

Camera SURPRISE-MT-1

PASSPORT

1. GENERAL INSTRUCTIONS

This passport contains brief characteristic and basic rules of using the camera "Surprise-MT-1". This is not a photography manual. Read carefully the operating procedure given in this passport below prior to using the camera. Construction of your camera may differ a bit from stated below due to modernization.

1.1. Handling the camera

The camera "Surprise-MT-1" is precise optical-mechanical device. Its right operation depends on the correct manipulation and good care of it.

Keep the camera clean; preserve it against impacts, a dust, and dampness. Use a soft brush to clean dust from a cartridge slot, take-up spool, film channel, and back cover with clamping table periodically. Do not touch optical parts of the camera. But if it has happen, remove traces immediately with soft cotton napkin or cotton wool moistened with spirit slightly.

Clean mirror and lens with bisector in the most necessary cases only very soft dry brush. Keep the camera in the closed case. Close the lens with a cover. Cover the camera body with body cap. Keep shutter released. Do not remove lens or cap from the camera without need to prevent pollution and dust deposition on the optical surfaces.

As the camera is complex device, highly skilled experts only may make any repair and appropriate adjustments.

Having brought the camera from a cold into a warm room, unpack it not earlier than after 5-6 hours (to allow the camera to be heated up to room temperature).

1.2. Transportation Instructions

Transportation of cameras "Surprise-MT-1" is permitted in transport packing by the following vehicles:

- Railway, air and water transport with protection from moisture, without restriction of distance (transportation by air transport should be made in the hermetically sealed heated compartments);
- Automobile transport in covered cars on the roads with firm and smooth covering on distance of more than 2000 kms.

Permitted range of temperatures during transportation is from -50 up to +50 degrees centigrade.

1.3. Instructions on Preservation and Demothballing

To prepare the camera for long storage or transportation, the sealed box with the camera and accessories should be placed into a polyethylene bag and stored along with silica gel dehumidifier in accordance with GOST 9.014-78 for conditions of storage: ZH: VZ-10, VU-7. Deadline of protection without re-preserving is 3 years.

For transportation, sealed bag with the camera is wrapped up by a packing paper and stacked into a packing-case. Damping material should be placed between the walls of the box and packages.

If the boxes with cameras are brought from colder place into a warm room, unpack them not earlier than after 5-6 hours (to allow the cameras to be heated up to room temperature).

1.4. Instructions on Sanitary Processing

It is necessary to carry out sanitary processing of the external surfaces of the camera in the process of operation. Sanitary processing should be carried out by fivefold wiping of external surfaces of the device (except for optical parts) with a tampon moistened with a disinfectant solution (3% solution of hydrogen peroxide with addition of 0,5% of a washing-up liquid like "Lotos", "Astra", "Progress"). The tampon should be wringed.

2. SAFETY REQUIREMENTS COMPLIANCE

Electrical safety of the camera meets to requirements of GOST 12.2.025-76 for products with the internal power supply of type B.

Resistance of isolation of an electric circuit of synchronization concerning the case in normal conditions has not less than 20 megohm.

Isolation between contacts of a connector, and also between contacts and the case, maintains within 1 minute without breakdown a voltage of not less than 500V DC at power of not less than 0,5 kV·A.

3. SPECIFICATIONS

3.1. Purpose and advantages

The camera "Surprise-MT-1" is intended for special medical shootings through endoscopes. It is applied without lenses and with lenses.

The camera has:

- Self-returning mirror (after shutter release), allowing to observe an object of shooting before and after exposure continuously;
- Vertical movement of the shutter curtains, guaranteeing uniform exposure of the whole frame field;
- System of simplified film loading, the handle of return rewind, and self-resetting picture counter, reducing preparation time;
- Special collecting lens in the viewfinder, in which centre on the focal plane the grid is placed in form of two concentric circles with diameters of 3 and 3,07 mm (round bisector) to provide high accuracy of focusing;
- Imprinter, allowing to enter a picture number or other information into the frame field.

3.2. Characteristics

Frame size, mm	18x24
Width of the perforated film, mm	35
Number of the pictures on one film	70
Shutter speeds, sec	From 1 to 1/1000, 'B' (manual), and long
Lenses: "Industar-50MT" Focal length, mm Relative aperture The lens is focused on infinity.	50 1:7
"Mir-25MT" Focal length, mm Relative aperture The lens is focused on infinity.	30 1:3.5
Lens mount The lens has a special device to mount an eyepiece of an endoscope	Bayonet
Tripod thread	1/4"
Average resource of the device, cycles, not less	10000
Time between failures, cycles, not less	3000
Linear field of the image of the viewfinder, mm	16,5x16,5
Overall dimensions of the camera, mm, no more:	
- With the lens "Mir- 25MT" - With an objective "Industar-50MT" - Without lens	140x103x128 140x103x100 140x103x70
Weight of the camera without accessories and without a case, kg, no more:	
- With the lens "Mir-25MT" - With the lens "Industar-50MT" - Without lens	0,85 0,80 0,70
Weight of the complete set in a case, kg, no more:	
- With the lenses - Without lenses	3,0 2,8

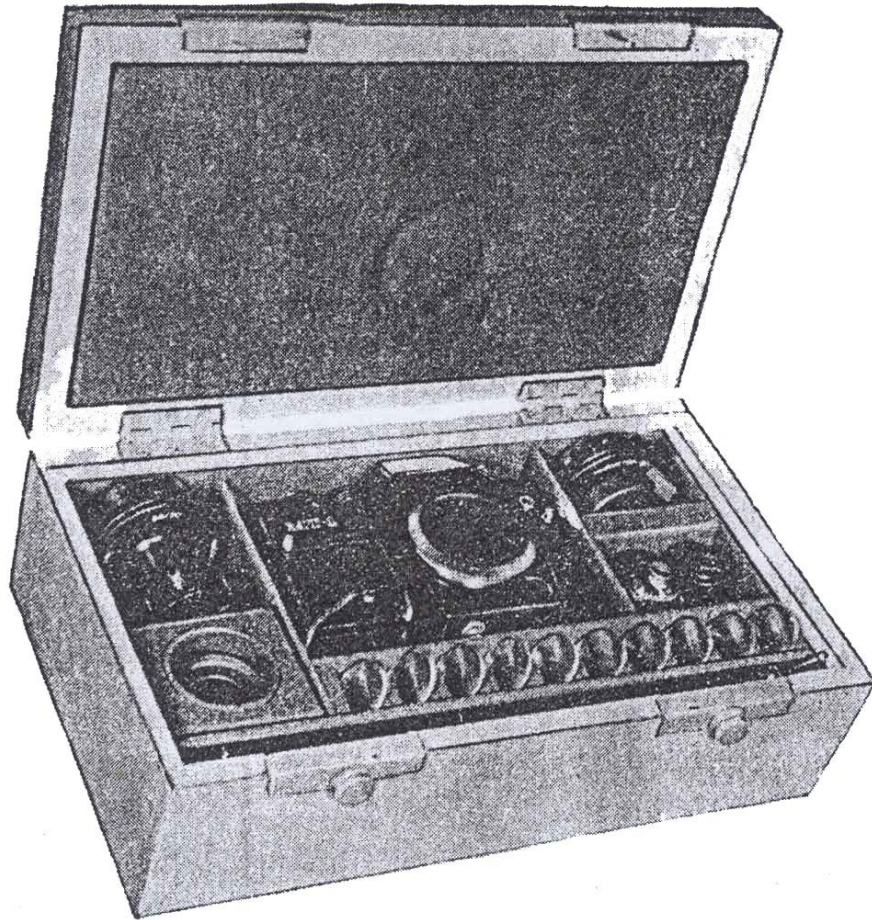
3.3. Information on the contents of precious materials in details and assembly units of the camera is given in the appendix.

4. DELIVERY SET

The name of components	Quantity in the version, pieces.	
	variant I	variant II
1. The camera "Surprise-MT-1" with a body cap	1	1
2. Lens "Mir-25MT"	1	-
3. Lens "Industar-50MT"	1	-
<u>Spare parts</u>		
4. Lamp SMN6.3-20-2 on OST 16.0.535.014-80	1	1
<u>Accessories</u>		
5. Battery RC-53 in accordance with GOST 12537-76	5	5
6. Cartridge in accordance with GOST 3543-80	1	1
7. Eye shade	1	1
8. Cable release	1	1
9. Diopter lenses (positive)	5	5
10. Diopter lenses (negative)	5	5
<u>Stacking</u>		
11. A case (wooden)	1	1
12. A box	1	1
<u>The operational documentation</u>		
13. The passport	1	1

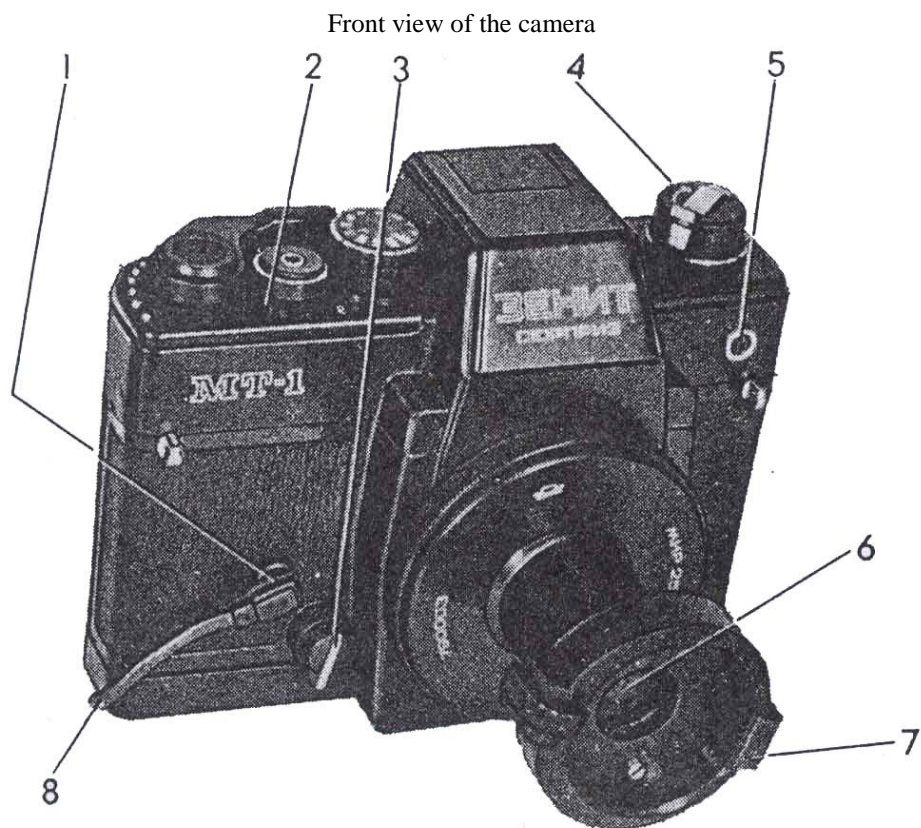
5. CAMERA CONSTRUCTION

General view of stacking of the camera



Picture 1

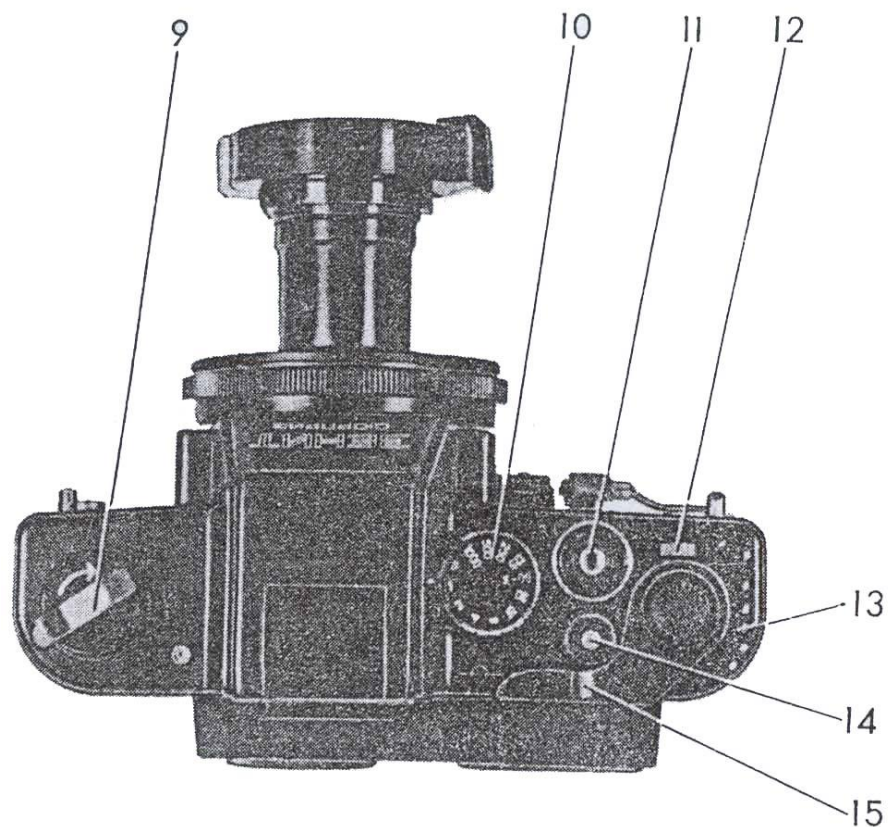
5.1. THE BASIC UNITS AND PARTS



Picture 2

- 1 - a plug socket for an imprinter connection;
- 2 - the bushing of long exposure "D";
- 3 - the button of manual imprinting of the information into the frame;
- 4 - the head of return rewind of a film;
- 5 - a plug socket for connection of pulse light sources;
- 6 - lens "Mir-25MT";
- 7 - the device for mounting of an endoscope;
- 8 - sync wire for connection of the imprinter

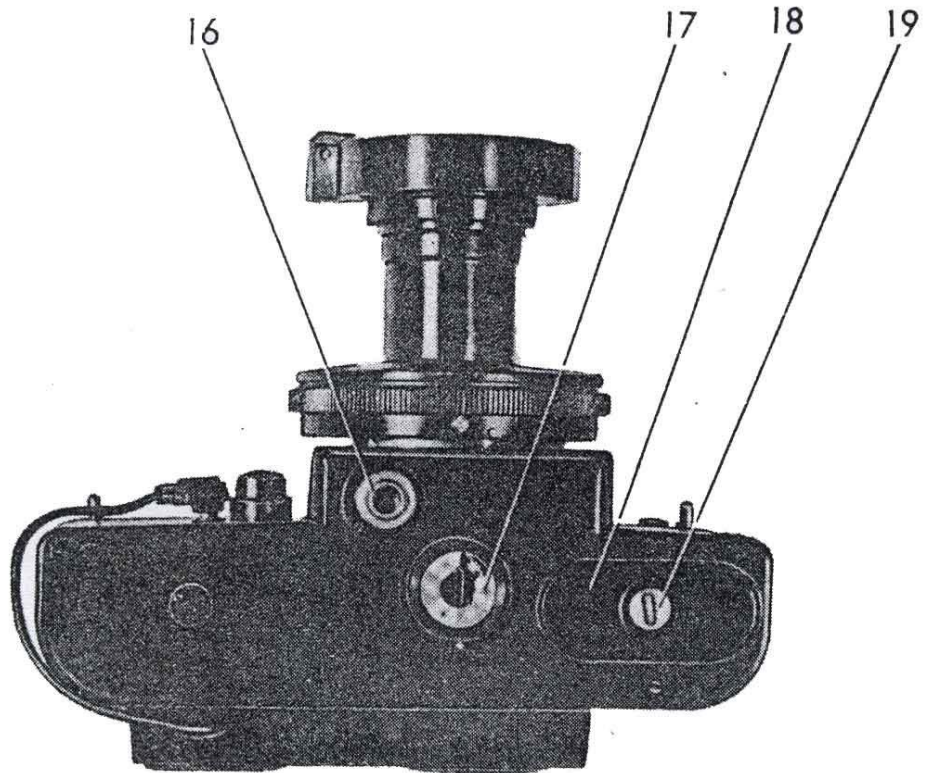
Top view of the camera



Picture 3

- 9 - the handle of return rewind of a film;
- 10 - the disk of shutter speed selection;
- 11 - shutter release button threaded for a cable release;
- 12 - the window of the picture counter;
- 13 - the marks of turn of the lever for manual imprinting;
- 14 - the button of return rewind of a film;
- 15 - the lever of the shutter cock and film advance

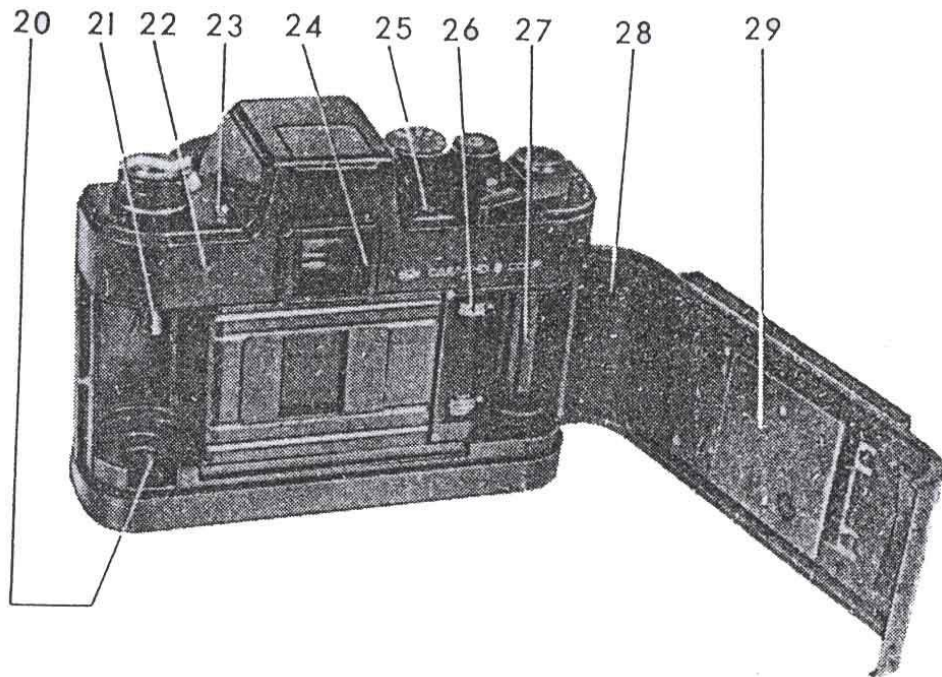
Bottom view of the camera



Picture 4

- 16 - tripod nut;
- 17 - the film type reminder;
- 18 - shutter batteries cover;
- 19 - the screw of the battery cover

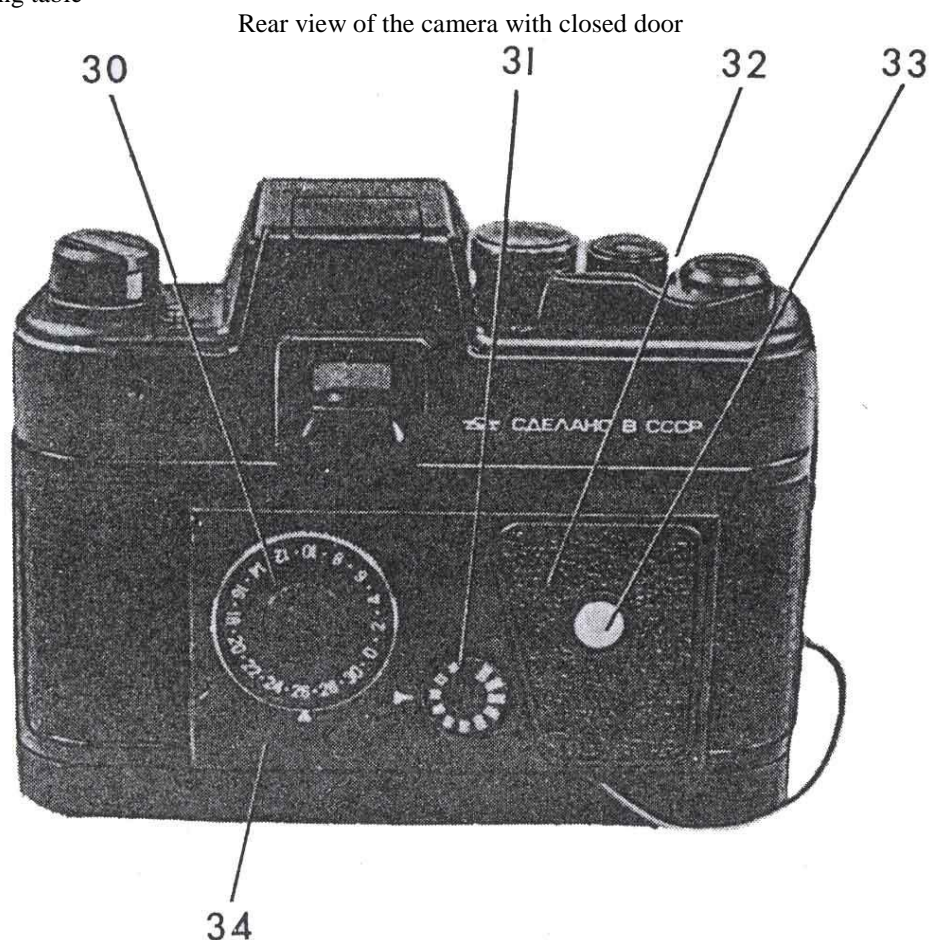
Rear view of the camera with an open door



Picture 5

- 20 - cartridge slot;
- 21 - lead of the cartridge spool;
- 22 - the window of light indication of the shutter batteries validity;
- 23 - the button of the control of the shutter batteries validity;

- 24 - the eyepiece of the viewfinder with an accessories holder;
- 25 - the index of the film plane position;
- 26 - the measuring roller;
- 27 - the take-up spool;
- 28 - the rear door;
- 29 - the clamping table



Picture 6

- 30 - the disk with a scale of number for imprinting;
- 31 - the disk of film sensitivity selection;
- 32 - the cover of the imprinter batteries compartment;
- 33 - the screw of the battery compartment cover;
- 34 - the imprinter

6. PREPARATION FOR WORK

Install the lens in the following way: turn the lens tightening ring counterclockwise until stop (looking from the front), insert the lens into the bayonet so that the head of the screw at the end face of the lens comes into a groove of the camera bayonet ring, and, holding the lens in such position, fix it by turning the tightening ring clockwise. Clean five elements RC-53 and put them into compartments as described in "Battery Replacement" section.

Load the camera as follows:

- Pull the head of return rewind 4 upwards. Thus the back door 28 should open;
- Put the cartridge with a film into the slot 20;
- Lower the head of return rewind 4 all the way down;
- Extend the loading end of the film from the cartridge approximately up to edge of the camera, insert it into a groove of the take-up spool 27. Turn the shutter cock lever 15 until stop and make sure that the film is reliably captured by the teeth of the measuring roller 26;
- Close the back door 28;
- Release shutter having pressed the shutter release button 11.

During each shutter cock, the film being advanced one frame. To reach the unexposed part of the film, it is necessary to cock and release the shutter four times. In the window of the picture counter 12 should be number "0".

If the film in the cartridge is reeled-up densely, head of return rewind will rotate during shutter cocking. With leaky winded film, the head will not rotate on the first frames;

- Set value of the film photosensitivity turning the disk 31 located on the imprinter 34.

7. THE OPERATING PROCEDURE

7.1. The procedure of installation of the imprinter numbers

The design of the camera "Surprise-MT-1" provides the opportunity of imprinting of information in manual and automatic modes.

In the automatic imprinting mode, it is possible to imprint a single number from the scale 30 (see Picture 7) into each frame. This number will correspond to the picture number, and to set it, it is necessary to turn the disk with the scale 30. Thus fixing of the disk will be felt. Imprinting occurs automatically at the moment of shooting by pressing the shutter release button 11.

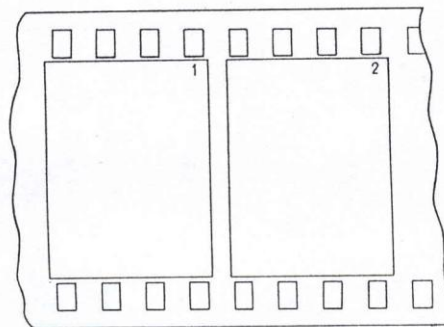
The manual imprinting mode is recommended to apply if you need to enter more full introductions into the frame field (film number; day, month and year of shooting, etc.). To do this, turn the shutter cock lever 15 partially, establishing a forward edge of the lever on the marks available on top cover of the camera (see Picture 3). Each incomplete angle of turn corresponds to the moving of the film for imprinting of the one number set on the scale 30. After each turn of the lever 15 and setting of necessary number, press the manual imprinting button 3. Manually you can imprint not more than five additional numbers by this way (see Picture 8).

After manual imprinting, it is necessary to turn the shutter cock lever 15 until stop and set the picture number. By pressing the shutter release button 11, the picture will be taken and set picture number will be imprinted simultaneously. The picture evidently illustrates information entered into the field of the frame.

ATTENTION! Keep in mind that picture number imprints in an automatic mode only. The scale 30 of the imprinter devices has 32 positions only. The length of the film allows to take 70 pictures. Therefore you should combine manual and automatic imprinting for numbering of the second half of the film.

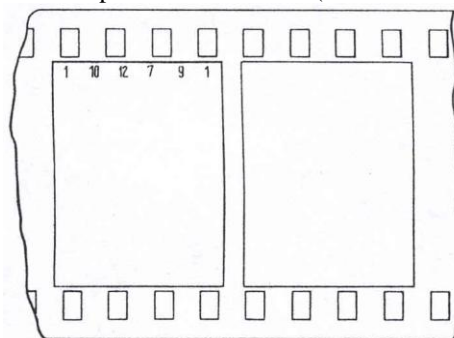
Upon imprinting of the numbers, circular light aura may appear around the numbers. If you don't want to imprint any information neither in manual mode, nor in automatic modes, it is necessary to disconnect a sync wire 8 from the plug socket 1.

The example of the numbers imprinted in the automatic mode.



Picture 7

The example of the full imprinted information (manual and automatic modes).



Picture 8

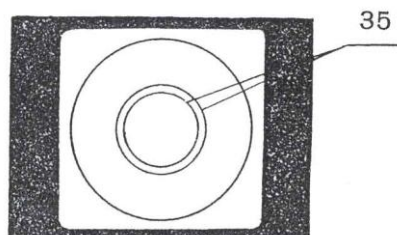
7.2. Setting Shutter Speeds

Turn the disk of shutter speeds 10 so that the chosen value of exposure is set against an index. Thus you feel fixing the disk. Numbers on the shutter speeds scale designate exposures in the appropriate shares of second. "B" is manual exposure. In this mode, shutter will remain opened while you hold the shutter release button 11 pressed.

"D" is long exposure. It is carried out by fixing the pressed trigger button 11 by turn of the bushing 2 counterclockwise. After the expiration of necessary time, return the bushing 2 into original position turning it clockwise until stop. It is recommended to use a cable release which is screwed into the shutter release button for manual and long exposures.

7.3. Focusing

Field of view of the viewfinder



Picture 9

The viewfinder of the camera has two concentric circles 35 (round bisector) in the centre of the field of view. You can install a diopter lens (see paragraph 7.6) if necessary to see the bisector circles separately. To focus the camera, it is necessary to accommodate your eye on the round bisector first, and then to achieve the sharp image of the object by means of the endoscope eyepiece.

7.4. Photographing

Cock the shutter. Press the shutter release button 11 smoothly, without jerks. Do not keep the shutter cocked too long, as it may worsen the quality of its work. There is a sync jack on the camera for connection to the lighting block providing operation of the endoscopes.

7.5. Unloading the camera

When the picture counter will reach number 70, rewind the film back into the cartridge. For this purpose:

- Disconnect the shutter mechanism, having pressed the button 14;
- Unfold the handle 9 and rotate the head of return rewind 4 in the arrow direction until the film will be release from the take-up spool;
- Pull up the head of return rewind 4 until stop, open the back door and take out the cartridge.

7.6. Using the eye shade with replaceable lenses

With the aid of the eye shade, you may set necessary diopter lens and make photographing without glasses.

To install a diopter lens, unscrew a ring inside of the rubber cup, insert a diopter lens and fix it by the ring. Install the lens so that its concave surface was inverted to an eye. Mount the eye shade with the lens onto the camera eyepiece.

Eye shade



Picture 10

7.7. Batteries Replacement

A feed of the electric circuit consists of five dry elements RC-53 which are replaced as follows:

- Open covers of the compartments, unscrewing screws 19 and 33 rotating them counterclockwise by means of a coin;
- Take out the used batteries and replace them with new ones, having them cleaned from oxidation first. Put the batteries into the compartments so that their marks (+) and (-) were matched to the appropriate marks in the compartments;
- Secure the covers.

8. MAINTENANCE SERVICE

Maintenance service is made without disassembly of the camera. You may need to do following operations:

- Cleaning external surfaces of the optical elements. Cleaning should be made with observance of the rules specified in the "General Instructions" section of this passport, without disassembly of the camera;
- Cleaning the film channel, rubbing of the clamping table etc. This operation is made by means of a cotton wool tampon moistened with spirit. Before cleaning, it is necessary to wring the tampon so that the liquid has not got in mechanisms of the camera and especially onto the optical surfaces;
- cleaning of the contact surfaces of the batteries RC-53 and their compartments. The cleaning is made during batteries replacement or upon their oxidation;
- If some parts of film or other small objects fall into mechanisms of the camera, it is necessary to take them by tweezers without disassembly of the camera.

9. OPERATING REPAIR

If a failure occurred which elimination requires disassembling of the camera, it is necessary to send the camera to the repair shop "Medtehnika". The repair is made under the repair documentation on the camera.

10. STORAGE RULES

The cameras "Surprise-MT-1" should be stored in dry heated room at temperature from +1 up to +40 degrees centigrade and relative humidity of air of 80% at temperature +25 degrees centigrade. Air in the room should be free from vapors of acids, alkalis and other substances, harmful for cameras. Storage of cameras is closer than 1 meter from heating systems, and also under direct solar light is forbidden.

The comparative film sensitivity chart

GOST	DIN	ASA
16	13	16
22	14	20
	15	25
	16	32
32		
45	17	40
	18	50
	19	64
65		
90	20	80
	21	100
	22	125
130		
180	23	160
	24	200
	25	250
250		
350	26	320
	27	400
	28	500
500	29	640

11. ACCEPTANCE CERTIFICATE

The camera "Surprise-MT-1" # _____

With lenses:

"Industar-50MT" # _____

"Mir-25MT" # _____

The camera "Surprise-MT-1" # _____

Without lenses

Meets TU 3-334-84 and it is recognized suitable for operation.

Date of manufacture _____

The price with lenses _____ roubles.

The price without lenses _____ roubles.

The address for submitting claims on quality:

143400, Krasnogorks-7, Moscovskaya obl., Krasnogorskiy mechanicheskiy zavod

The representative of Quality Department of the enterprise-manufacturer

12. GUARANTEE CERTIFICATE

The enterprise-manufacturer guarantees non-failure operation of the camera "Surprise-MT-1" at observance by the consumer of the conditions of operation, transportation and storage according to this passport.

The warranty period of operation is 18 months since date of putting the camera in operation, but no more than 24 months since the date of shipment from the enterprise-manufacturer. The warranty period of storage is 2 years.

Appendix

The contents of precious materials in the "Surprise-MT-1"

Name	Designation	Assembly units, complexes, sets			Weight in 1 piece, gr	Weight in the product, gr	Act number	Note
		Designation	Quantity, pieces.	Quantity in the product, pieces.				
1	2	3	4	5	6	7	8	9
Gold								
LED	AL307B							
	A0.336.076TU	BL3.822.166EZ	1	1	0,0018	0,0018		
	PAP074							
Microassembly	BL5.139.049	BL3.822.166EZ	1	1	0,0017	0,0017		
						0,0035		
Silver								
Plate	BL7.725.616	BL5.283.896	1	1	0,0135	0,0135		
Plate	BL7.725.617	BL6.622.414	1	1	0,0185	0,0185		
Plate	BL7.725.627	BL6.822.364	1	1	0,0142	0,0142		
Plate	BL7.725.628	BL6.120.662	1	1	0,0150	0,0150		
Plate	BL7.725.629	BL6.120.662	1	1	0,0135	0,0135		
Plate	BL7.725.634	BL6.120.597	1	1	0,0067	0,0067		
Plate	BL7.725.635	BL5.822.043	1	1	0,0318	0,0318		
Plate	BL7.725.722	BL6.120.622	1	1	0,0063	0,0063		
Plate	BL7.725.723	BL5.822.043	1	1	0,0220	0,0220		
Plate	BL7.725.757	BL6.120.662	1	1	0,0078	0,0078		
Board	BL7.102.884	BL5.283.896	1	1	0,4944:	0,4944		
Board	BL7.102.885	BL6.672.540	1	1	0,3468	0,3468		
Board	BL7.103.849	BL5.283.891	1	1	0,0103	0,0103		
Spring	BL7.730.313	BL6.682.025	1	1	0,0027	0,0027		
Contact	BL7.732.304	BL6.622.364	2	2	0,0008	0,0017		
Contact	BL7.732.472	BL6.604.244-02	1	1	0,0672	0,0672		
Contact	BL7.732.537	BL6.33 7.113	1	1	0,0210	0,0210		

1	2	3	4	5	6	7	8	9
Contact 7	BL7.732.538	BL5.822.043	1	1	0,0216	0,0216		
Contact	BL7.732.539	BL5.822.043	1	1	0,0130	0,0130		
Contact	BL7.732.540	BL6.120.622	1	1	0,0084	0,0084		
Contact	BL7.732.541	BL6.622.376	1	1	0,0149	0,0149		
Contact	BL7.732.542	BL6.337.113	1	1	0,0145	0,0145		
Contact 1	BL7.732.547	BL6.337.113	1	1	0,0126	0,0126		
Contact	BL7.732.548	BL6.607.019	6	6	0,0141	0,0844		
Contact	BL7.732.559	BL6.120.597	2	2	0,0037	0,0074		
Contact	Sr.999.SGI512	BL6.622.378	5	5	0,0172	0,0862		
	GOST 21932-76							
Contact	BL7.732.541	BL6.624.037	1	1	0,0149	0,0149		
Contact	BL7.732.542	BL6.622.366	1	1	0,0145	0,0145		
Contact	BL7.732.304	BL6.622.453	1	1	0,0008	0,0008		
Contact	BL7.732.304	BL6.622.453	1	1	0,0004	0,0004		
Contact	BL7.732.664	BL6.622.453	1	1	0,0005	0,0005		
Tab	BL7.750.254	BL5.822.044	1	1	0,0018	0,0018		
Tab	BL7.750.254	BL6.675.104	1	1	0,0018	0,0018		
Rivet	BL8.955.543	BL6.120.597	2	2	0,0019	0,0038		
Rivet	BL8.955.543-01	BL6.680.132	2	2	0,00199	0,0039		
Rivet	BL8.955.543	BL5.283.891	2	2	0,0019	0,0038		
Rivet	BL8.955.543-01	BL5.283.896	2	2	0,00199	0,0039		
						1,40713		
<u>Palladium</u>								
Board	BL7.102.884	BL5.283.896	1	1	0,0023	0,0023		
Board	BL7.102.885	BL6.672.540	1	1	0,0016	0,0016		
Board	BL7.102.898	BL6.120.597	1	1	0,00026	0,00026		
Board	BL7.103.849	BL5.283.891	1	1	0,0021	0,0021		
LED						0,0063		

Stub of the coupon on guarantee repair
 The camera "Surprise-MT-1"
 It is withdrawn _____
 The head of repair shop _____
 The signature, surname

Line of the cut

Krasnogorskiy mechanicheskiy zavod;
 143400, Krasnogorks-7, Moscovskaya obl.

COUPON ON GUARANTEE REPAIR

The camera "Surprise-MT-1"
 Model..... TU 3-334-84 x)
 Date of manufacturing..... #..... x)
 It is acquired on
 (it is filled by the establishment-owner)

 It is accepted on guarantee repair
 The enterprise
 (it is filled by repair shop)

City.....
 S.P. The head
 of the repair shop _____
 (Signature)

S.P. The head
 of the establishment-owner _____
 (Signature)

It is sent by repair shop "Medtehnika" to address of the factory-manufacturer and forms the basis for presentation of the account on payment for the repair made during a warranty period.

x) It is filled by the enterprise-manufacturer

Guarantee repair of the medical devices is carried out by repair shops of "Medtehnika" system, serving establishments of public health services in the given area, territory, republic (including medical establishments of other departments) due to factories-manufacturers. If the product has broken down as a result of misuse during a warranty period, cost of repair is paid by the establishment-owner of the product.

The controller..... The packer
 Date..... Date.....



<http://RafCamera.com>