Lomo 166 Universal general instructions

Fig. 1

Lubitel 166-Universal [Fig.1] is an up-to-date and simple in operation camera intended for the widest range of photo amateurs. The camera incorporates a coated lens, two viewfinders, diaphragm shutter with wide range of speeds, self timer and flash synchronizer. It assures precise focusing, operation with two picture sizes - 6 * 6 and 4.5 * 6cm, daylight reloading and exterior shooting on tripod and hand-held shooting.

It is enough to raise a little the reflex viewfinder cover to see deep between the light protective hoods a large and for any illumination distinct clear image according to which it is easy to fit frame limits when the object is already found or to find a new scene.

Image focusing is performed by slight rotation of a lens knurled mount.

Scales of distances, diaphragms and exposures and all the control units are located to assure speed and convenient operation.

Frame counting is performed through the window according to values on light protective paper of the film.

Due to reflex viewfinder it is possible to take pictures at high level holding

the camera over the head as well as turning it horizontally at the right angle.

Viewfinder lens has f/2.8, i.e. considerably higher than the photographic lens and thus the higher sensitivity to focusing.

For taking pictures at eye level the frame viewfinder is used that is more convenient when there is experience in estimating distances by eye and in correct focusing according to distance scale.

It is daylight loaded camera. For convenience the back is hinged.

The camera is rated for work in the temperature range from minus 15 to +45° C without direct effect of solar radiation and atmospheric precipitation.

CAMERA DESIGN & OPERATION

The reflex viewfinder consists of the viewfinder itself and a ground glass representing a small circle in the centre of field lens, with a folding focusing magnifier mounted above.

The field lens bears marks which limit the field of picture to 4.5 * 6cm.

The viewfinder is provided with metal light protective hoods that open simultaneously with raising the cover.

The viewfinder should be closed by the following procedures: first close the magnifier, then the side hoods, the rear hood with a square window and at last the cover until its front frame lug catches with the viewfinder case lock catch.

Focusing the images on the ground glass circle and in film plane is performed simultaneously as both lenses are coupled with each other with knurled mounts. The nearest focusing distance is 1.3 m.

The focusing magnifier is attached to the panel from inside. The magnifier is set to operation by pulling it up from the cover.

The frame viewfinder is formed by the front frame and rear light protective hood with a square window. To open the viewfinder it is necessary to tilt the panel inside so that it catches the rear hood lug. Slightly pulling out the rear hood is enough to close the viewfinder.

A washer is included in the camera delivery set to obtain pictures of 4.5 * 6 cm size. The washer is inserted between the panel and front frame of the finder after the panel catches the rear hood lug [Fig.7].

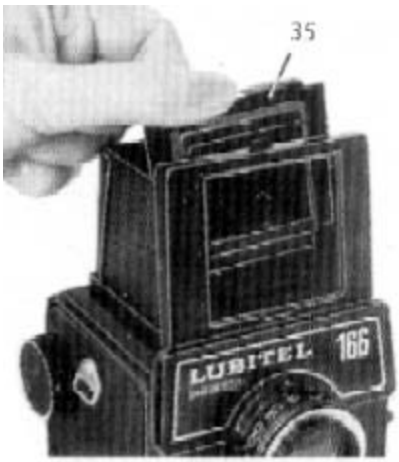

Fig. 7

To determine image limits the camera should be held at eye level, the object should be observed through the square window in the rear hood keeping the camera at the distance when the window edges coincide with those of the square opening in front frame. In this case the limits of the viewfinder field will be the image limits.

The distance scale is graduated at viewfinder lens mount in metres.

Diaphragm shutter is automatically giving the following speeds: 1/250, 1/125, 1/60, 1/30, 1/15 s. With shutter set to B any manual-control shutter speeds are obtainable.

Selected exposure time is set by rotating the adjusting ring dog (5) [Fig.3] to coincide the ring edge index with required exposure value.

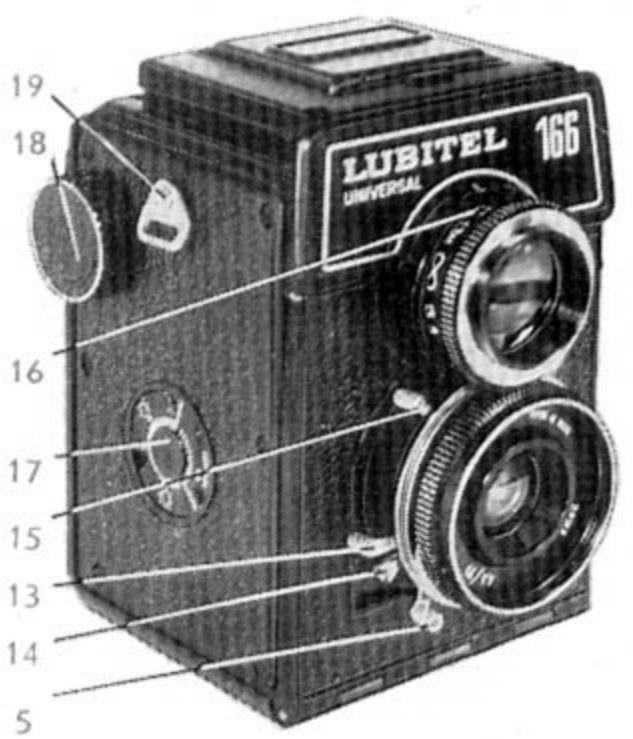

Fig. 3

Before shooting it is necessary to cock the shutter rotating the cocking lever fully downward. Shutter is released with smooth pressing the release lever or the knob of the cable release, the camera is provided with the socket for it. With shutter set to B index it remains opened from the moment of pressing the release lever till its releasing.

To activate the self-timer it is necessary to set the selected automatic exposure, cock the shutter, turn the self-timer lever (6) [Fig.2] fully downward and to press the release lever (15) [Fig.3]. In 7 - 15 seconds the shutter will operate and the picture will be taken.

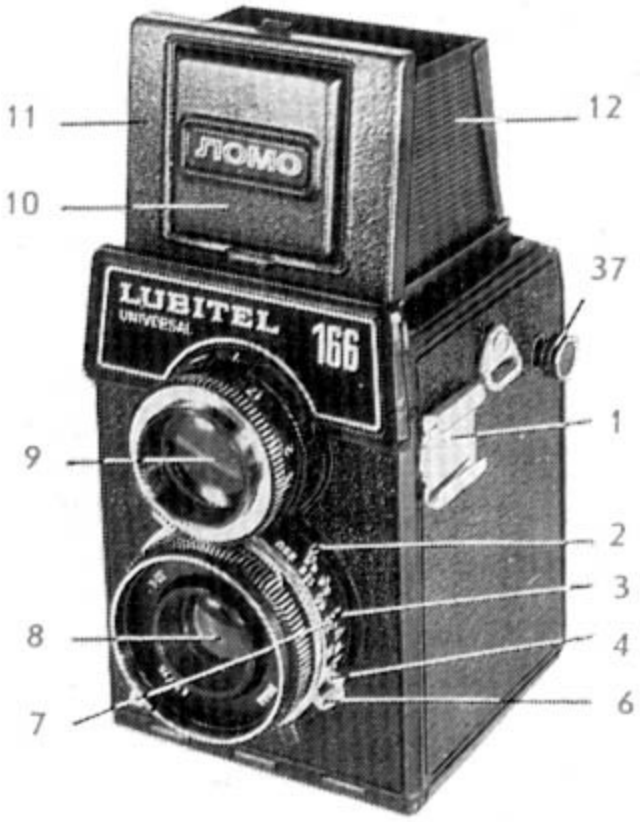

Fig. 2

Remember that with shutter set to B and release lever pressed it is impossible to cock the self-timer lever.

Flash synchronizer is intended for matching the flashing moment with complete shutter opening.

With electronic flash used the shutter may be set to any automatic exposure. With flash bulb used the shutter should be set to 1/15 or B. On releasing the shutter the synchronizer will act automatically.

Depth of field in metres with diaphragms						
	1 : 4.5	**1 : 5.6**	**1 : 8**	**1 : 11**	**1 : 16**	**1 : 22**
inf	25.59 - inf	20.57 - inf	14.40 - inf	10.47 - inf	7.20 - inf	5.24 - inf
15	9.44 - 35.62	8.74 - 53.75	7.42 - inf	6.25 - inf	4.95 - inf	3.97 - inf
8	6.14 - 11.51	5.81 - 12.89	5.20 - 17.50	4.60 - 31.71	3.87 - inf	3.25 -

						inf
6	4.22 - 6.15	4.06 - 6.52	3.76 - 7.50	3.44 - 9.25	3.02 - 15.16	2.63 - 66.77
4	3.49 - 4.69	3.38 - 4.90	3.17 - 5.43	2.94 - 6.28	2.63 - 8.51	2.34 - 14.89
3	2.70 - 3.37	2.64 - 3.47	2.52 - 3.72	2.37 - 4.09	2.17 - 4.91	1.97 - 6.49
2.5	2.30 - 2.74	2.25 - 2.81	2.16 - 2.97	2.06 - 3.20	1.90 - 3.67	1.75 - 4.47
2	1.87 - 2.15	1.84 - 2.19	1.79 - 2.28	1.71 - 2.41	1.61 - 2.66	1.50 - 3.05
1.7	1.61 - 1.80	1.59 - 1.83	1.54 - 1.90	1.49 - 1.98	1.41 - 2.14	1.33 - 2.38
1.5	1.43 - 1.58	1.41 - 1.60	1.38 - 1.65	1.34 - 1.71	1.27 - 1.83	1.21 - 1.99
1.3	1.25 - 1.36	1.23 - 1.37	1.21 - 1.41	1.18 - 1.45	1.13 - 1.53	1.07 - 1.64

The diaphragm serves for the control of light opening diameter. The stopping down is performed by moving the lever (20) [Fig.4] with pointer (2) [Fig.2]. The lens is stopped down when increase of the depth of field is desirable or when the available light is too intensive. Photographic lens depths of fields with different diaphragms and distances are given in the table.

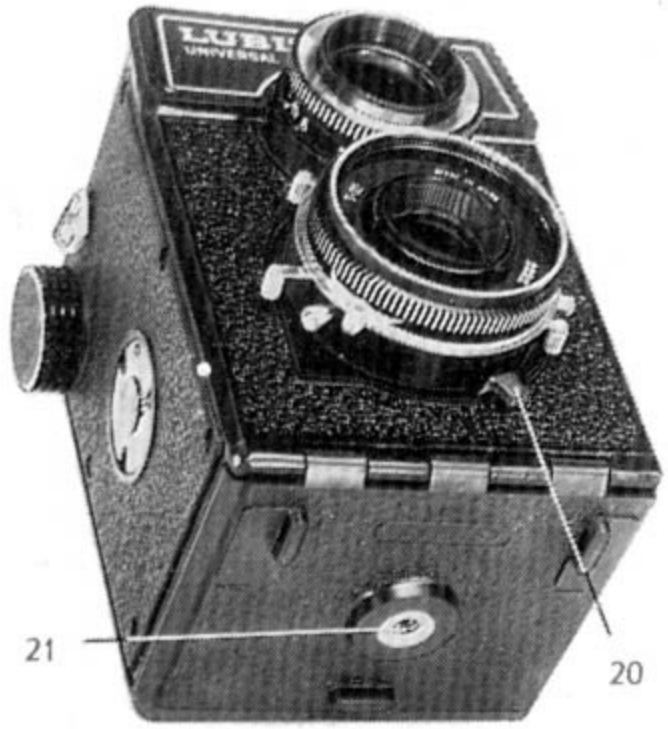

Fig. 4

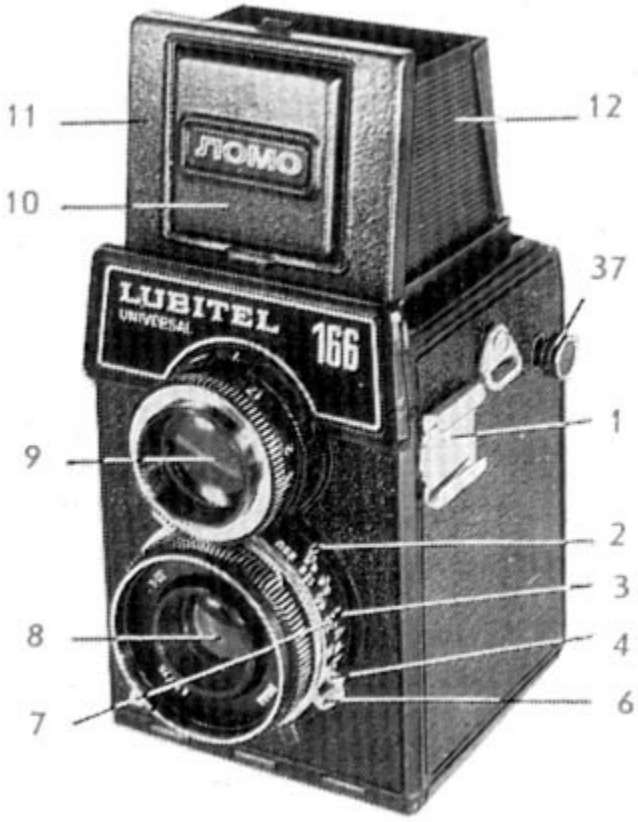

Fig. 2

At exposure scale every following value is two times preceding one. The diaphragm is f-numbered in such a manner that the pointer moving to a stop increases of decreases the amount of light for exposure two times. For instance the exposure time is 1/60 second at f/5.6 and if the lens has been stopped down to f/8 in other equivalent conditions the shutter should be set to 1/30 second.

Exposures and f-numbers carry the denominators only, as 15 instead of 1/15, 4.5 instead of 1/4.5 and so on.

The diaphragm scale between values 8 and 11 and distance scale between 8 and 15 are marked with white dots. With diaphragm scale pointer and distance scale index set to these dots all the images of objects at a distance of 4.5 m to infinity are obtained sharp.

CAMERA OPERATION PROCEDURES

Loading the Camera

Taking the camera in your left hand, open the camera back turning for this aim lock head (28)[Fig.6] until the index on the head and the dot on the body are matched.

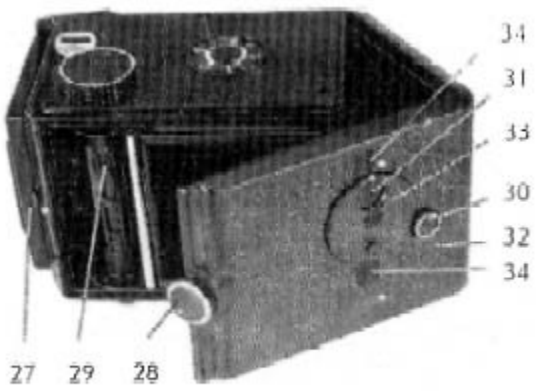

Fig. 6

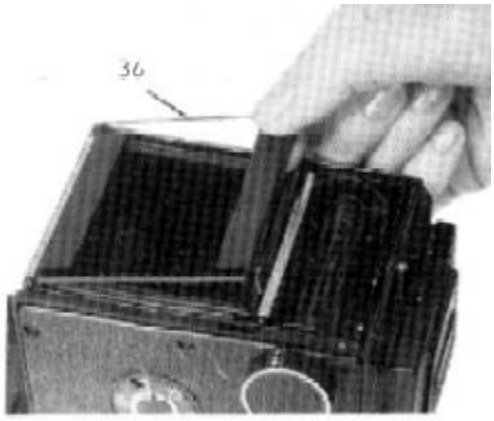

Fig. 8

For shooting 4.5 * 6 cm pictures, put limiting frame (36) [Fig.8] on the film gate.

Turning the film rewinding knob (18) [Fig.3], bring the spool slot at position convenient for loading the film protective paper end.

Break the seal of the film protective paper and insert the spool with the

film into the body receptacle between the spring and the body wall having pressed the flat spring with your finger.

Unwind the end of the protective paper and on folding it down for about 10mm insert in the slot of the take-up spool. Then holding the spool with the film with your left finger and rotating the film rewinding knob wind 2 - 3 layers of the protective paper to the take-up spool. Close the camera back assured that the paper tension is good.

Depending on picture size chosen (4.5 * 6 or 6 * 6 cm), turn turret (33) [Fig.6] until window (31) is adjusted at respective index (34).

Having turned the window cover plate head *30* to the right or to the left rotate the film rewinding knob (18) [Fig.3] until first the signal marks on protective paper and then **1** appear in the window. Close the cover plate.

Taking Pictures

Before taking pictures take the cover off the lenses and set the required exposure times and diaphragm. Exposure is set on exposure scale by rotating exposure adjusting ring dog (5) [Fig.3]. The required diaphragm value is set by moving the lever (20) [Fig.4] with index along the scale.

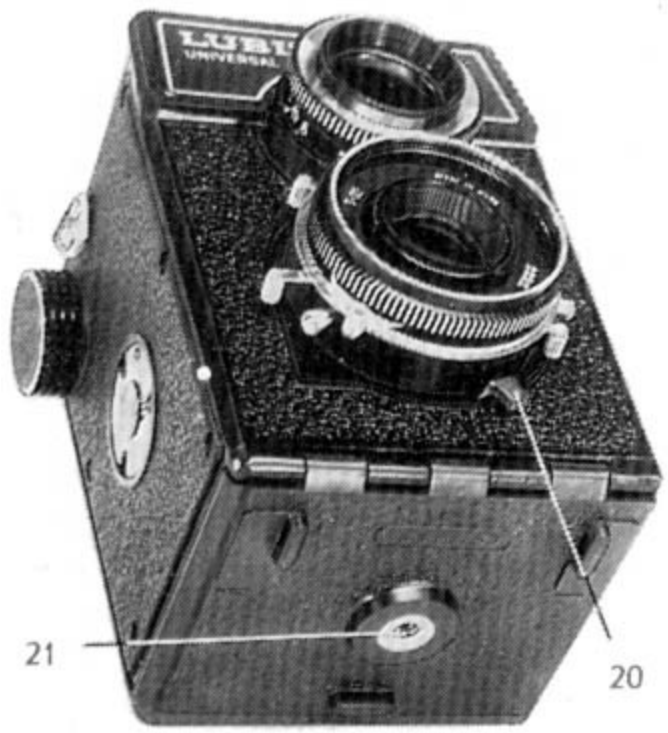

Fig. 4

Looking to the viewfinder determine the frame limits for 4.5 * 6 cm picture size, limiting marks (23) [Fig.5] are put down on the field lens] and with the focusing reach the required sharpness at the ground glass circle. If the object image that is required to get most sharp should be located at the picture edge turn the camera while focusing so that the object image was in the center and prior to the shutter release return the camera to the initial position.

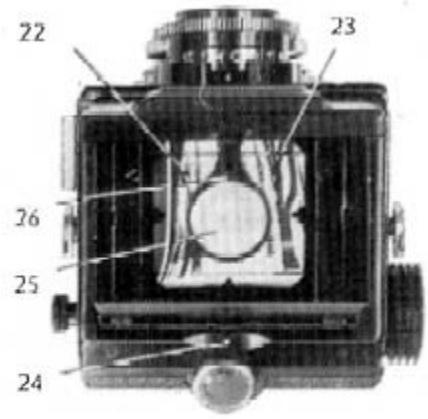

Fig. 5

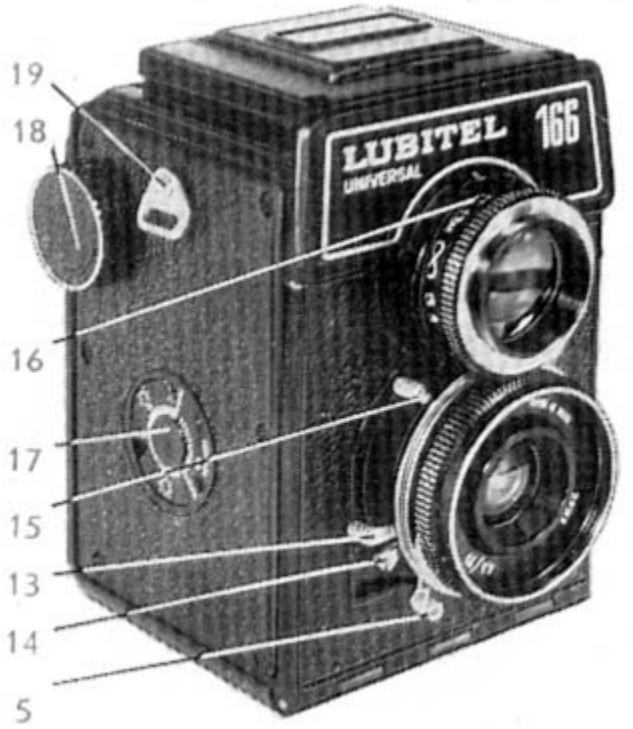

Fig. 3

With the cocking lever (15) [Fig.3] cock the shutter and release it smoothly.

Pull the film at a picture length. To do that open the window cover plate and rotate the film rewinding knob (18) till the following figure appears in the window, then close the cover plate.

Unloading the Camera

After the last exposure has been made rewind the film protective paper onto the take-up spool. Sometimes when the winding is almost completed the turning of the knob is detained due to the paper jammed in the supply spool slit. However this should not prevent the daylight unloading of the camera.

Open the camera back. Fully pull off the film rewinding knob and take-up spool head. Carefully take out the spool with the exposed film, seal the protective paper end and keep the film until it is developed.

Take the spool out of supply spool receptacle and insert into that of the take-up spool. Further, slightly turning film rewinding knob, press it and the head of the take-up spool spindle up to the stop.

Close the camera back.

Put cover on the camera lenses. For convenience purposes, adjust their mounts at the same level.

MAINTENANCE

Handle the camera with care.

Contaminated lenses deteriorate pictures sharpness, so it is necessary to keep lenses always clean. The objective lenses could be wiped from the outside only using a clean cambric or linen cloth or cotton wool, on having breathed on them.

Never dismount the camera.

Never wipe the plastic parts of the camera and the field lens with alcohol, acetone and other active solvents.

TECHNICAL DATA

Film accepted	120 - 61.5 mm
Picture size	6 * 6 and 4.5 * 6 cm

Picture number	12 or 16
Photographic lens - coated three-element anastigmat T-22	
Focal length	7.5 cm
Relative aperture	f/4.5
Viewfinder lens relative aperture	f/2.8
Automatic shutter speeds, s	1/250, 1/125, 1/60, 1/30, 1/15
With shutter speed set to B any manual-control shutter speeds are obtainable	
Diaphragm scale	from 4.5 to 22
Distance scale, m	from 1.3 to infinity
Self-timer operation time, s	7-15
Thread dimensions for the light filter mount	40.5 * 0.6 mm