AXOMAT 5
standard

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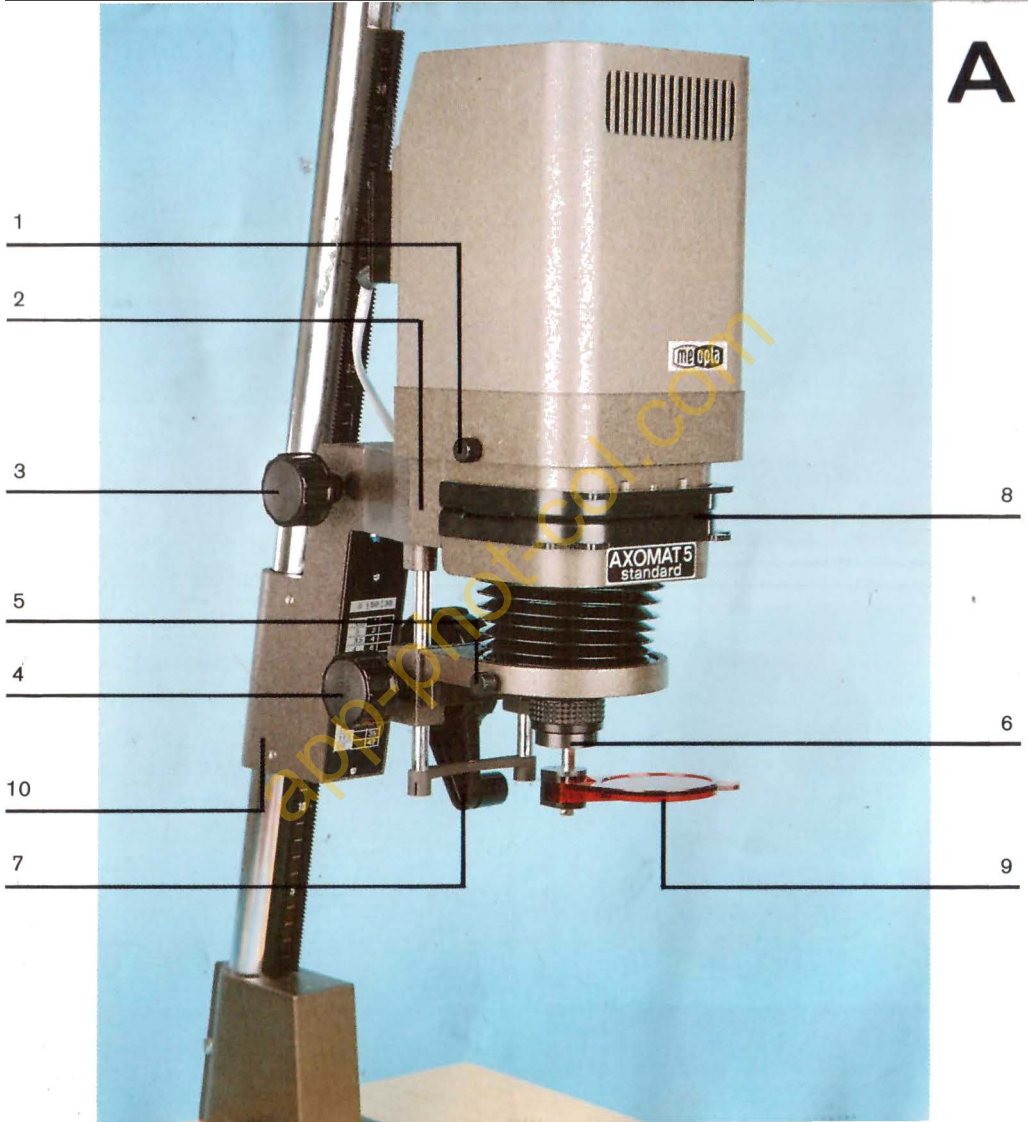

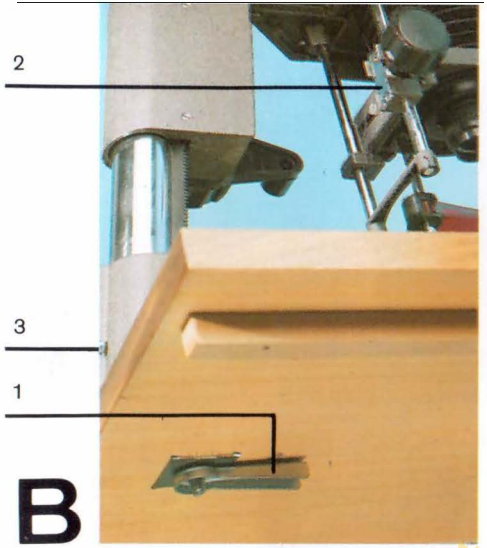

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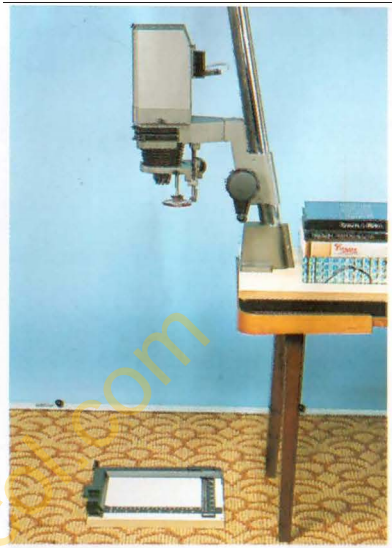

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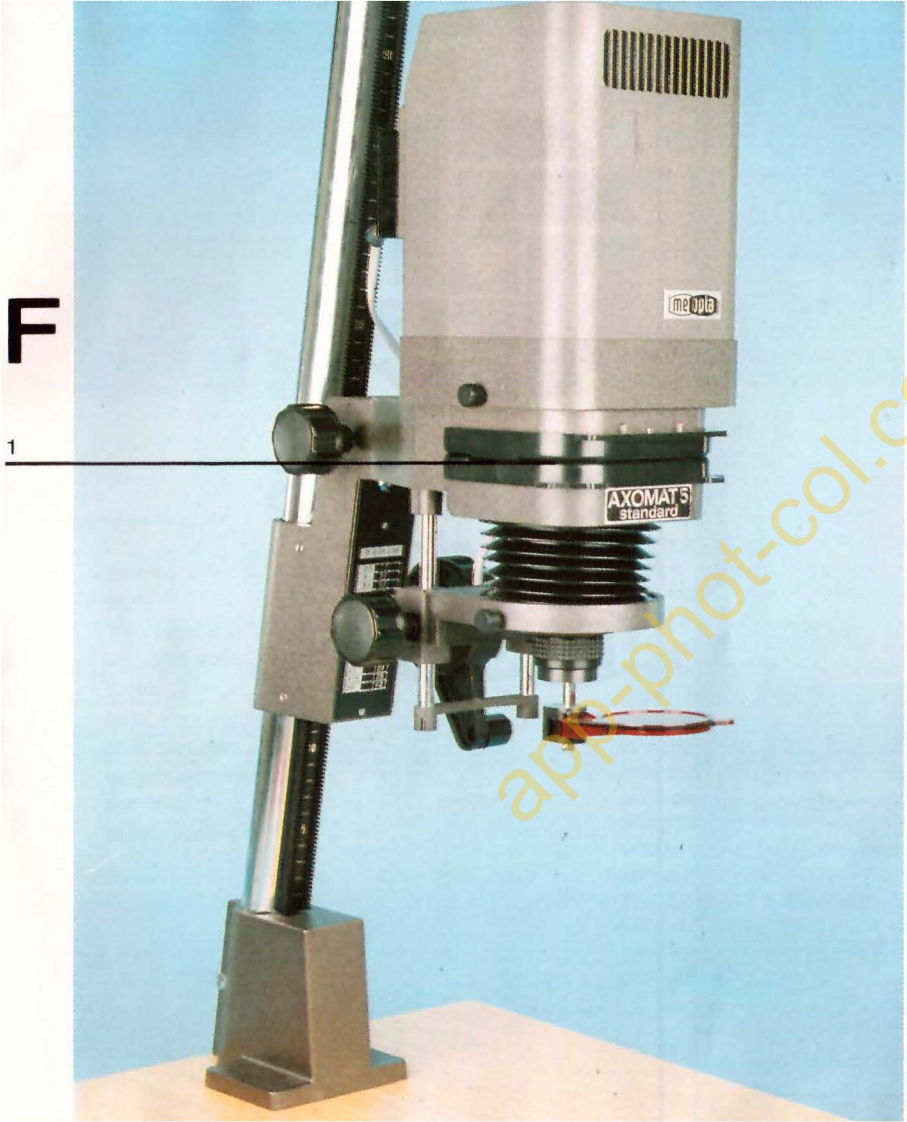

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Enlarger
AXOMAT 5 standard
392 211 201 007

Legend to Fig. A

1 - screws
2 - body
3 - stop turnknob
4 - focusing knob
5 - screw
6 - lens
7 - shift turnknob
8 - negative carrier
9 - red filter
10 - sliding mount

Description of the apparatus

The **AXOMAT 5 standard** enlarger is designed to enlarge photographic pictures from roll film negatives 35 mm. A lens f = 50 mm is designed to enlarge from 35 mm films. The light source is an opal lamp.

The product is designed for intermittent operation current in function of an enlarger. Even a continuous operation cannot damage the apparatus.

AXOMAT 5 standard is equipped with a negative carrier and a frame for negatives 24 × 36 mm.

Using a lens with a focal distance of f = 50 mm it is possible to achieve on the besaboard the biggest linear enlargement of about 11×, or the smallest enlargement of about 2.5×; on a suitable support the image can also be reduced linearly up to 1.4×. **AXOMAT 5 standard** is provided with a lens ring, thread M 39 × 1. The apparatus together with the column can be turned by 180° round the foot screw in the baseboard. In that way it is possible to obtain even larger magnification when projecting outside the baseboard, for instance on the floor. It is also possible to project on a vertical area, i. e. on the wall, by tilting the instrument body by 90° into the horizontal position; in that way considerable enlargements can be achieved.

The **AXOMAT 5 standard** enlarger can carry out a partial picture restitution, i. e. it can make up for the convergent lines on the negative brought about when taking pictures of different works of architecture, etc.

The shift of the apparatus along the bar is facilitated by a shift turnknob with a crank and a gear along a rack. The focusing turnknob and the friction mechanism ruling out idling enables lens carrier shift during focusing.
The column is provided with a scale to determine the enlargement according to the table on the mount and to calculate the exposure time with enlargement changes. The baseboard size is 390 × 530 mm. The supply cord is 2.2 m long. It is provided with a switch and a plug. With all the available accessories which can be bought together with the **AXOMAT 5 standard** apparatus the unit becomes a universal enlarger for negatives 24 × 36 mm and smaller.

Technical data AXOMAT 5 standard

negative format	max. 24 × 36 mm
light source	opal lamp 220 V/100 W
lens	f 50
enlargement on baseboard	11×
max. working height	920 mm
min. storing height	680 mm
baseboard size	390 × 530 mm
weight	7.8 kg

Operating instructions

Assembling the enlarger

The **AXOMAT 5 standard** enlarger is supplied by the manufacturer in special package. It has to be assembled from individual component parts. By means of lever **(B-1)** fix the stand foot including the rack and the shift mount. Introduce the body of the apparatus its pin firs' into the opening in the shift mount **(A-10)** and safeguarc the assembly with the stopping turnknob **(A-3)**. Afte that, install in the apparatus body the negative carrier **(A-8, D)**. Since the lamp is not supplied together with the apparatus, it is necessary to unscrew 2 screws **(A-1)** and to remove the condenser and the lamp house. Using a coin or a screwdriver loosen 2 screws **(E-1)** and separate the condenser assembly from the lamp house. Screw a lamp suitable for enlargers according to Table 1 into the lamp house. Assemble once again the lamp house with the condeser and mount the entire illumination system on the body **(Fig. A-2)**. Fasten the assembly using two screws **(A-1)** and the enlarger is ready for function. In the lens holder the lens ring is safeguarded with a screw **(A-5)**. The basic lens f = 50 can be replaced by lens f = 30 with a sunk lens ring for negatives 13 × 17 mm and smaller.

1. Light source - lamp

A special opal lamp for enlargers with maximum input 100 W, envelope diameter 70 mm and E 27 fitting is used (see **Table 1**). There must be no inscriptions on the envelope top nor any warps or other surface uneveness.

Table 1

designation	type number
Tungsram	721
Osram	4613
Philips	PF 603
Thorn	P 3/3
Tesla	261 6125

2. Lamp replacement

Caution
Before manipulating the bulb let the apparatus get cold.

The enlarger is supplied without a lamp. **The lamp can be installed only if the apparatus is disconnected from the mains!**
Replacement is carried out in the same way as described in the apparatus assembly.

3. Connection of the enlarger to the mains

Introduce the supply cord plug into the mains socket and light up the lamp by the switch.
When operating the instrument the vent holes of the lamp house should not be closed!

4. Placing of negatives in the carrier

The negative carrier design allows for introduction, removal or shift of the film strip even if the carrier is installed in the apparatus. The above operations can be carried out with the upper carrier part lifted **(F-1, D-1)**. After the upper carrier part is released, the film strip is still sufficiently fixed by springs. When short film strips or individual negatives are to be loaded, the carrier has to be removed from the apparatus.

5. Adjustment of the required image enlargement

Put auxiliary paper on the baseboard or into the masking aquipment; the size of the auxiliary paper should be just as that of the sensitive paper on which the image is to be enlarged.
By lighting up the enlarger lamp project the image on the prepared auxiliary paper. Open fully the lens aperture by turning the aperture mont until the lowest aperture number appears.
By turning the shift turnknob **(A-7)** lift or descend the apparatus along the column until the required enlargement is reached. At the same time continue picture focusing on auxiliary paper by turning the focusing knob **(A-4)**.
Since the shift turnknob is controlled by the right hand and since the focusing knob is adapted for left-hand turning, it is possible to follow the focused picture and its size. The two turnknobs turn always in the same sense - either towards maximum enlargement by turning the two turnknobs in one direction, or towards minimum enlargement by turning the knobs in the opposite sense.
During focusing it is possible to use the **Focusing system** 392 821 290 021.

6. Lens aperture

After enlargement adjustment and focusing set the convenient lens aperture by turning the aperture ring **(A-6)** with aperture numbers indicated: 4.5; 5.6; 8; 11; 16 and 22. From the point of view of optimum illumination and pattern uniformity it is recommended to screen the lens to working aperture 5.6 or 8. The selected aperture number should be set against the white mark. In case of **ANARET S 4.5/50** lens the selected aperture number

will be indicated in the frame; with the enlarger lamp glowing this number will be well illuminated. The numbers are selected (with the exception of the first number 4.5) in such a way that the subsequent higher number signifies half light quantity passing trough the lens.

The aperture number has a click-in device indicating the correct adjustment of the required aperture number. The click-in sound facilitates accurate aperture adjustment during dark chamber work; it is sufficient to count the number of click-ins. In **ANARET S** lenses the aperture ring can also be set between individual aperture number positions by pulling the aperture ring down. In that way individual click-ins for individual positions are eliminated.

7. Exposure of sensitive paper and test of exposure time

If the image on the baseboard is correctly placed, focused and the lens properly screened, proceed in the following way. Switch off the lamp, put the photographic paper in the focused image plane with the sensitive layer towards the lens and expose it by lighting up the lamp. After exposure, development and fixation assess whether the exposure is correct or not and, if needed, repeat the test with a different exposure time until a correct result is achieved. It is suitable to test several exposures. On their basis correct exposure can be determined. The sensitive black-and-white paper can be left exposed to the light passing through the red filter **(A-9)** for 30 s with the enlargement 2×.

Apart from turning the red filter can also be shifted. Depending on the lens used place the red filter in optimum position under the lens.

For measurement of different illumination levels during the enlargement process it is advisable to use the exposure system **MEOSIX 1** - 392 821 890 192. This apparatus allows for optimum exposure of the photographic paper and for achievement of high degree of reproducibility.

8. Enlargement outside the baseboard

If big blow-ups are to abtained, project the image outside the baseboard either on the floor or on the wall.

a) Floor projection (Fig. C)

Put the enlarger on the table so that the baseboard rear edge be on the front table edge. The baseboard should be conveniently loaded, e. g. with books, etc. Release the lever on the lower side of the baseboard **(B-1)** turn the aparatus together with the column round the baseboard bolt by 180° and lock the position by lever tightening. Project the picture on the floor or on any other suitable support. Proceed then as in normal enlargement operation.

b) Wall projection (Fig. G)

If even higher enlargement is to be achieved, enlarge by horizontal projection on a vertical wall. Put the enlarger on a table, release the stop turnknob **(A-3)** and tilt the instrument proper by 90° to the horizontal position. Block it there by stop turnknob tightening. Enlargement size is controlled by approaching or removing the apparatus to or from the wall on which the enlargement should be obtained.

9. Reduction

When making reduction or pictures at a scale 1 : 1 (e. g. slide making) up to enlargements 2.5x proceed in the following way. Set the image size by turning the focusing turnknob **(Fig. A-4)**. Focus the image by turnknob turning **(Fig. A-7)** in order to adjust the enlargement size, i. e. by the motion of the instrument along the column. If the largest possible reduction is to be achieved, set the lens carrier using the focusing knob as far as possible from the negative. Descend now the apparatus along the column by turning the shift turnknob downwards until a sharp picture appears on a suitable support of about 10 cm high placed on the baseboard.

10. Correction of coverging verticals (Fig. H)

If the camera is tilted during picture taking, convergent instead of parallel lines are obtained on the negative. During enlargement operations the correction can be carried out in the following way.
Release the bolt **(A-3, H-1)** and tilt the instrument until convergent lines of the image become approximately parallel. Using the bolt **(A-3, H-1)** fix the apparatus in this position. It is advisable to tilt the masking system too. Focus the image in the centre and screen the lens to obtain a sharp picture on the entire surface area.

11. Enlarger maintenance

The enlarger is a very accurate system requiring correct maintenance and servicing. It should be stored in a dry room and protected from dust by a suitable cloth cover. During operation do not touch the apparatus with wet or dirty hands. Special care should be taken when working with solutions and chemicals.

a) Condenser cleaning

By loosening two screws **(A-1)** the condenser and the lamp house can be taken out of the apparatus. By loosening the screw **(E-2)** and turning the condenser mount the entire condenser can be removed. Using a hair brush or a clean cloth remove dust from the two surfaces.

b) Lens cleaning

Pick the lens **(A-6)** with the fingers of one hand and loosen the screw **(A-5)** with the other hand. Pull down the lens ring and the lens and remove dust from the two lens outside surfaces with a fine hair brush or with a fine clean cloth.

c) Maintenance of the shift and friction mechanisms

The column tube including the rack and the focusing system rods should by kept clean. If necessary wipe them with a cloth saturated with machine oil or vaseline.
If, after a longer time, the focusing turnknob run is too rigid or too easy, adjust it by tightening the screws which hold the spring **(B-2)**. The friction mechanism run should be continuous and smooth.

Complete assembly of the AXOMAT 5 standard apparatus with lamp house for 100 W lamp

a) enlarger proper with column and baseboard
b) condenser and lamp house with condenser
c) negative carrier 24 × 36 mm
d) lens ring with thread M 39 × 1
e) lens f 50 with hood (supplied at special request)
f) operating instructions and warranty certificate
g) store box

The instrument is supplied in the following versions:

392 211 201 005 - **AXOMAT 5 standard, BELAR 4.5/50**
392 211 201 006 - **AXOMAT 5 standard, ANARET 4.5/50**
392 211 201 007 - **AXOMAT 5 standard** without lens

SPECIAL ACCESSORIES FOR THE AXOMAT 5 standard ENLARGER

1. Strip exposure system
392 821 890 091
The system enables tests in positive processes. On one single photographic paper 10.5 × 14.8 cm it is possible to carry out up to 5 exposures. In that way values for further enlargement operations can be determined.

2. Masking equipment
18 × 24 cm
392 821 720 063
The masking equipment serves for fast sensitive paper fixing and at the same time for white rim framing of photographic pictures.

3. Masking equipment
30 × 40 cm
392 821 720 054
The masking equipment serves for fast sensitive paper fixing and at the same time for white rim framing of photographic pictures.

4. Repro arm
392 821 550 091
The repro arm is designed to fix the photographic or movie camera on the enlarger column during reproduction, credits filming, etc.

5. UNIVERSAL illuminating device
392 821 540 074
A suitable accessory to illuminate the photographic originals - with four lighting units.

6. UNIVERSAL illuminating device
392 821 540 075
A suitable accessory to illuminate the photographic originals - with two lighting units.

7. UNIVERSAL illuminating device
392 821 540 076
A suitable accessory to illuminate the photographic originals - complemantary lighting unit.

8. Reproduction system
35 mm
392 821 520 101
It facilitates reproductions, macropictures, etc. on 35 mm films wound in magazines or on a special spool for 5 m of film.

9. Focusing ground glass
392 821 590 182
Together with the reproduction system 35 mm it facilitates technical photography. Apart from focusing it is possible to observe on the ground glass illumination of the object, reflexions on glossy surfaces, etc.

10. Tripod reduction
392 821 590 121
Thanks to the tripod reduction it is possible to fix the enlarger head to a tripod. In that way **AXOMAT 5 standard** can be transformed using the reproduction system into a simple photographic camera.

11. Focusing system
392 821 290 021
It serves for accurate focusing of the projected negative image on photographic paper.

12. Foot switch
392 821 890 035
It enables enlarger lamp control by foot.

13. Thread step-down reduction M 39 × 1/M 23.5 × 0.5
392 821 310 311

When using the lenses **ANARET 4.5/50** or **BELAR 4.5/50**, the respective lens must be screwed into this thread step-down reduction and fixed by a screw.

14. Ring for f = 30
392 821 310 391

Fox fixing the lens **ANARET 4.5/30**. The lens is screwed into the ring.

15. Ring M 42 × 1
392 821 310 381

Lens ring with thread M 42 × 1.

16. Macroadapter AXOMAT
392 821 330 071

It is used when taking pictures of small objects or when reproducing small originals. It also extends the lens pull-out.

17. ANARET 4.5/50
392 821 110 239

Enlarging lens for enlarging negatives, format 24 × 36 mm and smaller. Mount thread M 23.5 × 0.5. For screwing into the lens ring it is necessary to use the thread step-down reduction M 39 × 1/ M 23.5 × × 0.5, branch No. 392 821 310 311.

18. ANARET S 4.5/50
392 821 110 343

Enlarging lens for enlarging negatives, formats 24 × 36 mm and smaller with illuminated aperture number scale. Mount thread M 39 × 1.

19. ANARET 4.5/30
392 821 110 271

Enlarging lens for enlargement of negatives, formats 11 × 14 mm and 13 × 17 mm. Mount thread M 23.5 × 0.5. It is used together with the ring for f = 30, branch No. 392 821 310 391.

20. BELAR 4.5/50
392 821 110 262

Enlarging lens for enlargement of negatives, formats 24 × 36 mm and smaller. Mount thread M 23.5 × 0.5. For screwing into the lens ring it is necessary to use the thread step-down reduction M 39 × 1/ M 23.5 × 0.5, branch No. 392 821 310 311

21. MEOGON S 2.8/50
392 821 110 361

Enlarging lens for enlargement of negatives, formats 24 × 36 mm and smaller with illuminated aperture number scale. Mount thread M 39 × 1.

22. Carrier 456
392 821 890 203

The carrier serves for fixing the diffuser ground glass **MEOSIX 1** to enlargers **AXOMAT 5, OPEMUS 6, MAGNIFAX 4, AXOMAT 5 standard** and **OPEMUS 6 standard.**

23. MEOSIX 1
392 821 890 192

Exposure system enabling determination of the optimum photographic paper exposure and achievement of a high degree of reproducibility in black-and-white and colour photographs.

24. Focusing micromotion device
392 821 830 251

The manipulation during fine focusing of an image can be improved so that the micromotion device is replaced by the focusing knob.

25. DIFFUSER
392 821 290 031

The diffusion focusing screen for exposition time measurements is replaced by the focusing knob.

26. Reproholder OP (AX)
392 821 550 122

The repro-holder is a device for fixing an arbitrary photographic or cine camera and other taking apparatus featuring a weight less than 2 kg.

27. VIPONEL-NOVEX
Darkroom Clock,
Type Student

The double-range darkroom clock is used for precise measuring of the switching-on time of the connected electric consumer, especially enlarging apparatus. Owing to the possibility of precise repeating of the switching-on time it is suitable for work with black-and-white as well as colour photographic material. Furthermore it may be used for work in laboratories and others like that.

Switching current:
6 A/220 V ac
upon desire 6 A/110 V
Switching range:
"10×" 2 ÷ 60 sec.
Dimensions:
98 × 140 × 78 mm

28. VIPONEL
Darkroom Clock,
Type S 15

The double-range darkroom clock is used for precise measuring of the switching-on time of the connected electric consumer, particularly enlarging apparatus. Owing to the possibility of precise repeating of the switching-on time it is suitable for work with black-and-white as well as colour photographic material. Furthermore it may be used for work in laboratories and others like that.

Switching current:
6 A/220 V ac
upon desire 6 A/110 V
Switching range:
"1×" 0.2 ÷ 6 sec.
"10×" 2.0 ÷ 60 sec.
Dimensions:
98 × 140 × 78 mm

29. VIPO COMBI
Darkroom Clock,
Type B 6

The three-range darkroom clock is used for precise measuring of the switching-on time of the connected electric consumer, particularly enlarging apparatus. Owing to the possibility of precise repeating of the switching-on time the darkroom clock is suitable for work with black-and-white as well as colour photographic material. Furthermore it may be used for work in laboratories and others like that.

Switching current:
6 A/220 V ac
upon desire 6 A/110 V
Switching range:
"1" 0.2 ÷ 6 sec.
"10" 2.0 ÷ 60 sec.
"60" 0.2 ÷ 6 min

Dimensions:
113 × 161 × 85 mm

30. VIPO electronic Darkroom Clock, Type E 01

The digital darkroom clock is used for precise measuring of the switching-on time of the connected electric consumer, particularly enlarging apparatus. It is equipped with reversing socket. Use of this clock is inevitable in laboratories and darkrooms when making black-and-white and color photographs.

Switching current:
3 A/220 V ac
or upon desire 3 A/110 V

Switching range:

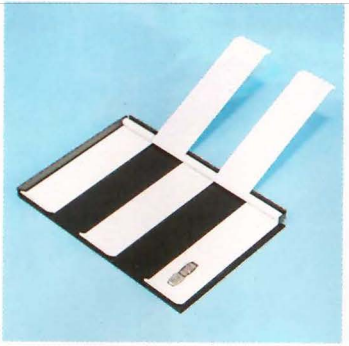
10 s	0.1 ÷	9.9 sec.
100 s	1.0 ÷	90.0 sec.
1 000 s	10.0 ÷	990.0 sec.

Dimensions:
150 × 165 × 84 mm

Caution

Due to continuous development of the apparatus the manufacturer reserves the right to changes or modifications in the design and manufacture and, conseauently, to some deviations from the text or figures of the operating instructions.

392 211 201 007 - N - 97/A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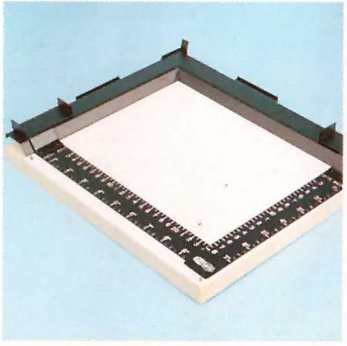
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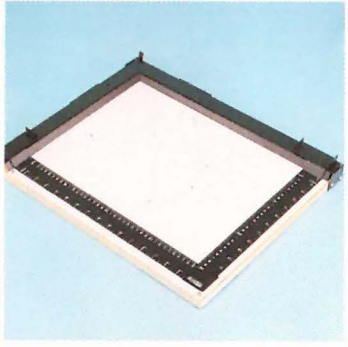
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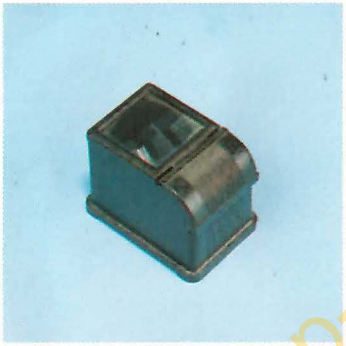

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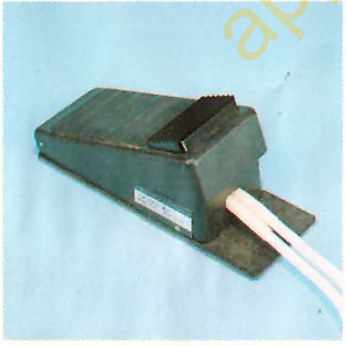

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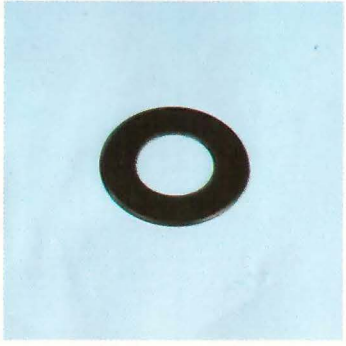

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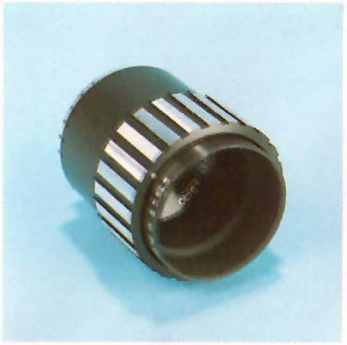

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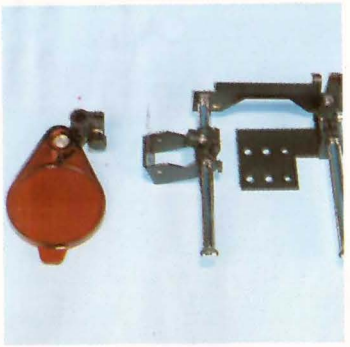

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