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APPENDIX A

THE CLOSED CIRCUIT TELEVISION CAMERA

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II INSTALLATION AND OPERATION
III SPECIAL APPLICATIONS

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1 TECHNICAL DATA

Scanning standard

Type LDH 0050/00: CCIR 625 lines, 50 fields/s, 2:1 interlaced
Type LDH 0050/10: EIA 525 lines, 60 fields/s, 2:1 interlaced

Current supply

a. Mains operation
Type LDH 0050/00: 220 V ± 10%, 50 Hz
Type LDH 0050/01: 110 V ± 10%, 60 Hz
By changing the transformer connections, both types are suitable for operation on 110, 117, 220 and 234V mains
Power consumption: appr. 18 VA

b. Battery operation
Type LDH 0050/00 Nom. 12V (11.2-16V)
Type LDH 0050/01 Nom. 12V (11.2-16V)
Load current appr.: 0.7 A
The battery voltage is applied to a separate socket, and should not be connected with the camera housing. The battery connection is electronically protected against polarity reversal.

Camera lens

Schneider "Xenoplan" f/1.9; 25 mm;
Exchangeable for all types of 16 mm film and Vidicon lenses with C-mount.

Pick-up tube

1" - Vidicon, type XQ 1030, with magnetic deflection and focussing, and 6.3V/90 mA filament power;
Exchangeable for other equivalent types.

Required illumination

150 Lux reflected light, for a Vidicon of average sensitivity, lens iris to f/1.9, and a signal-to-noise ratio of – 38 dB;
5 Lux with a lens of f/0.95, with increased signal amplification (see "Amplifier sensitivity") and acceptable picture quality;
The values may deviate from – 50% to + 100%, dependent on the sensitivity tolerances of the Vidicon tubes.

Output signals

a. VBS - signal, 1,4 Vpp across 75 Ohm, positive going picture signal, negative going sync signal.
b. HF - carrier wave, 8 to 15 mV (r.m.s.) across 75 Ohm, negatively modulated with the VBS signal; modulation depth appr. 80%
Nominal carrier frequency;
for LDH 0050/00: european TV - channel 4
for LDH 0050/01: american TV - channel 4
HF oscillator tuning to channels 2 and 3 is also possible.

Amplifier sensitivity

Nominal 1 Vpp VB - signal, at a signal current of 0.35 µA;
By preset potentiometer, the sensitivity can be doubled, with simultaneous decrease in bandwidth and signal-to-noise ratio.

Frequency response

Flat to 5 MHz measured with a high-ohmic current source replacing the Vidicon;
– 3 dB at 5 MHz, at maximum amplifier sensitivity.

Resolution

600 lines visible on a good picture monitor.

Signal-to-noise ratio

– 38 dB (r.m.s.) noise voltage against 1 Vpp signal voltage, measured with a 5 MHz weighting filter
– 33 dB at maximum amplifier sensitivity.

Light range control

Automatic Va control for an illumination range of approximately 1:60 with Vidicon XQ 1030. For other types of Vidicon, the Va control range can be re-adjusted.
Control speed from bright to dark: appr. 6 sec.
from dark to bright: appr. 3.5 sec.

White level

White compression between 1.0 and 1.2 Vpp of the VB - signal amplitude; level limitation at 1.2 Vpp.

Black level

Fixed by means of a clamping circuit.

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Time base

a. with mains locking: pull-in range ± 2 Hz
retaining zone ± 4 Hz mains frequency deviation from the nominal value (50 Hz and 60 Hz, respectively)
b. with battery supply and free-running from mains:
± 2 Hz deviation from the nominal field frequency (50 Hz and 60 Hz, respectively).

Level control

Flat-profile instrument at the camera rear with red-green-red scale to indicate when the automatic control range is exceeded, due to an incorrect iris setting or a too strong respectively too weak scene illumination.

Mounting facility

3/8"-W.W. thread in the base plate for tripod mounting;
Type LDH 0050/01 includes a 5/16"-W.W. adapter screw;
Two additional threaded holes, 5 mm metric thread, in the base plate are available for a different way of mounting.

Connections

a. Mains connection: fixed mains lead, length 5 m, with fitted plug
b. Battery connection: a connection lead, length 2 m, with ROKA plug can be supplied separately under type number LDH 8113/00
c. VBS - output: BNC coaxial socket, matching plug EL 8498/11; 75 Ohm termination plug is delivered with the camera
d. HF - output: BNC coaxial socket; a coaxial cable, length 10 m, with BNC plug and with a 75/300 Ohm adapting transformer is delivered with the camera (3922 406 50380).

Permissible ambient temperature

From – 10° to + 45°C; tropicalised design.

Dimensions

see dimensioned sketch. Fig. 1.

Weight

3.9 kg including Vidicon tube and standard lens.

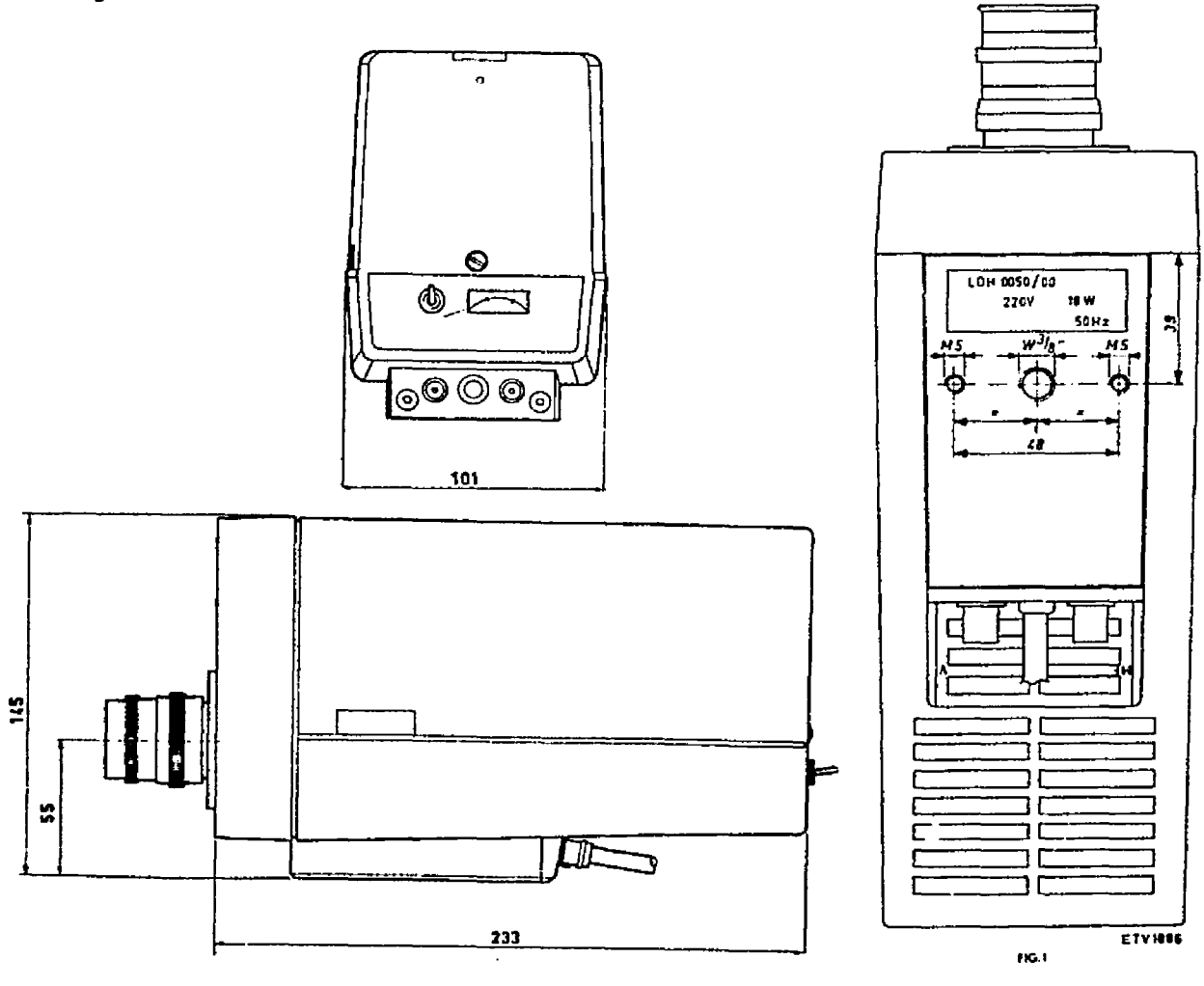


FIG. 1

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II INSTALLATION AND OPERATION

After unpacking, proceed as follows:
- Connect the video output to the input of a video monitor (BNC connectors are used as output sockets). Terminate the monitor with 75 Ω.
- Connect camera and monitor to the mains and switch on both.
- Open the aperture of the camera so far that the pointer of the level indicator is in the green sector of the scale, and a proper picture is obtained.
  If a T.V. receiver is used as picture monitor, proceed as follows:
- Connect the R.F. output of the camera to the aerial input of the receiver by means of the cable with matching transformer supplied.
- Set the channel selector of the receiver to channel 4.
- Connect the camera and the receiver to the mains and switch on the instruments.
- Open the aperture so far that the pointer of the level indicator is in the green sector of the scale and a proper picture is obtained.

III SPECIAL APPLICATIONS

1 FIXED TARGET VOLTAGE ADJUSTMENT

For some applications (document viewers, slide projectors etc.) it is desired to switch off the automatic target voltage circuit, so that the target voltage will not become too high if no image is projected onto the target. If a fixed target voltage is required, proceed as follows:
- Turn potentiometer R41 fully counter clockwise (cursor at earth potential).
- Adjust the target voltage to the correct value with potentiometer R68. (The voltage value can be measured by connecting a valve voltmeter to the cursor of potentiometer R68).

The control range of potentiometer R68 is approx. 19 V - 75 V. If a lower target voltage is desired this can be realised by connecting a resistor in parallel with R68. It is not advisable to adjust the target voltage to a value lower than 15 V, because this will give rise to shading on account of landing errors.

2 CONTROL RANGE LIMITATION OF THE AUTOMATIC TARGET VOLTAGE CIRCUIT

If a two-layer vidicon is employed it may be important, in view of the life of the tube, to limit the target voltage at a certain value (e.g. 60 V or 70 V). This can be effected as follows:

- Adjust the camera as indicated in the relevant instructions.
- Cover the lens and adjust the target voltage to the desired value with potentiometer R68. (The target voltage can be measured by connecting a valve voltmeter to the cursor of potentiometer R68).
  Indicator M1 will not show the correct value.

3 ELIMINATING THE MAINS LOCK

The mains lock can be eliminated as follows:
- Remove the two plugs from points 11 and 12 of the time base p.c. board.
- Cut off both plugs and interconnect the plugs by means of a short wire.
- Refit the two interconnected plugs to points 11 and 12.
- Insulate the ends of the cut-off wires.

4 CONNECTING THE LDH 0050 01 04 07 (60 Hz) TO A 50 Hz MAINS.

- Remove the mains lock (see point 3).
- Connect an electrolytic capacitor of 320 μF 6 V in parallel with R78.

It is advisable not to use fluorescent tubes or incandescent lamps with thin filaments for the illumination, in order to avoid 10 Hz flicker. Preferably use low voltage lamps with thick filaments (e.g. car lamps).

5 CONVERTING AN LDH 0050/00/03/06 (50 Hz) INTO AN LDH 0050/01/04/07 (60 Hz)

- Adapt the mains transformer to the correct mains voltage.
- Replace capacitors C143 and C145 by capacitors of 1K8 pF and 3K pF respectively.
- Adjust the camera (see chapter IV).

6 TURNING THE DEFLECTION COILS 90°

For certain applications (such as document viewing) it is necessary that the deflection coils are turned 90°; proceed as follows:
- Disconnect the video p.c. board.
- Remove the vidicon (see chapter IV "Replacing the vidicon".)
- Remove ornamental plate 3 Fig. 7. The ornamental plate is glued in place and can be prized off carefully with the aid of a knife.
- Remove the three screws 31 Fig. 7 by means of which the deflection unit is secured.
- Take the deflection unit carefully out of the camera. Remove the two screws 1 Fig. 2 and pull the coils approx. 1 cm backwards.
- **Warning:** The coils should not be pulled back more than approx. 1 cm as otherwise the connection wire of the target may break.
- Turn the coils 90° clockwise and push them forward again, so that the 5 connection wires of the deflection coils fit into the second recess.
- Refit the two screws 1 Fig. 5 however, do not yet tighten them completely.
- Refit the deflection unit in the camera and glue the ornamental plate in position.
- Refit the vidicon and the objective.
- Check that the image is vertical. If this is not the case, this may be corrected by slightly turning the deflection coils.

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– Tighten the two screws 1 Fig. 5 and fit the video p.c. board (make sure the correct rings are fitted).

7 HORIZONTAL MOUNTING OF THE CAMERA

With the aid of the bracket shown in Fig. 4, the camera can be mounted in a horizontal position.

8 SWITCHING OFF THE H.F. OSCILLATOR

For certain applications it may be required to make the H.F. oscillator inoperative to avoid radiation. The simplest way to do this is to disconnect resistor R72 on one side, thus interrupting the supply voltage of the oscillator.

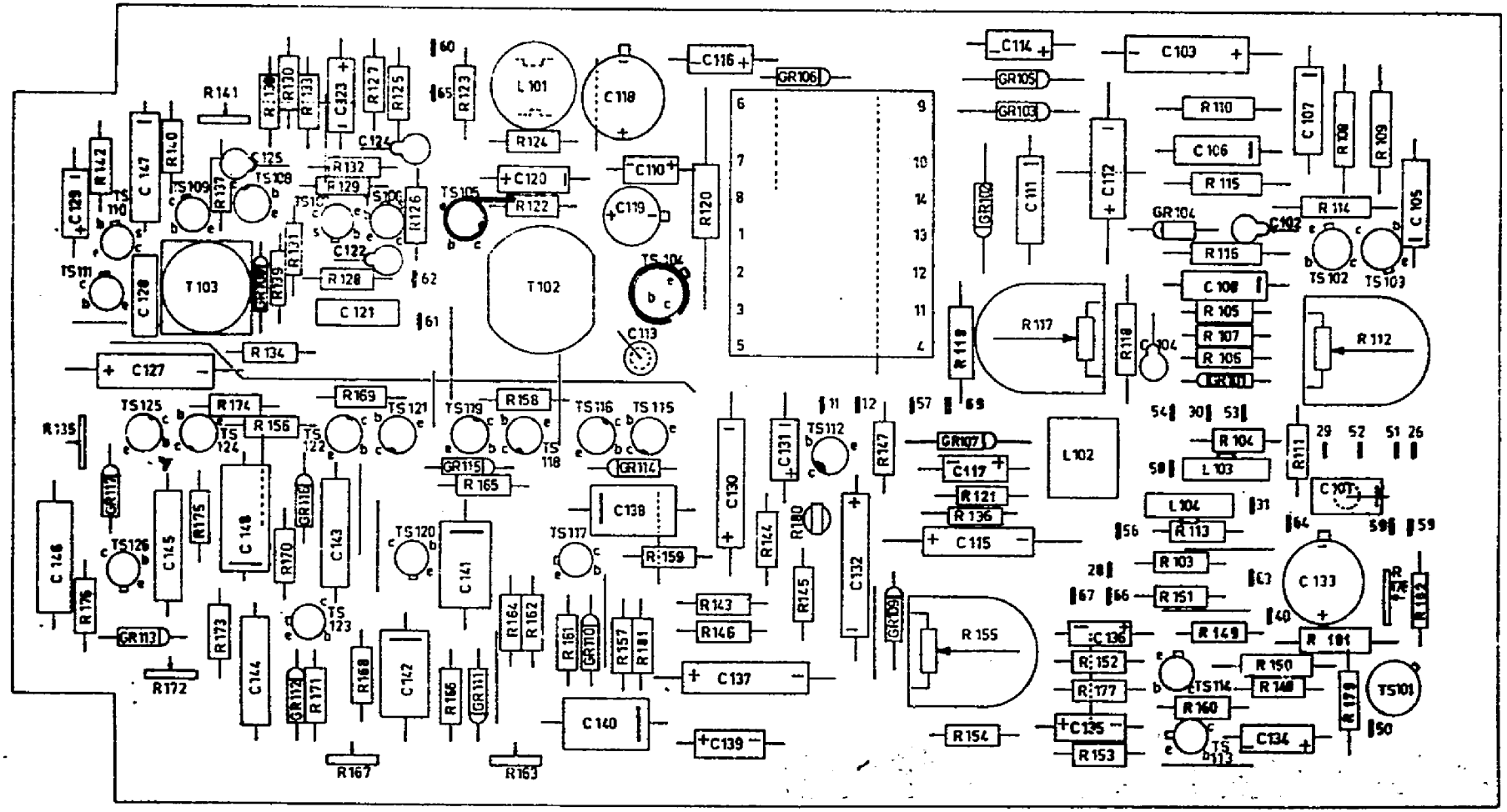
9 ADJUSTING TO A HIGHER SENSITIVITY

When the amount of light is very small, e.g. in the case of microscopy, it is possible to increase the sensitivity by a factor 1-2 with potentiometer R13.

10 BATTERY OPERATION

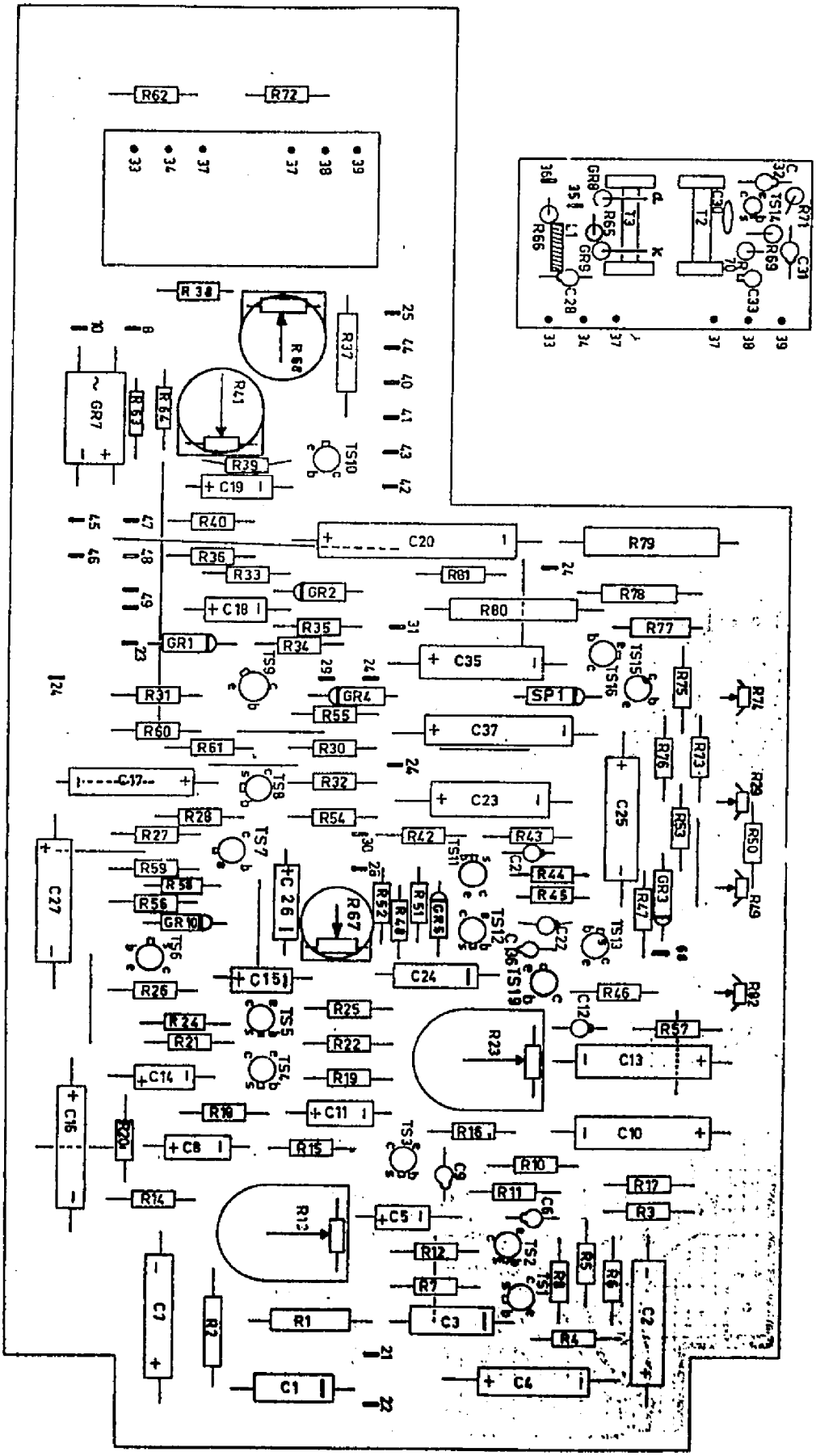
The camera can also operate on a 12 V battery. With special cable LDH 8113/00 the camera can be connected to the battery.

– **Warning:** If the camera is connected to a car battery the camera housing must be insulated completely from the tripot, or the battery must be free from earth (floating). Usually one of the two poles is connected to chassis (earth).

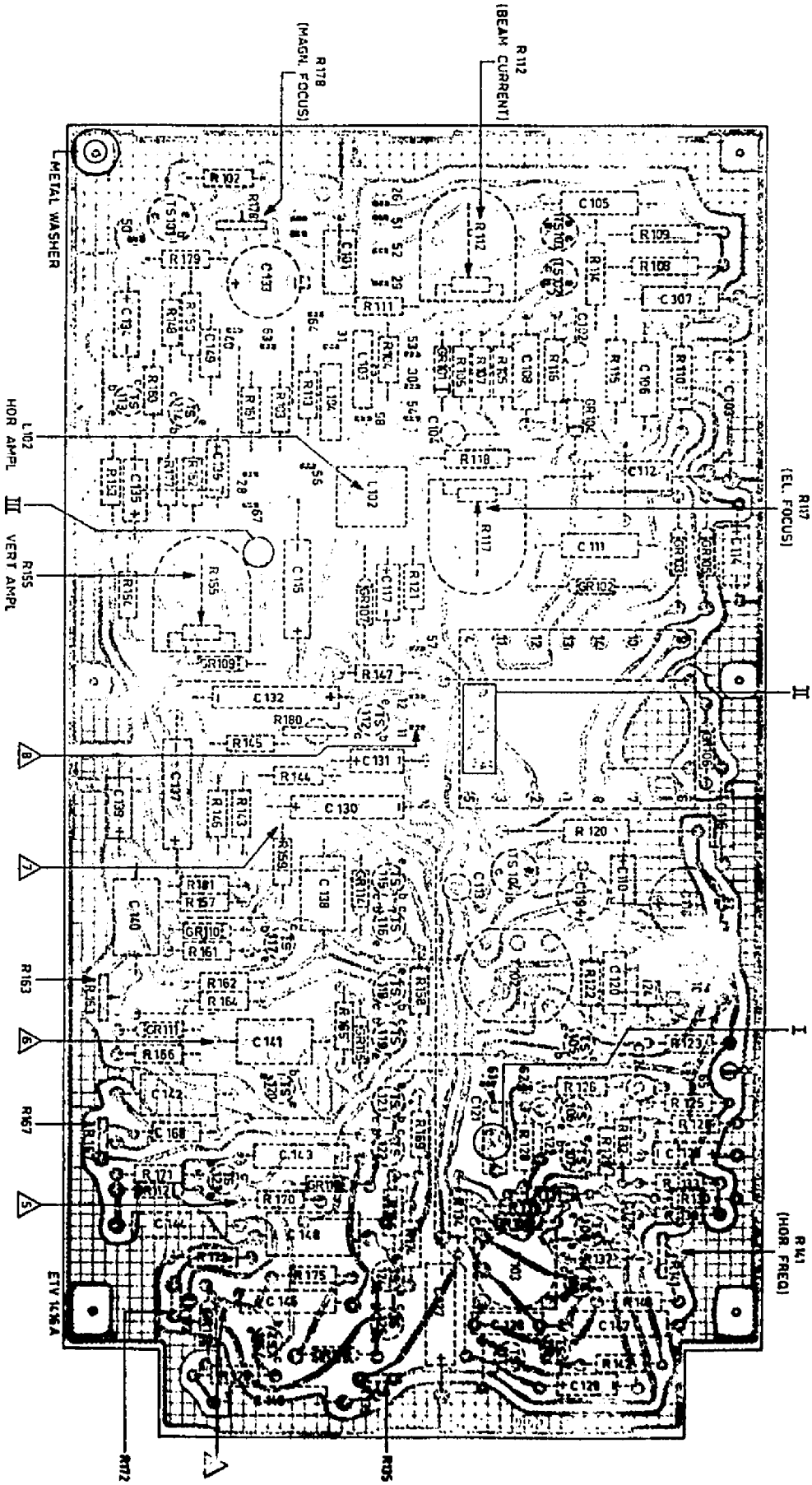

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