REICHERT

WIEN

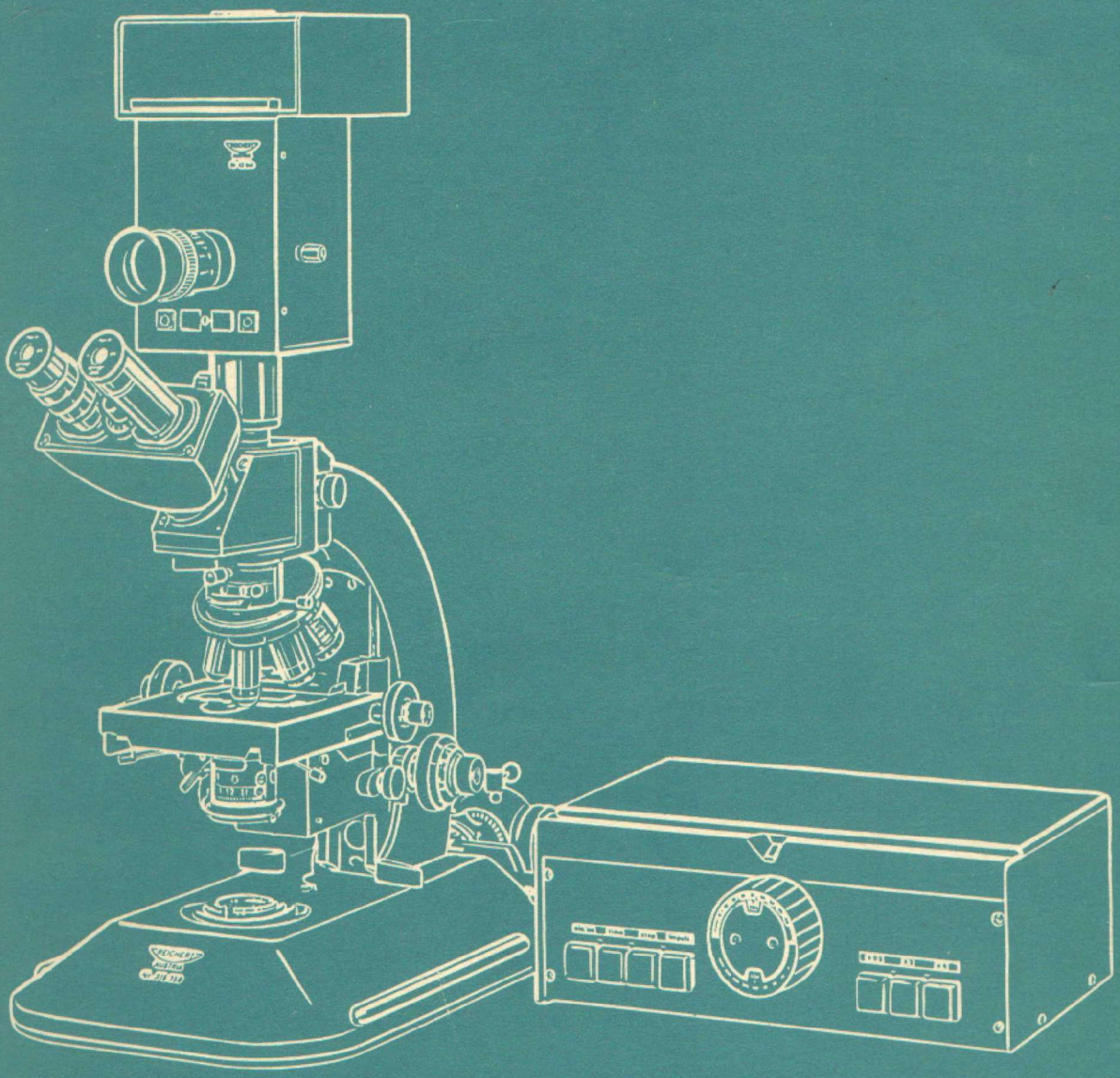


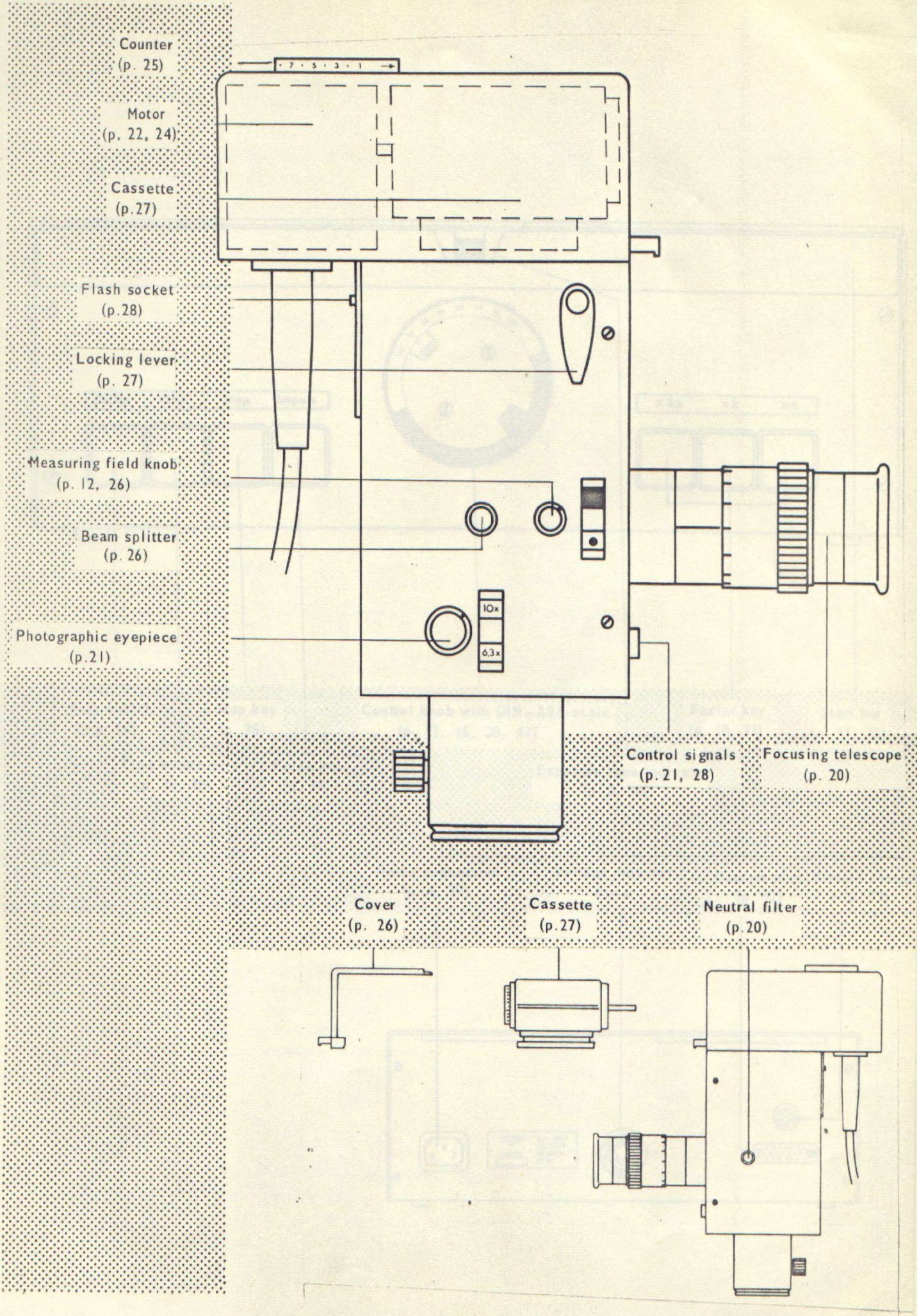
PHOTO-AUTOMATIC

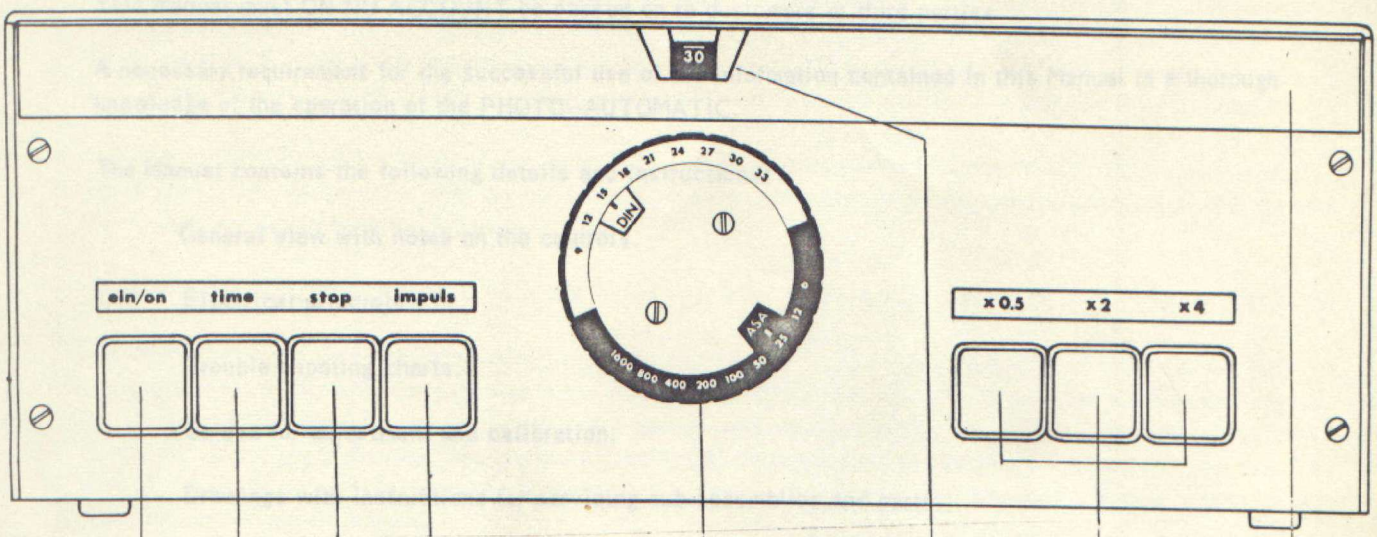
Service Manual

Service Manual
Reichert Photo-Automatic

List of Contents

S.B. I "Photo–Automatic" E 9/67


Counter
(p. 25)
Motor
(p. 22, 24)
Cassette
(p.27)
Flash socket
(p.28)
Locking lever
(p. 27)
Measuring field knob
(p. 12, 26)
Beam splitter
(p. 26)
Photographic eyepiece
(p.21)
10x
6.3x
Control signals
(p. 21, 28)
Focusing telescope
(p. 20)
Cover
(p. 26)
Cassette
(p.27)
Neutral filter
(p.20)



Main switch (p. 6, 38)

Stop key (p. 38)

Control knob with DIN–ASA-scale (p. 12, 16, 30, 41)

Factor key (p. 10, 31)

Start bar (p. 11, 30)

Time exposure (p. 10, 38)

Pulse key (p. 14)

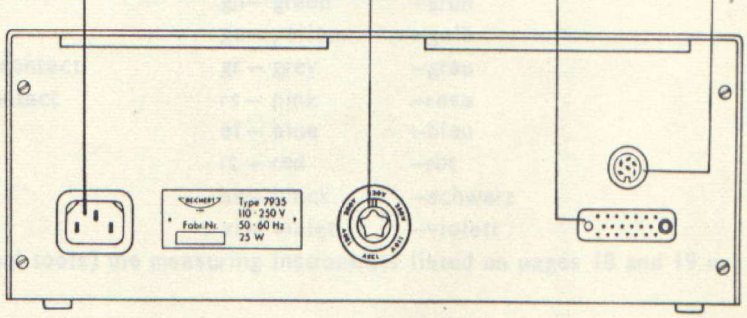
Exposure time indicator (p. 8, 30)

Mains connection (p. 6, 39)

Voltage selector Fuse

Camera plug (p. 42)

Remote control (p. 33)



Introduction

This Service Manual is intended to assist the service correspondents, service engineers and the technical staff of our representatives.

This Manual must ON NO ACCOUNT be passed on to dustomers or third parties.

A necessary requirement for the successful use of the information contained in this Manual is a thorough knowledge of the operation of the PHOTO–AUTOMATIC.

The Manual contains the following details and instructions:

General view with notes on the controls.

Electrical principle.

Trouble shooting charts.

Guides for adjustment and calibration.

Drawings with instructions for servicing sub-assemblies and parts.

Notes on spare parts.

Wiring diagram for printed circuits, switches and sub-assemblies.

Circuit diagrams.

The drawings are purely schematical and not to scale because of the need for increased clarity; their presentation differs intentionally from that used in engineering drawings. For similar reasons the description of the components employs the terms used in works training.

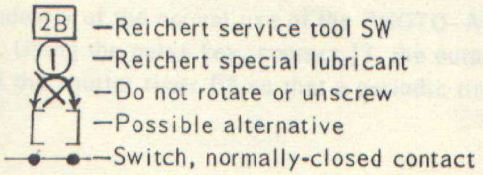
When ordering spares the following information should be given:

Serial number.

Delivery date.

Spare part number (if necessary trace the component and indicate the page number).

Explanation of symbols and abbreviations used:



2B —Reichert service tool SW
1 —Reichert special lubricant
—Do not rotate or unscrew
—Possible alternative
—Switch, normally-closed contact
—Switch, normally-open contact

w – white	–weiß
br – brown	–braun
gn– green	–grün
ge– yellow	–gelb
gr – grey	–grau
rs – pink	–rosa
bl – blue	–blau
rt – red	–rot
sw– black	–schwarz
vi – violet	–violett

Servicing requires (in addition to the usual tools) the measuring instruments listed on pages 18 and 19 as well as a 15 - 20 Watt soldering iron.

Electrical principle

With the PHOTO–AUTOMATIC in its rest position 80% of the light falls on the photoresistor which is arranged in a bridge circuit a series of balancing resistors (P3). These balancing are selected through a rotary switch (decks E3 and E4) so as to compensate the current determined by the photoresistor under the particular illumination. This is followed by a transistorised differential amplifier which measures and amplifies the bridge current. A relay stage consisting of the pol. relays I and II as well as the indicating relays A 1 and A 2 converts the measured values to a plusminus indication in the form of the red-green-red control signals.

In addition to this measuring circuit the control unit contains a monostable multi-vibrator acting as a time delay generator (shutter timer P5). Its resistance-capacitor timing combinations are arranged to give a geometrical exposure series with the following values:

1/250 – 1/125 – 1/60 – 1/30 – 1/15 – 1/8 – 1/4 – 1/2 – 1 – 2 – 4 – 8 – 15 – 30 – 1' – 2' – 4' – 8' – 15'.

These elements are selected by a second rotary switch (decks E1 and E2) whose control knob carries both the transparent scale with the exposure times and also the DIN–ASA scale. It is mounted on the same shaft as the switch for the bridge balancing resistors whose knob carries the DIN and ASA index marks. The two knobs are linked mechanically, the connection being set during calibration so that a certain optimum exposure time corresponds to a given specimen brightness. Changes in this connection provides a simple means for taking account of the film speed.

Rotation of the control knob therefore performs two functions simultaneously:

1. determining the specimen brightness (green light)
2. setting on the PHOTO–AUTOMATIC the optimum exposure time corresponding to this brightness and the film speed setting.

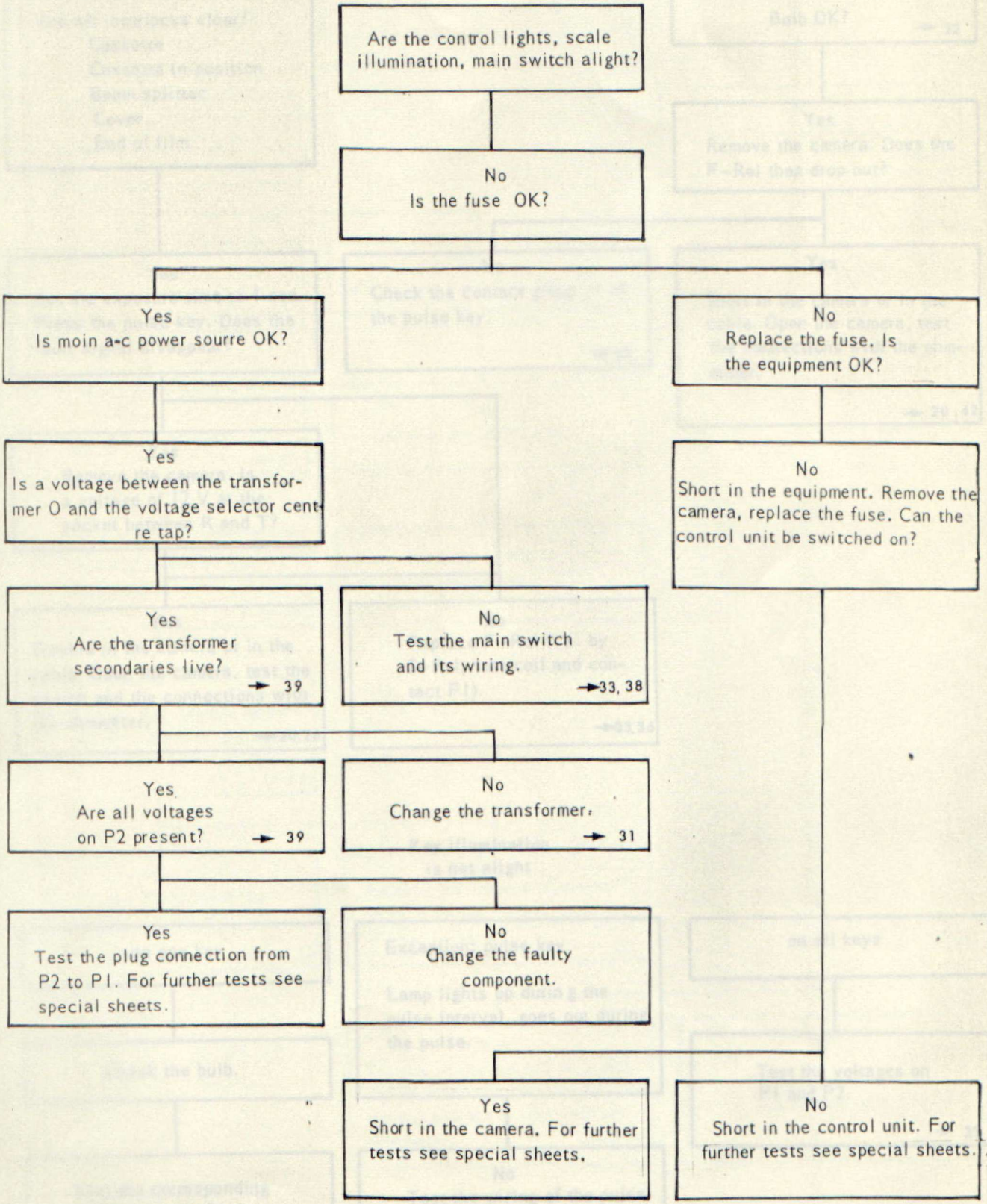
When all faults such as end of film, beam splitter, cassette etc. have been eliminated the shutter timer P5 can be switched on by means of the start bar (start relay S, contact S2). The timer opens the shutter through the shutter relay V, contact V3, for the duration of the exposure time setting; a white signal lights up. After closing the shutter, a pulse operates the transport timer P6 through the contact V1. This timer switches on a motor through the transport relay T, contact T3, which advances the film to the next frame. The cycle of operations can then start again from the beginning.

The factor keys x0.5, x2, x4 change the capacitors in the resistor-capacitor combinations of the shutter timer.

A similar procedure applies to point measurement; the point relay P, contacts P1, P2 and P4, changes the capacitors while the contact P3 switches the illumination over to the red scale.

Independently of the normal use of the PHOTO–AUTOMATIC the control unit can be used as a timing pulse system. Using the pulse key, contact J3, the output of the transport timer P6, contact T4 is connected to the input of the shutter timer P5 so that a periodic timing pulse generator is obtained.

Power supply
(Transformers, P2, P1)
Switch on Photoautomatic with EIN/ON key, all other keys off.



Fault signal

does not go out.

Are all interlocks clear?
Cassette
Cassette in position
Beam splitter
Cover
End of film

Yes
Set the exposure time to 1 sec. Press the pulse key. Does the fault signal disappear?

Yes
Remove the camera. Is a voltage of 12 V at the socket between R and T?

Yes
Trouble in the camera or in the cable. Open the camera, test the switch and the connections with the ohmmeter.
→ 20,26

No
Replace F–Rel (i.n. by S–Rel, test coil and contact F1).
→ 33,36

No
Check the contact group J1 of the pulse key.
→ 38

does not light up.

Bulb OK?
→ 22

Yes
Remove the camera. Does the F–Rel then drop out?

Yes
Short in the camera or in the cable. Open the camera, test the connections with the ohmmeter.
→ 20,42

Key illumination
is not alight

on one key

Check the bulb.

Test the corresponding contact group of key.
→ 38

Exception: pulse key

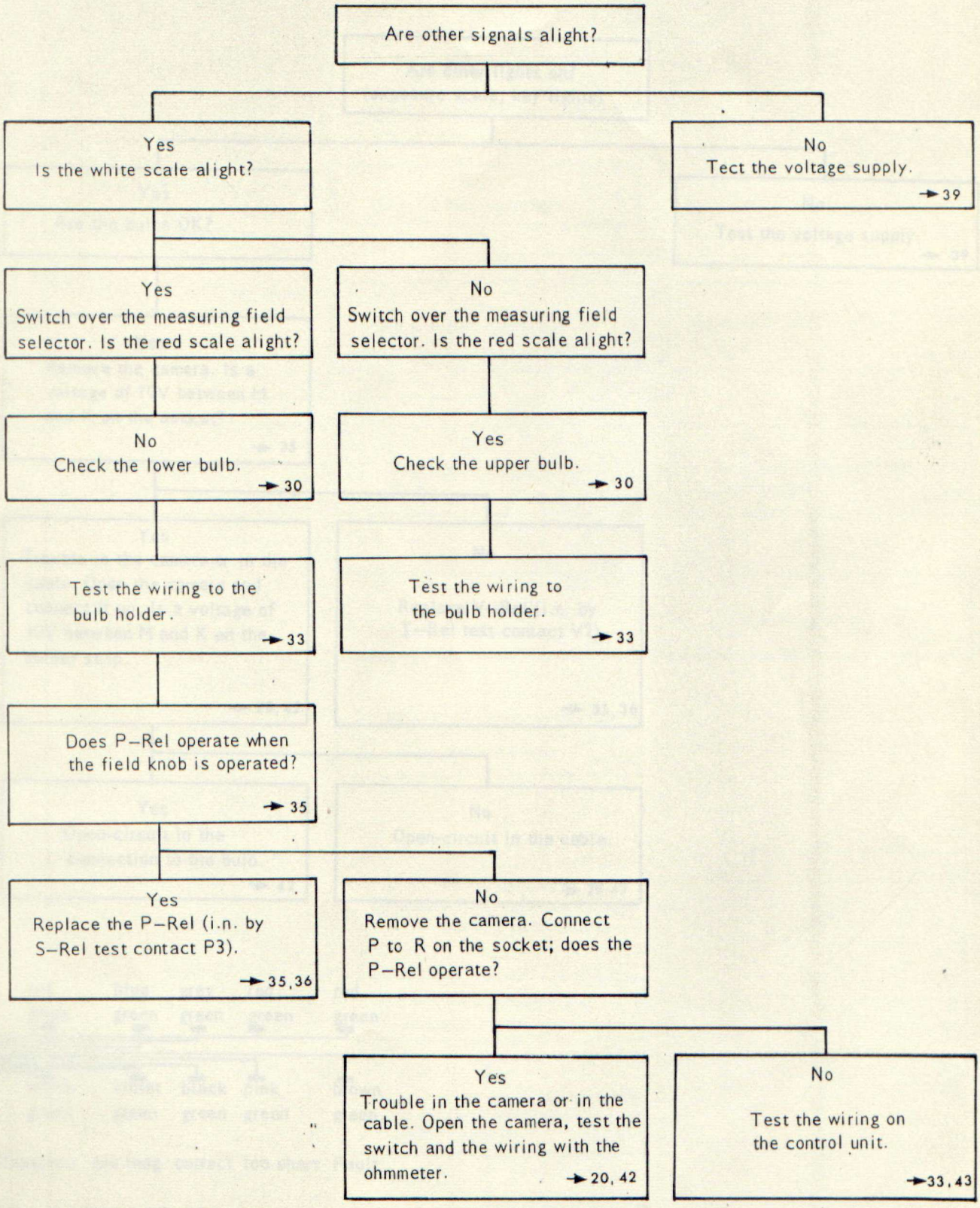
Lamp lights up during the pulse interval, goes out during the pulse.

No
Test the wiring of the pulse key.
→ 38

on all keys

Test the voltages on P1 and P2.
→ 39

Scale illumination
is not alight?



Control signals
(red-green-red)
do not light up.

Are other lights on?
(exposure scale, key lights)

Yes
Are the bulbs OK?

No
Test the voltage supply.
→ 39

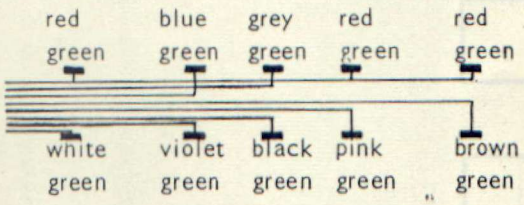
Yes
Remove the camera. Is a voltage of 10V between M and K on the socket?
→ 35

Yes
Trouble in the camera or in the cable. Open the camera and connect it up. Is a voltage of 10V between M and K on the solder strip.
→ 28, 42

No
Replace V–Rel (i.n. by T–Rel test contact V2).
→ 35, 36

Yes
Open-circuit in the connection to the bulb.
→ 42

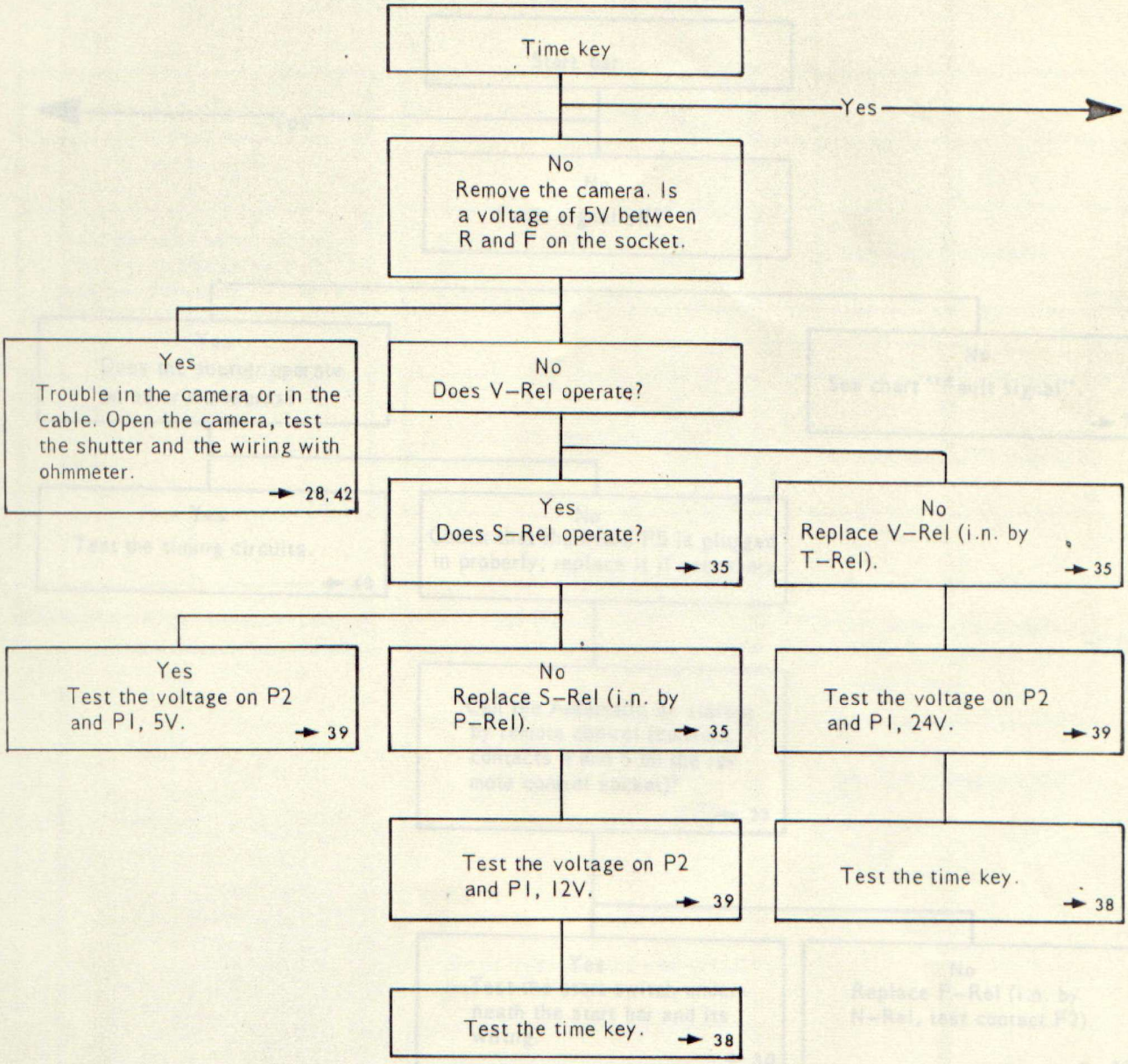
No
Open-circuit in the cable.
→ 28,42



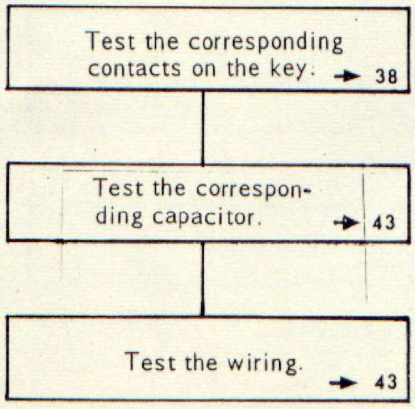
Exposure too long correct too short Fault

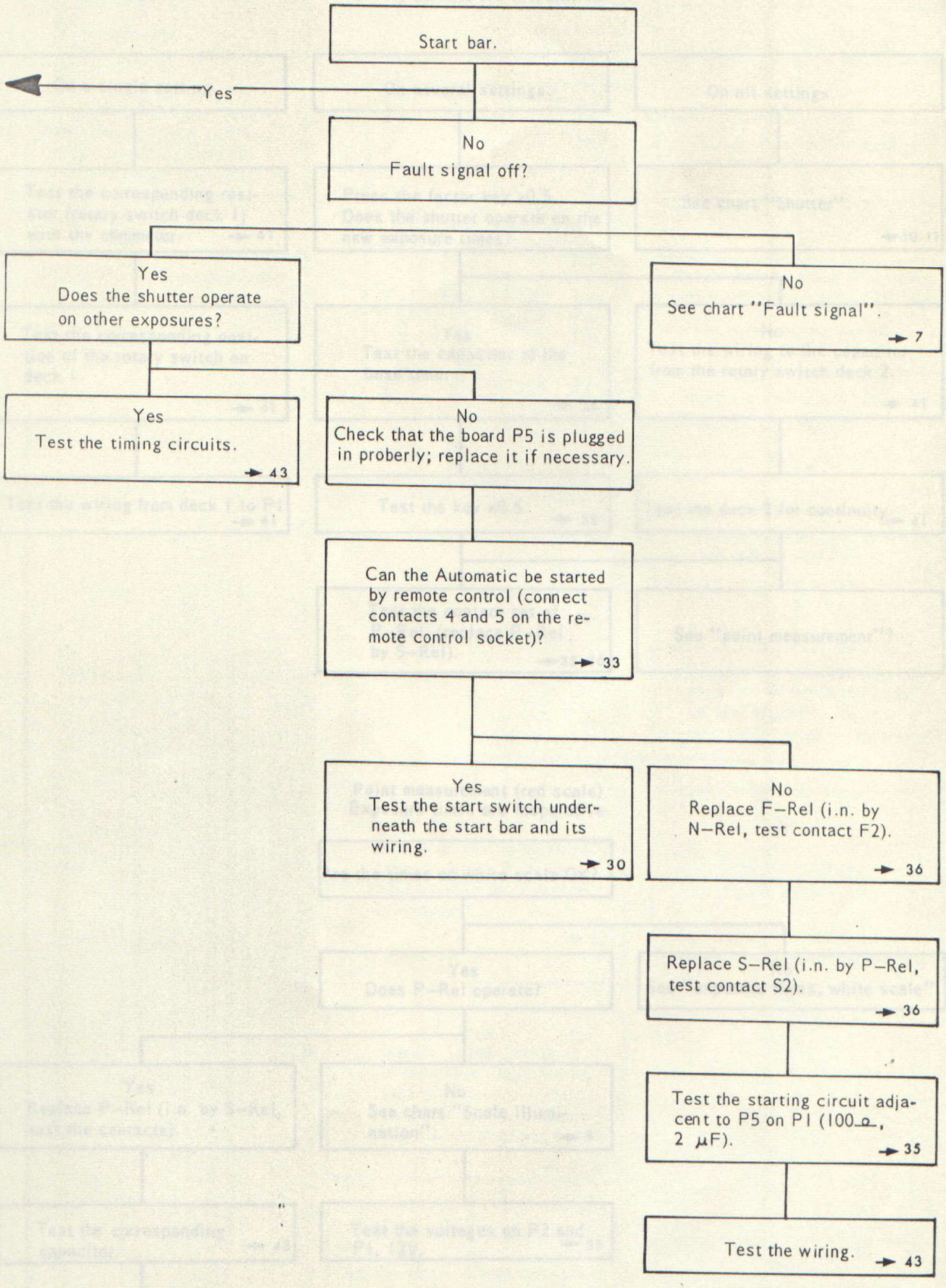
Circuit diagram., View from rear.

Shutter
opens with

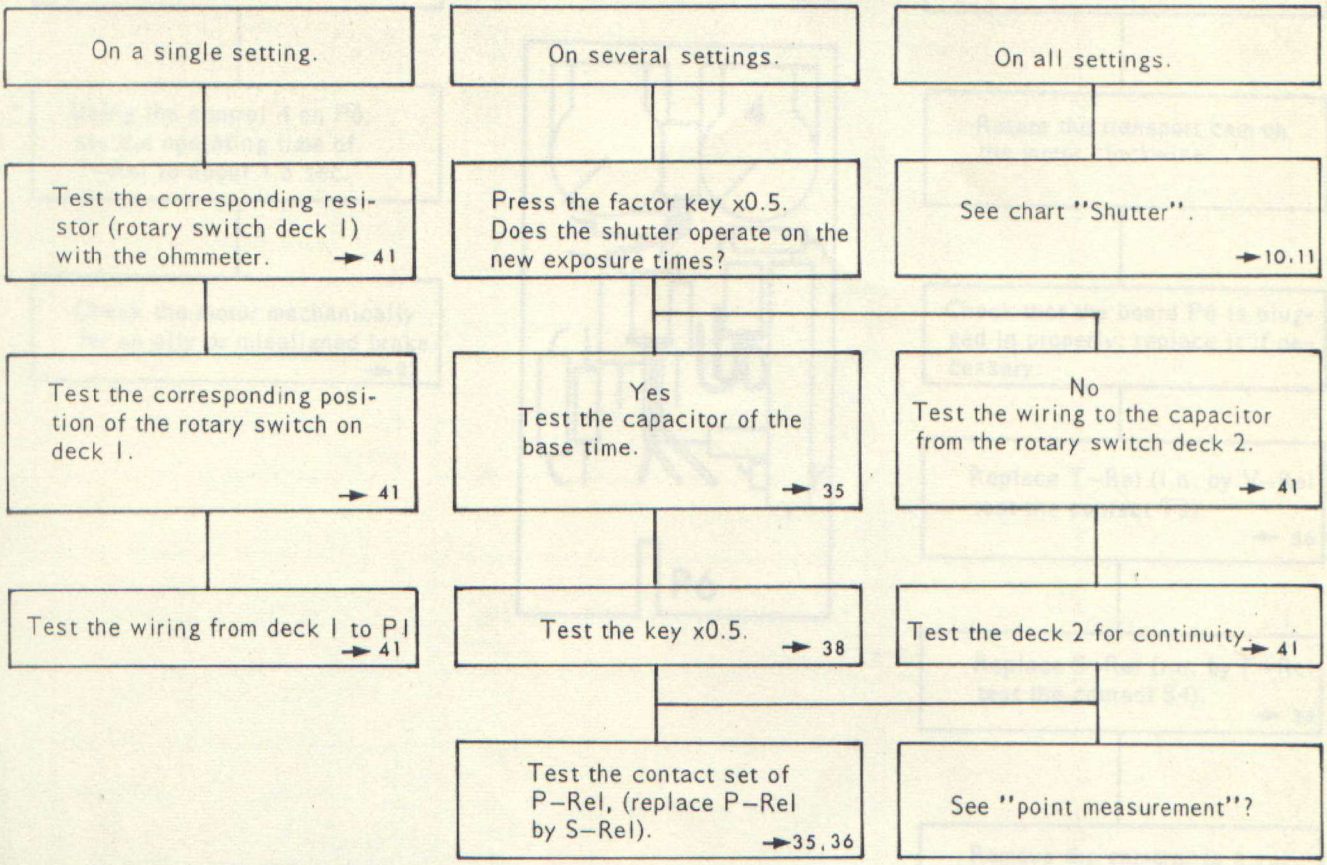


Factor keys
Exposure time does not change when the key is operated.

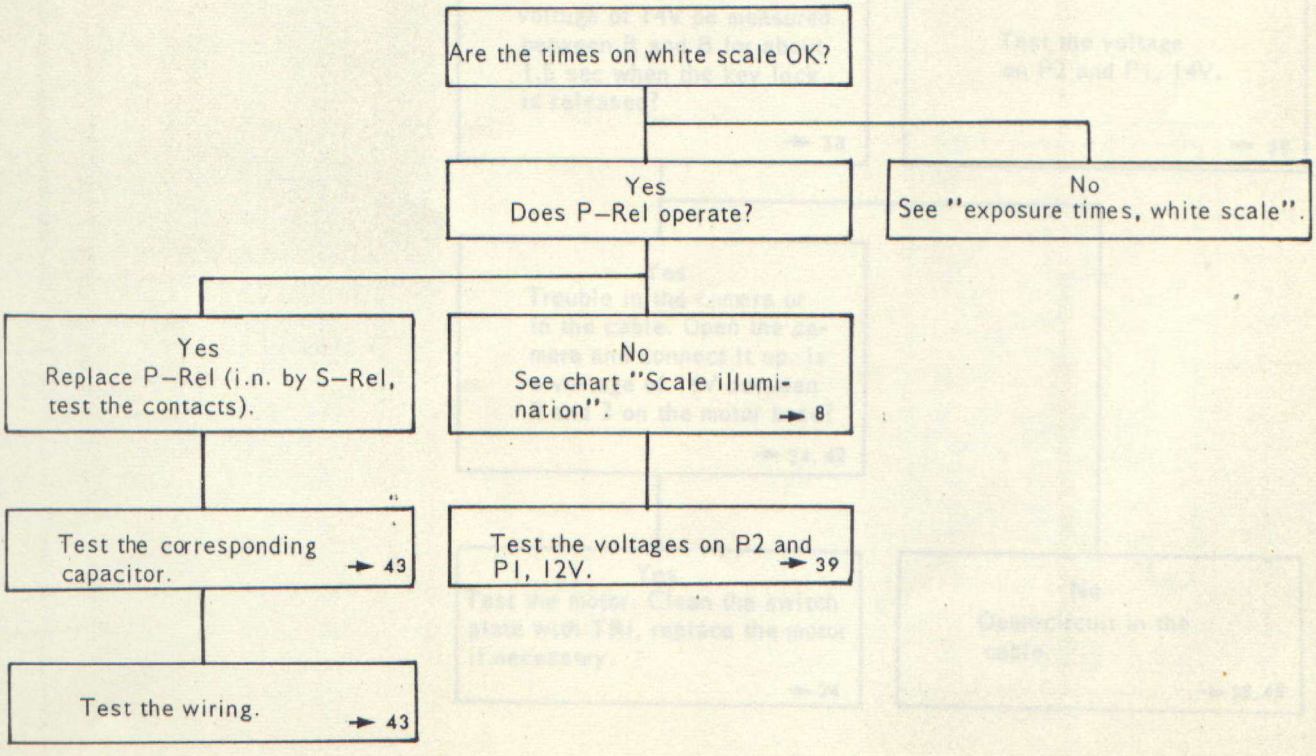



Start bar.
Yes
No
Fault signal off?
Yes
Does the shutter operate on other exposures?
No
See chart "Fault signal".
→ 7
Yes
Test the timing circuits.
→ 43
No
Check that the board P5 is plugged in proberly; replace it if necessary.
Can the Automatic be started by remote control (connect contacts 4 and 5 on the remote control socket)?
→ 33
Yes
Test the start switch underneath the start bar and its wiring.
→ 30
No
Replace F–Rel (i.n. by N–Rel, test contact F2).
→ 36
Replace S–Rel (i.n. by P–Rel, test contact S2).
→ 36
Test the starting circuit adjacent to P5 on P1 (100 Ω, 2 µF).
→ 35
Test the wiring.
→ 43

Exposure times
(white scales) are inoperative.



Point measurement (red scale)
Exposure times are inoperative.

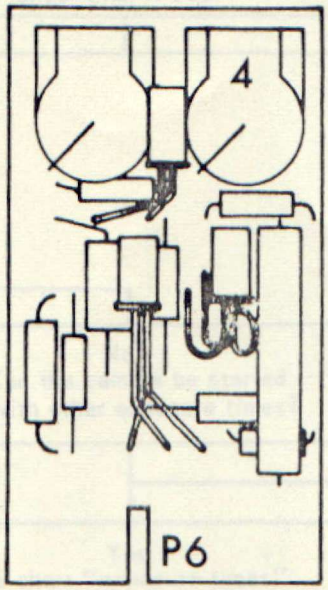


Film transport motor

runs on

Using the control 4 on P6, set the operating time of T–Rel to about 1.5 sec.

Check the motor mechanically for an oily or misaligned brake.
→22



fails

Rotate the transport cam on the motor clockwise.

Check that the board P6 is plugged in properly; replace it if necessary.

Replace T–Rel (i.n. by V–Rel test the contact T3).
→ 36

Replace S–Rel (i.n. by P–Rel test the contact S4).
→ 36

Remove the camera. Is a voltage of 14V between R and D on the socket?

Yes
Press the time key. Can a voltage of 14V be measured between R and B for about 1.5 sec when the key lock is released?
→ 33

No
Test the voltage on P2 and P1, 14V.
→ 39

Yes
Trouble in the camera or in the cable. Open the camera and connect it up. Is a voltage of 14V between 2 and 3 on the motor base?
→ 24, 42

Yes
Test the motor. Clean the switch plate with TRi, replace the motor if necessary.
→ 24

No
Open-circuit in the cable.
→ 28, 42

Pulse
does not operate.

Is the pulse interval = exposure time longer than ¼ sec?

Yes
Connect up the camera, press the start bar. Does it operate with the set exposure time?

No
Set to a longer time. If the pulse does not start up, press time key briefly.

Yes.
Test the pulse key. → 38

No
Can the camera be started with other exposure times?

Test the starter circuit to the right of P6 on P1 (100 Ω, 2 µf). → 35

Yes
see chart "exposure times". → 12

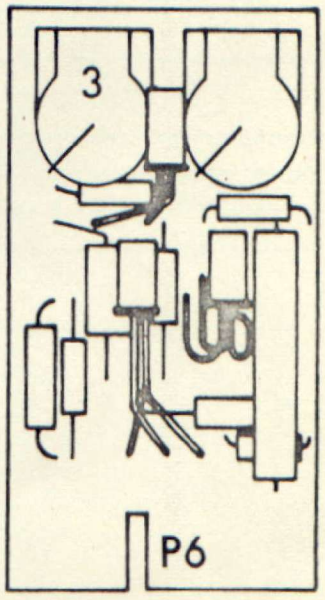
No
see chart "shutter". → 10,11

Test the wiring to the socket. → 38

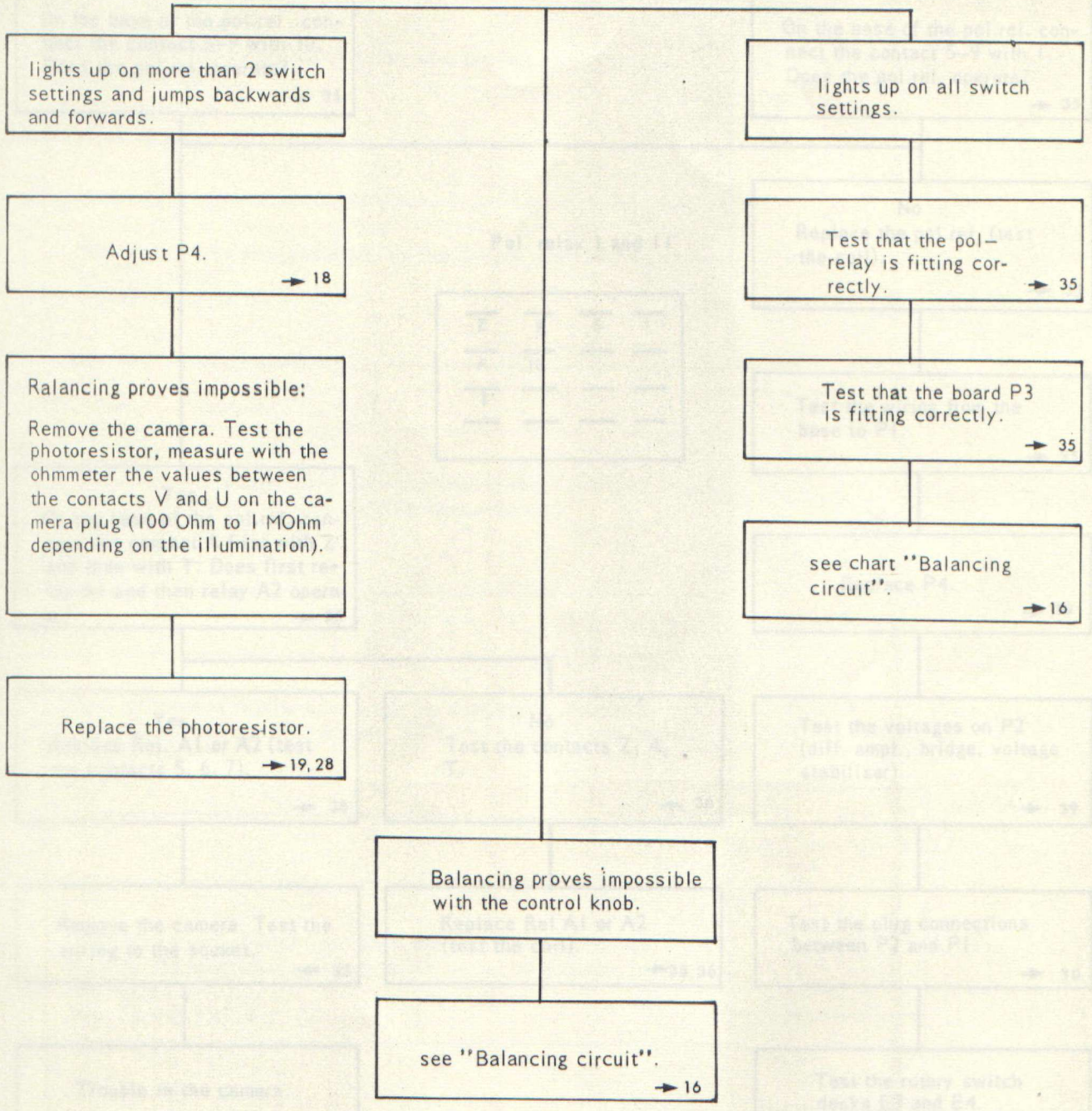
Replace T–Rel (i.n. by V–Rel test the contacts T1 and T4). →

Pulse duration

Set the required duration with control 3 on P6. The standard setting is 0.2 sec.



Green signal



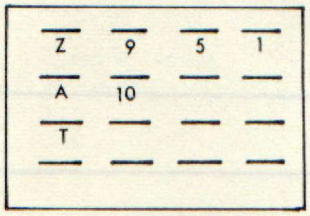
Balancing circuit

On the base of the pol.rel. connect the contact 5–9 with 10. Does the pol.rel. operate?
→ 35

On the base of the pol.rel. connect the contact 5–9 with 1. Does the pol.rel. operate?
→ 35

No
Replace the pol.rel. (test the coil).
→ 35

Pol. relay I and II



Test the wiring from the base to P1.
→ 35

Yes
On the base of the pol.rel. connect the contact A first with Z and then with T. Does first relay A1 and then relay A2 operate?
→ 35

Replace P4.
→ 18

Yes
Replace Rel. A1 or A2 (test the contacts 5, 6, 7).
→ 36

No
Test the contacts Z, A, T.
→ 36

Test the voltages on P2 (diff. ampl., bridge, voltage stabiliser).
→ 39

Remove the camera. Test the wiring to the socket.
→ 33

Replace Rel. A1 or A2 (test the coil).
→ 35, 36

Test the plug connections between P2 and P1.
→ 30

Trouble in the camera.
→ 6, 8, 42

Test the rotary switch decks E3 and E4.
→ 41

Film unexposed

Has the film been inserted correctly into the cassette? (see Op. Instr. p. 7, 8).

Yes

Has the cassette been inserted into the camera with the film transport key raised?
(see Op. Instr. p. 8).

Yes

Is the cassette shutter open when the locking lever is moved down?
(Insert cassette into camera with the back removed).
(see Service Manual p. 26).

Yes

Does the camera shutter open when the time key is operated?
(Test using the cassette without the back and the camera without the cover).

Yes

Does the camera shutter open when the start bar is operated?
(Cancel the fault interlock with yellow signal by pressing in the cover lock).
(see Service Manual p. 22).

No

See chart "shutter". →10, 11

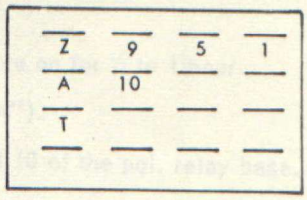
P4 Calibration

Instruments required: D.c. meter of at least 25 000 Ohm/V internal resistance, ranges 10V and 200–500 mV, or better a d.c. valve voltmeter with centre zero and similar ranges.

1.) Carefully remove the board P3 with the 17 balancing potentiometers from its mounting. Ensure that the potentiometer are not altered (adjustment of the measuring bridge).

2.) Switch on the control unit with the camera plugged in, using the EIN/ON key. Leave the instrument switched on for ½ to 1 hour.

Pol. relay lu. 11



3.) Connect the meter, range 10V, to the contacts 1 and 10 of the pol. relay base.

4.) Using potentiometer 1 on P4, set the voltage so that the meter shows a definite minimum, i.e. the value must be as near as possible to OV. The green lamp lights up.

5.) Clip the meter, range 10V, to the contacts 1 and 5–9.

6.) Set the potentiometer 2 on P4 to give 7V.

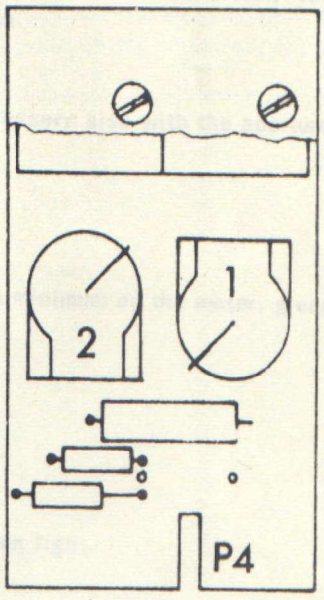
7.) Repeat operations 3, 4, 5 and 6 (once or twice).

8.) Clip the meter, range 200–500 mV, to the contacts 1 and 10.

9.) Carry out the fine calibration to OV as in operation 4.

10.) Carefully lock both potentiometer sliders with lacquer.

11.) Insert the board P3 into its mounting so that the left edge of the boards is level with the mounting. The green lamp then goes out and a red lamp lights up.



Photoresistor calibration

Instruments required: Meter as for P4 calibration, REMIPHOT, filter set consisting of neutral filters N1, N2, N4, N6 in flat slider or in filter fitting (MeF), microscope with 2 bodies, e.g.:

ZETOPAN with photographic tube and inclined monocular body, MeF with monocular body and lateral photographic tube with deviating prism.

If calibration has to be carried out after replacing the photoresistor (page 28) it is necessary to use in the control unit the circuit board P3 supplied together with the new cell. The camera must only be calibrated when it is closed.

Before calibration the 2 bodies are compared with the REMIPHOT. Any difference in brightness which may exist is allowed for by adjusting the index number. During the calibration the Photo-Automatic is fitted to the photographic tube, the REMIPHOT to the monocular body.

Adjustment:

REMIPHOT: Eyepiece ring set to 10x, index 15/12 DIN.
Photo-Automatic: Photographic eyepiece set to 10x, field knob to integrated measurement; cover the opening of the focusing telescope cover; control knob 15 DIN – 25 ASA.

Microscope: Low-power objective (4/0.10; 10/0.25), uniformly distributed specimen with little or no colour, powerful light source (quartz iodine lamp), neutral filter in suitable mount, Köhler illumination.

Calibration:

1.) Switch on REMIPHOT and Photo-Automatic, leave on for ½ to 1 hour.

2.) Check P4 calibration (see chart "P4 Calibration").

3.) Clip the meter, range 10V, to the contacts 1 and 10 of the pol. relay base.

4.) Adjust the specimen brightness on the microscope so that the REMIPHOT indicates an exposure time of 1/250 sec.

5.) Switch the light to the Photo-Automatic.

6.) Set the control knob to 1/250 sec.

7.) Adjust the 1/250 potentiometer on P3 so that the meter shows a clearly defined minimum. The green lamp lights up at the same time.

8.) Switch the light to the REMIPHOT.

9.) Adjust the brightness with the N1 filter (if necessary also with the aperture diaphragm to 1/125 sec.

10.) Change the light over to the Photo-Automatic.

11.) Set the control knob to 1/125 sec.

12.) Adjust the 1/125 potentiometer on P3 to give a minimum on the meter, green light.

13.) Change the light to the REMIPHOT.

14.) Adjust the brightness with filter to 1/60 sec.

15.) Switch the light to the Photo-Automatic.

16.) Set the control knob to 1/60.

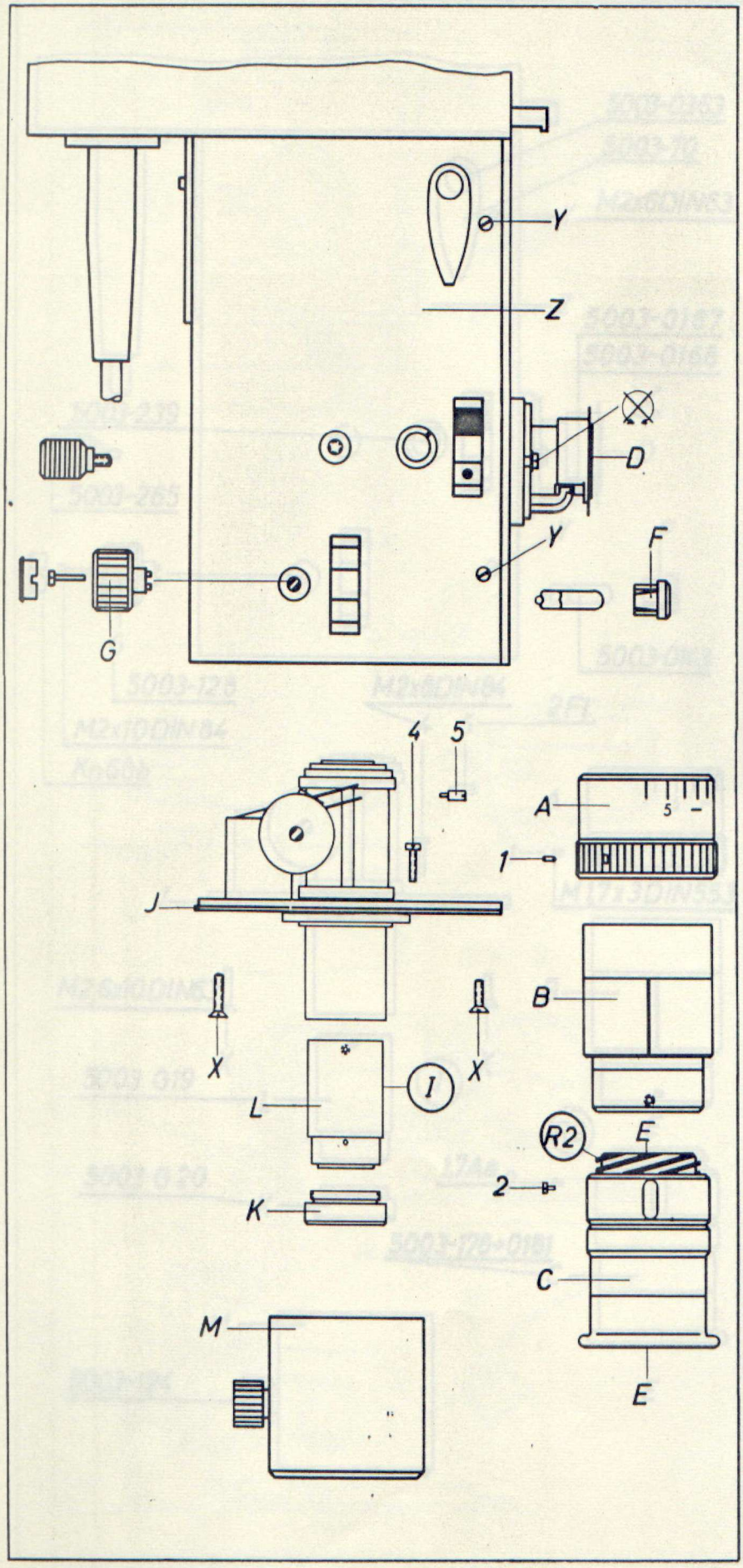
17.) Adjust the 1/60 potentiometer for minimum, green light.

etc. . . . . .

All the 17 potentiometers (up to 4 min) are calibrated by this procedure.

The entire operation is then repeated for a fine calibration. With exposure times above 30 sec (1, 2, 4 min), i.e. at low brightnesses and therefore high resistance values, the potentiometer must only be set after the photoresistor has reached its appropriate final value and the pointer ceases to move.

All potentiometer settings must be carefully locked with lacquer.



Opening the camera

Remove the caps from the knurled knobs and the locking lever. Pull out the knobs of the beam splitter and the grey filter, hold the shaft with the narrow flat pliers, unscrew the knurled knobs and push them in again. Unscrew the screws in the remaining knurled knobs and the locking lever and remove the knobs.

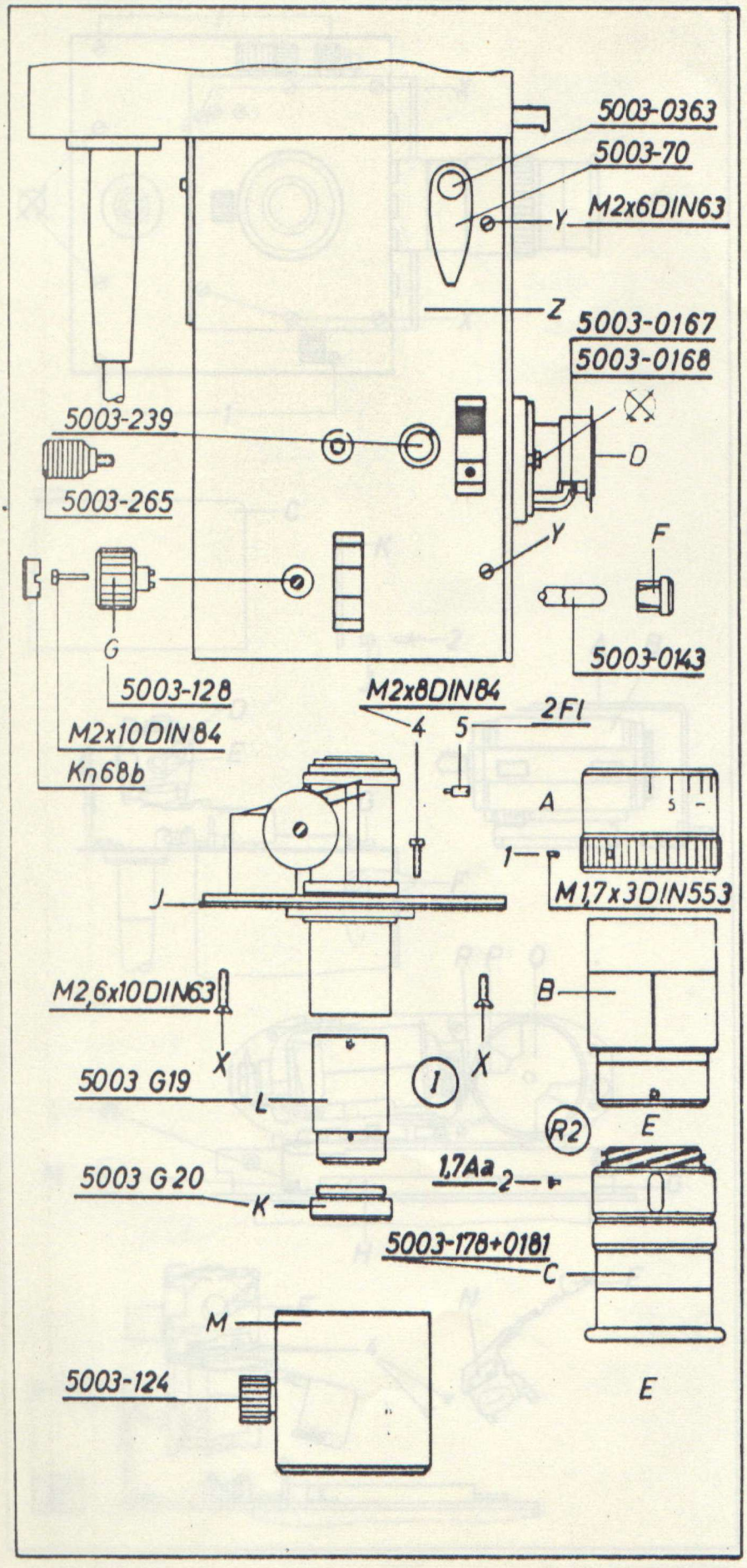
Unscrew the screw Y, remove the U-shaped housing Z.

Focusing telescope

Unscrew the focusing telescope from the camera housing. Mark part A in its final stop position. Unscrew the screw 1, withdraw part A from part C. Unscrew the screw 2, unscrew part C from part B.

Note: 6-start thread, mark position. Clean the thread, lubricate R2.

Clean the optics: clean graticule D, front and rear lens E.



Photographic eyepiece

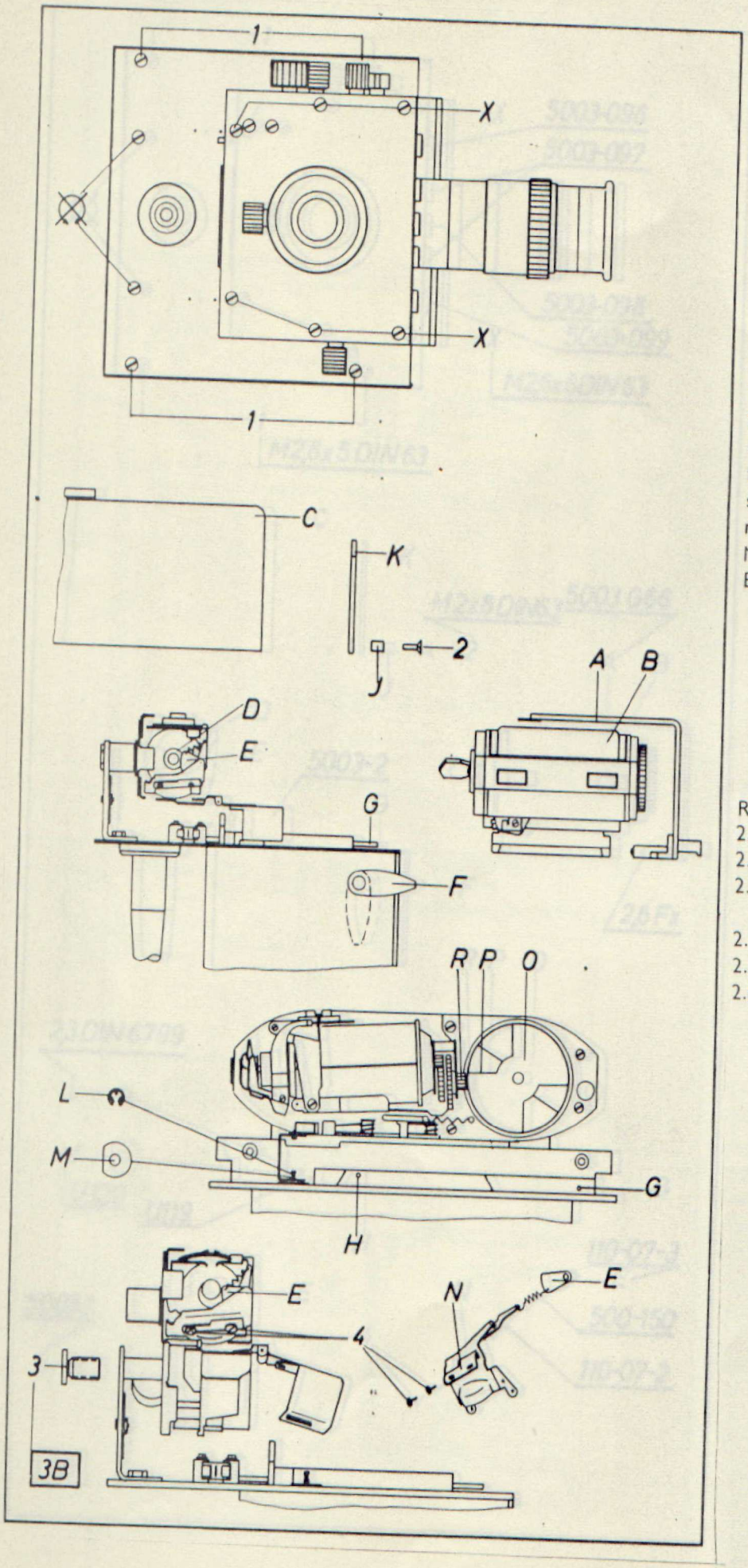
Remove the knob G, unscrew the screws X (p. 22). Carefully withdraw the plate J from the camera. Unscrew the screws 4, remove part M. Dismantle the lens mounting K, unscrew the screw 5. Withdraw the sliding part L from the eyepiece tube. Clean the lens surfaces (e.g. with LAVO).

Signal lamp

Remove the push-on lens F. Withdraw the bulb from its holder with a lamp withdrawal tool.

Circuit

The camera circuit is shown on pare 42.



Film transport motor

1. Oil on brake taper D.
2. Brake E out of adjustment or worn.

Re 1:

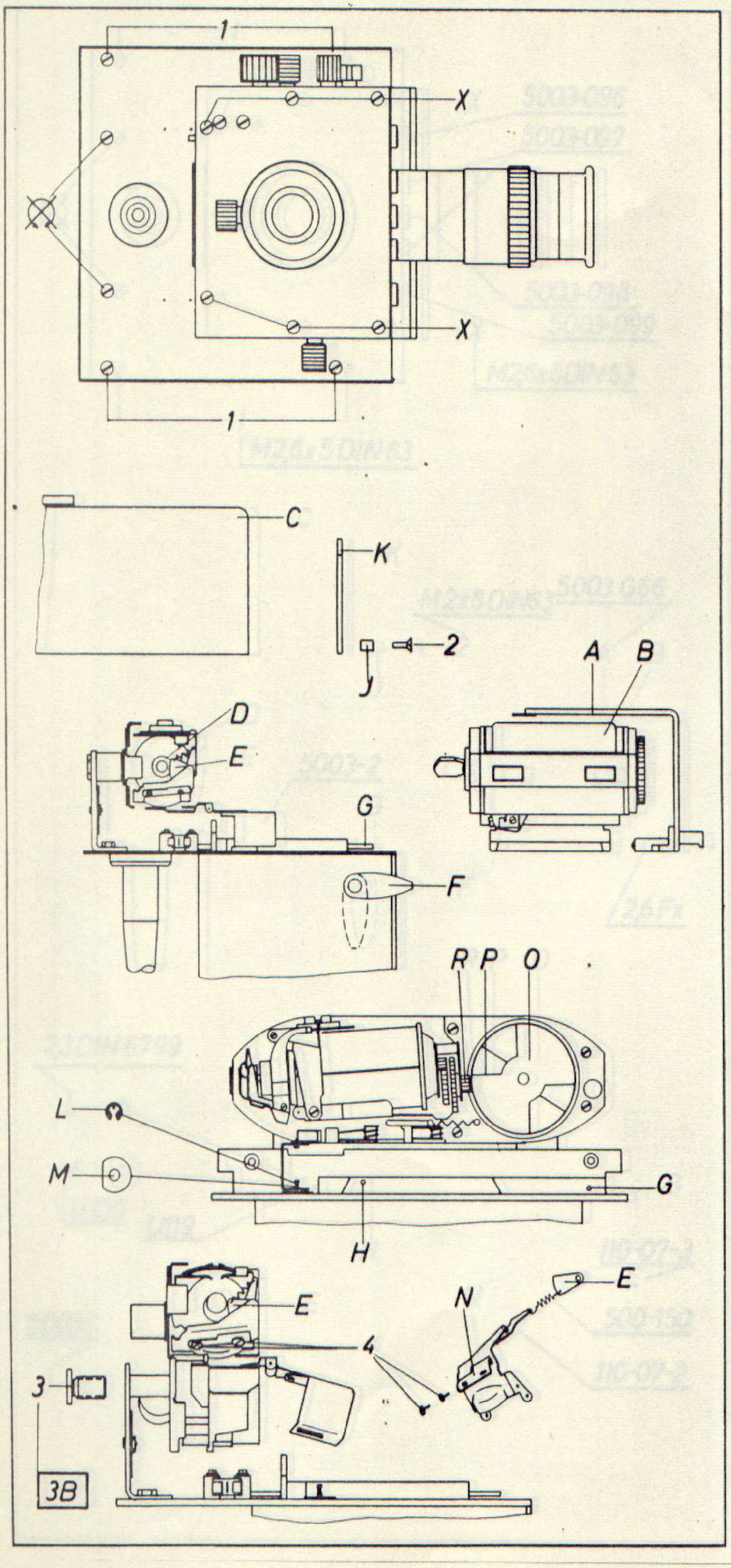
1.1 Remove cover A.
1.2 Remove cassette B.
1.3 Unscrew the screws 1.
1.4 Raise the housing C and withdraw it to the back.
1.5 Clean the brake cone D with grease-free petrol.

Test:

Switch on the instrument. Operate the lokking lever F, push in the pins G and H until the yellow fault signal goes out, press the start bar. If the film transport operates correctly the fault has been remedied. If the Motor does not transport correctly the brake E requires adjustment.

Re 2:

2.1 As above 1.1 – 1.4.
2.2 Unscrew the screws 2.
2.3 Remove the sleeves J and the cover plate K.
2.4 Remove the circlip L and the washer M.
2.5 Unscrew the screw 3.
2.6 Raise the motor, loosen the screws 4. Move the part N to set brake E against the brake cone D and tighten the screw 4.



Film transport motor

1. Oil on brake taper D.
2. Brake E out of adjustment or worn.

Re 1:

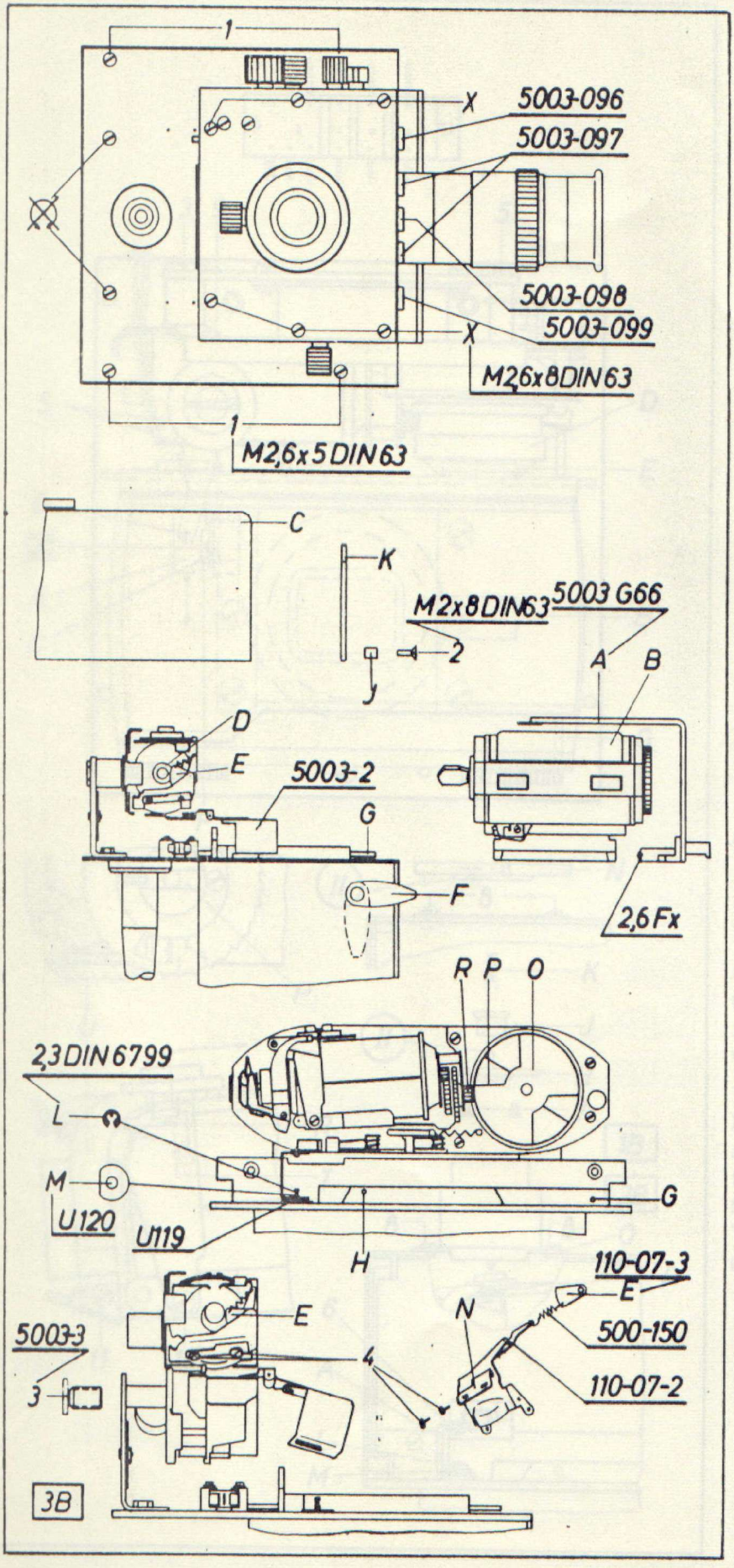
1.1 Remove cover A.
1.2 Remove cassette B.
1.3 Unscrew the screws 1.
1.4 Raise the housing C and withdraw it to the back.
1.5 Clean the brake cone D with grease-free petrol.

Test:

Switch on the instrument. Operate the lokking lever F, push in the pins G and H until the yellow fault signal goes out, press the start bar. If the film transport operates correctly the fault has been remedied. If the Motor does not transport correctly the brake E requires adjustment.

Re 2:

2.1 As above 1.1 – 1.4.
2.2 Unscrew the screws 2.
2.3 Remove the sleeves J and the cover plate K.
2.4 Remove the circlip L and the washer M.
2.5 Unscrew the screw 3.
2.6 Raise the motor, loosen the screws 4. Move the part N to set brake E against the brake cone D and tighten the screw 4.

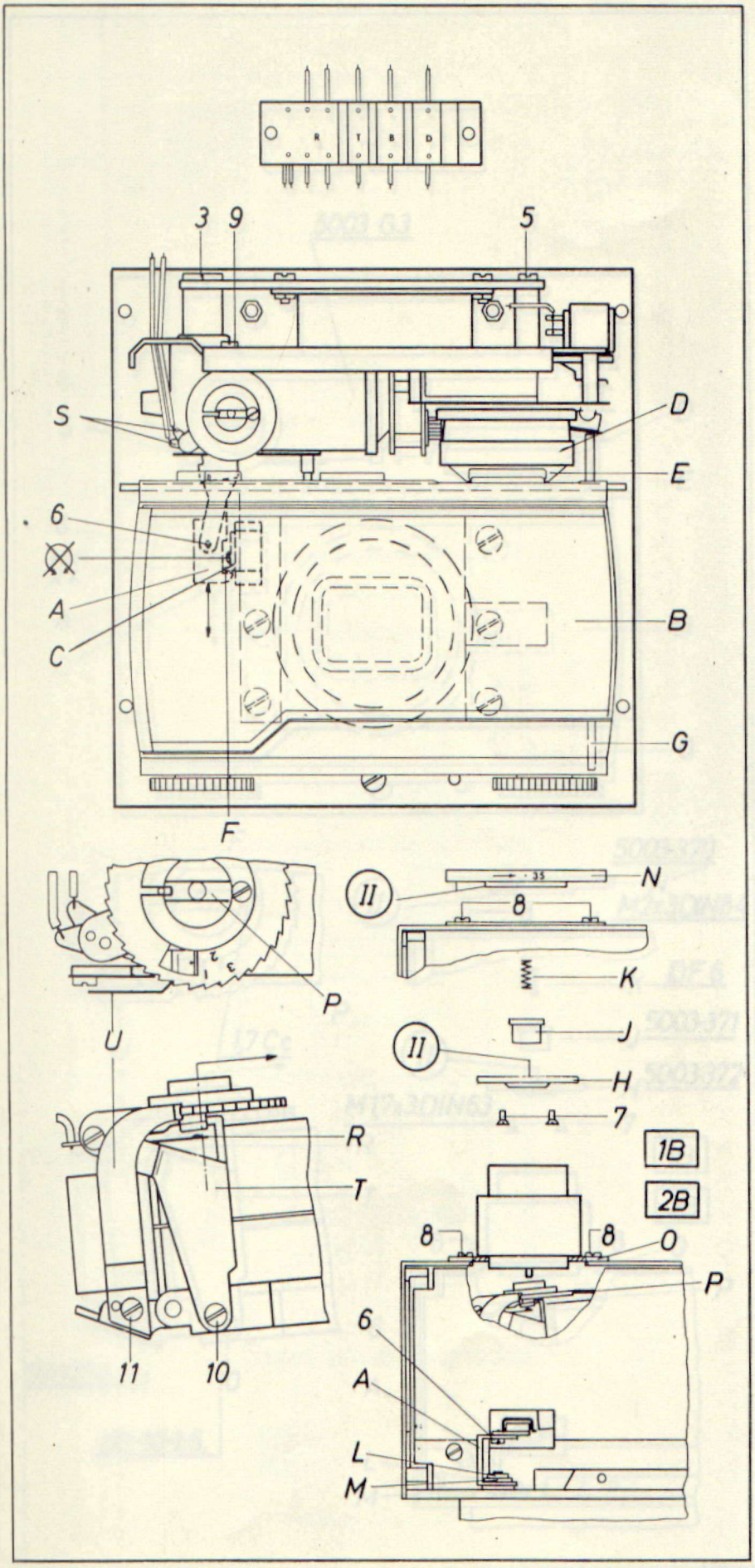


Test:

Move the transport wheel O clockwise up to the stop (approx. ¼ turn), then anti-clockwise (approx. ¾ turn). When the brake E is set correctly the lower edge of the transport cam P is in the same plane as the top edge of the transport pinion R.

Note:

During assembly both the motor counter and the camera counter on the housing C must be in the end position (36).



Film transport motor replacement

Remove cover, cassette etc. (p. 22, 1.1 – 2.4).

Remove the screw 6, take off the claw A. Unsolder the connections to the motor from the tags R, T, B, D. Unscrew the screws 3 and 5. Lift out the motor.

Fitting the new motor: screw on the motor with the screws 3, 4 and 5. Secure the claw A with the screw 6. Insert the cassette B and secure it with the locking lever F (p. 22). Centre the motor transport wheel D to the transport key E. Tighten the screws 3 and 5. Solder the motor connections to the solder strip R, T, B, D.

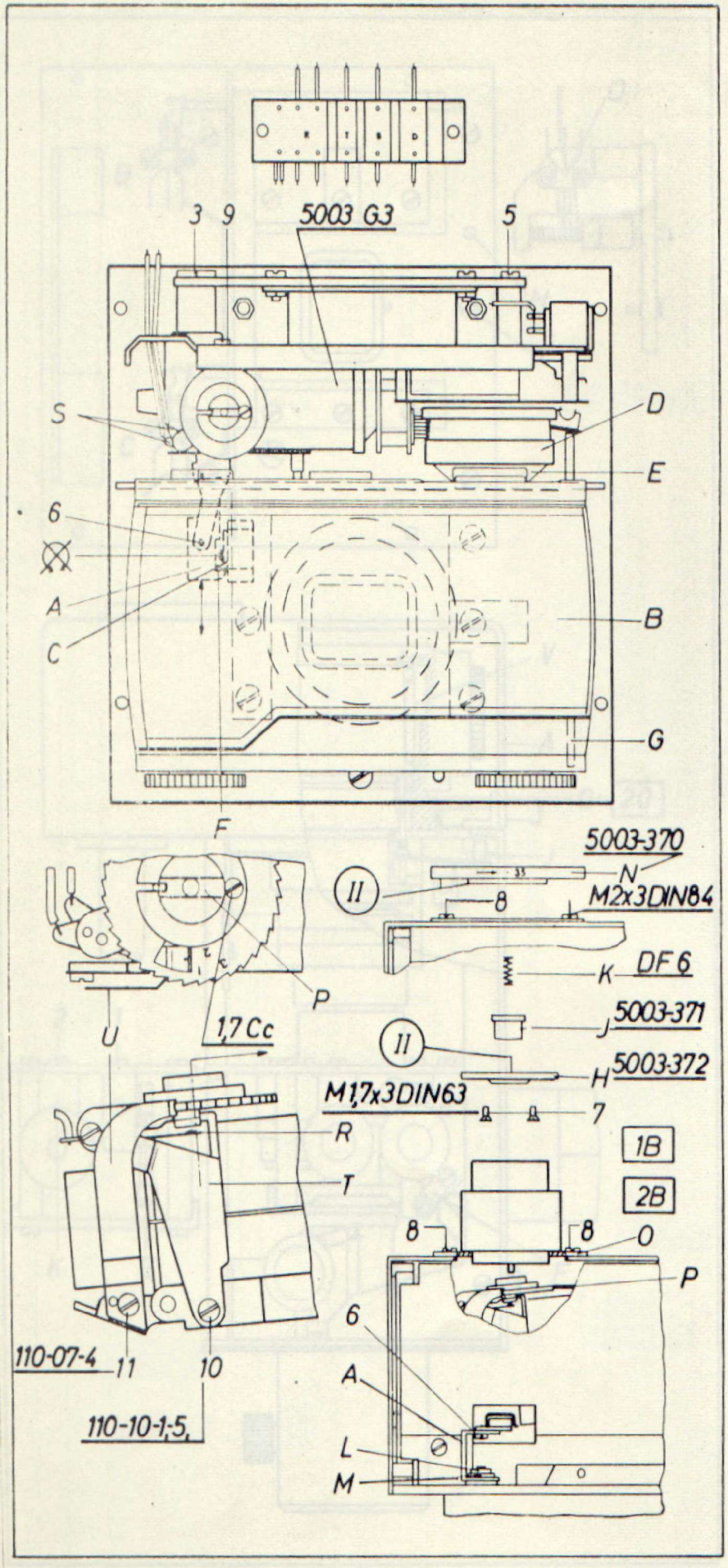
Transport lock claw A.

Adjustment

The distance between the face F on the claw A and the angle C on the cassette release knob must be 0.2 mm.

Loosen the screw 6, adjust the claw A by moving it in the direction of the arrow to give the required distance, tighten the screw 6. Fit the washer M and the circlip L.

Test:
Push the cassette B by hand up to the stop and secure it in position by operating the locking lever F. Push in the pin G (yellow fault signal goes out), press the start bar. Test for correct operation (release of transport lock and film transport).



Counter adjustment

The counter mechanism has to be adjusted after the motor has been changed.

Details:
Mark the position of the part H against the counting disc. Remove the screws 7, parts H, J, K and N. Fit the housing in position and secure it with the 4 screws 1 (p. 22). Insert the service tool No. 1B through the opening of the ring O into the bore of the part P. Place service tool No. 2B on SW 1B. The face of the SW 2B must be flat against the ring O. If not, loosen the screws 8 and move the ring O until SW 2B rests flat on it.

Counter dismatling

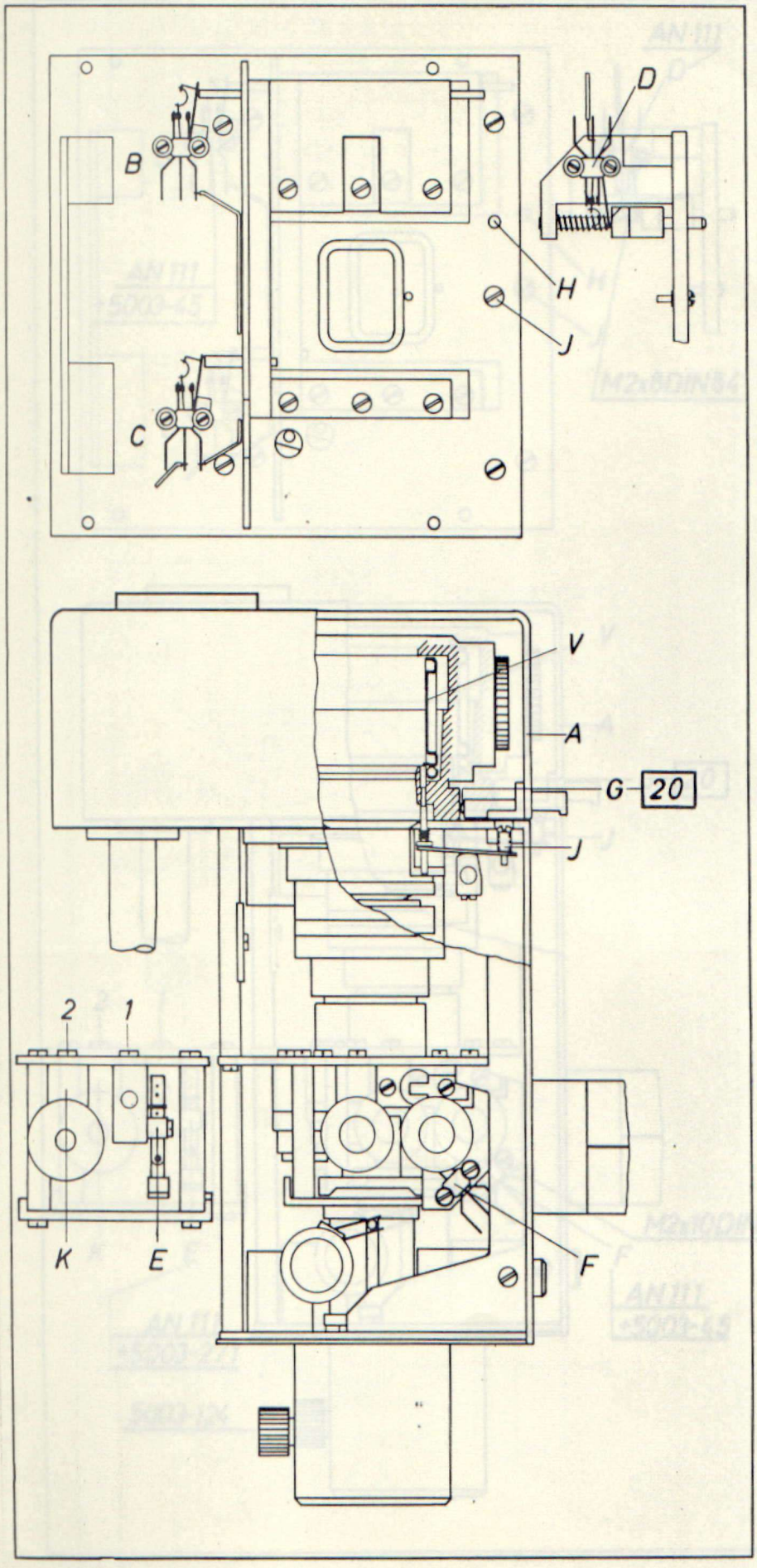
Unsolder the connections S. Unscrew the screws 9 and 10. Move the retaining bracket T in the direction of the arrow and then remove it.

Notes on fitting:
After fitting the new retaining bracket T the counting disc must move on by about 1½ teeth each time the film is tranported. The adjustment is made with the spring U after loosening the screw 11.

The camera counter must then be adjusted again (see above).

Film end switch

The correct operation of the switch for the end of the film is obtained by adjusting the contact plate R.



Cover lock and cassette lock

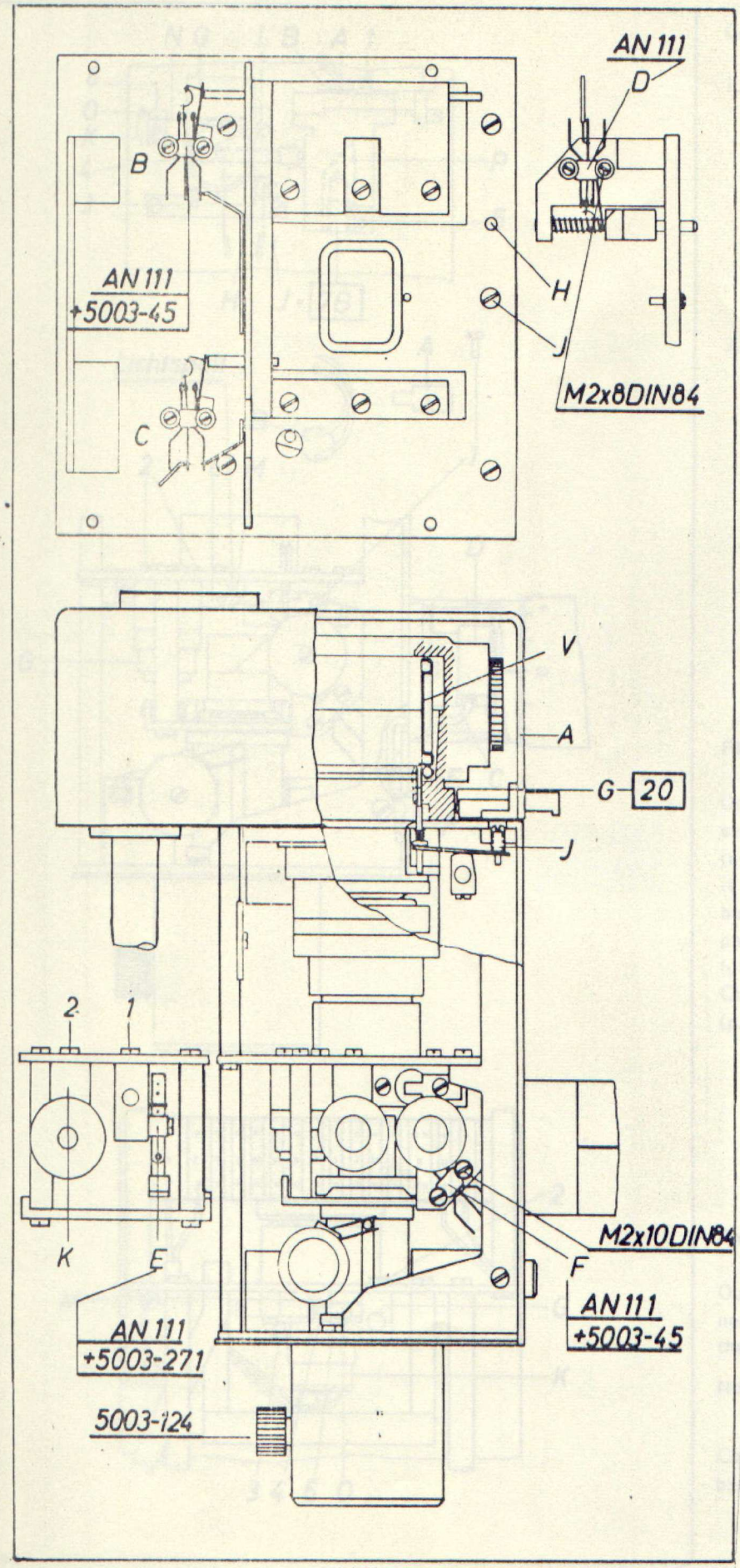
Remove cover, cassette etc. (p. 22, operations 1.1 – 2.4).

Replace the fault switch B.
Replace the fault switch C.

Cassette location switch D
Prism switch E
Measuring field switch F

Open the camera (p. 20). Change the switch D or the switch F. The prism switch E can be removed from its mounting block after removing the screws 1.

When it is fitted the prism switch E must be set so that it operates about 1 mm before the prism slide clicks into position.

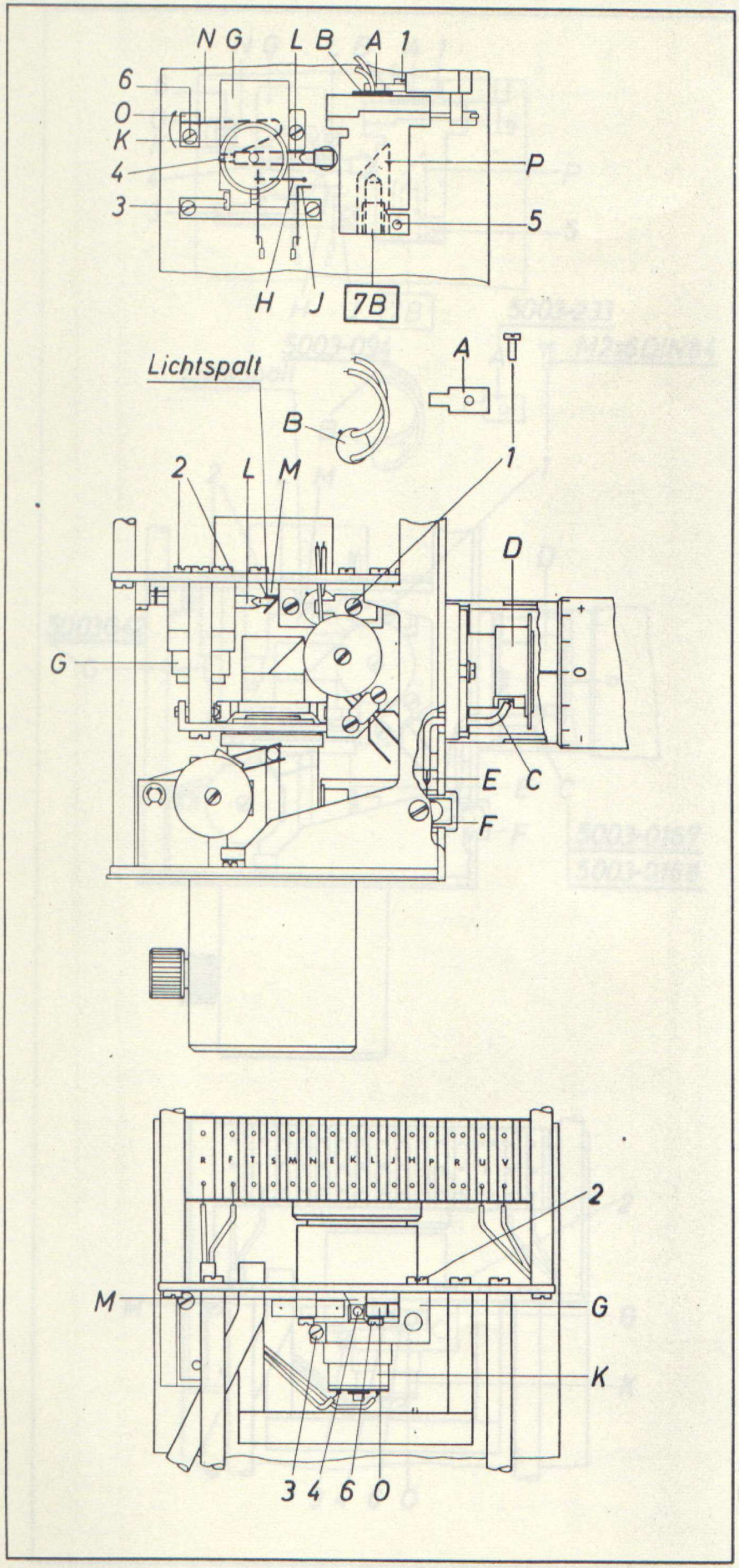


Cover A adjustment

The screw G in the cover A which forces the cassette accurately against its stop has to be set with the tool SW 20 so that the peg H at the same time engages smoothly in the bore of the cover A.

Cassette shutter V adjustment

Move over the locking lever and remove the cover A. Withdraw the cassette, replace it in position after removing the back and operate the locking lever. This opens at the same time the cassette shutter V. If necessary it has to be adjusted with the screw J so that it neither protrudes into the beam nor lies against the cassette wall.



Control signals red-green-red

1. No signals in the focusing telescope.
   Unscrew the telescope, check that the fibre optics are fitted into the bores of the graticule carrier D; if necessary place the fibres into the bore.
   Open the camera (p. 20).
   Check that the fibre optics are fitted into the bores of the lamp strip E; if necessary insert the fibres into the bores.
2. The lights are exceptionally dark. Remove the push-on lens F. The fibre optics must protrude 1 – 1.5 mm from the bore of the lamp strip E.
   Test the voltage at the solder strip between M and K, 10V (p. 39, 42).

Flash socket

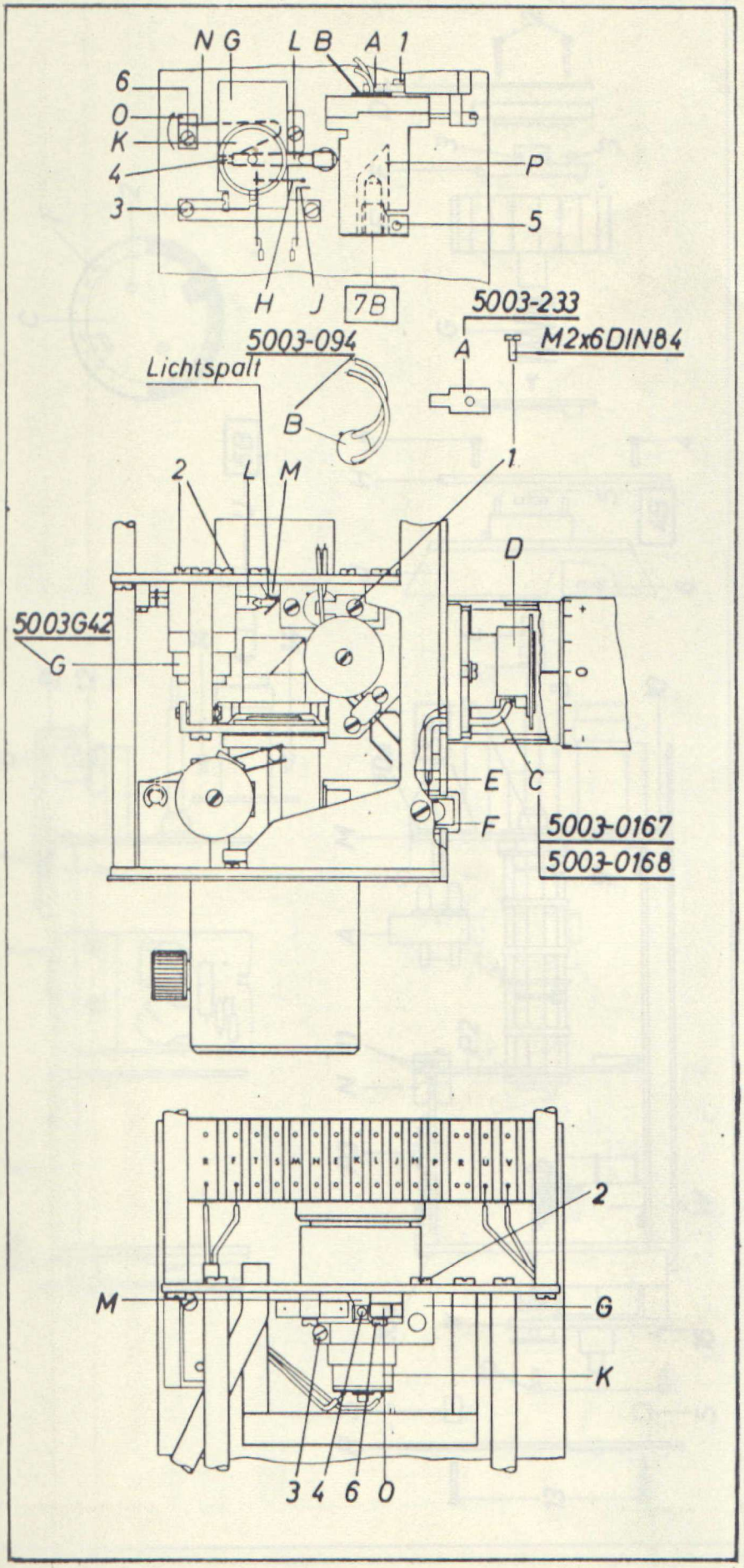
Open the camera (p. 20). Check that the synchronising socket is clean. If a flash is produced when the synchronising cable is plugged into the microflash ready for use but without operating the start bar, then part H sticks to part J and must be carefully separated from it.
Check the wiring and the soldered joints (p. 42).

Photoresistor replacement

Open the camera (p. 20). Unsolder the connections U and V. Remove the screw I and the part A, withdraw the photoresistor B.

Note: The pointer on the housing is directed upwards to the left.

Calibrating the photoresistor B and the board P3 supplied with it (p. 18).



Shutter

Open the camera (p. 20). Unsolder the connections R and F. Unscrew the screws 2, carefully remove the part G with the shutter motor K. Release the screw 3, withdraw the shutter motor from the part G. Notes on fitting:

Clamp the new motor K lightly with the screw 3 in the part G; the distance between the pointer L and the part G is then about 0.5 mm. Carefully fit the part G with the motor and tighten the screws 2.

Set the pointer L to the diaphragm M at 0.02 mm (light gap) bymoving the shutter motor along inside the part G; Tighten the screw 3.

Check:
The return spring N must rest against the plane surface when the pointer L moves and must not slide down on the trimming screw 4.

Solder on the connections R and F.

Remove the cover and the cassette from the camera, press the time key.

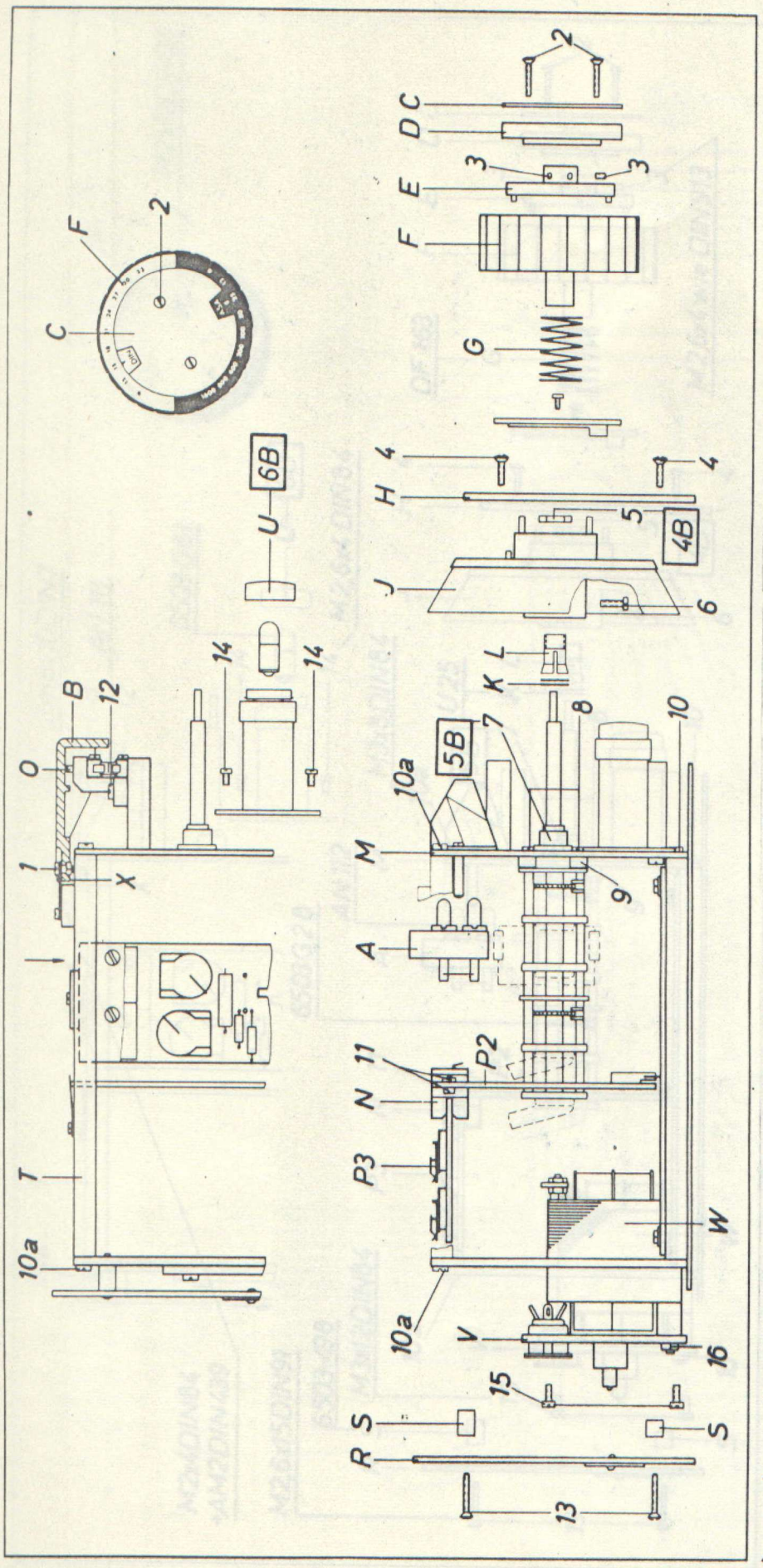
Using a 3x magnifier look into the camera from above. The shutter must not obstruct the beam in any way.

Rotate the part O with the pliers in the direction of the arrow with the screw 6 tightened until a segment of the pointer L is visible in the diaphragm M. Rotate part O back until the segment disappear. Retighten the screw 6 and lock it with varnish Check the operation of the shutter.

Adjusting the measuring beam

Remove the photoresistor B (do not unsolder it). Remove the neutral filter click bearing K after removing the screws 2 (p. 26). Secure the camera to the microscope body. Set a prominent point or the crossline into the centre of the double circle in the focusing telescope. Switch the measuring field knob to point measurement.

Screw the tool SW 7B into the prism mounting in the measuring block P. Release the hexagon socket screw T. Carefully rotate or move the prism mounting until the point or crossline is in the centre of the point measuring diaphragm. Tighten the socket screw 5. The point measuring diaphragm can be seen with a watchmaker's eyeglass through the bore for the photoresistor B.



Control unit

1. Remove the cover.

1.1 Unscrew 2 screws each on the left and right narrow sides; remove the cover.

2. **Time scale illumination.**

2.1 Open the instrument, Item 1.1.

2.2 Remove the lamp holder A and change the bulb.

3. **Start bar with switch.**

3.1 Open the instrument, Item 1.1.

3.2 Unscrew the screws 1, remove the start bar B.

3.3 Remove the pin O.

3.4 Unscrew the screws 12.

3.5 Replace the start switch.

Notes on fitting:

The start switch has to be mounted so that the distance is 0.2 mm.

4. **Rotary switch**; clean the contacts

4.1 Open the instrument, Item 1.1.

4.2 Remove P5 and P6.

4.3 Clean the contact with TRI (e.g. K-60 spray).

Rotary control, replacement.

4.4 Remove the start key, Item 3.2.

4.5 Set the control knob to 15 DIN/25 ASA.

4.6 Rotate the control knob anticlockwise to the stop.

4.7 Remove the screws 2 and the plates C and D.

4.8 Mark the part E, loosen the screws 3 with the socket key, remove part F and spring G.

4.9 Remove the screws 4 and the front panel H.

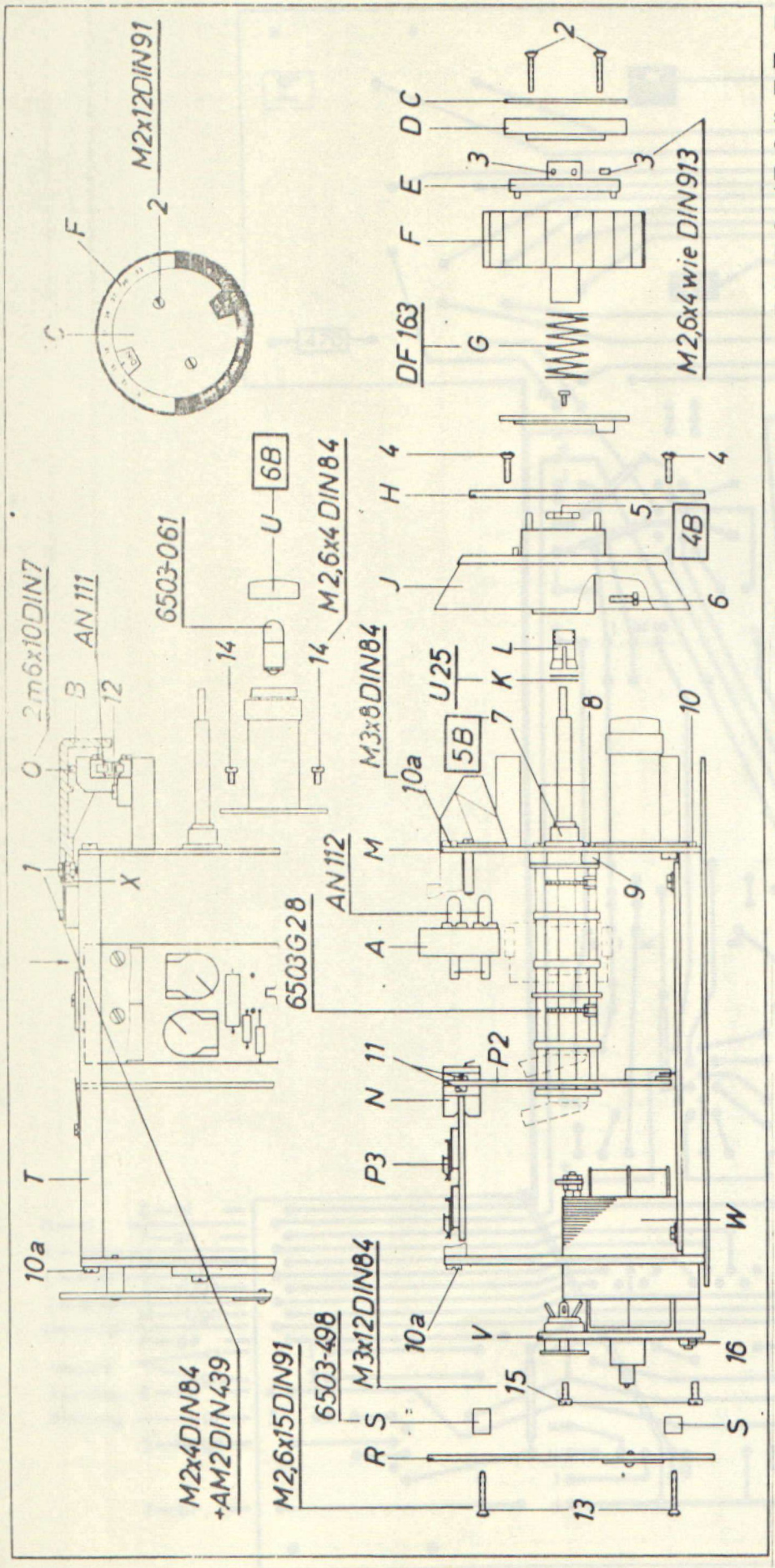
4.10 Remove the screw 6, loosen nut 5 with the service tool, remove the part J and the washers K. (Note part L, its position in the bore of part J may be marked).

4.11 Remove the nut (service tool SW 5B) and the screws 8 (note the spacers 9).

4.12 Carefully move forward the fixing screws 10 and the intermediate wall M as far as the connections permit.

4.13 Pull off P3 and remove the holder N after removing the screws with nuts 11.

4.14 Unsolder the connections from the rotary switch.



Fitting in the reverse order.

Note:
Re 4.10. Put part J into place but do not secure it, then fit the front panel H as operation 4.9. Now turn the switch and part J to the left stop and secure them. The numbers on part J should be in the centre of the window in the start bar.
Re 4.8. Lightly grease the spring G with grease 11. Secure the part E in the marked position.

5. Removing P2.

5.1 Open the instrument, item 1.1.
5.2 Take off the back panel R after removing the screws 13 (watch out for the spacers S).
5.3 Withdraw P3 and the mounting N after removing the screws 11.
5.4 Remove the clip for the capacitors (arrow).
5.5 Unscrew the screws 10a and remove the parts T.
5.6 Carefully pull out P2.

6. Push-button keys and bulbs.

6.1 Remove the cap with the cap removing tool.
6.2 Withdraw the bulb from the holder with the bulb removing tool.

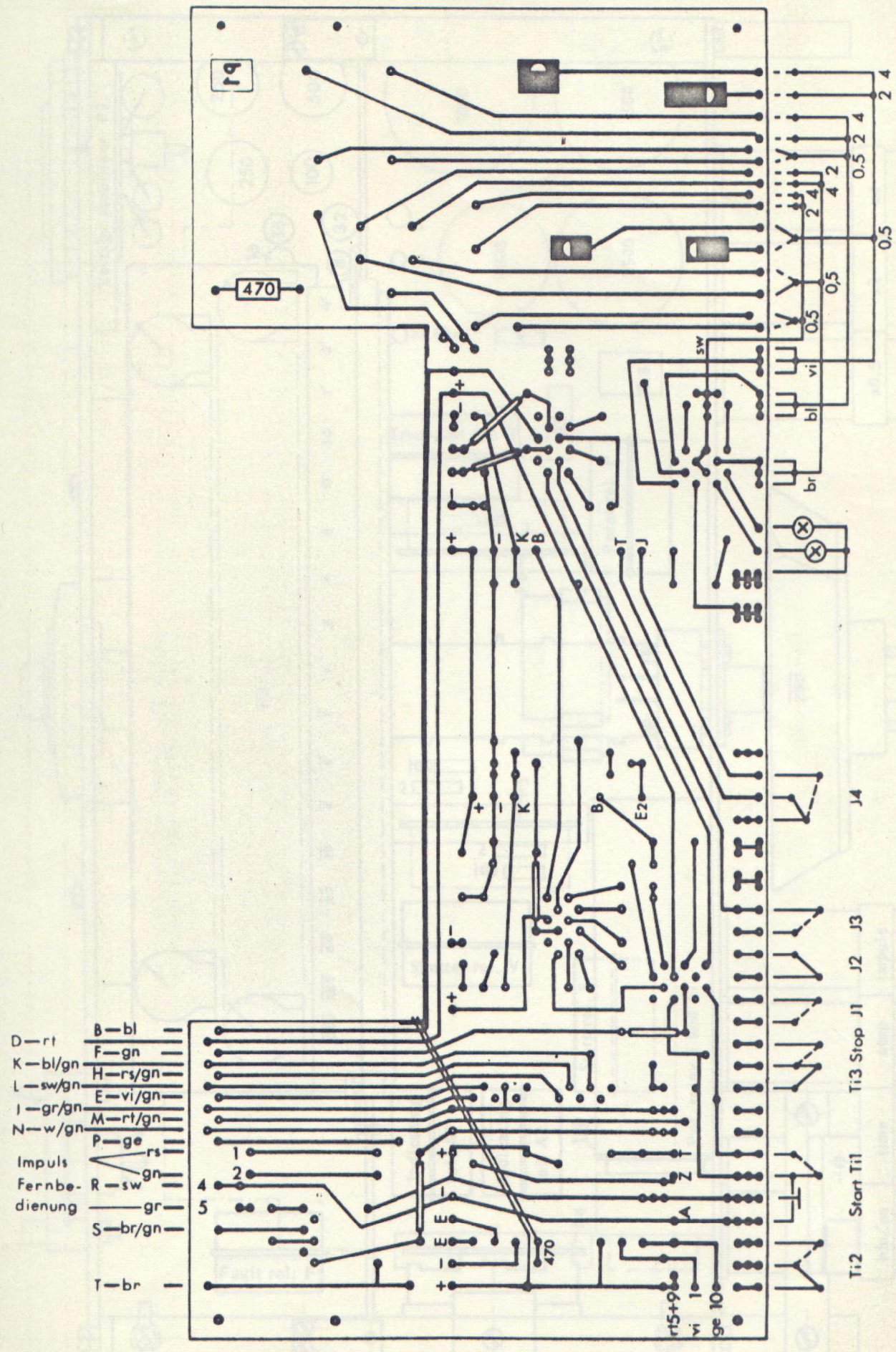
Replacement:

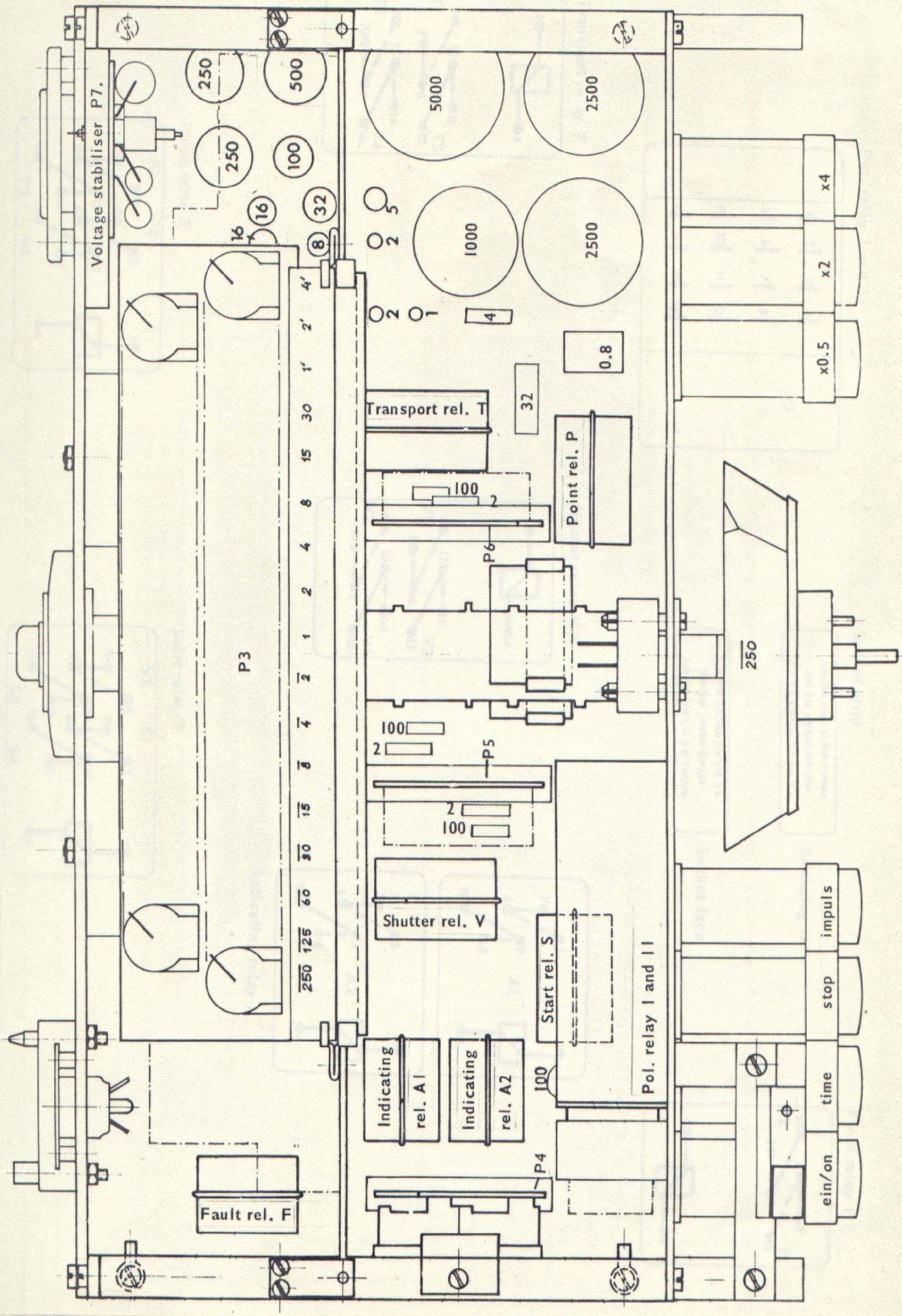
6.3 Remove the control knob and the front panel, operations 4.5 – 4.9.
6.4 Unscrew the screws 14 and unsolder the switch.

7. Transformer replacement.

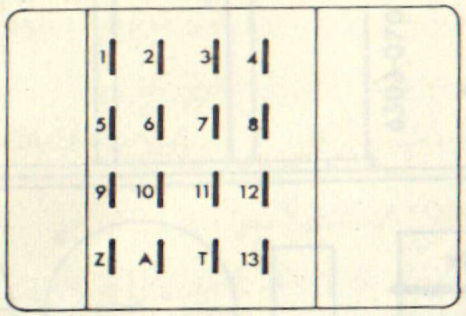
7.1 Open the instrument, item 1.1.
7.2 Remove the back panel, item 5.2.
7.3 Remove the screws 15 and the intermediate wall V after loosening the earthing clamp.
7.4 Unsolder the connections.
7.5 Unscrew the nuts 16, lift out the transformer W.

P 1 mit Lei tungsführung und Verdrahtung

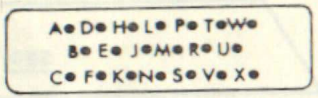



Voltage stabiliser P7.
250
500
250
100
16
32
8
16
5000
2500
1000
2500
x4
x2
x0.5
0.8
32
Transport rel. T
Point rel. P
100
2
P6
P3
250
100
2
P5
2
100
Shutter rel. V
Start rel. S
Pol. relay I and II
impuls
stop
time
ein/on
Indicating rel. A1
Indicating rel. A2
100
P4
Fault rel. F

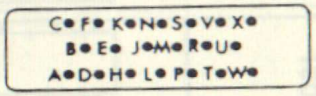
Pol. relay I and II



Socket strip

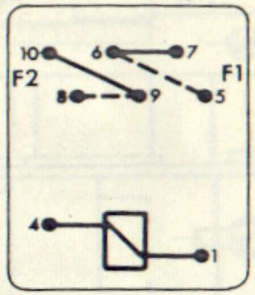


Soldering face

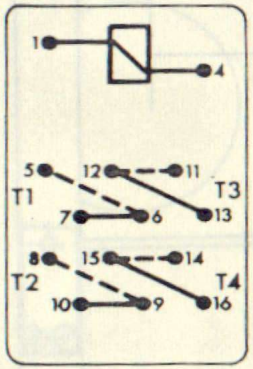


Socket face

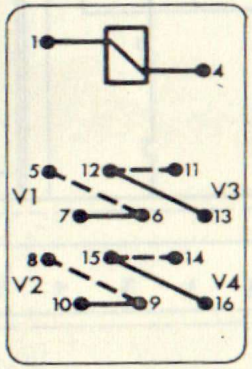
Fault relay F

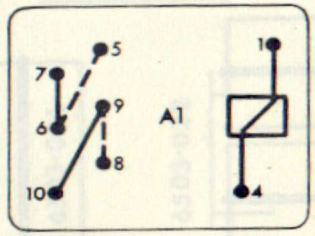


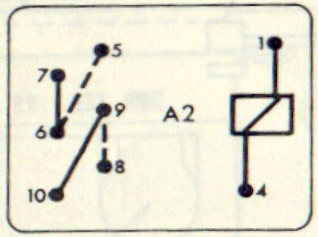
Transport relay T



Shutter relay V V

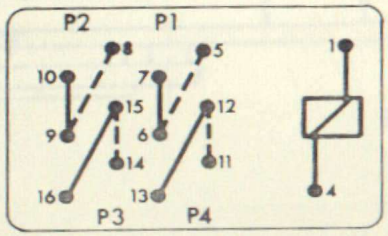




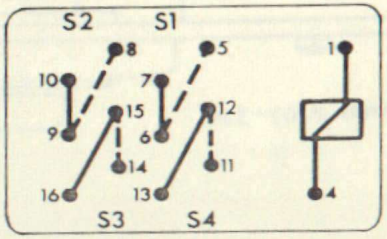


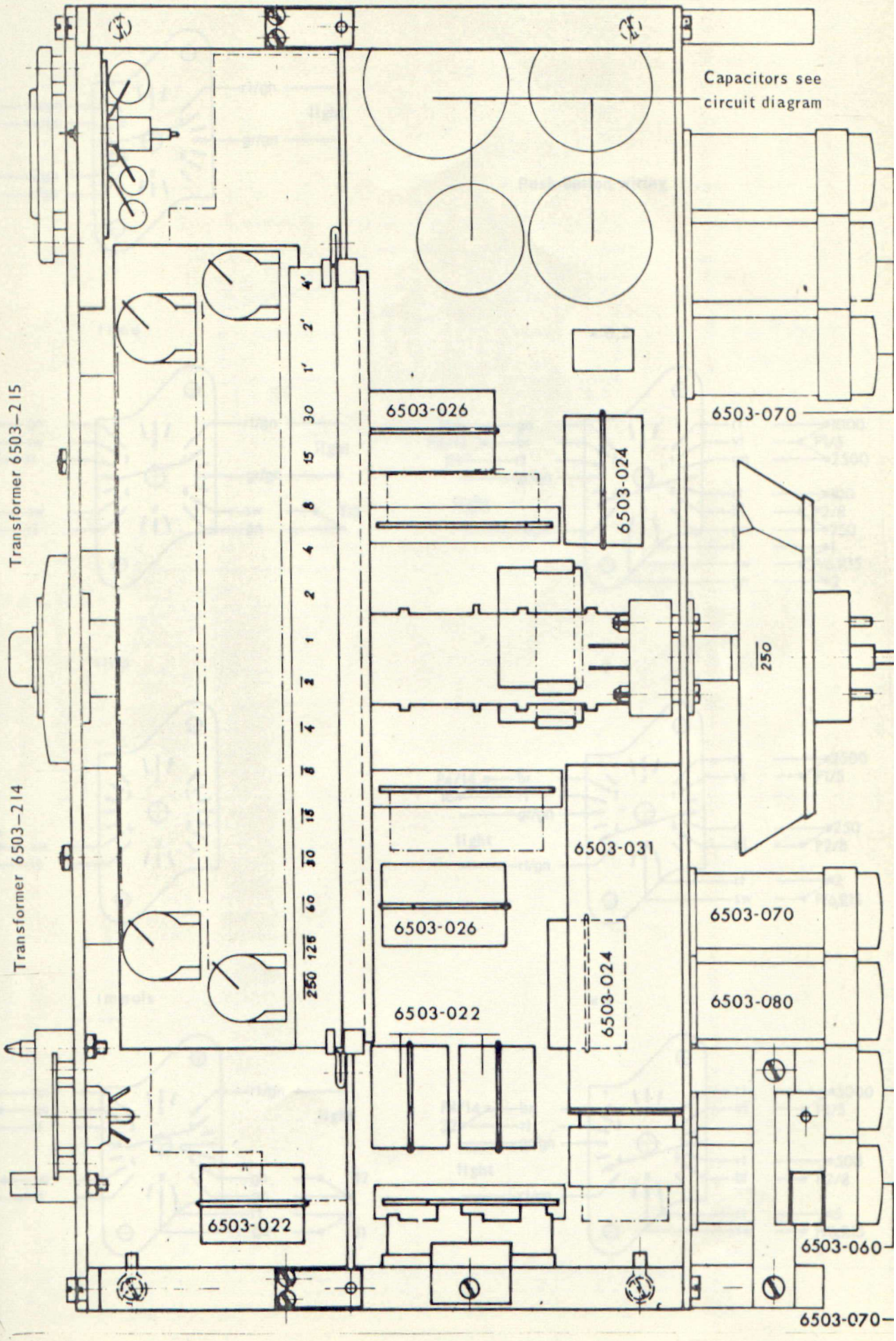
Indicating relay A

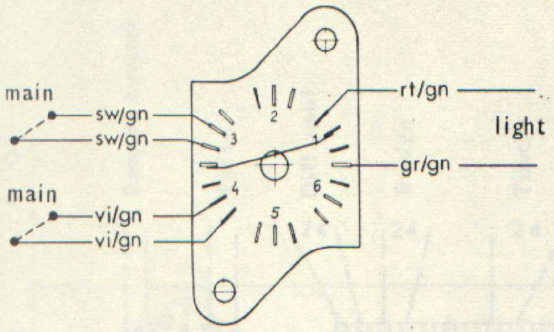
Point relay P



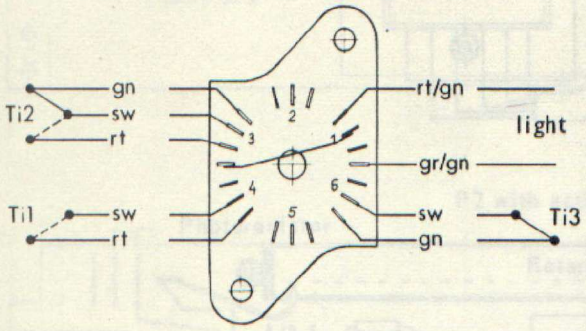
Start relay S



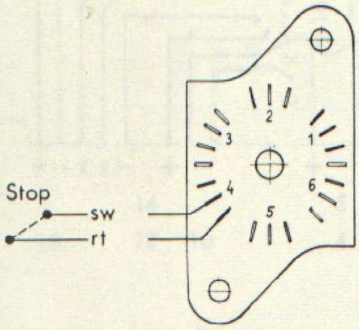

Capacitors see circuit diagram
6503-070
6503-026
6503-024
Transformer 6503–215
4'
2'
1'
30
15
8
4
2
1
½
¼
⅛
1/30
1/60
1/125
1/250
250
6503-031
6503-026
6503-070
6503-024
6503-080
6503-022
Transformer 6503–214
6503-022
6503-060
6503-070



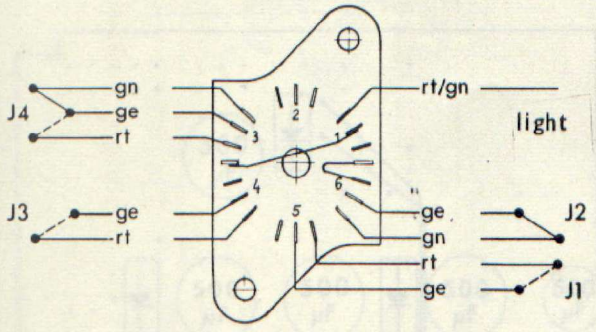
time



stop

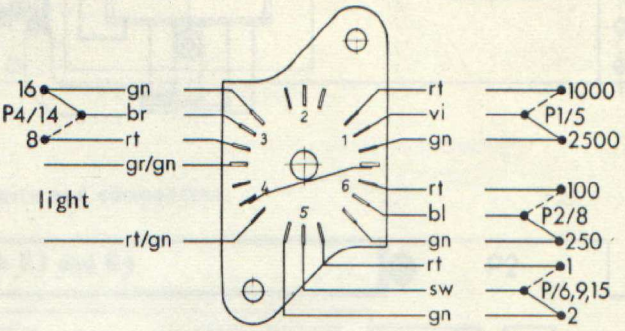


impuls

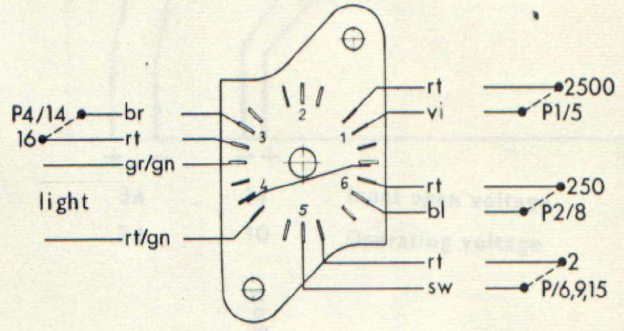


Push-button wiring

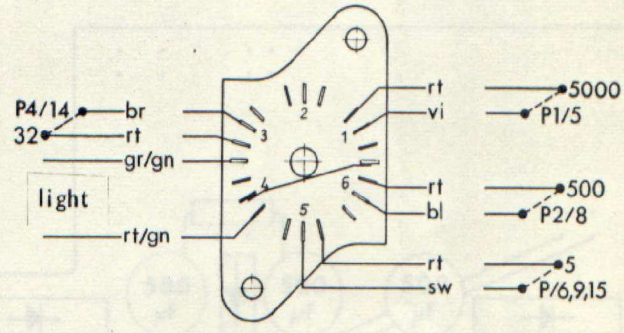
x 0,5



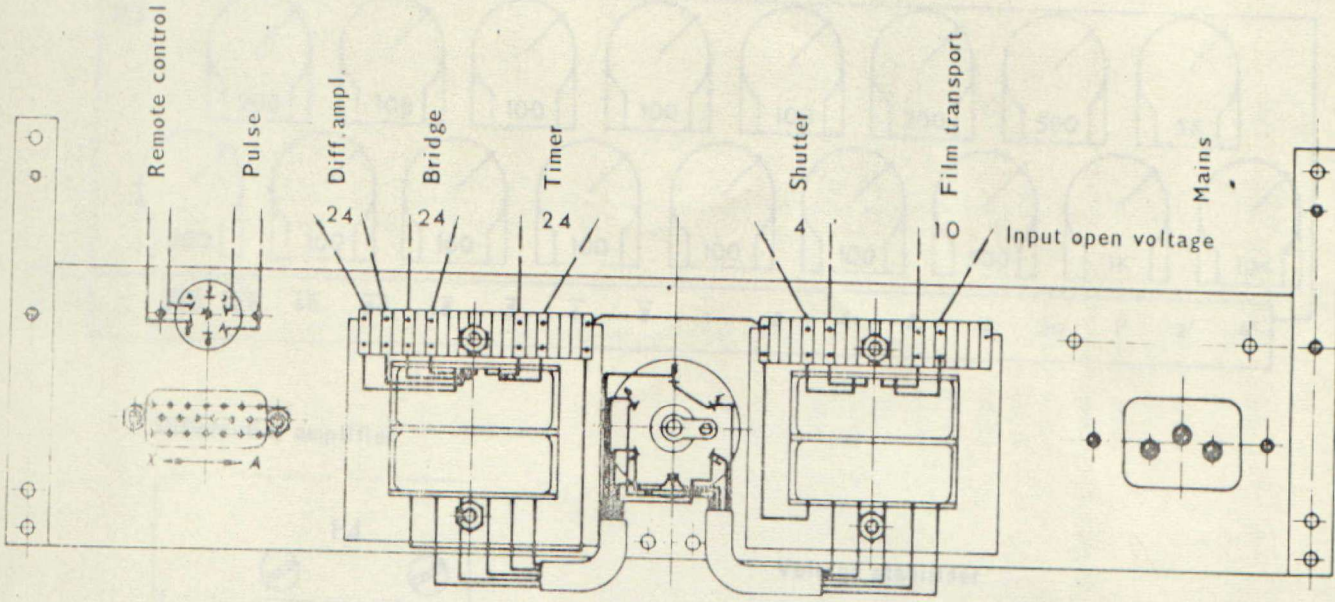
x 2



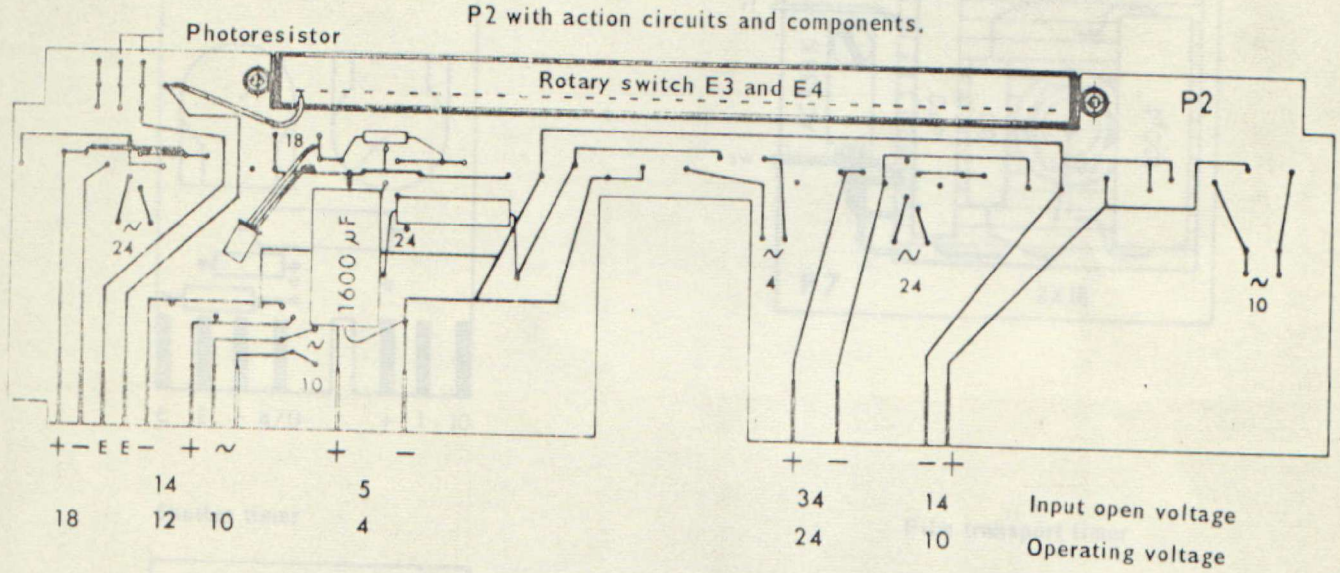
x 4

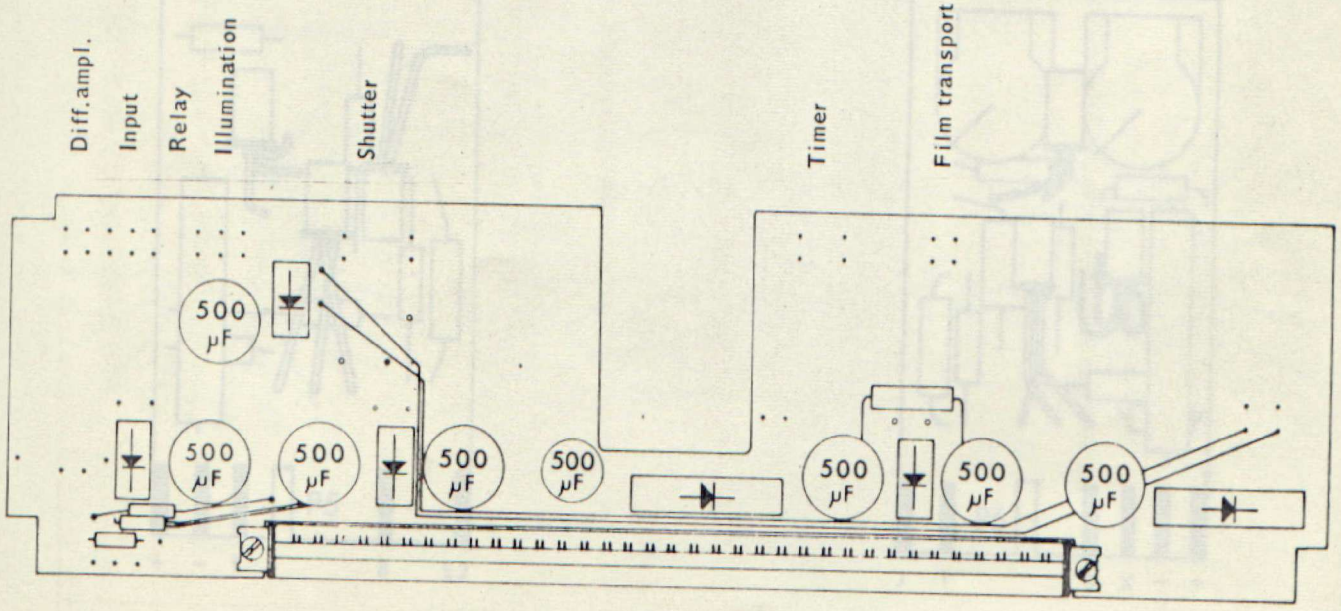


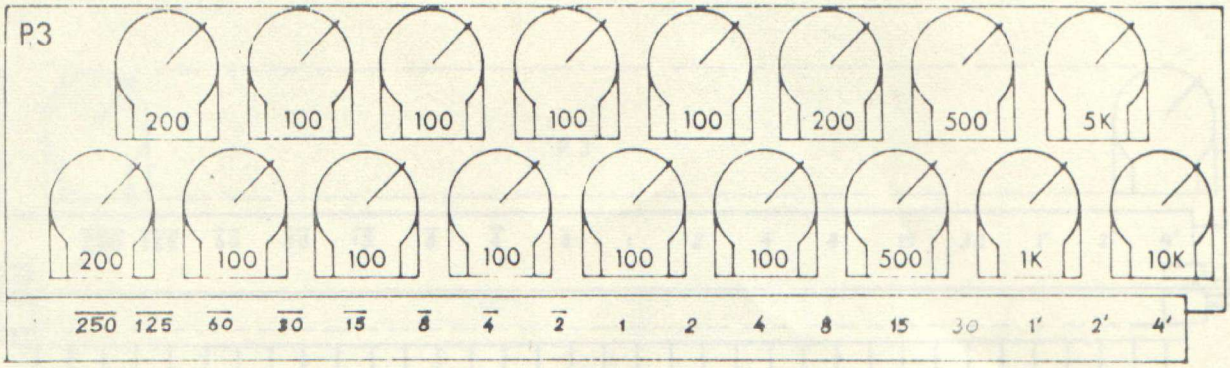
Rear panel with transformers



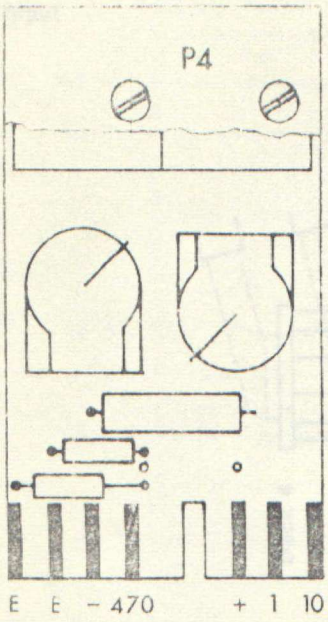
P2 with action circuits and components.



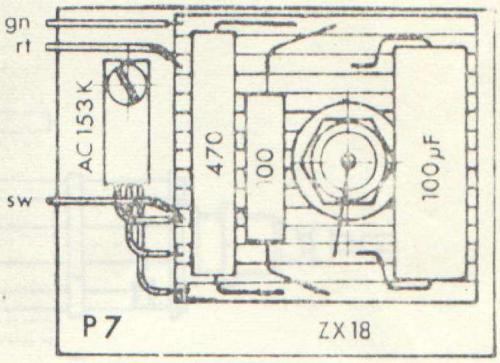




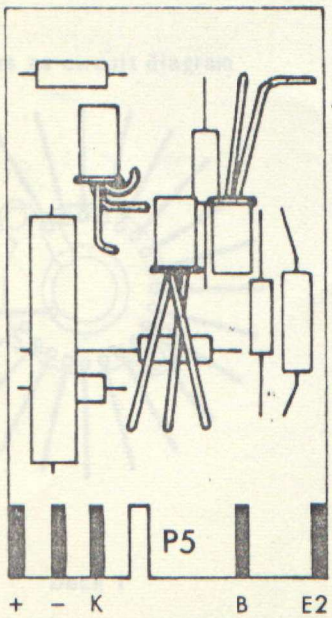
Differential amplifier



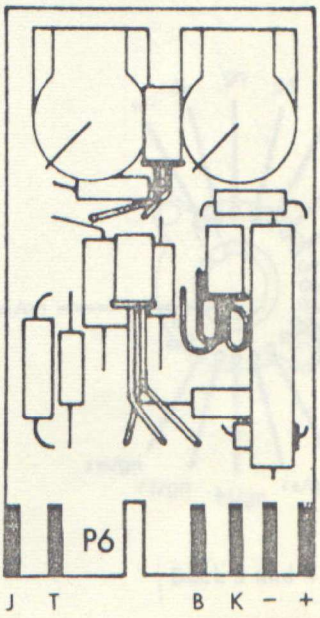
Voltage stabiliser



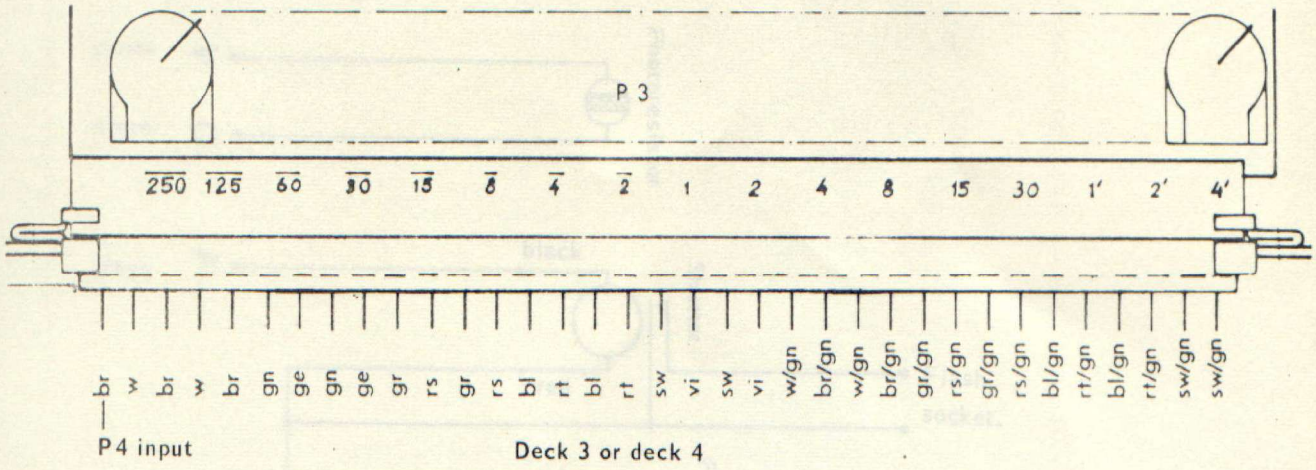
Shutter timer

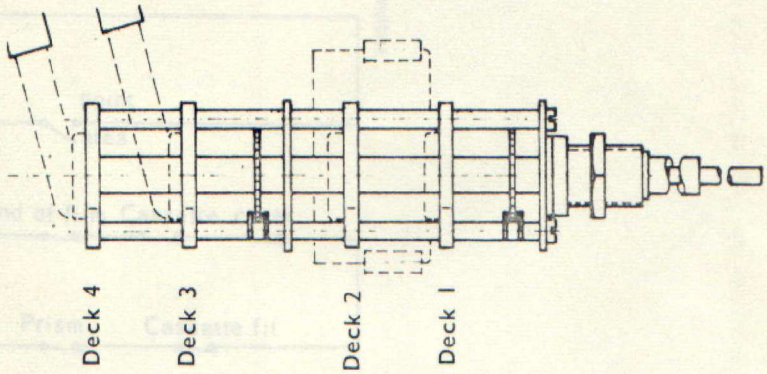


Film transport timer

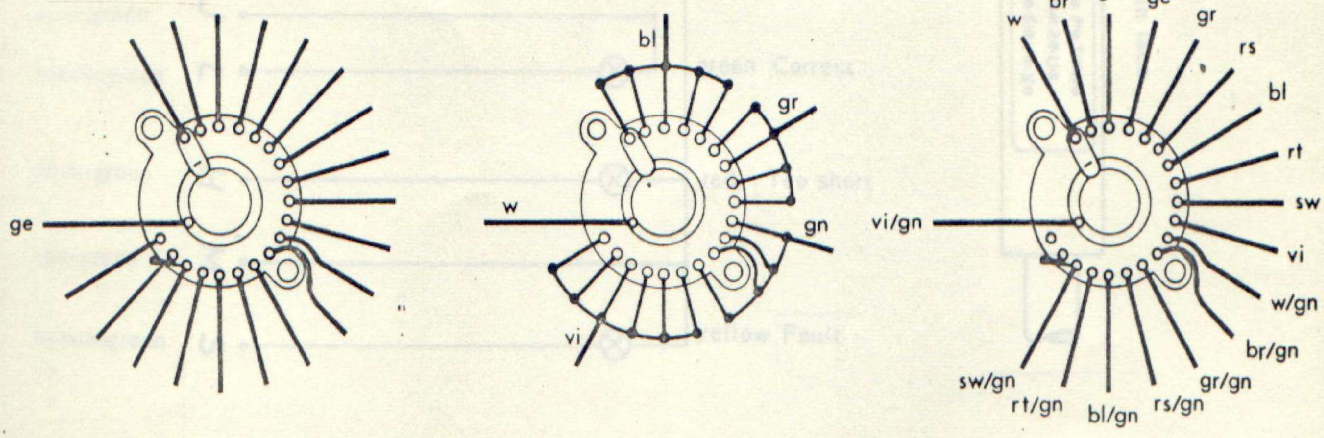


Control knob: wiring and connections

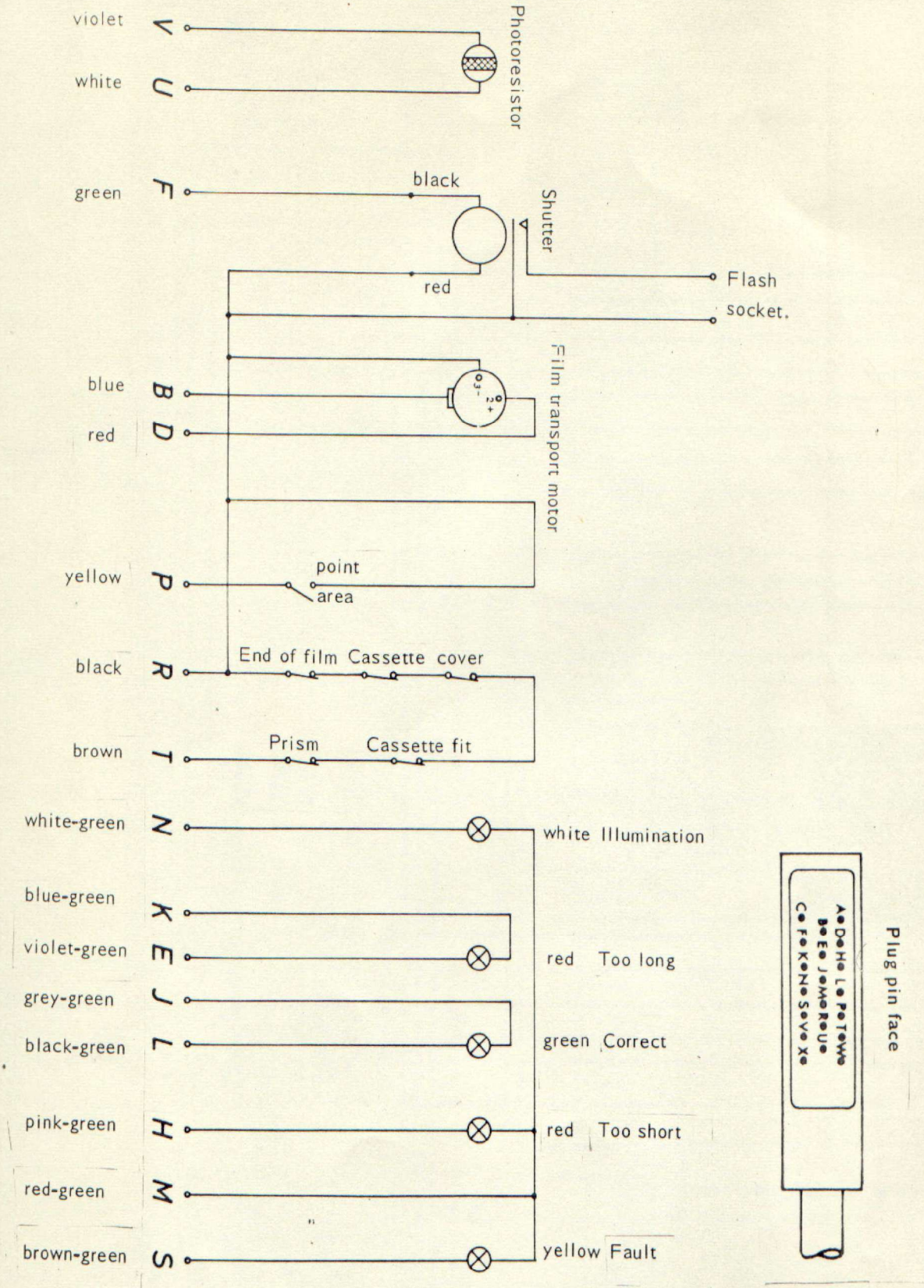


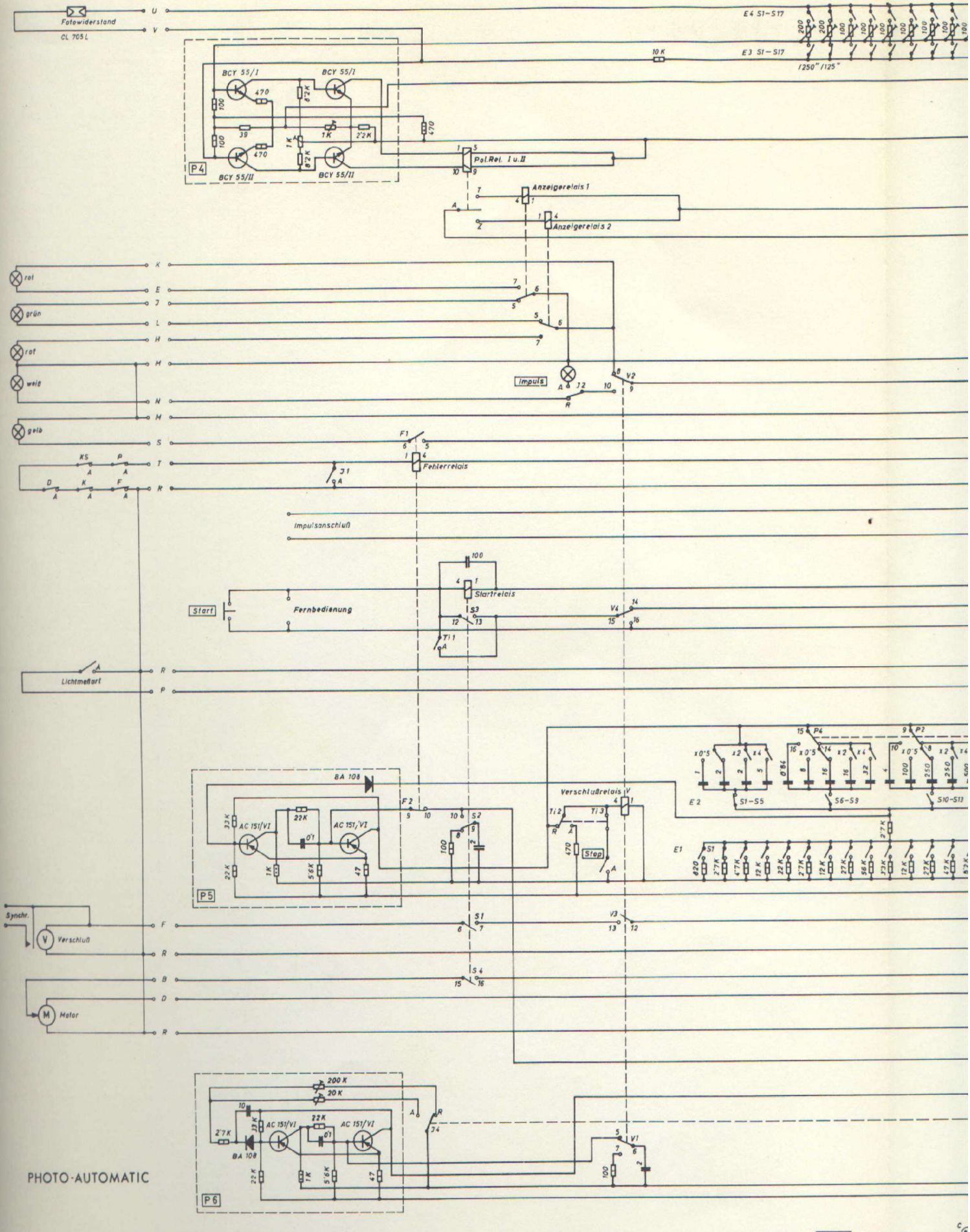


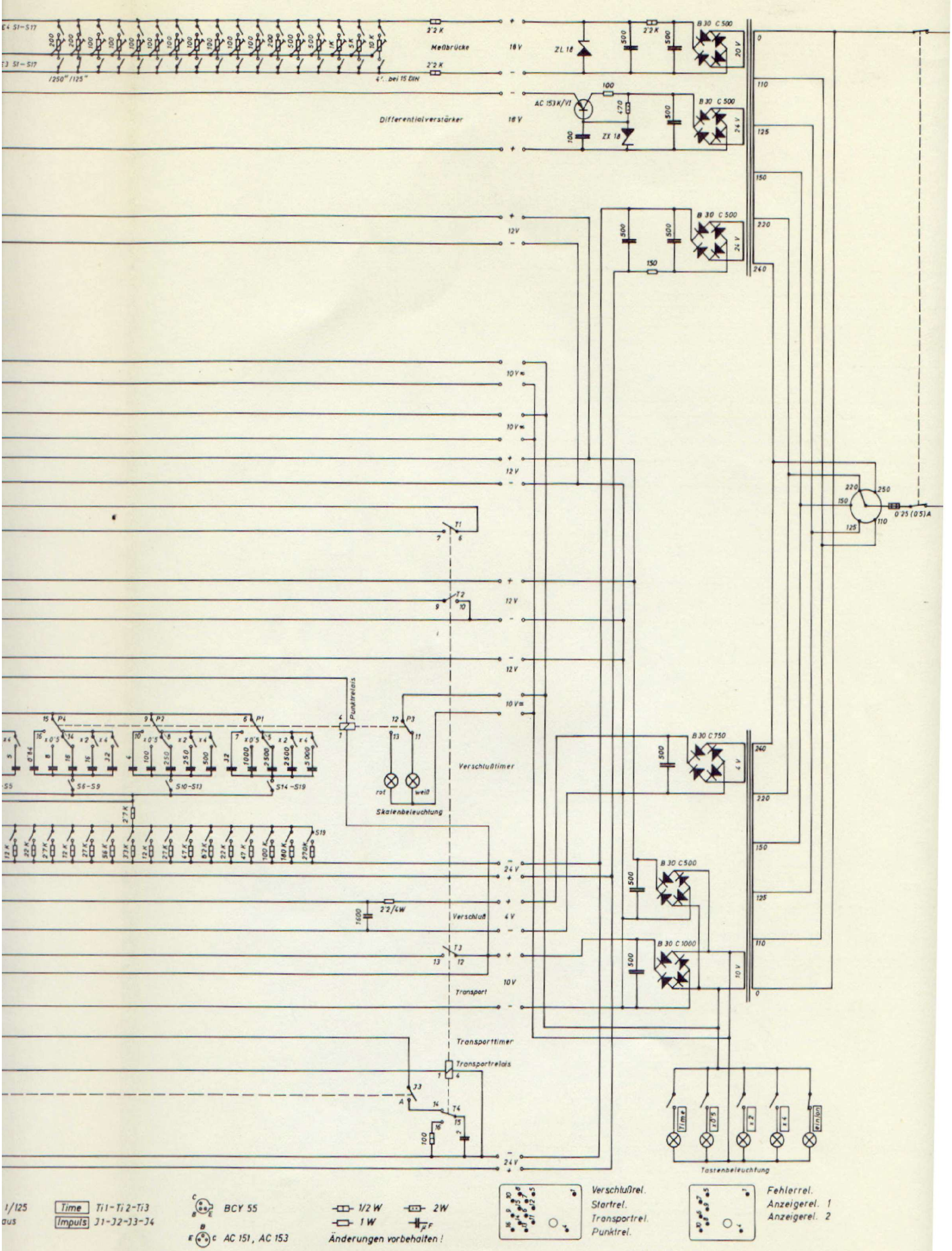
Resistors as circuit diagram



Camera: circuit and connections




Fotowiderstand
CL 705 L
U
V
E4 S1–S17
E3 S1–S17
1/250" 1/125"
10 K
BCY 55/I
BCY 55/II
P4
Pol.Rel. I u.II
Anzeigerelais 1
Anzeigerelais 2
rot
grün
rot
weiß
gelb
Impuls
F1
Fehlerrelais
KS
P
D
K
F
Impulsanschluß
Start
Fernbedienung
Startrelais
Lichtmeßart
BA 108
AC 151/VI
P5
Verschlußrelais V
E2
S1–S5
S6–S9
S10–S13
E1
Synchr.
Verschluß
Motor
Stop
200 K
20 K
P6
PHOTO-AUTOMATIC
Gezeichnete Stellung: Gerät eingeschaltet (220 V)
Filmempfindlichkeit 15 DIN eingestellt
integrierende Messung
Grünsignal, aufnahmebereit
Verschlußzeit 1/125
Faktortasten aus
Time Ti1-Ti2-Ti3
Impuls J1-J2-J3-J4



Meßbrücke
18 V
Differentialverstärker
AC 153K/VI
ZL 18
ZX 18
B 30 C 500
B 30 C 750
B 30 C 1000
12 V
10 V=
24 V
4 V
10 V
Punktrelais
Verschlußtimer
Skalenbeleuchtung
rot
weiß
Verschluß
Transport
Transporttimer
Transportrelais
Tastenbeleuchtung
Time
x 0'5
x 2
x 4
ein/aus
0'25 (0'5) A
Time Ti1-Ti2-Ti3
Impuls J1-J2-J3-J4
BCY 55
AC 151, AC 153
1/2 W
1 W
2 W
Änderungen vorbehalten !
Verschlußrel.
Startrel.
Transportrel.
Punktrel.
Fehlerrel.
Anzeigerel. 1
Anzeigerel. 2

REICHERT

WIEN

C. REICHERT **OPTISCHE WERKE A.G.**

A 1171 VIENNA **AUSTRIA**

PRINTED IN AUSTRIA

SB. Photoautomatic 9/67