



HANTAREX

electronic equipment manufactures

x-y monitor

MTRV

this is an HRS product :

**HIGH
RELIABILITY
SERIES**



HANTAREX

electronic equipment manufactures

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Questo speciale monitor MTRV XY, così chiamato per la sua particolare prerogativa di rappresentazione cartesiana, è la dimostrazione del continuo aggiornamento tecnologico di HANTAREX nel campo dei monitors per Video-Games di struttura meccanica elettronica particolarmente progettate per un'alta affidabilità.

Fa parte dei prodotti della nuova serie HRS, cioè High-Reliability-Series, dei quali, grazie al processo di progettazione e produzione di tipo professionale, si garantisce un alto grado di affidabilità, quindi durata del prodotto stesso.

Questo monitor, collegato a piastre logiche di giochi espressamente progettati per le sue caratteristiche, è capace di riprodurre sul suo cinescopio ad altissima risoluzione qualsiasi disegno.

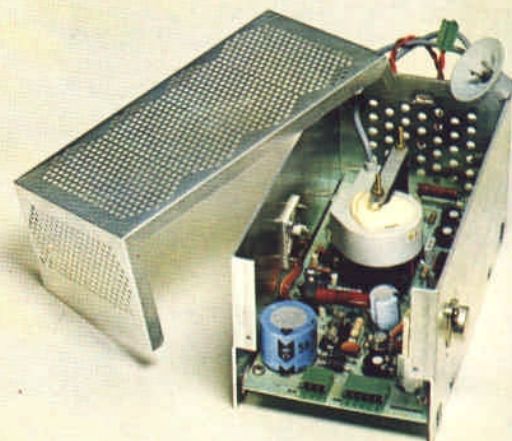
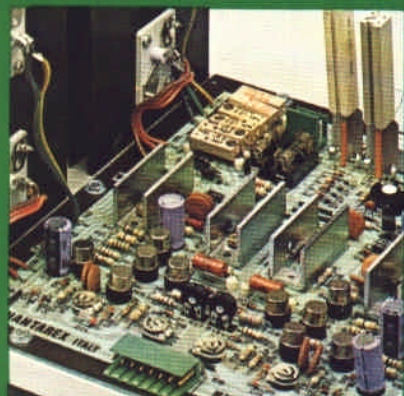
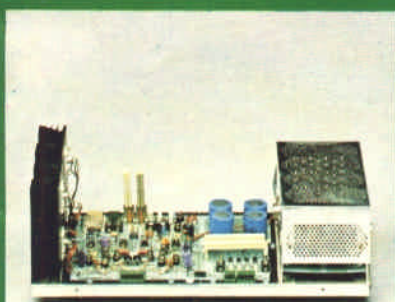
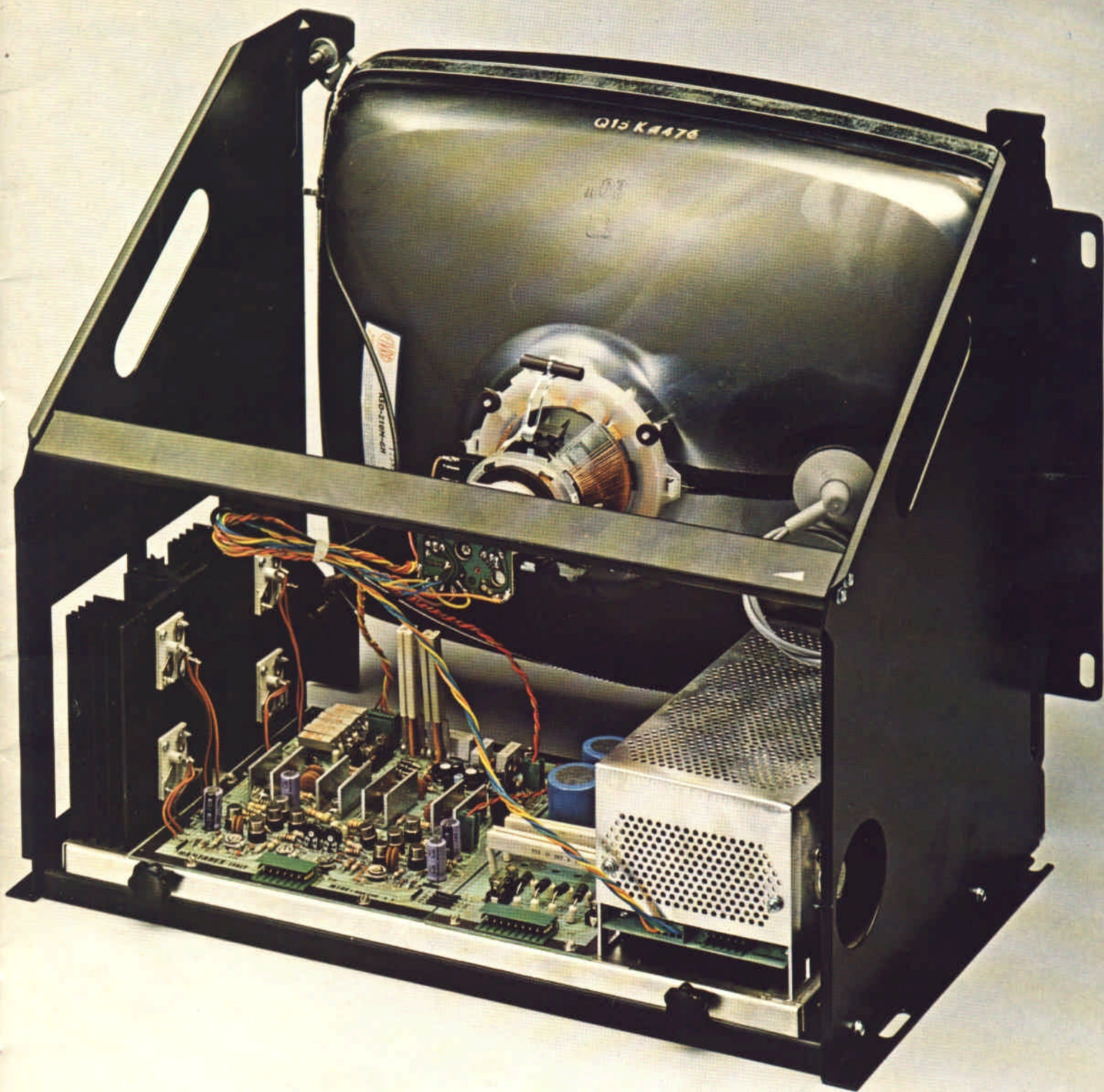
Con questa nuova serie HANTAREX non è solamente presente nel campo dei Video-Games con un prodotto di qualità, come il Monitor Vettoriale, ma esprime soprattutto tutta la sua esperienza e capacità tecnica, in grado di risolvere qualsiasi problematica del settore che i propri clienti possono incontrare nei nuovi progetti.

This special monitor MTRV XY so called (named) for its particular quality of Vector representation, is proof of HANTAREXs' continuing technological advancement in monitors mechanically and electronically structured for Video-Games, especially designed for high reliability.

It is one of the new HRS (High Reliability Series) products which guarantee a high degree of quality and therefore long life, due to professional planning and production. This monitor connected to Video-Game logic boards, demanding a high resolution, will be able to accurately and faithfully reproduce the patterns on the very high resolution picture tube.

With this new series of monitors HANTAREX will be able to solve virtually all the problems their clients will meet.

MT RV
monitor X-Y



CARATTERISTICHE TECNICHE GENERALI

GENERAL TECHNICAL CHARACTERISTICS

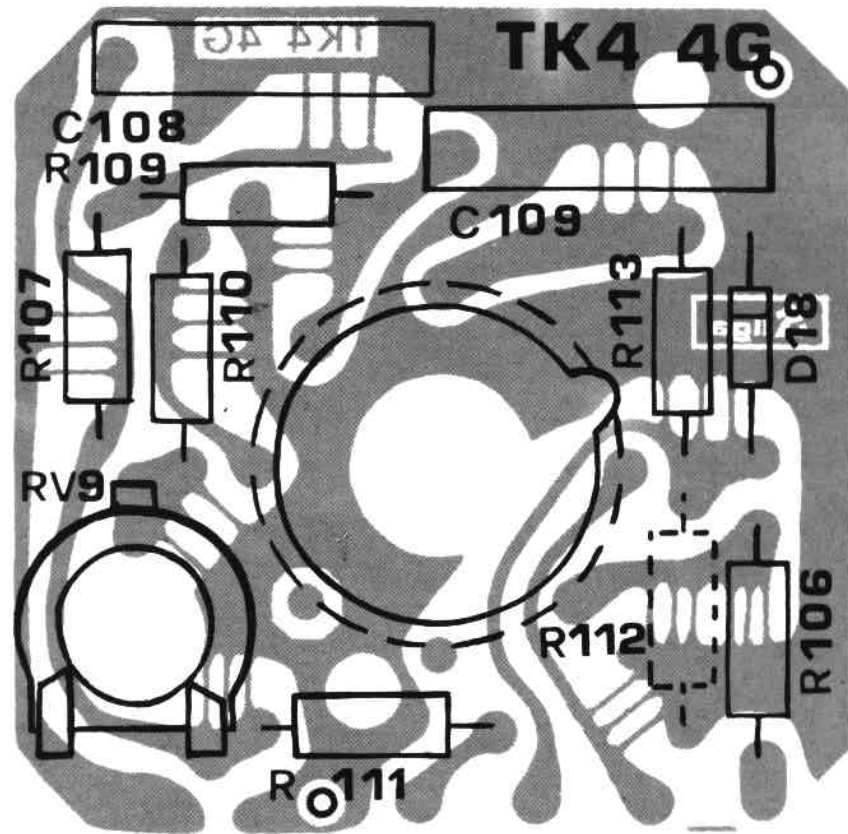
CARATTERISTICHE TECNICHE GENERALI:

Cinescopio	15" - 20" - 24" - 110° - cinescopi di tipo speciale per X-Y
Alimentazione	220V AC \pm 10%-15% 50-60 Hz - alimentazione a trasformatore isolato da rete - assorbimento totale 100 Watt
Ingresso segnali	a) standard analogici b) opzionali digitali 10 BIT
Geometria	n. 2 controlli di linearità per il canale X n. 2 controlli di linearità per il canale Y n. 2 controlli ampiezza
Alta tensione	14.000 V a 0 m A beam
Raggi X	speciale circuito a norme internazionale per la limitazione della emissione dei raggi X
Controlli	luminosità, contrasto, fuoco
Dimensioni	altezza 405 mm., larghezza 505 mm., profondità 380 mm., Kg. 18
Temperatura	di lavoro 0°C + 55°C; ambiente di immagazzinamento da -40°C a + 65°C

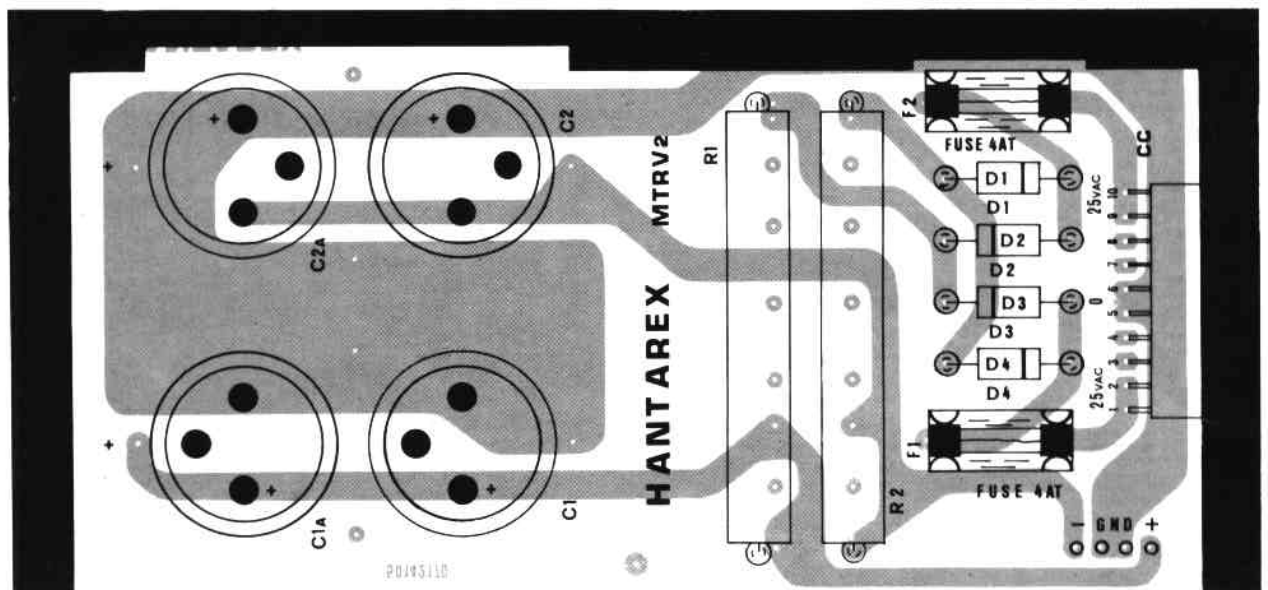
GENERAL TECHNICAL CHARACTERISTICS:

C.R.T. types:	15" - 20" - 24" - 110° - Special X-Y C.R.T.s.
Power supply:	220 V AC + 10%-15% 50/60 Hz - Transformer power supply isolated from the mains. Total input: 100 Watts.
Input signals:	a) Analogue (standard) b) 10 BIT digital (optional)
Linearity:	2 linearity controls for channel X. 2 linearity controls for channel Y. 2 amplitude controls.
EHT:	14,000 V at 0 m A beam.
X-rays:	A special circuit, according to international rules, to limit the emission of X-rays.
Controls:	brightness, contrast, focus.
Dimensions:	height 405 mm, width 505 mm, depth 380 mm, weight 18 kgs.
Temperature:	working 0°C + 55°C; storage from -40°C to 265°C.

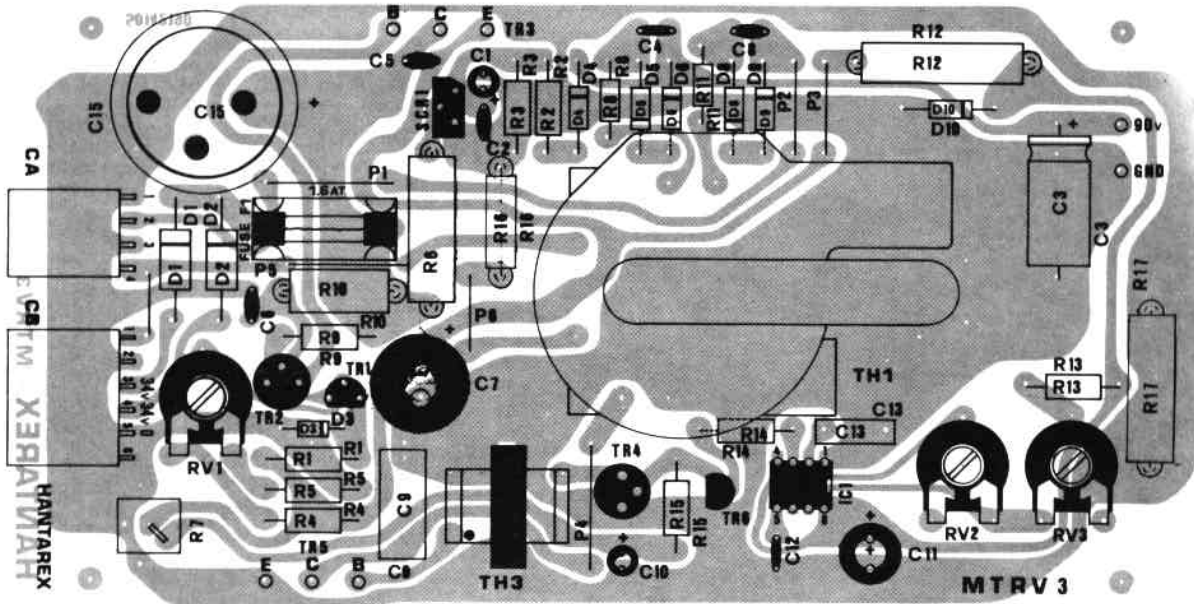
HANTAREX ITALY MONITOR MT RV



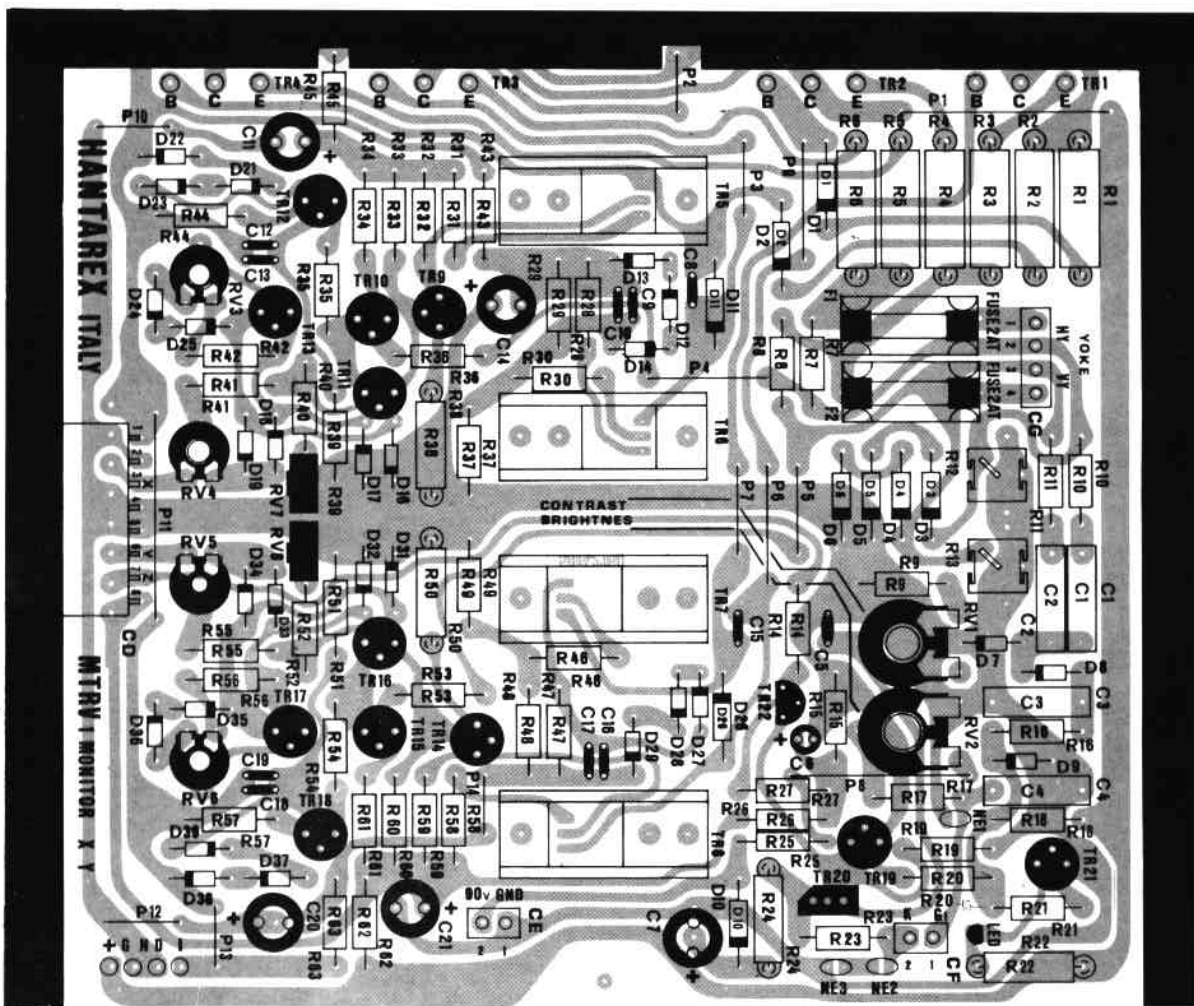
CIRCUITO STAMPATO ZOCCOLO CINESCOPIO
neck board **TK4**



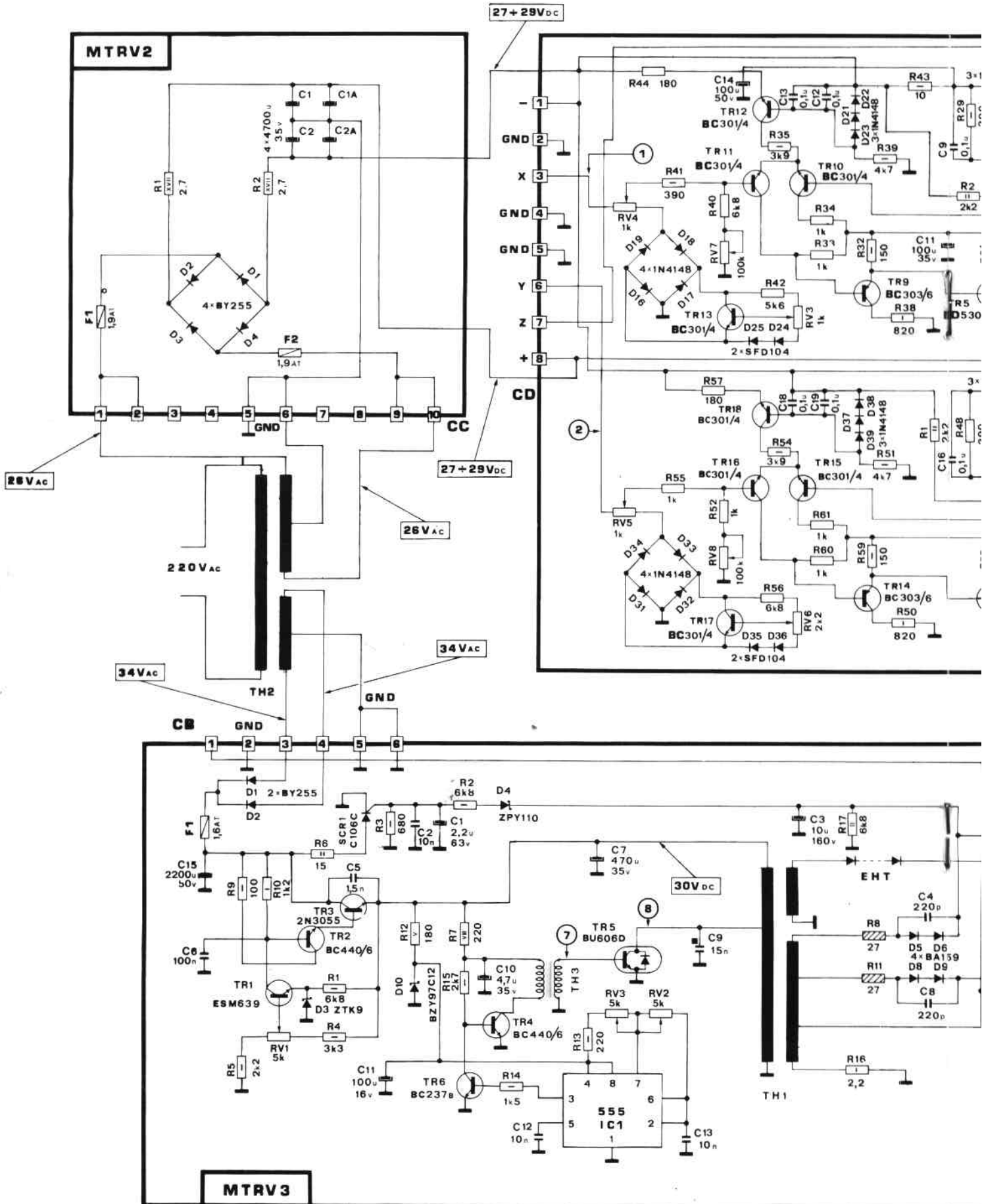
CIRCUITO STAMPATO ALIMENTATORE
power supply board **MTRV2**



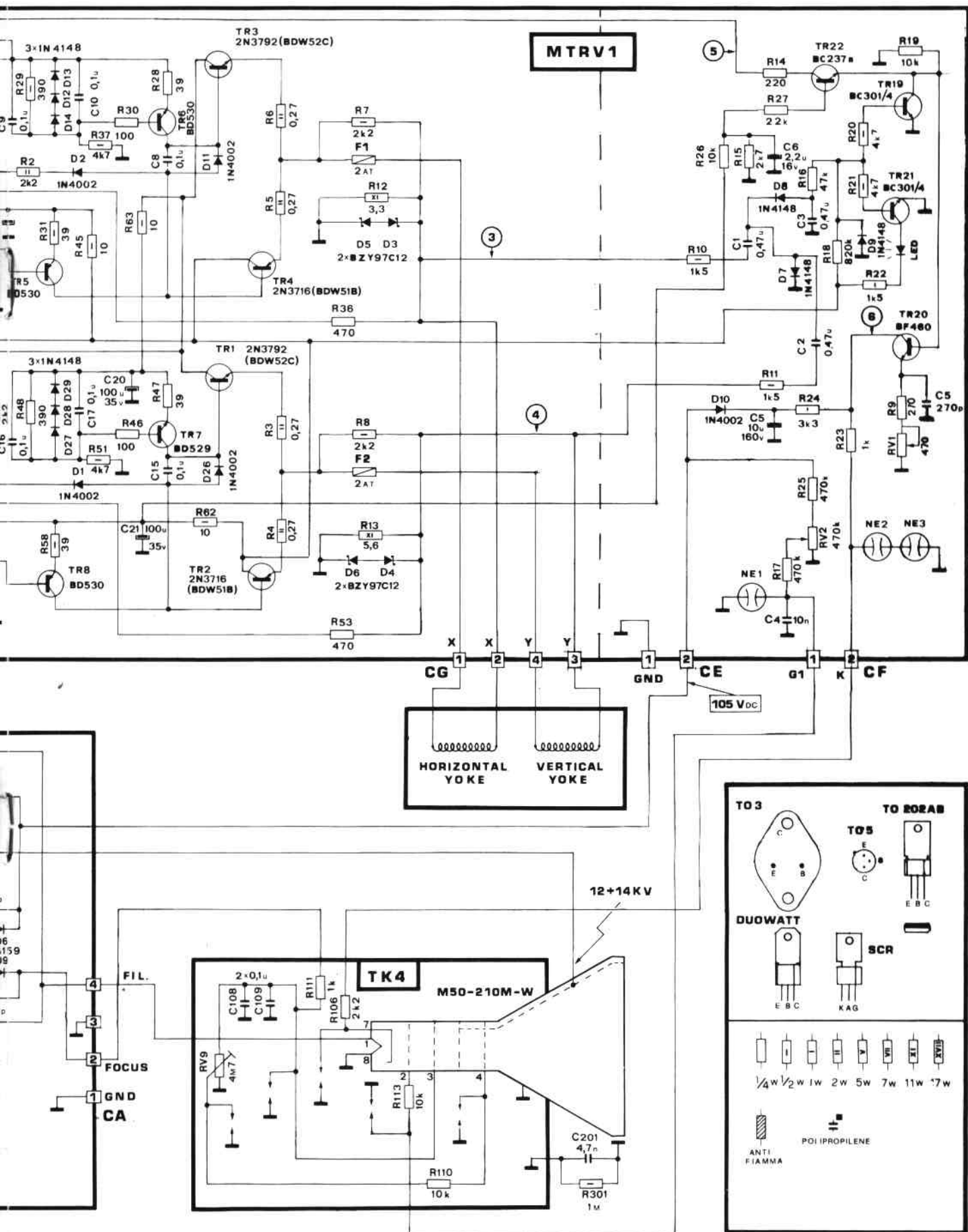
CIRCUITO STAMPATO EAT
EHT board **MTRV3**



CIRCUITO STAMPATO DEFLESSIONE
deflection amplifier board **MTRV1**

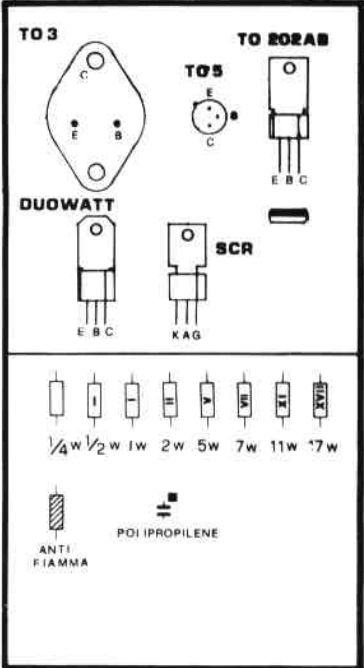


MONITOR MT RV



MTRV1

HORIZONTAL YOKE **VERTICAL YOKE**



OSCILLOGRAMMI

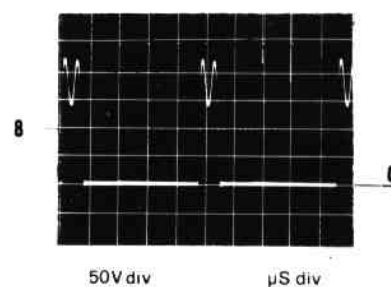
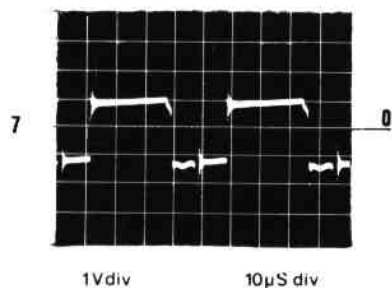
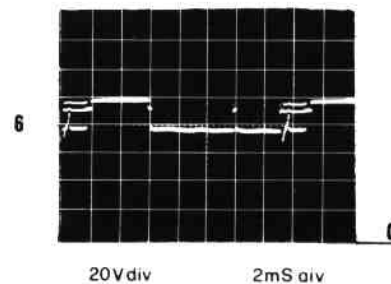
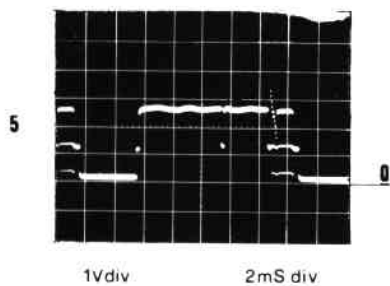
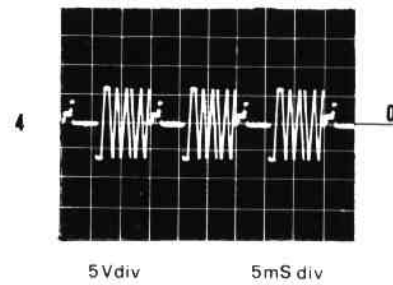
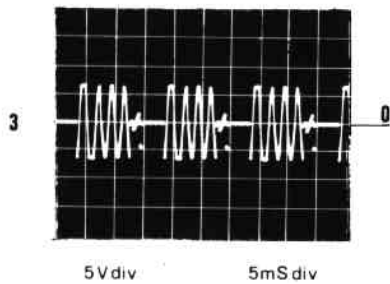
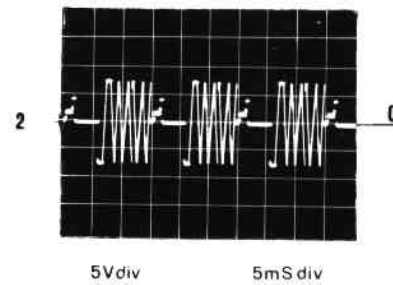
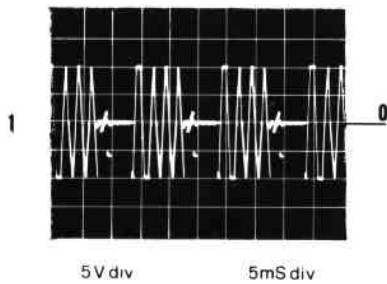
OSCILLOGRAMMI RILEVATI CON GENERATORE DI SEGNALI DI TIPO ANALOGICO.

CANALE X = 20V_{pp} CANALE Y = 15V_{pp} SEGNALE Z = 0,6 ÷ 5V

WAVEFORMS

WAVEFORMS TAKEN WITH ANALOGIC SIGNALS GENERATOR.

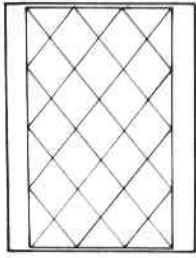
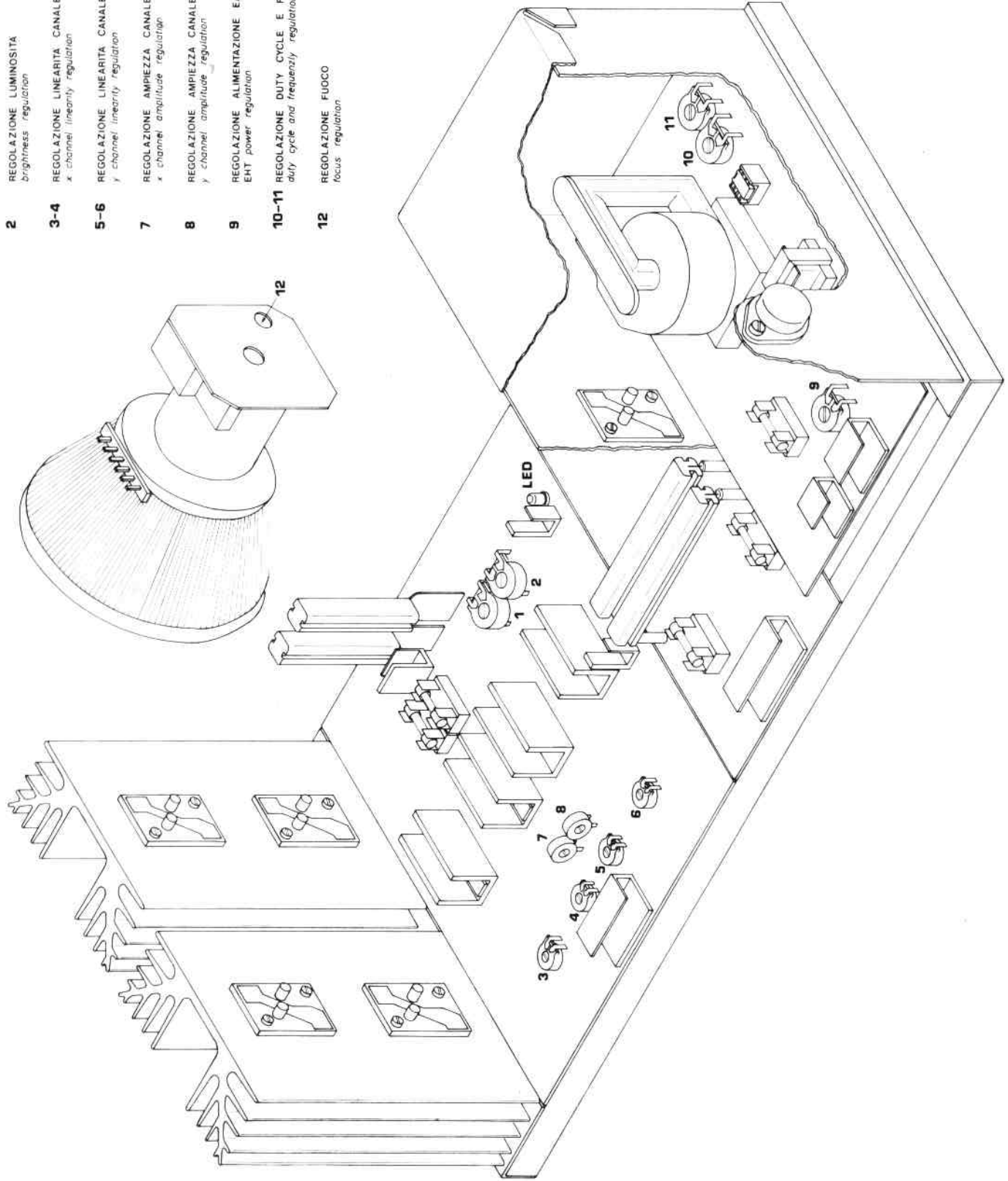
CHANNEL X = 20V_{pp} CHANNEL Y = 15V_{pp} SIGNAL Z = 0,6 ÷ 5V



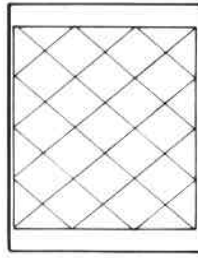
POTENZIOMETRI DI REGOLAZIONE

ADJUSTING TRIMMERS

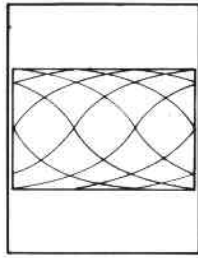
- 1 REGOLAZIONE CONTRASTO
contrast regulation
- 2 REGOLAZIONE LUMINOSITÀ
brightness regulation
- 3-4 REGOLAZIONE LINEARITÀ CANALE X
x channel linearity regulation
- 5-6 REGOLAZIONE LINEARITÀ CANALE Y
y channel linearity regulation
- 7 REGOLAZIONE AMPIEZZA CANALE X
x channel amplitude regulation
- 8 REGOLAZIONE AMPIEZZA CANALE Y
y channel amplitude regulation
- 9 REGOLAZIONE ALIMENTAZIONE EAT
EAT power regulation
- 10-11 REGOLAZIONE DUTY CYCLE E FREQUENZA
duty cycle and frequency regulation
- 12 REGOLAZIONE FUOCO
focus regulation



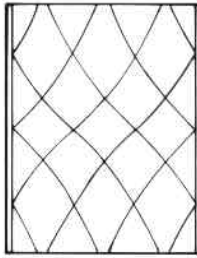
8



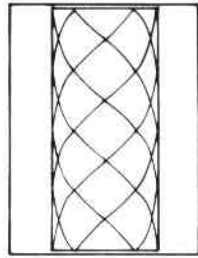
7



3-4



5-6



ZOCCOLO CINESCOPIO

Codice 62000420

CODICE	DESCRIZIONE	POSIZIONE SCHEMA	QU.
50140040	circ. Stamp TK4		1
34020050	zoccolo cinese 107 c.s.		1
21341000	res 1/2 1k	R 111	1
21342200	res 1/2 2K2	R 106	1
21351000	res 1/2 10K	R 113-110	2
33621500	ponticelli L = 16 m/m	R 107-109	2
23074700	trimmer PT 15 V 4 M 7		1
25661000	C.POL. 1.60 100N 10% 630V p 22,5	C 108-109	2
61000010	assieme cabl. L. Vie		1
61000040	assieme cabl. 2 Vie		1
50100180	cavetto UNIP. nero 1,5 terminale A E	cm.	50
			1

CENTINA Codice 62000430

CODICE	DESCRIZIONE	POSIZIONE SCHEMA	QU.
50110450	centina		1
50420010	pomelli blocc. Centina vite TE con finta rond.		12

GABBIA EAT Codice 62000380

CODICE	DESCRIZIONE	POSIZIONE SCHEMA	QU.
50110420	gabbia EAT		1
50110430	coperchio gabbia		1
20410400	trans. 2 N 3055		1
20430000	trans. BU 606 D		1
34020060	zoccolo T03		2
50420120	mica per TO 3 vite AUTOF rondella dentellata vite AUT. TE con finta rond.		4

DISSIPATORE Codice 62000410

CODICE	DESCRIZIONE	POSIZIONE SCHEMA	QU.
50110400	dissipatore 41/125		2
20410410	trans 2 N 3716		2
20410420	trans 2 N 3792		2
34020060	zoccolo per TO 3		4
50420120	miche per TO 3 viti rondelle dentellate viti TE con finta rondella fili		8

AMPLIFICATORE XY

Codice 62000400

CODICE	DESCRIZIONE	POSIZIONE SCHEMA	QU.
20100000	diode 1 N 4148	D 7-8-9-12-13-14 20-21-22-16-17 18-19-31-32-33 34-27-28-29-37 38-39	23
20000000	diode SFD 104	D 24-25-35-36	4
20150002	diode 1N 4002	D 1-2-11-10-26	5
20110100	diode BZY 97 C 12	D 3-4-5-6	4
20401010	trans BC 301-4	TR 10-11-12-13 15-16-17-18-19-21	10
20401000	trans BC 303-6	TR 9-14	2
20400420	trans BC 237 B	TR22	1
20420100	trans BF 460	TR 20	1
20410060	trans BD 529	TR 6-7	2
20410070	trans BD 530	TR5-8	2
21231000	res 1/4 W 5% 100 E	R 30-46	2
21231800	res 1/4 W 5% 180 E	R 44-57	2
21232200	res 1/4 W 5% 220 E	R 14	1
21232700	res 1/4 W 5% 270 E	R 9	1
21234700	res 1/4 W 5% 470 E	R 36-53	2
21242700	res 1/4 W 5% 2 K 7	R 15	1
21245600	res 1/4 W 5% 5 K 6	R 42	1
21246800	res 1/4 W 5% 6 K 8	R 56	1
21251000	res 1/4 W 5% 10 K	R 19-26	2
21252200	res 1/4 W 5% 22 K	R 27	1
21254700	res 1/4 W 5% 47 K	R 16	1
21264700	res 1/4 W 5% 470 K	R 17-25	2
21268200	res 1/4 W 5% 820 K	R 18	1
21321000	res 1/2 W 5% 10 E	R 45-43-62-63	4
21323900	res 1/2 W 5% 39 E	R 47-31-58	3
21331500	res 1/2 W 5% 150 E	R 32-59	2
21333900	res 1/2 W 5% 390 E	R 41-29-48	3
21341000	res 1/2 W 5% 1 K	R 23-60-61-33 34-55	6
21341500	res 1/2 W 5% 1 K S	R 10-11	2
21343900	res 1/2 W 5% 3 K 9	R 35-54	2
21344700	res 1/2 W 5% 4 K 7	R 51-20-21-37 49-39	6
21438201	res 1 W 5% 820 E a strato	R 38-50	2
21342200	res 1/2 W 5% 2 K 2	R 7-8	2
21441500	res 1 W 5% 1 K 5	R 22	1
21443300	res 1 W 5% 3 K 3	R 24	1
21502700	res 2 W 5% filo 0,27 E	R 3-4-5-6	4
21542200	res 2 W 5% 2 K 2 a filo	R 1-2	2
22515600	res 11 W vert. 5% 5,6 E	R 12-13	1
23034700	trimmer PT 15 V 470 E	RV 1	1
23064700	trimmer PT 15 V 470 K	RV 2	1
23041002	trimmer cermet 1 K	RV 3-4-5	3
23042204	trimmer cermet 2 K 2	RV 6	1
24531000	C. EL. EN 12,35 100 mF 35 V	C 11-14-20-21	4
24312200	C. EL. EN 12,35 2,2 mF 16 V	C 6	1
24821000	C. EL. EN 12,35 10 mF 160 V	C 7	1
25264700	C. POL. 1,60 470 N 10% 100 V p=15	C 1-2-3	3
25751000	C. POL. 1,73 10 NF 10% 1000 V p=15	C 4	1
26322700	C. CER 270 pF SOV	C 5	1
26610601	C. CER 100 NF · 20 + 80 50 V	C 8-15-9-10-16 17-12-13-18-19 CX	1
29100000	fusibile 2 A RIT		2
29100050	portafusibile 28011		2
29300000	perline steatite 4 m/m		20
34023308	conn. amp mod. I M 90° 8 vie 2806/8/2		1
34023352	conn. amp mod I M 2 vie 280609/1		2
34023354	conn. amp mod I M 4 vie 280610/1		1
50420020	distanziale per TOS		10
50110440	dissipatore AD H		4
50110050	supporto resist. potenza		2
50142160	circ. stampato MTRV 1		1
29600000	lampade neon GHO 762-00	NE 1-2-3	3
20180003	diode LED 5 m/m rosso		1
33621000	ponticello 10 m/m	P 2-13-14	6
33621250	ponticello 12,5 m/m	P 3-10-12	3
33621500	ponticello 15 m/m	P 5-7	2
33622000	ponticello 20 m/m	P 4-6-9	3
33623000	ponticello 30 m/m	P 8	1
33623500	ponticello 35 m/m	P 1-11	1
21613300	res 15 W (0 11 W) rest. 5% 3,3 ohm.	R 12	1
21241000	res 1/4 W 5% 1 K	R 40-52	2
21322700	res 1/2 W 5% 27 ohm.	R 28	1
23052202	trimm. PTIOH 22 K	RV 7-8	2

STAMPATI MTC 900

ALIMENTATORE E RIGA

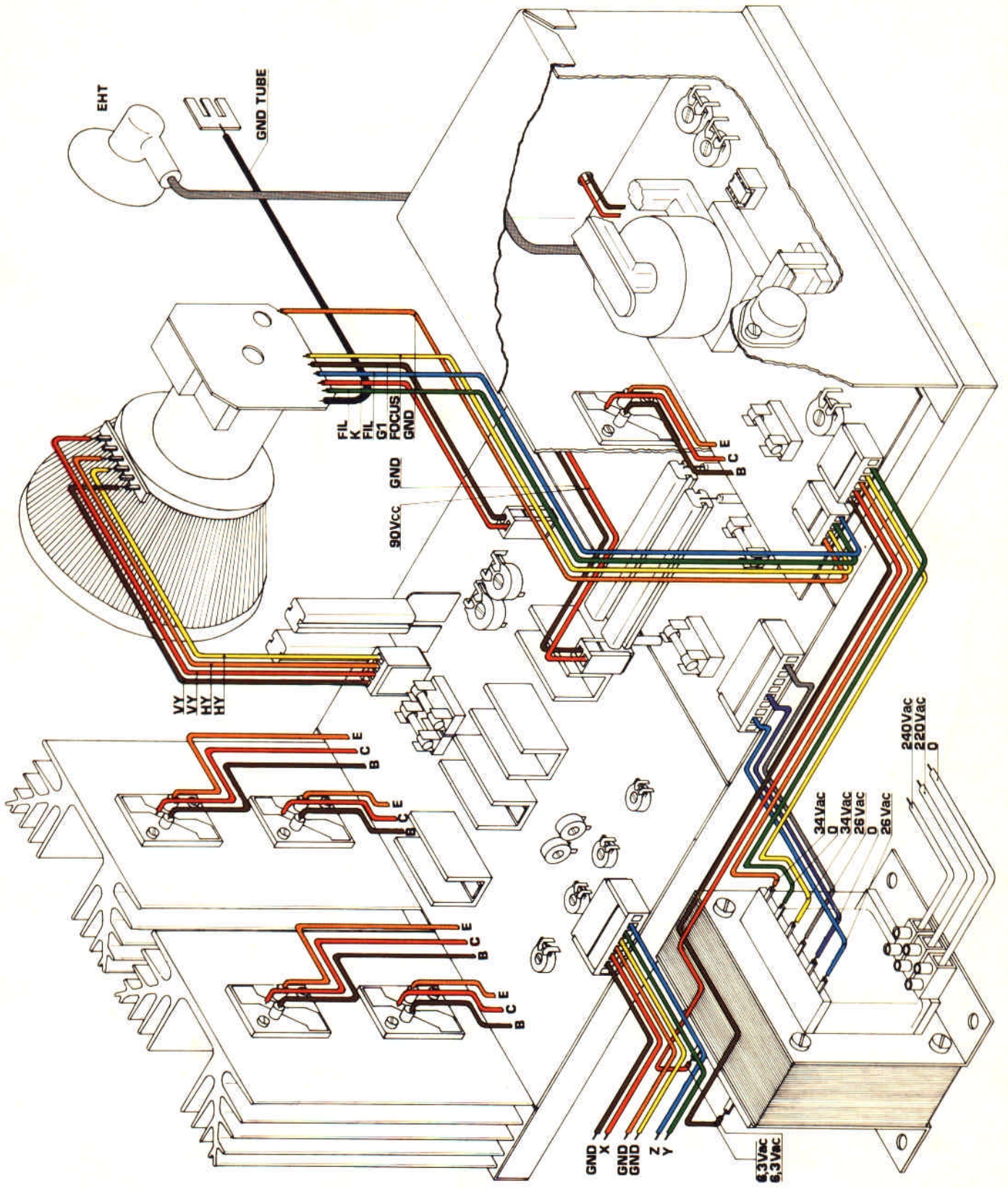
Codice 62000470

CODICE	DESCRIZIONE	POSIZIONE SCHEMA	QU.
20100010	diodo BA 159	D 5-6-8-9	4
20150130	diodo BY 255	D 1-2	2
20110100	diodo zener BZY 97 C 12	D 10	1
20110500	diodo zener ZPY 110	D 4	1
20410000	trans ESM 639	TR 1	1
20401500	trans BC 440-6	TR 2-4	2
20670010	circ. int. ZTK9	D 3	1
20630040	circ. int. 555 TC	IC 1	1
21323301	res 1/2 W 5% 33 ohm ANTIF	R 8-11	2
21331000	res 1/2 W 5% 100 ohm	R 9	1
21336800	res 1/2 W 5% 680 ohm	R 3	1
21342200	res 1/2 W 5% 2,2 K	R 5	1
21343300	res 1/2 W 5% 3,3 K	R 4	1
21346800	res 1/2 W 5% 6,8 K	R 1-2	2
21441201	res 1 W 5% 1,2 K strato met.	R 10	1
21521502	res 2 W 5% filo ass. 180 °	R 12	1
22131800	res 5 W 5% filo ass. 180 °	R 7	1
23044703	trimmer PT 15 V 4,7 K	RV 1-3-2	3
20440000	tiristore C 106 C (CIO 7)	SCR 1	1
25651000	C. OIK, 1M60 10 NF 10% 630 V p = 10	C 13	1
24612200	C. EL. EN 12,35 2,2 mF 63 V	C 1	1
24534700	C. EL. EN 12,35 470 mF 35 V	C 7	1
24514700	C. EL. EN 12,35 4,7 mF 35 V	C 10	1
24331000	C. EL. EN 12,35 100 mF 16 V	C 11	1
24821001	C. EL. EN 12,12 10 mF 160 V	C 3	1
24642201	C. EL. 2200 mF 63 V	C 15	1
25751501	C. POL. 1,73 15 N 10% 1000 V p = 15	C 9	1
26510600	C. CER 10 NE -20 +80 25 V	C 3-12	1
26610601	C. CER 100 N -20 +80 50 N p = 10	C 6	1
26322720	C. CER 220 pF 2000 V	C 4-8	2
26415610	C. CER 1500 pF 1000 V	C 5	1
28010010	trasf. driver 24	TH3	1
28010100	trasf. EAT	TH 1	1
29100016	fusibile 1,6 A RIT		1
29100050	portafusibile 28011		1
29300000	perline stealite 4 m/m		6
29300010	perline stealite 8 m/m		6
34023304	connettore mod I masc. 90° 4 vie 280616/1	CA	1
34023306	connettore mod I M. 90° 6 vie 280617/1	CB	1
34023402	connettore mod I femmina 2 vie 280590		1
34020110	zoccolo C. I. 8 PIN		1
50420020	distanziale TOS		2
50420160	fascetta stringitubo L = 178		1
50110050	supporto resistenza potenza		1
21341500	res 1/2 W 5% 1,5 K	R 14	1
13362200	ponticello L = 20 m/m	P 3 + 4	2
33622250	ponticello L = 22,5 m/m	P 2	1
33622500	ponticello L = 25	P 1	1
21342700	res 1/2 W 5% 2,7 K	R 15	1
21332200	res 1/2 W 5% 220 "	R 3	1
20400420	trans BC 237 B	TRG	1
21412200	res 1 W 5% 2,2 °	R 16	1
26510601	C.C. 10 N -20 +80 50 V	C 2	1
21746800	res 4 W 6,8 K	R 17	1
33621250	ponticello L = 12,5	P 6	1
33621500	ponticello L = 15	P vicino R 1	1
33621900	ponticello L = 19	P S	1

ALIMENTATORE Codice 62000390

CODICE	DESCRIZIONE	POSIZIONE SCHEMA	QU.
20150130	diodo by 255	D 1-2-3-4	4
22712700	res. 17 W vert. 2,78	R 1-2	2
29100050	portafusibile 28011		2
29300010	perlina stealite h = 8 m/m		8
34023310	connettore mod I M 90° 10 vie		1
50142170	circ. stampato MTRV 2		1
50110050	supporto res. potenza		2
33621500	ponticello l = 15 m/m		4
24544701	C. EL. 4700 mF 35V 3 pin		4
29100008	fusibile 1,9 A RIT (speciale)		2

MT RV CONNECTION DIAGRAM





HANTAREX

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HANTAREX SUD

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HANTAREX HELLAS

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Sourmena - Glifada - ATENE - GRECIA
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SELCON

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Tel. 01-9910950 - Telex 219875



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D4000 DÜSSELDORF 30 W. GERMANY
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HANTAREX JAPAN

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