

Bang & Olufsen



Beogram CD4500

Type 5171, 5172, 5173, 5174,
5175

BEOGRAM CD 3500

Type 5146-5147-5148-5149-5150

**CD-Mechanism Version II
Beogram CD 4500**

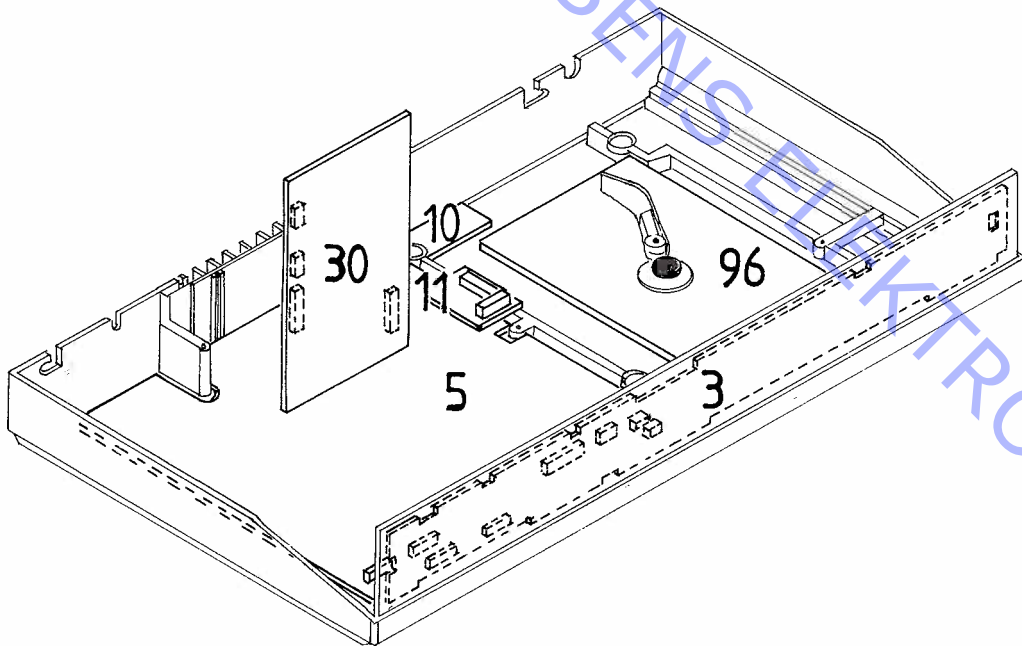
SERVICEANVISNING
SERVICE MANUAL



Modules

3	Display	diagr. C page 2-5
5	Decoder	diagr. B page 2-4
10	Digital out	diagr. B page 2-4
11	Connections PCB	diagr. A page 2-2
30	Servo	diagr. A page 2-2
96	CD-mechanism	diagr. A page 2-2

CLASS 1
LASER PRODUCT



TECHNICAL SPECIFICATIONS

Frequency range	3-20,000 Hz \pm 0.3 dB
Signal-to-noise ratio	>100 dB/110 dB A-weighted
Dynamic range	>96 dB
Harmonic distortion	<0.0025% at 0 dB
	<0.025% at -20 dB
Channel separation	>101 dB
Channel difference	<0.08 dB
Converter system	2 x 16 bit, 4 x oversampling 176.4 kHz
Low pass filter	Digital + Bessel/elliptical analog
Damping >20,000 Hz	>50 dB
Phase error between L and R	0 degree at 20-20,000 Hz
Output, analog	1.3 V RMS at 0 dB
Output, digital	For digital equipment
Power supply	Type no. 5171: 220 V
	Type no. 5172: 240 V
	Type no. 5173: 120 V
	Type no. 5174: 100 V
	Type no. 5175: 240 V
Power frequency	50-60 Hz
Power consumption	23 watts
Dimensions W x H x D	42 x 7 x 24.5 cm (16 ¹ / ₂ " x 2 ³ / ₄ " x 9 ¹ / ₂ ")
Weight	4.5 kg (9,9 lbs)

Subject to change without notice

OVERSIGHT OVER LEDNINGSMONTERING FOR NETTRANSFORMATOR SURVEY OF WIRE MOUNTING FOR MAINS TRANSFORMER

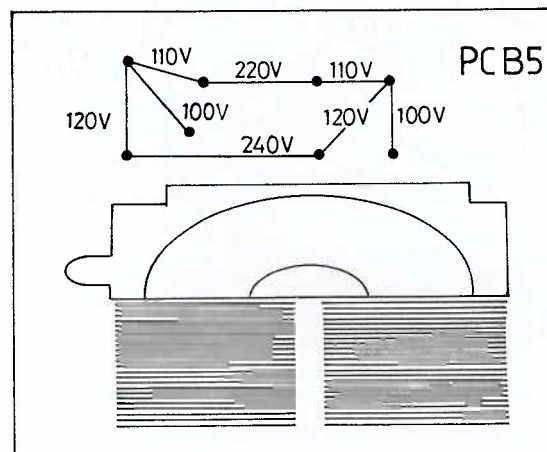
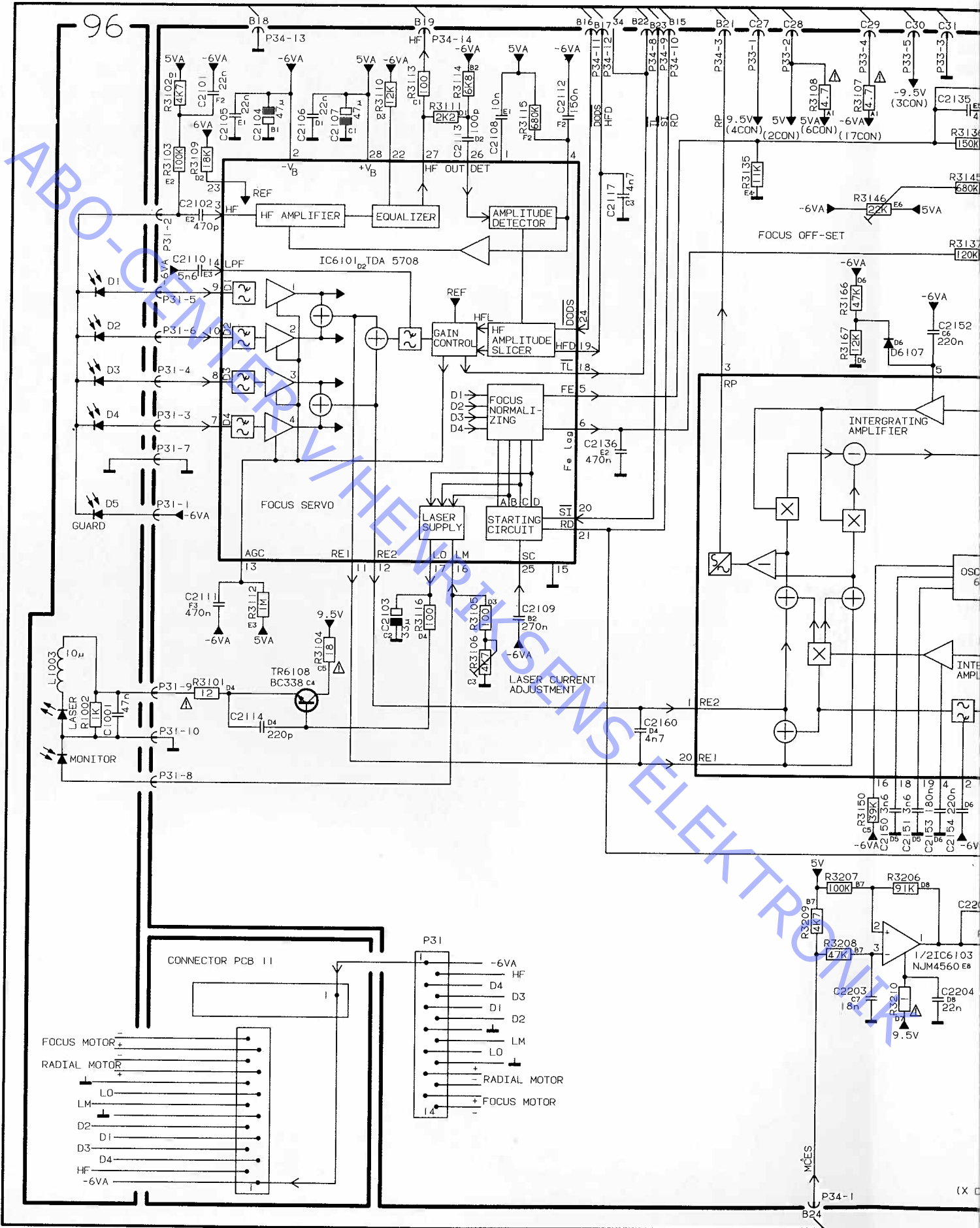
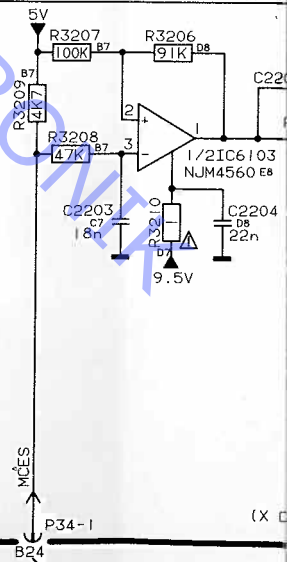
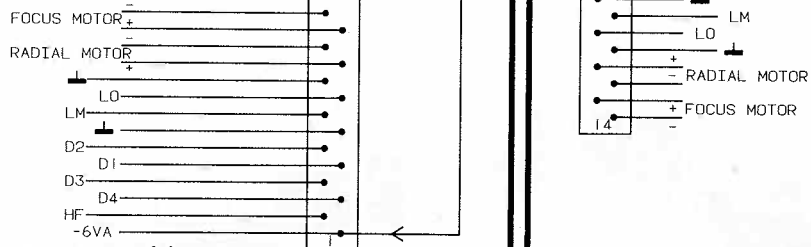
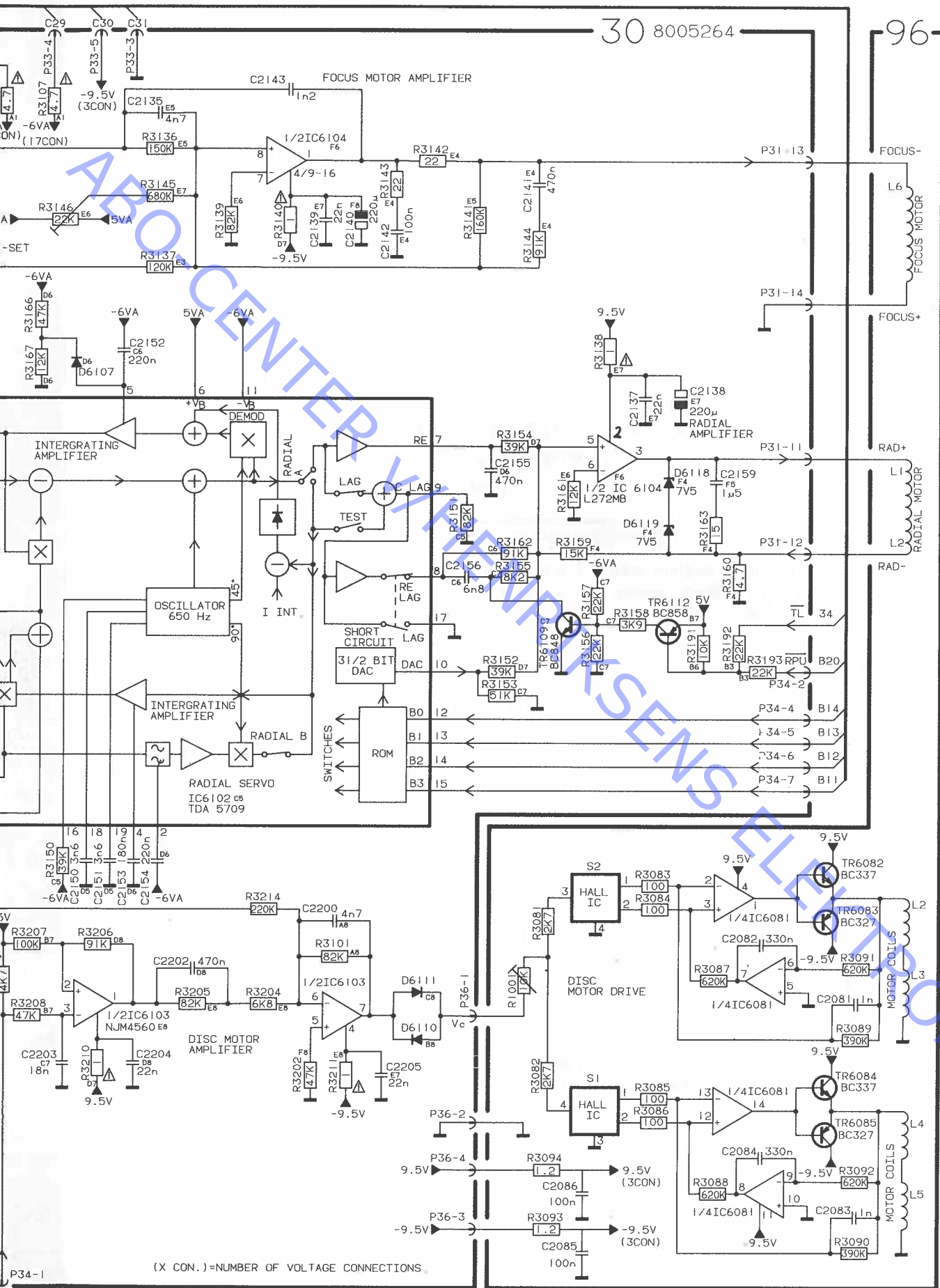


DIAGRAM A (Servo and Disc Motor System)



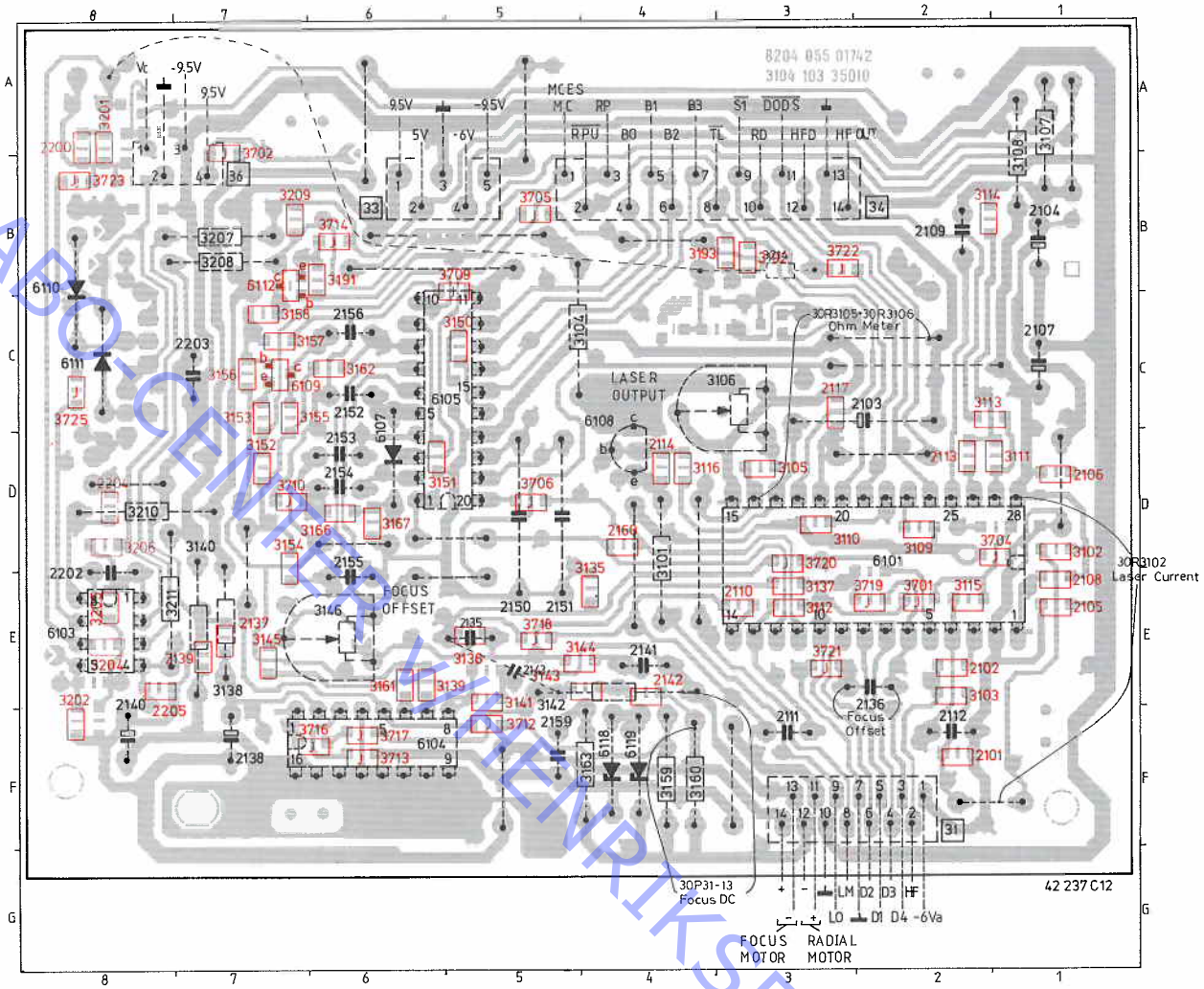
ABO-UNIVERSITY.ELECTRONICS



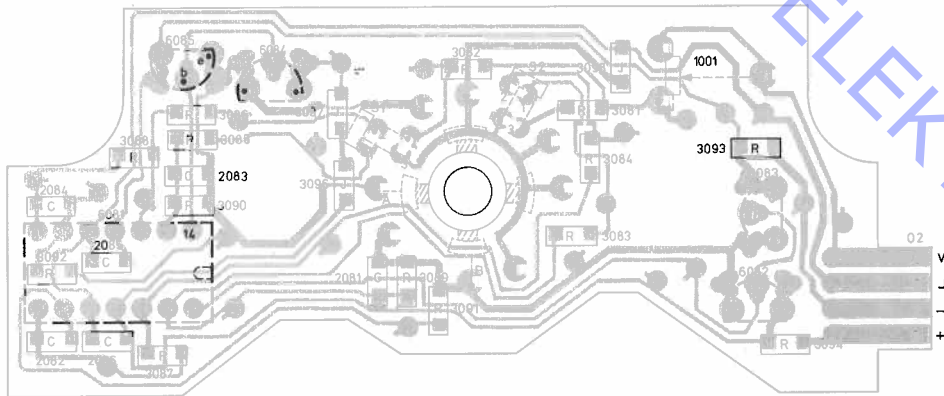


(X CON.)=NUMBER OF VOLTAGE CONNECTIONS.

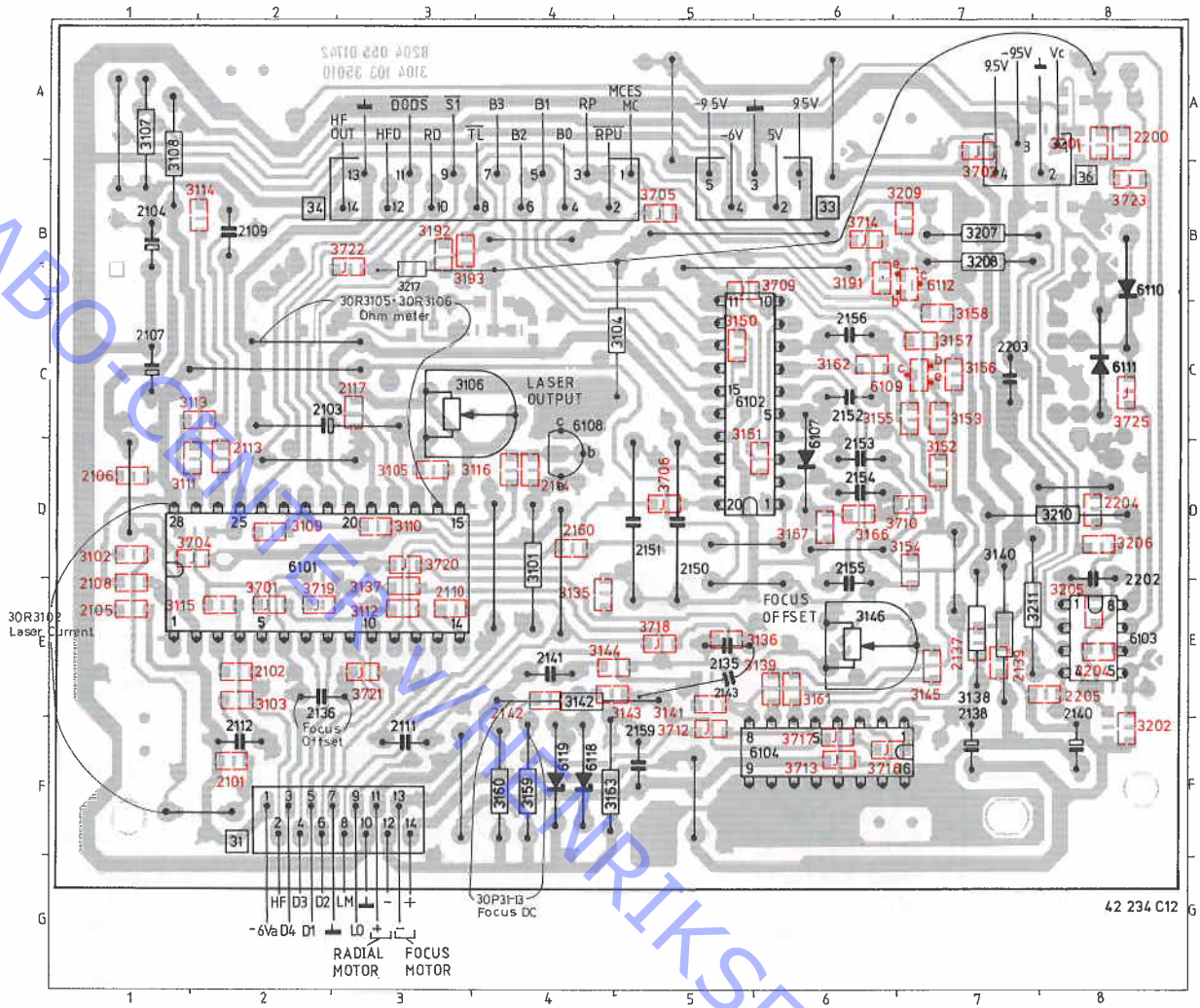
SERVO PCB30



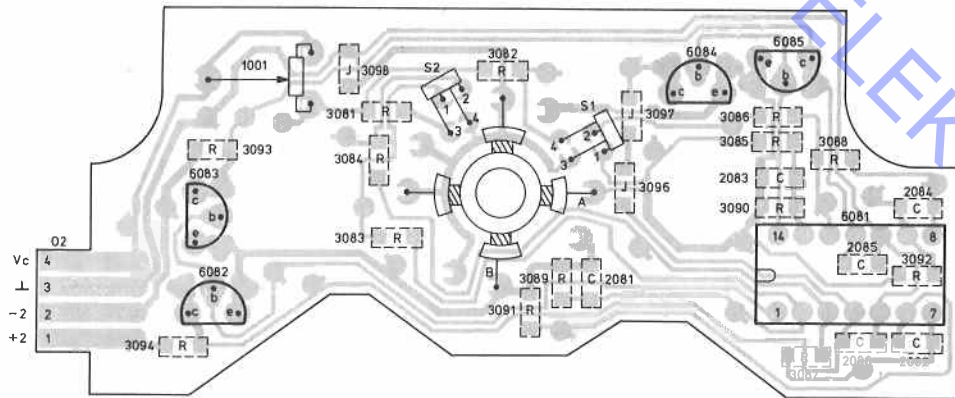
DISC MOTOR CONTROL



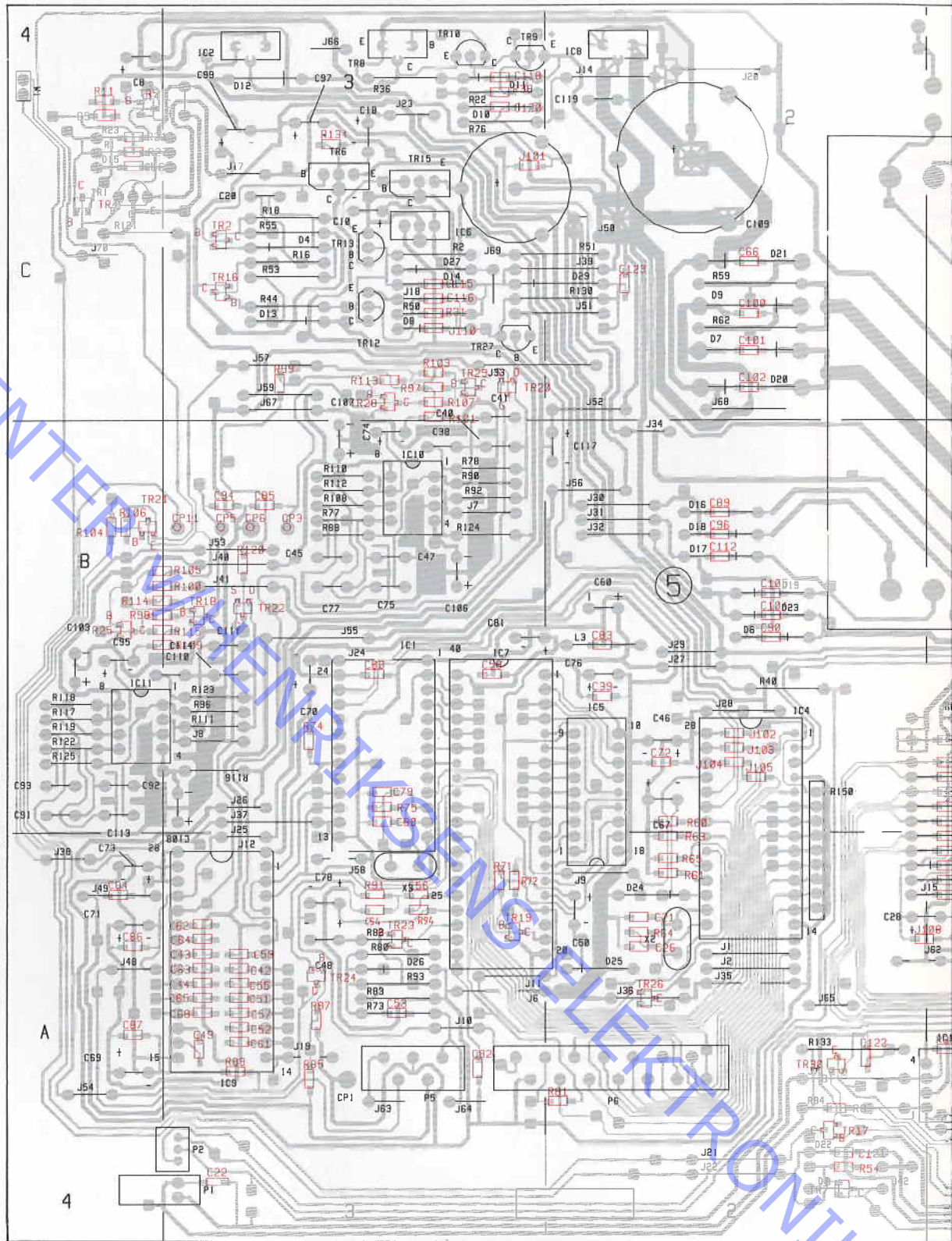
SERVO PCB30



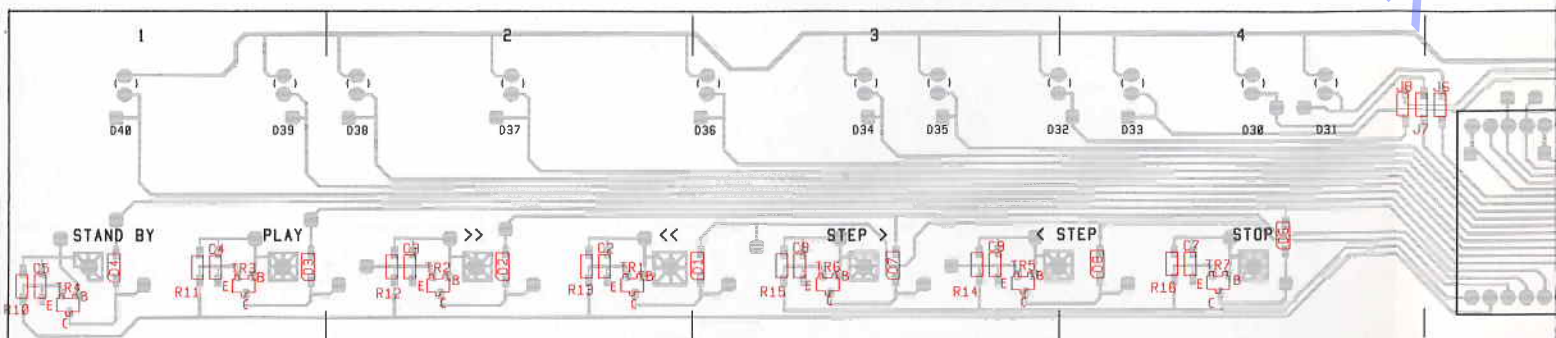
DISC MOTOR CONTROL

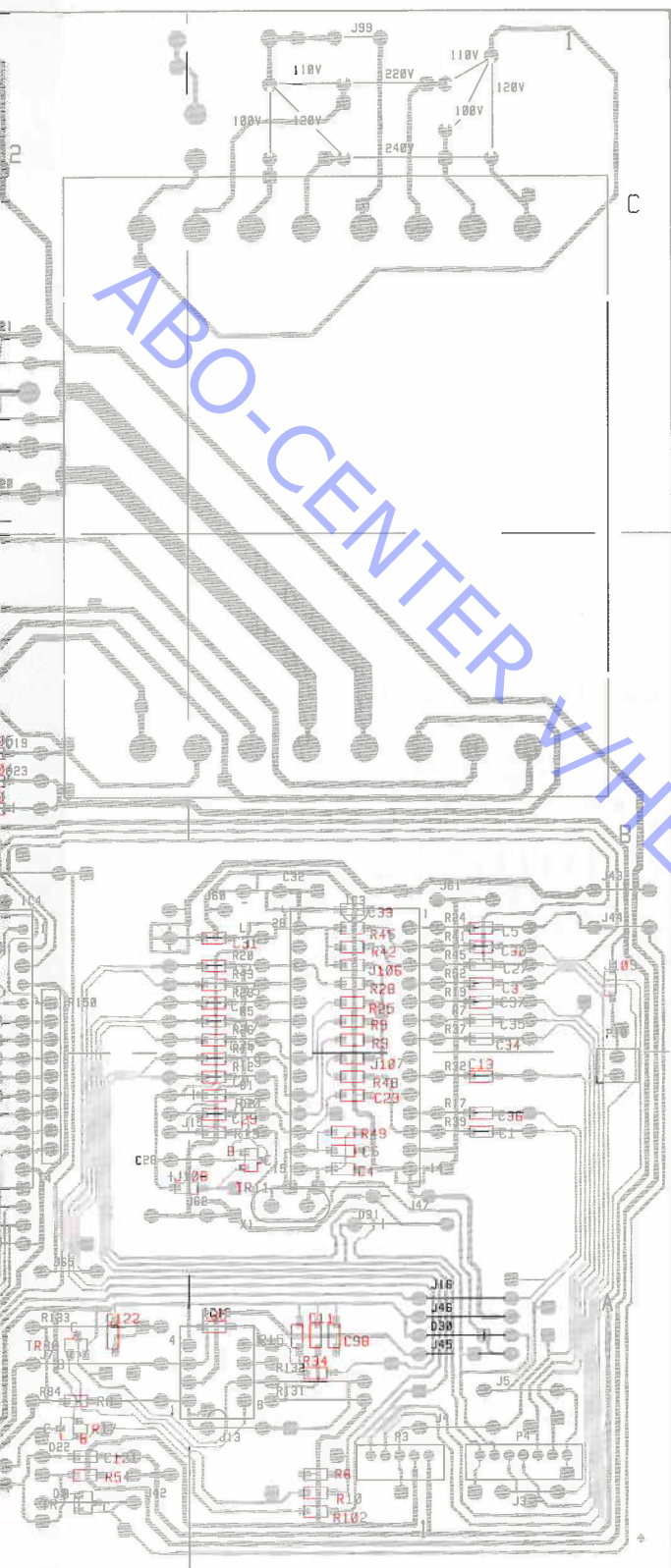


DECODER PCB5

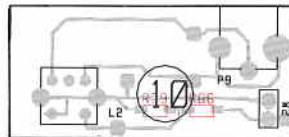


DISPLAY PCB3

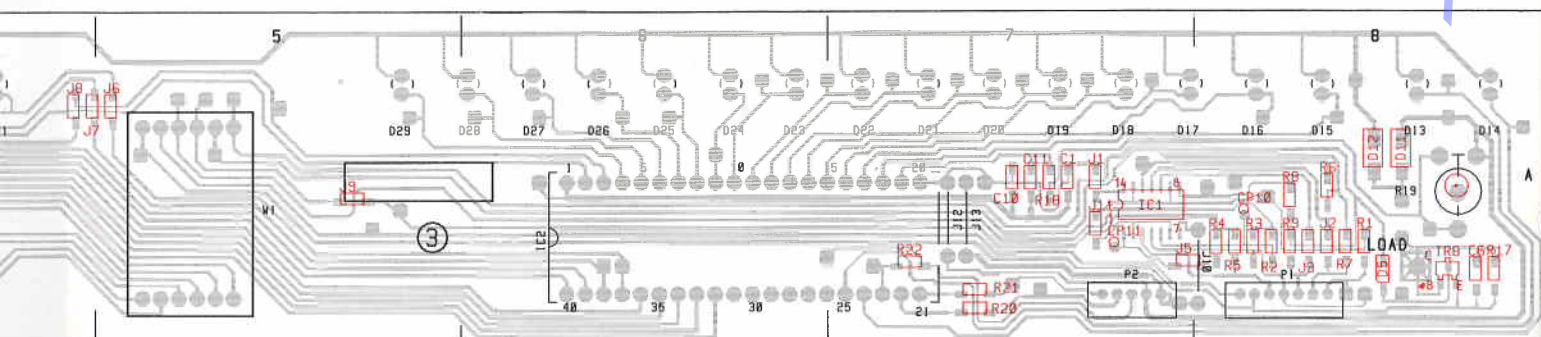
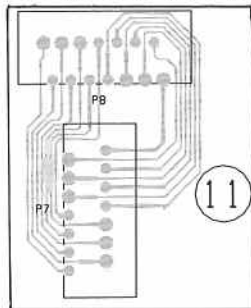




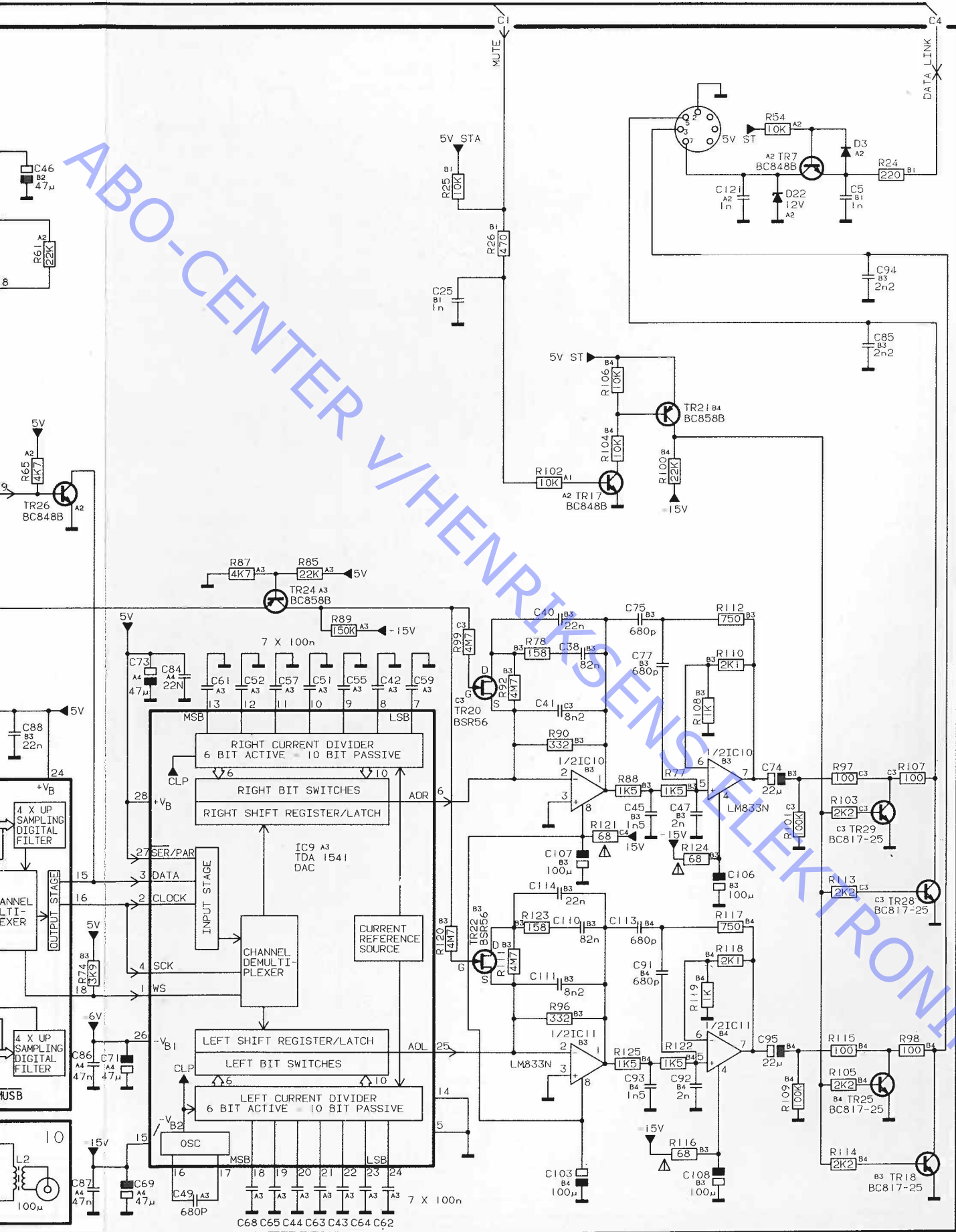
DIGITAL OUT PCB 10



CONNECTION PCB 11



ABO-CENTER
HENRIKSENS ELEKTRONIK



ABO-CENTER V/HENRTS ELETTRONIK

DIAGRAM B (Decoder)

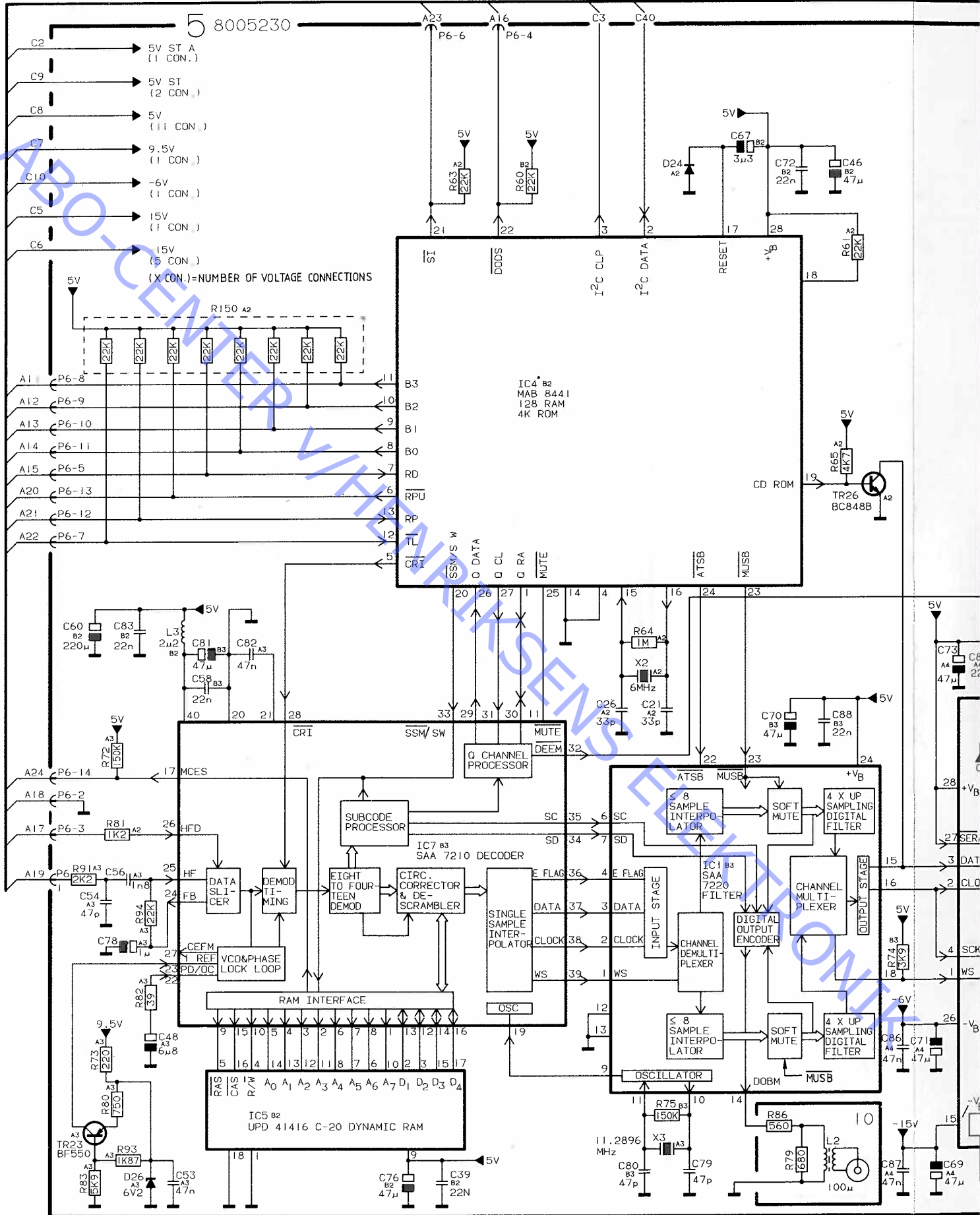
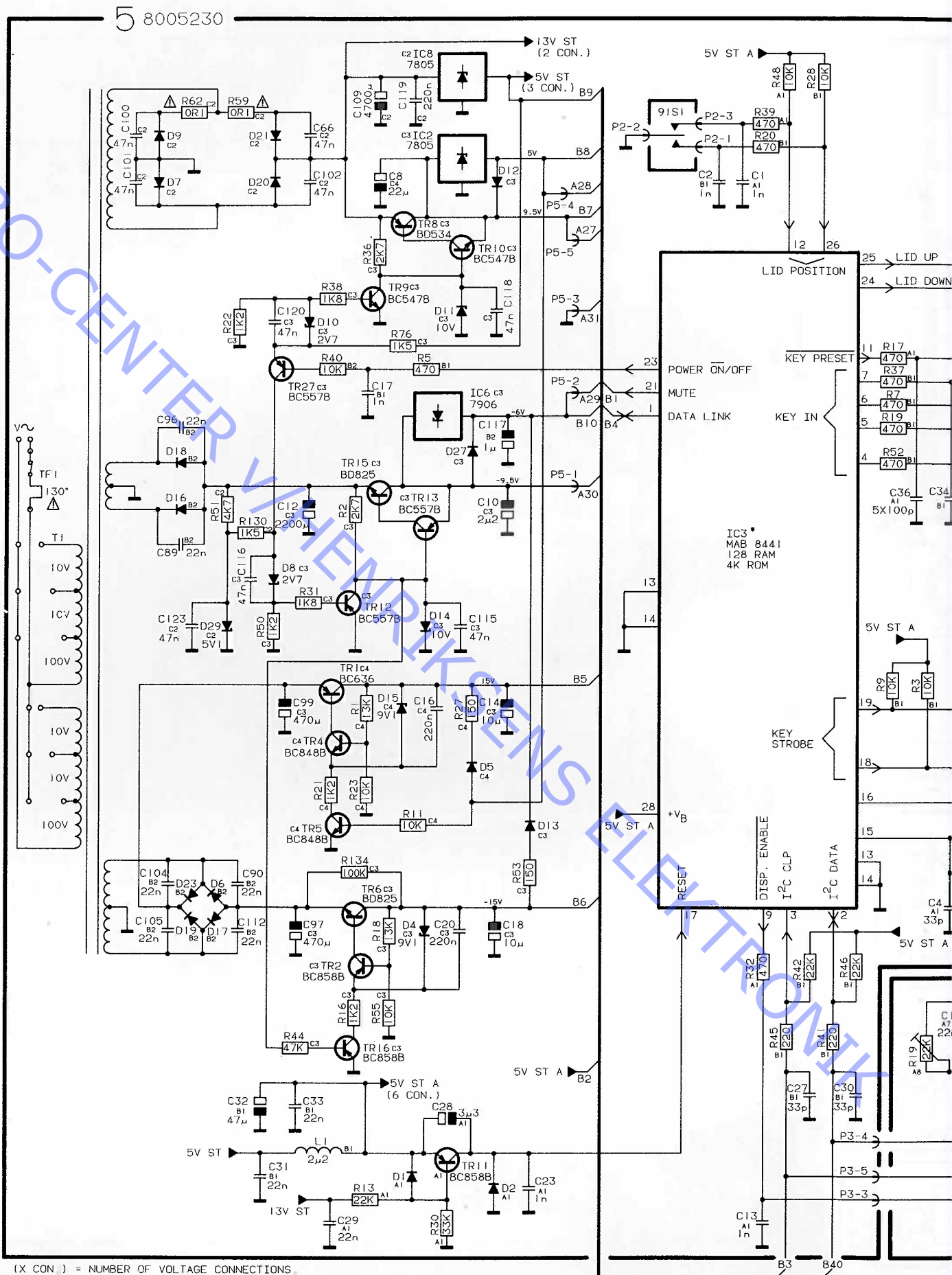
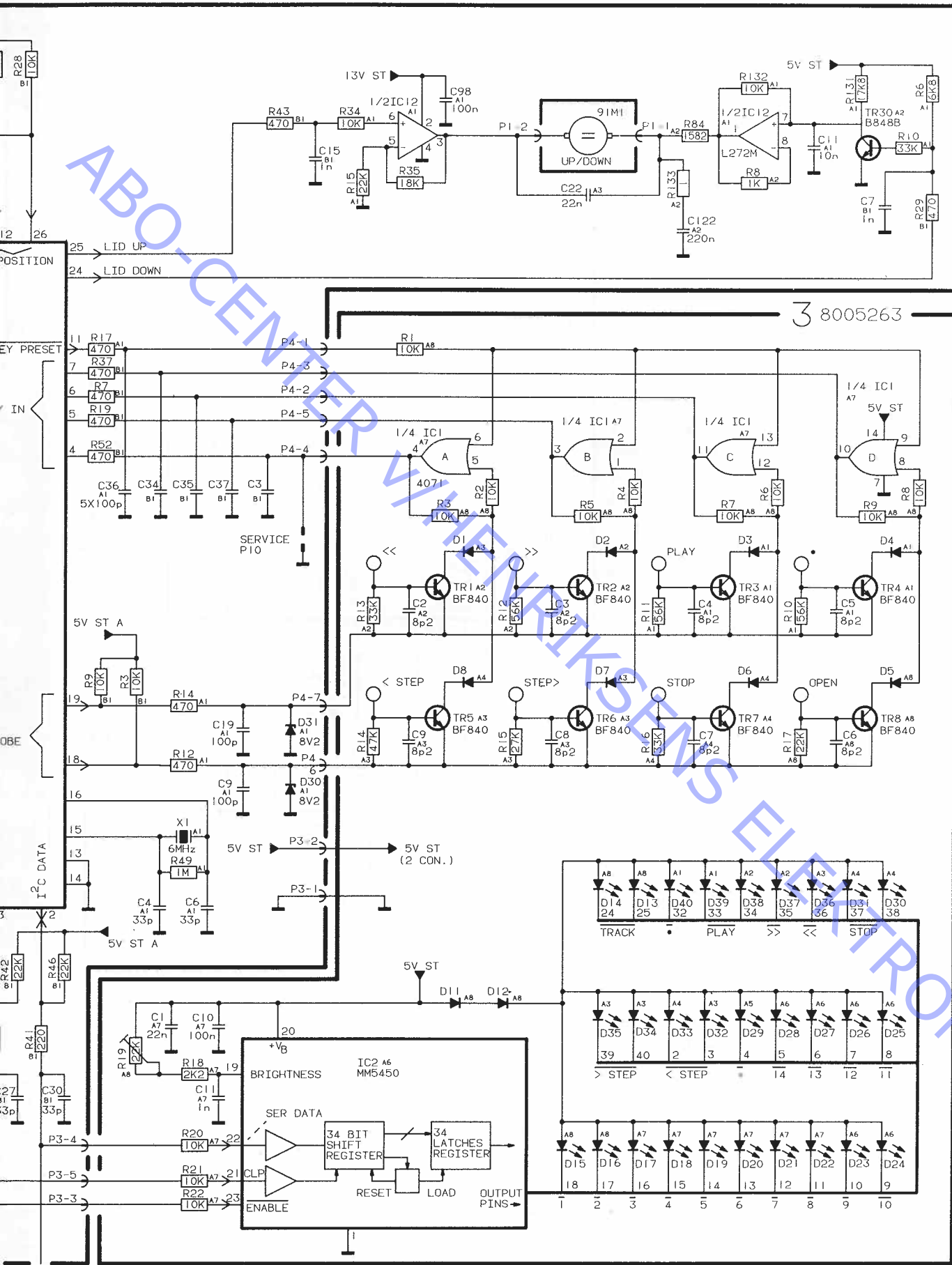


DIAGRAM C (Power Supply, Control and Display)





3 8005263

SERVICE P10

BRIGHTNESS

IC2 A6 MM5450

SER DATA

34 BIT SHIFT REGISTER

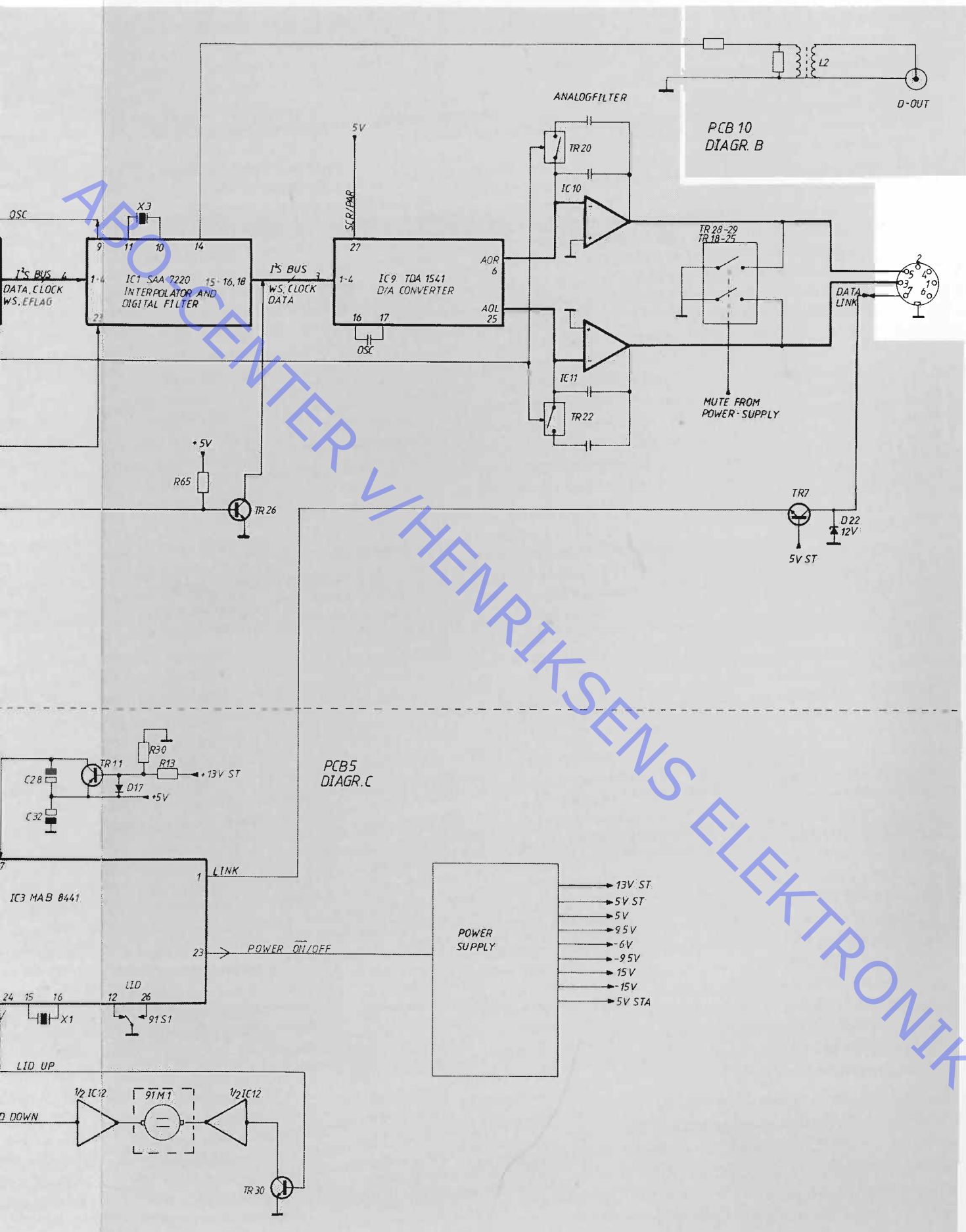
34 LATCHES REGISTER

RESET LOAD OUTPUT PINS

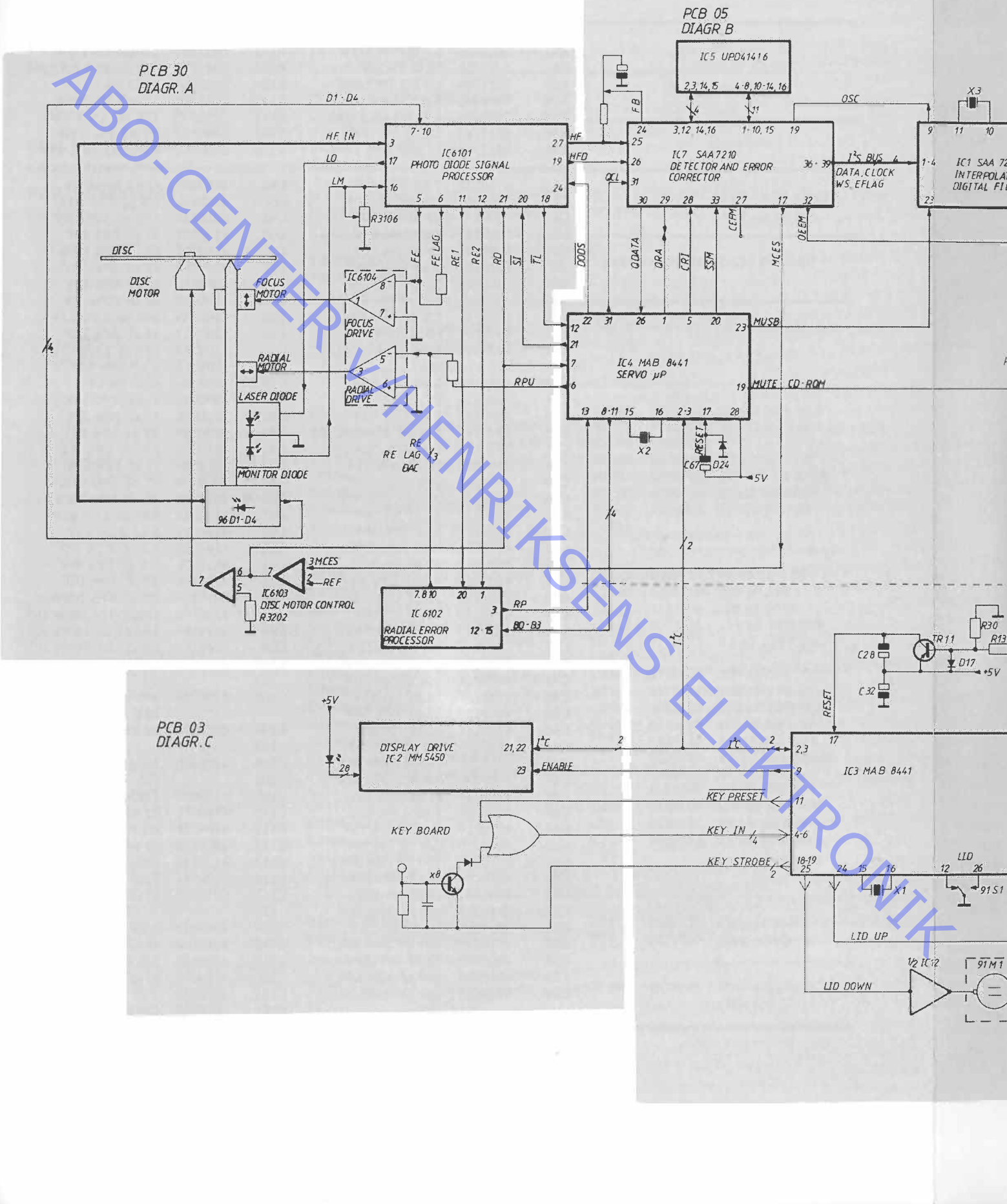
TRACK PLAY >> << STOP

> STEP < STEP 14 13 12 11

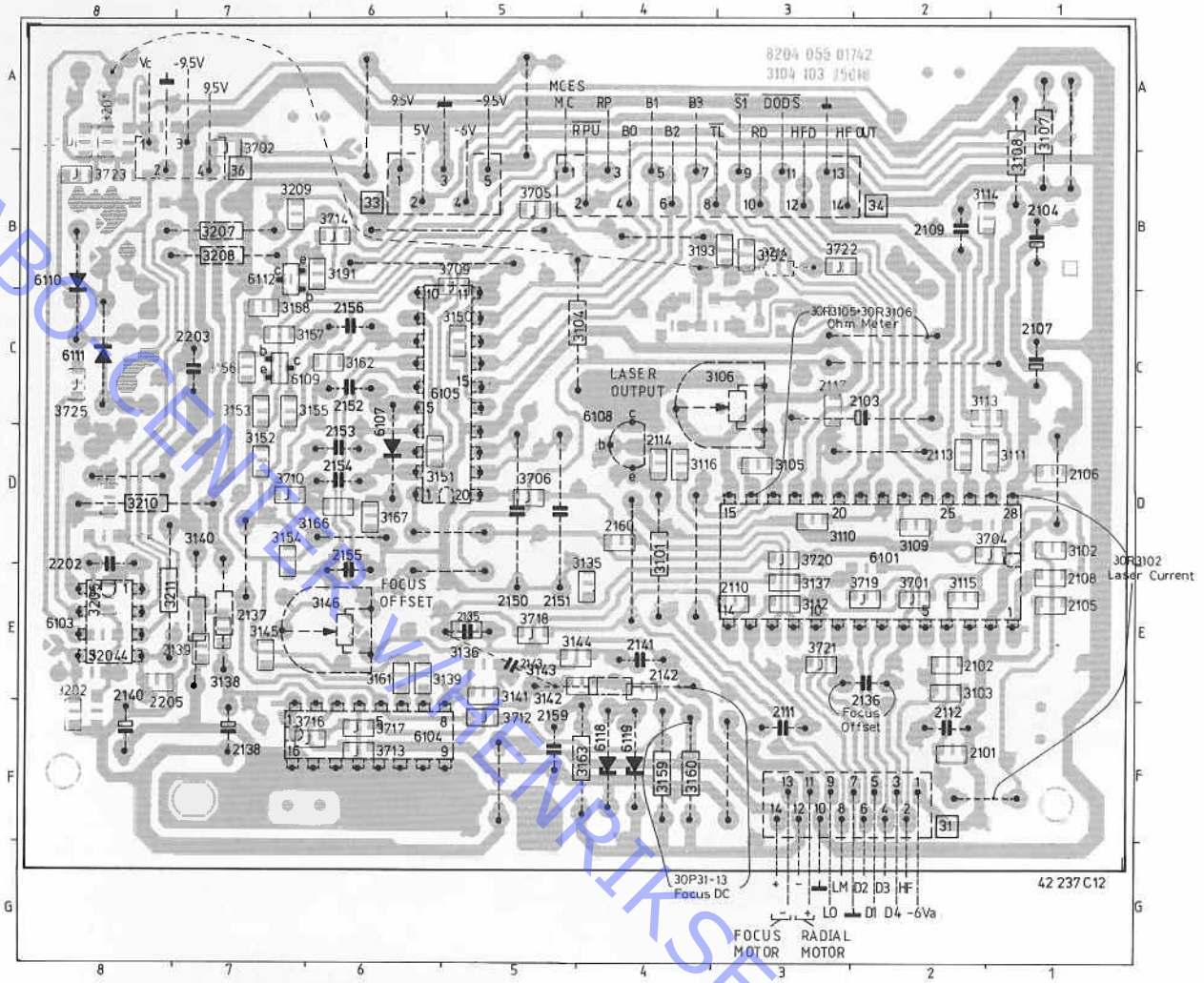
18 17 16 15 14 13 12 11 10 9



BLOCK DIAGRAM



SERVO PCB30



ABOORANGKAPANS ESENS ELEKTRONIK

JUSTERINGER

Laserstrøm

Vigtigt:

Efter udskiftning af CD løbeværket eller servo-PCB30 skal laserstrøm-potentiometeret 30R3106 forjusteres, inden apparatet tilsluttes lysnettet.

Tilslut et ohmmeter over 30R3105 + 30R3106. Juster 30R3106, indtil 30R3105 og 30R3106 tilsammen har en værdi på 1 kohm.

Tilslut et DC-voltmeter over 30R3102.

Tilslut et oscilloskop til ben 27 på 30IC6101.

Ilæg testplade nr. 5 (plade uden fejl, bestillingsnr. 3634031) og tryk PLAY.

Kontroller på oscilloskopet, om der er HF signal. Hvis der ikke er HF signal, slukkes apparatet, og fejlen findes.

Hvis der er HF signal, spilles spor 1 på testplade 5, og 30R3106 justeres, til der måles $50\text{mV} \pm 5\text{mV}$ med DC-voltmeteret.

Fokus offset.

Ilæg testplade nr. 5A (bestillingsnr. 3634031).

Sæt apparatet i service-position 2 ved at kortslutte service-stikket på PCB5 samtidig med, at netstikket sættes i.

Kortslutningen på service-stikket fjernes.

Tryk STEP> 2 gange.

Hvis »2« i displayet bliver ved med at blinke, justeres 30R3146, indtil »2« lyser konstant.

Sæt apparatet i serviceposition 4 ved at trykke STEP> 2 gange (»4« i displayet skal lyse, og pladen skal rotere).

Tilslut et DC-voltmeter over 30C2136.

Juster 30R3146, indtil der måles $400\text{ mV} \pm 40\text{ mV}$.

Vinkel-indstilling på laserarm

Før justeringen skal vinkel-indstillingen på laserarmen kontrolleres, se side 7.1.

Hvis kontrol af vinkel-indstillingen viser, at vinklen er uden for tolerance, skal den *ikke* justeres til minimum afvigelse men blot justeres inden for tolerance.

Efter justering af vinkel-indstillingen skal laserarmens friktion kontrolleres. Dette kan gøres med en trykfjedermåler, som holdes mod magneten på fokusenheden.

ADJUSTMENTS

Laser current

Important:

When replacing the CD mechanism or the servo PCB30, the laser current potentiometer 30R3106 must be preadjusted before the set is connected to mains.

Connect an ohmmeter across 30R3105 + 30R3106. Adjust 30R3106 until the combined value of 30R3105 and 30R3106 is 1 kohm.

Connect a DC voltmeter across 30R3102.

Connect an oscilloscope to pin 27 of 30IC6101.

Load test disc no. 5 (disc without faults, part no. 3634031) and press PLAY.

Check on the oscilloscope whether there is any HF signal. If not, switch off the CD player and locate the fault.

If there is an HF signal, play track 1 of test disc 5 and adjust 30R3106 until a reading of $50\text{ mV} \pm 5\text{ mV}$ is obtained on the DC voltmeter.

Focus offset

Load test disc 5A (part no. 3634031)

Set the unit in service position 2 by short-circuiting the service plug on PCB5 and simultaneously connecting the player to mains. Remove the short-circuit on the service plug.

Press STEP> twice.

If '2' in the display keeps flashing, adjust 30R3146 until '2' is lit constantly.

Set the unit in service position 4 by pressing STEP> twice ('4' in the display must be lit and the disc rotate).

Connect a DC voltmeter across 30C2136.

Adjust 30R3146 until a reading of $400\text{ mV} \pm 40\text{ mV}$ is obtained.

Angle setting of laser arm

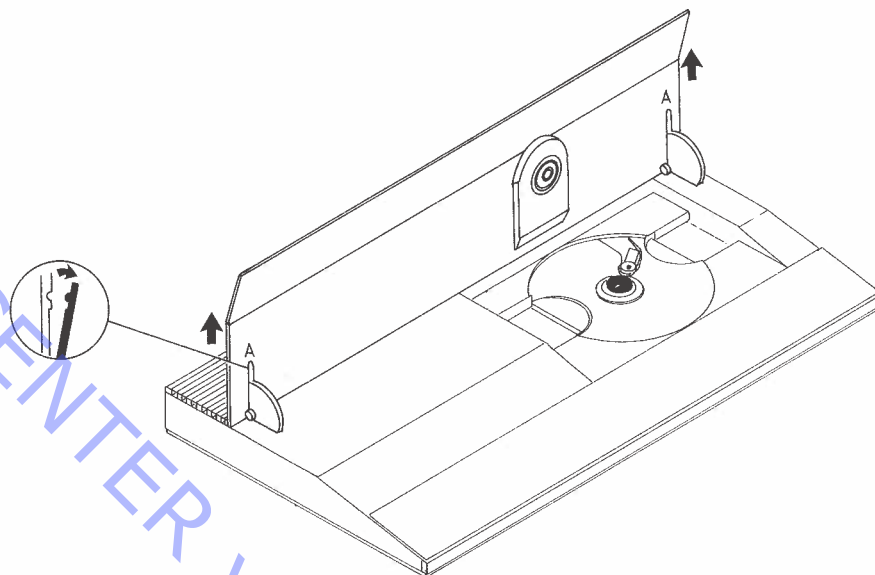
Before carrying out the adjustment, check the angle setting of the laser arm, see page 7.1.

If a check on the angle setting shows that the angle falls outside the tolerance, the angle should *not* be adjusted for minimum deviation but should be adjusted within the tolerance.

After adjusting the angle setting, check the friction of the laser arm. This is done by means of a spring pressure gauge which is held against the magnet of the focusing unit.

ADSKILLELSE

DISASSEMBLY

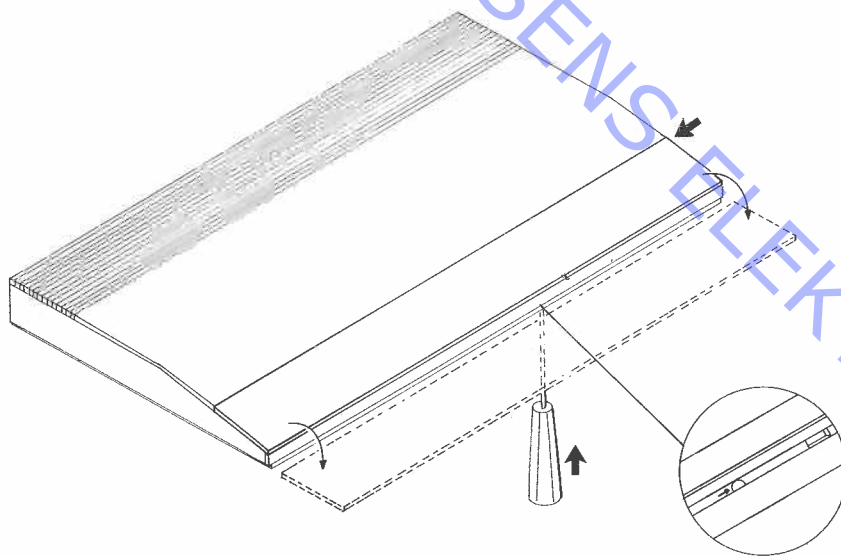


Låg

Lågholderne A i begge sider vipkes udad.
Låget kan nu løftes op og fjernes.

Lid

Pull outwards the lid arms A in both sides.
The lid can now be removed by pulling it upwards.

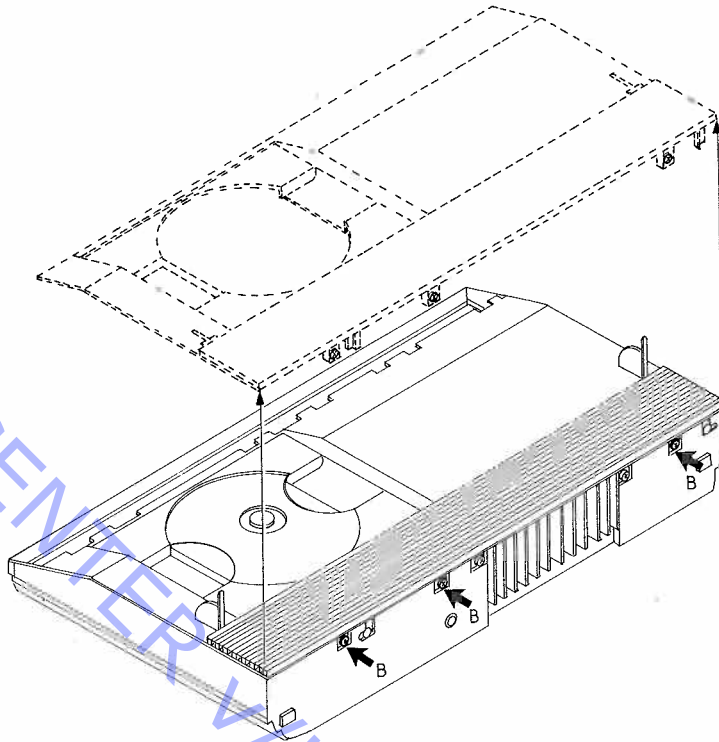


Betjeningspanel

En tynd genstand presses op i hullet mærket med en pil i bunden.
Samtidig presses betjeningspanelet mod venstre.

Operation panel

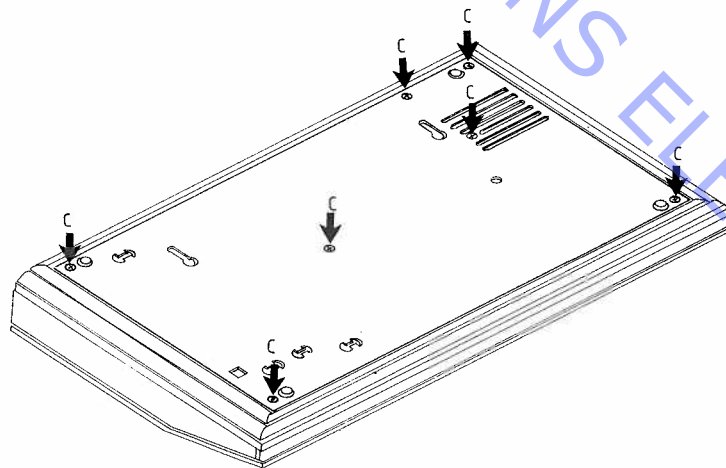
Insert a thin object in the hole in the bottom marked with an arrow.
At the same time, push the operation panel towards the left.

**Topplade**

Skruerne B i bagkanten af toppanelet løsnes.
Toppladen kan nu løftes op og fjernes.

Top panel

Loosen the screws B in the rear side of the top panel.
The top panel can now be removed by lifting it.

**Bund**

Skruerne C i bunden fjernes.
Bunden kan nu aftages.

Bottom

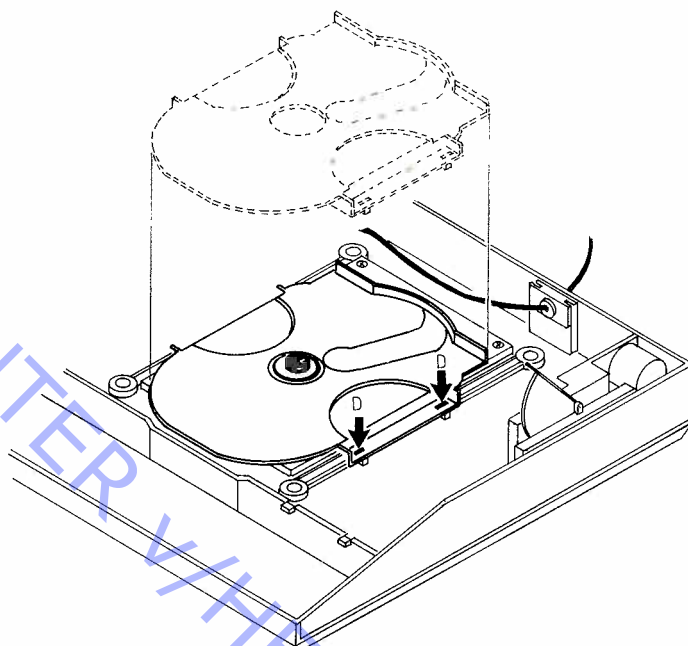
Remove the screws C in the bottom.
The bottom can now be removed.

CD løbeværk

Pres de to plastikflige (D) ud, løft samtidig plastdækslet op i samme side.

CD Mechanism

Push the two plastic flaps (D) outwards, and lift the plastic cover on the same side simultaneously.



Fjern de fire skruer (E)

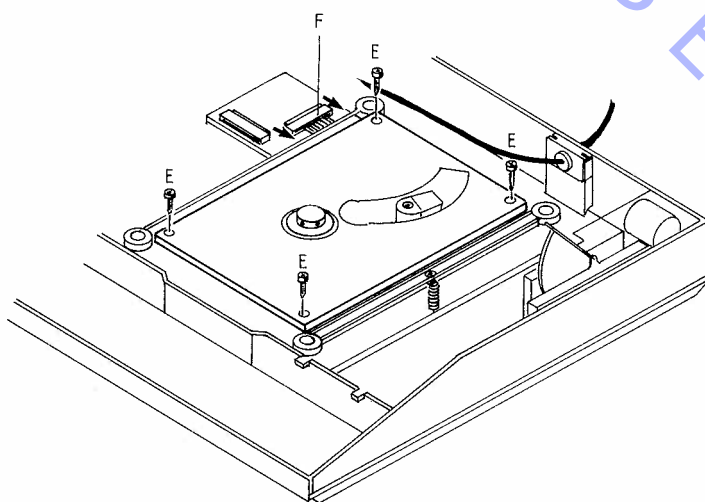
Flexprintet i stikket F løsnes.

CD løbeværket kan nu forsigtigt løftes op.

Remove the four screws (E).

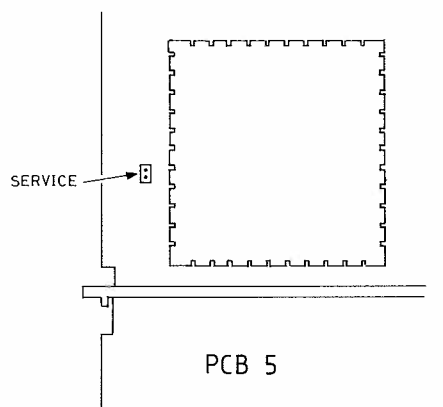
Loosen the flexible PCB in the socket F.

The CD drive unit can now be lifted out carefully.



Serviceprogram

Kortslut servicestikket på PCB5, samtidig med at netstikket sættes i. Kortslutningen i servicestikket fjernes.



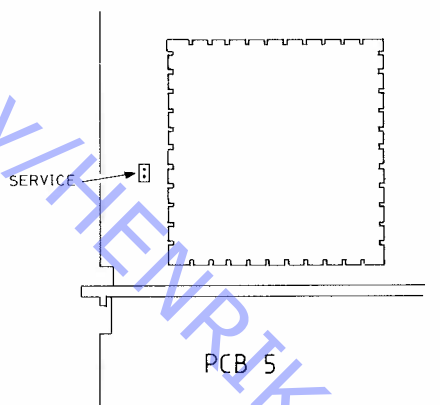
Tast STEP>	Display viser 1 (= serviceposition 1).	
Tast >>	Laserarm svinger ud.	<i>Hvis arm bliver stående:</i> Er fleks-PCB rigtigt placeret? Går radialspole imod? Er trægheden i armlejet for stor?
Tast <<	Laserarm svinger ind.	<i>Hvis arm bliver stående:</i> Er fleks-PCB rigtig placeret? Går radialspole imod? Er trægheden i armlejet for stor?
Ilæg CD-plade		
Tast STEP>	Display viser 2. Laser tænder og søger focus. Hvis display lyser 2 konstant: Focussøgning i orden.	<i>Hvis 2 i displayet blinker:</i> CD bliver ved med at søge i focus, indtil der tastes STEP>. Tændes laser? Regulerer FE-udgangen til focus motoramplifier? Regulerer focusmotor?
Tast STEP>	Display viser 3. CD-motor starter rotation og laser placeres mod centrum.	<i>Hvis CD-plade ikke roterer:</i> Starter RD-udgangen turntable motoramplifier? Er MCES-pulsen tilstede?
Tast STEP>	Display viser 4. Radialsøgning startes. Hvis display viser 4 konstant. Radial søgning i orden.	<i>Hvis 4 i displayet blinker:</i> Regulerer RE-udgangen til radial motoramplifier? Subcode info er ignoreret. Musik kan høres, fordi MUSB er høj men er afhængig af lead-in sporets længde. Kan vare op til 1 min.

Tast >>	Display viser 4 konstant.	<i>Hvis 4 i displayet blinker.</i>
	Laserarm springer ud over spor.	Kontroller radialservo.
Tast <<	Display viser 4 konstant.	<i>Hvis 4 i displayet blinker.</i>
	Laserarm springer ind over spor.	Kontroller radialservo.

Serviceprogrammet kan gentages ved at taste STEP>. Displayet viser da kort efter service-position 1. Serviceprogrammet afsluttes ved kortvarigt at fjerne netstikket.

Service program

Short-circuit the service plug on PCB5 and simultaneously connect the CD player to mains. Remove the short-circuit on the service plug.



Press STEP>	Display indicates service position 1.	
Press >>	Laser arm swings out.	<i>If arm doesn't move: Is flex-PCB placed correctly? Does radial coil touch anything? Is arm bearing inertia excessive?</i>
Press <<	Laser arm swings in.	<i>If arm doesn't move: Is flex-PCB placed correctly? Does radial coil touch anything? Is arm bearing inertia excessive?</i>
Load compact disc		
Press STEP>	Display indicates 2. Laser switches on and searches for focus If display indicates 2 constantly. Focus search is OK.	<i>If 2 in the display flashes: CD continues to search for focus until STEP> is pressed. Does laser switch on? Does FE output regulate the focus motor amplifier? Does focus motor regulate?</i>

Bang & Olufsen

Beogram CD 3500

Type 5146-5147-5148-5149-5150

Indklæbes i serviceanvisning nr. 3538721/3538722, Beogram CD 4500 type 51XX.
To paste into Servicemanual no. 3538721/3538722, Beogram CD 4500 type 51XX.
In Serviceanleitung Nr. 3538721/3538722, Beogram CD 4500 Typ 51XX einkleben.
A coller le Manuel d'entretien No. 3538721/3538722, Beogram CD 4500 Type 51XX.

3538741



SERVICEANVISNING
SERVICE MANUAL

BEOGRAM CD 3500, TYPE 514X

See drawings on pages 4-1

List of Mechanical parts

9006 3114308 Chassis
9019 3162313 Cover
9027 3458710 Top Plate

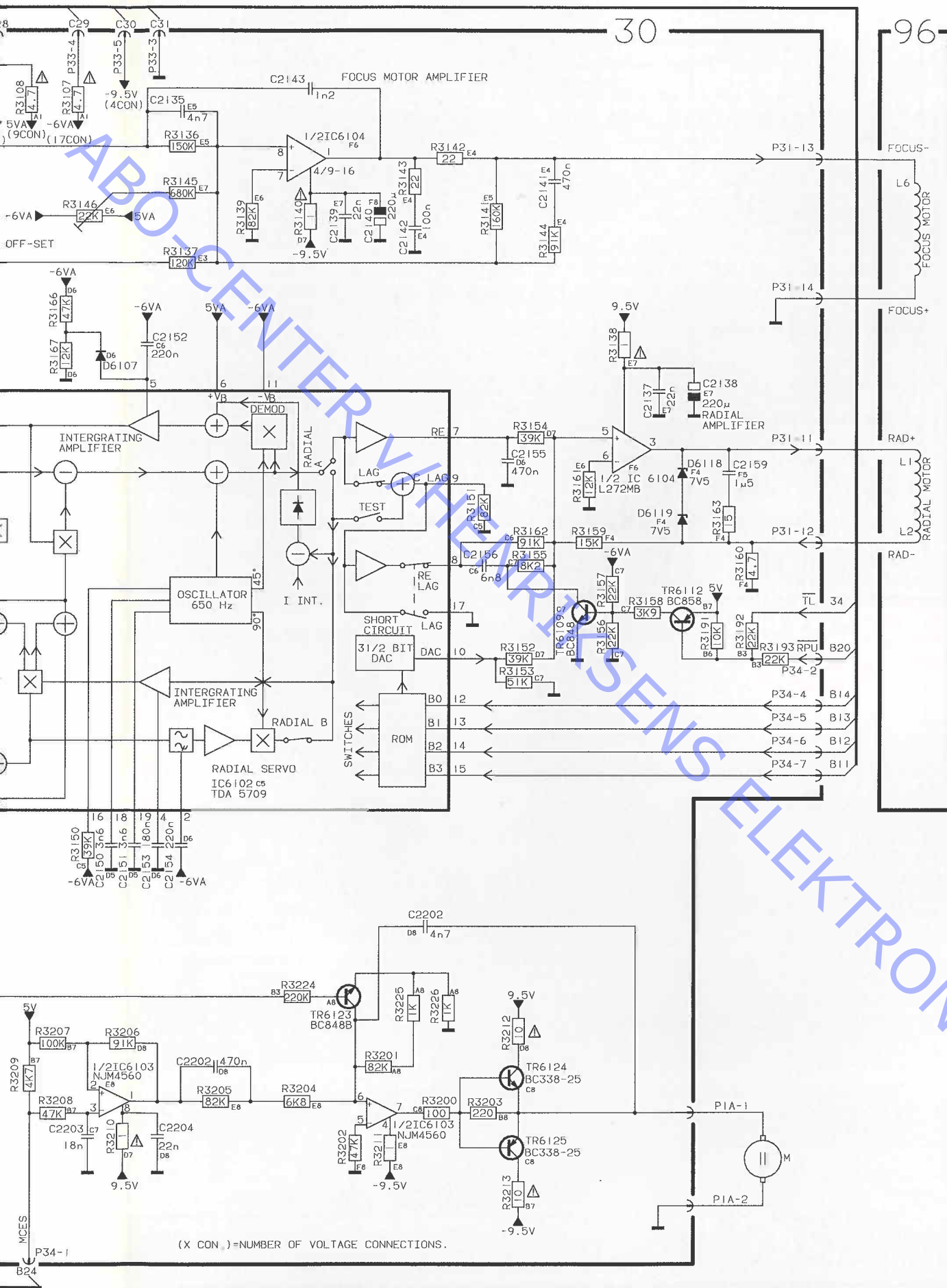
ABO-CENTER V/HENRIKSENS ELEKTRONIK

CD-Mechanism Version II Beogram CD 4500

Indklæbes i Serviceanvisningen Beogram CD 4500 (3538721/3538722)
Paste into Service Manual Beogram CD 4500 (3538721/3538722)
In Serviceanleitung Beogram CD 4500 (3538721/3538722) einkleben
A coller le Manual d'entretien pour Beogram CD 4500 (3538721/3538722)

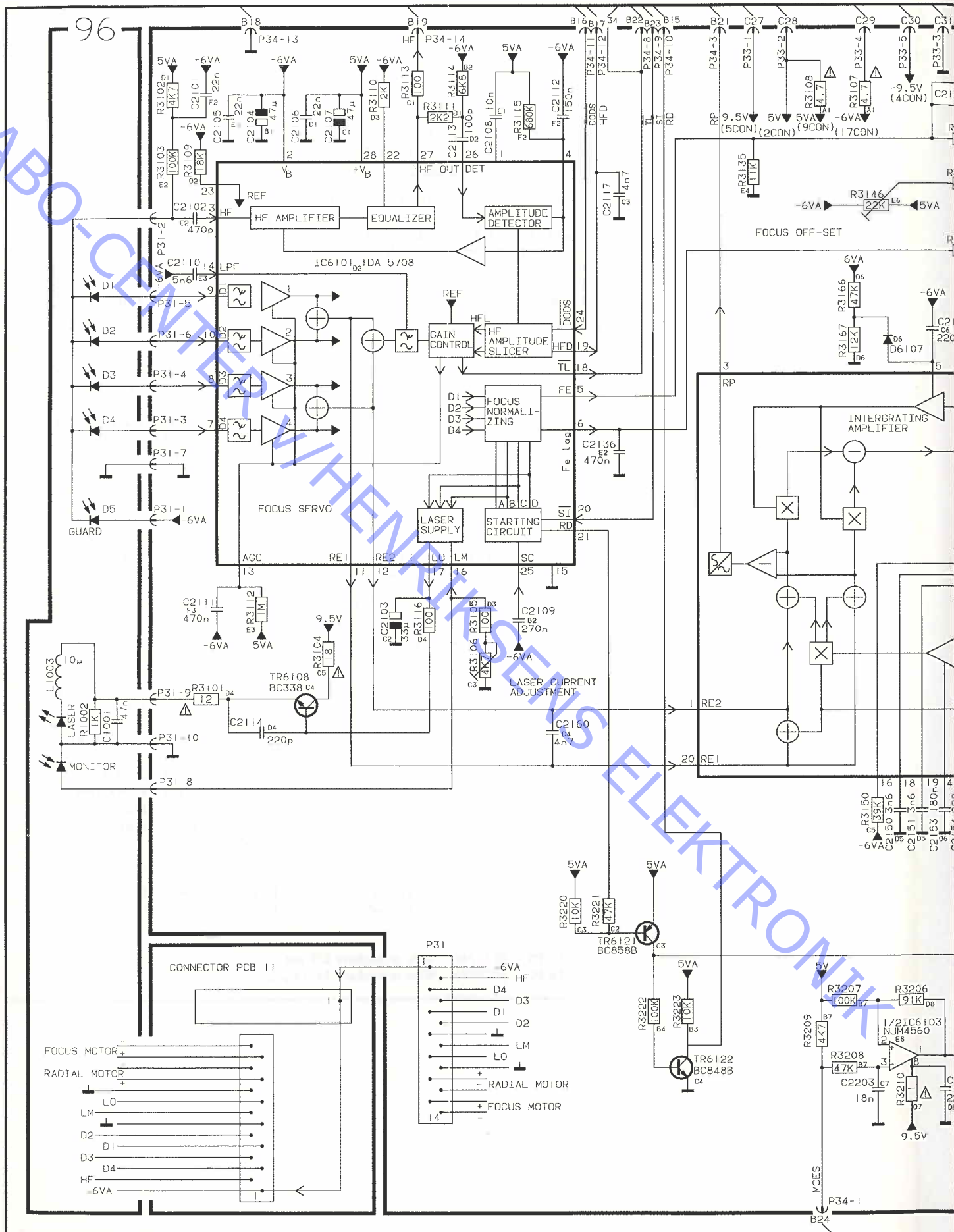
10-91 3538798



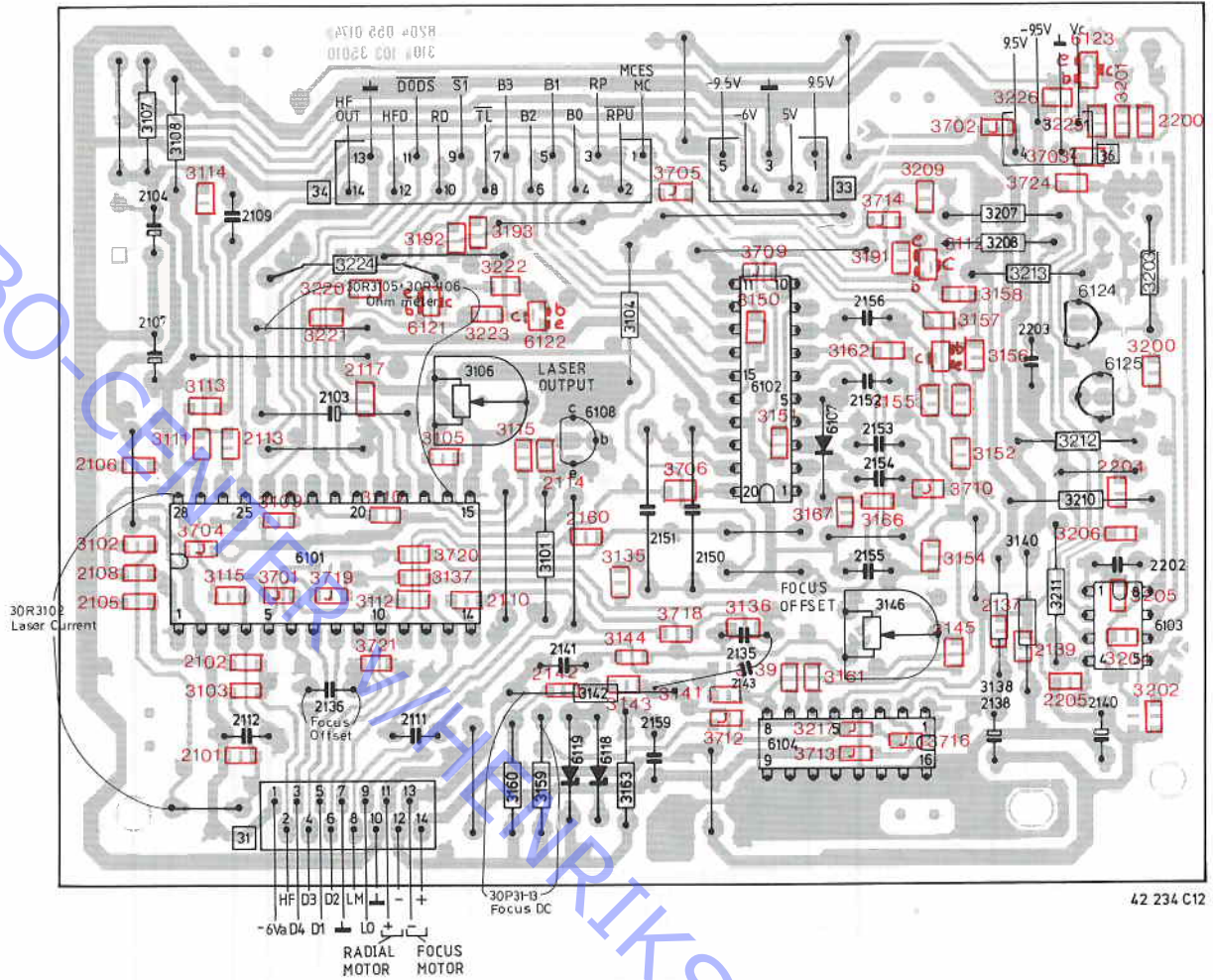


(X CON.) = NUMBER OF VOLTAGE CONNECTIONS.

DIAGRAM A (Servo and Disc Motor System)



Servo PCB 30

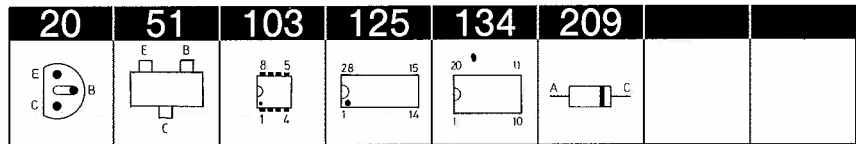


42 234 C12

9
10
11
5-1

9
10
11
5-1

LIST OF ELECTRICAL PARTS



Δ indicates that static electricity may destroy the component.

Resistors not referred to are standard, see page 3-2

PCB 30, 8005288
Servo

IC6101Δ	8340991	125	TDA 5708 C3	IC6103	8340993	103	NJM 4560D
IC6102Δ	8340992	134	TDA 5709	IC6104	8340683	103	L 272BH

TR6108	8320721	20	BC 338-16	TR6122-	8320615	51	BC 848B
TR6109	8320615	51	BC 848B	TR6123			
TR6112	8320616	51	BC 858B	TR6125	8320523	20	BC 328-25
TR6121	8320616	51	BC 858B				

D6107	8300058	209	1N 4148	D6118-	8300570	209	HZ 7C2 7V5
				D6119			

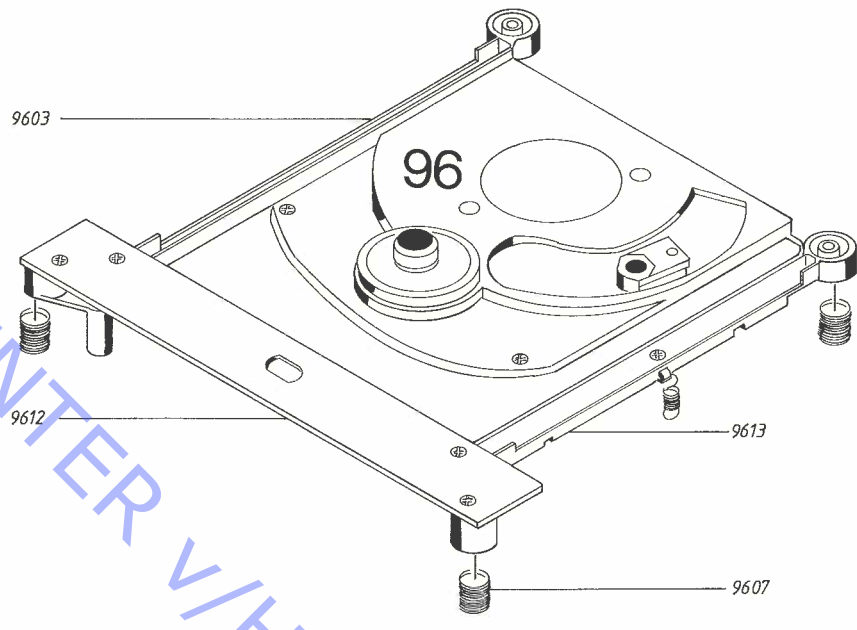
R3101	5020966	12Ω	5% 1/3W	R3146	5370327	22kΩ	20% 0.1W
R3104	5020967	18Ω	5% 1/3W	R3160	5020971	4.7Ω	1% 1/4W
R3106	5370324	4.7kΩ	20% 0.1W	R3207	5020263	100kΩ	1% 1/4W
R3107-	5020965	4.7Ω	2% 1/3W	R3208	5020969	47kΩ	1% 1/4W
R3108				R3210-	5020964	1.0Ω	2% 1/3W
R3138	5020964	1.0Ω	2% 1/3W	R3211			
R3140	5020964	1.0Ω	2% 1/3W	R3212-	5020489	10Ω	10% 0,30W
R3141	5011587	160kΩ	1% 1/8W	R3213			

C2101	4000255	22nF	10% 50V	C2139	4000255	22nF	10% 50V
C2102	4000249	470pF	5% 50V	C2140	4200745	220μ	16V
C2103	4200414	33μ	-10+50% 16V	C2141	4130405	470nF	50V
C2104	4200482	47μ	20% 10V	C2142	4000256	100nF	10% 50V
C2105-	4000255	22nF	10% 50V	C2143	4100283	1.2nF	2% 250V
C2106				C2150-	4130424	3.6nF	1% 160V
C2107	4200482	47μ	20% 10V	C2151			
C2108	4000254	10nF	10% 50V	C2152	4130206	220nF	10% 100V
C2109	4130379	270nF	5% 63V	C2153	4130314	180nF	10% 63V
C2110	4000253	5.6nF	10% 50V	C2154	4130206	220nF	10% 100V
C2111	4130405	470nF	10% 50V	C2155	4130405	470nF	10% 50V
C2112	4130406	150nF	5% 50V	C2156	4130338	6.8nF	5% 100V
C2113	4000248	100pF	5% 50V	C2159	4200746	1.5μ	50V Bipolar
C2114	4000233	220pF	5% 50V	C2160	4010173	4.7nF	10% 50V
C2117	4010173	4.7nF	10% 50V	C2200	4010173	4.7nF	10% 50V
C2135	4130370	4.7nF	5%	C2202	4130405	470nF	10% 50V
C2136	4130405	470nF	10% 50V	C2203	4130221	18nF	5% 63V
C2137	4000255	22nF	10% 50V	C2204-	4000255	22nF	10% 50V
C2138	4200745	220μ	16V	C2205			

P31	7210614	Socket, 14 pol	P34	7220657	Plug, 14 pole
P33	7220652	Plug, 5 pole	P36	7220651	Plug, 4 pole

To P5	6275746	Wire w/sockets 5/5 pin
To P6	6275745	Wire w/sockets 14/14 pin

LIST OF MECHANICAL PARTS



- 8420178 CD Mechanism with servo
- 8420179 CD.Mechanism without servo
- 8005288 Servo PCB

-
- 9603 3152841 Holder, left
 - 9612 3342053 Weight load
 - 9613 3152840 Holder, right
 - 9607 2812140 Spring
-

- 6276561 Wire bundle

ABO-CENTER V/HENDRIKSSENS ELEKTRONIK

60D
H
B
-25
7V5
W
V
4W
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