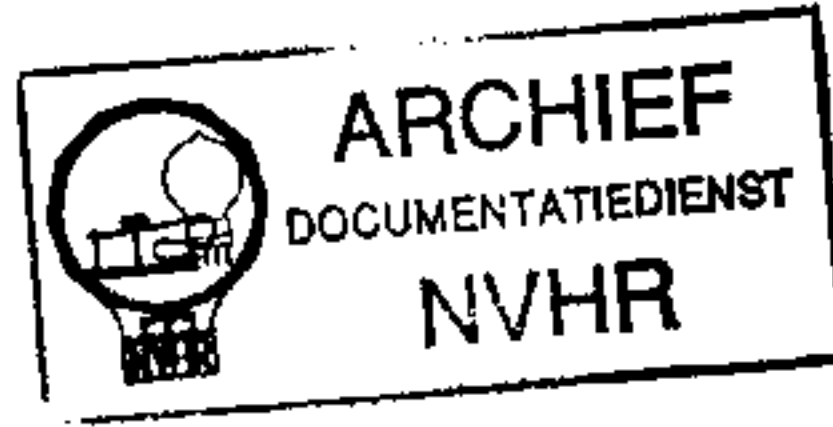


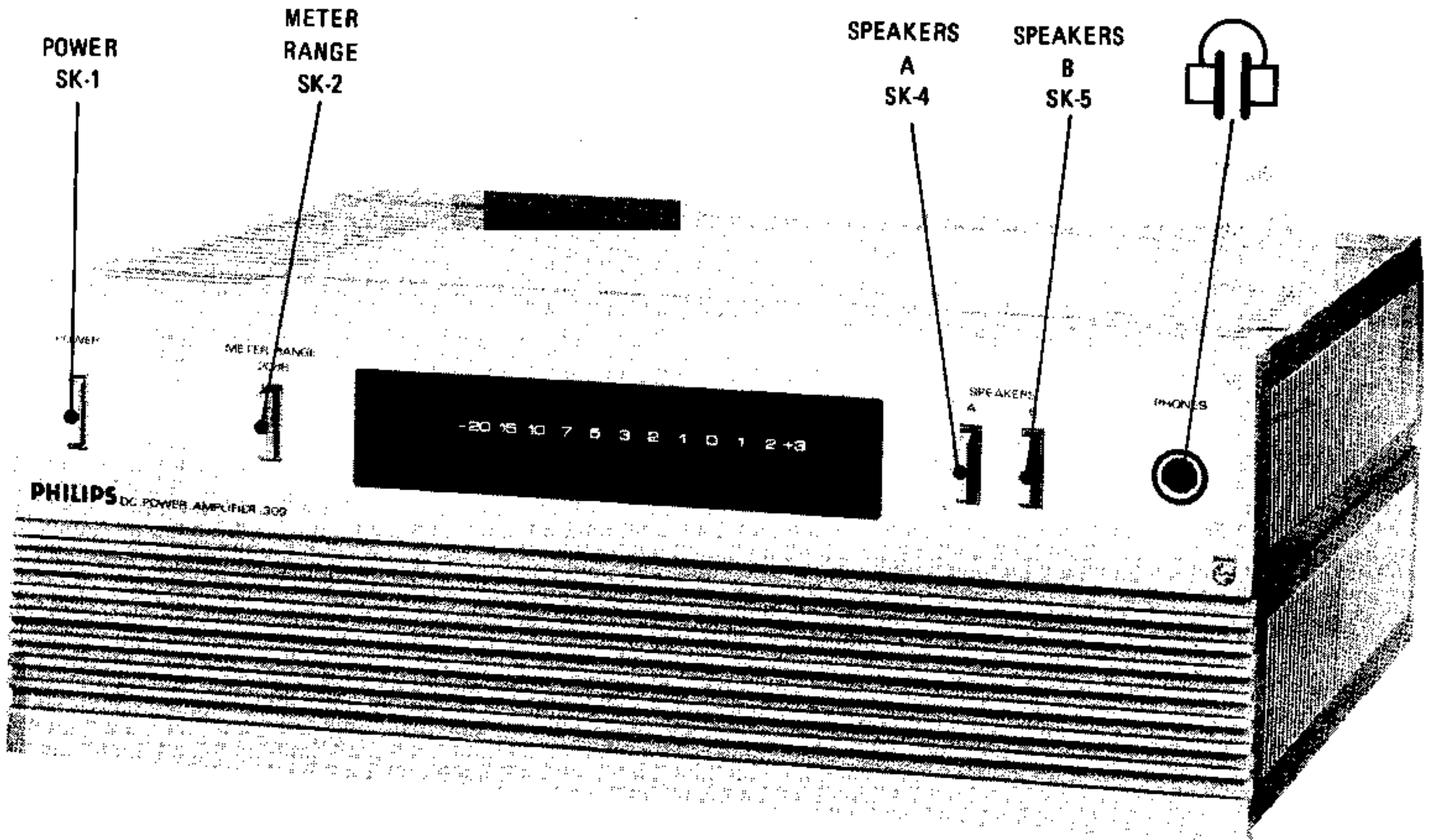
Service
Service
Service

Ned. Ver. v. Historie v/d Radio



Met dank aan www.radiomuseum-hengelo.nl

Service Manual



19687A12

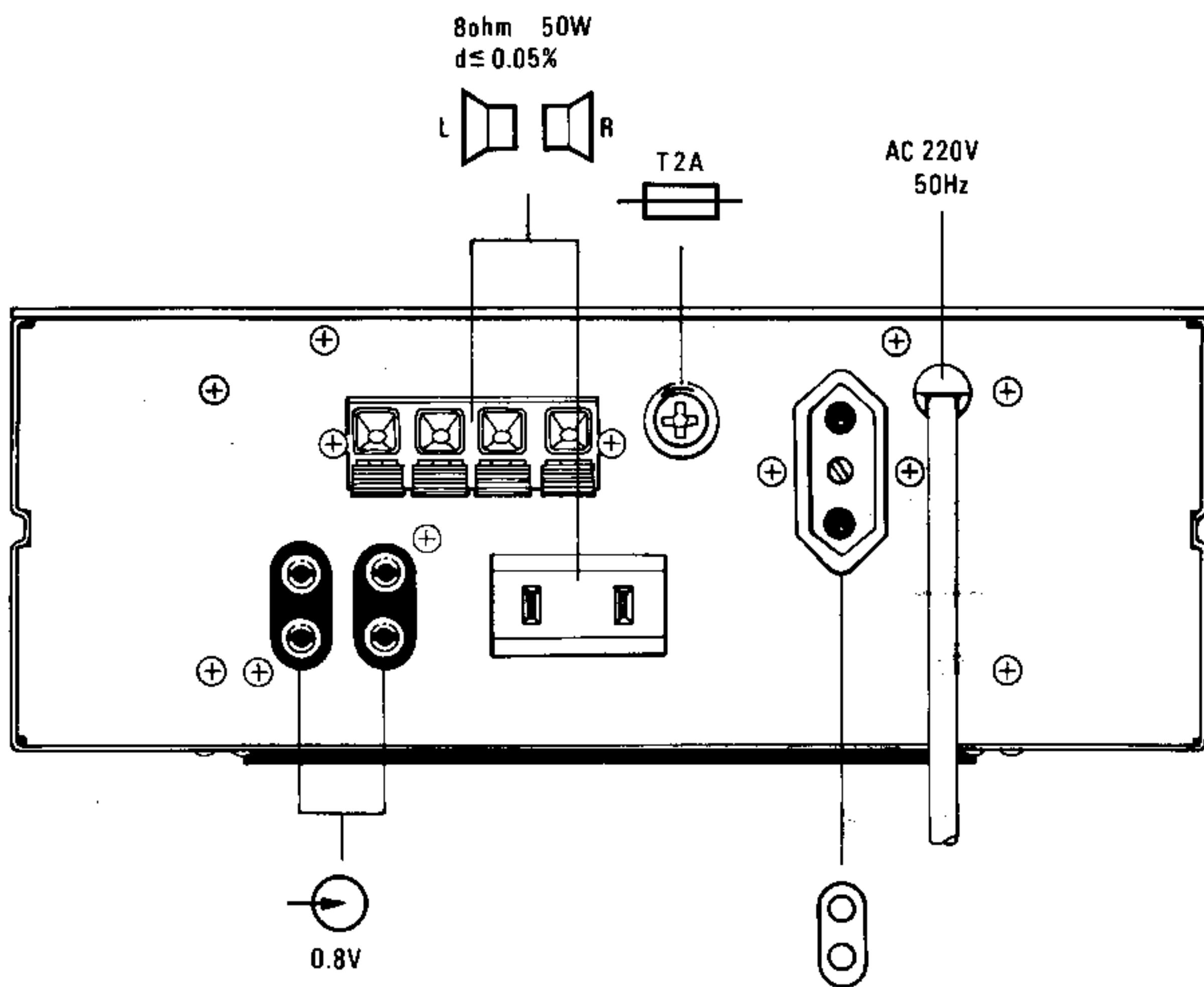
Documentation Technique Service Dokumentation Documentazione di Servizio Huolto-Ohje Manual de Servicio Manual de Servicio



Subject to modification
4822 725 13517
Printed in The Netherlands

PHILIPS

CS 69 289



MAX 2.5A
SWITCHED

19684 B12

(GB)

Mains voltage : 220 V
 Dimensions : 260x100x183 mm
 Output : 2x70 W (4 Ω)
 D ≤ 0.7 % (IEC)
 Output impedance : 4-16 Ω

For more detailed technical specifications please consult commercial documentation

(NL)

Voedingsspanning : 220 V
 Afmetingen : 260x100x183 mm
 Output : 2x70 W (4 Ω)
 D ≤ 0.7 % (IEC)
 Output impedantie : 4-16 Ω

Voor meer uitgebreide specificaties gelieve de commerciële documentatie te raadplegen.

(F)

Tension : 220 V
 Dimensions : 260x100x183 mm
 Sortie : 2x70 W (4 Ω)
 D ≤ 0.7 % (IEC)
 Imp. de sortie : 4-16 Ω

Pour l'obtention de données techniques plus détaillées veuillez consulter la documentation.

(D)

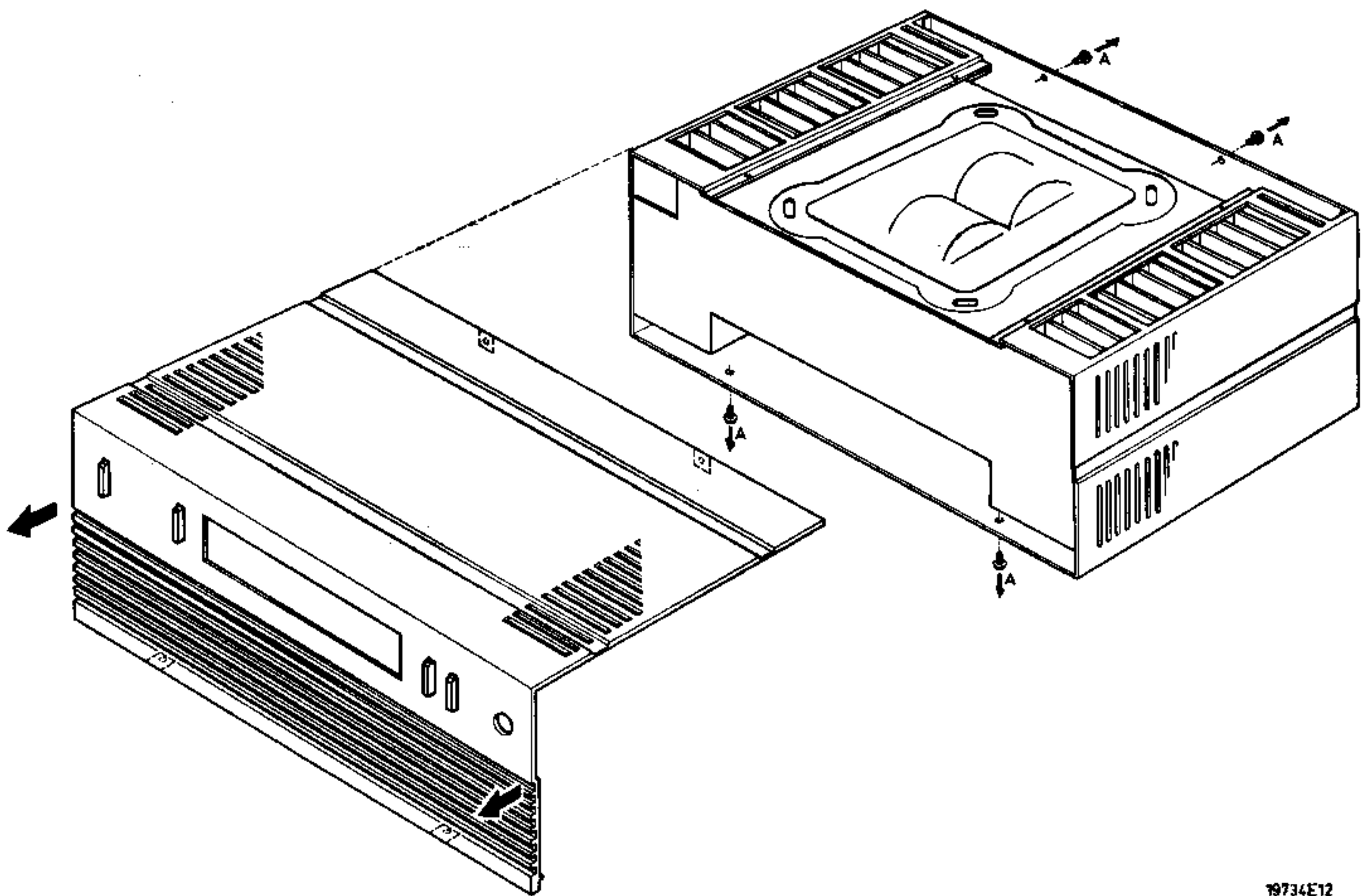
Spannung : 220 V
 Abmessungen : 260x100x183 mm
 Ausgangsleistung : 2x70 W (4 Ω)
 D ≤ 0.7 % (IEC)
 Ausgangs impedanz : 4-16 Ω

Für eine mehr detaillierte technische Spezifikation verweisen wir auf die kommerzielle Dokumentation

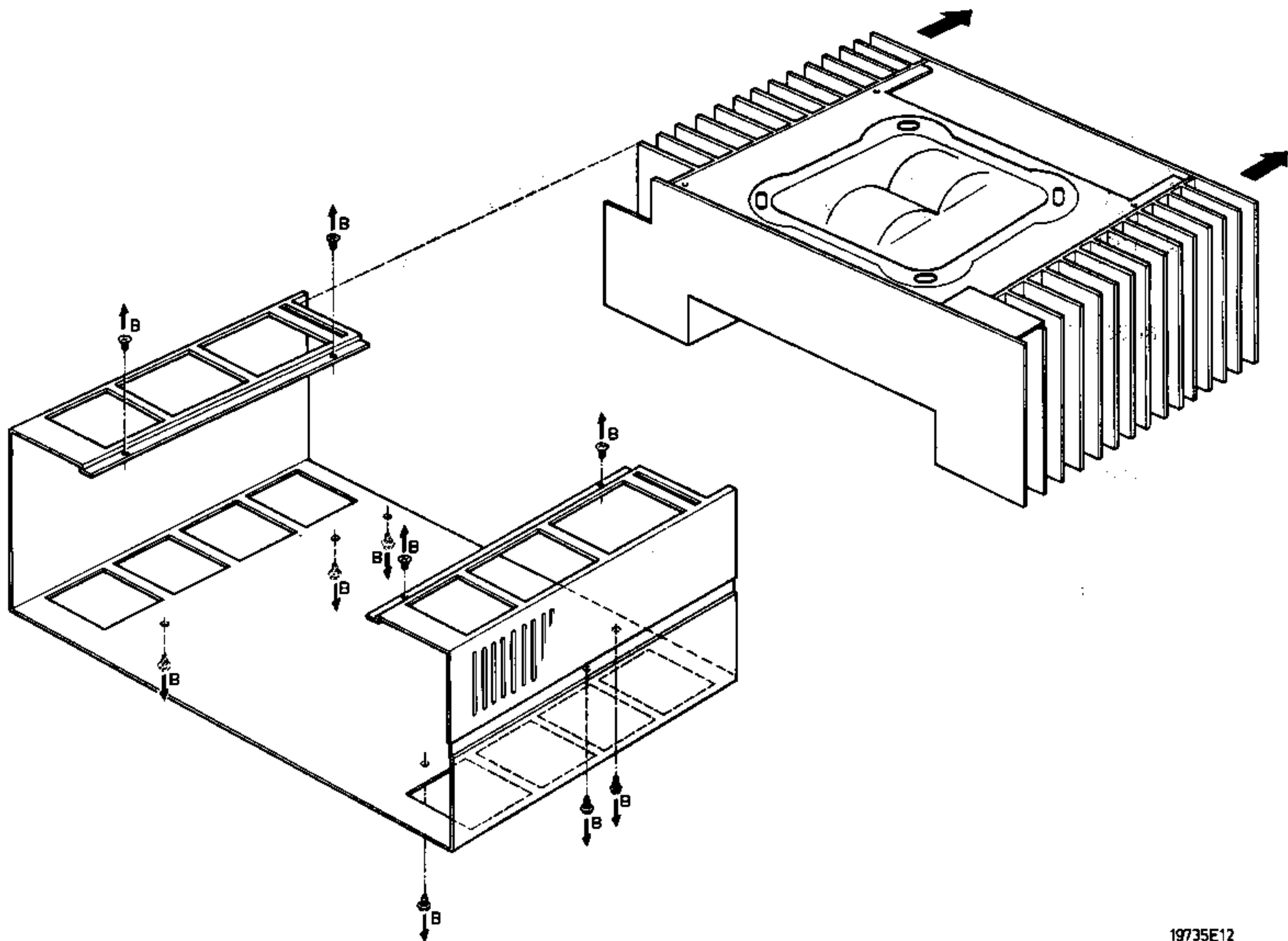
(S)

Nätspänningar : 220 V
 Dimensioner : 260x100x183 mm
 Uteffekt : 2x70 W (4 Ω)
 D ≤ 0.7 % (IEC)
 Utgångsimpedans : 4-16 Ω

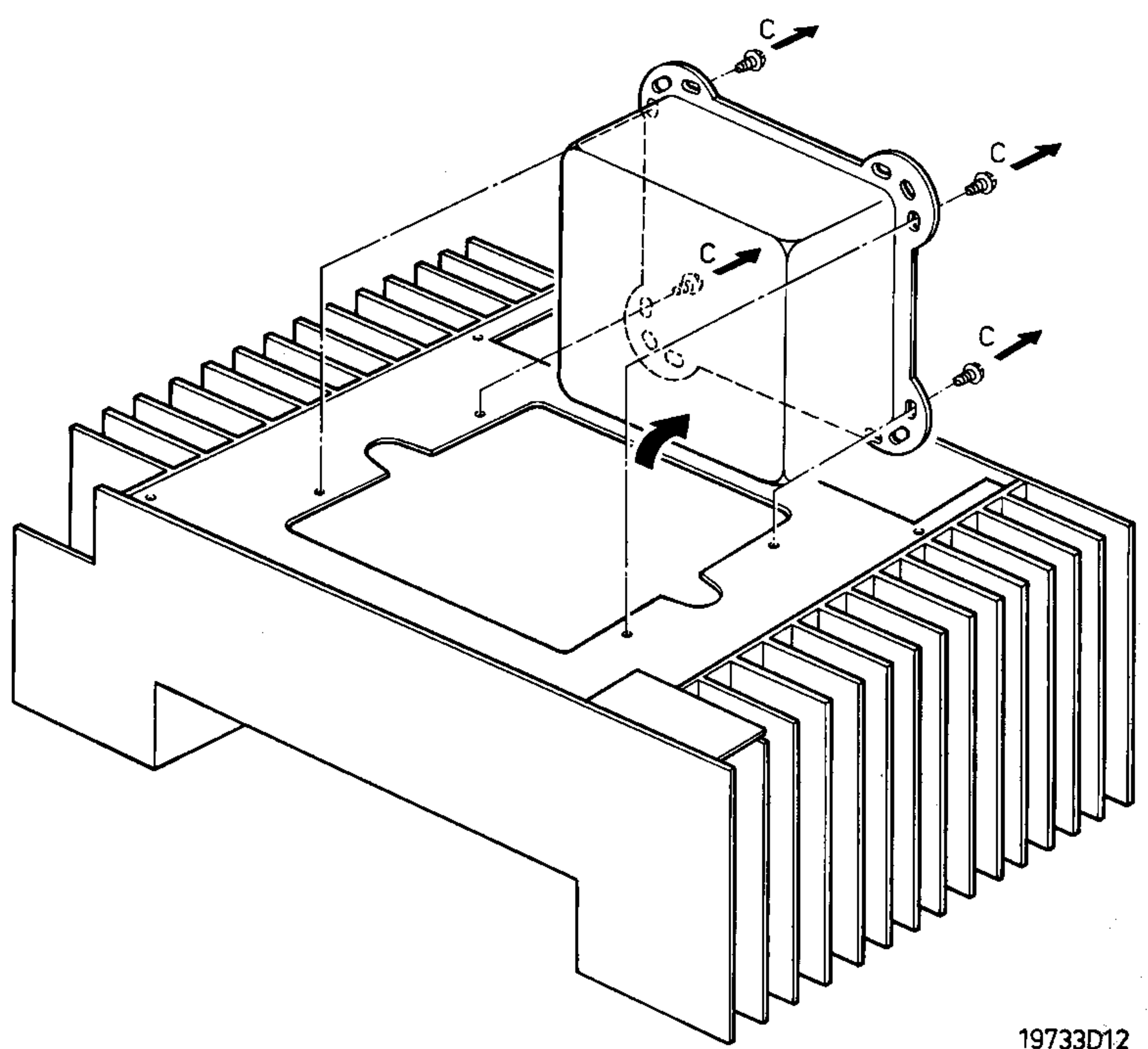
För mera detaljerade data se kommersiell dokumentation.



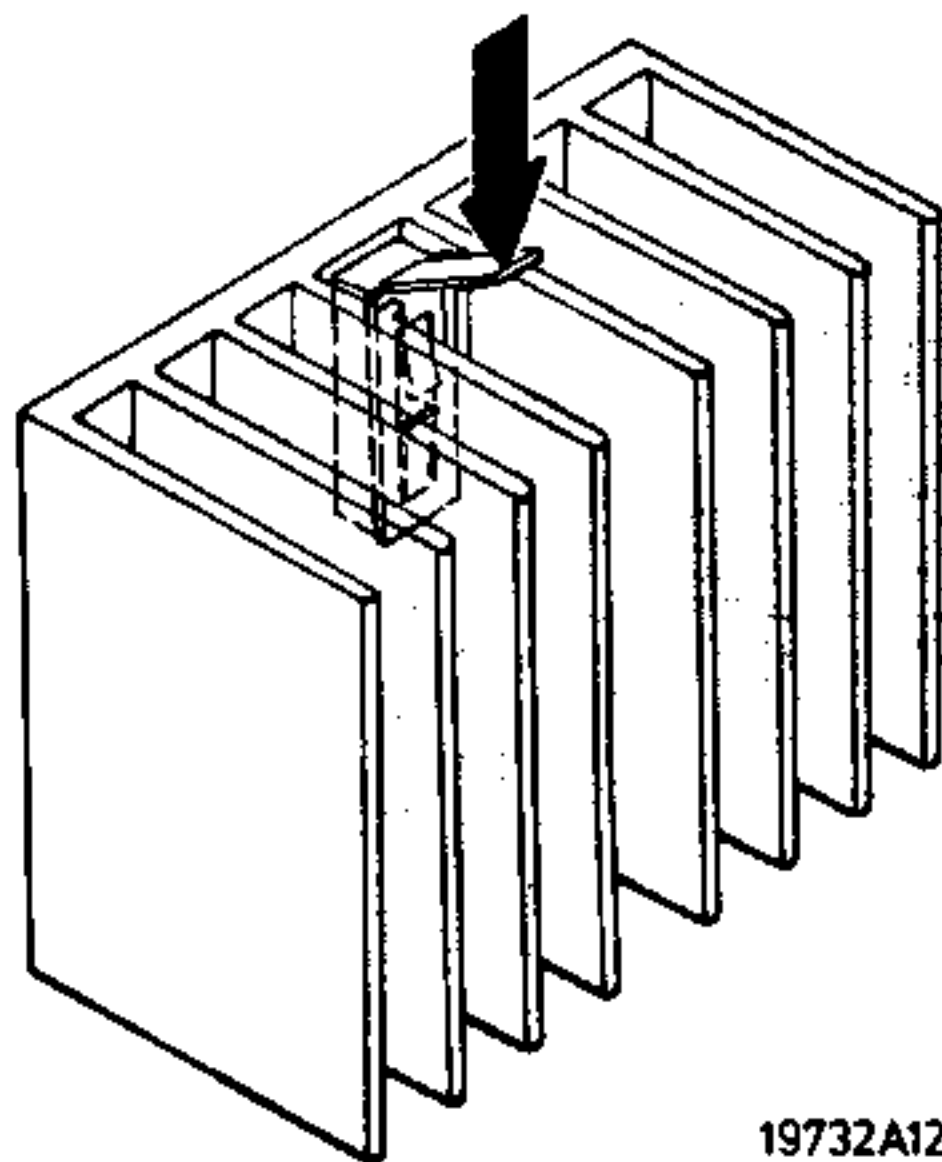
19734E12



19735E12

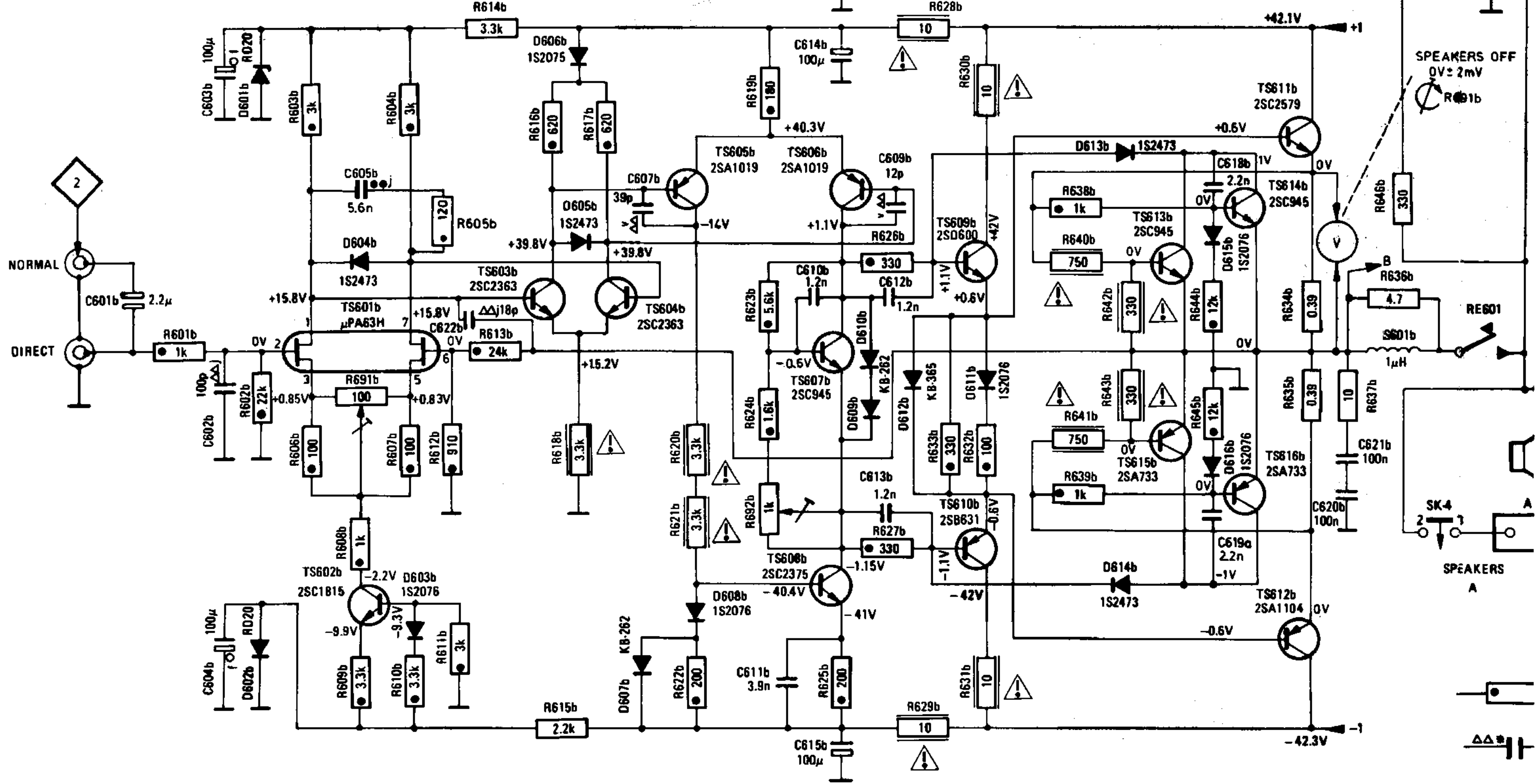
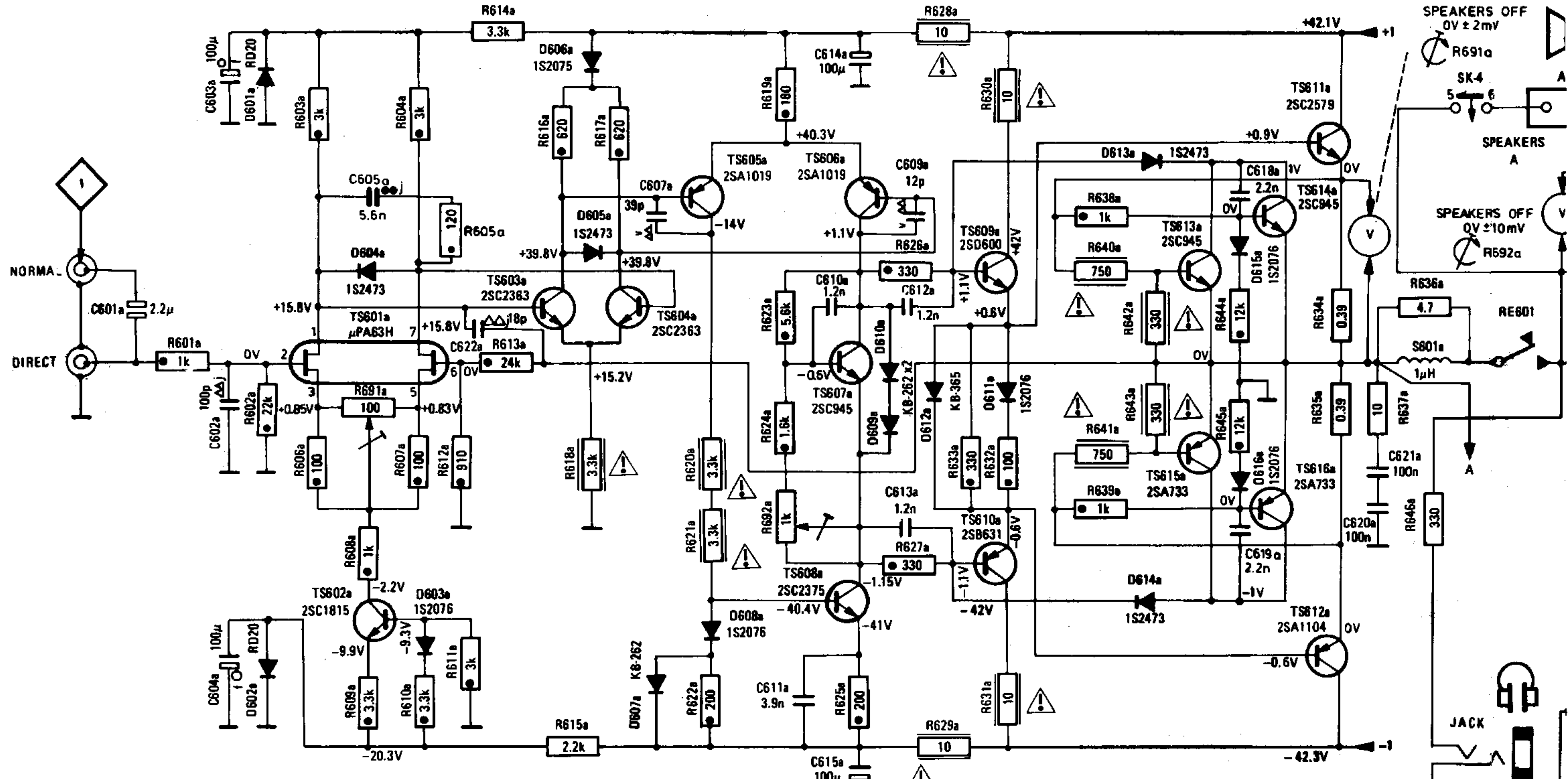


19733D12

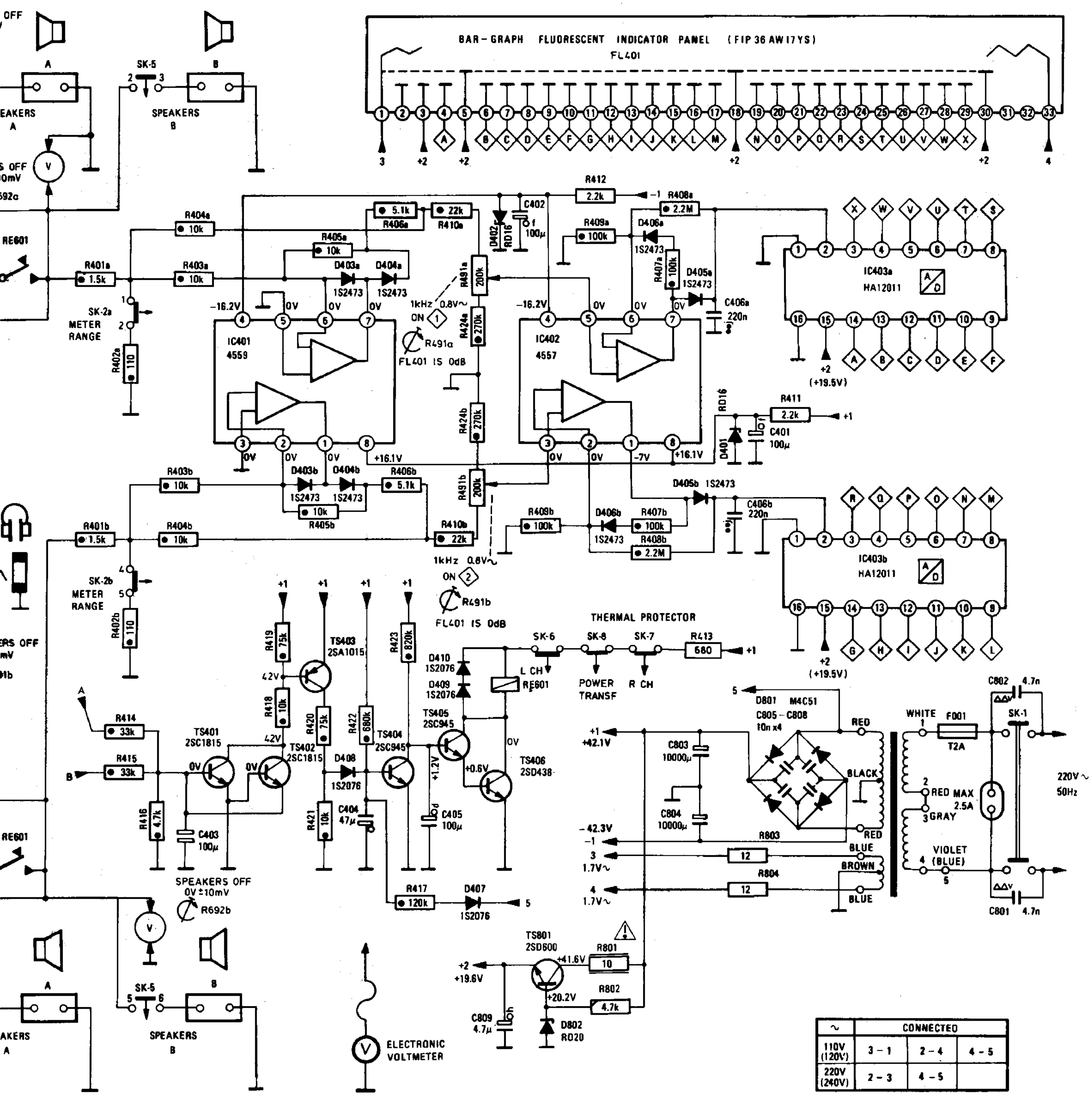


19732A12

M	D601a - D604a	TS601a - TS604a	D605a - D608a	TS605a - TS610a	D609a - D612a	TS611a - TS616a	D613a - D616a	S601a	
M	D601b - D604b	TS601a - TS604b	D605b - D608b	TS605b - TS610b	D609b - D612b	TS611b - TS616b	D613b - D616b	S601b	SK-4a RE601
M									SK-4b
C	601a - 604a		605a 607a		608a - 615a		618a 619a 621a 620a		
C	601b - 604b		622a 605b 607b		609b - 615b		618b 619b 621b 620b		
C			622b						
R	601a - 607a	691a	612a - 614a	615a - 618a	692a	626a - 633a			648a
R	601b - 607b	691b	612b - 614b	615b - 618b	619a - 625a	626b - 633b		638a - 645a	634a - 637a 646b
R		608a - 611a			619b - 625b			638b - 645b	634b - 637b
R		608b - 611b			692b				



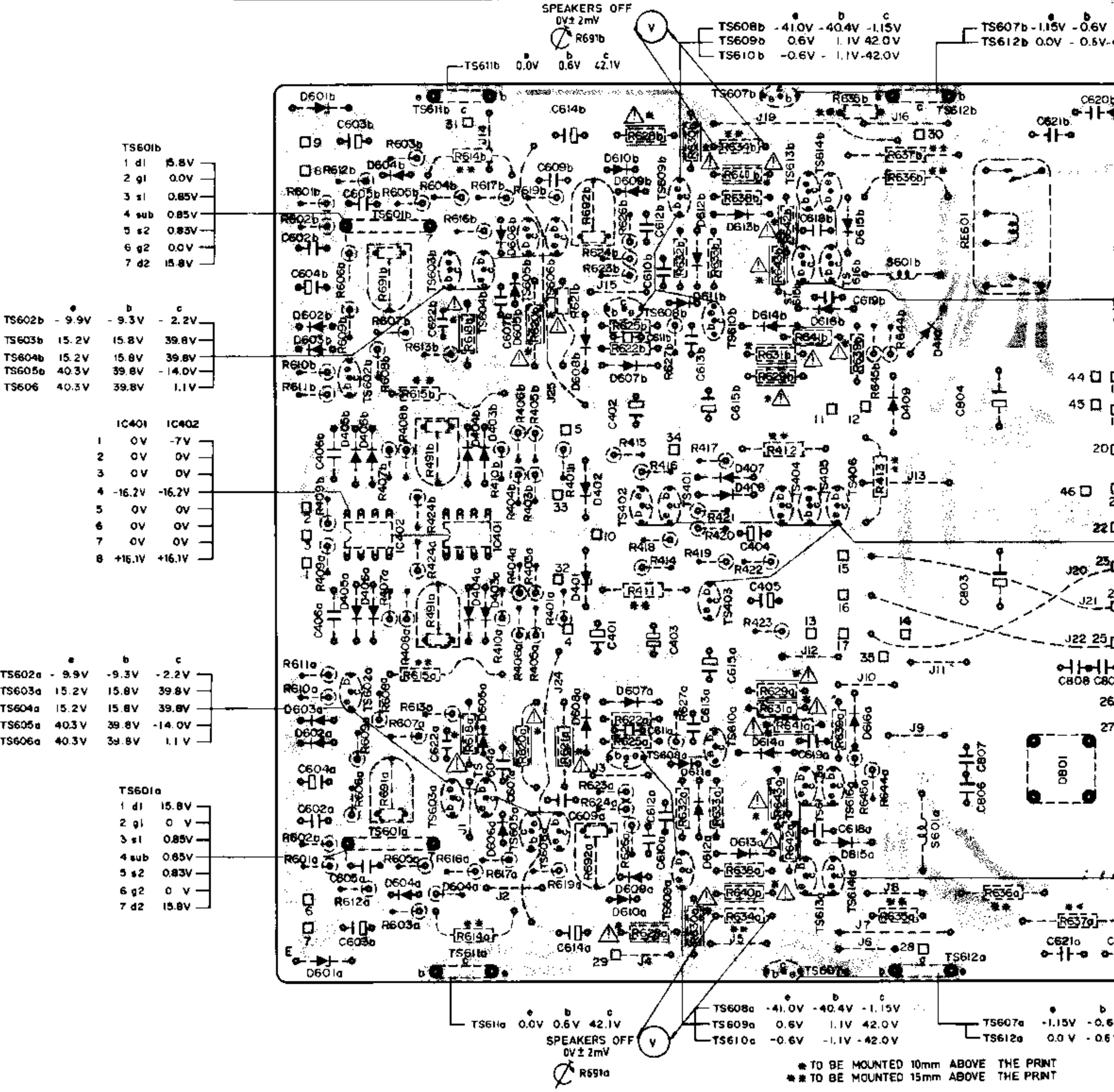
RE601	SK-2a	SK-5a	IC401	D403a	D404a	D402	IC402	SK-6 - SK-8	D406a	D405a	IC403a	M
	SK-2b	SK-5b		D403b	D404b	RE601	FL401		D406b	D405b	IC403b	F001
			TS401 - TS406			D407 - D410	TS801	D802		D801		SK-1
						402			406a			C
								803	804	401	805 - 808	801
			403	404	405	809				406b		802
												R
			401a - 404a		405a	406a 410a	412	407a - 409a		411		R
			401b - 404b		405b	406b 410b 491a 424a		407b - 409b				R
			414 - 416	418 - 423		491b 424b	413			803	804	R
							417	801	802			R



~	CONNECTED		
110V (120V)	3 - 1	2 - 4	4 - 5
220V (240V)	2 - 3	4 - 5	

- CARBON RESISTOR E24 SERIES 0.25W 5%
 - MINIATURE ELECTROLYTIC CAPACITOR
 - FLAT-FOIL POLYESTER CAPACITOR
 - PLATE CERAMIC CAPACITOR
 - MINIATURE BIPOLAR ELECTROLYTIC CAPACITOR
- *d= 10V h= 63V
e= 16V r= 250V
f= 25V v= 500V

M	D601b-D604b	TS601b-TS604b	TS611b	TS605b	TS606b	D605b-D610b	TS608b-TS610b	D611b-D612b-D614b	TS607b	TS613b-TS616b	D615b-D616b	TS612b	S601b
M	D403a-D406a	IC402	IC401	D403b-D406b	D401	D402	TS401-TS403	D408-D407	TS404-TS406	D409	D410	RE601	D801
M	D601a-D606a	TS601a-TS604a	TS611a	TS605a	TS606a	D607a-D610a	TS608a-TS610a	D611a-D612a-D614a	TS607a	TS613a-TS616a	D615a-D616a	TS612a	S601a
C	602b-605b	622b	607b	609b	610b-615b			618b-619b			621b	620b	
C	406a-406b	401-403			404-405			803-808					
C	602a-605a	622a	607a	609a	610a-615a			619a-618a			621a		
R	602b-601b-606b-613b-691b-603b-605b-614b-620b-410b-692b-621b-628b	629b-634b			638b-643b-635b-637b-645b-644b								
R	407a-409a-407b-409b-424a-424b-491a-491b-403a-406a-403b-406b-401a-401b-411	414-423			412			413					
R	602a-601a-606a-613a-691a-603a-605a-614a-620a-410a-692a-621a-628a	629a-634a			638a-643a-645a-644a			635a-637a					



TS601b	1 d1	15.8V
	2 g1	0.0V
	3 s1	0.85V
	4 sub	0.85V
	5 s2	0.85V
	6 g2	0.0V
	7 d2	15.8V

TS602b	-9.9V	-9.3V	-2.2V
TS603b	15.2V	15.8V	39.8V
TS604b	15.2V	15.8V	39.8V
TS605b	40.3V	39.8V	-14.0V
TS606b	40.3V	39.8V	1.1V

IC401	IC402
1	0V -7V
2	0V 0V
3	0V 0V
4	-16.2V -16.2V
5	0V 0V
6	0V 0V
7	0V 0V
8	+16.1V +16.1V

TS602a	-9.9V	-9.3V	-2.2V
TS603a	15.2V	15.8V	39.8V
TS604a	15.2V	15.8V	39.8V
TS605a	40.3V	39.8V	-14.0V
TS606a	40.3V	39.8V	1.1V

TS601a	1 d1	15.8V
	2 g1	0 V
	3 s1	0.85V
	4 sub	0.85V
	5 s2	0.83V
	6 g2	0 V
	7 d2	15.8V

SPEAKERS OFF
0V ± 2mV

TS608b -41.0V -40.4V -1.15V
TS609b 0.6V 1.1V 42.0V
TS610b -0.6V -1.1V -42.0V

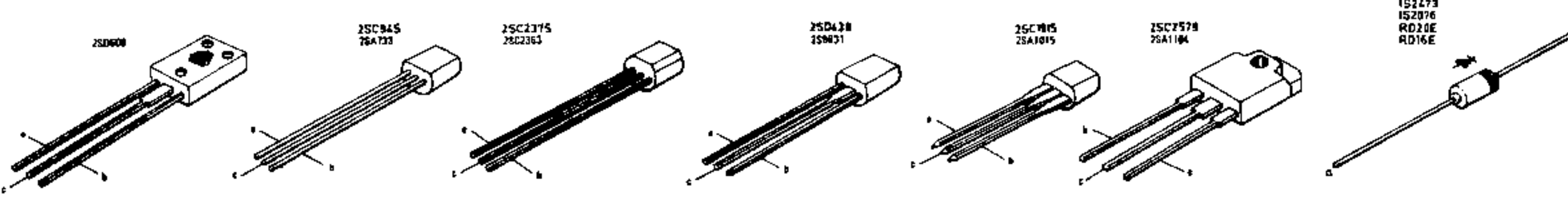
TS607b -1.15V -0.6V
TS612b 0.0V -0.6V

SPEAKERS OFF
0V ± 2mV

TS608a -41.0V -40.4V -1.15V
TS609a 0.6V 1.1V 42.0V
TS610a -0.6V -1.1V -42.0V

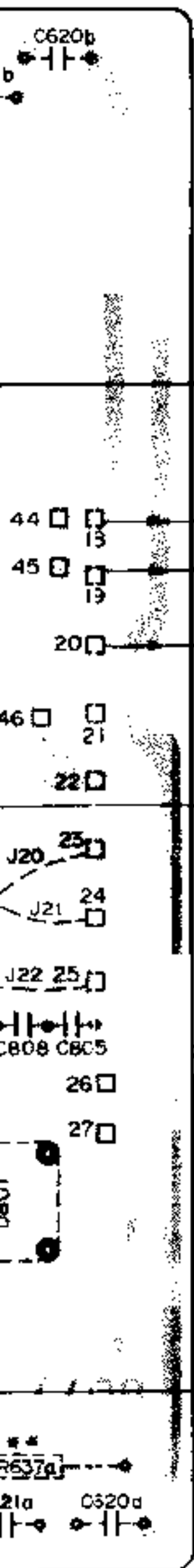
TS607a -1.15V -0.6V
TS612a 0.0V -0.6V

* TO BE MOUNTED 10mm ABOVE THE PRINT
** TO BE MOUNTED 15mm ABOVE THE PRINT



	M
D801	M
	M
b 620b	C
-808	C
620a 620c	C
	R
	R
	R

b c
V -0.6V 1.1V
- 0.6V-42.3V



	a	b	c
TS613b	0.0V	0.0V	1.0V
TS614b	0.0V	0.0V	1.0V
TS615b	0.0V	0.0V	-1.0V
TS616b	0.0V	0.0V	-1.0V

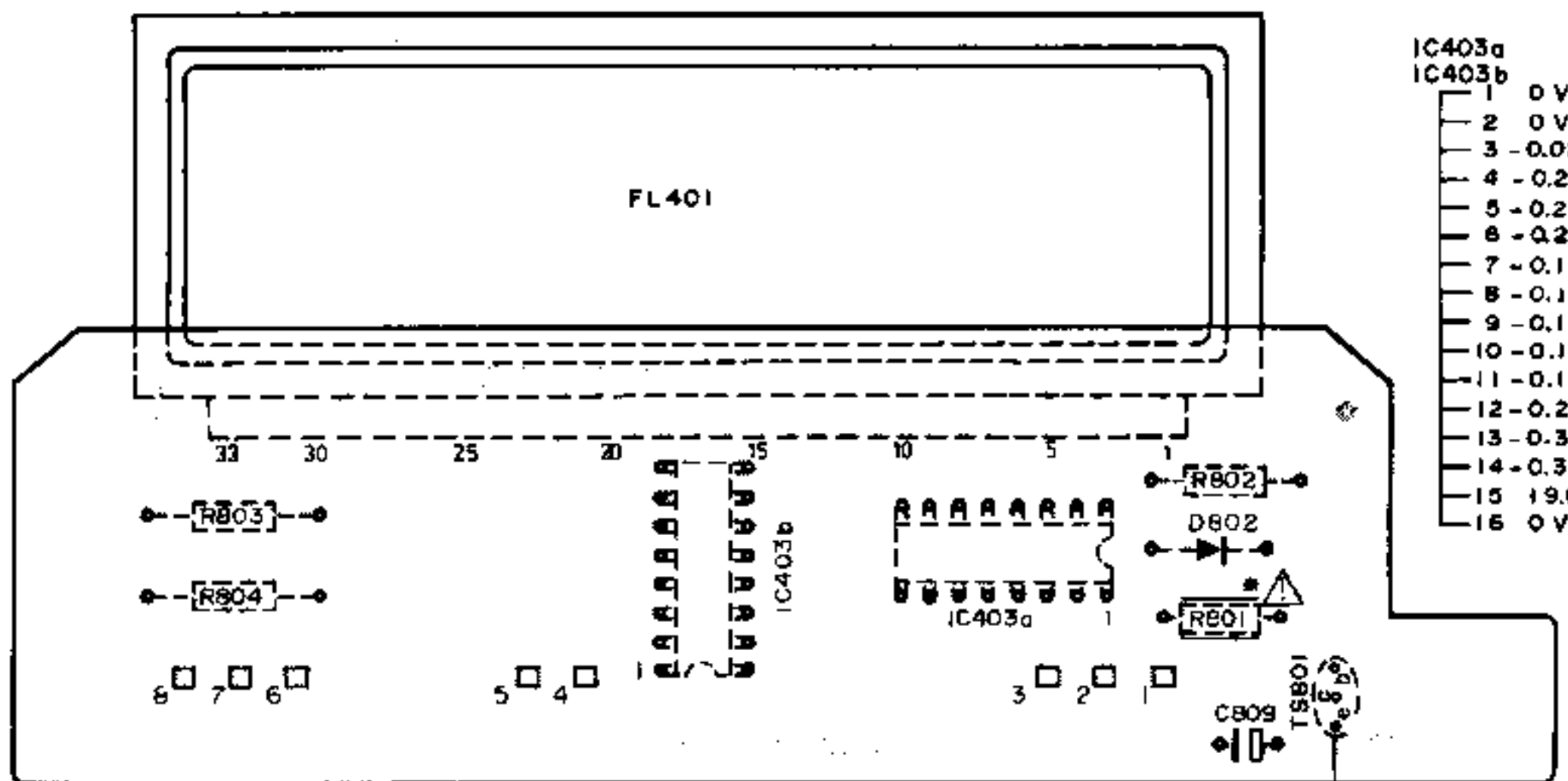
	a	b	c
TS401	0.0V	0.0V	42.0V
TS402	0.0V	0.0V	42.0V
TS403	42.1V	42.0V	-0.6V
TS404	0.0V	0.8V	1.2V
TS405	0.6V	1.2V	0V
TS406	0.0V	0.6V	0V

	a	b	c
TS613a	0.0V	0.0V	1.0V
TS614a	0.0V	0.0V	1.0V
TS615a	0.0V	0.0V	-1.0V
TS616a	0.0V	0.0V	-1.0V

b c
5V -0.6V 1.1V
1V -0.6V -42.3V

19681D12

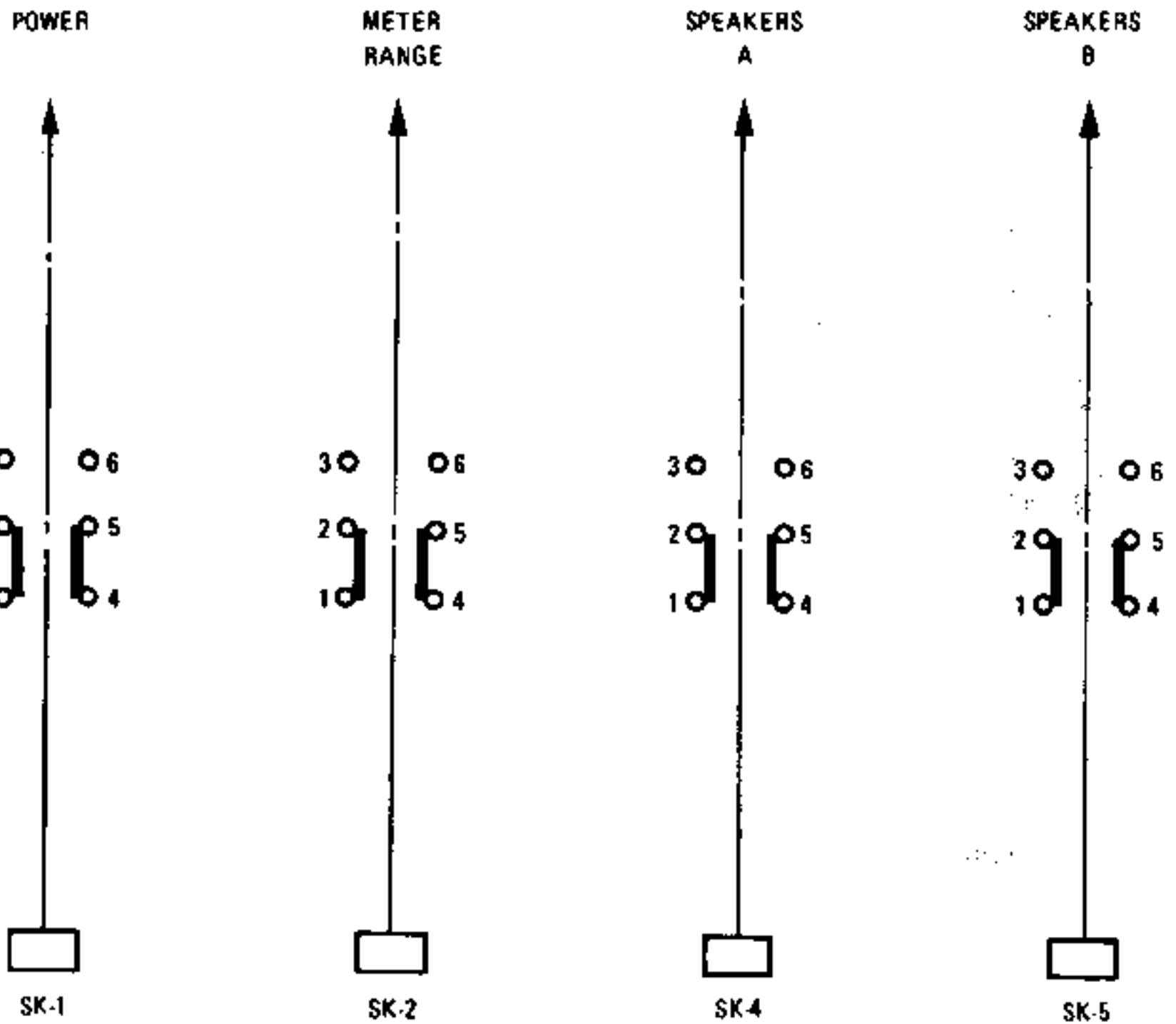
M	FL401	IC403b	IC403a	D802	TS801	M
C				609		C
R	803	804		801	802	R



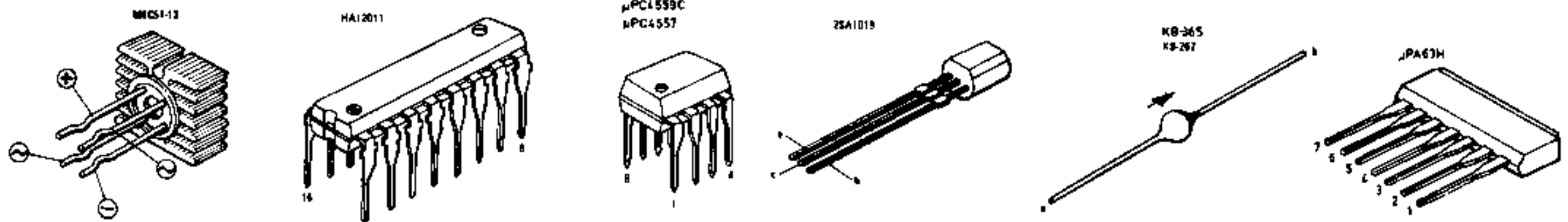
*TO BE MOUNTED 10mm ABOVE THE PRINT

TS801	a	19.6V
	b	20.2V
	c	41.6V

19682B12



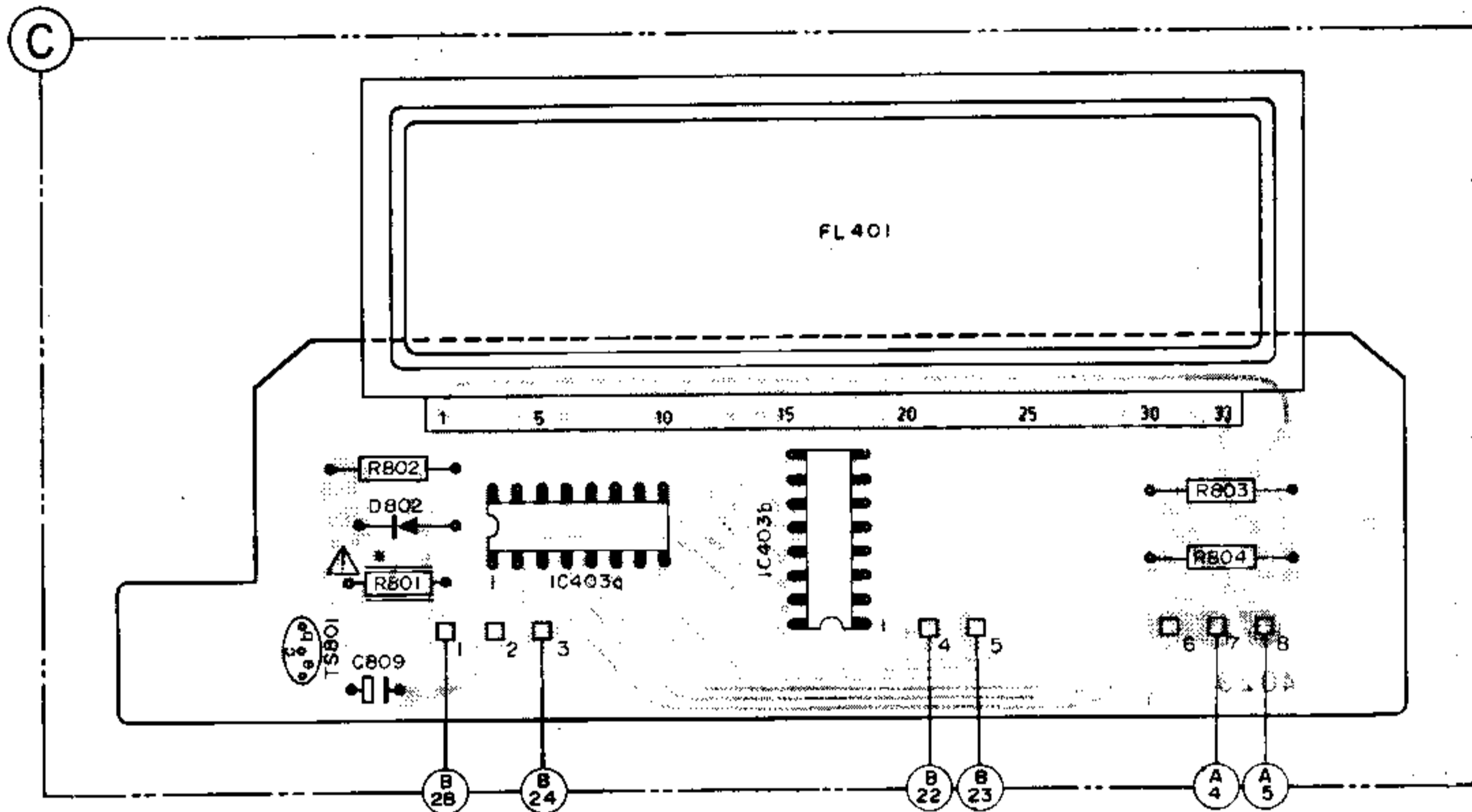
19686A12



19685C12

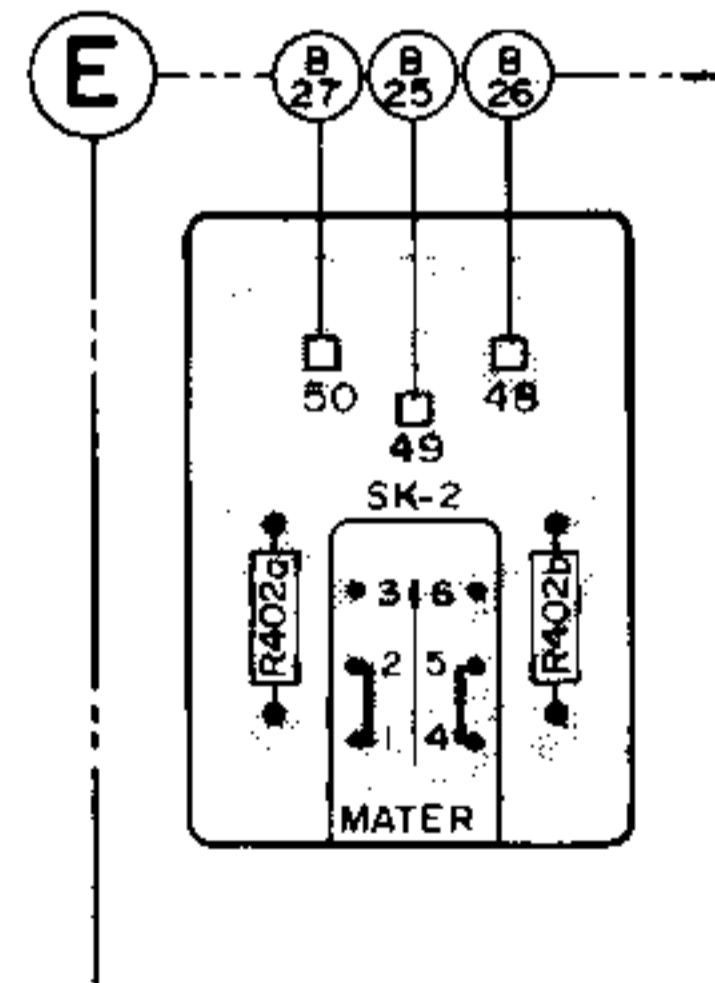
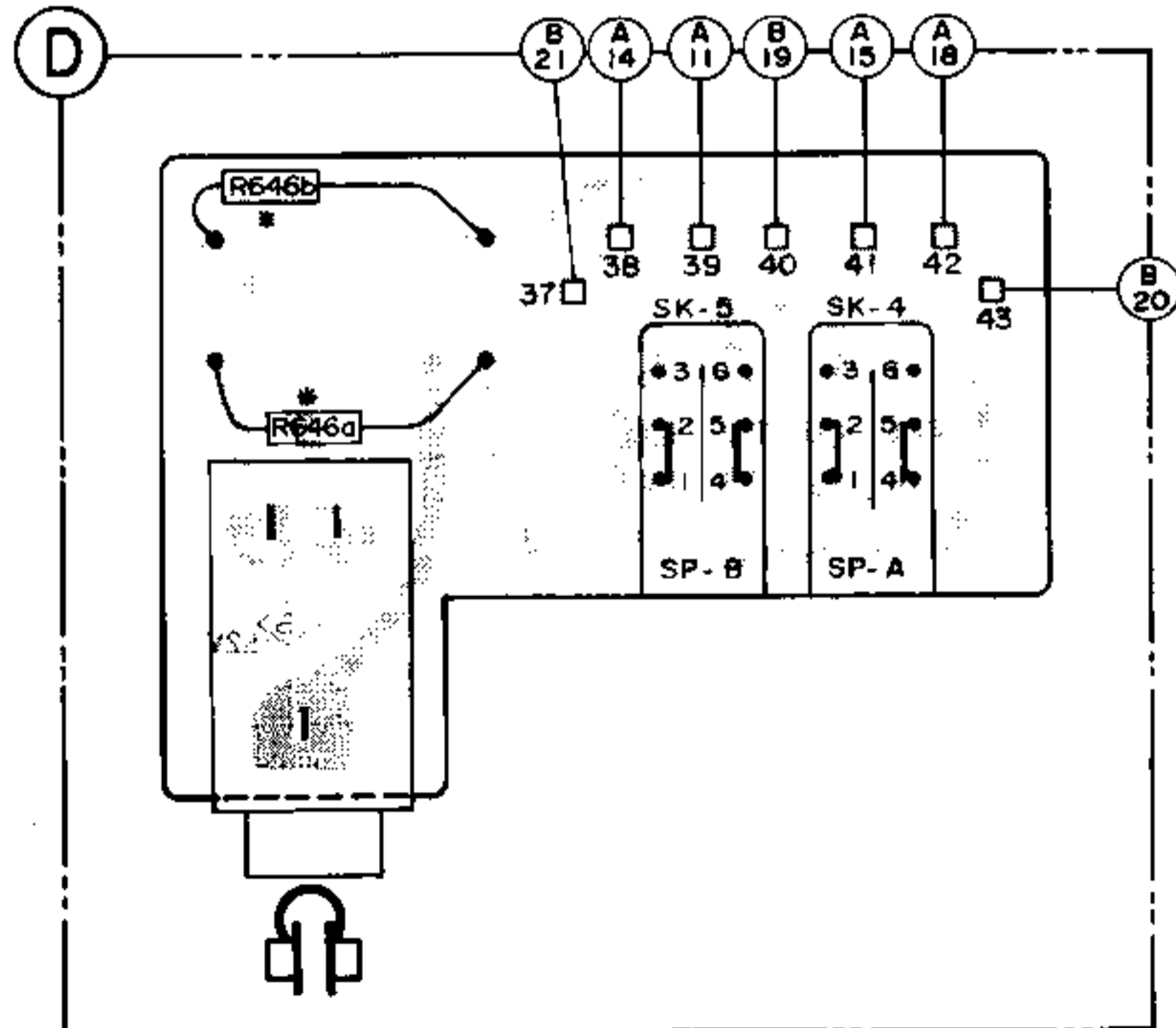
D604b	M
c	M
D606a	M
	C
	C
	C
b 602b	R
g 409a	R
b 602a	R

M	TS801	D802	IC403a	IC403b	FL401	M
C		809				C
R		802 801			803 804	R



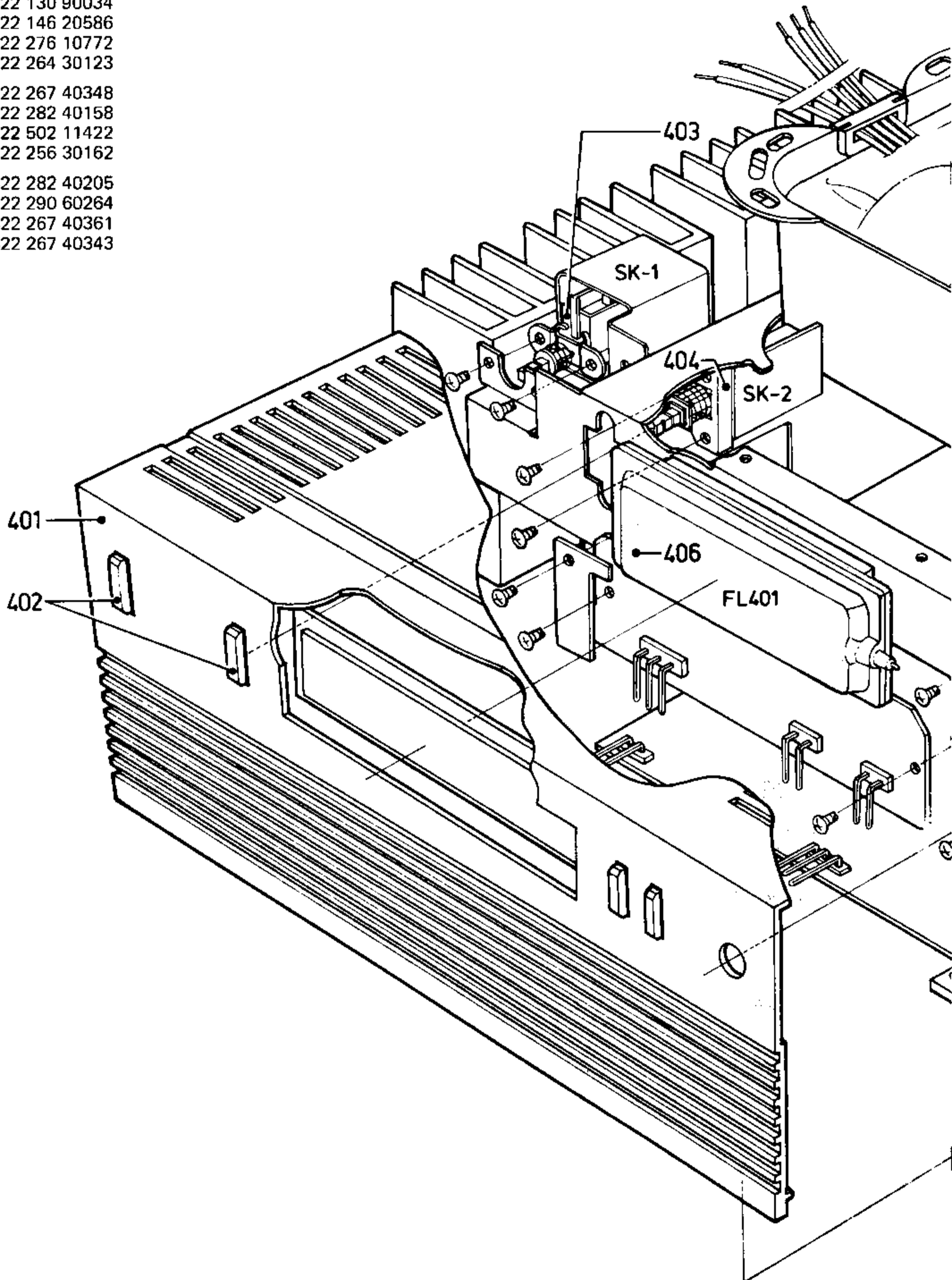
M	SK-5	SK-4	M
R	646b	646a	R

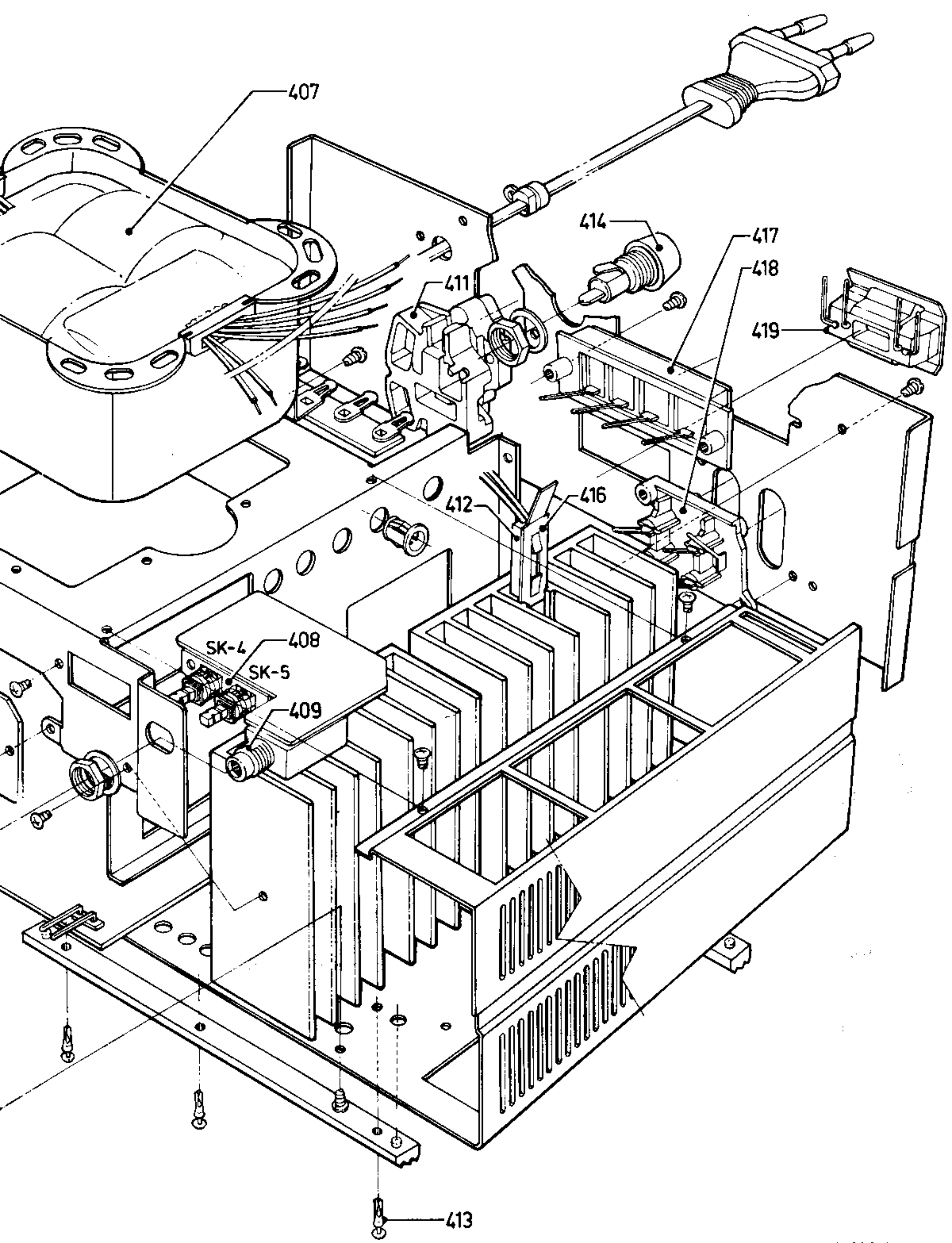
M	SK-2	M	
R	402a	402b	R



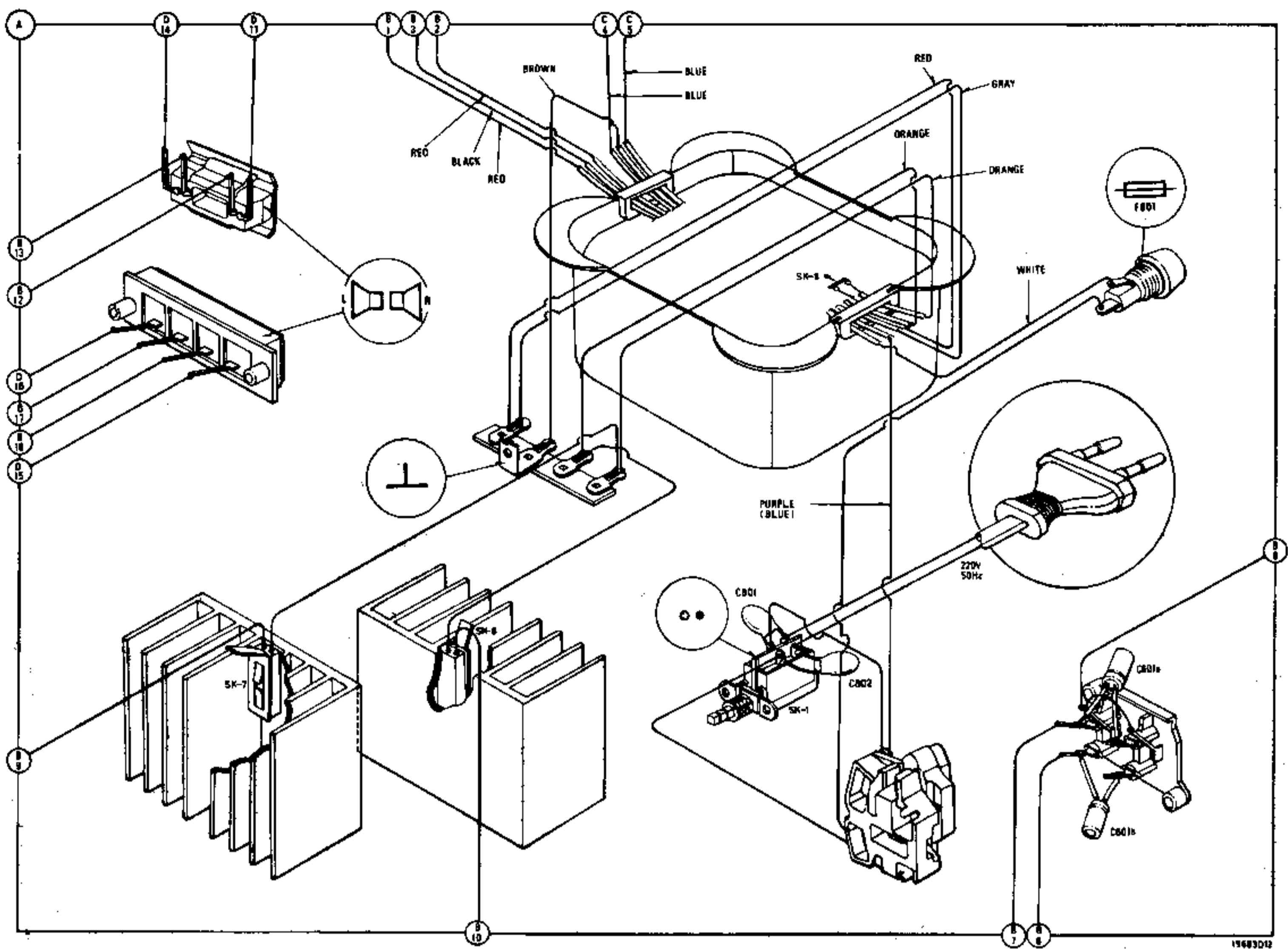
* TO BE MOUNTED 10mm ABOVE THE PRINT
 ** TO BE MOUNTED 15mm ABOVE THE PRINT

401	4822 425 30152
402	4822 410 22308
403	4822 276 10733
404	4822 276 10771
406	4822 130 90034
407	4822 146 20586
408	4822 276 10772
409	4822 264 30123
411	4822 267 40348
412	4822 282 40158
413	4822 502 11422
414	4822 256 30162
416	4822 282 40205
417	4822 290 60264
418	4822 267 40361
419	4822 267 40343





18433D14



GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

NL

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

SF

Korjatessa laitetta on turvallisuussyistä ehdottomasti eneteltävä oikein ja käytettävä tehtaan määräämiä alkuperäisvaraosia.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

S

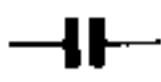

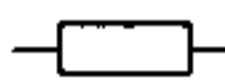



Säkerhetsbestämmelserna kräver att varje reparation skall utföras korrekt med hänsyn till ursprunglig placering av komponenter, ledningar etc. och med användning av föreskrivna reservdelar.

DK

Myndighedernes sikkerheds- og radiostøjbestemmelser kræver, at enhver reparation skal udføres korrekt m.h.t. overholdelse af originalplacering og montering af komponenter, ledningsbunder, etc. og ved anvendelse af de foreskrevne reservedele.

N

Sikkerhetsbestemmelser kreves at apparatet blir gjenopprettet til original utførelse og at deler som er identiske med de som er spesifisert, blir benyttet.

-C-			-D-		
403	Elco BP 100 μ F - 16 V	4822 124 20961	401,402	RD16E-B	4822 130 31271
601	Elco BP 2.2 μ F - 50 V	4822 124 20954	403-406	1S2473	4822 130 31185
610	Mylar 1.2 nF - 50 V	4822 121 41256	407-410	1S2076	5322 130 34792
611	Mylar 3.9 nF - 50 V	4822 121 41257	601,602	RD20E-C	4822 130 31136
612,613	Mylar 1.2 nF - 50 V	4822 121 41256	603	1S2076A	5322 130 34792
614,615	Elco 100 μ F - 50 V	5322 124 24123	604-605	1S2473	4822 130 31185
618,619	Mylar 2.2 nF - 50 V	4822 121 41247	606	1S2075	4822 130 31026
620,621	Mylar 0.1 μ F - 50 V	4822 122 31271	607	KB262	4822 130 31095
801,802	Cera 4.7 nF - 400 V	4822 122 31428	608,611	1S7076A	4822 130 34792
803,804	Elco 10.000 μ F - 50 V	4822 124 20897	609,610	KB262	4822 130 31095
805-808	Cera 10 nF - 250 V	4822 122 40184	612	KB365	4822 130 31142
			613,614	1S2473	4822 130 31185
			615,616	1S2076A	4822 130 34792
-R-			801	M4C-51-13	4822 130 31272
411,412	Metal 2K2 - 1 W	4822 116 60065	802	RD20E-C	4822 130 31136
413	Metal 680 Ω - 1 W	4822 116 60087			
491	Potm. 200K	4822 100 10303	-TS-		
614	Metal 3K3 - 1 W	4822 116 60059	401,402	2SC1815Y-GR	4822 130 41306
615	Metal 2K2 - 2 W	4822 116 60089	403	2SA1015Y	4822 130 41298
618	Fail safe 3K3 - 1/4 W	4822 111 30599	404,405	2SC945L-P	4822 130 41198
620,621	Fail safe 3K3 - 1/2 W	4822 111 30598	406	2SD438E,F	4822 130 41139
628,629	Fail safe 10 Ω - 1/4 W	4822 111 30601	601	μ PA63H	4822 130 41295
630,631	Fuse res. 10 Ω - 1/4 W	4822 113 90073	602	2SC1815Y-GR	4822 130 41306
634,635	Cement 0.39 Ω	4822 113 80248	603,604	2SC2363E,F	4822 130 41208
636	Metal 4.7 Ω - 1 W	4822 116 51195	605,606	2SA1019F	4822 130 41333
637	Metal 10 Ω - 2 W	5322 116 54348	607	2SC945L-P	4822 130 41198
638,639	Fail safe 1K - 1/4 W	4822 111 30602	608	2SC2375F	4822 130 41335
640,641	Fail safe 750 Ω - 1/4 W	4822 111 30603	609	2SD600	4822 130 41141
642,643	Fail safe 330 Ω - 1/4 W	4822 111 50413	610	2SB63I	4822 130 41136
646	Metal 330 Ω - 2 W	4822 116 60088	611	2SC2579	4822 130 41474
691	Potm. 100 Ω	4822 100 10253	612	2SA1104	4822 130 41473
692	Potm. 1K	4822 100 10215	613,614	2SC945L-P	4822 130 41198
801	Fuse res. 10 Ω - 1/4 W	4822 113 90073	615,616	2SA733-P,Q	4822 130 44256
803,804	Metal 12 Ω - 1/2 W	4822 116 60086	801	2SD600	4822 130 41141
-S-			-Miscellaneous-		
601,a,b	Choke coil 1 μ H	4822 157 51076	FL401	Flourescent Power Ind.	4822 130 90034
			RE601	Relay	4822 280 50017
-IC-			F001	Fuse 2A - 250 V	4822 253 30025
401	μ PC4559C	4822 209 80607	SK-6	Thermal protector 100 $^{\circ}$ C	4822 282 40158
402	μ PC4557	4822 209 80671	SK-7	Thermal protector 100 $^{\circ}$ C	4822 282 40158
403	HA12011	4822 209 80669			