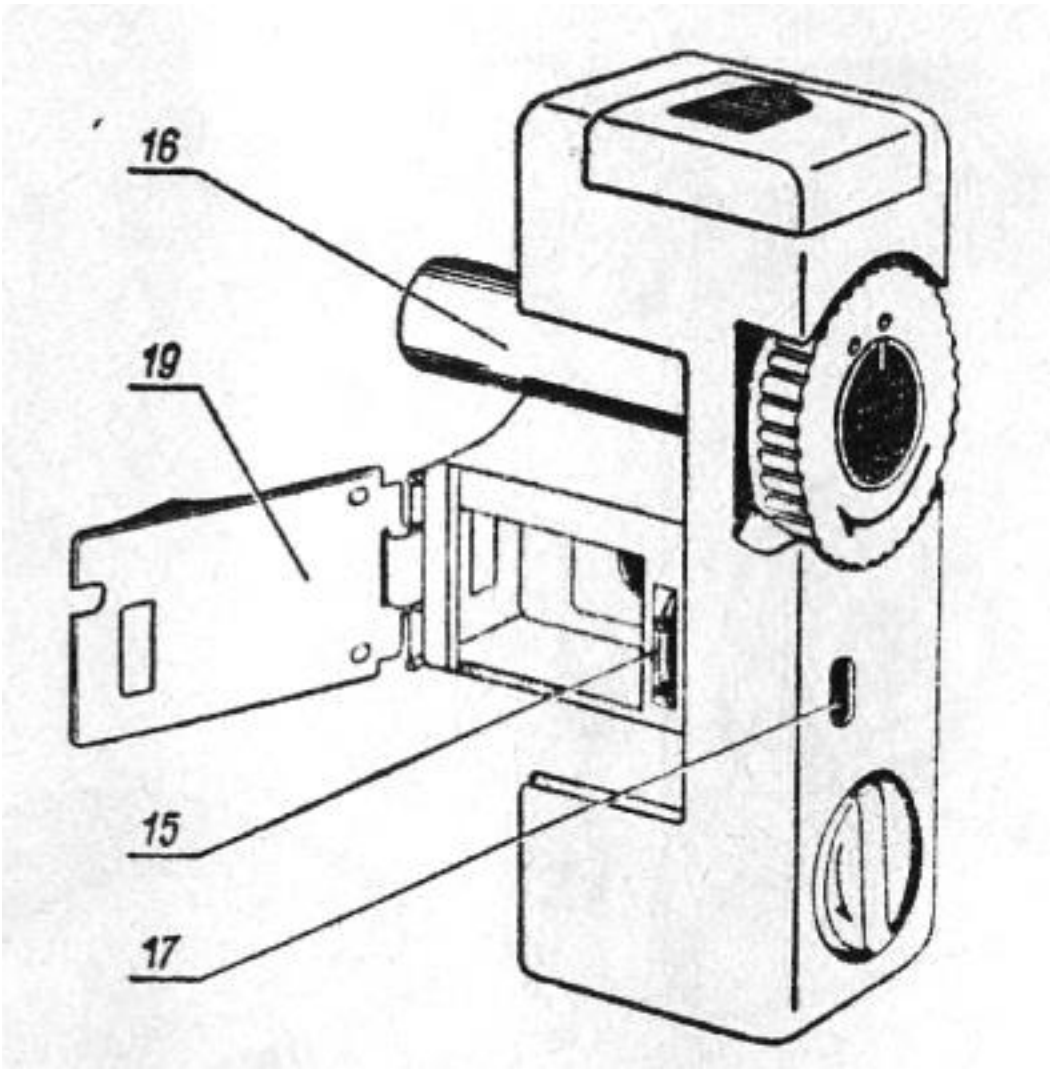


Figure 3

Rear view

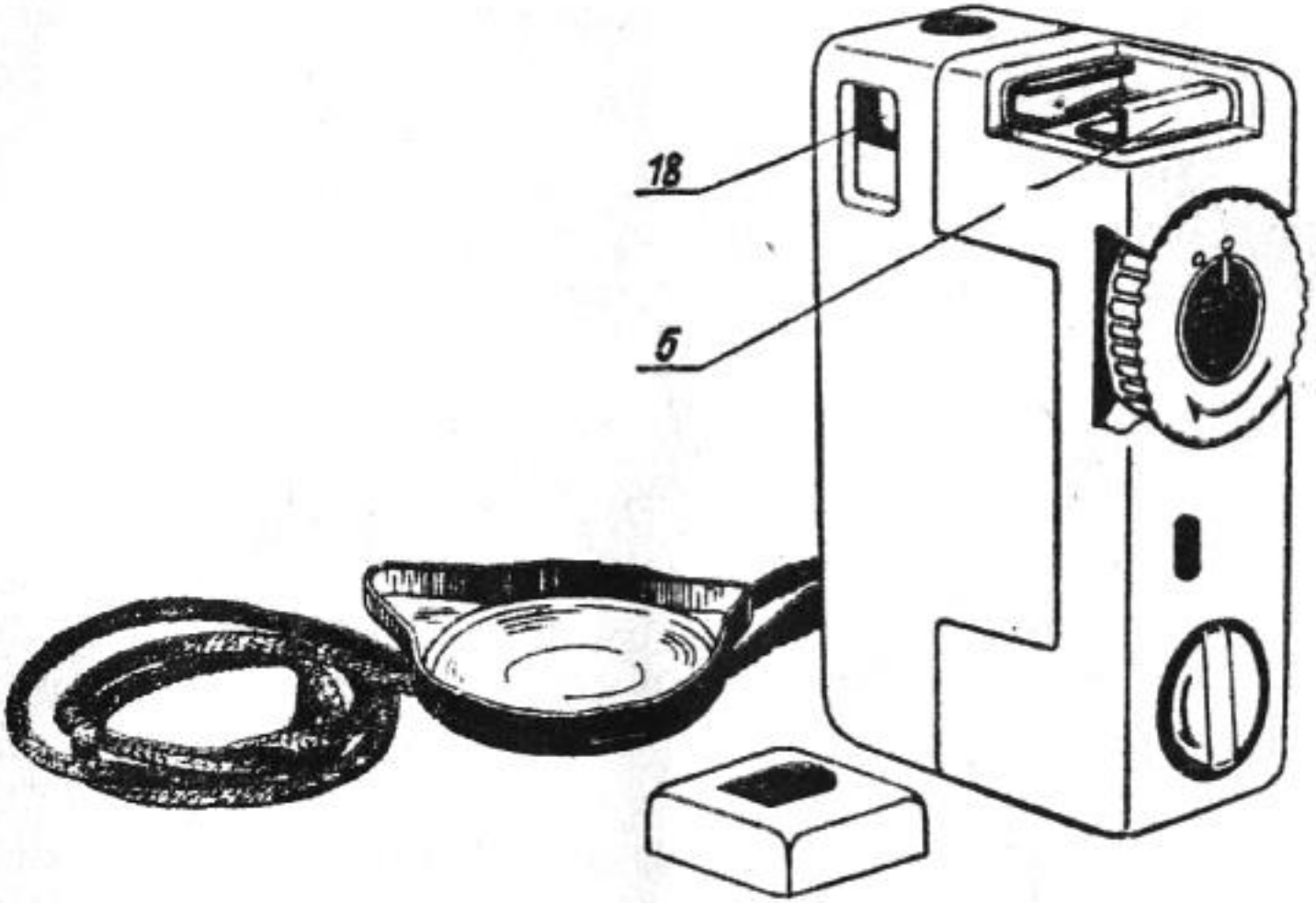


Figure 4

5. Setting up the camera

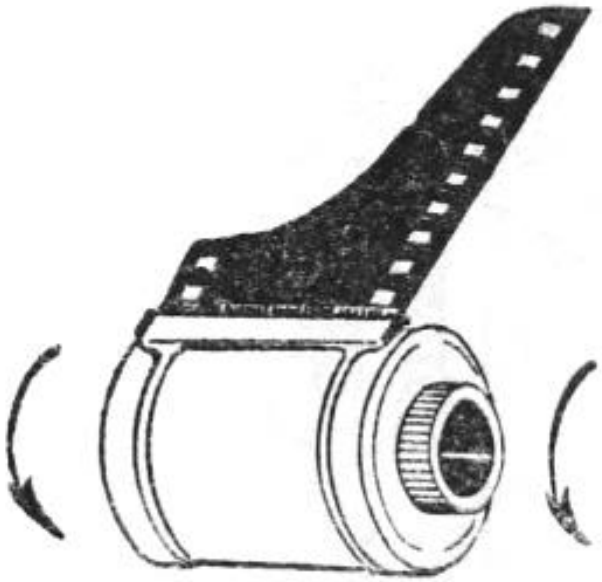


Figure 5

5.1. Loading the camera with film being transported on the take-up spool

Before proceeding to load the camera, make sure that the film is properly loaded in the cassette.

Loading and removing the film cassette should not be done in direct sunlight. If there are no any close shadowed area, you should turn your back towards the sun.

Before loading the camera, make sure that the cassette's caps are closed tightly. Caps on metal cassettes should be rotated counter-clockwise until resistance, assuming protruding part of the cassette being on the right (fig. 5).

5.1.1. Remove the lens cover. Take the camera in your hands, as shown on figure 6.

Slide the lock (14) in the direction shown on the arrow, and holding it in this position, remove the camera cover (13).

In an unloaded camera, you can still cock the shutter by turning the gear (15) in the direction of the take-up spool.

5.1.2. Set the film transport lock button (4) in the normal operating position. To do this, using your finger, press the button all the way in, and rotate it clockwise until you line up the line with the white dot.

If pressing the button proves to be difficult, rotate the take-up spool (16) slightly in any direction.

N o t e. For long storage intervals, when the camera is not used, it is preferred to set the transport lock button in rewind position (lined up with the red dot).

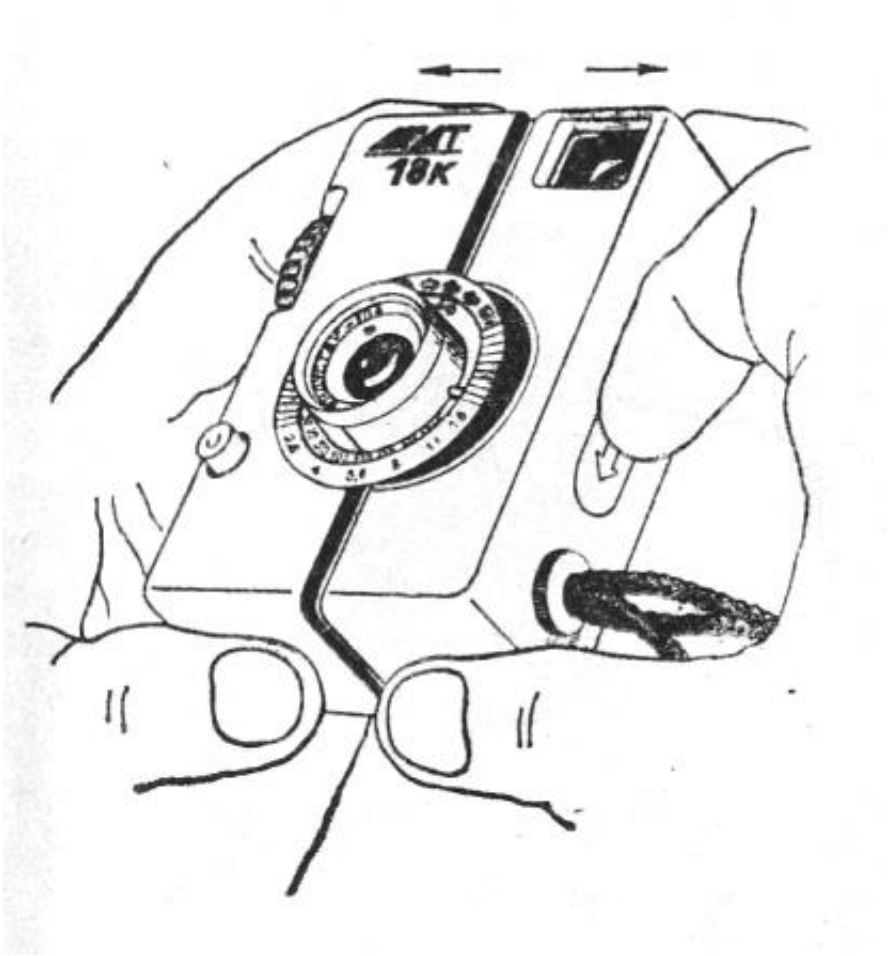


Figure 6

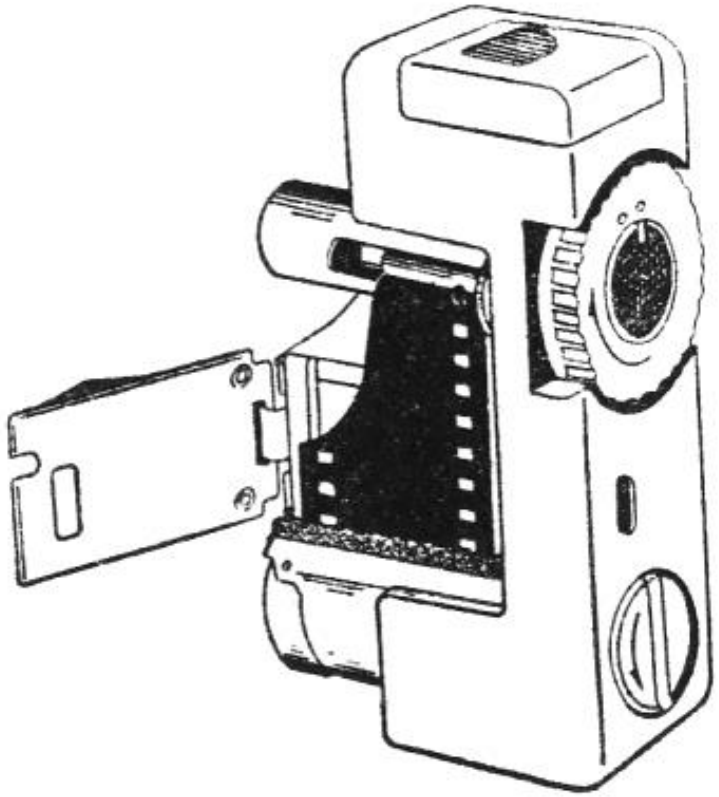


Figure 7

5.1.3. Open the foldable film pressure plate (19), put the film cassette in place. Then pull the film leader into the slot in the take-up spool (16) so that it protrudes from the other side of the spool. Make sure that the film is straight in its path, and the film perforations go over both the winding gear's (15), and the take-up spool teeth (fig. 7).

Close the foldable film pressure plate. The loaded film and film support protrusions should snugly fit in the pressure plate slot in corresponding grooves.

Release the shutter if it has been cocked, and while holding the pressure plate (19) with your finger, rotate the film winding knob (3) to make sure, that the film wraps around the take-up spool and the shutter winding gear (15) rotates freely.

Put back the removable cover (13) back. To do this, line up the internal edges of the cover with corresponding guiding grooves in the other half and push it in straight, avoiding any skews, until it's closed and you feel resistance. With that, the spring-loaded lock slider (14) slides back.

Then, wind the exposed part of the film all the way to the take-up spool. For this, rotate the winding knob (3) clockwise, until you feel resistance, and then press the shutter release button (1). Repeat this process 2-3 times.

If during that attempt the winding knob could not be rotated, it means the shutter is cocked – press the shutter release button. If the winding knob does not stop and can be rotated freely, check if the film transport lock button is in the operating position, or correct the film engagement in the take-up spool.

5.1.4. Loading the camera with film being transported "from cassette to cassette".

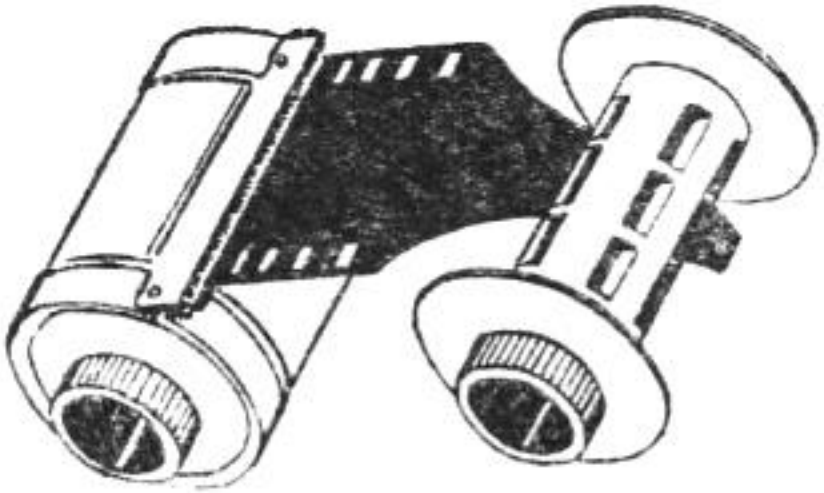


Figure 8

5.1.4.1. Preparing the camera.

Set the film transport lock button (4) in operating position (see point 5.1.2). Holding the film winding knob (3) with one hand, rotate the take-up spool counter-clockwise with the other, and remove the spool.

N o t e. Save the spool just in case that you do not have a free take-up cassette. While re-installing the take-up spool, the film transport lock button (4) should be in operating position. While

holding the film winding knob (3) with your right hand, insert the spool (16) in guiding holes, and rotate it clockwise until resistance.

5.1.4.2. Preparing the two cassettes.

Take the cassette with film loaded (see point 5.1) and cut the end of the film leader so it can fit in the receiving cassette's spool (fig. 8). Take out the spool of the receiving spool and rotate it with the hole towards the "giving" cassette. Put the film on the receiving spool and close the take-up cassette.

5.1.4.3. Inserting the double-cassette unit in the camera.

Open the foldable film pressure plate, push the cassettes apart to insert them in their corresponding places. Make sure that the film is straight in its path, and the film sprockets fit over the winding mechanism gear (fig. 9). For further instructions, see point 5.1.3.

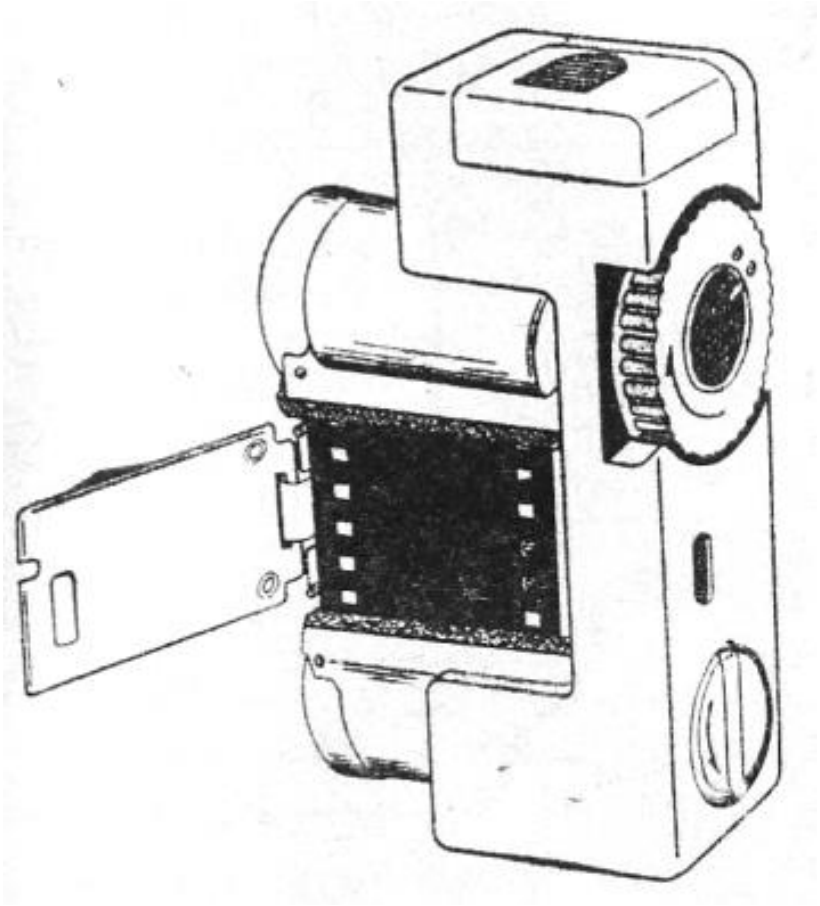


Figure 9

5.2. Setting up the film sensitivity.

Set the light sensitivity value of film by rotating the film sensitivity ring (10) until the chosen value is lined up with the line on the lower part of the depth of field ring (11). You can also set the ring to any intermediate light sensitivity values.

In the table 1 below you can find conversion between GOST/ISO and DIN values.

Table 1

GOST/ISO	25	32	40	50	64	80	100	125	160
DIN	15	16	17	18	19	20	21	22	23

Table 1 (continued)

200	250	320	400	500	640	800	1000	1250	1600
24	25	26	27	28	29	30	31	32	33

For set the film sensitivity ring (10), you will find two protrusions on it. Their small height makes sure that film sensitivity is not changed by accident. To rotate the ring you can help yourself with a matchstick or other similar item.

6. Instruction of operation

6.1. Setting the exposure using symbols. Remove the cover (21) from the lens. Estimate the weather (sky) conditions, and by rotating the exposure setting ring (12) set the chosen symbol, by lining it up with the black line on the film sensitivity ring (10).

When choosing the weather symbol, take note of the following:

- at film sensitivity of 25 ISO you cannot choose the symbols “Thunderstorm” and “Cloudy”;
- at film sensitivity of 50 ISO you cannot choose the symbol “Thunderstorm”.
- at film sensitivity of 1600 ISO you cannot choose the symbols “Object at sea” and “Bright sunlight”.
- at film sensitivity of 800 ISO you cannot choose the symbol “Object at sea”.

This means that photographing on film of aforementioned sensitivities, at corresponding weather conditions, is not recommended due to insufficient or excessive lighting conditions.

Exposure set in that way, i.e. aperture and shutter speed, will be automatically worked out by the camera’s diaphragm-shutter mechanism. The diaphragm value set for the condition can be read from the lower part of the exposure setting ring (12). The chosen value is lined up with the white line on the bottom half of the depth of field ring (11). The worked-out shutter speed can be estimated using the table 2 below.

Table 2

Set aperture	2,8*	2,8	3,4*	4	4,8*	5,6	6,8*	8	9,5*	11	13,5*	16
Corresponding shutter speed [s]	$\frac{1}{65}$	$\frac{1}{130}$	$\frac{1}{144}$	$\frac{1}{169}$	$\frac{1}{204}$	$\frac{1}{260}$	$\frac{1}{354}$	$\frac{1}{362}$	$\frac{1}{417}$	$\frac{1}{540}$	$\frac{1}{540}$	$\frac{1}{540}$

* Aperture values not marked on the camera.

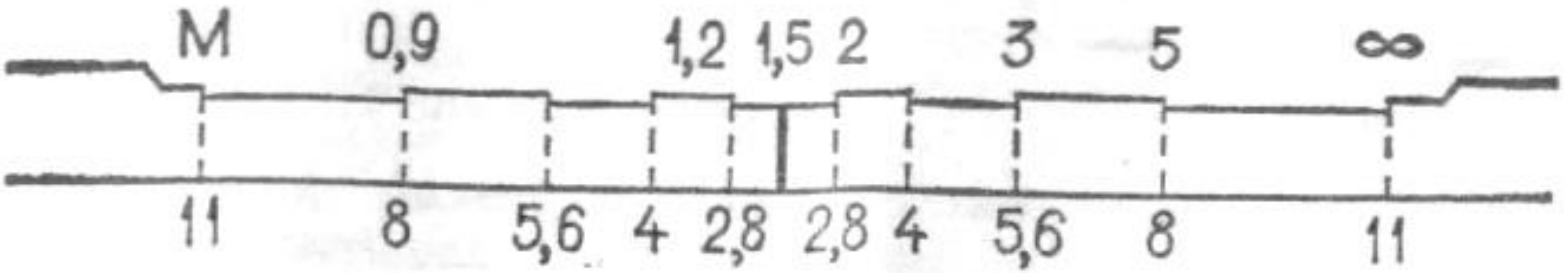
However, sometimes a need may arise to correct the exposure slightly, for example, when the object (subject) is very dark, or on the contrary, very bright. For those cases, on the film sensitivity ring (10), there are located two additional symbols near the exposure line, for “light” and “dark”. Shifting the chosen exposure symbol to the “light” symbol will reduce the exposure by the factor of 2*, and shifting it towards the “dark” symbol – will increase it by the factor of 2*.

When shooting in lighting conditions significantly different from those on the weather symbols, a light meter may be useful. While reading the values from the light meter, you should choose the aperture and shutter speed values closest to those on the table above, so you can set it with the aperture ring (12).

* essentially, by 1 stop under and over, respectively.

6.2. Setting the focusing distance. Setting the distance to the object (subject) of the photograph is done by lining up the appropriate distance on the focusing ring (9) with the line on the upper part of the depth of field ring (11). Small mistakes with setting up the focus don't matter much, because the lens produces large depth of field.

If it is necessary to known the exact depth of field, you may find the depth of field ring (11) helpful. The following drawing shows how to read the depth of field.



In this example, when focusing distance is set to 1.5 meters, at aperture of 2,8, objects between 1.2 and 2m will be in focus, and at aperture of 8, from 0.9 to 5m.

6.3. Cocking the shutter. Rotate the film winding knob (3) clockwise until you feel resistance. Shutter is cocked by the film moving inside.

. Viewfinder framing lines

Figure 10

6.4. Photographing. Looking through the viewfinder (18), move the camera on the subject you wish to capture in such a way, that it fits inside the glowing frame borders in the viewfinder. If the subject is closer than 3 meters from the camera, the borders of the frame are determined using parallax marks located inside the glowing borders (fig. 10).

Release the shutter, smoothly pressing the shutter button (1).

6.5. Photographing with a flash. The camera is equipped with a hot shoe for cordless (hot shoe compatible) electronic flashes.

To use one, remove the hot shoe cover (6) and insert the flash connector in the hot shoe (5). Flash can be installed or removed with the shutter either cocked or uncocked.

Detailed instructions on using the flash are included in the manual of your unit.

Setting the camera to work with flash is done using the exposure ring (12) only between apertures between 2,8 and 16. Using a flash at aperture of 2,8 is not recommended.

6.6. Unloading the camera. Once the frame counter window shows you have done 72 photos, you can finally unload the camera.

6.6.1. To do this when film is transported over to the take-up spool, press the film transport lock button (4) and rotate it counter-clockwise, until it lines up with the red dot. Unfold the film

rewind lever (2) and by rotating it in the direction of the arrow located on the lever, return the film to its original cassette. When the film is loaded back you will feel a small jerk and further rotations will be with much less resistance. Remove the camera cover (13) and retrieve the cassette.

The frame counter window will also automatically return to zero.

Close the cover (13). Fold the rewind lever back to its original position. Put back the lens cover (21).

6.6.2. If the film is transported “from cassette to cassette”, once 72nd frame was shot, shoot 2 more empty frames, remove the camera cover (13) and remove the set of cassettes.

Cut the film off the original cassette. Similarly, you may remove the exposed part of the film if it was not shot completely, and reload the camera with the remaining part.

7. Technical maintenance

The camera requires careful handling. It needs to be kept in a clean environment and protected from mechanical damage, moisture and sudden fluctuations of temperature.

Cleaning the surfaces of the lens and the viewfinder should be done by gently rubbing a flannel napkin or cotton wool, slightly damped with technical alcohol, or a soft brush.

Disassembling the camera by yourself is not allowed, as the process may permanently damage the camera or cause miscalibration of precise elements. Repair and adjustment must be done only by qualified specialists in repair shops.

Introducing any lubricant to the camera is strictly forbidden.

8. Possible malfunctions and methods of their repair

Malfunction	Root cause	Method of repair
When winding the shutter (camera is loaded with film), the winding knob cannot be turned.	1. Due to incorrect film loading, the film is not winding on the take-up spool.	Remove the cover and load the camera properly.
	2. The rewind button is in incorrect position.	Set the rewind button in the operating position (fig. 6)