elinchrom
PROFESSIONAL STUDIO FLASH SYSTEM

SERVICING MANUAL

110 V version

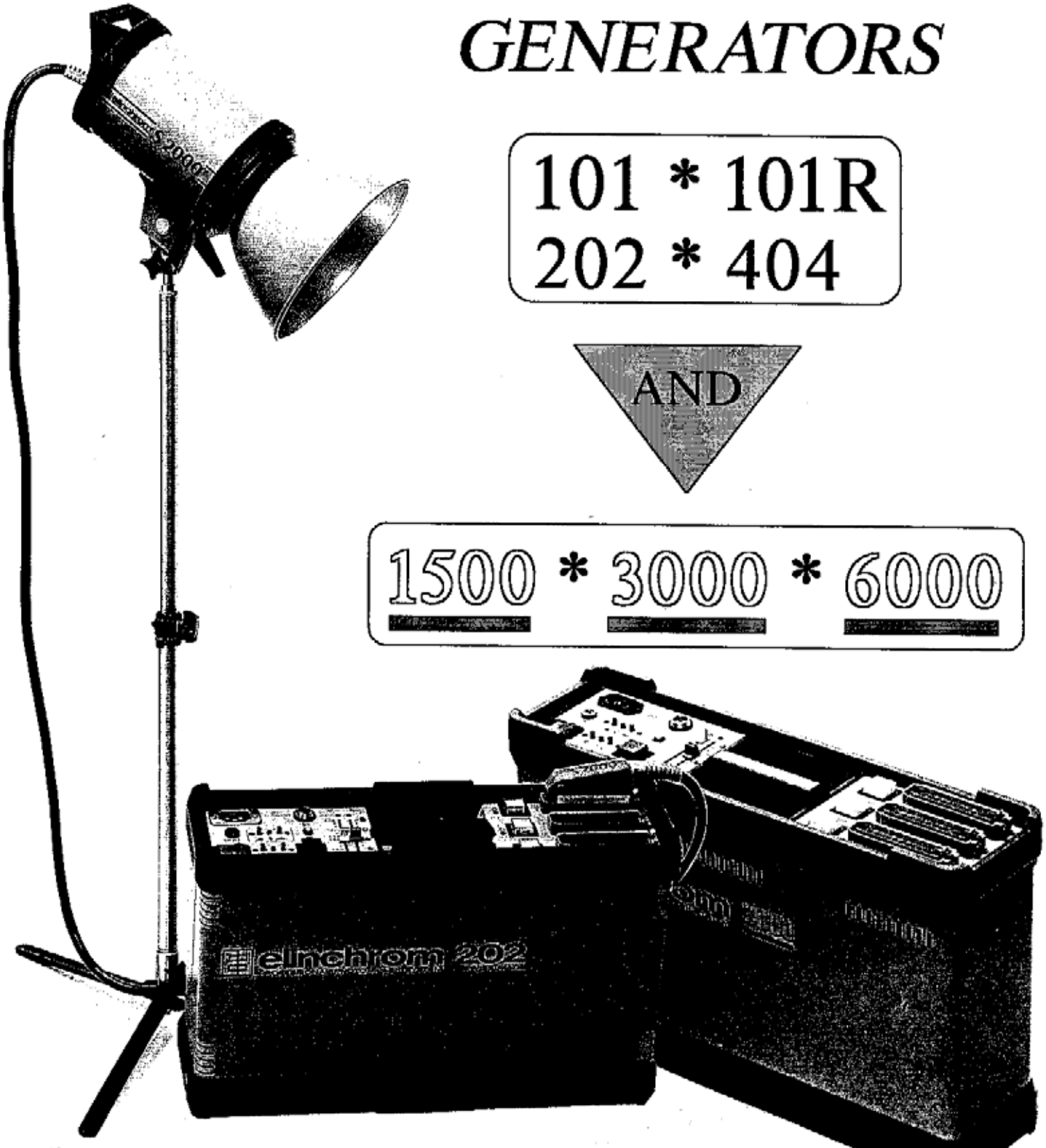
" CLASSIC "

GENERATORS

101 * 101R
202 * 404

AND

1500 * 3000 * 6000



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elinchrom
SWISS MADE STUDIO FLASH SYSTEM

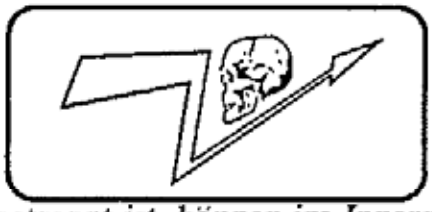
RE : AFTER SALES SERVICE
BETRIFFT : TECHNISCHER DIENST
CONCERNE : SERVICE TECHNIQUE

IMPORTANT ! The interior of the generator or compact contain components carrying dangerous levels of electric charge, even though the unit has been disconnected from the mains.

ALWAYS TAKE THE FOLLOWING PRECAUTIONS:

1. Always disconnect it from the mains supply, and discharge the unit before (for generator) and after (for compact) removing the outer cover or housing. This is best achieved with a suitable discharge resistor *(code 11931 for 220 V) and (11930 for 110 V)* fitted to a lamphead plug which may be inserted into a lamphead outlet for generator only.
   For compact connect the discharge resistor in the flash tube terminals.

2. Take care when opening a generator. Always start by connecting a voltmeter across the storage capacitors, as capacitor drainage may not have occurred due to a fault in the unit.



ACHTUNG GEFAHR !
Auch wenn der Generator vom Netz getrennt ist, können im Innern des Geräts noch gefährliche elektrische Spannungen vorhanden sein.

ACHTUNG GEFAEHRLICHE STROMSPANNUNG:

1. Bevor Sie ein Blitzgerät öffnen, entladen Sie zuerst die Kondensatoren mittels Entladewiderstand *(Best, Nr. 11931 für 220 V)*
2. Vorsicht bein Oeffnen eines Blitzgeräts. Verbinden Sie sofort ein Voltmeter mit den Kondensatoren, denn diese könnten wegen einer anderen Panne nicht entladen sein.

ATTENTION DANGER !
Des tensions électriques dangereuses restent présentes, ceci même lorsque l'appareil est déconnecté du secteur.

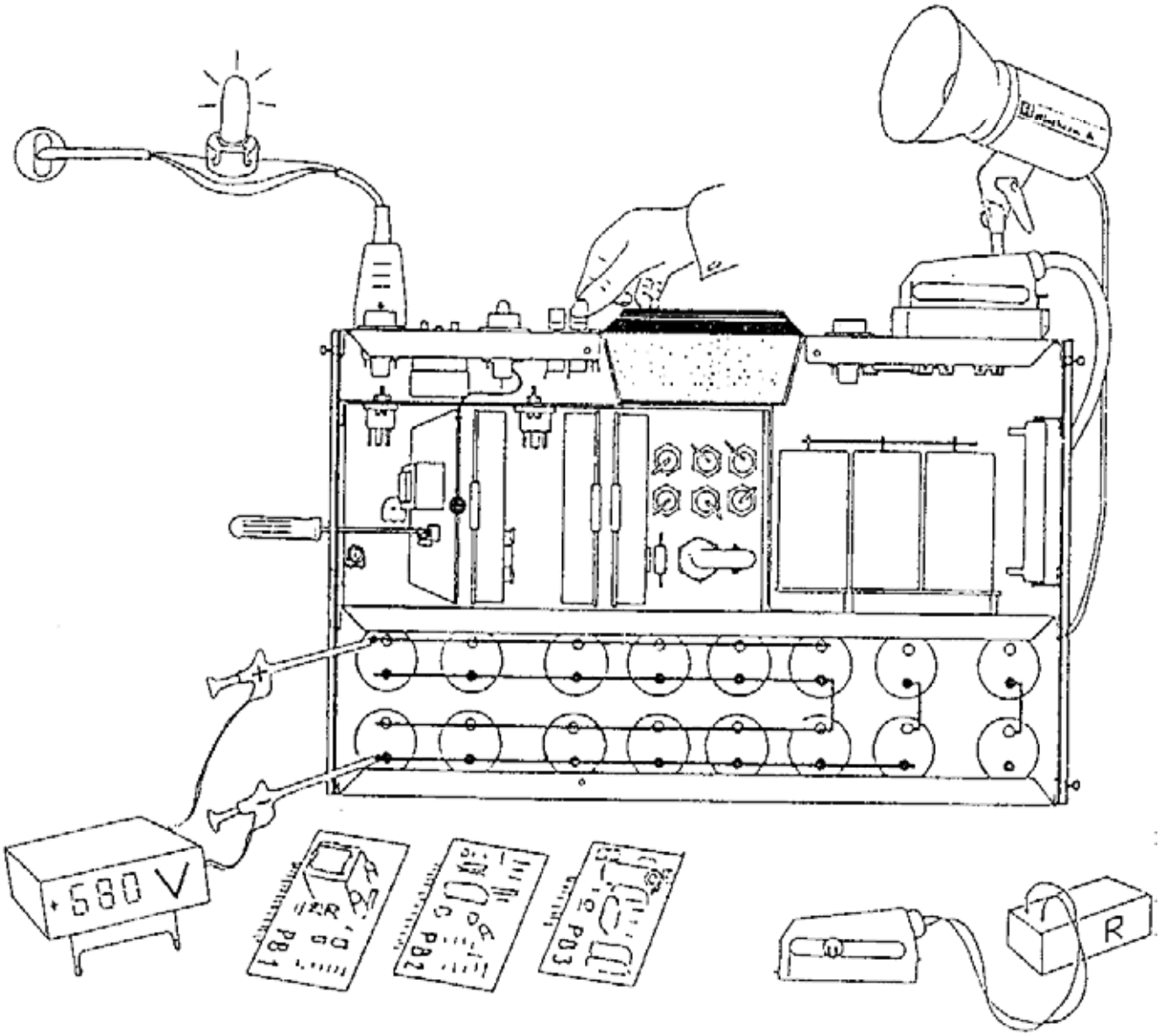
PRUDENCE LORS DE L'OUVERTURE D'UN GENERATEUR OU COMPACT.

1. Déconnecter l'appareil du réseau et avant de procéder à sont ouverture décharger le générateur au moyen du dispositif de décharge *(code 11931 pour 220 V)* et *(11930 pour 110 V).*
   Pour les compacts retirer la poignée et la chemise métallique et procéder à la décharge en connectant le dispositif aux bornes du tube flash.
2. Commencer par vérifier la tension aux bornes des condensateurs. Leur drainage peut ne pas avoir eu lieu, la rupture d' un élément ou d' un conducteur peut en être la cause.

elinchrom 101+202+404: Servicing manual

Introduction

This MANUAL aims to provide your servicing department with an efficient aid.



SECTION 1 FUNCTIONAL EXPLANATION AND DESCRIPTION

SECTION 2 SERVICING AND EQUIPMENT

SECTION 3 TROUBLE SHOOTING AND SPECIFIC PROBLEMS

SECTION 4 ADJUSTMENTS+ REPLACEMENT OF COMPONENTS AND FINAL CHECK

DIAGRAMS

ENCLOSURES:

SECTION 1 FUNCTIONAL EXPLANATION AND DESCRIPTION

1-1 References to and location of elements

1-2 Definition of groups

1-3 Group assemblies

1-4 Diagram terminology

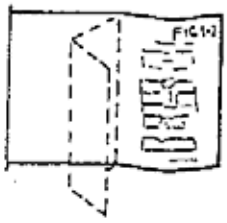
1-5 Functional description

- /1 Charge/discharge cycles
- /2 Recycling time
- /3 Initial automatic capacitor forming charge
- /4 Overvoltage protection
- /5 Equilibration (balance) check
- /6 Flash trigger boost
- /7 Modelling light
- /8 Charge signal

1-1 Reference to and location of elements

The reference to elements and groups to be located is shown in brackets (element/pertaining group). On unfolding the diagram sheets 1 and 2, the Fig. 2 "LOCATION OF ELEMENTS" is directly at hand for reference during reading.

Unfold Fig 1-2 (diagrams)



These references always apply to the circuit diagrams of Fig. 3 "ELINCHROM 101" or Fig. 4 "ELINCHROM 202+404".

EXCEPT FOR THE ITEMS MENTIONNED BELOW AND LOCATED IN Fig. 2, THE PRINTED CIRCUIT ELEMENTS (PB1/2/3/4/5) ARE NOT LOCATED. The reference marking of operative elements is inscribed on the printed circuits next to such elements, usually on the soldered side. For sections where the location of such elements is desirable, a sketch is there appended to aid such location.

- (R6 et R7/PB1) — Charge adjustment trimmers
- (R3/PB5) — Linearity trimmer of the sliding potentiometer (R8/GP1)
- (R4/PB5) — Trimmer to control minimum modelling light intensity
- (R1 et R2/PB5) — Charge voltage (HT1) tapping resistors to provide reference voltages for the following circuits :
  - "OVER VOLTAGE PROTECTION" (PB3)
  - "CHARGE CONTROL" (PB1)
- (D7/PB5) — Diode forming part of the "DIODE NETWORK" circuit (PB5)
- (Dt4/PB5) — Modelling light triac (mounted behind); forming part of the "LAMP CONTROL" circuit (PB5)
- (F2/PB5) — Fuse mounted at the rear of circuit board PB5, located ahead of the power supply to the circuit boards (PB1/2/3). By preceeding the charge circuit, blowing of this fuse prevents a rise of the charge voltage on the storage capacitors (see section 1/5-4 "overvoltage protection"). Note that the "LAMP CONTROL" circuit (PB5) supplying and controlling the modelling lamp is protected by the main fuse (F1/GP1).

1-2 Definition of groups

Two types of group are defined in terms of the circuits or general features of the ELINCHROM 101+202+404 units.

[PB] : Printed circuit boards (plug-in or otherwise)

[GP] : Specific parts of the unit

Note that Dt2, the charge switching triac mounted on the metallic support of the circuits itself, is considered a group (see circuit diagrams Fig. 3 and 4).

1-3 Group assemblies

group :	Comprises :
Plug-in board PB1	"SYNCHRO" and "CHARGE CONTROL"circuits
Plug-in board PB2	"TRIAC CONTROL" and "CHARGE SPEED" circuits
Plug-in board PB3	"TRIGGER" and "OVERVOLTAGE PROTECTION"circuits
Plug-in board PB4	"EQUILIBRATION CONTROL" circuits for ELINCHROM 202+404
Stationary board PB5	"LAMP CONTROL", "CHARGE SIGNAL", "DIODE NETWORK" circuits
	Elements : (R1) charge reference resistor PB3 (R2) charge reference resistor PB1 (R3) charge linearity adjustment trimmer (F2) Fuse spare fuse
GP1	"CONTROL PANEL"
GP2	"OUTLET LAMPHEAD"
GP3	Voltage doubling capacitors (C7)
GP4	Electrolytic "STORAGE CAPACITORS"
Dt2	Charge switching triac.

1-4 Diagram terminology

Certain elements, groups etc... on block diagrams and circuit diagrams are lettered there in capitals. Where these are referred to in the text, they are also quoted in capitals within inverted commas, for instance "DIODE NETWORK".

1-5 Functional description

- The group functions and their relationship are shown in Fig. 1

"BLOCK DIAGRAM"

- The groups, circuits and elements are shown in Fig. 2

"LOCATION OF ELEMENTS"

- To improve the clarity of the circuit diagrams

ELINCHROM 101 et ELINCHROM 202+404 (Fig. 3 and 4 respectively)

no circuit diagrams of the plug-in boards are shown. Circuits PB1/2/3 and, for the models 202+404, PB4 are only shown by their connection points. Only a few elements are shown, such as adjustment trimmers and others that facilitate an understanding of the functions. That way the whole diagram is easier to follow.

Printed circuit board PB5 comprises on the one hand the circuits :

"LAMP CONTROL"

"CHARGE CONTROL"

"DIODE NETWORK"

"R1 and R2" HT1 reference resistors

"R3" Linearity adjustment resistor for flash intensity control (sliding-variator) R8 and connections for the above

On the other hand, all the groups GP1/2/3/4 and the triac Dt2.

Note : The plug-in circuit boards are not intended for repair by servicing stations but must be returned to the manufacturer for exchange. Their "DIAGRAM CONNECTION & SCHEMATIC" illustrations in the circuit diagram section of this MANUAL are therefore not essential but are included for the sake of information.

1-5/1 Charge/discharge cycles

A charging cycle command sent to the "CHARGE CONTROL" circuit (PB1) switches on the "TRIAC CONTROL" (PB2) circuit as long as the selected charge level has not been reached. The "TRIAC CONTROL" circuit controls the charge triac (Dt2), switching it at the zero voltage crossing.

Once the charge level selected by the sliding potentiometer control (R8/GP1) is reached a new selected lower setting does not reduce the charge. To obtain the lower charge, a flash must be fired first.

The "SYNCHRO" circuit (PB1) is activated by pressing the green key (Sw5/GP1), by short-circuiting the synchro socket (J5/GP1) or by a flash striking on the photocell (Q5/GP1).

By an autocoupling system the "SYNCHRO" circuit triggers a 300 millisecond delay in the "CHARGE CONTROL" circuit (PB1), stopping the charging function and in turn activating the "TRIGGER" circuit (PB3). The discharge of the 1 µF capacitor of the "TRIGGER" circuit across the triggering coils of the lamp units produces a 15 kV pulse which ionises the gas in the flash tubes. This creates a low-impedance discharge path for the energy stored in the storage capacitors (GP4), leading eventually to a luminous flash accompanied by a heat discharge.

Duration of synchronisation sequence :

- 80-100 microseconds to the beginning of the flash

Flash duration (t 0,1) :

- 3-15 milliseconds, depending on the generator and the number and type of lamp heads connected.

Maximum ionisation period of the tubes used by ELINCA :

- 200 milliseconds.

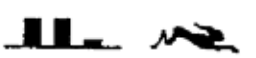
After the 300 millisecond delay the charging cycle can restart.

1-5/2 Charging speeds

These are selected by interrupting the circuit of the charge control triac. These interruptions are governed by the "CHARGE SPEED" circuit (PB2) which acts by cutting out the control circuit of the "TRIAC CONTROL" (PB2), according to the selected charging speed (Sw7/GP1):

 = 6 interruption cycles during each charging cycle

 = 2 interruption cycles in every two charging cycles

 = continuous charging

 = continuous interruption (no charging)

1-5/3 Automatic capacitor forming charge

Each time the supply is cut off - until a flash has been triggered - the "CHARGE SPEED" circuit (PB2) is in a state of slow charging : several interruption cycles to each charge cycle.

ELINCHROM 202+404 : These interruptions can be prolonged if the state of the storage capacitors leads to a significant unbalance (see section 1-5/5 : second function).

In addition to the reduced rate charge state, a further effect at the points 7 and 8 of the "CHARGE CONTROL" circuit PB1 cancels any resistance of the intensity variator (R8/GP1). This effect ensures a full charge.

The LED (D12/GP1) signals this first charge from the moment the effect above is engaged.

1-5/4 Overvoltage protection

A fault in the charging system could cause a charge voltage increase which may reach 600 volts DC in the ELINCHROM 101, 1200 volts DC in the model 202 and 404 or 900 volts DC in the 110 volt version of the 202 and 404. This could seriously damage the unit.

The overvoltage protection circuit (PB3) is activated at a preset charge limit level. With the model 101 the HT1 limit is 390 volts DC, in the models 202 and 404 the HT1 limit is 745 volts DC. This circuit blows the quick-blow SP cartridge fuse (F2/PB5) which is connected in series with the switching triac (Dt2), thus cutting out the charging sequence.

1-5/5 Equilibration (balance) check (Circuit PB4 in models 202 and 404

One or more faulty capacitors (not formed of one or both storage capacitor groups (C10 and C11/GP4) LEADS TO UNBALANCE in the voltage of the two groups.

First function

Restoring voltage equilibrium (balance) between the capacitor groups C10 and C11 (C10 and C11/GP4)

Each deviation is instantly compensated by switching a compensation resistor (8,2K) into the circuit in parallel with the group of the higher voltage.

This results in limiting the voltage deviation to the reaction limit of the circuit, i.e. about 4 to 5 volts deviation.

Example : Model 202 with maximum charge selected : HT1 = 680 volts DC. Reaction voltages to lack of balance maintain :
- either C10 at 337 volts DC and C11 at 343 volts DC,
- or the other way around.

Second function

Stopping the charge when the difference in voltage between C10 and C11 increases.

This switching off takes place when the difference in voltages exceeds about 50 volts (depending on circuit tolerances the response is between 30 and 70 volts).

CAUSES OF APPRECIABLE VOLTAGE DIFFERENCES

1) Any considerable lack of formation of the capacitors causes an internal resistance difference between capacitor groups C10 and C11 greater than the compensation resistance (8,2K). The switch-off interval is the longer, the more significant the formation.

2) Faulty capacitors. A defective capacitor (sometimes short-circuited) rapidly produces a resistance difference between C10 and C11 greater than 8,2K. In this case, the cutout prevents the total charge voltage HT1 - which would tend to be applied to the sound capacitor groups - from damaging these capacitors by overvoltage.

1-5/6 Flash trigger boost

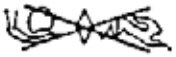
Whatever the charging voltage (HT1) it is assumed that a sufficient voltage (HT3) is always applied to the terminals of the flash tubes.

The application of a 15 KV pulse to the triggering coil ionises the xenon tubes. The discharge of the energy through the low-impedance path thus produced is proped up by the voltage applied to the flash tube electrodes.

The "TRIGGER" circuit (PB3) produces a voltage HT2 of 620 volts DC. Two diodes D7 and D8 (see Fig 3 or 4, "DIODE NETWORK" (PB5) isolate this from the charging voltage (HT1).

The result is that the entire discharge energy goes through the diode D7 which is of suitable capacity for the purpose. Hence the voltage (HT3) has the higher value of the two voltages (HT1) and (HT2).

Special features :



WHEN THE CHARGING CIRCUIT IS SWITCHED OFF (no setting selected at Sw7/GP1) ONLY THE TRIGGER BOOST ENERGY (0,2 joule) IS APPLIED TO THE FLASH TUBE.

controlling this boost system or the flash tubes.

1-5/7 Modelling light

The modelling light is controlled by a triac (Dt4/PB5) OUT OF PHASE.

The "LAMP CONTROL" circuit (PB5) regulates the phasing as a function of the selected power level (R5/GP1). The bottom point of the adjustment range (1/8) is adjusted by the potentiometer (R4/PB5). The intermediate settings then depend on the capacity of the capacitor (C4/PB5) which controls the linearity of the sliding potentiometer of variator (R5/GP1).

1-5/8 Charge signal

The charge signal given by the brief reduction of the light intensity of the modelling light is produced by partly cutting off one of the two half periods.

This is done via the "CHARGE SIGNAL" circuit (PB5) every time the "CHARGE CONTROL circuit (PB1) receives a control signal to switch the charge.

This last function at the same time controls the ready light signal (Sw5/GP1).

SECTION 2 SERVICING AND EQUIPMENT

2-1 Exchange of plug-in circuit boards

2-2 Discharging the unit

2-3 Overvoltage

2-4 Recommendations

/1 Connect the input current limiter

/2 Select no charge speed

/3 Fire an open flash after switching on

/4 Fire an open flash on switching off

/5 Recommendations for first switching on

2-5 Equipment

/1 Voltmeters

/2 Input current limiter

/3 Discharge plug

/4 Plug for modelling light adjustment

/5 Test circuit boards

/6 Tools

/7 Optional : Twin-track oscilloscope (for PB2 setting)

/8 Optional : Adjustment resistors for PB3

2-1 Exchange of plug-in circuit boards

To replace a faulty board PB1, PB2, PB3 or PB4, ELINCA S.A. will supply a replacement circuit board for a lump sum.

This exchange system is the basis of a rationalised and straightforward rapid servicing by saving you cumbersome trouble tracing.

The low price charged for each exchange board is fixed to encourage you to utilise this system which also provides us with a precise analysis of faults arising, and helps us to eliminate sources of such faults in manufacture.

In practice this works as follows : the agency stocks the circuits with other spare parts. The faulty circuit is sent back to Switzerland in a "small packet" envelope. ELINCA S.A. in turn sends a replacement circuit in the same way and invoices it at a special low price, this as long as the returned faulty circuit board has not suffered further damages by an attempted repair which might have ruined it.

Note :

ELINCA S.A. reserves the right to invoice at full price the exchange of circuits which appear to be badly repaired and obviously incomplete.

2-2 Discharging the unit

IMPORTANT - DANGER !
The interior of the unit may have parts carrying dangerous electric charges even when the generator is disconnected from the mains supply.

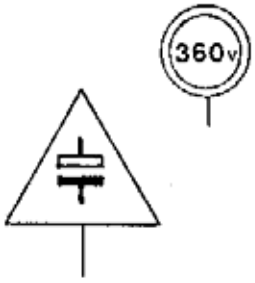
ALWAYS DISCHARGE A UNIT BEFORE OPENING IT
This is best done with a suitable discharge resistor fitted to a lamphead plug to be plugged into one of the outlets (J1-2 or 3/GP2) A discharge accessory described in section 2-5/3.

CAREFUL WHEN OPENING THE GENERATOR
Start by connecting a voltmeter to the capacitor terminals. Capacitors drainage may have failed to occur - possibly through a defective element (for instance D7 of PB5) or of a conductor line.

BEFORE ANY HANDLING OF THE INSIDE OF THE GENERATOR
Disconnect the unit from the mains supply and discharge.

2-3 Overvoltage

The maximum permissible voltage - for a limited period - on the storage capacitors is about 390 volts.



Their working voltage must not exceed 360 volts DC, as beyond that :

- capacitors can be damaged by overvoltage, and
- other serious damage can arise through the increased flash power discharged.

CHECK CAREFULLY THAT THE VOLTAGE LIMITS ACROSS THE STORAGE CAPACITORS TERMINALS IS NOT EXCEEDED.

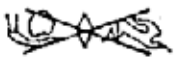
2-4 Recommendations

In the course of servicing, be sure to observe the following points :

2-4/1 Connect the input current limiter

As described in section 2-5/2, at any rate when any of the charging function appear suspect.

2-4/2 Select no charge speed when switching power on



Have the three buttons in the upper position (Sw7/GP1)

This special setting cancels the charge function when normal condition of the charging system exist. Hence the voltage across the storage capacitor terminals (GP4) should not rise. Also, with the modelling lamp not switched on , the low current consumption of the generator circuit (15 Watts) and of a lamphead fan (40 Watts) do not in themselves make the limiter lamp light up. Note that with no charge speed selected, the red forming signal (D12/GP1) also remains out even with power switched on.

2-4/3 Fire an open flash after switching on

On the one hand thanks to the absence of the charge recommended above, only the spack produced by the triggering of the tube is visible. On the other, this triggering release disconnects the automatic control of the first forming charge. Apart from checking its proper functioning, this first automatic charge is not wanted during servicing, as it ensures a full charge and thus cancels the intensity variator setting for the flash (R8/GP1). In practice the operator will for a first time prefer to set a minimum flash intensity with rapide charging. The limiter lamp flashes brightly at the beginning of the charging cycle and goes out once the selected charging level has been reached.

2-4/4 Fire an open flash on switching off

When switching off the main switch (Sw4/GP1) fire at the same time an open flash (Sw5/GP1). This considerably lowers the voltage on the storage capacitor terminals (GP4).

2-4/5 Recommendations on first switchig on

Note the recommendations 2-4/1, 2 and 3. Then select rapid charging.

Use the variator (R8/GP1) to stabilise the charge the first time at the minimum level . For the models 202 and 404 check the equilibration balance of charges between (C10/GP4) and (C11/GP4). Then bring the charge to its fullpower level but watch the charging voltage (HT1). If necessary adjust the charge (see section 4-1).

2-5 Equipment

The items mentioned in sections 2-5/2, 3 and 4 are easily assembled.

2-5/1 Voltmeters

Have at least one instrument with digital readout and a minimum precision of 0,2 % DC, 1 % AC. Essential insulation : to 1,2 KV.

2-5/2 Input current limiter

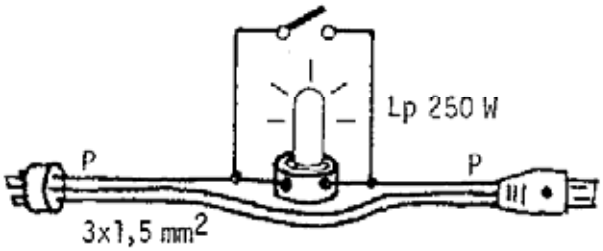
This limits the input current to 1 amp. on 220 Volt mains supplies and to 2 amp. on 110 Volt supplies.

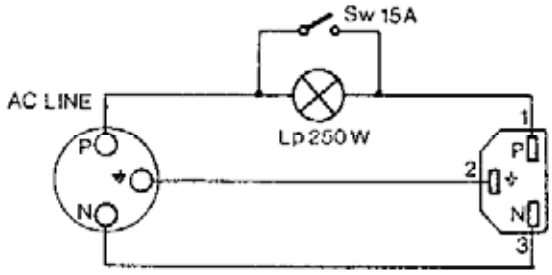
It is useful in case of a short circuit in the supply section of the electronic circuits.

The current restriction increases the charging time and improves stabilisation, which is useful when doing check up and adjustments.

Indispensable for any adjustment of PB3.

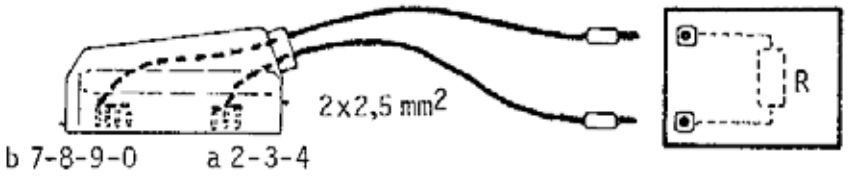
WATCHING THE BRIGHTNESS OF THE LAMP GIVES GOOD INDICATIONS FOR TRACKING DOWN THE FAILURES.





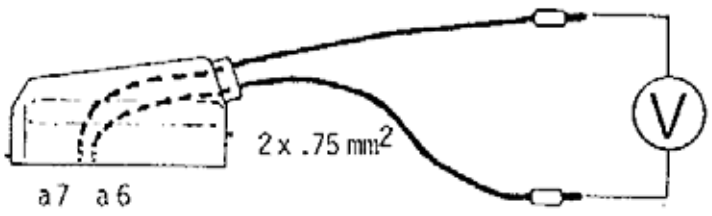
The switch Sw bypasses the lamp when normal connection conditions are required.

2-5/3 Discharge plug

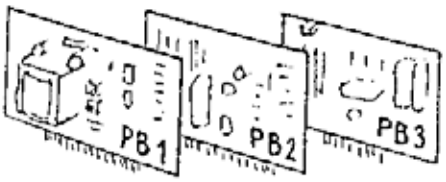


discharge resistance 100 ohms, minimum power handling 50 Watts.

2-5/4 Plug for modelling light adjustment



2-5/5 Test circuit boards



A set of plug-in circuit boards intended exclusively for trouble shooting is recommended.

1 board PB1 adjusted for the ELINCHROM 202 or 404 (see sections 4-1 "adjusting the charge" and 4-7/1 "replacing the PB1"). When used with an ELINCHROM 101, the approximate 10 % drop of charging voltage it produces does not affect the functional checks.

1 board PB2

1 board PB3 for the 220V version use one board designed for the ELINCHROM 404 (with 3 resistors 5E/10W).

There is no need to stock a PB4 board intended exclusively for trouble shooting. Its functioning can be checked by removing the suspect board from the generator (see section 3-2/4 "PB4 malfunction" and 3-7 "fault tracing for lack of charge").

On having located the fault, replace the defective circuit by one stocked for this purpose by the servicing department.

2-5/6 Tools

Two soldering irons, one of medium power (40-60 W), the other more powerful (100-150W).

Use a good quality resin-cored solder. Avoid solders containing acid flux.

Small tools : crosshead (Philips) screw driver, fine screw-driver for trimmer adjustment, various pliers, an empty cigarette lighter to check the photocell, etc...

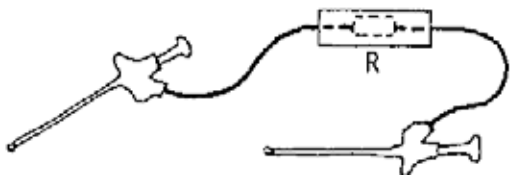
2-5/7 Optional : twin-track oscilloscope

This measuring unit is mentioned in section 4-7/2 ("replacing the PB2") and in the appendix under "charge speed adjustment PB2". It is not necessary to acquire this instrument. However, servicing departments which have one can readjust a PB2 circuit board by refering to the sections just mentioned.

2-5/8 Optional : adjustment resistors for PB3

These should be insulated and fitted with probes for easy and safe connection in parallel with the resistor R1 of the circuit board PB5.

ELINCHROM 101	2,2MΩ	, 1/2W
ELINCHROM 202+404	4,7MΩ	, 1/2W



SECTION 3 TROUBLE SHOOTING AND SPECIFIC PROBLEMS

3-1 Preliminaries

Read sections 1 and 2.

3-1/1 Prerequisites before a repair

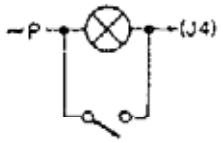
Have available all equipment described in sections 2-5/1, 2, 3, 4 and 6.

3-1/2 Visual inspection of the exterior

Carefully check the lamphead outlets (J1-2-3). These must look IN ORDER with no apparent damage or signs of arcing. Visually inspect the whole unit (panels, housing) - these should be IN ORDER

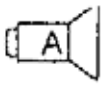
If not, see section 3-8, fault No. 1

3-1/3 Connecting the input current limiter



Connect the generator to the mains supply "through the input current limiter".

3-1/4 Connecting an ELINCHROM A lamphead



Connect one ELINCHROM lamphead, preferably model A. The model S can carry a discharge up to 2000 Ws; when used with the model 404 generator, its life expectancy is reduced.

3-2 Specific problems

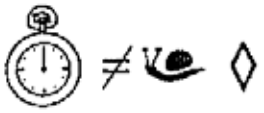
See section 3-8, faults :

Blown main fuse	3+6
Blown internal fuse	7+8+9+10
Generator fails to charge	16+18
Generator charges but triggering problems	7+9
No triggering boost on tube	7+9
Photocell and its replacement	8+10
Faulty modelling light	11+12+13
Modelling light ☼ or ready signal	13
Forming charge and its LED	15

3-2/1 Other problems

Check the functions listed in section 3-3

3-2/2 PB2 malfunction



The slow and normal charge speed setting do not match the specified recycling times.

IN SOME CASES

Full charge is not reached - either during the forming charge or when selecting the charge speed.

IN ALL CASES

The selection of fast charging speed is not affected by the adjustment.

See section 4-7/2 : replacing the PB2.

3-2/3 PB3 malfunction

Full charge ○ cannot be achieved; without the input current limiter, the fuse (F2/PB5) blows. In that case the limiting voltage adjustment is too low. Note that if the adjustment is too high, there is no effect. Only the position of the trimmer (R24/PB3) can give cause for suspicion : when adjusted, its position is always very near the mid-setting.

See section 4-7/3 : remplacing the PB3.

3-2/4 PB4 malfunction

Lack of balance betwen (C10/GP4) and (C11/GP4) which is reduced on removing the circuit board PB4.

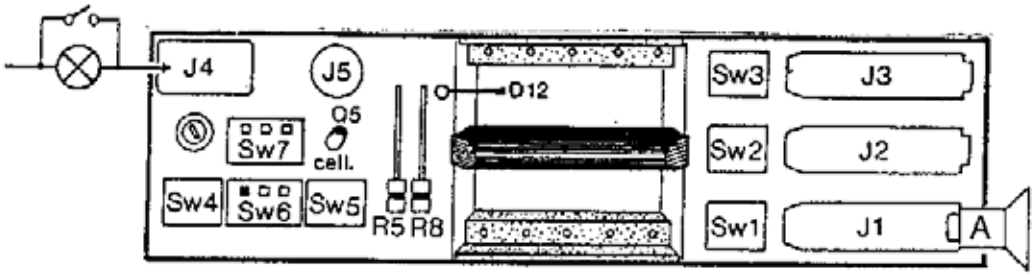
A charging cutout which disappears on removing the PB4 is due to a fault in that circuit.

See section 4-7/4 : remplacing the PB4.

3-3 Function check

This check consists of 9 successive tests where a logical sequence of settings or operations are carried out on the control panel. Observation then shows possible faults. If an apparent defect shows up in the course of one of these tests, carry out all the planned operations of that test and note all faults observed before refering to the fault tracing analysis of section 3-8.

The function control provides valuable indication of the cause of breakdowns. It cannot however cover all possible faults. If interpretation proves ambiguous or an unforeseen case arises, it is therefore necessary to find the cause of the breakdown by the normal means described in section 3-9 : breakdowns not revealed by the function check.



Setting on the panel: - raise all three charge selector buttons Sw7
- turn off the modelling light, Sw6
- move variator R8 to its minimum setting
- move vatiator R5 to its minimum setting 1/8
- connect a lamphead type A to J1 and press switch Sw1

Note : Check that the input current limiter is connected

TEST	OPERATION		OBSERVATION (fault if not observed)	
1	Press the main power switch Sw4	:	Current limiter lamp out	2
			Red light of key Sw4 lit	3
			Green light of key Sw5 out	4
			Forming charge signal D12 out	5
			Lamphead fan running	6
2 a)	Fire flash by manual flash button Sw5	:	Triggering energy produces visible flash in tube	7
			Green light of key Sw5 lights for an instant	8
b)	Fire flash by photocell Q5 (eg by spark of a cigarette lighter	:	Triggering energy produces visible flash in tube	9
			Green light of key Sw5 lights for an instant	10
3 a)	Switch on Sw6 without signal	:	Weak modelling light	11
b)	Move variator R5 from 1/8 to 1/1	:	Modelling light intensity increases	12
c)	Switch on Sw6 with signal	:	Drops from previous setting	13
4 a)	Connect lamphead to outlet J2 and press Sw2	:	Modelling lamp lights	14
b)	Fire by button Sw5	:	Triggering energy produces visible flash in tube	14
c)	Connect lamphead to outlet J3 and press Sw3	:	Modelling lamp lights	14
d)	Fire flash by manual flash button Sw5	:	Triggering energy produces visible flash in tube	14

Switch off modelling light by Sw6

TEST	OPERATION		OBSERVATION (fault if not observed)	
5 a)	Select slow charging with Sw7 for a few seconds	:	Forming charge signal D12 out Input limiter lamp flashes Green light in key Sw5 out	15 16 17
b)	Select normal charging ◊ with Sw7:		Faster flashing of limiter lamp Green lamp in key Sw5 out	18 19
	If a) and b) are positive, then within 1 minute	:	Limiter lamp goes out and Green lamp in key Sw5 lights up	20 20

Press main power switch Sw4 and at the same time fire an open flash

Disconnect the input current limiter

Select modelling light with signal by Sw6

6	Switch on main power switch Sw4 again	:	Forming signal lamp D12 lit Modelling lamp lit	21 22
	WITHIN ONE MINUTE	:	Ready light Sw5 lights up	23
7	Move variator R8 to full power ●—○	:	Green light of key Sw5 stays alight	24
8	Fire a flash by Sw5	:	Forming signal D12 goes out	25

9 Checking recycling times (at full power, R8 ○)

			101	202	404	
ON 220V/50 Hz SUPPLIES :	Slow charging	Sw7	6.5	13	26	26
	Normal charging	Sw7 ◊	2	3.8	7.4	26
	Fast charging	Sw7	1.1	2	3.7	27
ON 120V/60 Hz SUPPLIES :	Slow charging	Sw7	7.8	16	32	26
	Normal charging	Sw7 ◊	2.5	4.7	9.1	26
	Fast charging	Sw7	1.3	2.5	4.7	27

For other mains supplies see specifications in the appendix (recycling times for different mains supply voltages).

3-4 Opening the unit

Work on an insulated and clean surface.

However urgent the job may be, take special care to note and follow section 2-2 "discharging the unit".

1. Disconnect the mains lead.
2. Connect the discharge plug to one of the lamphead outlets.
3. Remove both rubber bumpers.
4. Unscrew the lateral screws (2 screws at each side).
5. Lay down the generator flat and remove the four screws in turn of each of the two housing sections.
6. Turn the unit so that the accessible side faces the repair engineer.

CAUTION : THE CAPACITOR CHARGE MAY NOT BE FULLY DRAINED.

Use a voltmeter to check the absence of any voltage on the storage capacitors (GP4). The presence of a voltage (after plugging the discharge plug into an outlet) would be due to a break in the discharge circuit - conductors, sockets or diodes (D1 to D7/PB5). In that case attach two leads with probes to the discharge resistor and drain the capacitors directly from their terminals.

With all operations inside the generator it is a sensible precaution to USE ONLY ONE HAND at a time. That avoids a discharge through your body. For instance when withdrawing a plug-in circuit board, keep the free hand on the insulated rubber handle.

3-5 Voltage measurements

When the generator is open and placed under charge, a voltmeter should always check the charging voltage HT1. A second voltmeter is then used for other voltage measurements.

Charge voltage HT1 : switch the voltmeter to 1000 VDC and connect the probes to the ⊖ and ⊕ terminals (Fig 2). For values see "adjusting the charge", section 4-1.

Balance between C10 and C11 : Switch a voltmeter to 1000 VDC,
Connect it between ⊖ & ½ = voltage C10
Connect it between ½ & ⊕ = voltage C11
Voltage C10 = voltage C11 (±10V) = $\frac{HT1}{2}$ (±5V)

Modelling light voltage : Switch a voltmeter to 1000 volts AC and connect through the plug intended for this use (section 2-5/4) to terminals a6 and a7 of one of the lamp outlets (J1 to J3/GP2). For voltage readings see section 4-2, "adjusting the modelling light".

Fault tracing for a blown internal fuse

This can be due to several causes :

a) Short-circuit of the charge triac Dt2
b) Fault in the circuit board PB2 ("TRIAC CONTROL" section)
c) Breakdown on circuit board PB1 ("CHARGE CONTROL" section)
d) Breakdown on circuit board PB3 ("OVERVOLTAGE PROTECTION" section)

A blown fuse F2 is usually due to one of the above causes. But there are also further possibilities.

Example : accidental overvoltage in the mains supply. (In that case F2 protects the triac Dt2).

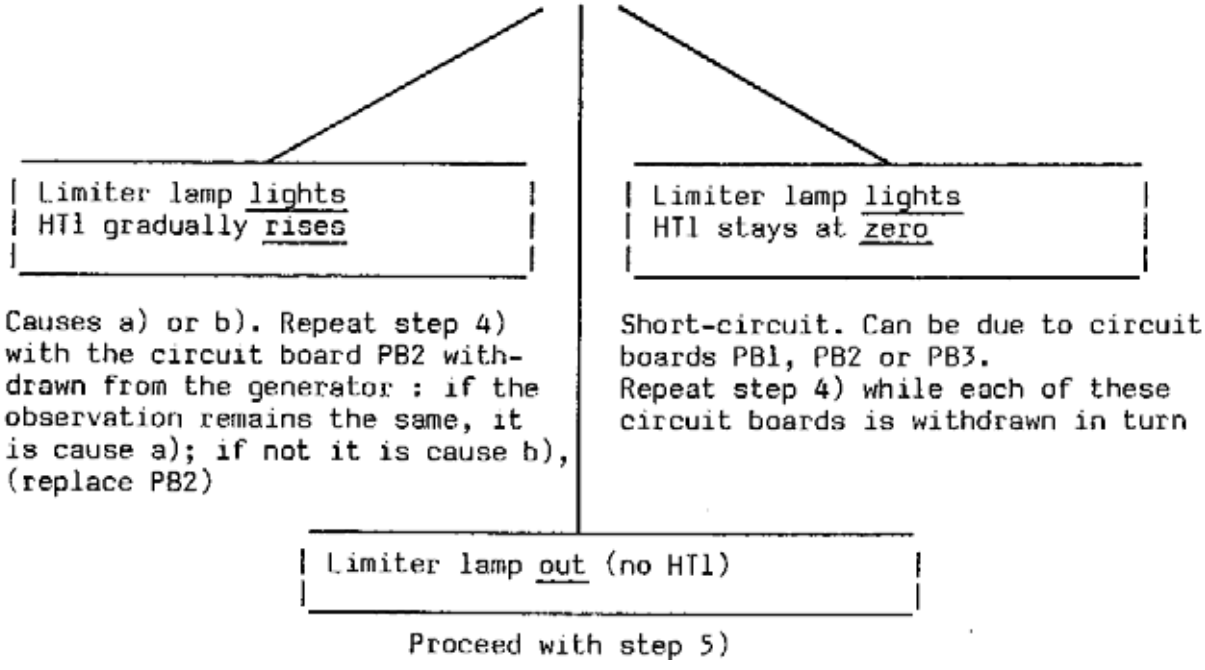
1) Replace (F2/PB5) at the rear of circuit board PB5. A spare fuse is located alongside the plug-in circuit boards.

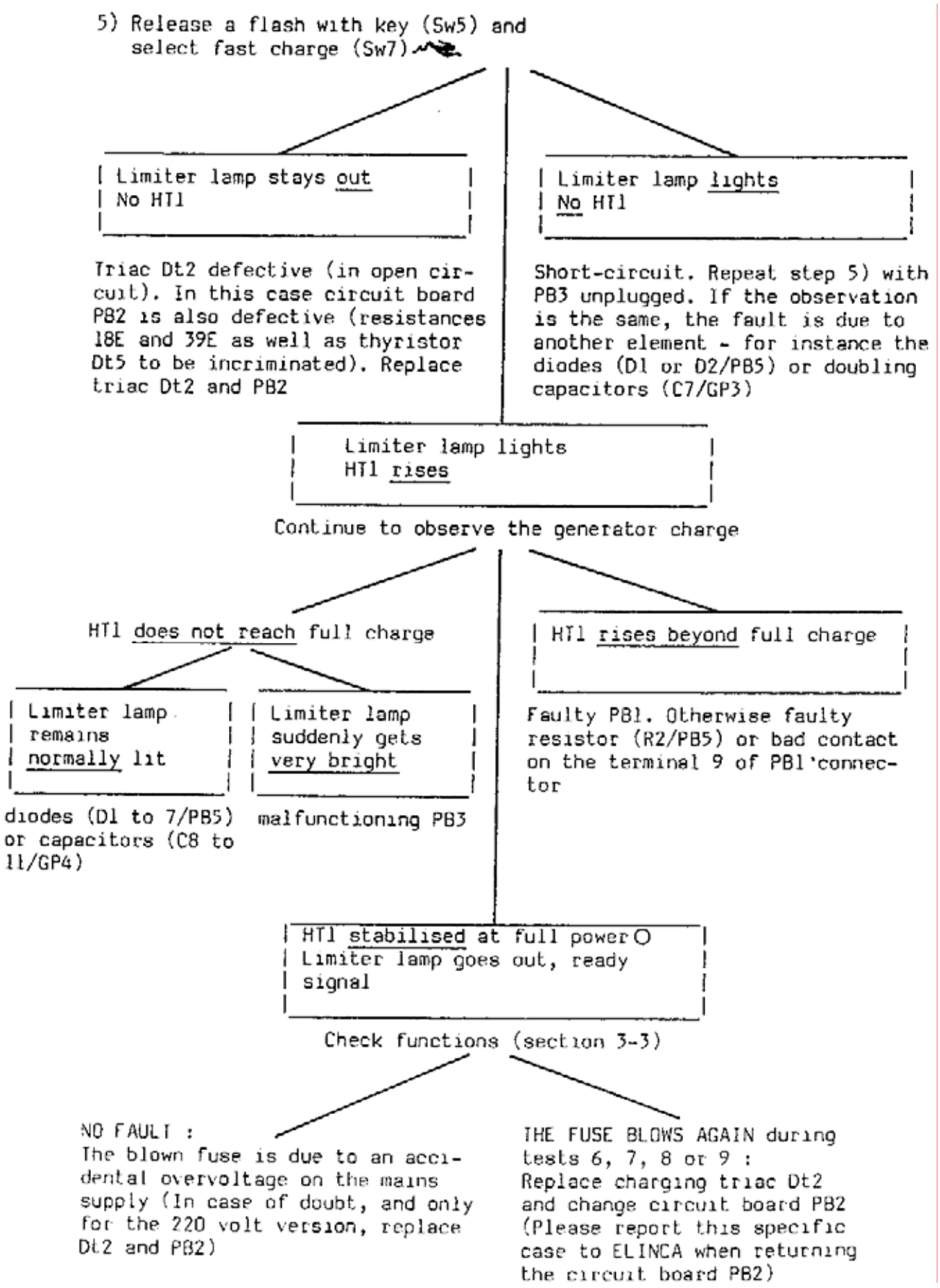
   12,5 amps ASP for 101+202/220 V
   16 amps ASP for 404/220 V and 101+202+404/110 V

2) Control panel setting :
   - disengage the three selector buttons Sw7
   - switch off the modelling light by Sw6
   - move variator R8 to maximum
   - move variator R5 to minimum-1/8
   - plug in a lamphead A at J1 and depress switch Sw1

3) Connect the input current limiter

4) Press the main power switch button (Sw4). Observe the lamp of the current limiter and the charging voltage HT1 :




5) Release a flash with key (Sw5) and select fast charge (Sw7)
Limiter lamp stays out
No HT1
Triac Dt2 defective (in open circuit). In this case circuit board PB2 is also defective (resistances 18E and 39E as well as thyristor Dt5 to be incriminated). Replace triac Dt2 and PB2
Limiter lamp lights
No HT1
Short-circuit. Repeat step 5) with PB3 unplugged. If the observation is the same, the fault is due to another element - for instance the diodes (D1 or D2/PB5) or doubling capacitors (C7/GP3)
Limiter lamp lights
HT1 rises
Continue to observe the generator charge
HT1 does not reach full charge
Limiter lamp remains normally lit
diodes (D1 to 7/PB5) or capacitors (C8 to 11/GP4)
Limiter lamp suddenly gets very bright
malfunctioning PB3
HT1 rises beyond full charge
Faulty PB1. Otherwise faulty resistor (R2/PB5) or bad contact on the terminal 9 of PB1 connector
HT1 stabilised at full power
Limiter lamp goes out, ready signal
Check functions (section 3-3)
NO FAULT :
The blown fuse is due to an accidental overvoltage on the mains supply (In case of doubt, and only for the 220 volt version, replace Dt2 and PB2)
THE FUSE BLOWS AGAIN during tests 6, 7, 8 or 9 :
Replace charging triac Dt2 and change circuit board PB2 (Please report this specific case to ELINCA when returning the circuit board PB2)

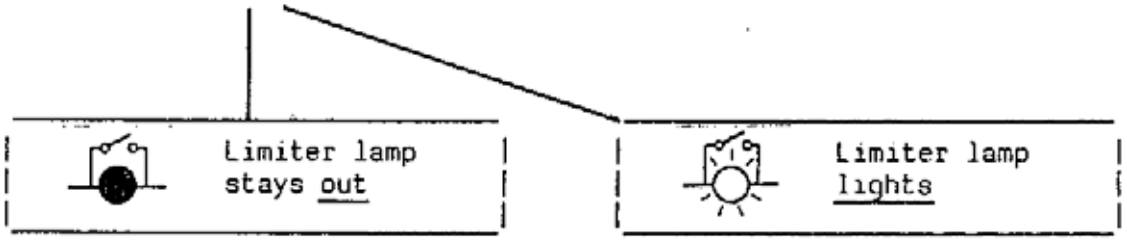
3-7 Fault tracing for lack of charge

1) Check the functions (section 3-3)

Faults 16+18 are observed during test step 5 :

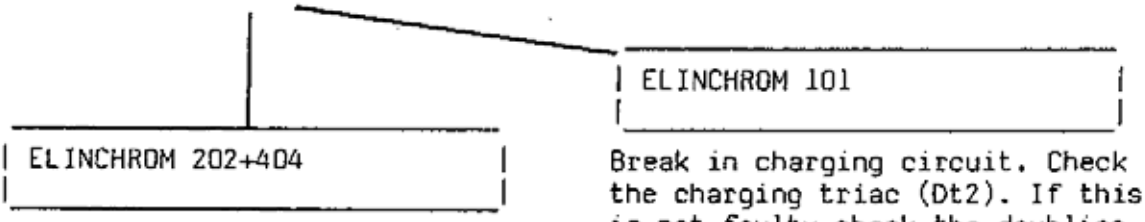
limiter lamp stays out on selecting slow charging
(operation a = fault 16) and on selecting normal charging ◊
(operation b = fault 18).

2) After steps a) and b) of test operation 5, select rapid charging with switch Sw7 and observe the limiter lamp.



Try replacing circuit boards PB2 then PB1. If the boards are not responsible for the breakdown :

Faulty circuit board PB2



Remove circuit board PB4 from the generator and carry out step 3)

Break in charging circuit. Check the charging triac (Dt2). If this is not faulty check the doubling capacitors (C7/GP3), diodes (D1 to 6/PB5), conductors or poor contact

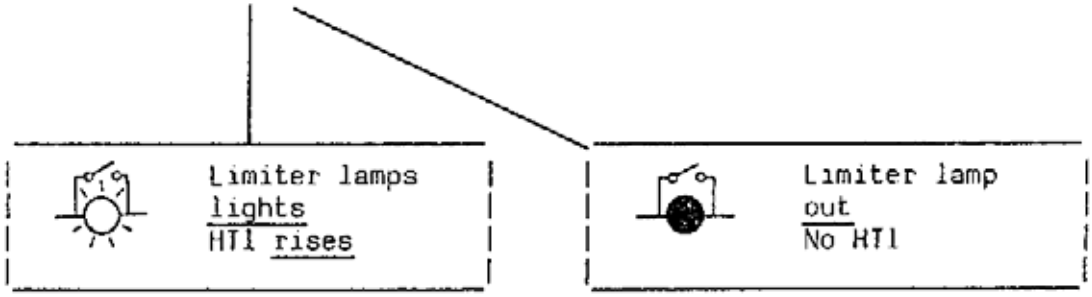
3) Disengage the three selector buttons Sw7, before switch on main power button again.

(Leave the other settings on the panel unchanged :

- modelling light out, Sw6
- variator R8 at minimum -
- variator R5 at minimum - 1/8).

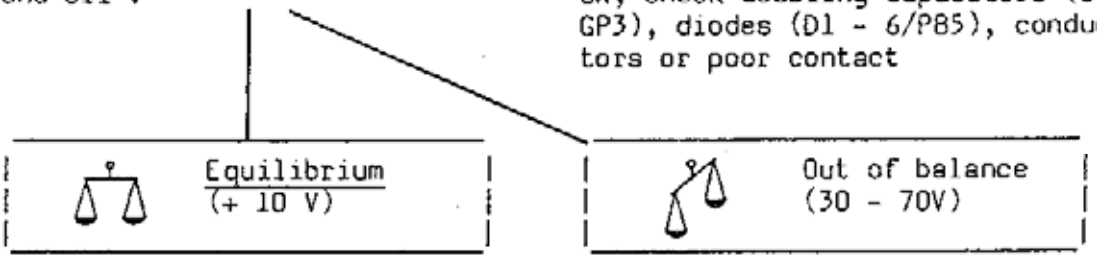
Re-engage main power button Sw4 and fire an open flash with key Sw5.

Then set slow charge with Sw7 and observe the limiter lamp and the charging voltage HT1 :



Check equilibrium balance of voltages between groups C10 and C11 :

Break in charging circuit. Check charging triac (Dt2); if this is OK, check doubling capacitors (C7/GP3), diodes (D1 - 6/PB5), conductors or poor contact



Switching cutout of charging triac (Dt2) due to malfunction of circuit board PB4

Failure of charge caused by defective capacitors

3-8 Tracing faults 1 to 27

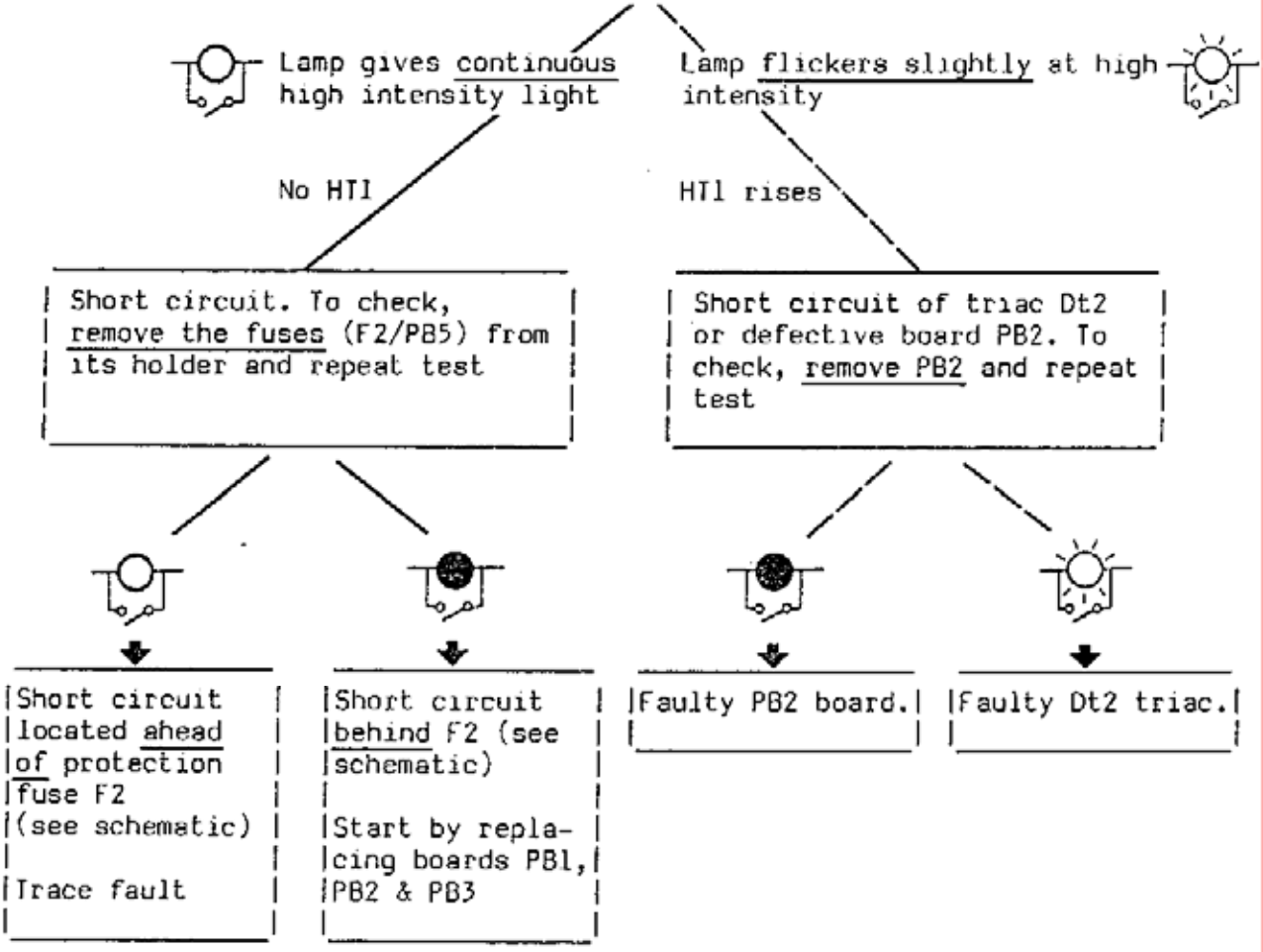
Fault 1

If a lamphead outlet is damaged (J1-2 or 3/GP2) take care when replacing it to clean thoroughly any arcing on other parts or elements.

Note : check and if necessary change also the plug of the lamphead or extension cable which in case of flash-over could also be damaged.

Other suspect elements : check and replace if necessary.

Fault 2 — Observe the intensity of the limiter lamp and check the charging voltage HT1 when repeating test operation 1 of the function check (section 3-3).



Fault 3 — Defective signal lamp of main power button (Sw4/GP1).

Fault 3+6 — Blown main fuse (F1/GP1). After replacing this restart the function check sequence ; can be due to a failure.

Fault 4 — Replace circuit board PB1. If this makes no difference, check "CHARGE SIGNAL" (PB5) and especially the diodes D10 and D11 of this section.

Fault 5 — Replace circuit board PB2. Otherwise check (Sw7/GP1) and wiring.

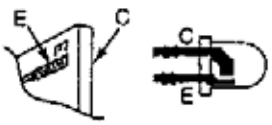
Fault 6 — Check connecting cables (fan phase : Sw1-2-3 at contact a8 of J1-2-3).

Fault 7+8 — Faulty syn. key (Sw5/GP1). Also check its wiring (the screened wire goes to points 22 + and - on PB5).

Fault 7+9 — Replace circuit board PB3. Repeat the test ; if this makes no difference, replace PB1. As a last resort check for short-circuit of diode (D7/PB5).

Fault 8+10 — Replace board PB1. Repeat test step 2 ; if no difference, green signal lamp of key (Sw5/GP1) defective.

Fault 9+10 — Unsolder photocell lead from PB1.



Carry out test (2b) by briefly short circuiting the conductors of PB1 "E-C" where the photocell lead was attached :

FAULTS 9+10 PERSIST	FAULTS 9+10 DISAPPEAR
Exchange board PB1 and reattach photocell lead, observing correct polarity	Fit new photocell (Q5) of control panel (GP1), making sure of correct polarity

If neither of the two above remedies applies, the photocell cable may be broken or there may be a short-circuit.

Faults 7+8+9+10 — THE INTERNAL FUSE (F2/PB5) is blown. Carry out fault tracing for a blown internal fuse (section 3-6).

Faults 11+12+13

- Very brillant light in the 3 cases : Modelling triac (Dt4/PB5) short-circuited or damaged diac (Dc1/PB5).
- No light in all the the 3 cases : The 2 items mentioned above may still be the cause. Otherwise check the "LAMP CONTROL" section (PB5) and its wiring. Check also the modelling light selector (Sw6/GP1).

Fault 12 — Sliding potentiometer (R5/GP1) out of action (and its wiring).

Fault 13

- Same lamp brightness as in observation 12 : Change circuit board PB1, otherwise check especially D10 and D11 of the "CHARGE SIGNAL" section of PB5.
- No light : Check selector (Sw6/GP1) or its wiring.

Fault 14 — Check the wiring and contacts of the lamphead outlet in question.

Fault 15	Replace PB2, otherwise PB3.
Fault 16	Check charge speed selector (Sw7/GP1) and its wiring.
Fault 18	Check charge speed selector (Sw7/GP1) and its wiring.
Faults 16+19	Replace PB1.
Faults 16+17+18+19	(The generator may have reached its full charge - check by triggering a flash). Faulty circuit board PB1 - replace.
Faults 16+18	Carry out the fault tracing for lack of charge (section 3-8).
Fault 20	Carefully observe the limiter lamp and the green key (manual flash button). The charge voltage HT1 will also give a clue to different possibilities as below :

1) Limiter lamp lights strongly (instead of going out).

This may be due to a charging overvoltage.

If so, and it is not feasible to adjust the charging voltage, replace PB1. Then check for a break of the reference resistor (RE2). (At contact 9 of connector from PB1 to R2/PB5).

If not, overvoltage protection circuit of board PB3 is faulty : fit new PB3.

2) The lamp continues to blink ; the green key does not light

HT1 does not rise

IMPORTANT ! A break in the diode circuit of PB5, especially D6 or of a conductor wire, may produce an overvoltage to (C8 or C9/GP4).

The selected charge ◕ is not reached

Short-circuit or fault in the charging system. Inspect (C7/GP3), the diodes of the "DIODE NETWORK" section of PB5, or also the capacitors of GP4 (check C8-C9, then C10-C11).

3) The limiter lamp goes out but the green key does not light

Interrupted charge. Search for the cause :
Start by replacing PB2

ELINCHROM 202+404

Carry out step 3) for tracing the lack of charge (section 3-7)

Note that in the case of a partial charge, charging failure may be due to faulty capacitors leading to unbalance voltages of 30-70 volts. Also the charging voltage HT1 would rise to at least this value.

4) The green key lights BUT THE LIMITER LAMP STAYS LIT

Charging triac short-circuited. (Not very likely, as this case is traced by test 1 of the function check.)

Fault 21 — Change PB2, or otherwise the faulty forming charge signal LED (D12/GP1).

Fault 23 — Replace PB2.

Faults 21+23 — Internal fuse (F2/PB5) blown.
Replace the charge triac Dt2 and change PB2.
(Please report this specific case to ELINCA when returning circuit board PB2).

Faults 21+22+23

Various possibilities

Blown circuit breaker or fuse of AC line	Generator main fuse (F1/GP1) blown

Not very probable if internal fuse (F2/PB5) has the correct rating

If the AC supply line is overloaded or voltage is too low	If the internal fuse (F2/PB5) was already replaced

Carry out the function check with a correct mains supply

Replace Dt2 and change PB2 (as described for faults 21+23)

Fault 24	Replace PB2.
Fault 25	Faulty PB2 or otherwise PB3.
Fault 26	PB2 defective or out of adjustment ; replace.
Faults 26+27	The recycling time depends on the capacity of the voltage doublers (C7/GP3) and (C8-9/GP4), on the capacity of the storage capacitors (C10-11/GP4), and on the voltage and frequency as well as on the impedance of the line supply. If the measured recycling times deviate from the specified times by more than ± 20 %, contact the manufacturer. You will receive new instructions.

3-9 Failures not revealed by the function check

3-9/1 General procedure

	Visually inspect all electronic and mechanical elements. If these show defects, breaks, scorching, etc... - replace.
	CHECK THE FUSES (F1/GP1) and (F2/PB4)
	Use the input current limiter whenever charging functions are suspect.
	Replace in turn circuit boards PB1, PB2, PB3.
	For models 202+404 : remove circuit board PB4 and test it. Check equilibrium balance between C10/GP4 and C11/GP4).

After that, look in turn for the cause of failure in the following items :
(Dt2)
(C7/GP3)
(D1-6/PB5)
(C8-11/GP4)

If the cause of failure is still not apparent, check once more items such as switches, selectors and variators of the control panel.
Check that the plug-in circuit boards make proper contact with their connectors.
Check the conductors and contacts of circuit board PB5.

3-9/2 Special case : Defective modelling light

Visually check the elements involved in the modelling lighting.

Replace only board PB1.

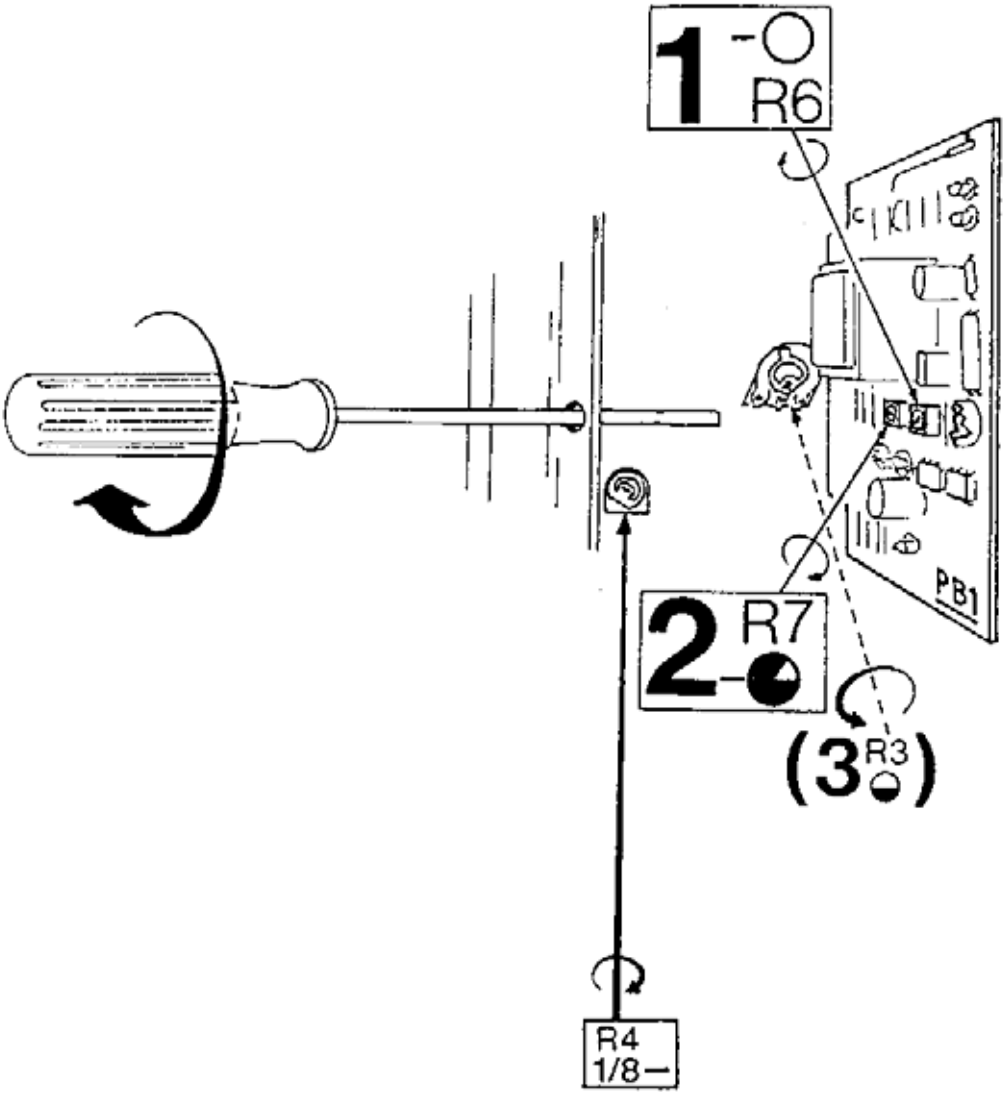
Check on the one hand the triac (Dt4/PB5) and on the other the diac (Dc1/PB5).

Possibly after that check :
- the diodes of the "CHARGE SIGNAL" circuit (PB5)
- the remaining elements of the "LAMP CONTROL" circuit (PB5)
- in the last resort, all connections and leads.

3-9/3 Untraceable failures

Contact the manufacturer, stating the serial No. of the unit. Describe the failure and list the faults observed during the function check (section 3-3). You will then receive further instructions.

SECTION 4 ADUSTMENTS, REPLACEMENT OF COMPONENTS AND FINAL CHECK


1
R6
2
R7
(3
R3)
R4
1/8
PB1

4-1 Adjusting the charge

The upper and lower limiting values of the charge are controlled by potentiometers R6 and R7 of circuit board PB1. Intermediate values are controlled by the resistor (R3/PB5) which adjusts the linearity of the sliding potentiometer or variator (R8/GP1).

Use a voltmeter in DC mode to measure the charge voltage HT1 at points ⊖ and ⊕ of GP4 (see Fig. 2).

	ELINCHROM 101	202+404 tcTR
1. at the ○ setting adjust R6/PB1 (max.charg.volt.)	359 ±3V	680 ±3V
2. at the ◕ setting adjust R7/PB1 (min.charg.volt.)	166 ±3V	280 ±5V
3. at the ◒ setting adjust R3/PB5 (linearity)	270 ±3V	495 ±4V

Note that adjustment 3 is necessary only when the potentiometer (R8/GP1) is replaced.

4-2 Adjusting the modelling light

This adjustment brings the light intensity from full (1/1) down to minimum (1/8 or 12,5 %) with the trimmer (R4/PB5).

This adjustment is easy with a voltage measurement at the modelling lamp terminals :

- Measure the voltage with a voltmeter in AC mode, using the plug intended for the purpose (section 2-5/4)
- Modelling light selector : 💡 (light on, signal off)
- Check the resulting voltage at full intensity (1/1).
- At 1/8 adjust R4/PB5 to obtain the required voltage

MAINS VOLTAGE	RESULTING VOLTAGE at 1/1	ADJUSTED VOLTAGE at 1/8
100	95	— 39
110	105	→ 40
115	110	→ 42
120	115	→ 44
127	122	→ 45
200	190	— 78
210	200	— 80
220	210	→ 82
230	220	→ 85
240	230	— 87
250	240	— 91

4-3 Replacing components

Disconnect the unit from the mains supply and discharge the capacitors (see section 2-2).

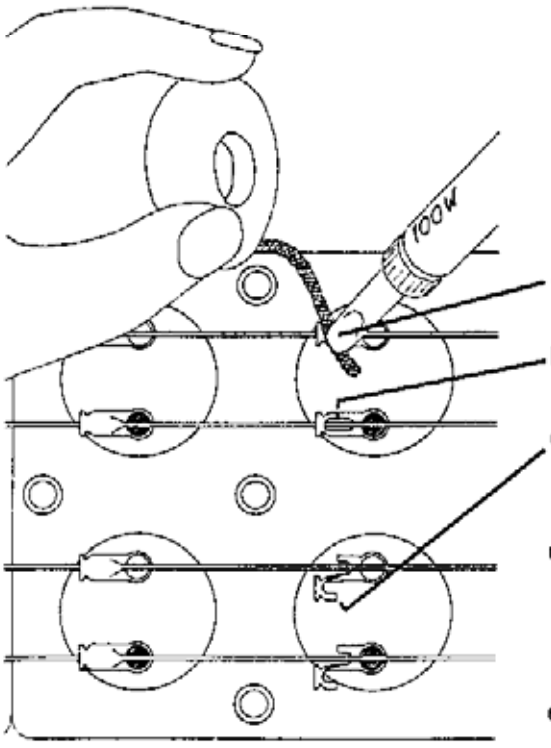
After replacement carry out a final check (section 4-8).

4-4 Replacing control panel elements

- From the mains socket (J4/GP1) unsolder the two wires of the interference-suppressing capacitor (C3/GP1).
- Remove the four retaining screws of the panel.
- The panel can now be swinged forward allowing easy reach of all parts.

4-5 Replacing components on PB5 : Plug out all the plug-in printed boards. All parts on PB5 are now easily accessible.

4-6 Replacing storage capacitors



DRAIN individually all storage capacitors (C8-9-10-11/GP4)

A 100W power soldering iron is required
Please make neat soldering joints.

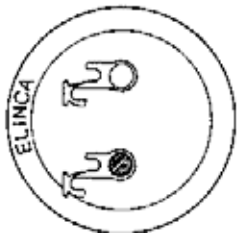
a) remove solder tin from lug terminal

b) cut off lugs

c) clear off lugs : the stiff wires are thus free

d) take out bottom plate of unit : the capacitors assembly rack can now be taken out

e) push out the back plastic rack and replace defective capacitor(s).



Straighten out lugs terminal of new capacitor(s) and place them in the assembly rack.

4-7 Replacing plug-in circuit boards

Disconnect the unit from the mains supply and discharge (see section 2-2)

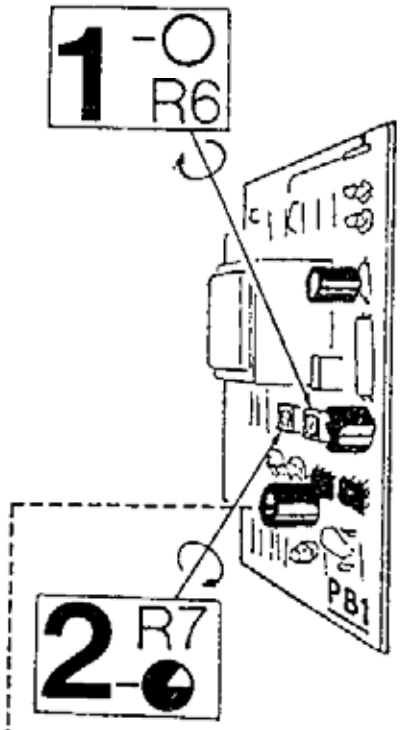
Extract the circuit board from the socket with a pair of pliers. (CAUTION : before handling a circuit board (PB3) check that its paper/metal capacitors are discharged.

Drop the removed circuit board in the recess of the control panel underneath the handle. (Replace the wiring of the cell on a suspect PB1 circuit board only after checking that the fault is really in this circuit.).

| Only replacement of a PB1 requires a charge adjustment.

| Replacement boards PB2-PB3-PB4 supplied by ELINCA are preset. Their factory adjustment applies to all generators 101+202+404. If the boards appear out of adjustment, see the sections dealing with replacing the circuits in question.

4-7/1 Replacing PB1



| When a circuit board PB1 is replaced, the charge must be readjusted. This is occasioned by the tolerances in the components and also the different settings for the various generator models.

Normally it is sufficient to adjust items 1 and 2. An adjustmeent of item 3 (see section 4-1) is required only when the potentiometer (R8/GP1) has been replaced.

The PB1 circuit boards supplied as replacements by ELINCA are all preset for the ELINCHROM 202+404. These latter models therefore only require a fine adjustment. When mounted on the ELINCHROM 101 the charge voltage is about 10 % lower before adjustment and hence without hazard.

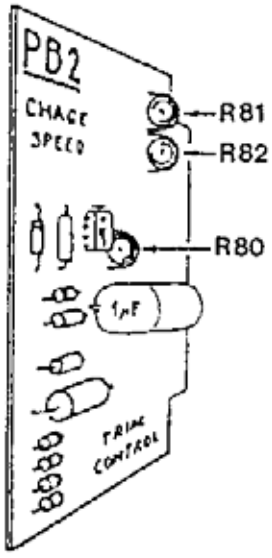
IMPORTANT. If a circuit board PB1 supplied (or adjusted) for a model 101 is installed in a model 202 or 404, it raises the full charge to a critical level around 740 volts. In such a case first turn down R6/PB1.

elinchrom	1-O	2-◕
101	359 - 166 V	
202+404	680 - 280 V	
66	680 - 310 V	

| 220V version. Circuit boards PB1 are compatible with the ELINCHROM 66. One exception are circuits mounted on the first series of ELINCHROM 66 units which differ in the lack of a third capacitor. These must not be mounted in an ELINCHROM 101, 202 or 404.

4-7/2 Replacing PB2

Once this board is adjusted, its design renders the "CHARGE SPEED" section comparatively insensitive to tolerances of its components.



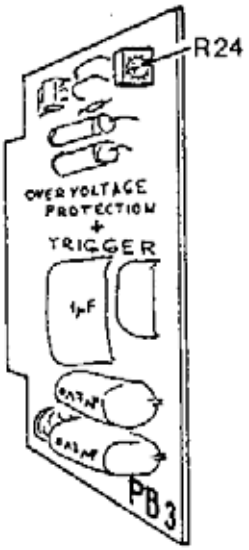
Its adjustment is independent of the model in which it is used - ELINCHROM 101 or 202 or 404.

For repair departments that do not have a double-trace oscilloscope with vertical sweep : do not move the trimmers R80 - R81 - R82. If the board is out of adjustment change it and return it to the manufacturer for readjustment.

Adjustment of the PB2 board requires the display on an oscilloscope CRT screen of the "TRACE OUTPUT" signal (point 3/IC 3/PB2) superimposed on the "TRACE LINE" signal. For repair workshops that have suitable equipment, see the description charging speeds (section 1-5/2) and follow the directions for adjusting the PB2 in the appendix.

4-7/3 Replacing PB3

Its "OVER VOLTAGE PROTECTION" section may be subject to an adjustment of at the most + 2,2% depending on the generator in which the PB3 board is installed. Also, the components in which the ELINCHROM 101 differs from a 202+404 are selected in such a way that the same factory adjustment satisfies the admissible overvoltage limits, namely 390 volts for the 101 and 745 volts for the 202+404.



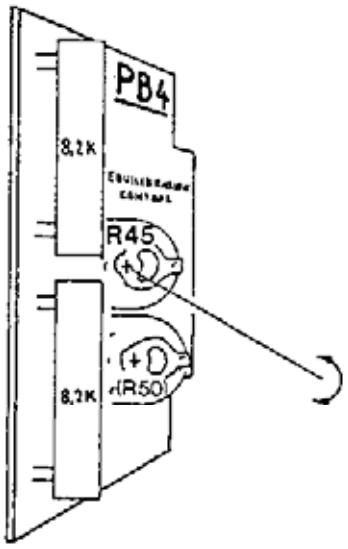
If the readjustment required appears to be greater than the adjustment level provided, replace PB3. Servicing departments that want to check or readjust the circuit themselves, should follow the procedure adjusting PB3 in the appendix.

The "TRIGGER" section can be damaged through bad contacts of the triggering coil in the lampheads (overheating of resistors 4,7 E/4W or 10K/1/2 W). First check the suspect lampheads, then replace the PB3. See also in the appendix: "Triggering coils and their wiring".

4-7/4 Replacing the PB4

This circuit is adjusted in the course of manufacture to a high stability level (± 1%)

Full adjustment of the PB4 requires elaborate test equipment which is uneconomical to acquire for a repair department and is not therefore described here.



The equilibration (balance) adjustment is easy to check

The "normal" deviation between the voltages of capacitors groups C10 and C11 is between 0 and 8 volts. If this deviation is higher (9-15 volts) readjust the trimmer R45/PB4 :

- connect two voltmeters, one between the points (-) and (1/2) (voltage of C10) and the other between points (1/2) and (+) (voltage of C11.
- gradually turn R45/PB4 in the one or other direction until the voltage difference is within the "normal" range.

(A voltage unbalance greater than 16V indicates a defect)

Do not readjust the trimmer R50/PB4. If this has been accidentally moved reset it to its mid-position. Its effect on charge control would only be slightly modified.

4-8 Final check

1) Check the charge adjustment (section 4-1)

2) Check the modelling light adjustment (section 4-2)

3) Carry out the function check (section 3-3)

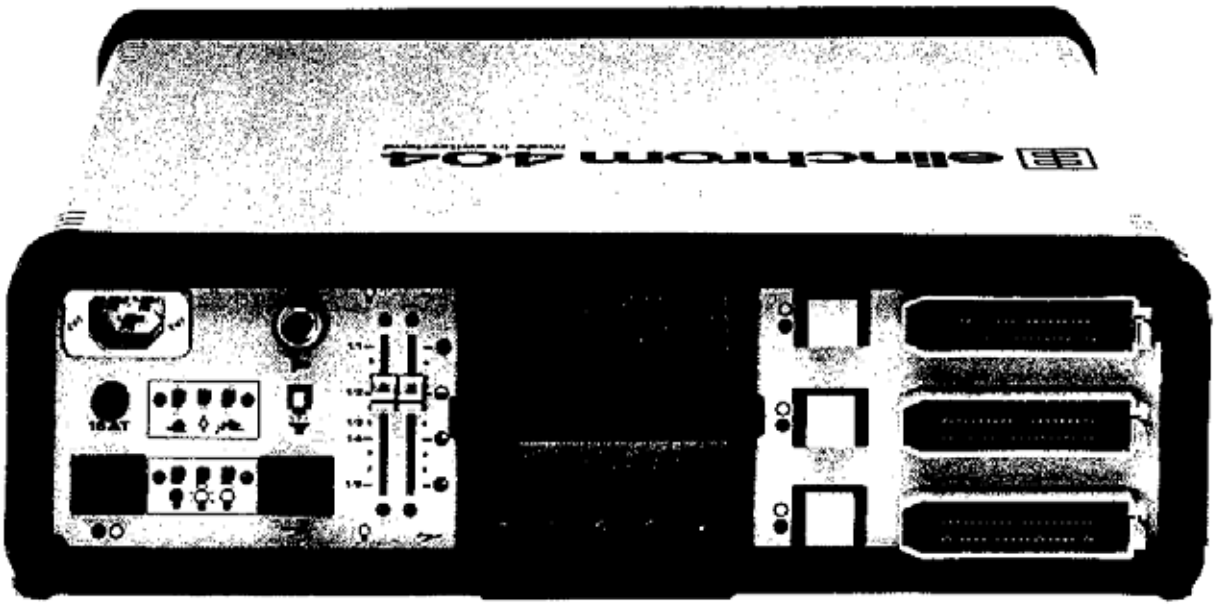
4) Check the flash release via the synchro socket (J5/GP1)

Specially recheck the functions which were the cause of the repair work.

elinchrom

Instructions for use

elinchrom® 101 202 404
PROFESSIONAL STUDIO FLASH SYSTEM



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Switzerland

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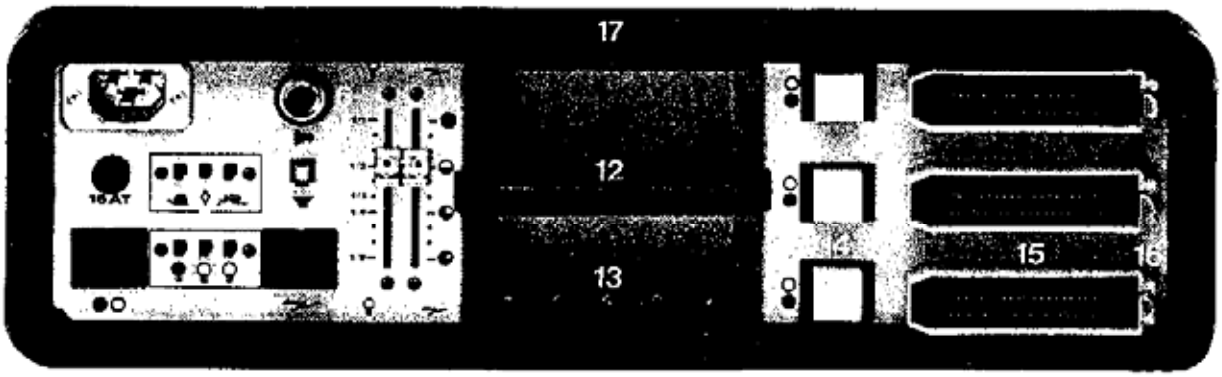
PROFESSIONAL STUDIO FLASH SYSTEM

THE CONTROLS

1. Mains supply socket
2. Fuses
3. Main switch and check lamp
4. Charging speed selectors
5. Modelling lamp and pilot signal selectors
6. Socket for camera synchronisation
7. Photocell
8. Open flash button and ready light
9. Modelling lamp intensity control
10. Flash power control
11. Forming charge signal
12. Carrying handle
13. Spare fuses for generator and lampheads
14. Separate lamphead switches
15. Lamphead outlets
16. Plug lock and release
17. Shock-absorbing rubber bumpers



OPERATION

1) Connect the main lead to the AC supply.
2) Press the red key to switch on the power-pack.
3) Press the normal charging speed key.
4) Press the key for modelling lamp with pilot signal.
5) Plug the synchronising cord into the synchronising socket (6). To trigger the flash via the photocell underneath the transparent key (7), press the latter. Its signal lamp lights up green to show that the cell is switched on for triggering the flash from an external source. On releasing the switch (key up) the signal lamp goes to red, showing that the cell is switched off.
6) Release the yellow key (14) and plug the lampheads into the power-pack.
7) Press the yellow keys (14) to switch on the lampheads.
8) When the green ready light comes on in the open flash key (8), trigger a first flash by pressing this key. The unit is now ready for use. When reducing the flash power, move the slider (10) to the required setting and then trigger a flash to allow the power-pack to recharge to the new lower level.

1 Mains supply socket

Release the main switch (red key 3 up) and firmly push the plug of the mains lead into the socket (1). Integral springing ensures perfect contact. Before disconnecting the plug of the mains lead always release main switch (red key up).

Before connecting the power-pack to the AC supply, check that the latter is earthed (three-wire lead) and that the supply voltage is the same as marked on the data panel in the power-pack base. Check also that the mains supply fuses can carry the flash unit's charging and modelling lamp current. If in doubt, set the charging speed selector (4) to slow charging.

2 Fuses

Standard 5 x 20 mm cartridge fuse, 16 amps, slow-blowing. To replace a blown fuse, unscrew the fuse holder cap with a coin. Spare fuses are located next to the carrying handle (do not use a lamphead fuse). If the fuse blows repeatedly have the unit checked by an authorized ELINCHROM servicing station.

3 Main switch and check lamp

Press the red key; this connects the power-pack to the mains supply and the key lights up. Gently pressing the key once more switches off the power-pack; the key lifts and the red check lamp goes out.

4 Charging speed selectors

Select the required charging speed by pressing the appropriate key.

◊ NORMAL CHARGING, suitable for normal use.

SLOW CHARGING. On slow charging the power-pack takes a low mains current. This is the recommended setting when the mains supply capacity is too limited for normal charging (e.g. when the mains supply fuses keep blowing). Slow charging allows use of the unit in locations where supply conditions would otherwise be unsuitable.

FAST CHARGING. This permits rapid flash sequences which can become specially fast at reduced flash power settings. This is however subject to certain restrictions - see section 33, fast flash sequences).

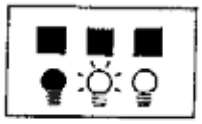
The three charging speeds require the following fuses in the mains supply line :

		◊	
220-240 volt supplies	6A	10A	16A
110 volt supplies	10A	15A	25A

Note that fast flash sequences and also powerful modelling lamps draw a heavier mains supply current. You reduce the risk of blowing a fuse with slower flash cycling, lower flash power and less powerful modelling lamps ; also by reducing the modelling light when flashing or by switching it off altogether.

Charging speeds			◊	
		● – ○	● – ○	● – ○
220 V	ELINCHROM 101	1.9 - 6.5 s	0.8 - 2.0 s	0.5 - 1.1 s
110 V		2.5 - 7.8 s	1.0 - 2.5 s	0.6 - 1.3 s
220 V	ELINCHROM 202	3.8 - 13 s	1.3 - 3.8 s	0.7 - 2.0 s
110 V		3.5 - 16 s	1.2 - 4.7 s	0.8 - 2.5 s
220 V	ELINCHROM 404	7.4 - 26 s	2.2 - 7.4 s	1.1 - 3.7 s
110 V		6.8 - 32 s	2.3 - 9.1 s	1.4 - 4.7 s

5 Modelling lamp and pilot signal selectors



Select the required setting by pressing the appropriate key. The setting controls all three lamphead outlets together.

Modelling lamp off

Use the setting for :

- Long exposure times with mixed-light shots, repeated or multiple flash etc. where the modelling lamps might affect the exposure.

- Three-way savings when the modelling lamps are not required :

  1. Reduced power consumption.
  2. Increased modelling lamp burning life.
  3. Less heat generation in the lampheads and hence increased flash tube life.

Modelling lamp and pilot signal on

This is the normal setting.

Function of the pilot signal : during charging or recharging of the power-packs when the green ready light is out, the modelling lamp intensity drops and blinks slightly to signal that the previous flash fired correctly and that the power-pack is charging. Once the generator is recharged, the green light comes on and the modelling lamp intensity becomes steady at the selected power level. That way you know that the next flash is ready to fire, without taking your eyes off the subject.

Modelling lamp without pilot signal

Use this setting when you do not want the pilot signal.

6 Socket for camera synchronisation

Plug in the sync. cord and secure it with the screw ring for perfect connection. For normal exposures use a shutter speed of 1/30 second.

For cordless synchronisation mount an infrared flash on the camera or any portable amateur flash with an infrared-filter (e.g. Kodak No 87). The infrared flash triggers the photocell on the ELINCHROM without interfering with the subject lighting. For still greater mobility of the camera use the supplementary ELINCHROM photocell (No 11081) suitably located within reach of the camera flash and connected to the synchronising socket.

A VHF ELINCHROM remote control unit FRC 1, not larger than a cigarette pack, is also available.

Do not connect flash units of different makes together to the same sync. socket. The ELINCHROM power-pack uses a triggering voltage of 20 volts while other makes often use much higher voltages ; direct interconnection could then damage your unit. The ELINCHROM generator can always be synchronized with other flash units via the ELINCHROM photocell (No 11081).

7 The switchable photocell

This is located underneath the small transparent key (7). Depressing the key (7) so that the green signal lamp lights switches on this cell which will then trigger a flash in response to an external flash source. When the key is down, the signal lamp turns red (cell switched off).

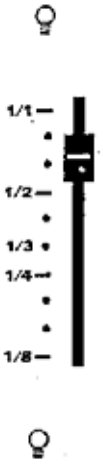
If the power-pack location does not expose its photocell sufficiently to the auxiliary triggering flash, connect a supplementary cell, mounted on a suitable support, to the sync. socket of the power-pack. See the SUPPLEMENTARY PHOTOCELL data sheet.

8 Open flash button and the ready light

To trigger a flash, press the green key.

The light underneath this key lights up to show that the power-pack is fully charged and ready to trigger the next flash. The light goes out during charging.

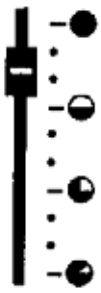
9 Modelling lamp intensity control



This linear control provides a continuous intensity adjustment of the modelling lamp from full to 1/8 power. The linear scale is marked in 1/3 f-stop intervals.

The control permits parallel adjustment with the flash power control for continuous proportional variation of the modelling lamp intensity and flash power. Separate adjustment of the two controls is also possible - e.g. for full modelling lamp intensity, for focusing or for exact proportional adjustment in combinations of several power-packs. Further, you can reduce the modelling lamp intensity to save power or to reduce lamp glare on the subject. While you move the two sliders of the flash and modelling lamp control together, the two light sources remain proportional.

10 Flash power control



The sliding controls cover a continuous output range from 100 % ○ down to 12.5 % ● . The linear scale is marked in 1/3 f-stop intervals, like the modelling lamp intensity control.

When reducing the flash power, disperse the surplus power already stored by triggering a flash. The power-pack then recharges to the selected level. When you increase the flash power, the power-pack automatically tops up the charge to the new level.

11 Forming charge signal

The red signal lights up during the initial charge required to reform the capacitors (see section 30). During this first charge the capacitors are charged to full power irrespective of the selector setting. When the green ready light signals the full power-pack charge, trigger a flash. The first flash disengages the automatic forming control and the red signal goes out.

12 Lamphead outlets

The three outlets are fully matched.

Always switch off the yellow keys (14 - key up) when plugging in or unplugging the lampheads.

Adapter cables are available (see section 27 for compatibility) to connect older ELINCHROM lampheads to new power-pack models.

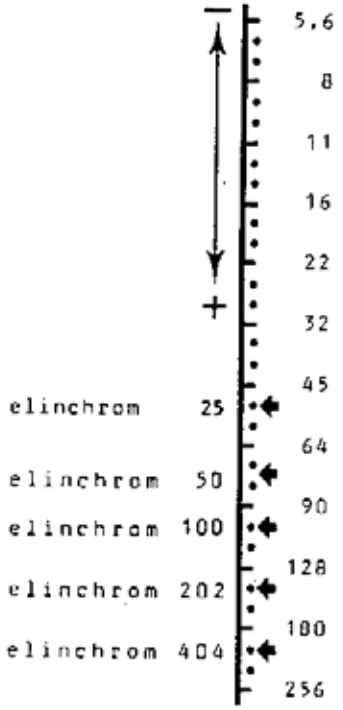
13 Plug lock and release

When plugging in the lamphead plug, first push in the side next to the yellow key, with the cable pointing outwards, then press down the whole plug. The spring in the socket locks the plug in position. To unplug, push down the spring and pull the plug.

elinchrom meter

The guide aperture is based on the standard reflector, a lighting distance of 1 meter (3 1/3 ft.) and a 21 DIN/100 ASA emulsion. For other combinations, the working aperture can be read off the aperture scale, just by increasing or decreasing the guide aperture by the respective number of f-stops indicated below.

GUIDE APERTURE



LIGHT DISTRIBUTION WITH ELINCHROM LAMPHEADS

symmetric:

S=I=	100 %	●
2xS	50 %	- 1
3xS	33 %	- 1 2/3
A	100 %	- 1/3
2xA	50 %	- 1 1/3
3xA	33 %	- 2
X	(8000 Ws)	+ 1

asymmetric:

A+S	A=70 %	- 2/3
	S=30 %	- 2
A+2xS	A=60 %	- 1
	S=20 %	- 2 1/3
2xA+S	A=40 %	- 1 2/3
	S=20 %	- 2 2/3
R + 2400G/2000 Ws (asymmetric=S)		- 1 2/3
R + 2404B/4000 Ws (asymmetric=A)		- 2 1/3

LIGHT SHAPERS

REFLECTORS:		
standard	21	●
compact	21	- 1/3
brilliant	26	+ 2/3
white mat	26	- 1
square	44	- 1 1/3
+ diffusing filters:		
	21, 26	- 1
	44	0
+ colour filters:		
	21, 26	- 1
+ polarizing filters:		
	21, 26	
variable from		- 2 1/3
to		- 4 1/3
+ spot grids:		
	21, 26	- 2/3
	44	- 1/3
UMBRELLAS:		
silver		- 2/3
white		- 1 1/3
translucent		- 2 1/3
SOFT BOX 100 x 100		- 1 1/3
with diff. int.		- 1 2/3
with diff. ext.		- 2
complete		- 2 1/3
QUADRA LITE 145x145		- 2
with diffusor		- 3
OCTA LITE diam. 190		- 2
with diffusor		- 3
RECTA LITE 72,5x175		- 2
with diffusor		- 3 1/3
STRIP LITE 33 x 175		- 2 1/3
with diff. 33		- 4
with diff. 18		- 4 2/3

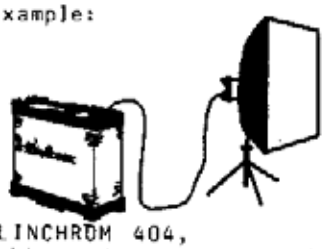
DISTANCE

ft.	m/cm	
53	16.00	- 8
38	11.30	- 7
26	8.00	- 6
19	5.70	- 5
13	4.00	- 4
	3.60	
10	3.20	
	2.85	- 3
8	2.50	
	2.25	
	2.00	- 2
6	1.80	
	1.60	
	1.40	- 1
4	1.25	
	1.12	
3	1.00	●
	90	
	80	
2	70	+ 1
	50	+ 2
1	35	+ 3
	25	+ 4

EMULSIONS

DIN	ASA	
9	6	- 4
10	8	
11	10	
12	12	- 3
13	16	
14	20	
15	25	- 2
16	32	
17	40	
18	50	- 1
19	64	
20	80	
21	100	●
22	125	
23	160	
24	200	+ 1
25	250	
26	320	
27	400	+ 2
28	500	
29	640	
30	800	+ 3

Example:



ELINCHROM 404, guide aperture 180 1/3

with one lamphead ELINCHROM T 0 = 180 1/3

with one SOFT BOX complete - 2 1/3 = 90

at distance 1.6 meter - 1 1/3 = 45 2/3

with emulsion 64 ASA - 2/3 = 45

gives working aperture 45

Camera extension, filters etc. to be considered in addition.

The ELINCHROM METER cannot replace the flashmeter altogether, as it does not take into consideration combined light from several sources, reflected light within the studio, individual tolerances of the equipment and of the many conbinations of LIGHT SHAPERS.

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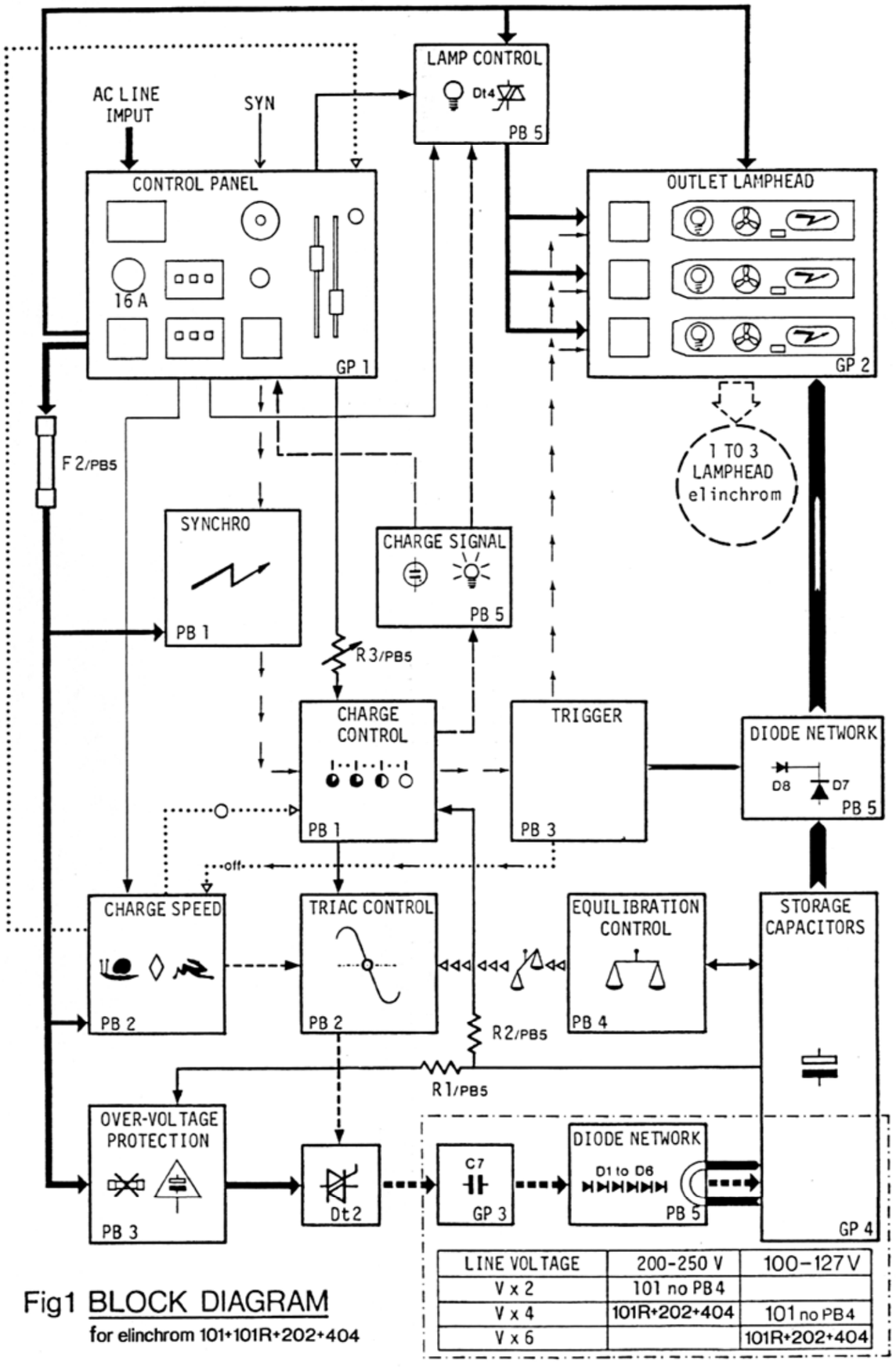
PROFESSIONAL STUDIO FLASH SYSTEM



LINE VOLTAGE	200-250 V	100-127 V
V x 2	101 no PB4	
V x 4	101R+202+404	101 no PB4
V x 6		101R+202+404

Fig1 BLOCK DIAGRAM
for elinchrom 101+101R+202+404

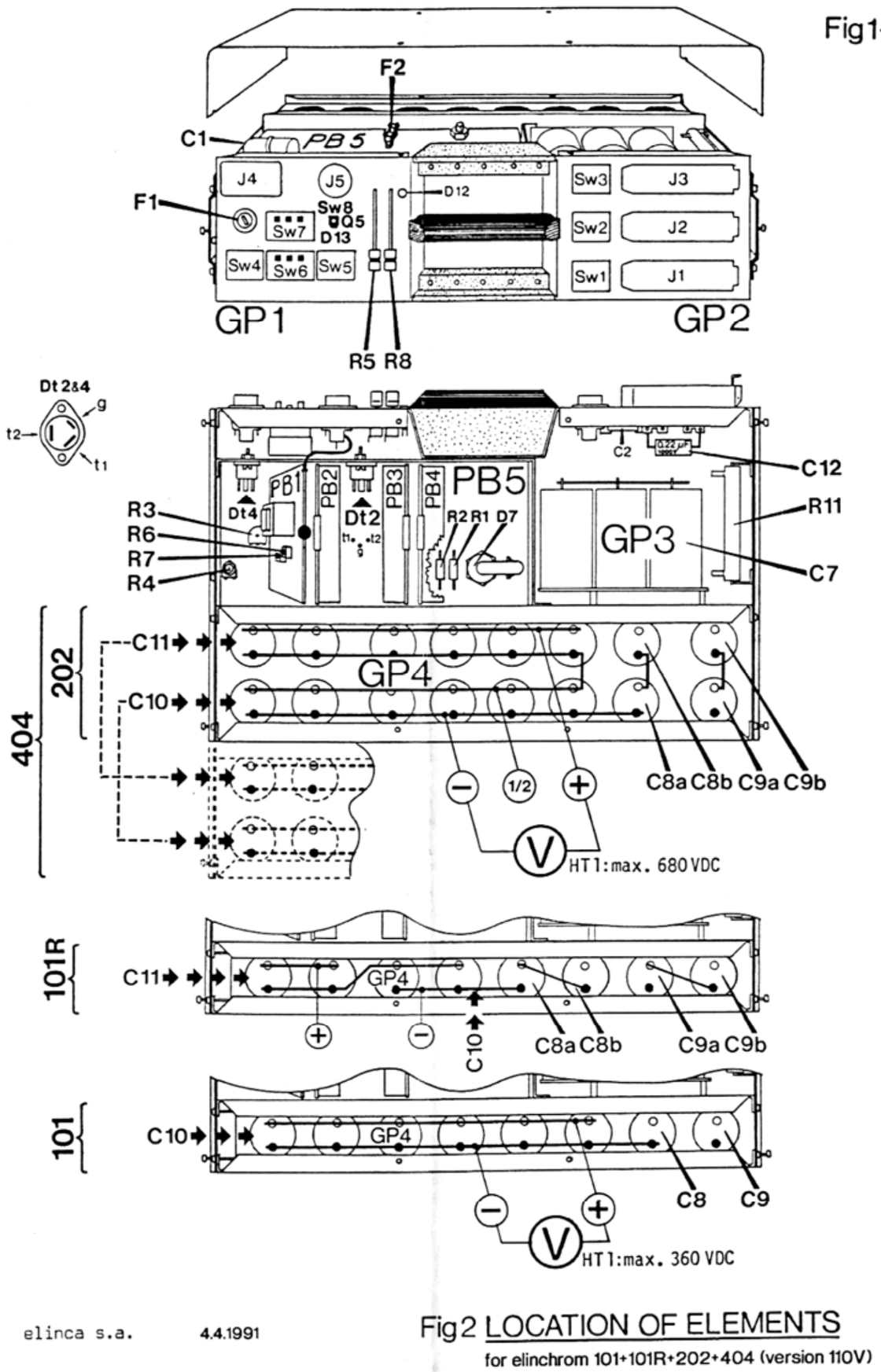


Fig2 LOCATION OF ELEMENTS
for elinchrom 101+101R+202+404 (version 110V)

Fig 3

DIAGRAM CONNECTION LAMPHEAD **elinchrom A** and **S**

LAMP ON

Sw 1-2-3

C2 0,22 µF MP 250V~

OUTLET: 1

J 1-2-3

C12 0,22µF 1000 V

ionization trigger voltage

trigger boost voltage

HT 2 = 620 VDC

D8 1N 5408

DIODE NETWORK

HT 3 = 620 VDC

OUTLET: 1-2-3

STORAGE CAPACITORS (GP4)

165 ≤ HT 1 ≤ 360 VDC

D7

D6

D3

D2

D1

R1 270K 1% 2W

R2 270K 1% 2W

R10 68K 2W

C10 6x 2200 µF 360 V

C9 2200µF

C8 2200µF

●OVER-VOLTAGE PROTECTION

●TRIGGER

PB3

Dt3

R24

L2

0V

Dt2 BTA 40700 A

(GP3) C7 5x 150µF 270V~

R11 3,9K 5W

F1 16A FST

F2 16A SP

ON

AC. LINE 100-127V~ 60 Hz

J4

L3 RE1/16-6

C1 0,5µF + 2x 2500 pF

R9 470K

Sw4

Ne/Sw4 47K

C5 0,1µF

PB5 main board

PRINTED CIRCUIT n° 14123

PB2

●TRIAC CONTROL

●CHARGE SPEED

R82

R81

R80

P.C. n° 14124

Sw7

CONTROL PANEL (GP1)

D12

L.E.D

Ne/Sw5 47K

C6 10nF 250V~ MP

LAMP CONTROL

L1 RS 27-10A 180 µH

C4 0,1µF

Dt4 BTA 25 700 A

Dc1

D32

R37 10K

R4 1M

C3 47nF MP 250V~

R5 470K LIN.

P.C. n° 14124

Sw6

D9

D10

D11

R35 470K

PB1

●CHARGE CONTROL

●SYNCHRO

IC2

R6 max Vref 8

R7 min

R3 2,2K

R8 4,7K LIN.

J5

Sw5

P.C. n° 14126

2,2K

Q5 TIL 78

3x 1N4007

Sw8

OR-X 2521

D13

CHARGE SIGNAL

Dt 2&4

g

t2

t1

10210

elinchrom 101

charge voltage adjustment	meter connection points: (GP4) ⊖ ⊘ ⊕ VDC
	position R8 { 1 ○ – adjust R6/PB1 → 359±3
	2 ◕ – adjust R7/PB1 → 166±3
	3 ◒ – adjust R3/PB5 → 270±3
lamp adjustment	meter connection points: (GP2) a6 ⊘ a7 VAC
	connect one lamphead A (at 120 Vac line)
	position R5 { 1/1 – resulting voltage → 115±x
	1/8 – adjust R4/PB5 → 44±x
plug-in print boards	PB1 adjust charge voltage points: 1 and 2
	PB2, PB3 } circuit adjustments made by manufacturer

DRAWING	3.2.81 CT
MODIFIED: Sw 1-2-3 added C12 5.5.84	

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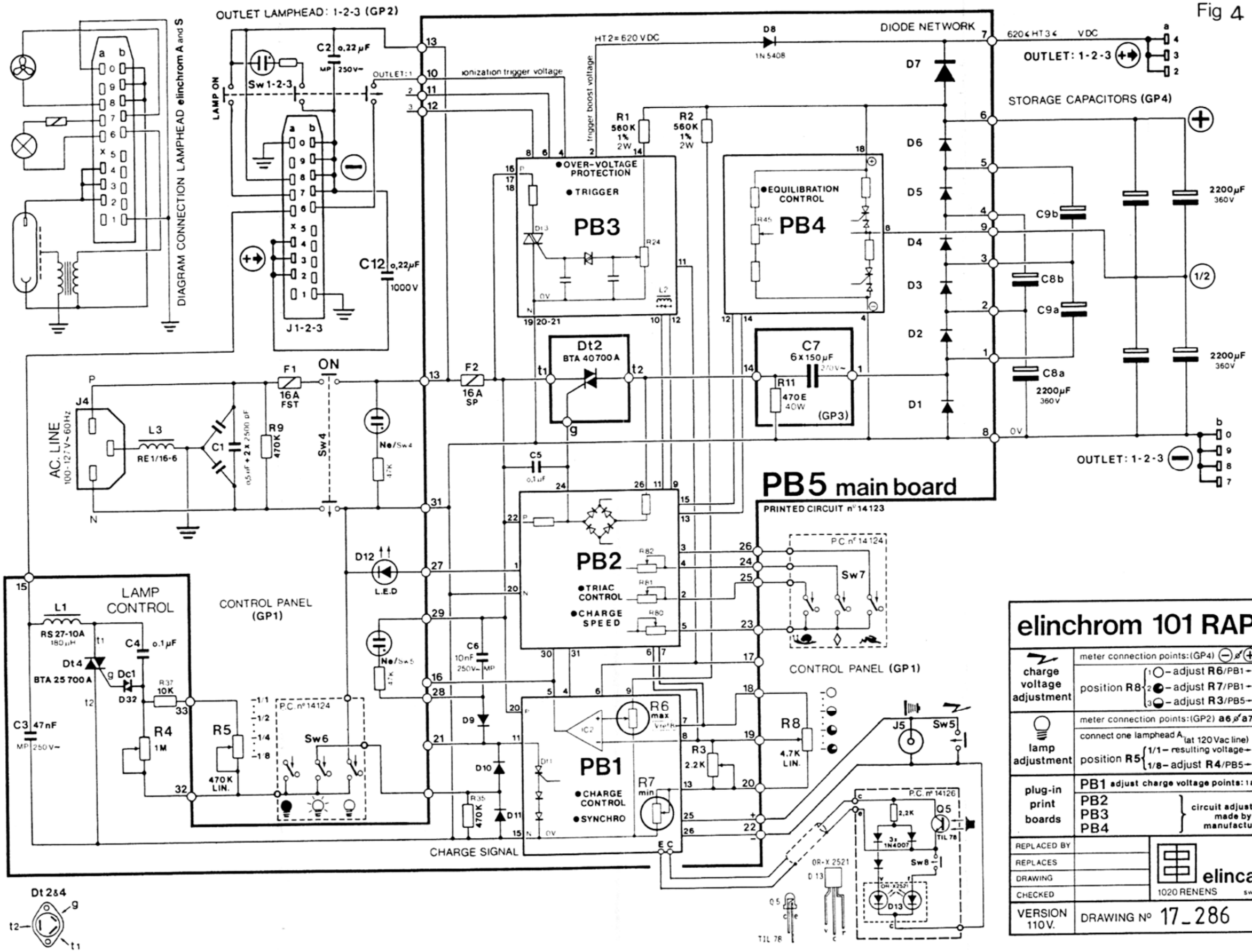
Switzerland

VERSION 110V.	DRAWING N° 16 3 85

Fig 4

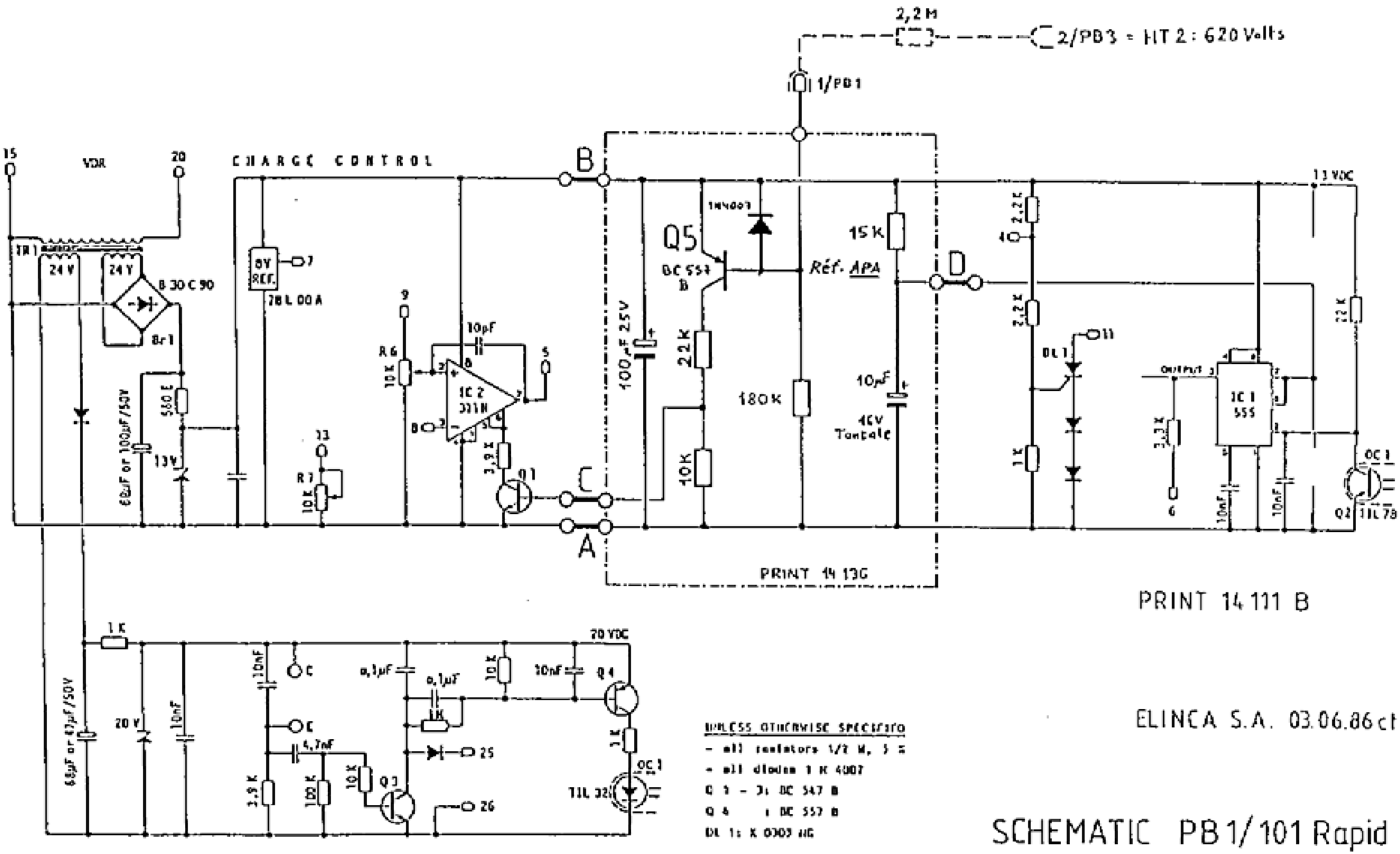


elinchrom 101 RAPID

charge voltage adjustment	meter connection points: (GP4) ⊖ ⌀ ⊕ VDC
	position R8: 1 ○ – adjust R6/PB1 –
	position R8: 2 ◕ – adjust R7/PB1 –
	position R8: 3 ◒ – adjust R3/PB5 –
lamp adjustment	meter connection points: (GP2) a6 ⌀ a7 VAC
	connect one lamphead A (at 120 Vac line)
	position R5: 1/1 – resulting voltage – 115±x
	position R5: 1/8 – adjust R4/PB5 – 44±x
plug-in print boards	PB1 adjust charge voltage points: 1 and 2
	PB2, PB3, PB4 – circuit adjustments made by manufacturer

REPLACED BY	
REPLACES	
DRAWING	
CHECKED	
VERSION 110V.	DRAWING N° 17_286

elinca s.a.
1020 RENENS switzerland



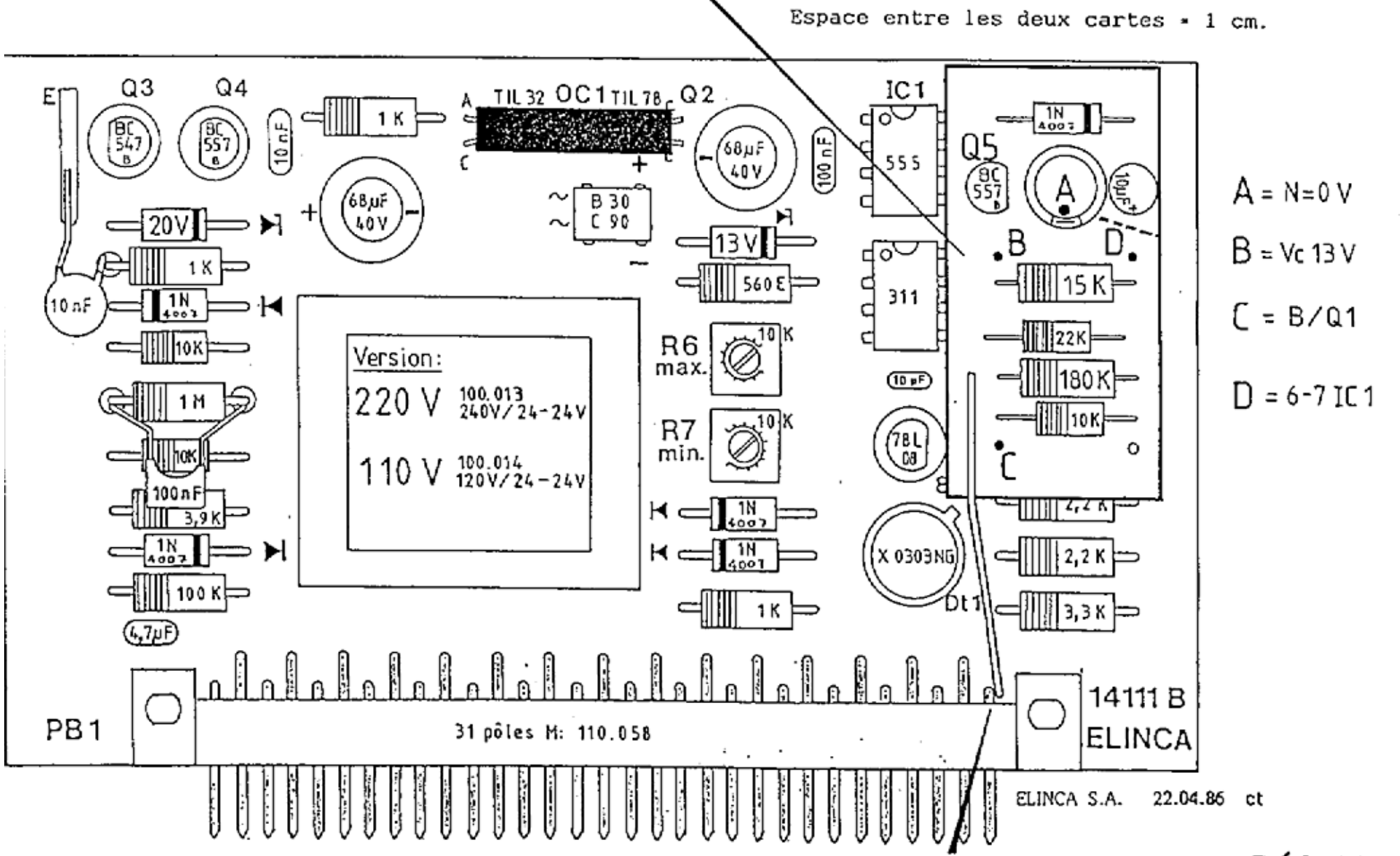
PRINT 14 111 B

ELINCA S.A. 03.06.86 ct

SCHEMATIC PB1/101 Rapid

CIRCUIT PB 1 pour elinchrom 101 RAPID

OPÉRATION 4: Monter le circuit 14136.



A = N=0 V

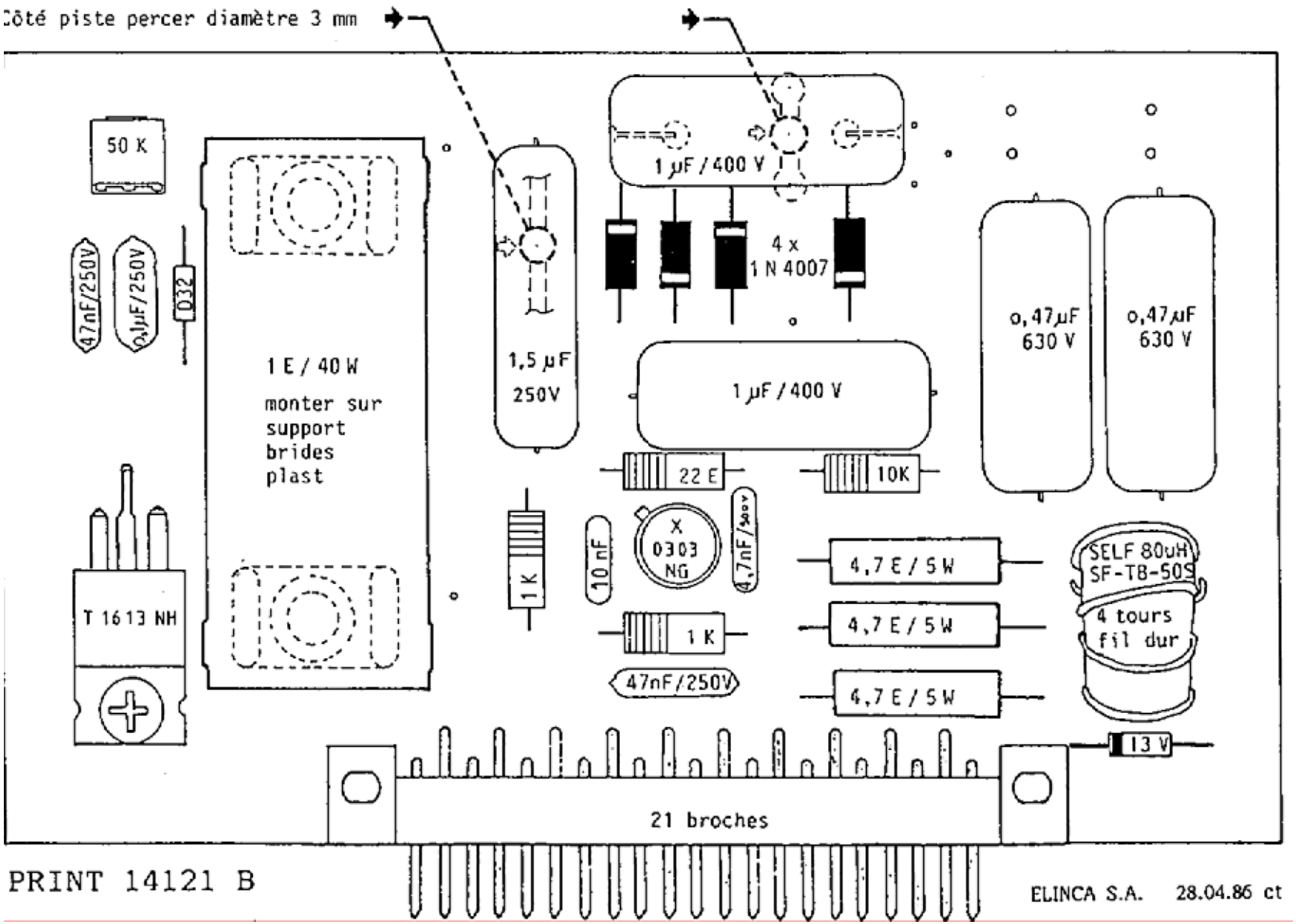
B = Vc 13 V

C = B/Q1

D = 6-7 IC 1

Câbler le fil rouge au point 1 du connecteur. = Réf. APA

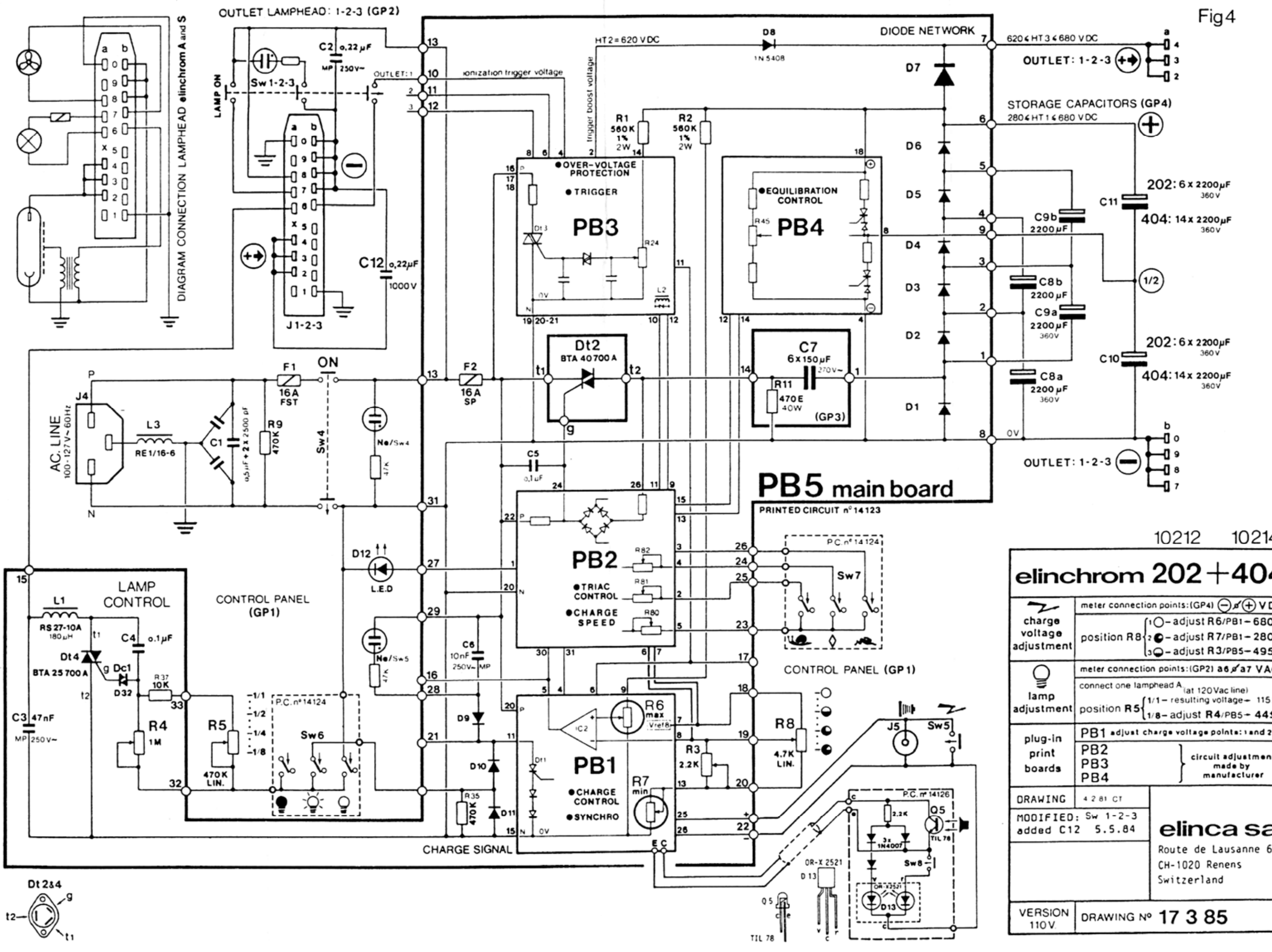
CIRCUIT PB 3 pour elinchrom 101 RAPID / 110 V



PRINT 14121 B

ELINCA S.A. 28.04.86 ct

Fig 4



10212 10214

elinchrom 202+404

charge voltage adjustment	meter connection points: (GP4) ⊖ & ⊕ VDC
	position R8 { 1 ○ – adjust R6/PB1 – 680±3 ; 2 ◐ – adjust R7/PB1 – 280±5 ; 3 ◒ – adjust R3/PB5 – 495±4
lamp adjustment	meter connection points: (GP2) a6 & a7 VAC
	connect one lamphead A (at 120 Vac line)
	position R5 { 1/1 – resulting voltage – 115±x ; 1/8 – adjust R4/PB5 – 44±x
plug-in print boards	PB1 adjust charge voltage points: 1 and 2
	PB2, PB3, PB4 } circuit adjustments made by manufacturer
DRAWING	4 2 81 CT
MODIFIED: Sw 1-2-3 added C12 5.5.84	

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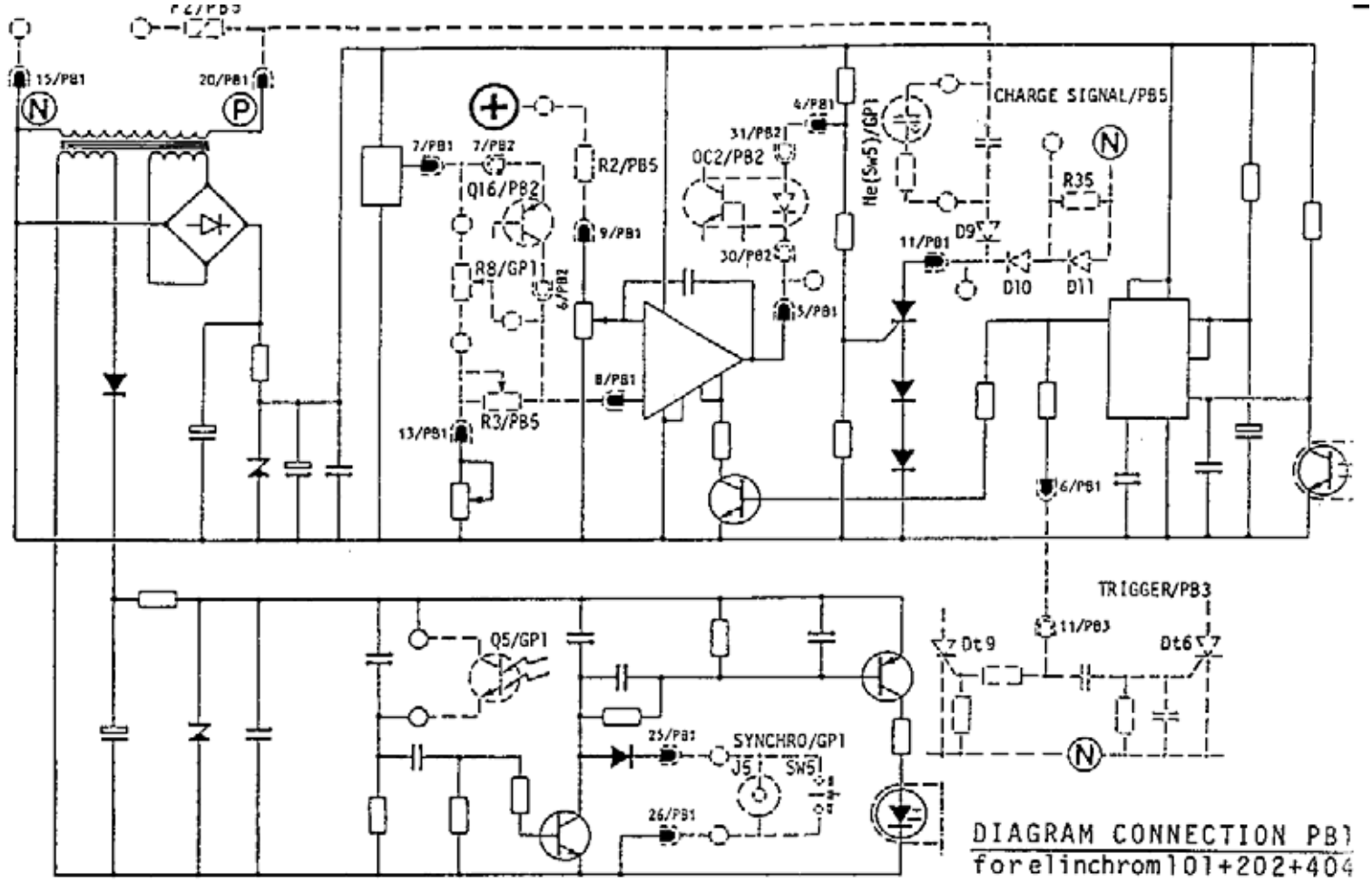
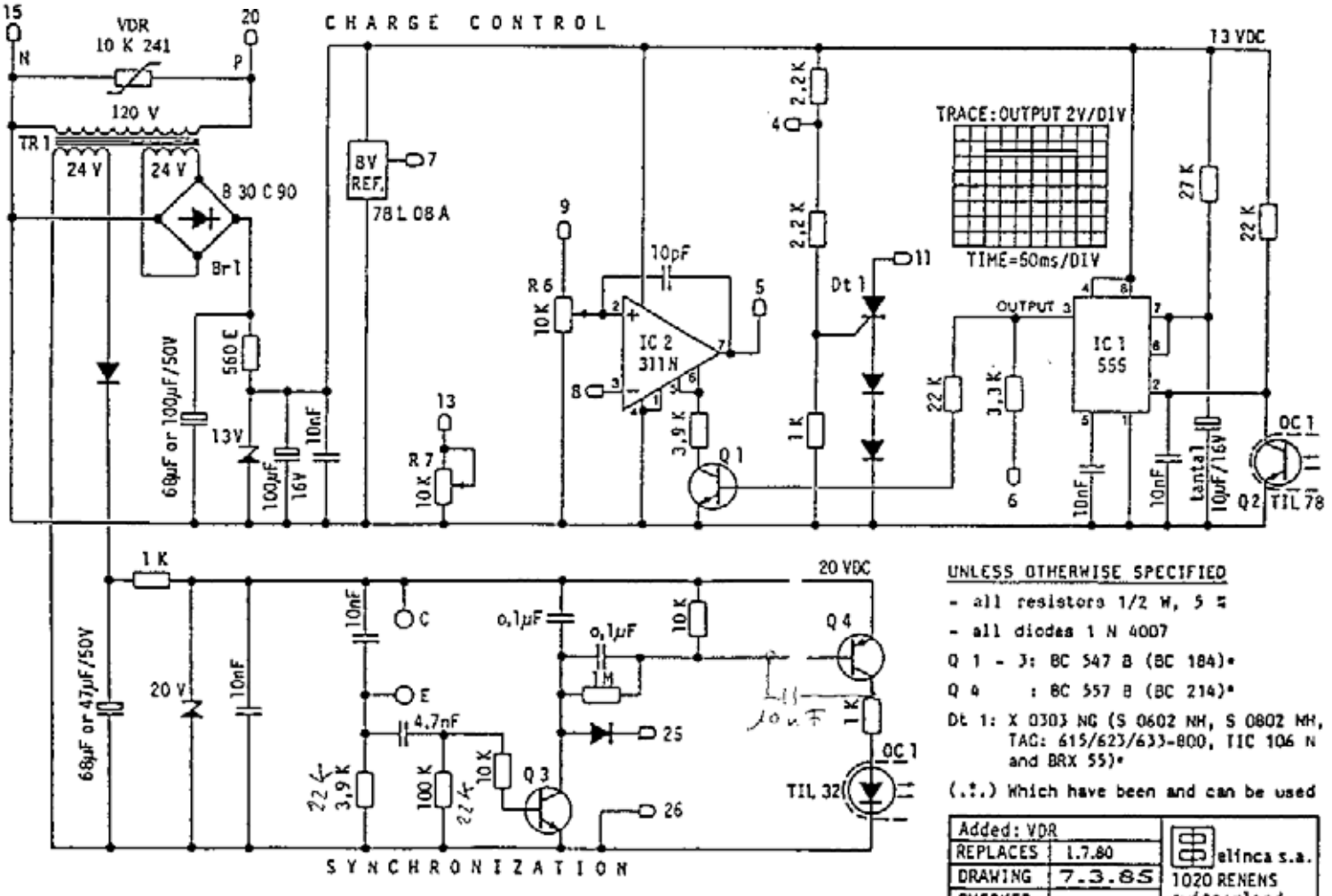
Switzerland

VERSION 110V	DRAWING N° 17 3 85





UNLESS OTHERWISE SPECIFIED

- all resistors 1/2 W, 5 %
- all diodes 1 N 4007

Q 1 - 3: BC 547 B (BC 184)*

Q 4 : BC 557 B (BC 214)*

Dt 1: X 0303 NG (S 0602 NH, S 0802 NH, TAG: 615/623/633-800, IIC 106 N and BRX 55)*

(.*.) Which have been and can be used

Added: VDR		elinca s.a. 1020 RENENS switzerland
REPLACES	1.7.80	
DRAWING	7.3.85	
CHECKED		
VERSION 110 V	SCHEMATIC	PB1

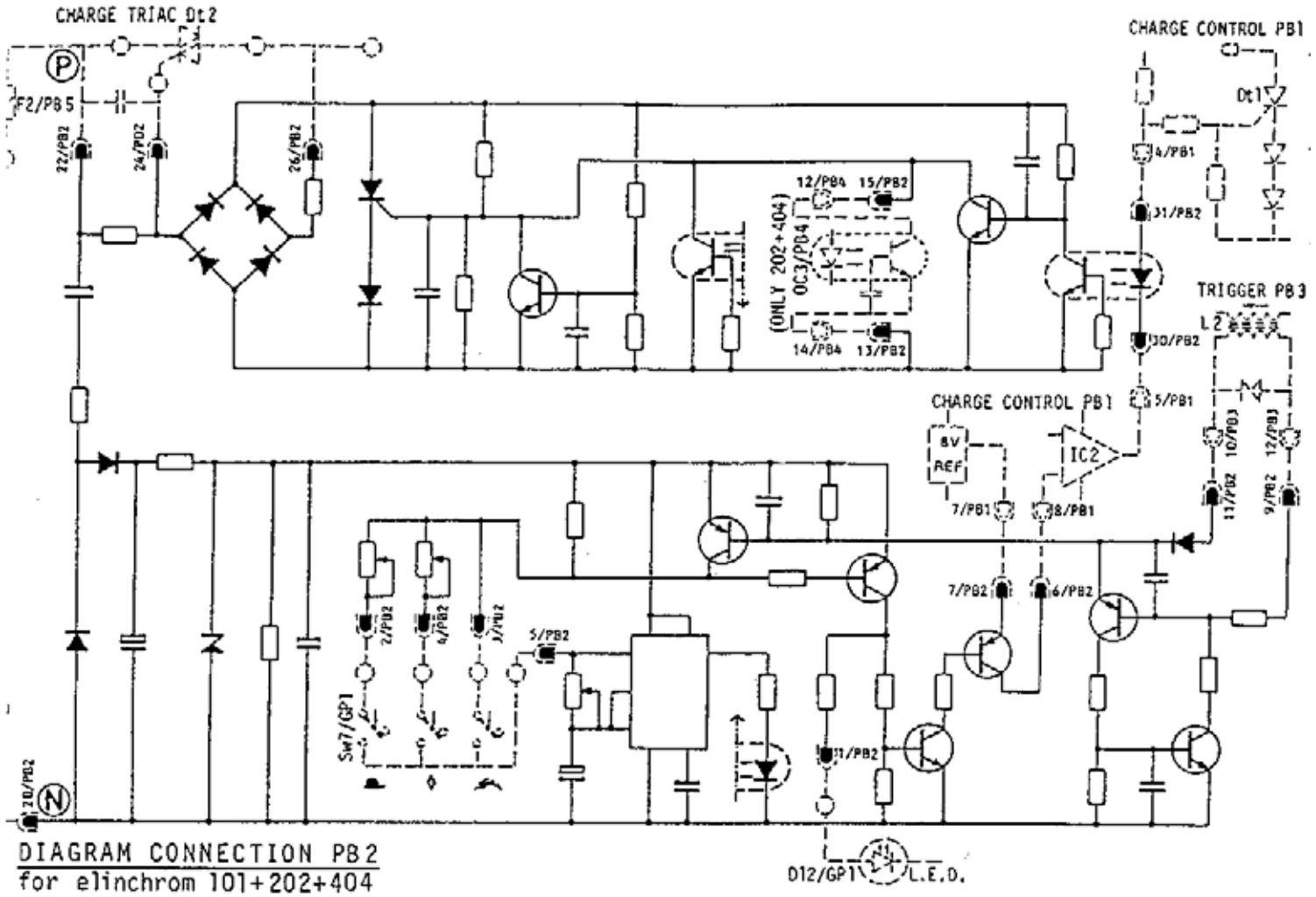
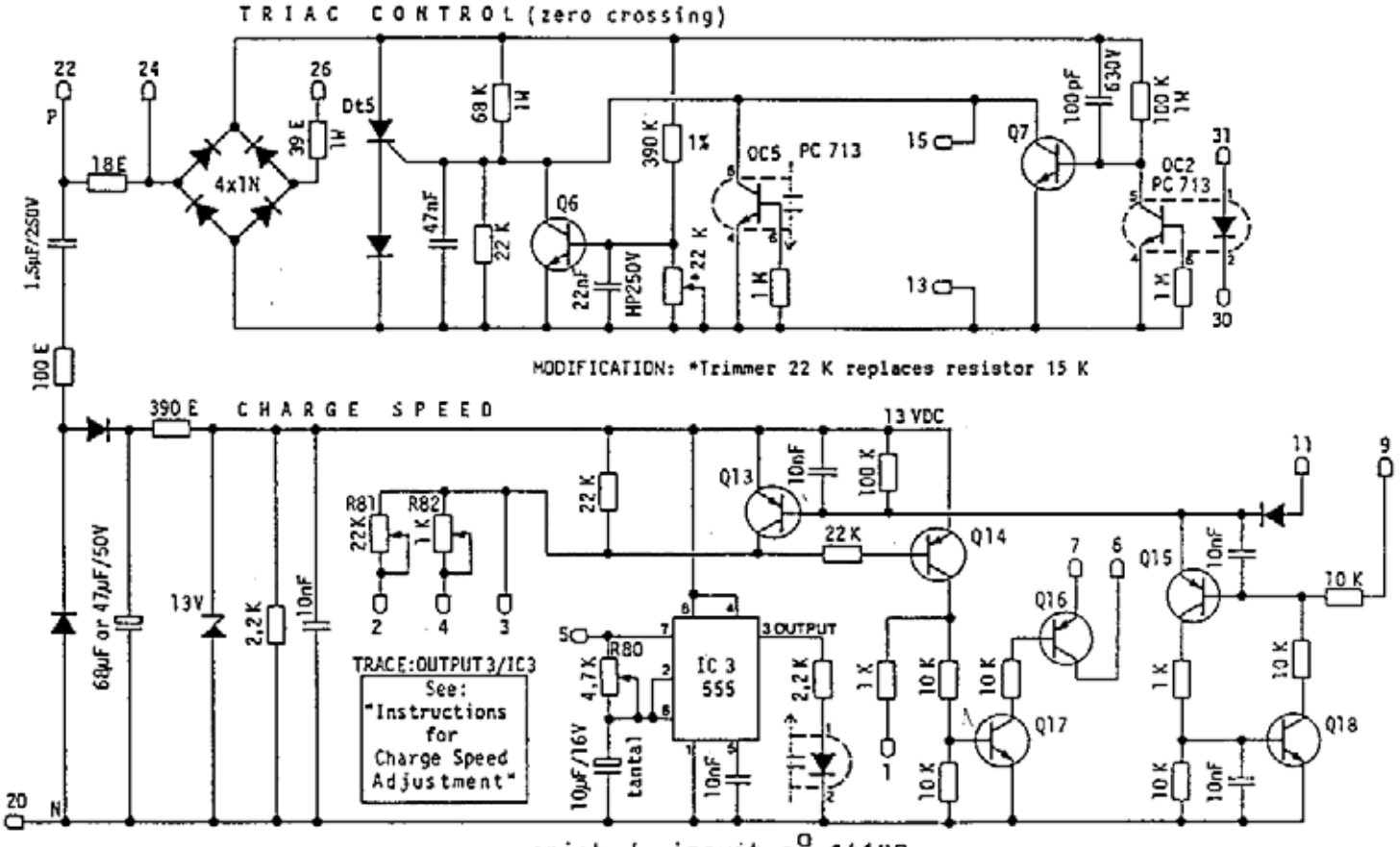


DIAGRAM CONNECTION PB2
for elinchrom 101+202+404



printed circuit n° 14120

UNLESS OTHERWISE SPECIFIED

- all resistors 1/2 W, 5 %
- all diodes 1 N 4007

Q 6-7-17-18: BC 547 B (BC 184)*

Q 13 to 16 : BC 557 B (BC 214)*

Dt 5 : X 0303 NG (S 0602 NH, S 0802 NH, TAG: 615/623/633-800, TIC 106 N)*
replaces: TAG 59 S and 70 S/N

(.*.) Which have been and can be used.

REPLACES	2.7.80	elinca s.a.
DRAWING	8.3.85	1020 RENENS switzerland
CHECKED		
VERSION 110 V	SCHEMATIC PB2	

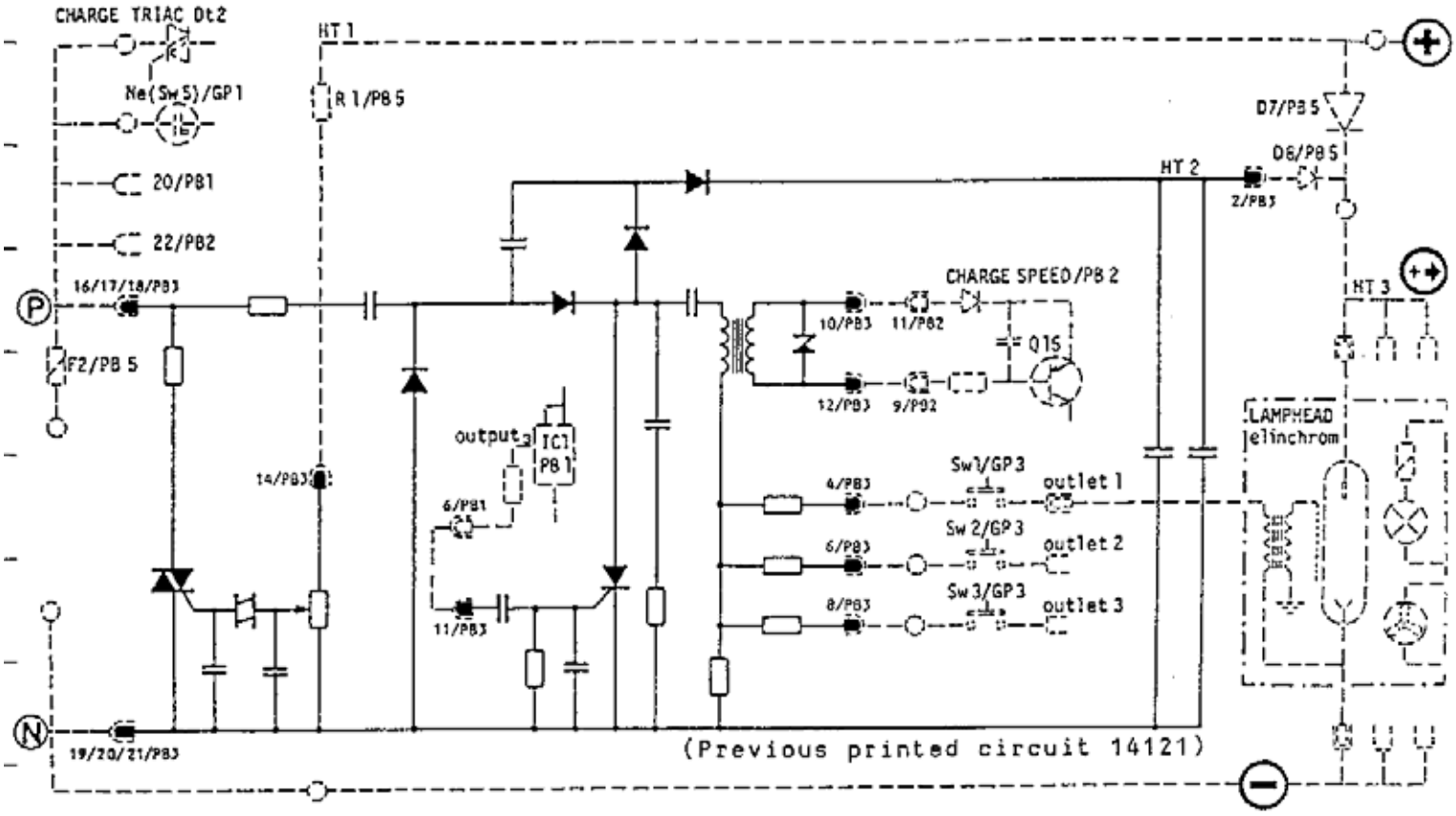
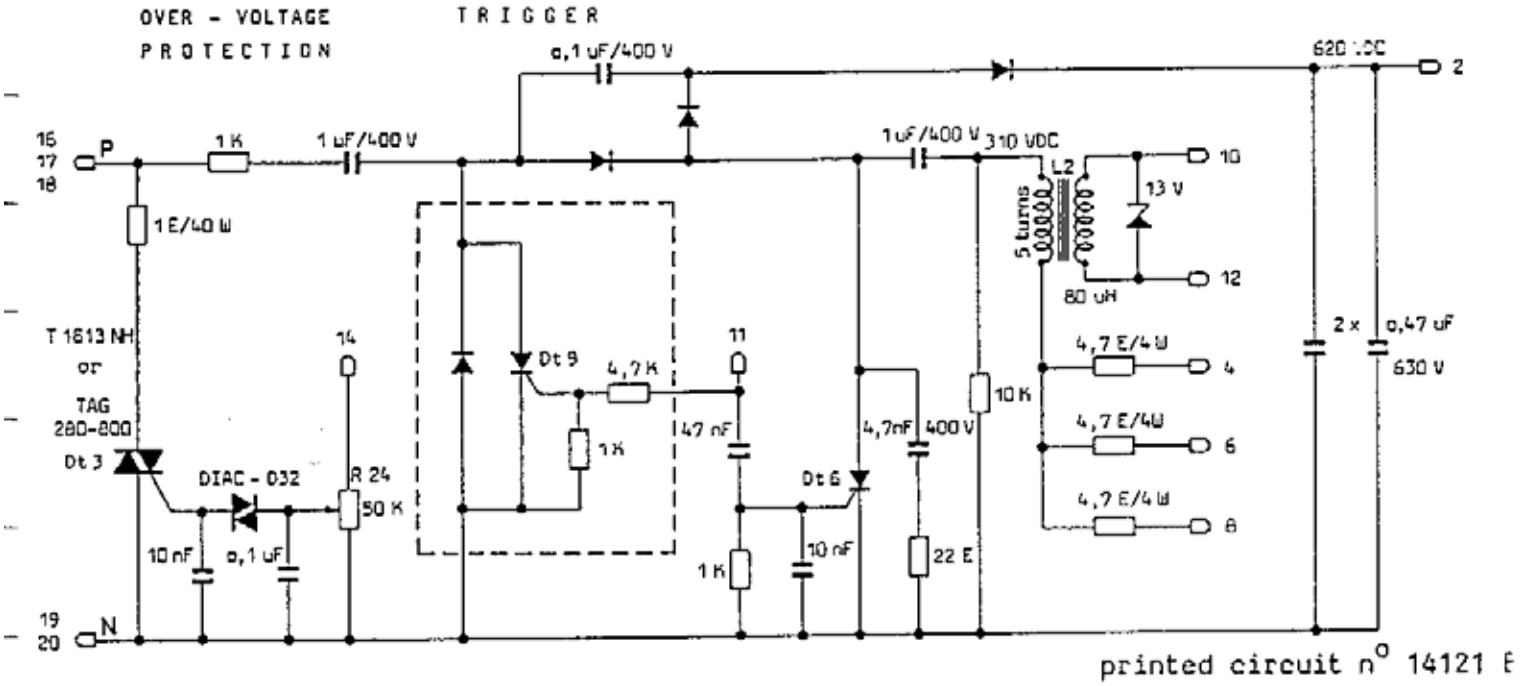


DIAGRAM CONNECTION PB3
for elinchrom 101 + 202 + 40



printed circuit n° 14121 E

FOR ADJUSTMENT SEE:
Instructions for adjusting Over-Voltage Protection

UNLESS OTHERWISE SPECIFIED
- all resistors 1/2 W, 5 %
- all diodes 1 N 4007

Dt 6-9: X 0303 NG (S 0602 NH, S 0802 NH, TAG: 615/623/633-800, TIC 106 N)*
only Dt 6 (TAG 2-400)

(.*.) which have been and can be used.

Modification of circuit 14121:

We have added the thyristor Dt 9 which ensures the proper delay of charge of the trigger boost voltage.

This modification can be introduced on former printed board PB 3 by simply adding the circuit 14132.

Added:		elinca s.a. 1020 RENENS switzerland
REPLACES	3.7.80	
DRAWING	9.3.85	
CHECKED		
VERSION 110 V	SCHEMATIC	PB3

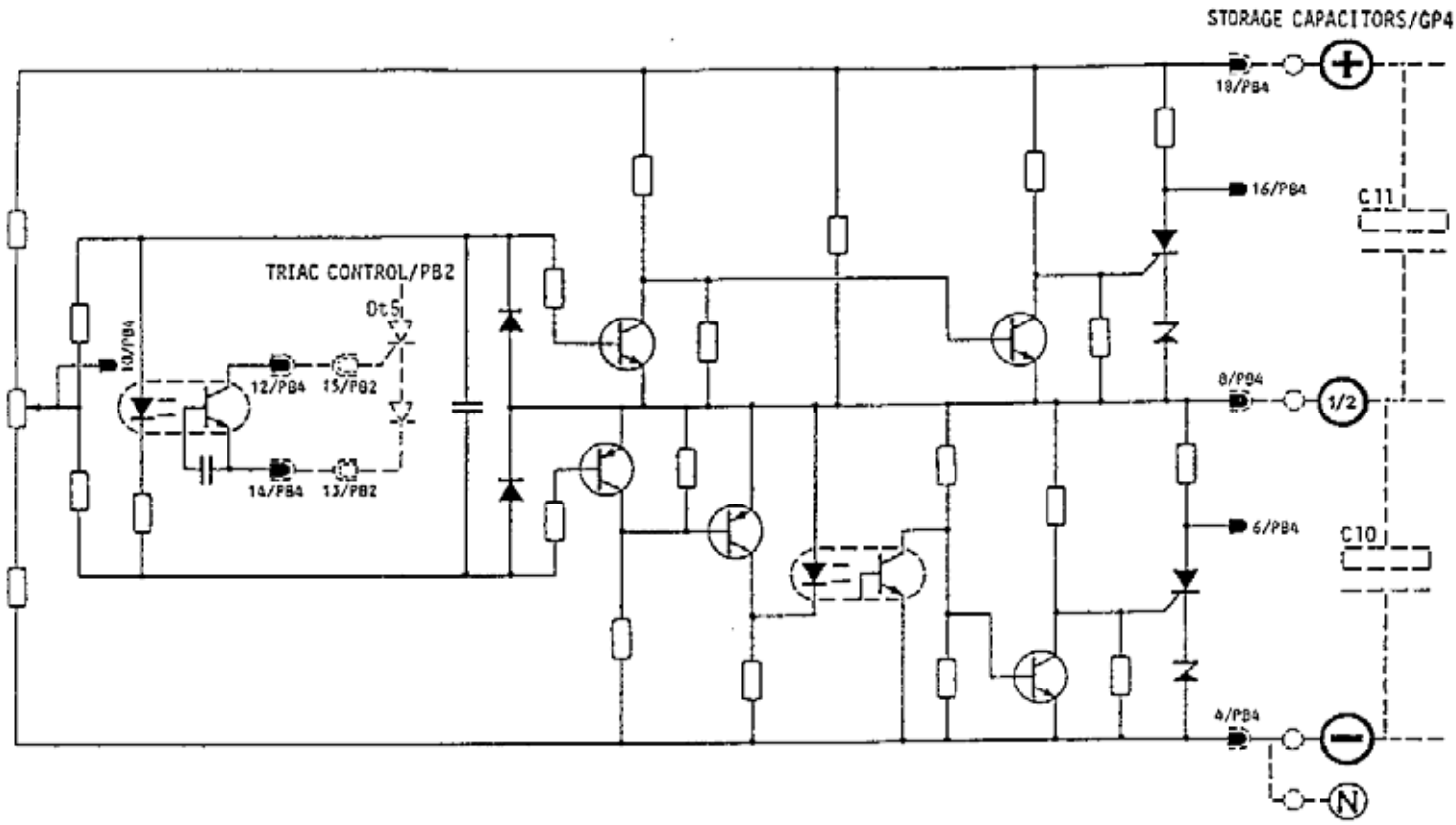
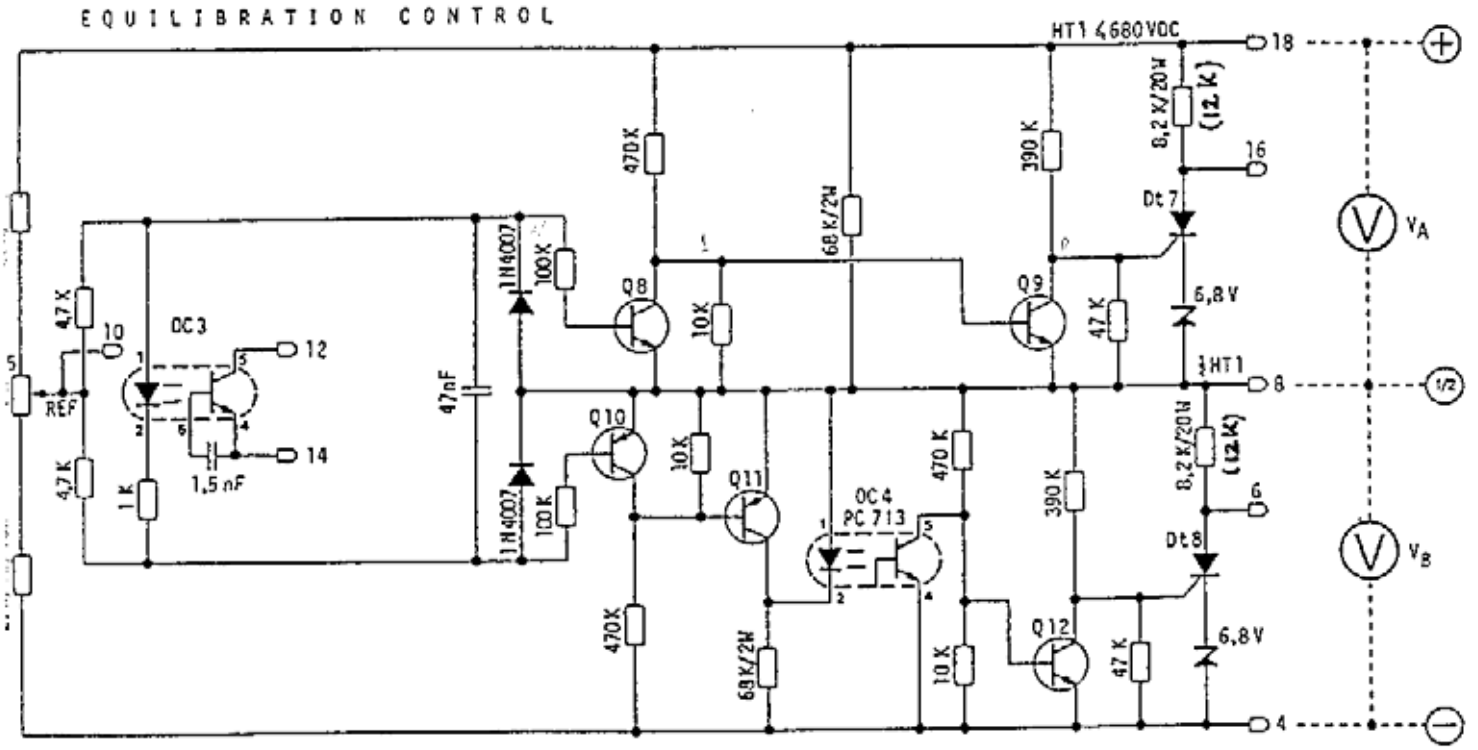


DIAGRAM CONNECTION PB 4
for elinchrom 202+404



printed circuit n° 14122

UNLESS OTHERWISE SPECIFIED

- all resistors 1/2 W, 5 %

Q 8-9-12: BC 547 B (BC 184)*
Q 10-11: BC 557 B (BC 214)*

OC 3 : PC 713 / selected

Dt 7 - 8: X 0103 MA selected (TAG: 615-800, 59 S, 70 S/N and BRX 55)*

(.*.) Which have been and can be used.

Equilibration adjustment:
adjust R 45/PB 4, so that
$V_A = V_B \pm 2$ VDC (= ½ HT 1)
(take reading at capacitors)

REPLACES	4.5.80	elinca s.a.
DRAWING	10.3.85	1020 RENENS
CHECKED		switzerland
	SCHEMATIC PB4	

PARTS LIST FOR GENERATORS 101 + 202 + 404

10209 - 10211 - 10213 220 V version
10210 - 10212 - 10214 110 V version

Symbol		Description	Specification	Order No.
PB 1 101 - 202 - 404	220V	Printed board with element	14111B	14601
PB 1	220V	Printed board with element	202+404+Classic+Comb	14615
PB 2 50Hz	220V	Printed board with element	14120 All mod.	14603
PB 2 60Hz	*220V*	*Printed board with element*	*14120 All mod.*	*14600*
PB 3 101 only	220V	Printed board with element	14121B	14605
PB 3 202+404	220V	Printed board with element	202+404+Classic+Combi	14606
PB 3 101R	220 V	Printed board with element	14121 B	14613
PB 4 110/220V		Printed board with element	All mod.	14608
PB 1 101 - 202 - 404	110V	Printed board with element	14111 B (old)	14602
PB 1 All mod. (new)	110V	Printed board with element	202+404+Classic+Combi	14616
PB 2 60Hz	110V	Printed board with element	14120 All mod.	14604
PB 3 202+404	110 V	Printed board with element	14121 B	14607
PB 3 101R	110 V	Printed board with element	14121 B	14614
R 1 - R 2 101		Resistor	270 K 1% 2 W	14620
R 1 - R 2 202 + 404		Resistor	560 K 1% 2 W	14621
R 3		Variable resistor cermet	2,2 K 1/10W	109.023
R 4		Variable resistor cermet	1 M 1/10W	109.015
R 5		Linear potentiometer	470 K	14427
R 8		Linear potentiometer	4.7 K	14426
R 5 and R 8		Linear potentiometer Tandem (New)	4.7 K + 470 K	109.027
R 9 - R 35		Resistor	470 K 1/2W	121.564
R 10 only 101		Resistor	68 K 2 W	111.047
R 37		Resistor	10 K 1/2W	121.103
C 1		Line filter FA26 -16 (New)	For all mod.	104.112
C 2		Capacitor (déparasitage)	MP 0.22uF 250v	104.019
C 3		Capacitor (entstörung)	MP 47 nF 250v	104.013
C 4	220V	Capacitor	0,22uF 250V	104.018
C 4	110V	Capacitor	0,1 uF 400V	104.017
C 5		Capacitor	0,1 uF 250V	104.016
C 6		Capacitor	MP 10nF 250V	104.008
C 7	220V	Capacitor doubler	MP 130uF 240Vac	14051
C 7	110V	Capacitor doubler	150uF 270V	14016
C 8 & 9 / a & b C 10/11		Flash capacitor 50 x 80 mm	2200uF 360V	14324
C12		Capacitor	0,22uF/1000V	104.020

Symbol		Description	Specification	Order No.
D 1 to 6		Diode (old IRF 40 HF 60)	IR 70 HF 80	105.087
D 7		Diode	SKN 240/08	14631
D 8		Diode	1 N 5408	14430
D 9/10/11		Diode	1 N 4007	14009
D12		Light emitting diode	Red Led	14640
Dc 1		Diac	D 32	14015
Dt 2 / DT 4	220V	Triac (modelling + charge)	BTA 25 700 A	14635
Dt4	110V	Triac (modelling)	BTA 25 700 A	14635
Dt 2	110 V	Triac (charge)	BTA 40 700 A	14636
Q 5 (see Sw 8)		Photo transistor (old: TIL 78)	PT 361	105028
L 1		Self (modelling)	RS 27-10A	14627
L 3		Self (earth)	RE 1/16-6	14628
F1		Fuse 5 x 20 mm	16 A T (time lag)	19057
F 2 for 101	220V	Fuse 6 x 35 mm	12.5 A F (fast)	19023
F 2 for 202 + 404	220V	Fuse 6 x 35 mm	16 A F (fast)	19024
F2 for 202 + 404	110V			
Sw 1/2/3 old		Latching switch	Lamp ON	14641
Sw1/2/3	110/220V	Latching luminous switch	Lamp ON	14647
Sw 4	220V	Latching switch (old push)	ON	14307
Sw 4	110V	Latching switch (old push)	ON	14317
Sw 4	220V	Latching rocking switch	ON	14645
Sw 4	110V	Latching rocking switch	ON	14646
Sw 5	220V	Momentary switch	Flash	14309
Sw5	110V	Momentary switch	Flash	14642
Sw 6/Sw 7		Switch with circuit	3 Pos.	14643
		Black cap for 14643		204.108
Sw 8		Commutable photocell circuit	with element	14644
J 1/2/3		Lamphead outlet complete	20 pole	22047
J4		Power AC, male (new type)	adapter set	900.002
J5		Synchro outlet	80 C amphenol	12076
(J5)		Synchro Jack 3.5 outlet		110.104

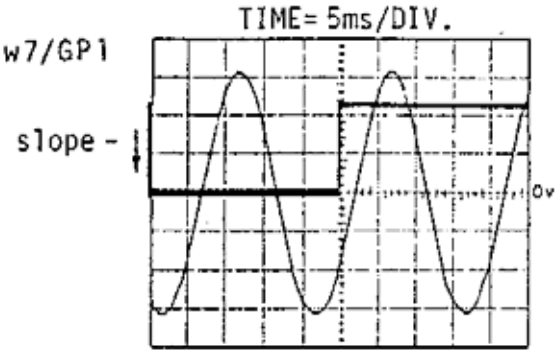
PARTS LIST FOR GENERATORS 101 + 202 + 404

Description		Specification	Order No.
Fuse holder - Porte fusible - Sicherungshalterung		5 x 20 mm	14651
Connector for printed board PB5		21 pole fem.	14652
Connector for printed board PB5		31 pole fem.	14653
Button for R5 and R8 (green and yellow)			14494
Photocell protection cap (old)		Ø 7.5. x 12.5 mm	14470
Isolation ring for synchro outlet Bague d'isolation pour prise synchro Kunsstoffhalterung für Synchroanschluss		Ø 22/19 x10 mm	14485
Plastic rack holder for capacitors		2 case	14660
Bac plastique pour condensateurs		4 case	14661
Kunsstoffhalterung für Kondensatoren		6 case	14020
Plastic rack holder for capacitors (New for all models)			206.052
Space stopper for PB1 Butée pour : Distanzschiene für: PB 2 - 3 - 4		50 mm	14663
Foam for spare fuses Mousse pour fusible de réserve Schaumstoffhalterung Ersatzsicherungen		6 case	14665
Isolation strip for capacitors:	101	440 x 57 mm	14666
Protection plast. transversale pour:	202	440 x 105 mm	14667
Kondensatoren-Isolationsfolie für	404	440 x 95 mm	14668
Rubber hand grip Poignée caoutchouc Gummi-Handgriff			14670
Rubber protective bumper Bande de protection caoutchouc Vollgummi-Stossdämpfer			14671
Metal housing (2pcs) for:	ELINCHROM 101	BOX 101	14680
Boîtier (2 parties) pour:	ELINCHROM 202	BOX 202	14681
2 Aussenwände für:	ELINCHROM 404	BOX 404	14682

Y1——TRACE: OUTPUT(point 3/IC3/PB2)= 5 V/DIV.

Y2——TRACE: LINE= 100 V/DIV.

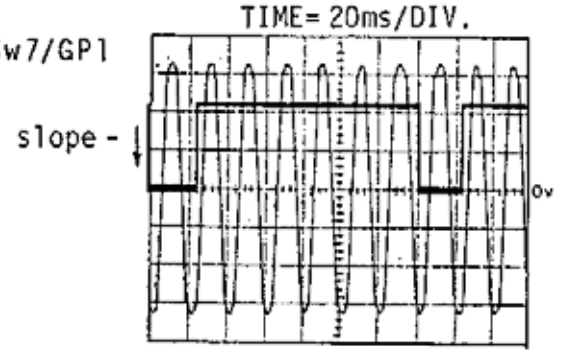
1- SELECT Sw7/GP1



ADJUST R80/PB2

50 Hz (60 Hz) t=25ms (20,8)

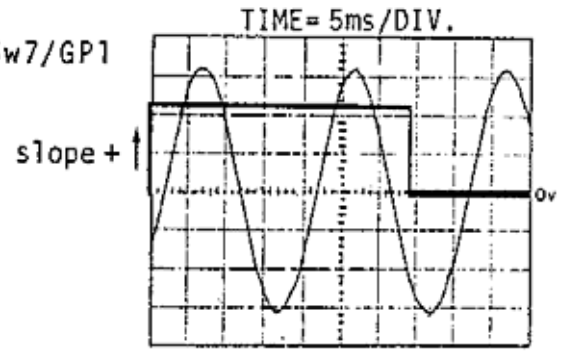
2- SELECT Sw7/GP1

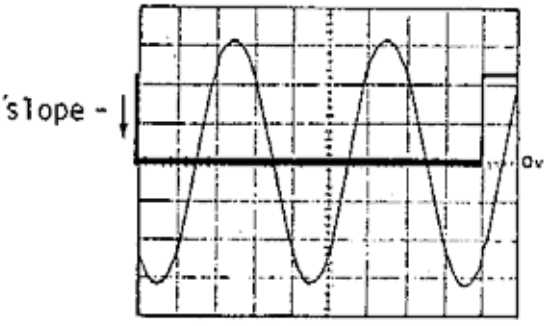


ADJUST R81/PB2

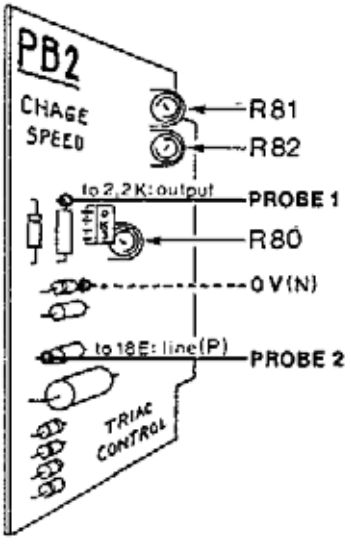
50 Hz (60 Hz) t=140ms (117)

3- SELECT Sw7/GP1





ADJUST R82/PB2



INSTRUCTIONS FOR CHARGE SPEED ADJUSTMENT (PB 2)

AJUSTAGE RAPIDITE DE RECHARGE (PB 2)

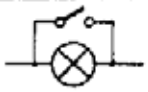
EINSTELLUNG DER LADEZEIT (JUSTIERUNG PB 2)

Recharging time in function to mains voltage (at full output ○)

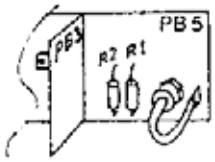
		50 Hz/ 200V	210V	220V	230V	240V	250V	
ELINCHROM 101 :	Slow charging	7.5	7	6.5	6	5.7	5.3	sec.
	Normal charging speed	2.3	2.1	2	1.9	1.8	1.7	sec.
	Fast charging	1.3	1.2	1.15	1.1	1.05	1	sec.
ELINCHROM 202 :	Slow charging	15	14	13	12	11	10	sec.
	Normal charging speed	4.2	4	3.75	3.5	3.3	3.1	sec.
	Fast charging	2.2	2.1	2	1.9	1.8	1.7	sec.
ELINCHROM 404 :	Slow charging	30	28	26	24	23	21	sec.
	Normal charging speed	8.4	7.9	7.4	7	6.5	6.1	sec.
	Fast charging	4.2	4	3.7	3.5	3.3	3.1	sec.

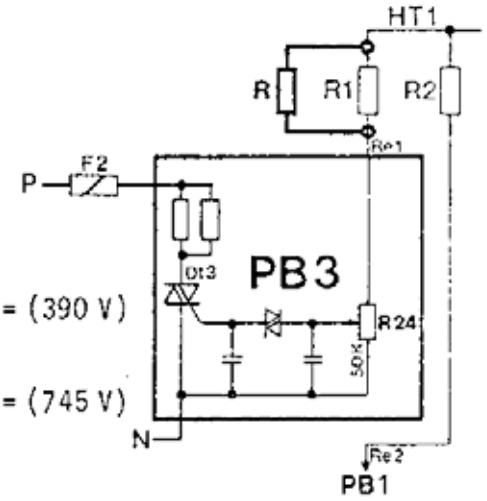
		60 Hz/ 127V	120V	115V	110V	100V	
ELINCHROM 101 :	Slow charging	7	7.8	8.3	8.8	10.2	sec.
	Normal charging speed	2.4	2.5	2.6	2.7	3.1	sec.
	Fast charging	1.2	1.3	1.4	1.5	1.7	sec.
ELINCHROM 101 :	Slow charging	14	16	18	20	27	sec.
	Normal charging speed	4.1	4.7	5.1	5.6	7.2	sec.
	Fast charging	2.3	2.5	2.8	3	3.8	sec.
ELINCHROM 101 :	Slow charging	28	32	36	40	54	sec.
	Normal charging speed	7.9	9.1	9.9	10.9	14.1	sec.
	Fast charging	4.3	4.7	5.3	5.7	7.3	sec.

1- CONNECT "INPUT CURRENT LIMITER"
Brancher le "limitateur de courant d'entrée"
"Vorrichtung zur Netzstrom-Begrenzung" anschliessen



2- ATTACH R parall. to R1/PB5 : 101 : R = 2,2 MΩ
Ajouter R en parall. sur R1/PB5 : 202+404 : R = 4,7 MΩ
R parall. über R1/PB5 einsetzen :



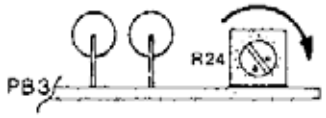


101: HT1 360 VDC $\frac{\text{lim.}}{f(R)}$ = (390 V)

202+404: HT1 680 VDC $\frac{\text{lim.}}{f(R)}$ = (745 V)

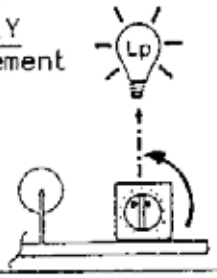
THIS PRODUCES A REFERENCE EQUIVALENT TO A HIGHER VOLTAGE THAN THAT OF THE ACTUAL HT1.
Cela produit une référence équivalente à une tension de charge supérieure à celle existante aux bornes des condensateurs, HT1.
Dies wirkt wie eine Ueberspannung, während jedoch die Kondensatoren normal aufgeladen sind.

3- TURN TO MAXIMUM R24/PB3
Tourner au maximum R24/PB3
R 24/PB3 zum Maximum drehen



4- Select (Sw7/GP1) CHARGE TO : P1/1 ○ 101 : 360 VDC
charger à : 202+404 : 680 VDC
aufladen :

5- ADJUST R24/PB3 TO POSITION AT WHICH THE LAMP LIGHTS UP FULLY
Tourner R24/PB3 jusqu'au seuil où la lampe s'illumine fortement
R24/PB3 justieren, bis die Lampe voll aufleuchtet



INSTRUCTIONS FOR ADJUSTING OVER-VOLTAGE PROTECTION
Réglage de la protection aux surtensions de charge
Anleitung zum Justieren des Ueberspannungsschutzes

Adjustment of overvoltage protection (PB3)

APPENDIX

Chronology of modifications

This applies to generators of the first series (1980) and only of the 220 Volt version. If such generators are returned for servicing, check the points I to III and carry out the necessary modifications.

I Introduction of guide holders PB1-2-3 and 4.

Effect : Prevents the circuit boards from disengaging from their connector.

II Introduction of a plastic insulation covering the storage capacitors (GP4).

Effect : Better protection in case of accident (impact, faulty capacitor, etc...)

Following frequent blown internal fuses (F2/PB5) and failures of the charge triac (Dt2) the following modifications were made :

III a) Thyristor Dt5/PB2 (TAG 59S or TAG 70S) replaced by TAG 70N.

Reason: Insufficient insulation break-through voltage of some samples of the previous thyristor type.

III b) The following changes were made in the ELINCHROM 404 : internal fuse F2/PB5 (12,5 amps ASP slow-blow) by 16 amps ASP slow-blow and an appropriate circuit board PB3. (Visual characteristics : three large resistors 5E 10 W in parallel instead of two of the PB3 circuit boards intended for the ELINCHROM 101 and 202).

Reason: The internal 12,5 amps ASP fuse was too near the limit of its specifications in heavy-duty use.

III c) Charge triac Dt2 (TAG 725-600 and TAG 725-800 of suspect reliability) replaced by TOAL 3825 X.

IV Modelling light triac Dt4/PB5 (TAG 255-600 or TAG 280-600 mounted on the rear of board PB5) is replaced by the same type as Dt2, namely TOAL 3825X.

Reason: Improved and more efficient service.

Chronology of modifications

VI In october 1982 a photo-cell with over-ride was introduced (Q5/GP1).

VII In 1983 the basic printed board PB 5 has been replaced and is perfectly compatible with the previous one.

VIII a) Begining 1984 auxiliary circuit (14132) added on printed board PB 3.

b) Anti-noise capacitor (C12/GP2) 0,22 uF / 1000 V connected under lamphead plugs.

Reason: These two modifications have been introduced to avoid self-firing of the flash tubes.

IX During 1984 introduction of luminous lamphead switches (Sw 1-2-3/GP2) as well as on main switch (Sw 4/GP1).

X Begining 1985 up-dating of PB 3 printed board. Modification (VIII a) on printe circuit.

XI From march 1985 on ELINCHROM 202 introduction of internal fuse (F2/PB5) 16 amps SP. A third resistor 5 ohms / 10 W has been added on board PB 3. PB 3 board are now identical on ELINCHROM 202 and 404. See point III b.

elinca sa 15.3.85 e

Modification III a)

MODIFICATIONS AND IMPROVEMENTS

RE : ELINCHROM power packs 101+202+404

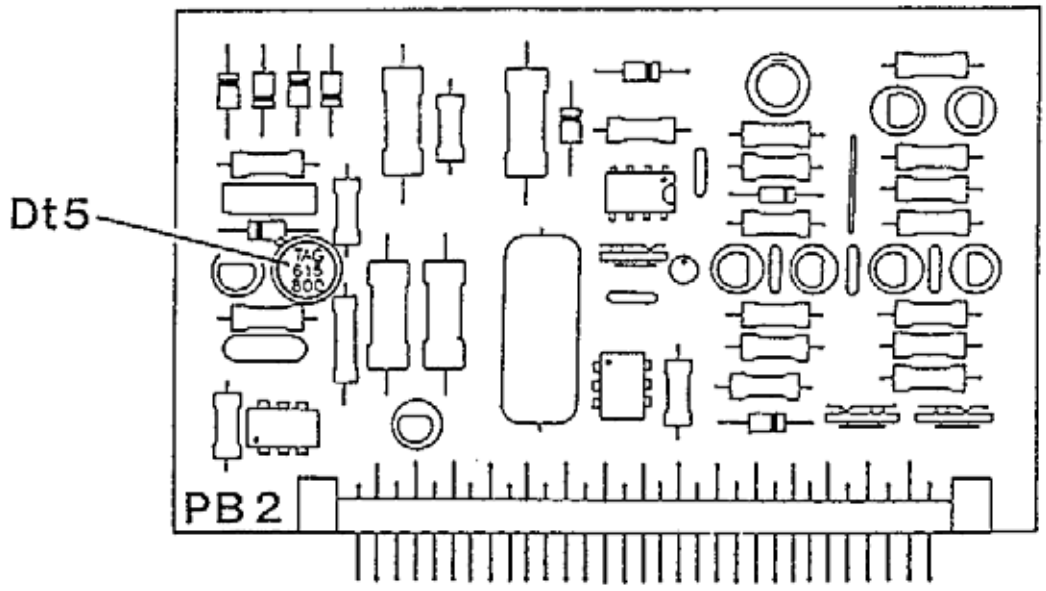
TYPES : 10209 / 10210 / 10211 / 10212 / 10213 / 10214

FINDING : Frequent blowing of internal fuse (F2/PB5) and sometimes with destruction of charge triac (Dt2).

CAUSE : Insufficient tension of insulation of thyristor Dt5/PB2. This thyristor is the semi-conductor controlling the charge triac at zero crossing. In case of such insufficient insulation of commutations nearby maximum tension produce enormous peak currents which blow the internal fuse and eventually the charge triac.

REMEDY : When changing the internal fuse, check the charge triac Dt2 and exchange printed board PB2 as a matter of course.

Those who do not wish to return PB2 for standard exchange should replace the thyristor (Dt 5/PB2) type TAG 59S, TAG 70S or TAG 70N by new type TAG 615-800.



NOTE : With the exception of thyristor TAG 1-400 (code : 14014) used for older generators, i.e. CADET, QUANTA, 2002 and 4004 all thyristors in our present programme (BRX 55, TAG 2-400, TAG 70N) will be replaced by the new TAG 615-800 as we go along. Code : 54014.

ELINCA SA 27.11.83

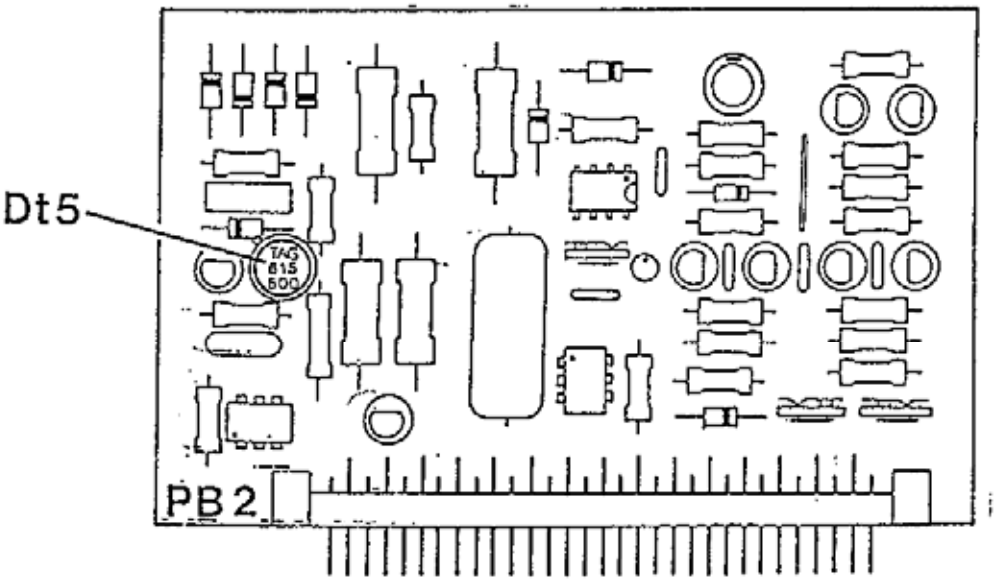
THYRISTOR Dt 5/PB 2 for ELINCHROM 101+202+404

Previous type:

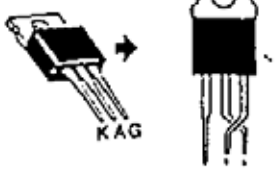
TAG 59 S
TAG 70 S/N

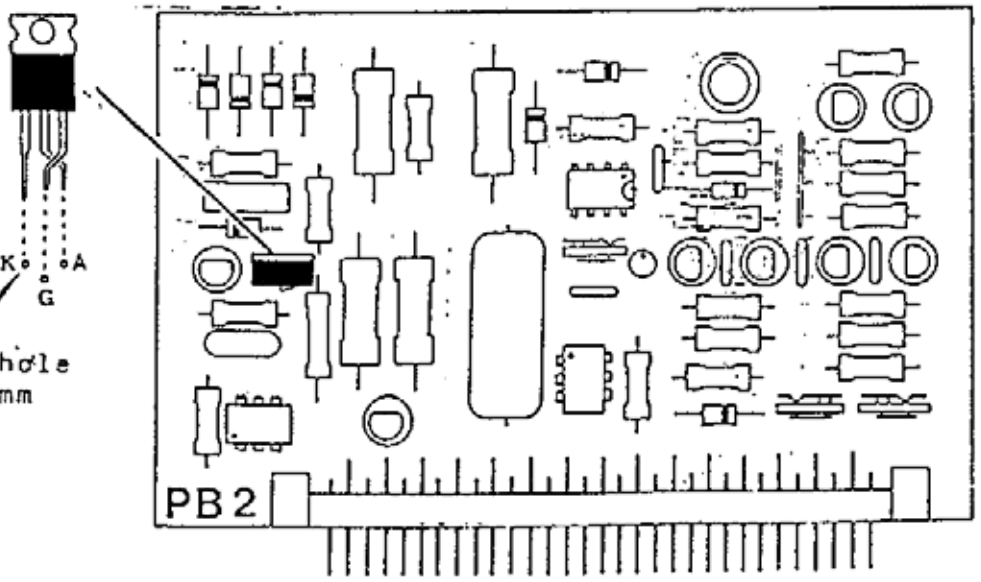
Now replaced by new type:

TAG 615-600
X 0303 NG



TAG 623-600
TAG 633-600
S 0602 NH
S 0802 NG
TIC 106 N





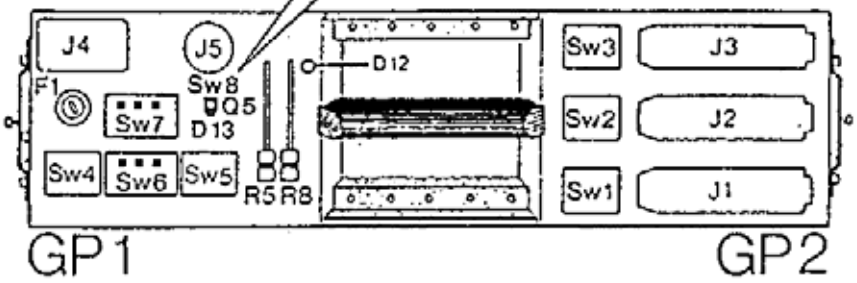
Increase hole
ø to 1.0 mm

Modification VI

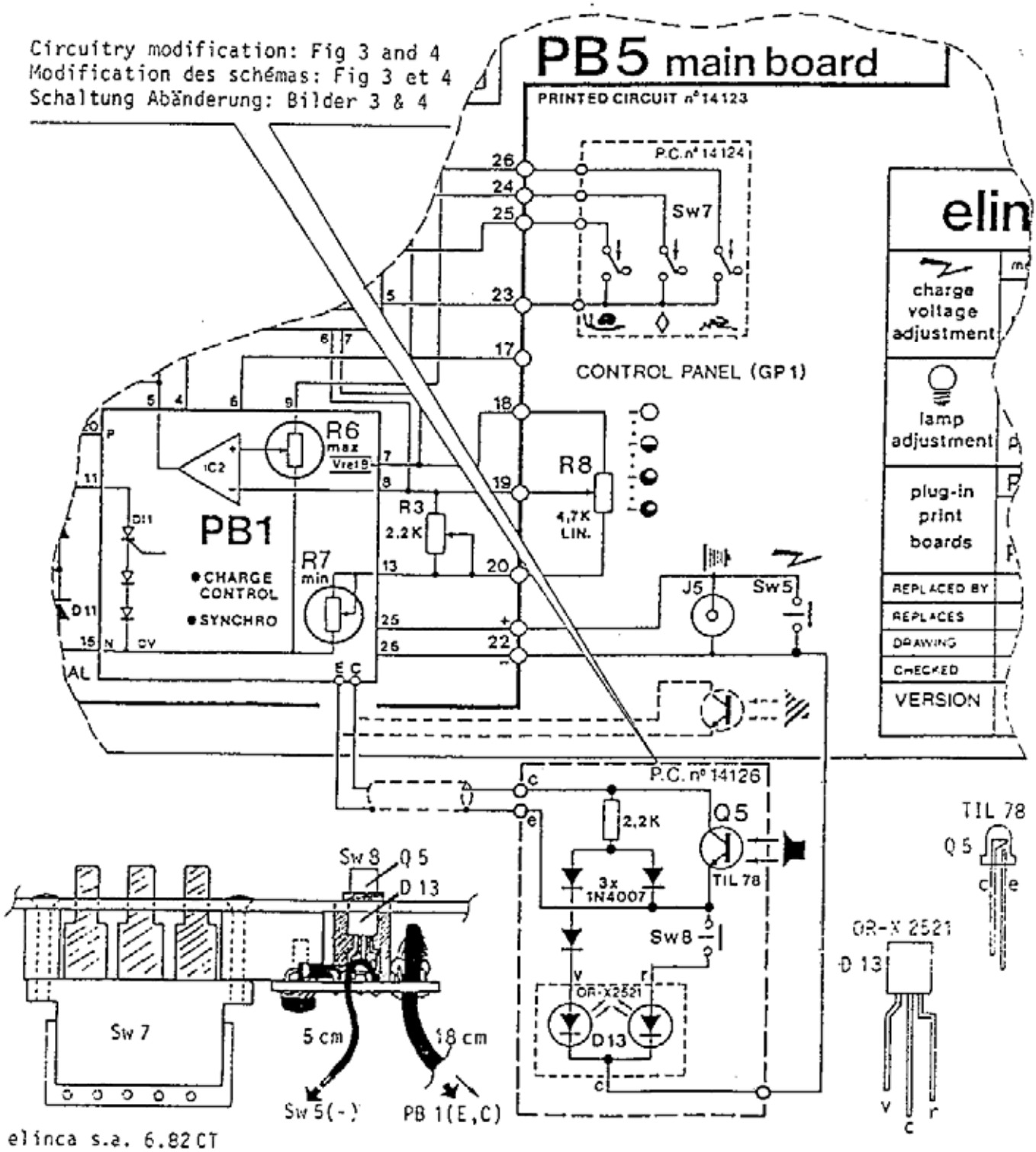
elinchrom 101 + 202 + 404

MODIFICATION: Photocell ON/OFF Switch (Q 5/GP 1)
MODIFICATION: photo cellule de synchronisation (Q 5/GP 1) décommutable
VERANDERUNG : FOTOZELLE ein/aus Schalter (Q 5/GP 1)

Modification Fig. 2
Bild 2 Veränderung

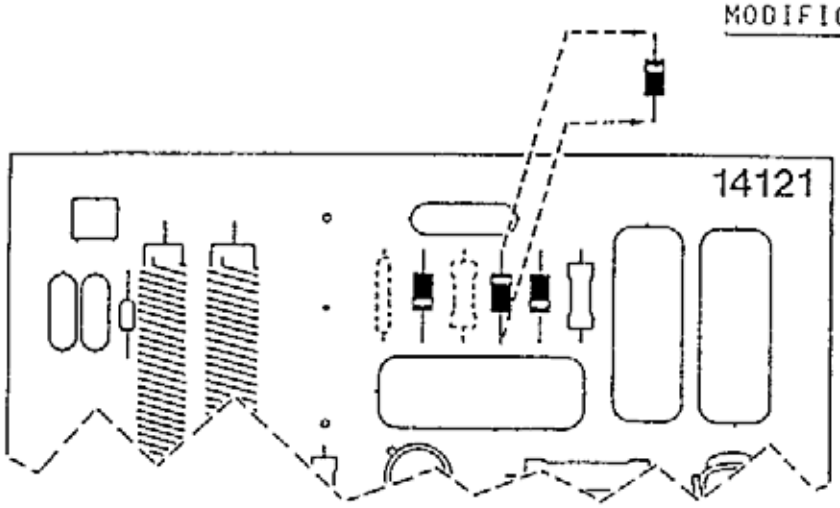


Circuitry modification: Fig 3 and 4
Modification des schémas: Fig 3 et 4
Schaltung Abänderung: Bilder 3 & 4



Modification VIII a)

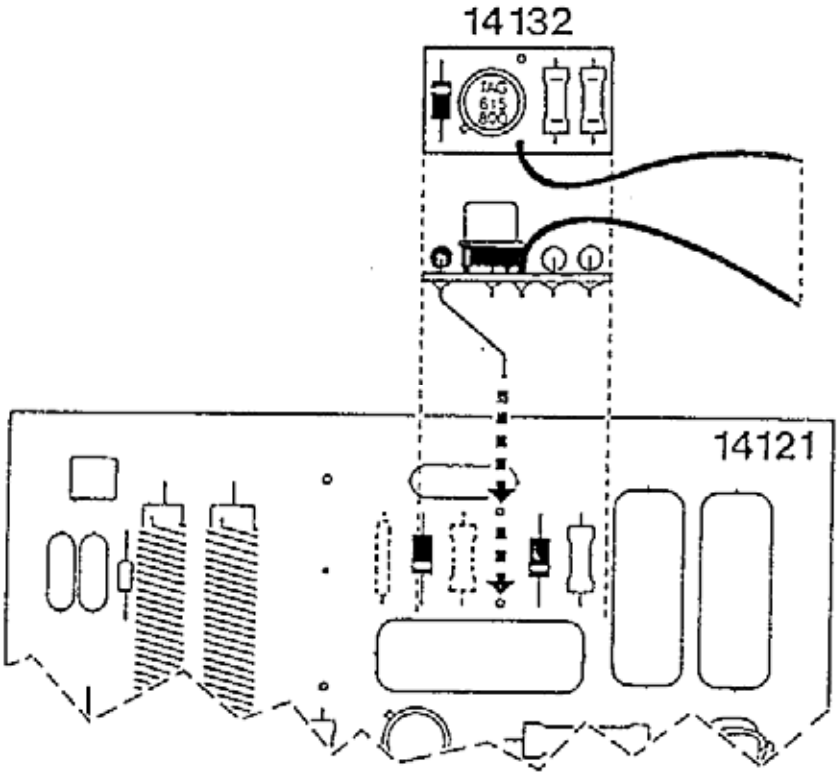
MODIFICATION / ÄNDERUNGEN 14121



1 Remove the diode indicated at left.

Entfernen Sie die links gezeigte Diode.

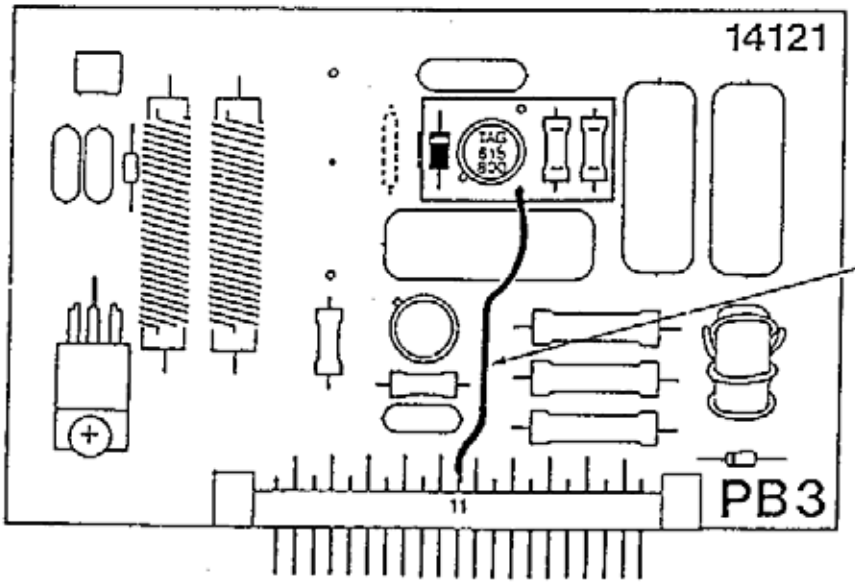
Enlever la diode indiquée ci-contre.



2 Mount the circuit 14132 introducing the two wires of its diode into the holes.

Montieren Sie die Schaltplatte 14132 indem Sie die zwei Drähte der Diode in die frei gewordenen Löcher einführen.

Monter le circuit 14132 en entroduisant les deux fils de sa diode dans les trous libérés.



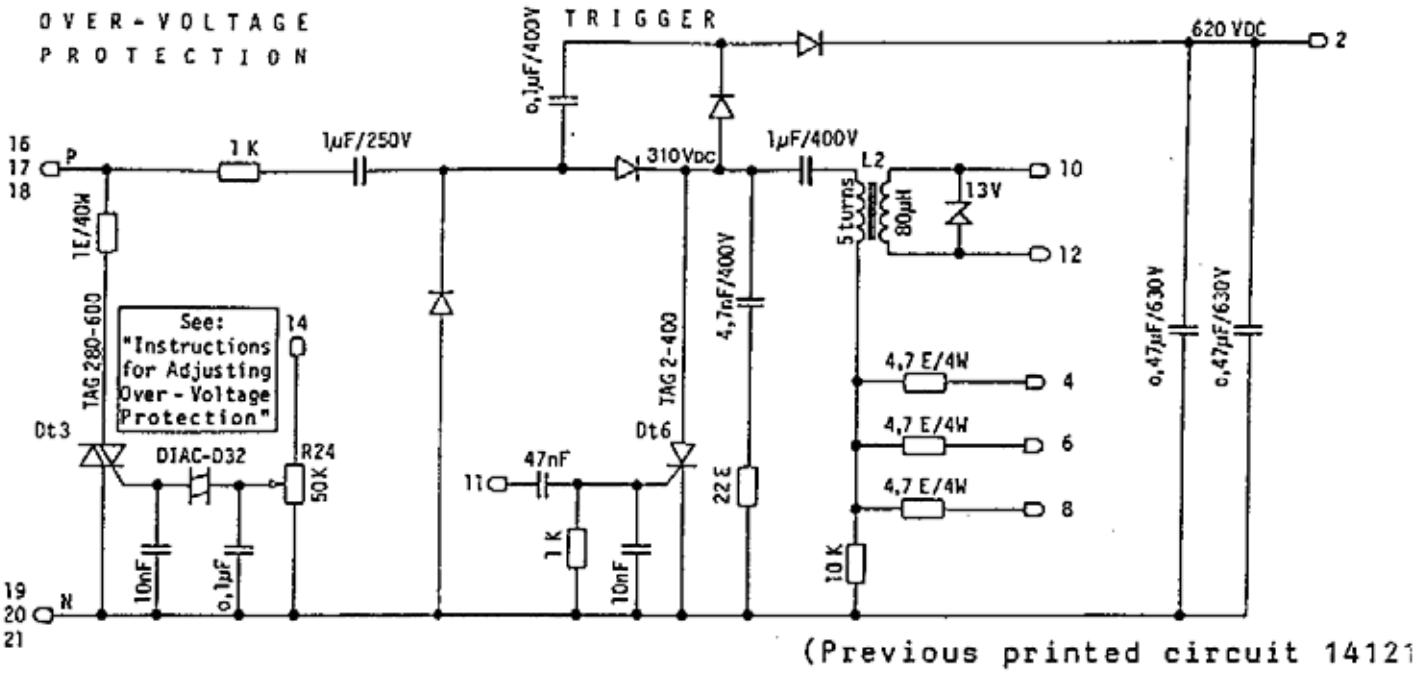
3 Connect the cable to point 11.

Verbinden Sie das Kabel mit Anschluss 11.

Relier le câble au point 11 du connecteur.

VERSION 220 V.

elinca sa SAV 3.11.83
rev 30.11.83

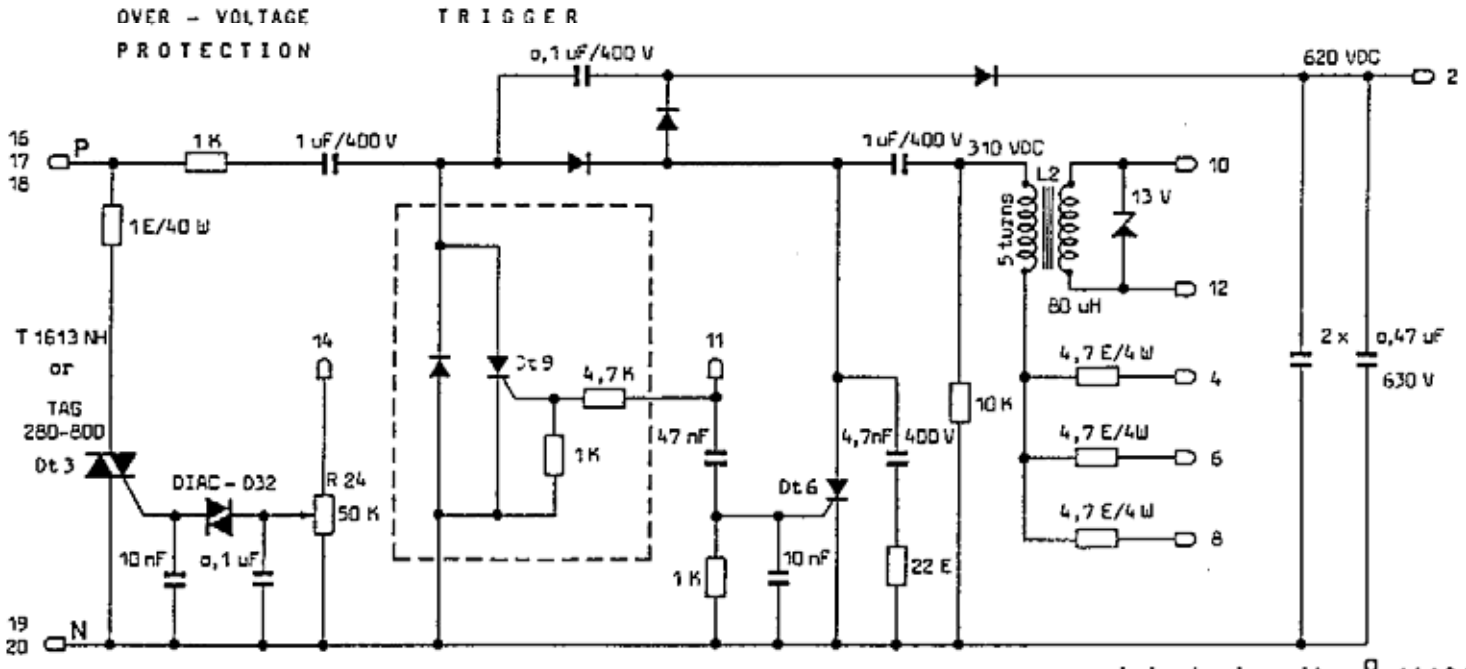


(Previous printed circuit 14121

UNLESS OTHERWISE SPECIFIED
-all resistors 1/2W, 5%
-all diodes 1 N 4007

printed circuit n° 14121

REPLACED BY		elinca s.a
REPLACES		
DRAWING	3.7.80 CT	1020 RENENS switzerland
CHECKED		
VERSION 110 V	SCHEMATIC	PB3



printed circuit n° 14121

FOR ADJUSTMENT SEE:
Instructions for adjusting Over-Voltage Protection

Modification of circuit 14121:
We have added the thyristor Dt 9 which ensures the proper delay of charge of the trigger boost voltage.
This modification can be introduced on former printed board PB 3 by simply adding the circuit 14132.

UNLESS OTHERWISE SPECIFIED
- all resistors 1/2 W, 5 %
- all diodes 1 N 4007

Dt 6-9: X 0303 NG (S 0602 NH, S 0802 NH, TAG: 615/623/633-800, TIC 106 N)*
only Dt 6 (TAG 2-400)

(*.) Which have been and can be used.

Modification X

Added:		elinca s.a
REPLACES	3.7.80	
DRAWING	9.3.85	1020 RENENS switzerland
CHECKED		
VERSION 110 V	SCHEMATIC	PB3

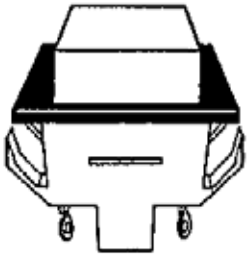
Modification IX

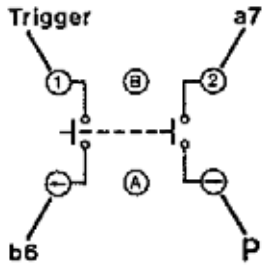
Lamphead switches (Sw 1-2-3)
Schalter für Lampenköpfe (Sw 1-2-3)
Interrupteurs des torches (Sw 1-2-3)

Former model: until march 1984

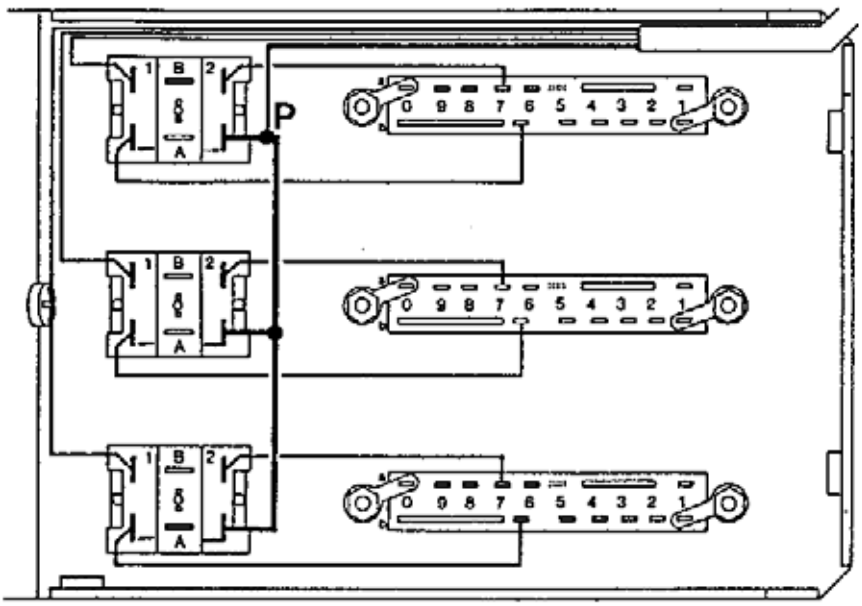
Vorhergehendes Modell: bis März 1984

Ancien modèle: jusqu'en mars 1984





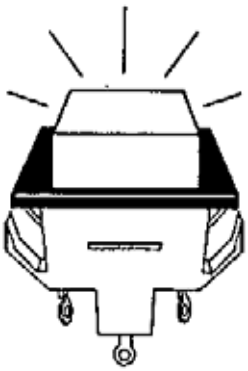
CODE / Bestr. Nr. 14641

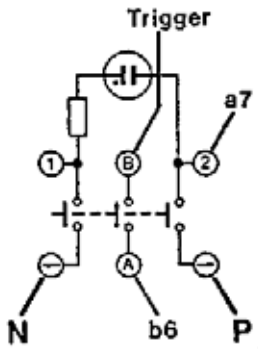


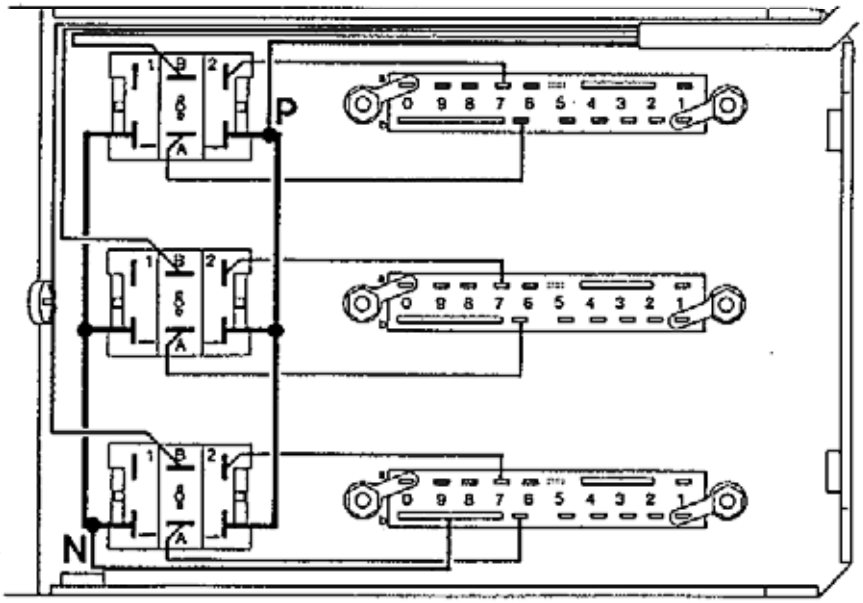
New luminous switch

Neuer leuchtender Schalter

Nouveau modèle lumineux







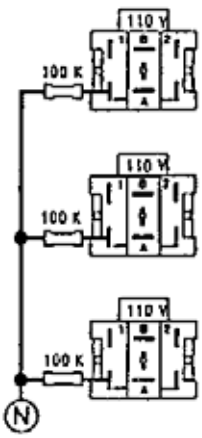
Version 220 V. CODE / Bestr. Nr. 14647

Version 110 V. CODE / Bestr. Nr. 14648

If necessary, 110 V switches can be used ou 220 V packs. In this case a 100 K 1/2 W resistance has to be connected in serie with point N.

Falls 220 V Schalter am Lager fehlen Können auch 110 V Schalter verwendet werden. In diesem Falle muss ein Widerstand 100 K 1/2 W mit Kontackt "N" in Serie verbunden werden.

Des interrupteurs 110 V peuvent être montés sur des générateurs version 220 V. Dans ce cas une résistance de 100 K 1/2 W est placée en série avec le point N.



Modification IX

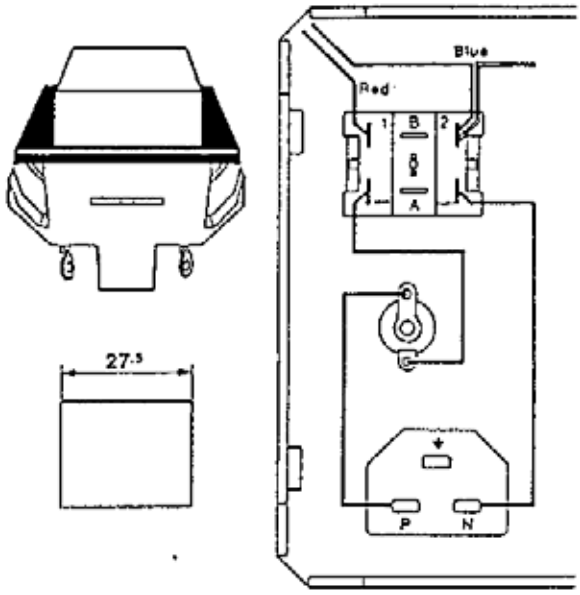
Mains switch (Sw 4)
Hauptschalter (Sw 4)
Interrupteur principal (Sw 4)

Former model: until march 1984

Version 220 V. CODE 14307 remplaced by 14645.
Version 110 V. CODE 14317 remplaced by 14646.

Vorhergehendes Modell: bis März 1984
Version 220 V. Best. Nr. 14307 ersetzt durch 14645.
Version 110 V. Best. Nr. 14317 ersetzt durch 14646.

Ancien modèle: jusqu'en mars 1984
Version 220 V. CODE 14307 remplacé par 14645.
Version 110 V. CODE 14317 remplacé par 14646.

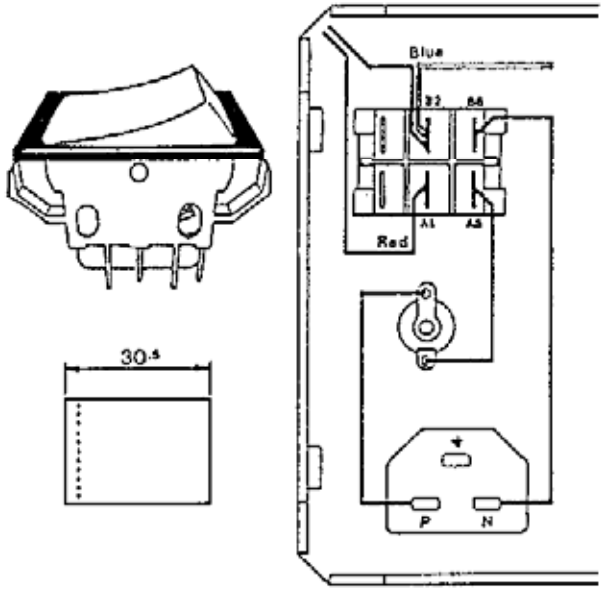


Mains switch used from march to sept. 84

Defect: the relay may stick.
Remedy: replace switch by new model.

Hauptschalter verwendet von März bis Sept. 84
Panne: Das Relais blockiert.
Lösung: Neuer Schalter einbauen.

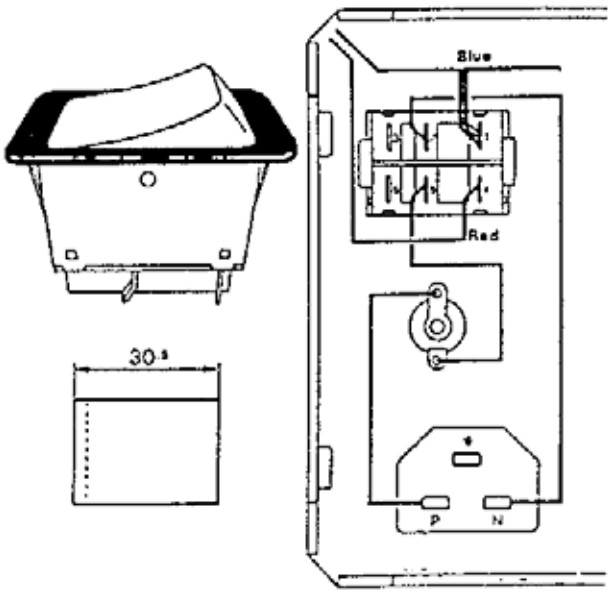
Modèle utilisé de mars à septembre 84
Défaut: contacts peuvent rester collés.
Remède: remplacer par le nouveau modèle.



New mains switch introduced in sept. 84

Neuer Hauptschalter seit September 84.
Nouveau modèle introduit en septembre 84.

Version 220 V. CODE / Bestr. Nr. 14645
Version 110 V. CODE / Bestr. Nr. 14646



Introduction of the acoustic end-of-charge signal in the ELINCHROM power packs 101-202-404

The set of parts contains :
Circuit No. 14134 with screws, Zener diode 5.6 V and adhesive label.

1 Mount the circuit on the back of PB5.

2 Wiring : The wires from point 2-15-4-6 should be connected with the corresponding points of PB1 and the two wires from contact Sw with the first Pilot Button ● (SW6).

3 Cut the upper track of the circuit 14124 of Sw6 between the buttons ● and ☼ .

4 Insert the Zener diode 5.6 V on PB1 at the place indicated.

5 Stick the label underneath the pilot buttons.

6 The contact between the emergent screw and the housing ensures a good resonance of the signal.

Einbau der Schaltung "Akkustische Ladeanzeige" in die ELINCHROM Generatoren 101-202-404

Der Bestandleitsatz enthält :
Schaltplatte Nr. 14134 mit Schrauben, Zenerdiode 5,6 V und selbsklebende Etikette.

1 Montieren Sie die Schaltung auf der Rückseite des PB5.

2 Verdrahtung : Die Drähte der Anschlüsse 2-15-4-6 werden an den entsprechenden Kontakten des PB1 angeschlossen und die zwei Drähte des Anschlusses Sw am ersten Schaltknopf ● des Einstellichts (Sw6).

3 Trennen Sie die obere Piste der Schaltung 14124 des Sw6 zwischen den beiden Knöpfen ● und ☼ .

4 Setzen Sie auf dem PB1 an der angezeigten Stelle die Zenerdiode 5,6 V ein.

5 Aufkleben der Etikette unterhalb der Einstellichtknöpfe.

6 Der Kontakt der herausragenden und einstellbaren Schraube mit dem Gehäuse gibt dem akkustischen Signal die nötige Resonanz.

Montage du signal sonore sur générateurs ELINCHROM 101-202-404

Le kit comprend : Un circuit "acoustic signal" No. 14134 avec visserie, une diode Zener 5,6 V et une étiquette.

1 Fixer le circuit au verso de la carte PB5.

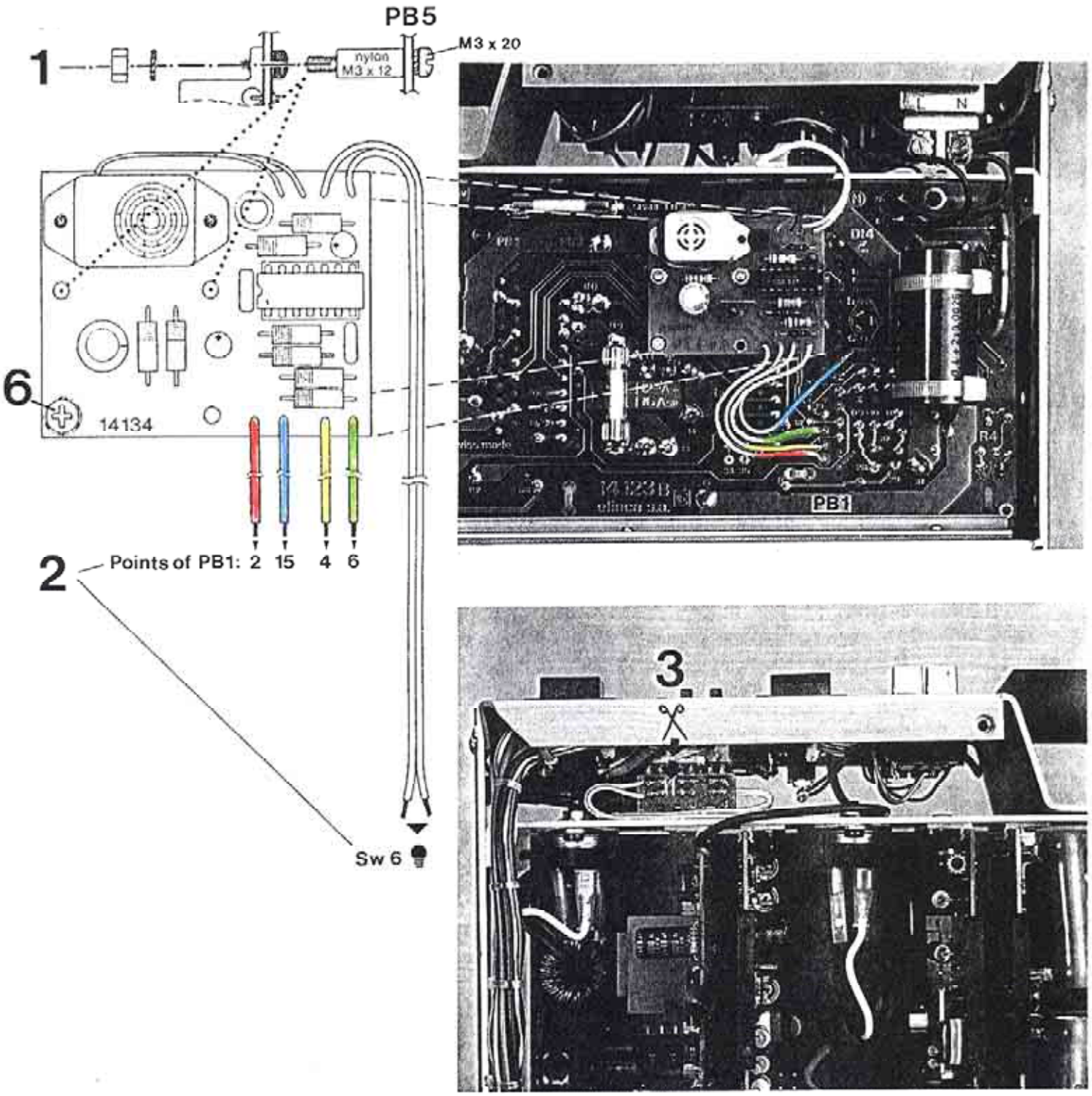
2 Câbler : les fils des points 2-15-4-6 aux points correspondants du connecteur PB1, les deux fils des points Sw au premier poussoir ● du sélecteur d'éclairage pilote (Sw6).

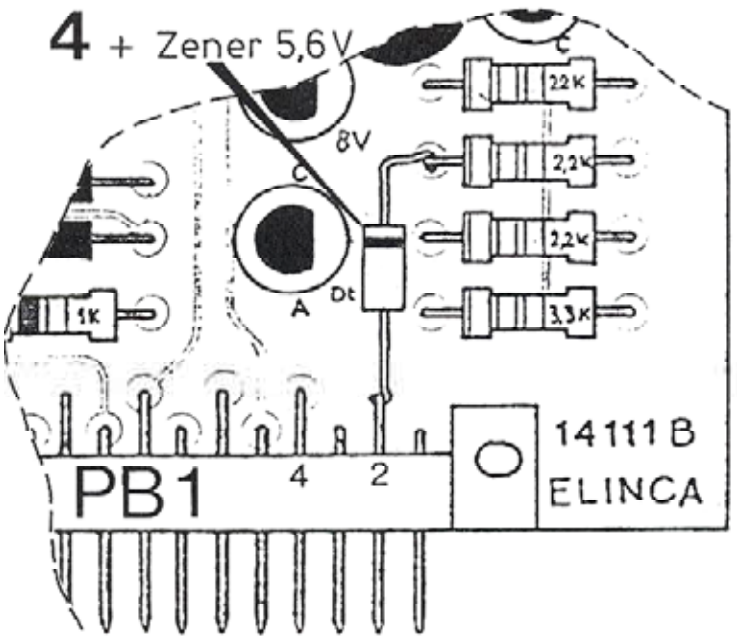
3 Couper la piste supérieure du circuit 14124 de Sw6 entre les deux premiers poussoirs ● et ☼ .

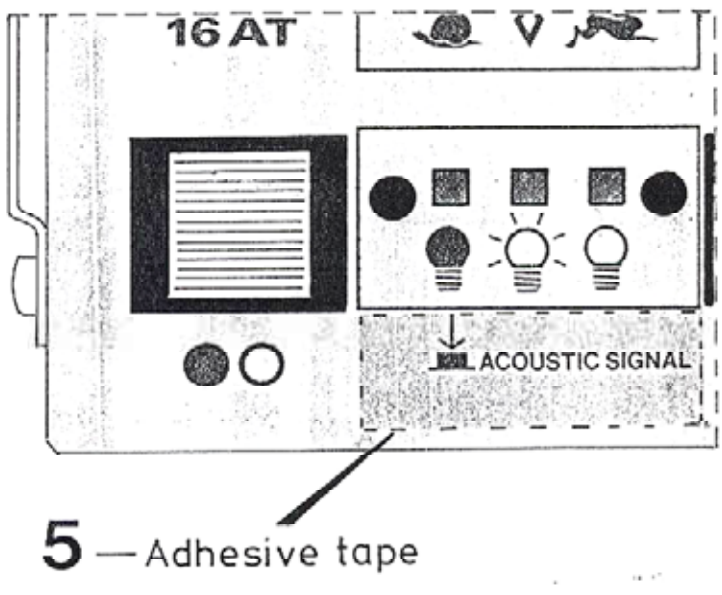
4 Rajouter la diode Zener 5,6 V à l'endroit indiqué sur la carte PB1.

5 Placer l'étiquette autocollante au dessous du sélecteur pilote.

6 Le contact de la vis émergente du circuit acoustique avec le boîtier assure une bonne résonnance.


PB5
1
nylon M3 x 12
M3 x 20
6
14134
2
Points of PB1: 2 15 4 6
Sw 6
PB1
3


4 + Zener 5,6 V
8V
22K
2,2K
2,2K
3,3K
1K
A
Dt
PB1
4
2
14111 B
ELINCA


16 AT
ACOUSTIC SIGNAL
5 — Adhesive tape

ACOUSTIC END-OF-CHARGE SIGNAL for elinchrom101+202+404

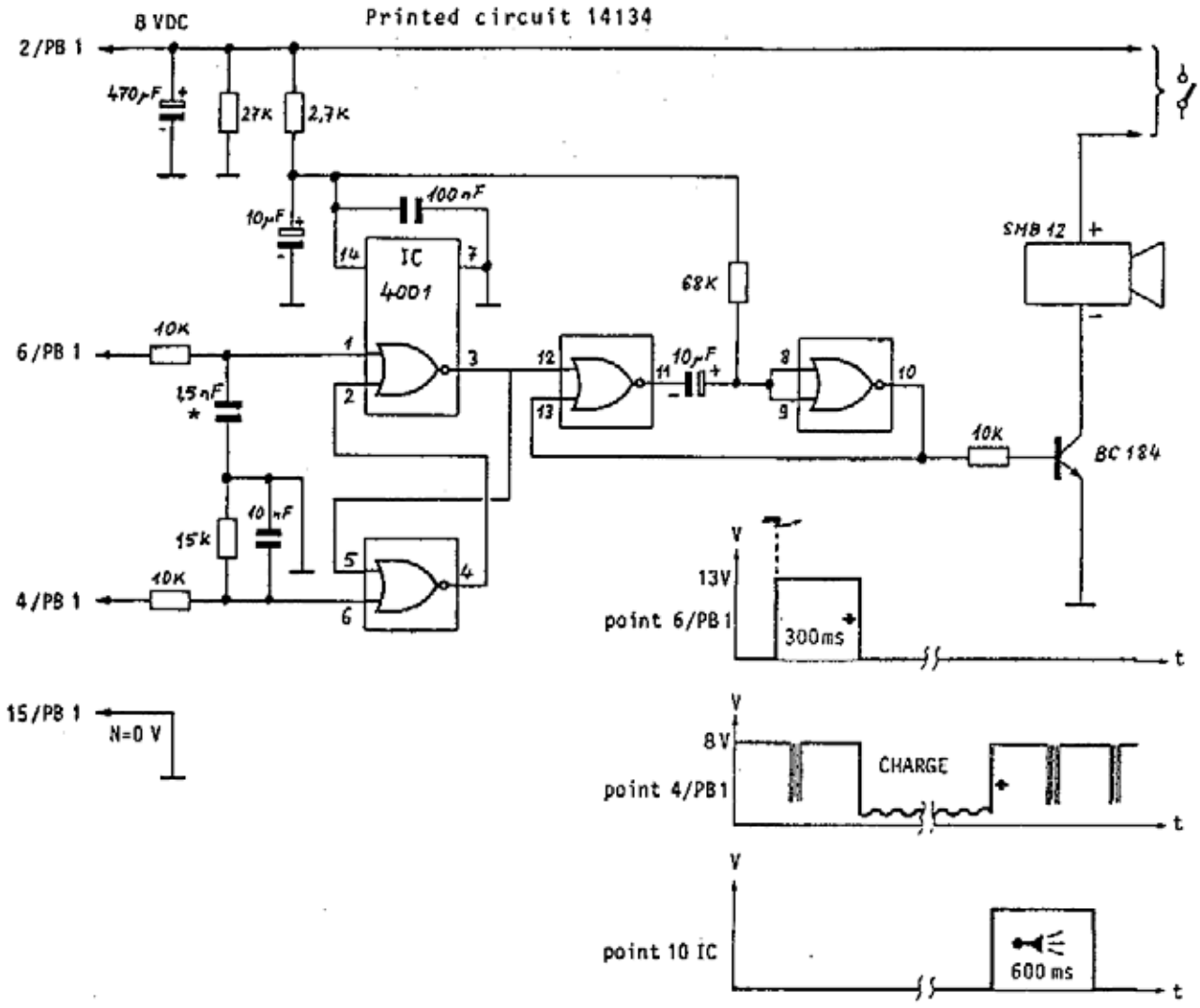
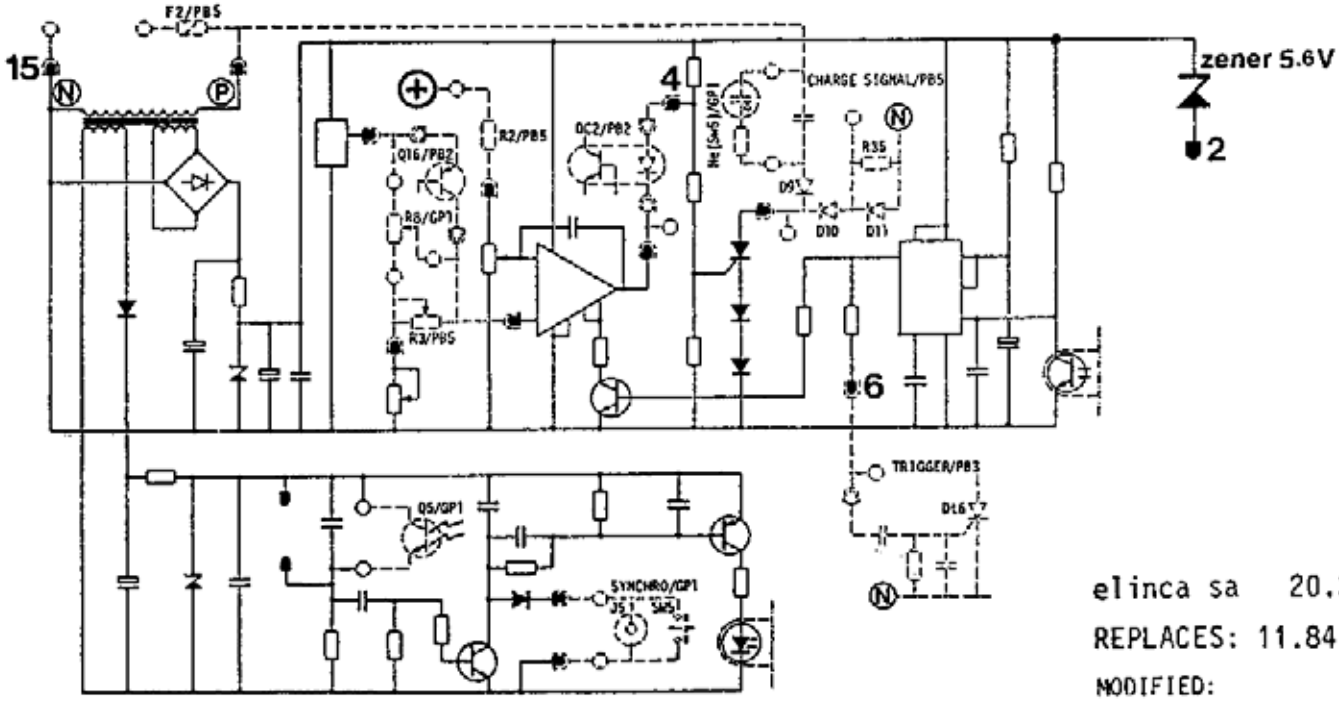


DIAGRAM CONNECTION PB1

TO BE ADDED

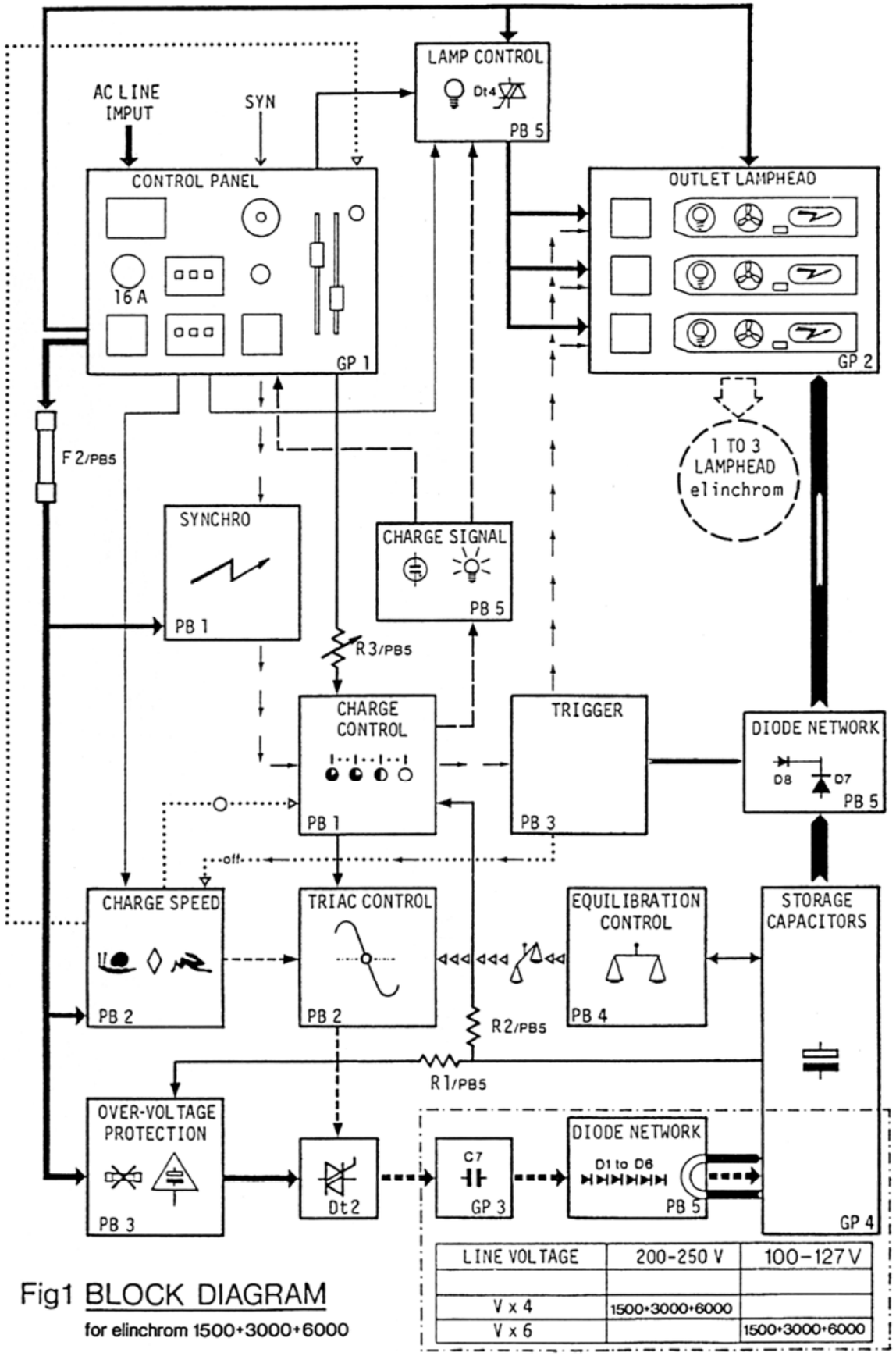


elinca sa 20.2.85

REPLACES: 11.84 SAV

MODIFIED:
1 Mohms replaced by 1,5nF*

CLASSIC GENERATORS

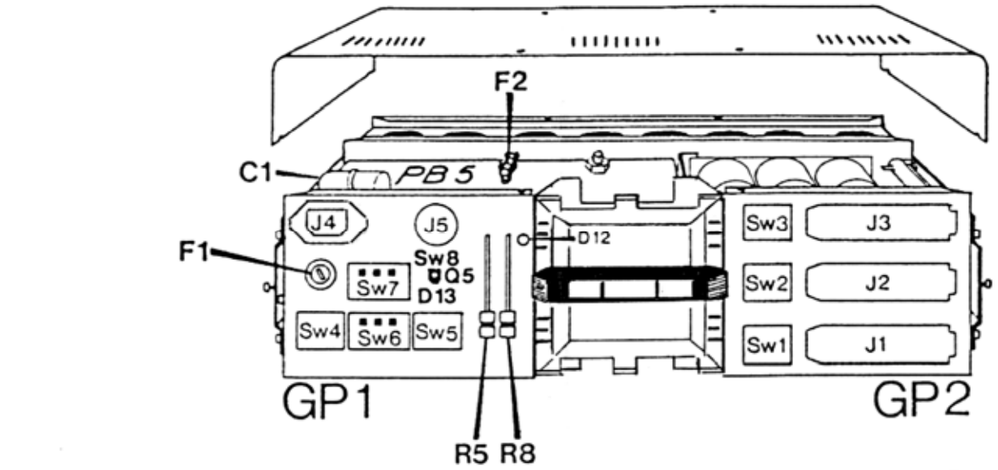


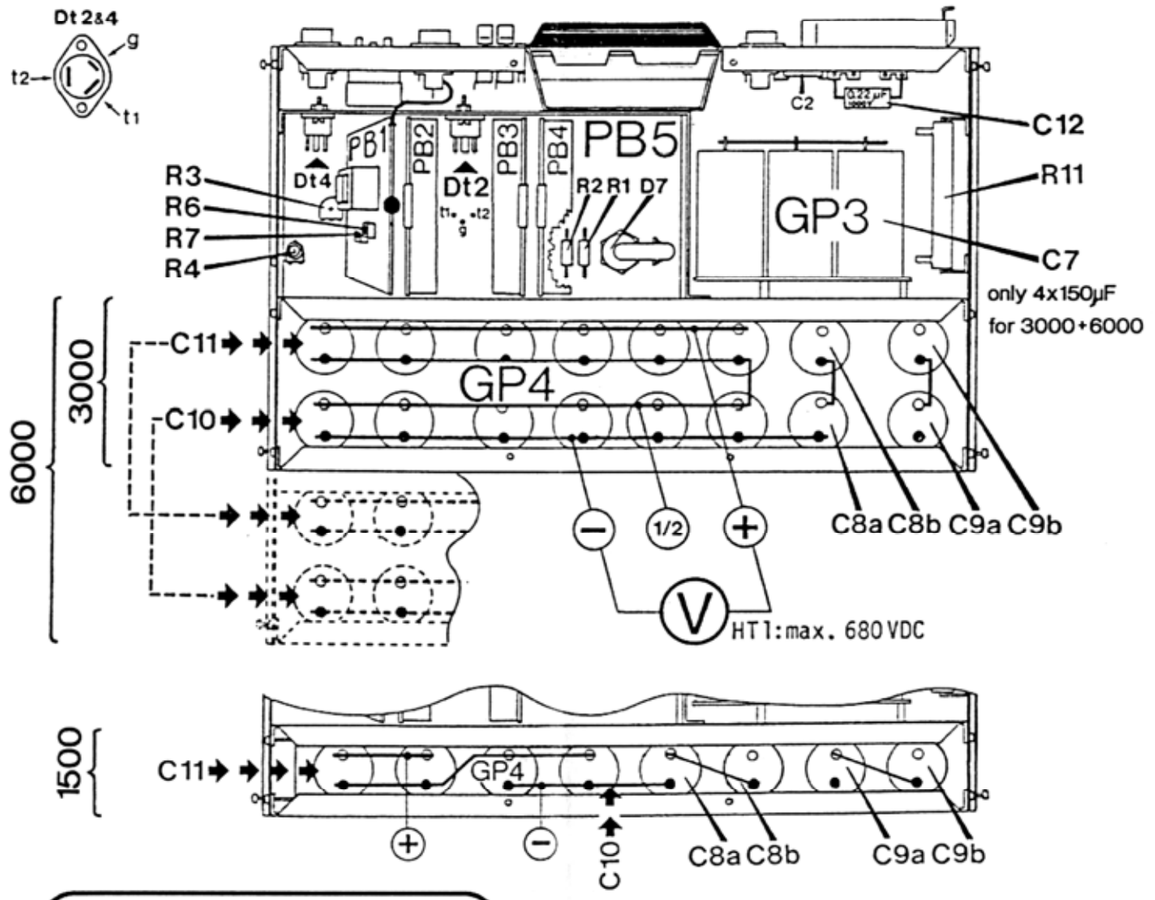
LINE VOLTAGE	200-250 V	100-127 V
V x 4	1500+3000+6000	
V x 6		1500+3000+6000

Fig1 BLOCK DIAGRAM

for elinchrom 1500+3000+6000

Fig1-2





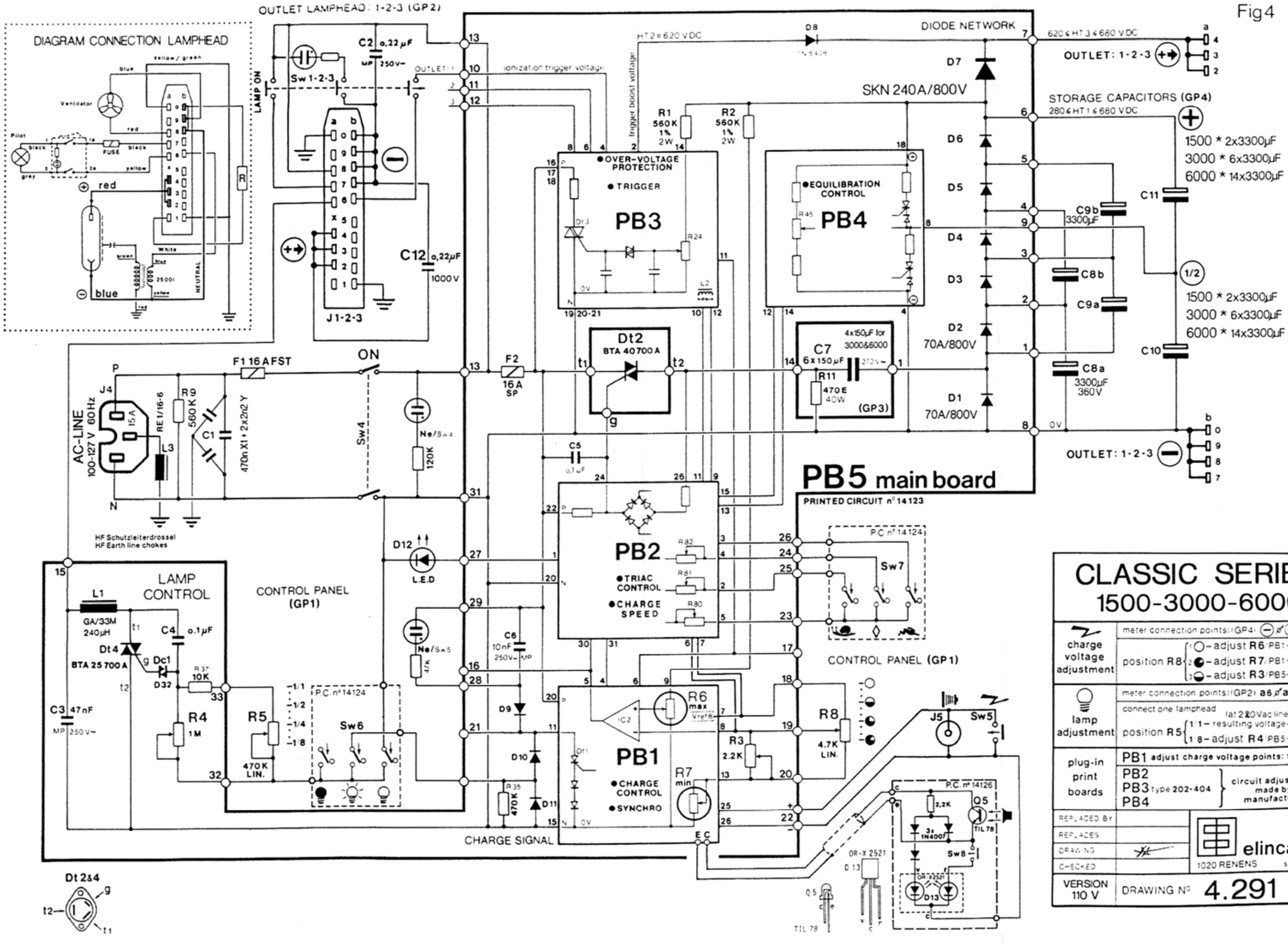
PRINTED BOARDS WITH ELEMENTS		ORDER
PB1	110V	14602
PB2	110V / 60 Hz	14604
PB3	110V	14607
PB4	110/220V	14608

elinca sa 4.4.1991

Fig2 LOCATION OF ELEMENTS

for elinchrom 1500+3000+6000 (version 110V)

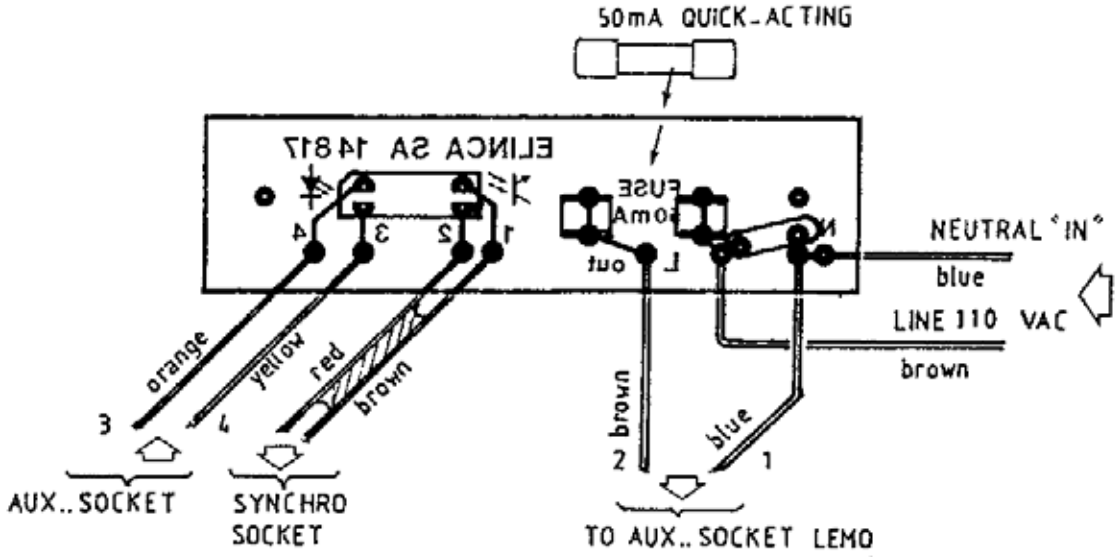
Fig 4

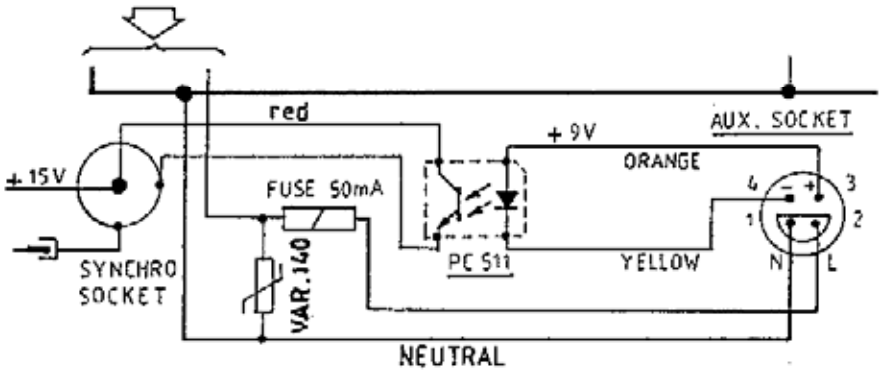


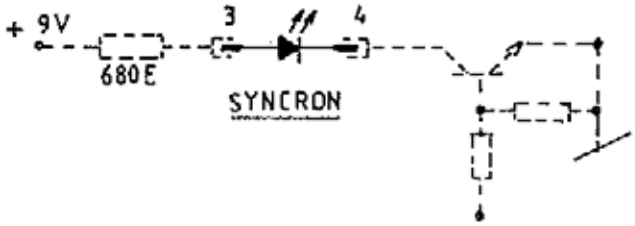
CLASSIC SERIES
1500-3000-6000

charge voltage adjustment	meter connection points: (GP4) ⊖ & ⊕ VDC	
	position R8	1 ⊖ – adjust R6 (PB1) – 680±3
		2 ◕ – adjust R7 (PB1) – 280±5
		3 ◒ – adjust R3 (PB5) – 495±4
lamp adjustment	meter connection points: (GP2) a6 & a7 VAC	
	connect one lamphead (at 220 Vac line)	
	position R5	1/1 – resulting voltage – 210±x
		1/8 – adjust R4 (PB5) – 82±x
plug-in print boards	PB1 adjust charge voltage points: 1 and 2	
	PB2 PB3 type 202-404 PB4	circuit adjustments made by manufacturer
REPLACED BY		elinca s.a.
REPLACES		1020 RENENS switzerland
DRAWN		
CHECKED		
VERSION 110 V	DRAWING N° 4.291	

AUXILIARY SOCKET INTERFACE







PART N°	QTY	SPECIFICATION
14817	1	PRINT
111.059	1	VARISTOR 140 VAC
106.039	2	SPRING FUSE HOLDER
106.040	1	FUSE 5x20 mm
105.053	1	PHOTOCOUPLER (PC 511) long creeping distance

CIRCUIT ASSEMBLY 14868

110V – VERSION ISSUE 06.94

elinchrom
PROFESSIONAL STUDIO FLASH SYSTEM

RE: AFTER SALES SERVICE
BETRIFFT: TECHNICHER DIENST
CONCERNE: SERVICE TECHNIQUE

MODIFICATION "CLASSIC" 1500 - 3000 - 6000

5 F-STOP RANGE

ADJUSTING THE CHARGE

The upper and lower limiting values of the charge are controlled by potentiometers R6 and R7 of circuit board PB1. Intermediate values are controlled by the resistor (R3/PB5) which adjusts the linearity of the sliding potentiometer or variator (R8/GP1).

Use a voltmeter in DC mode to measure the charge voltage HT1 at points - and + of GP4 (see Fig. 2 LOCATION OF ELEMENTS of the servicing manual).

1. at the 1/1 setting adjust R6/ PB1 (max. charge . voltage) 680 V + and - 3 V.
2. at the 1/16 setting adjust R7/PB1 (mini. charg. voltage) 230 V + and - 5 V.
3. at the 1/4 setting adjust R3/PB5 (linearity) 390 V + and - 5 V

Note that adjustment is necessary only when the potentiometer (R8/GP1) is replaced.

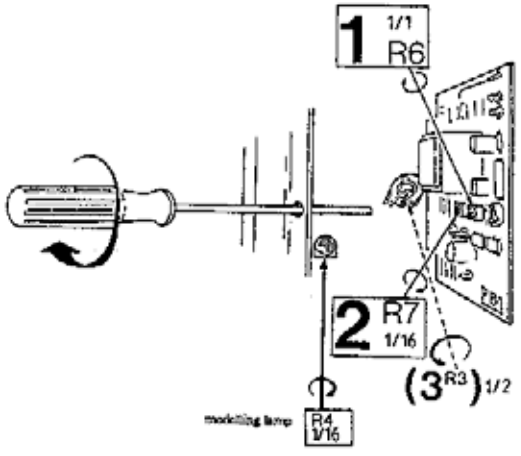
ADJUSTING THE MODELLING LIGHT

This adjustment brings the light intensity from full (1/1) down minimum (1/16 or 6,2 %) with the trimmer (R4/PB5). This adjustment is easy with a voltage measurement at the modelling lamp terminals.

1. Measure the voltage with a voltmeter in AC mode.
2. Modelling light selector: light ON
3. Adjustment 60 VAC at line 230 VAC. 50Hz.

FOR PACKS 110 V VERSION ONLY
3. Adjustment 30 VAC at line 120 VAC 60Hz.

205.142	*(1500) 205.146*	*(3000) 205.145*	*(6000) 205.144*	*205.143*
1/1	8	9	10	
1/2	7	8	9	1/2
1/4	6	7	8	1/4
1/8	5	6	7	1/8
1/16	4	5	6	1/16



205.147

WHEN REPLACING PB1:
Adjust charge voltage
① *Power 1/1 adjust R6 at 680 V.*
② *Power 1/16 adjust R7 at 230 V.*

SET OF LABELS
for 5 x 3000 (2 x 6000) (1 x 1500)
6 X 205.147
6 X 205.143
6 X 205.142
5 X 205.145
2 X 205.144
1 X 205.146

ORDER : 14207
PRICE : Sfrs 26

elinchrom
PROFESSIONAL STUDIO FLASH SYSTEM

RE: AFTER SALES SERVICE
BETRIFFT: TECHNICHER DIENST
CONCERNE: SERVICE TECHNIQUE

TECHNISCHE AENDERUNGEN
"CLASSIC" 1500 - 3000 - 6000

5 Blendenstufen

Justierung der Ladung

Die oberen und unteren Grenzwerte der Ladung werden von den Potentiometern R6 und R7 der Leiterplatte PB1 gesteuert. Die Zwischenwerte hängen vom Regelwiderstand (R3/PB5) ab, der die Linearität des Schiebereglers (R8/GP1) justiert.

Ein auf Gleichstrom geschalteter Voltmeter dient zur Messung der Ladespannung HT1 an den Messpunkten − und + von GF (Siehe Fig. 2 LOCATION OF ELEMENTS der service Anleitung).

1. Bei An wahl 1/1 justiren R6/PB1 (max. Ladespannung) 680 V + und - 3 V.
2. Bei Anwahl 1/16 justieren R7/PB1 (mini. Ladespannung) 230 V + und - 5 V.
3. Bei Anwahl 1/4 justieren R3/PB5 (Linearität) 390 V + und - 5 V

die Justierung 3 ist nur dann erforderlich, wenn der Regler (R8/GP1) ersetzt wird..

Justierung des Einstellichts

Fur diese Justierung wird die Lampenleistung über den Trimmer (R4/PB5) von Volleistung (1/1) auf Minimalleistung (1/16) bzw. 6,2 % heruntergebracht.
Am einfachsten führt man diese Einstellung mit einer Spannungsmessung an den Kontakten der Einstellampe durch:

1. Spannung mit auf Wechselstrom geschaltetem Voltmeter und dem dazu bestimmten Stecker
2. Einstellicht - Wählschalter EIN
3. Justierte Spannung bei 1/16 Leistung 60 VAC für Netzspannung 230 VAC . 50Hz.

Umbausätze für Classic auf 5 Blendenstufen

Siehe Rückseite

elinchrom
SWISS MADE STUDIO FLASH SYSTEM

1500
3000
6000
CLASSIC

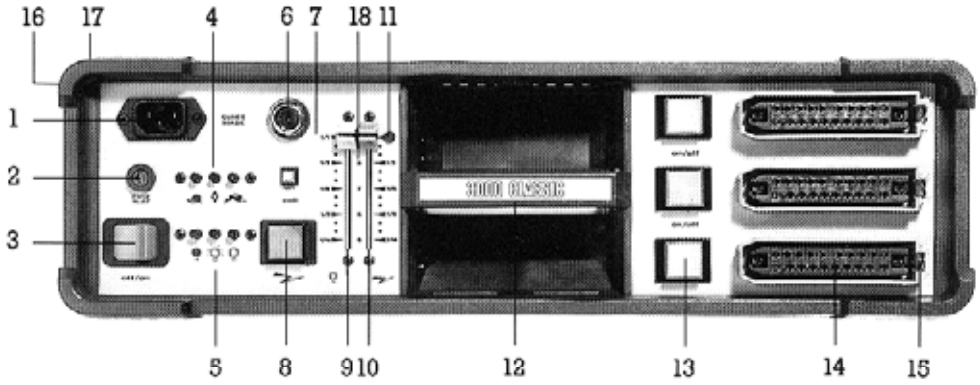
INSTRUCTIONS FOR USE

CONTROL PANEL

1 Power socket
2 Fuse AC supply
3 Illuminated power switch
4 Charge speed selectors
- slow charge 220-240 V = 6 A 110 V = 10 A
- ◊ medium charge 220-240 V = 10 A 110 V = 16 A
- fast charge 220-240 V = 16 A 110 V = 25 A

5 Modelling light selectors
- lights off
- lights on with "ready signal"
- lights on with continuous full power

6 Sync.-socket
7 Photocell with red/green off/on indicator
8 Illuminated open flash button
9 Modelling light variator (5 diaphragms range)
10 Flash power variator (5 diaphragms range)
11 Forming charge full power signal
12 Hand grip
13 Lamphead control switches
14 Lamphead outlets
15 Plug locks and releases
16 Socket for accessories
17 All round protectors
18 Total power scale



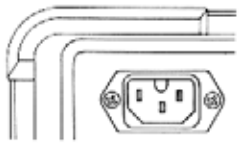
ACCORDING TO THE SAFETY REGULATIONS, WE DRAW YOUR ATTENTION TO THE FACT THAT THIS EQUIPMENT SHOULD BE USED ONLY IN DRY PLACES

OPERATION

1. Mains switch: While in the off position (left side depressed), firmly push in the plug of the original EL mains cable. The fuse of your AC supply should be: 220-240V - 16A / 110V - 25A.
2. Connect the mains cord (1)
3. Connect lampheads ensuring that lamphead switches are OFF, i.e. NOT pushed down (down is the ON position).
4. Switch on the mains power (3)
5. Check photocell (7) is in the RED/OFF position until required
6. Select charging rate (4) (medium charge ◊).
7. Select modelling lamp setting (5)
8. Switch on lampheads (13). On slow charge setting, with modelling lamps set at the middle position (lamp dims, flickering may occur). See section 12.
9. The green READY LIGHT (8) indicates that the unit is charged as required. See section 7.

FOR YOUR SAFETY, NEVER OPEN YOUR GENERATORS OR YOUR LAMPHEADS. FOR REPAIRS, BRING THEM TO YOUR ELINCHROM AGENT.

1. MAINS SUPPLY

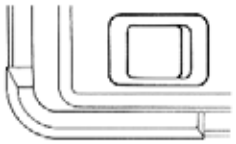


While the MAINS SWITCH (3) is switched off (not illuminated), firmly push in the plug of the original ELINCHROM mains cord.

2. FUSE

Standard type 5 x 20 mm, 16 AT. Before exchanging a blown fuse switch off the unit (3) and remove mains cable. Depress and turn the fuse holder anti-clockwise 1/8th turn and remove it. If the new fuse blows immediately upon reconnection give the pack to an ELINCHROM service centre for a check-up. (N.B. Check fuse is correct value 16 A).

3. MAINS SWITCH



The button should light up when the pack is switched on. Switch off before removing the mains cord.

4. SWITCHABLE PHOTO CELL (SLAVE)

Button up and green light = cell switched on
Button down and red light = cell switched off
When switched on the pack can be remote triggered by an other flash unit in your studio. In difficult situations e.g. daylight, blinding, obstacles, the additional cell with 5 m cord (extensions available) solves most problems. Alternatively use the FRC-SYNCRON cordless remote flash release.

5. CHARGE SPEED SELECTORS

- Press the button of chosen speed

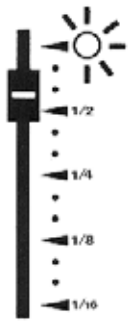
RAPID	Allows fast recycling but draws more power e.g.	
	220-240 V = 16 A	110 V = 25 A
MEDIUM	220-240 V = 10 A	110 V = 16 A
SLOW	220-240 V = 6 A	110 V = 10 A

Slow charge is recommended when the mains capacity is too limited for the use of MEDIUM charge.

6. ADEQUATE FUSES FOR MAINS SUPPLY

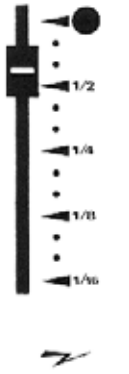
		◊	
For 220-240 V	6 A	10 A	16 A
For 110 V	10 A	16 A	25 A

7. FORMING CHARGE SIGNAL



When first switching on, the capacitors always reform slowly, whether the charge setting is slow, medium or fast. The signal (11) illuminates to indicate full charge, whether the power setting is lower or not. Triggering the OPEN FLASH TOUCH (8) discharges the preformed full power and the unit recharges to your preselected level. Whenever reducing the power setting release a flash and the unit will recharge to your preselected power.

8. VARIABLE, STEPLESS FLASH POWER CONTROL

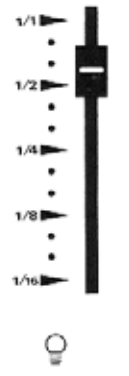


The sliding controls cover a range from full power to 1/16 and their linear scales are marked in 1/3 f-stops. However, the power increase or reduction is continuously and infinitely variable in the smallest fractions of an f-stop. Whenever reducing the power setting release a flash and the unit will recharge to your preselected power.

9. OPEN FLASH BUTTON WITH READY LIGHT

Having pressed this illuminated button to release a flash, the green light will appear again when the pack is recharged. If the green light does not appear the charge system could be defective. Please check at ELINCHROM service centre.

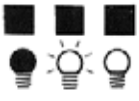
10. VARIABLE, STEPLESS MODELLING LAMP POWER CONTROL



Identical use as for the FLASH POWER CONTROL.
The two sliding controls can be adjusted together, always giving proportional modelling light – and flash power, or can be used independently.

11. MODELLING LIGHT

Select and push in one of these buttons. The modelling light will be the same for all lamphead outlets.



Modelling lamp OFF

Modelling lamp ON with optical end of charge signal (diminished brightness until the pack is fully charged).

Modelling lamp ON with permanent full power, proportional as per control 2.

12. SYNC SOCKET

Plug-in the sync cable and secure it with the screw-ring. Do not connect other makes of flash units to an ELINCHROM sync socket. This could damage your unit because ELINCHROM, for security reasons, use a trigger voltage of only 20 V.

ALTERNATIVE: Cordless flash release may be used such as the ELINCHROM FRC-1 SYNCRON units. The transmission is slightly slower than by sync cable. Therefore, use 1/60 for focal plane shutters (see camera specifications) and 1/125 for blade shutters (central shutters).

13. ACCESSORY SOCKET

This socket allows direct, cordless connection of:
- Remote flash release FRC SYNCRON
- MULTIFLASH UNIT
- POWER STROBE for stroboscopic effects at intervals from 0.1 to 9.99 s.

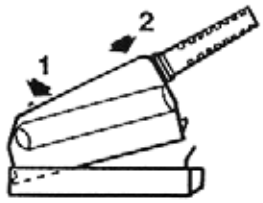
14. CHARGE SPEED

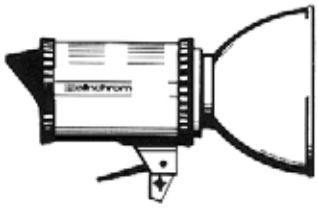
			◊	
		1/16 — 1/1	1/16 — 1/1	1/16 — 1/1
220 V	ELINCHROM 1500 CLASSIC	2,6 - 8,8 s	1,0 - 2,7 s	0,3 - 1,5 s
110 V		3,0 - 9,5 s	1,4 - 3,4 s	0,8 - 1,8 s
220 V	ELINCHROM 3000 CLASSIC	4,8 - 16,4 s	1,6 - 4,8 s	0,9 - 2,5 s
110 V		6,0 - 27,0 s	2,7 - 8,0 s	1,5 - 4,2 s
220 V	ELINCHROM 6000 CLASSIC	10,0 - 35,0 s	3,0 - 10,0 s	1,5 - 5,0 s
110 V		12,0 - 57,0 s	4,1 - 16,4 s	2,5 - 8,5 s

Charge times are slower on 110 V because the reduced voltage requires higher currents which many main fuses may not accept.

15. CORRESPONDING POWER AND F-STOP

Fully charged power in Ws/Joules						f-stop at 1 m 100 ASA / 21 DIN
1500 CLASSIC		3000 CLASSIC		6000 CLASSIC		
				6000	1/1	256 1/3
		3000	1/1	3000	1/2	180 1/3
1500	1/1	1500	1/2	1500	1/4	128 1/3
750	1/2	750	1/4	750	1/8	90 1/3
375	1/4	375	1/8	375	1/16	64 1/3
188	1/8	188	1/16			45 1/3
95	1/16					32 1/3





16. LAMPHEADS

When plugging in a lamphead connector, first push in the front part, then firmly press in the whole plug, the rear part being secured by the locking spring.

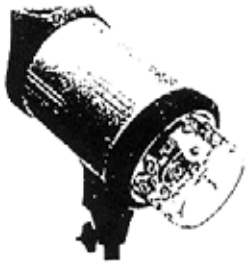
DO NOT PLUG IN OR UNPLUG LAMPCORDS WHILE THE YELLOW SWITCHES ARE ON i.e. ILLUMINATED.

17. LAMPHEAD CONTROL BUTTONS

These switches operate the modelling lamp and trigger circuit for the flash tubes. Whether switched ON or OFF, the ventilator continues cooling the lamphead which extends the life-span of the tubes.

18. FUSES FOR LAMPHEADS

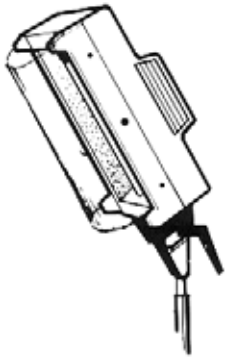
Use only FAST BLOW FUSES, type ASP 5 × 20 mm corresponding to the label on each lamphead. Different modelling lamps require corresponding fuses. Slow blow fuses will not protect the modelling lamp. The fast blow fuse will protect the TRIAC of the modelling lamp circuit, the modelling lamp and therefore the flashtube.



19. PROTECTIVE PYREX DOME

Transparent, matt or yellow domes can be easily fitted to all lampheads, except R heads for which clear or matt security filters are available.

Easy attachment of the protective dome:
- Disconnect the lamphead from the pack
- Loosen the 3 screws of the lamphead reflector
- Fit the clips underneath the screw heads and tighten the screws
- Put the dome in place and hook the springs into the airvent holes



20. LAMPHEAD TYPES

1. With standard flash duration. Types S (T) and R
2. With action stopping (short flash duration). Type A

The X-head with two flashtubes can be standard or action:
a) with each cable in a separate generator it gives standard flash duration
b) with both cables in the same generator it gives short flash duration.

21. ASYMMETRIC POWER DISTRIBUTION

When lampheads of different types are "mixed" asymmetrical light output will be given because A type flashtubes draw power very rapidly.

For approximate output difference, see below:

A	OTHER	A	OTHER	OTHER	A	A	OTHER
75%	25%	60%	20%	20%	40%	40%	20%
A gives 1 1/2 f-stop more than the other		A gives 1 1/2 f-stop more than the other			A gives 1 f-stop more than the other head		

22. FLASH DURATION

TYPES	1500 CLASSIC	3000 CLASSIC	6000 CLASSIC
A	1/1650 s	1/1000 s	* 1/750 s
S	1/900 s	1/500 s	* 1/350 s

AT t 0,5

* with 2 lampheads

FOR YOUR SAFETY, USE ONLY ELINCHROM LAMPHEADS ON YOUR GENERATORS.

23. LAMPHEAD COMPATIBILITY

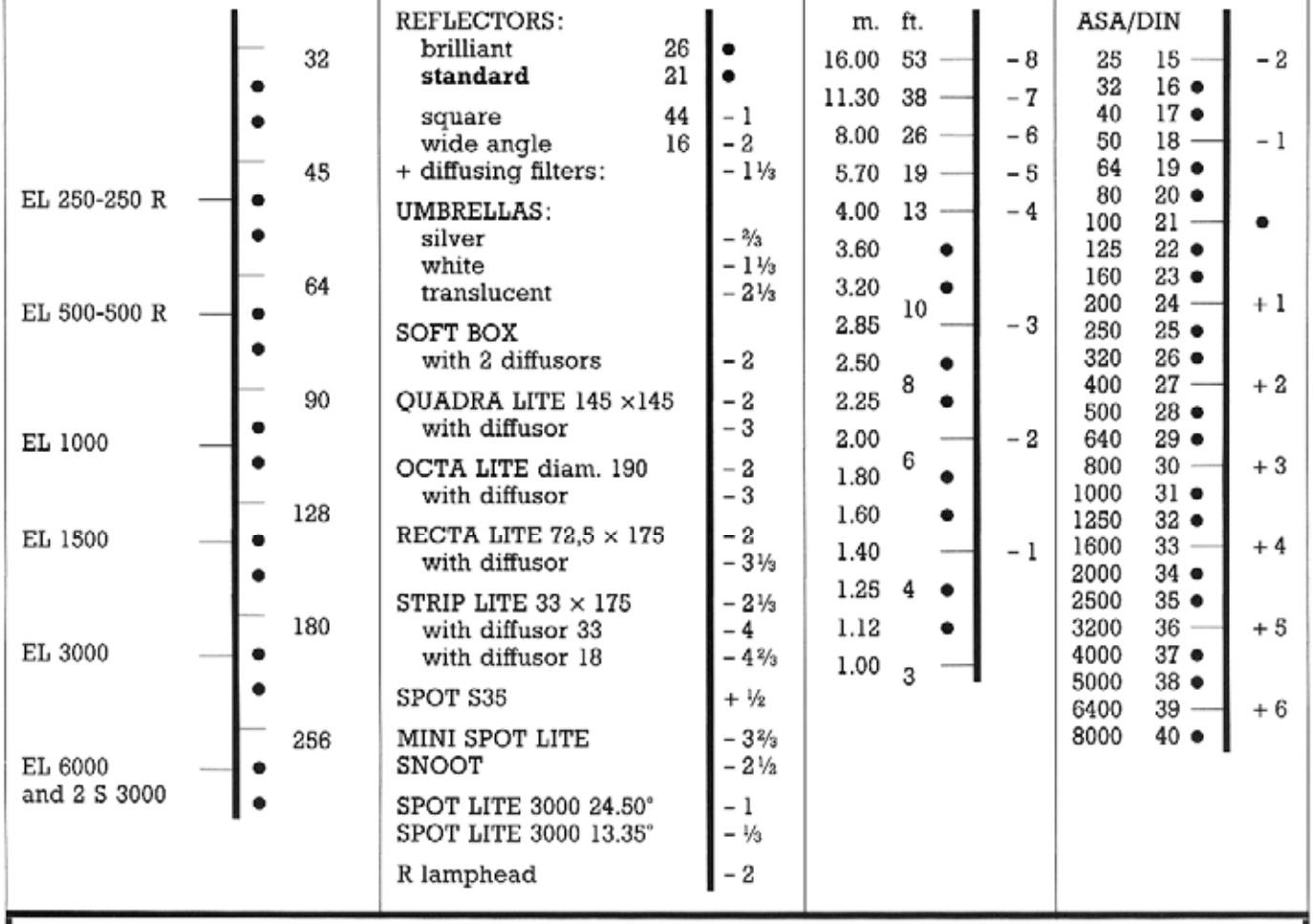
All lampheads since October 1986 have been designed to inform MICRO generators of their type. Lampheads before that date will refuse to function until modified. This is a simple modification and can be done by an ELINCHROM service center.
Below is a table listing lampheads made since 1980 which are adaptable and indicating the equivalents in the current series.

MAXIMUM POWER	COMPATIBLE			ADAPTABLE
	1992	1988	1986	1980
1500/2000 WS	S1500N - -	S2000 A2000 R2000	S2 A2 R2	S - -
3000/4000 WS	S3000N A3000N Spot Lite 3000 Box Lite 3000	S3000 A3000 - -	- - - -	- - - -
4000 WS	- - - -	S4000 A4 Box Lite 4000 R4000	T4 A4 Box Lite 4000 R4	T A - -
6000 WS	X6000N	-	-	-
8000 WS	-	X8000	X8	X

elinchrom
SWISS MADE STUDIO FLASH SYSTEM

ELINCHROM METER

Guide aperture based on the standard reflector, distance 1 m/3⅓ ft. and film ASA 100. Following these scales you can easily obtain the approximate working aperture.



EXAMPLE:	VARIATION	F-STOP
EL 3000 with S3000 head		180⅓
SOFT BOX with 2 diffusors	- 2	90⅓
Distance 1,6 m	- 1⅓	64
Emulsion 64 ASA	- ⅔	45⅓

The ELINCHROM METER is a useful guide for studio lighting but it can not replace a professional flash-meter.

FOR YOUR SAFETY, NEVER OPEN YOUR GENERATORS OR YOUR LAMPHEADS.
FOR REPAIR, BRING THEM TO YOUR ELINCHROM AGENT.

elinca sa
Av. de Longemalle 11
P.O. Box 458
CH-1020 RENENS
SWITZERLAND

M. E. CLASSIC 94 E

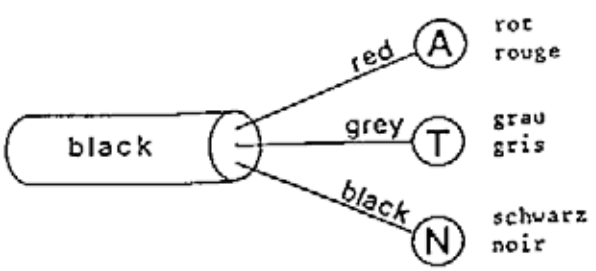
VENTILATORS – FANS – VENTILATEURS

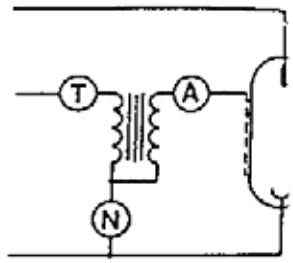
PART N		DESCRIPTION	FOR SERVICE
620.003	220 V	STANDARD EL	HEADS . TORCHES . A . S . T.
620.010	110 V	STANDARD EL	A2 . A4 . T4 . X . X8000 . S2000 . S3000 . S4000 . A2000 . A3000 . A4000 .
107.004	220 V	MOTOR	
107.005	110 V	MOTOR	
204.098		HOUSING . GEHAUS . SUPPORT .	
901.174		FAN PROPELLER GEBLASEFLUGEL . HELICE **********	
107.010	220 V	MICRONEL V72TL (white paint)	BOX LITE 1983/1989
107.011	110 V	MICRONEL V72TL	BOX ********
107.012	110 V	MICRONEL V72JM	HEADS R2 . R4 . R2000 . R4000 .
107.013	220 V	MICRONEL V72JM	******* **********
107.015	24 VDC	MICRONEL F80	"MICRO" SERIES
107.016	Bl.110/220 V	MICRONEL V722AB	BOX LITE 1991 HEADS MOD:1991

13.11.1990

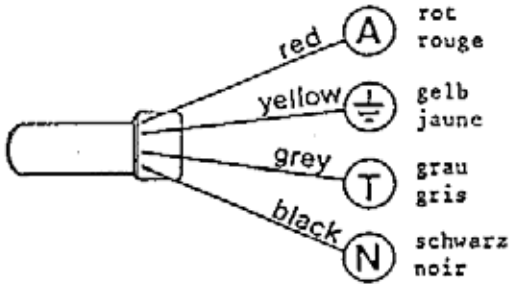
older models:
anciens modèles:
ältere Modelle:

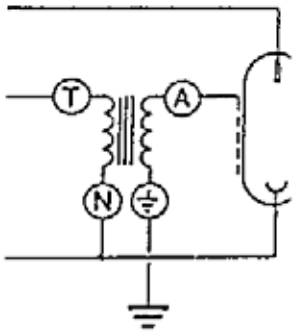
20.112
20.154/5 RECTA
20.222/24
20.324 parabol
20.325
20.326
20.327
20.328
20.423
20.424



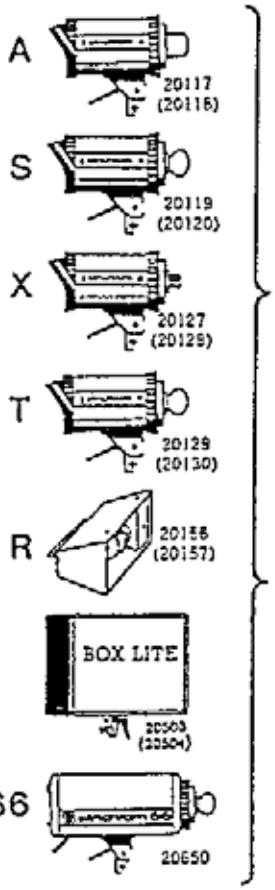


20.114
20.115
20.116
20.117
20.119
20.330/31
20.334





elinchrom:



20.114
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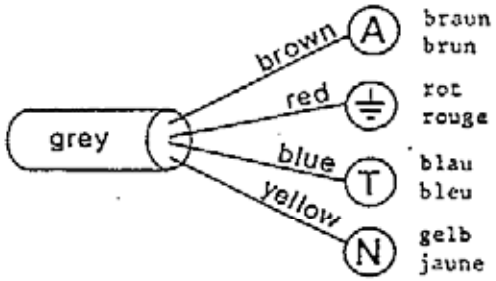
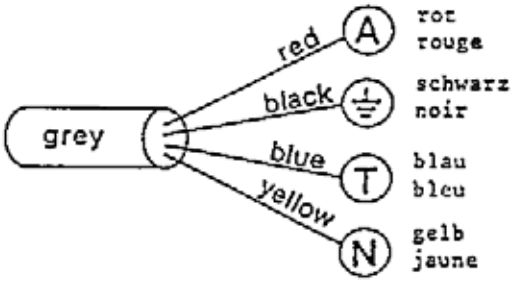
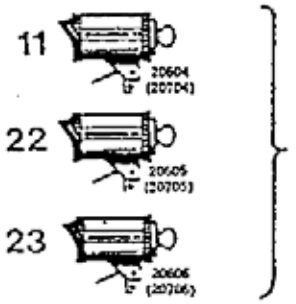
20.135
20.331



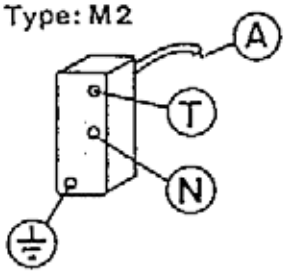


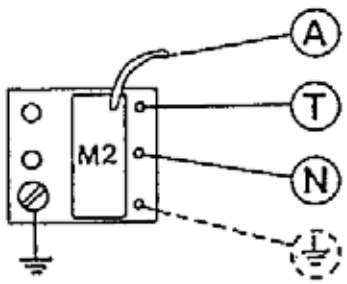
(Nr) = code for 110 V

UNIPACK
EL 11
22
66
20.111
20.112
20.428
20.501/2 HDD



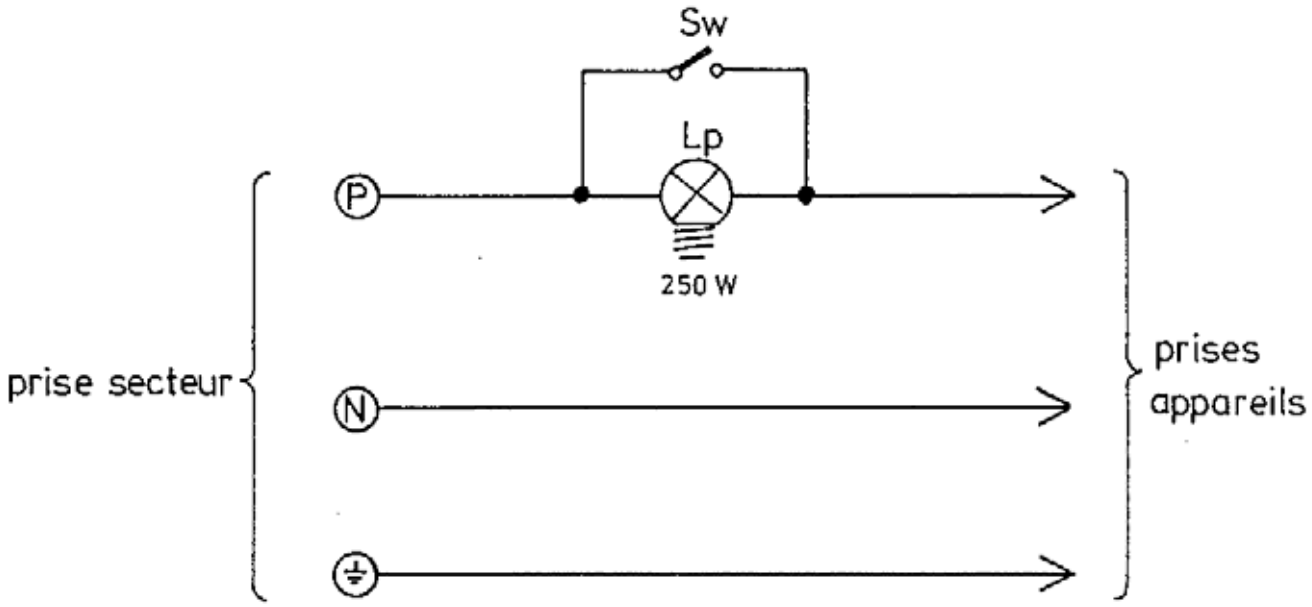
Type: M2



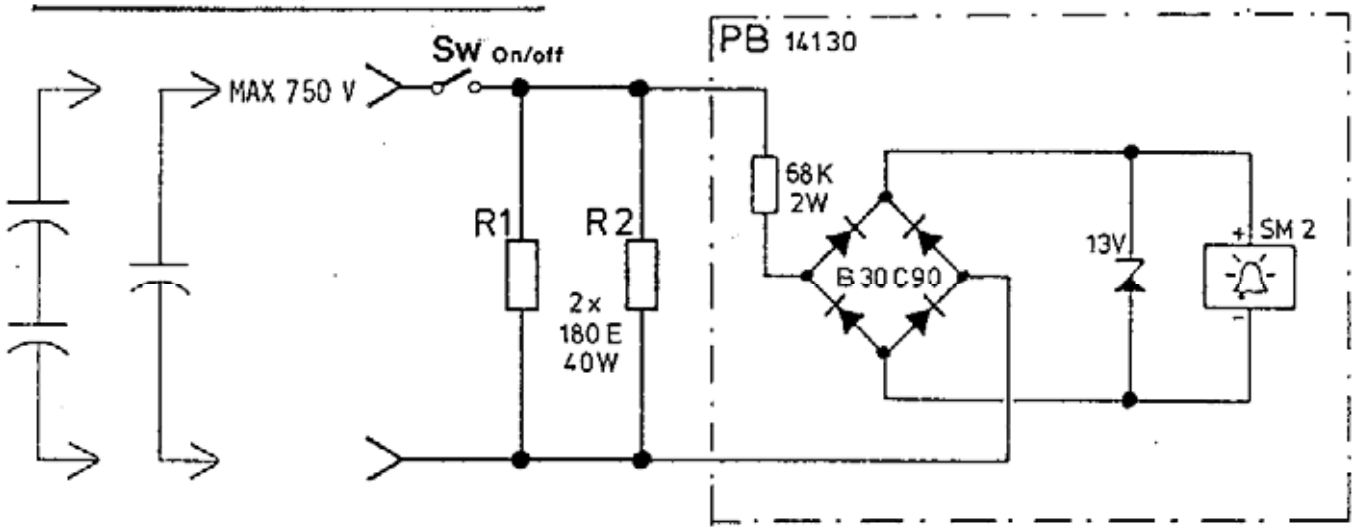


TYPES OF TRIGGER COILS AND THEIR WIREING BOBINES D'AMORÇAGE ET LEUR CABLAGE ZUENDSPULEN-TYPEN UND IHRE VERDRAHTUNG	elinca sa CH-1020 Renens Switzerland	DRAWN BY BA 3.85

LIMITATEUR

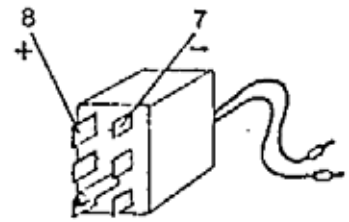


RÉSISTANCE DE DÉCHARGE



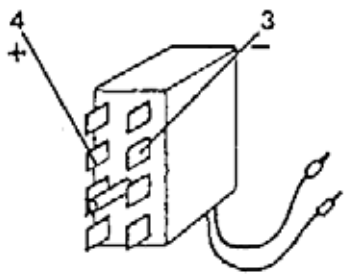
FICHES POUR LE DRAINAGE DES DIFFERENTS TYPES DE GENERATEURS

FICHE 6 pôles



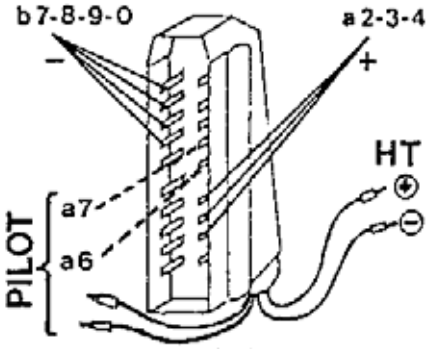
CADET
QUANTA
elinchrom 2002

FICHE 8 pôles



elinchrom 4004

FICHE 20 pôles



elinchrom 101+202+404

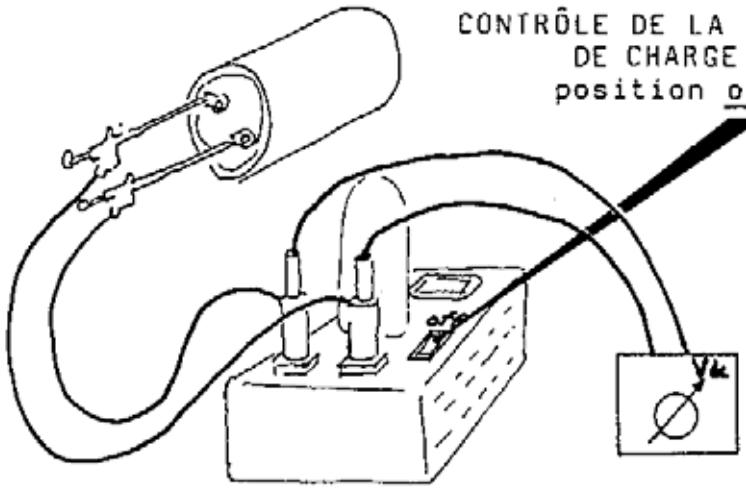
BOÎTE LIMITATEUR / DÉCHARGE

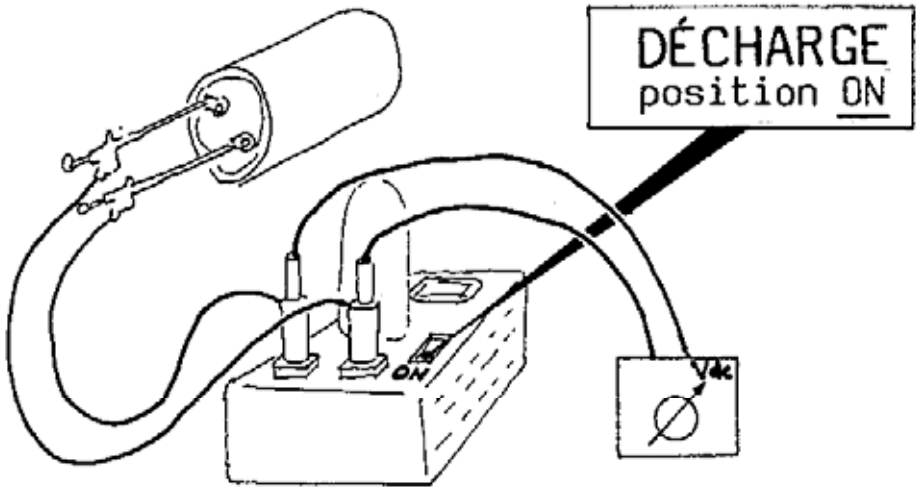
elinca sa Rév. 11.84 CT

Mode d'emploi RÉSISTANCE DE DÉCHARGE

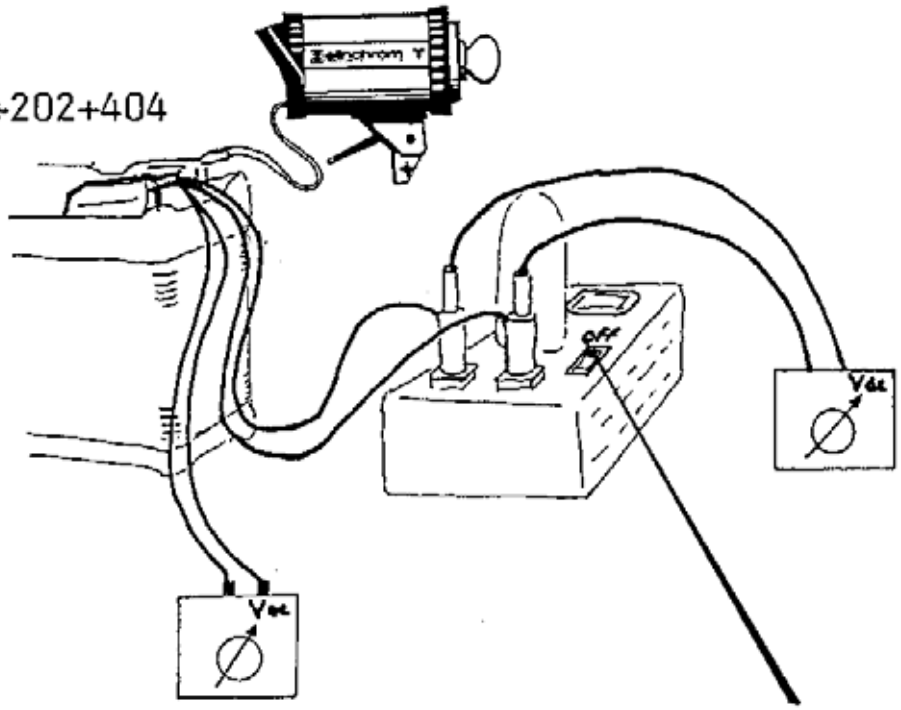
ELINCHROM:

11+22+23
66
HDD
UNIPACK
MINIPACK
CADET
QUANTA
Satel-Light
2002
4004





ELINCHROM 101+202+404



Ajustage de l'éclairage pilote: position off