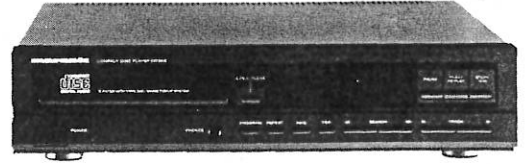


Service
Service
Service



44 520 A11

Service Manual

CONTENTS

- 1 Explanation of subdivision and table of contents per page
- 2 Controls and technical specifications
- 3 Servicing hints
- 4 Exploded view
- 5 Measurements and adjustments
- 6 Control & display panel
power supply
- 7 Circuit diagrams
- 8 Wiring diagram, Voltage adapter
- 9 Electrical parts list
- 10 List of symbols

COMPACT
disc
DIGITAL AUDIO

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 in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.

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.

I

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

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.

CLASS 1
LASER PRODUCT

3122 190 03420

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound.

Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available to our National Marantz Subsidiary or Agent.

ORDERING PARTS:

Parts can be ordered either by mail or by telex. In both cases, correct part number has to be specified. The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or telex must be signed otherwise such part order will be considered as null and void.

PARTS ORDERING

Parts may be ordered at the following addresses:

AUSTRIA HORNYPHON Vertriebsgesellschaft GmbH Wienerbergstrasse 1 A 1101 Wien Austria Telex: 132.332	FINLAND MARANTZ DIVISION OF OY PHILIPS Ab Kaivokatu 8 00100 Helsinki Finland Telex: 124811	GREAT BRITAIN MARANTZ AUDIO U.K. Ltd Unit 15/16 Saxon Way Industrial Estate Moor Lane Harmondsworth UB7 OLW Great Britain Telex: 935196	SAUDI ARABIA AL ALAMIAH ELECTRONICS P.O.Box 5954 University Street Riyadh 11432 Saudi Arabia Telex: 401530	SWITZERLAND DYNAVOX ELECTRONICS Route de Villars 105 1701 Fribourg Switzerland Telex: 942377
BELGIUM SVD DIVISION MARANTZ Industrialaan 1 1720 Groot-Bijgaarden Belgium Telex: 24466	FRANCE MARANTZ FRANCE 4 Rue Bernard Palissy 92600 Asnières France Telex: 611651	GREECE SHERTON ELECTRONICS S.A. P.O.Box 21025 Hippocrates Street 188 Athens 11471 Greece Telex: 216.795	SOUTH AFRICA MARANTZ DIVISION OF PHILIPS S.A. Main Road Martindale P.O. Box. 58088 Newville 21114 South Africa	TURKEY DOGRUOL Ltd. I.M.C. 6 Blok N°6310 Unkapani Istanbul Turkey Telex: 22085
CHILE MARANTZ DIVISION OF PHILIPS S.A. AV. Santa Maria, 0760 Casilla 2687 Santiago Telex: 240.239	GERMANY MARANTZ GERMANY GmbH Max-Planck-Strasse 22 6072 Dreieich 1 Germany Telex: 529821	JAPAN MARANTZ JAPAN, Inc. 35-1, 7-chome, Sagamiono Sagamihara-shi, Kanagawa Japan	SPAIN PHONO S.A. Ignacio Iglesias 10 Badalona (Barcelona) Spain Telex: 59355	MALTA CACHIA & GALEA Republic Street, 68D Valetta Telex: 1682
DENMARK MARANTZ DIVISION OF PHILIPS SERVICE A/S Prags Boulevard 80 Postbox 1919 DK-2300 København S Denmark Telex: 31201	THE NETHERLANDS Elpro Marantz Wint Hontlaan 28 3526 KV Utrecht The Netherlands Telex: 4748	KUWAIT AL ALAMIAH ELECTRONICS Ussama Building Fahd al Saleem Street P.O.Box 23781 Safat-Kuwait Telex: 22694	SWEDEN MARANTZ DIVISION OF PHILIPS Försäljning AB Tegeluddsvägen 1 S-115 84 Stockholm Sweden Telex: 14060	PORTUGAL MARANTZ Divisao philips S.A. service Outurela-carnaxide 2795 LinDA-A-VELHA Telex: 43906
	NORWAY MARANTZ DIVISION OF PHILIPS A/S Sandstuveien 40 0680 Oslo 6 Norway Telex: 72640	ITALY MARANTZ ITALIANA S.P.A. Via Chiese, 74 20126 Milano Italy		

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

1. EXPLANATION OF THE LAYOUT OF THE DOCUMENTATION

The documentation consists of chapters.
 The number of the chapter is indicated by the first digit of the page number.
 The second digit of the page number is the sequence numbering.

If modifications or supplements require new supplementary or replacement pages, the page number is extended with a third part:

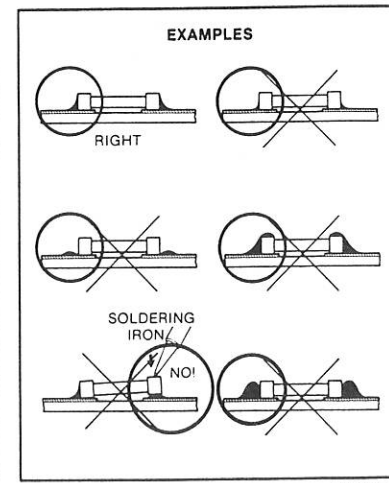
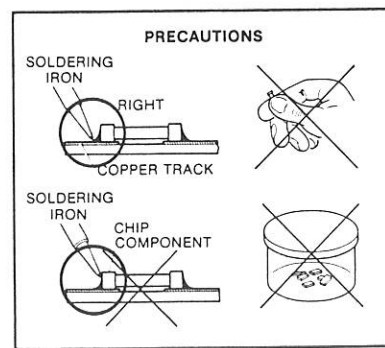
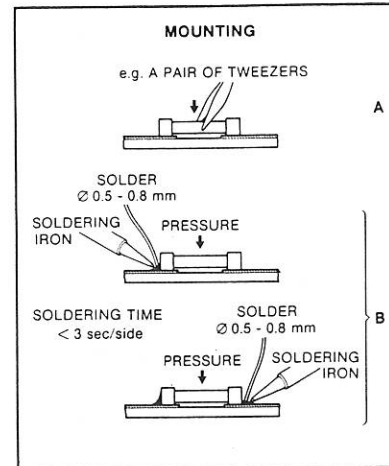
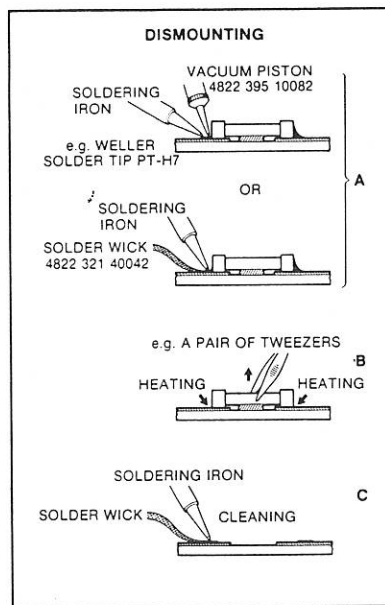
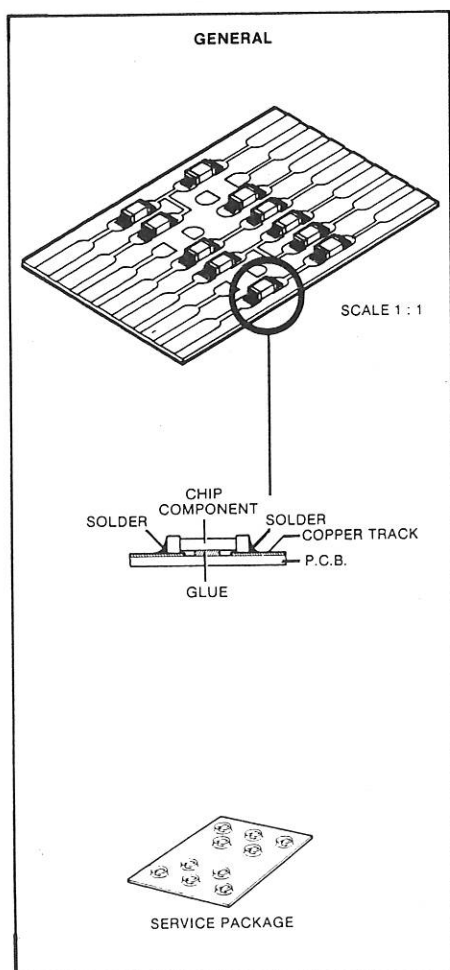
A digit behind the page number indicates that it concerns a supplementary page.
 A replacement page is indicated by a letter behind the page number.

Example

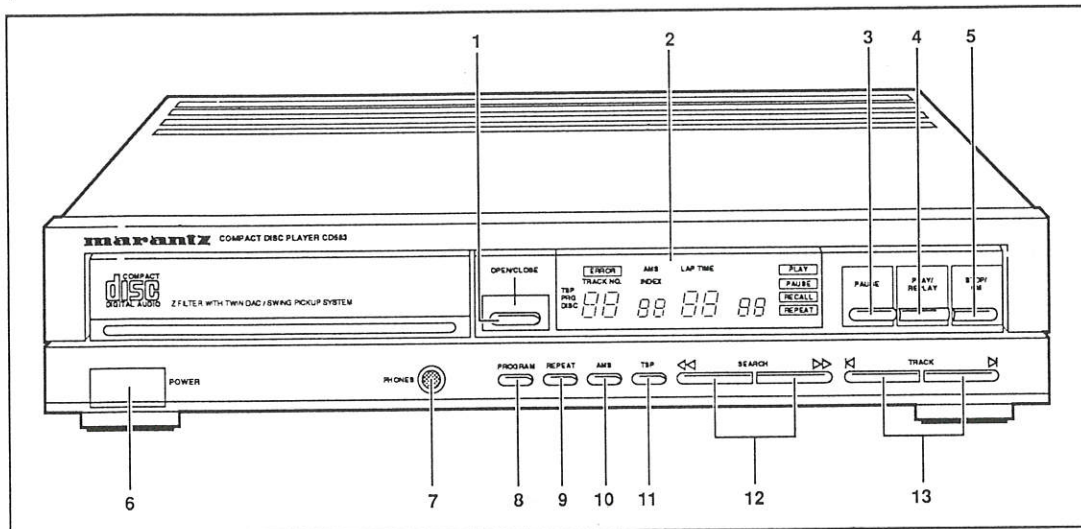
- 3-6 is page 6 of chapter 3
- 3-6-1 is a supplementary page behind page 3-6
- 3-6-a is the replacement page of page 3-6 (so page 3-6 can be removed from the documentation).

TABLE OF CONTENTS PER PAGE

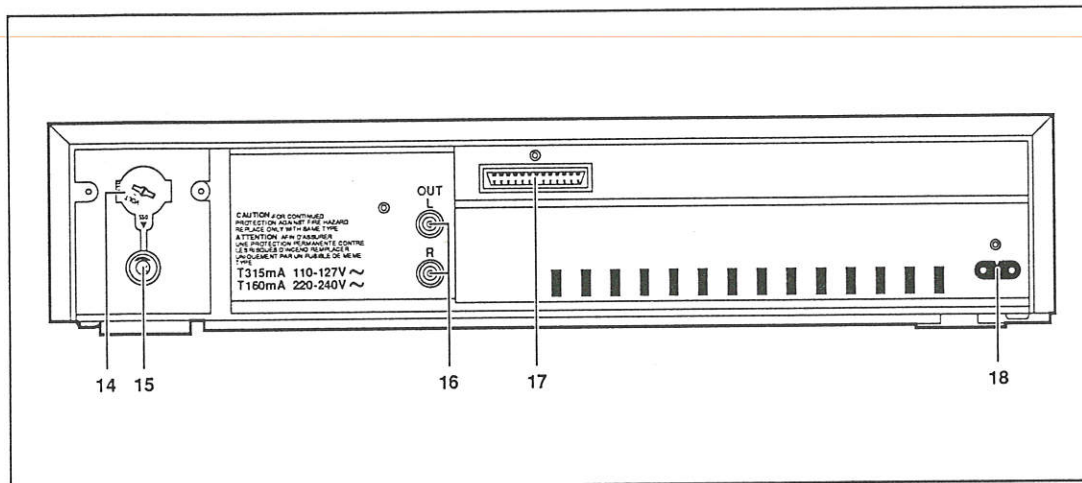
Chapter	Page	Contents
1	1-1	Explanation of the subdivision of the documentation Table of contents per page Handling chip components
2	2-1	Controls
	2-2	Controls, Technical specification
3	3-1	Servicing hints
4	4-1	Disassembly of the cabinet and loading
	4-2	Exploded view cabinet
	4-3	Exploded view loading
5	5-1	Trouble shooting
	5-2	Measurements and adjustments
	5-3	Measurements and adjustments
	5-4	Measurements and adjustments
	5-5	Measurements and adjustments Initiation of the servicing program
	5-6	Measurements and adjustments
	5-7	Bottom view Error table
6	6-1	Control & Display circuit diagram Control & Display panel
	6-2	Power supply circuit diagram
7	7-1	Block diagram
	7-2	Servo circuit
	7-3	Drawing of main panel
	7-4	Drawing of main panel
	7-5	Decoding 1 circuit
	7-6	Decoding 2 circuit
8	8-1	Wiring diagram
	8-2	Voltage adapter
9	9-1	Electrical parts list
	9-2	List of chip components
10	10-1	List of symbols
	10-2	List of symbols



1



2



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FRONT OF PLAYER

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 OPEN/CLOSE
For opening and closing the disc tray.</p> <p>2 DISPLAY
Informs you about the function of the player</p> <p>3 PAUSE
For interrupting play</p> <p>4 PLAY/REPLAY
For starting play (PLAY)
For returning to the beginning of a track (REPLAY)</p> <p>5 STOP/CM
For stopping play (STOP)
For erasing a programme (CM = Clear Memory)</p> <p>6 POWER
For switching the player on and off</p> <p>7 PHONES
For connection of headphones</p> | <p>8 PROGRAM
For storing track numbers in a programme
For erasing track numbers from a programme
For checking the programme</p> <p>9 REPEAT
For repeating a disc or programme</p> <p>10 AMS
For automatically playing the beginning of each track
(AMS = Automatic Music scan)</p> <p>11 TSP
For playing all tracks on a disc in random order
(TSP = Track Shuffle Play)</p> <p>12 «SEARCH»
For fast search for a particular passage («SEARCH
backwards; SEARCH » forwards)</p> <p>13 ⏪ TRACK ⏩
For selecting another track during play
For selecting a track number to start play with
For selecting track numbers during programming
(⏪ TRACK from high to low; TRACK ⏩ from low to high)</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

REAR OF PLAYER

All connections to the rear panel should be made with the power to the entire system switched off.

To avoid cross-connection of channels, connect one plug at a time.

14 VOLTAGE SELECTOR**15 MAINS FUSE HOLDER****16 OUT L/R**

Insert the two plugs of the connecting lead provided into these sockets and connect the other end of the cable to the CD or AUX sockets of the pre-amplifier or amplifier to be used. Be careful not to use the PHONO sockets!

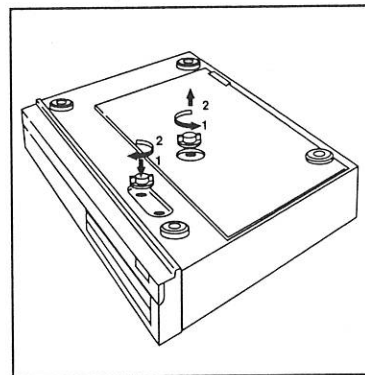
Note that **L** or white corresponds to the left channel and **R** or red to the right channel.

17 MULTY CONNECTOR

For interconnecting equipment when the player is used in a Marantz Midi System. See also 'Multy Connector' on page 8.

18 MAINS SOCKET

3



44 229 A11

REMOVING THE TRANSIT CLAMPS

The two red transit clamps on the underside of the player lock the player mechanism to secure it during transportation.

Remove these transit clamps before using the player
Store them in the recesses provided
Refit them before transporting the player

TECHNICAL SPECIFICATION

- | | | | |
|----------------------|---------------------------------------------------------------------------------------|------------------------------|------------------------------------------------------------|
| ● System | : Compact Disc Digital Audio system | ● Channel difference | : $\leq 0,2$ dB |
| ● Mainsvoltages | : 110 V, 127 V, 220 V, 240 V
$\pm 10\%$ (to be changed by transformer connections) | ● Total harmonic distortion | : ≤ -90 dB |
| ● Mains frequencies | : 50,60 Hz (no adaption required) | ● Intermodulation distortion | : ≤ -90 dB |
| ● Power consumption | : ≤ 20 W | ● De-emphasis | : 0 or 15/50 μ s (switched by the subcode on the disc) |
| ● Frequency range | : 20 Hz + 20 kHz $\pm 0,1$ dB | ● Dimensions WxDxH | : 360 x 300 x 81 mm (tray closed) |
| ● Output voltage | : max. 2 V _{rms} / ≥ 10 kOhms | ● Weight | : approx 3 kg |
| ● Output impedance | : 200 Ohms | | |
| ● S/N ratio | : ≥ 96 dB | | |
| ● Channel separation | : ≥ 90 dB | | |





3. SERVICING HINTS



All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can drastically reduce life expectancy. When repairing, make sure that you are connected via a wrist wrap with resistance to the same potential as the chassis of the set. Keep components and aids also at the same potential.

When the tray mechanism and CDM-unit has been disassembled the player can be prepared for measurements by bridging the "tray detection" switch SK2 on the main panel.

Explanation of the symbols used

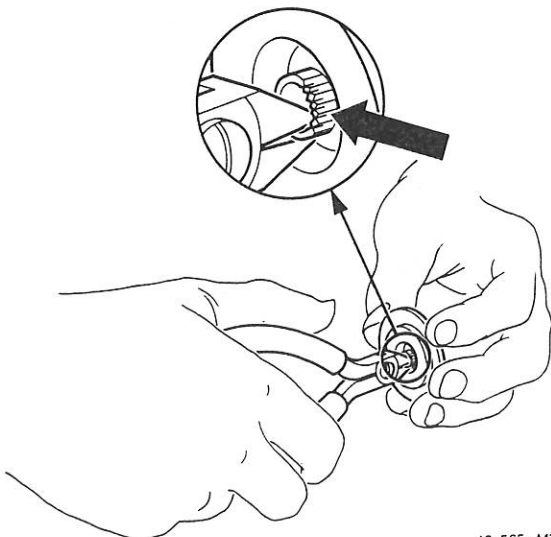
-  = oscilloscope (ri ≥ 10 MΩ)
-  = meter (voltmeter with ri ≥ 10 MΩ)
-  = carry out alignment/adjustment
-  = test point

Service disc hold-down

The disc should always rest properly on the turntable. To achieve this a disc hold-down has been mounted in a bracket of the tray mechanism.

If the tray mechanism has to be disassembled for servicing, a separate disc hold-down should be used. For a service disc hold-down see the figure below.

- Compose a service Disc hold-down in the following way.
- Cut in the most inner ring of a disc holddown pos 118 (4822 462 50383) with small and sharp nippers. See fig. below.
 - Enlarge the diameter of the innermost ring slightly with the hind part of a pencil or ballpoint, so that it jams onto the turntable with sufficient force.
 - If the jamming force decreases after certain time of use, the diameter has to be enlarged with a pencil or ballpoint again.



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SERVICE AIDS

Audio test disc 3	4822 397 30085
Disc without errors 5 + black spots and fingerprints 5A Disc (65 min 1kHz) without pause	4822 397 30096
Torx screwdrivers Set (straight) Set (square)	4822 397 30155
13th order filter	4822 395 50145
	4822 395 50132
	4822 395 30204

REPLACEMENT OF TRANSFORMER FUSE

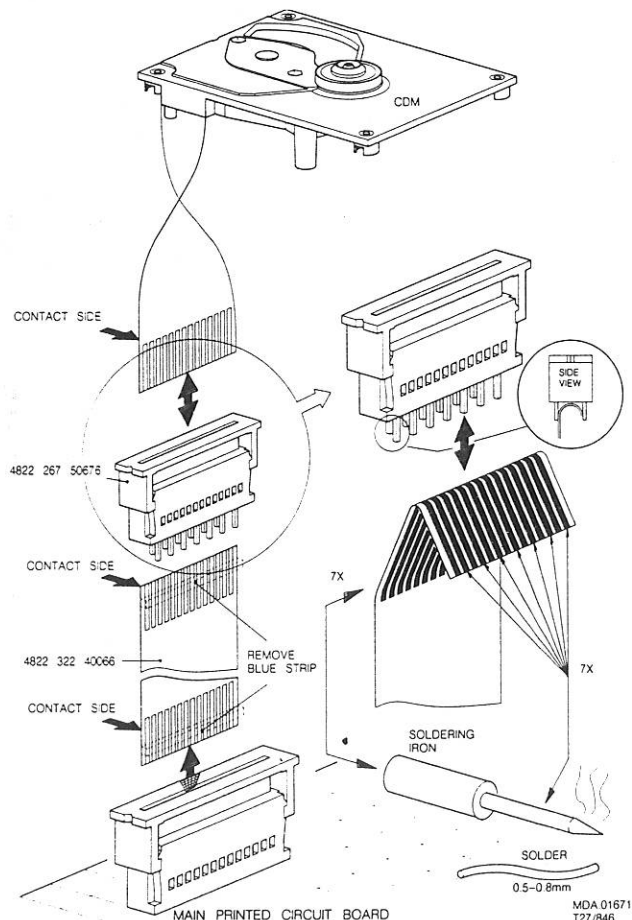
- Remove top cover.
- Remove the transformer
- Now the transformer fuse is accessible.

WORKING WITH THE FAULTFINDING TREE

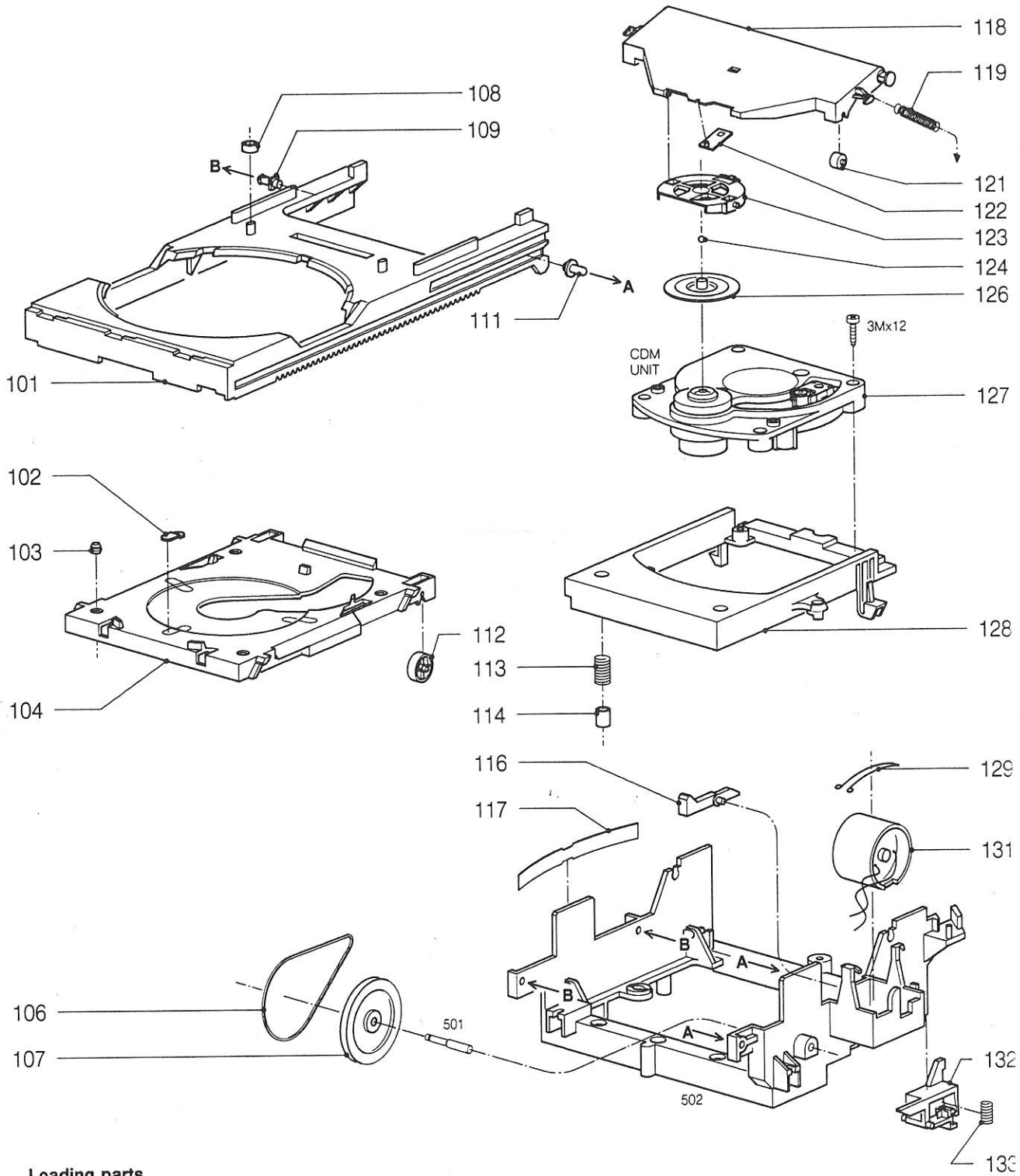
Follow the path of the faultfinding tree, beginning at the top left. Perform the actions you come across in the various blocks.

Look at the various side branches to find out if the information you see there applies to your problem. If, for instance, you find the indication display, this means that no picture appears on the display. If you establish this fault, follow the branch and perform the recommended actions. Check the components mentioned. In a number of branches further reference is made to measurements you could carry out. These measurements are explained in several tables further on in this manual.

EXTENSION CABLE



MDA 01671 T27/846



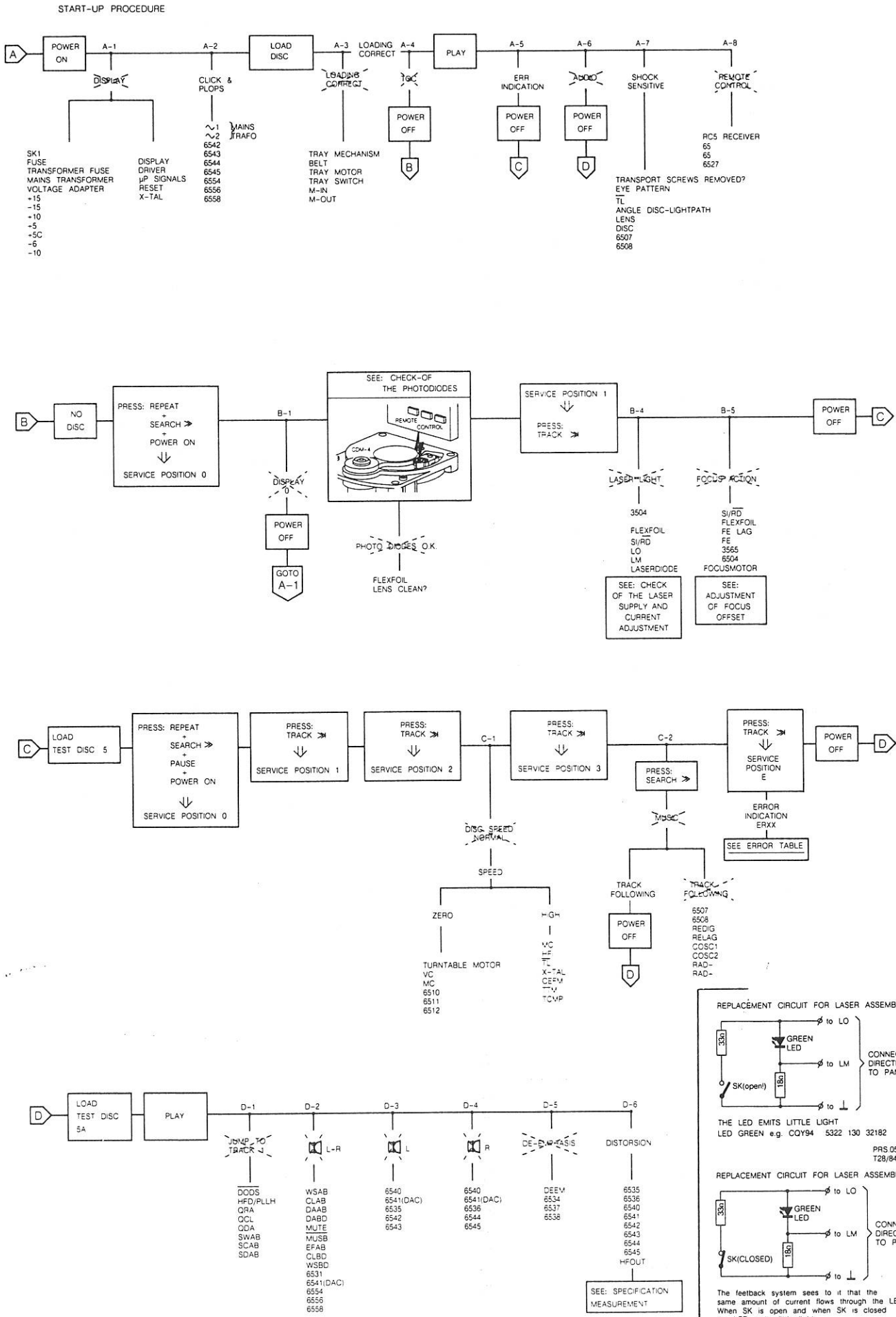
Loading parts

101	4822 444 50603	119	4822 492 32883
102	4822 325 50176	121	4822 528 90639
103	4822 325 50177	122	4822 466 92257
104	4822 466 92251	123	4822 402 61207
106	4822 358 10115	124	4822 520 40177
107	4822 522 32359	126	4822 530 80503
108	4822 532 51518	127	4822 691 30209
109	4822 402 61081	128	4822 402 61196
111	4822 402 61132	129	4822 492 63746
112	4822 528 90638	131	4822 361 20998
113	4822 492 51902	132	4822 402 50244
114	4822 466 61587	133	4822 492 51935
116	4822 402 61107	502	4822 464 50715
117	4822 492 63659		
118	4822 444 60568		

CAUTION
 INVISIBLE LASER RADIATION WHEN
 OPEN. DO NOT STARE INTO BEAM.
3104 106 75942

EVA.00594
821/T19

START-UP PROCEDURE (FAULT FINDING TREE)



A-1 μP - SIGNALS

Signal	Mode				Remarks
Reset	Power on	100		Pulse "high"	
X-TAL	Stand-by	101		4 MHz	
TRAY IN	Open/close	83		"high"	"high" when tray is closing
TRAY OUT	Open/close	83A		"low"	"low" when tray is opening
$\overline{\text{ATSB}}$	DISC, SEARCH	89		"low"	
$\overline{\text{MUTE}}$	Power on, play	67		Activity	"high" when starting up

T-22297A

B-2 B0, B1, B2, B3 SIGNALS

Signal	Mode				Remarks
B0	Service position 0 or 1; search >>	36		"low"	
	Service position 0 or 1; search <<	36		"low"	
B1	Service position 0 or 1; search >>	34		"high"	
	Service position 0 or 1; search <<	34		"high"	
B2	Service position 0 or 1; search >>	33		"low"	
	Service position 0 or 1; search <<	33		"high"	
B3	Service position 0 or 1; search >>	32		"high"	
	Service position 0 or 1; search <<	32		"high"	

T-22297B

B-3 CHECK OF THE PHOTODIODES

Step	Signal	Mode					Remarks
1	-	power on		-	-	See drawing 38314A12	Signal depends on Distance lens \leftrightarrow IR LED of remote control

T-22297C

B-4 CHECK OF LASER SUPPLY

The laser, the lasersupply plus the monitor diode form a feedback system. A defect in the lasersupply may result in the destruction of the laser. If, in that case, the laser is replaced, (= complete D.C.M.-unit) the new laser will also become defective. However, it is impossible to check and repair a feedback system if a link is missing. For this reason the laser supply can be checked with the replacement circuit for laser assembly.

Step	Signal	Mode					Remarks
1	LO	serv. pos. 2		-	1.8<V <2.3	-	PRS05539
	LM	SK		-	170<mV <220	-	
2	LO	serv. pos. 2		-	1.8<V <2.3	-	PRS05540
	LM	SK		-	170<mV <220	-	
3	LO	Power on		-	0V ± 0.2V	-	No light

T-22297D

B-4 LASER CURRENT ADJUSTMENT

Step	Signal	Mode					Remarks
1	-	Power off		R3520	1kΩ	-	Pre-adjustment Ohmic value
2	Eye-pattern HF	Power on Test disc 5 play	pin 25 decoder 1 (SAA7210)	-	-	See drawing 37017B8	IF no signal see "start up procedure"
3	laser current = voltage across R3501	Test disc 5 play track 1		R3520	50 mV DC	-	-

T-22297E

B-5 ADJUSTMENT OF FOCUS-OFFSET

Step	Signal	Mode					Remarks
1	-	Power on	-	R3569	-	-	adjust for optical mid-position of the focus motor
2	FE LAG	Play Test disc 5 Track 1	27	R3569	400mV ± 40 mV DC	-	fine adjustment

T-22297F

B-5 FOCUS ACTION

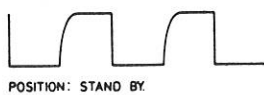
Signal	Mode				Remarks
SI/RD	Service position 1 when repeating start up procedure	21		pulses "low"	See drawing MDA.01403
FE	Service position 1, no disc	26			See drawing MDA.01413
FE-LAG	Test disc 5A, play	27			See adjustment of focus-offset

T-22297G

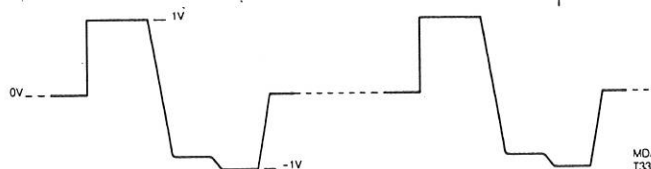
C-1 HIGH SPEED DISC ROTATION

Signal	Mode				Remarks
TL	Test disc 5, play or service position 2	13		pulses "low"	When the disc is slowly braked by hand
HFI	Test disc 5, play or service position 2	65			See drawing: 37017B8
X-tal	Test disc 5A, play or service position 2	69		11.28 MHz	
CEFM	Test disc 5A, play or service position 2	68		4.32 MHz	
MC	Test disc 5, play or service position 2	81			See drawing: 38849A12

T-22297H






37 017 B8



38 314 A12




MDA 01413
T33/823

C-2 TRACK FOLLOWING

Signal	Mode				Remarks
RE dig	Test disc 5, play or service position 3	37		pulses "high"	When the disc is slowly braked by hand
RE lag	Test disc 5, play or service position 3	41		400 Hz ↔ 500 Hz	Pulses during search
C osc1	Test disc 5, play or service position 3	30		650 Hz	
C osc2	Test disc 5, play or service position 3	31		650 Hz	




T-22297I

D1 JUMP TO TRACK 1

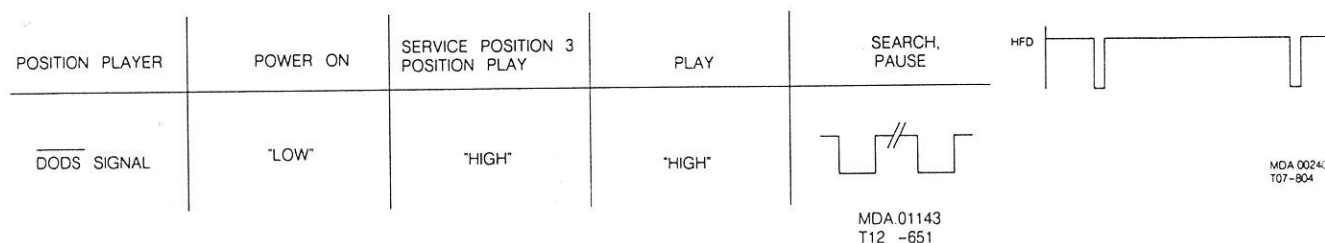
Signal	Mode				Remarks
$\overline{\text{DODS}}$	Test disc 5A search >> or search <<	19			See drawing MDA.01143
HFD/ $\overline{\text{PLLH}}$	Test disc 5A, track 15, play	23		pulses "low"	See drawing MDA.00240 also pulses when the disc is slowly braked by hand
QRA	Test disc 5A, play	75			} See drawing MDA.00453
QDA	Test disc 5A, play	77			
QCL	Test disc 5A, play	76			
SWAB/SSM	Test disc 5A, play	78			See drawing MDA.00239
SCAB	Test disc 5A, play	79			See drawing MDA.00239
SDAB	Test disc 5A, play	80			See drawing MDA.00239

T-22297J

D-2 NO AUDIO OUTPUT LEFT+RIGHT

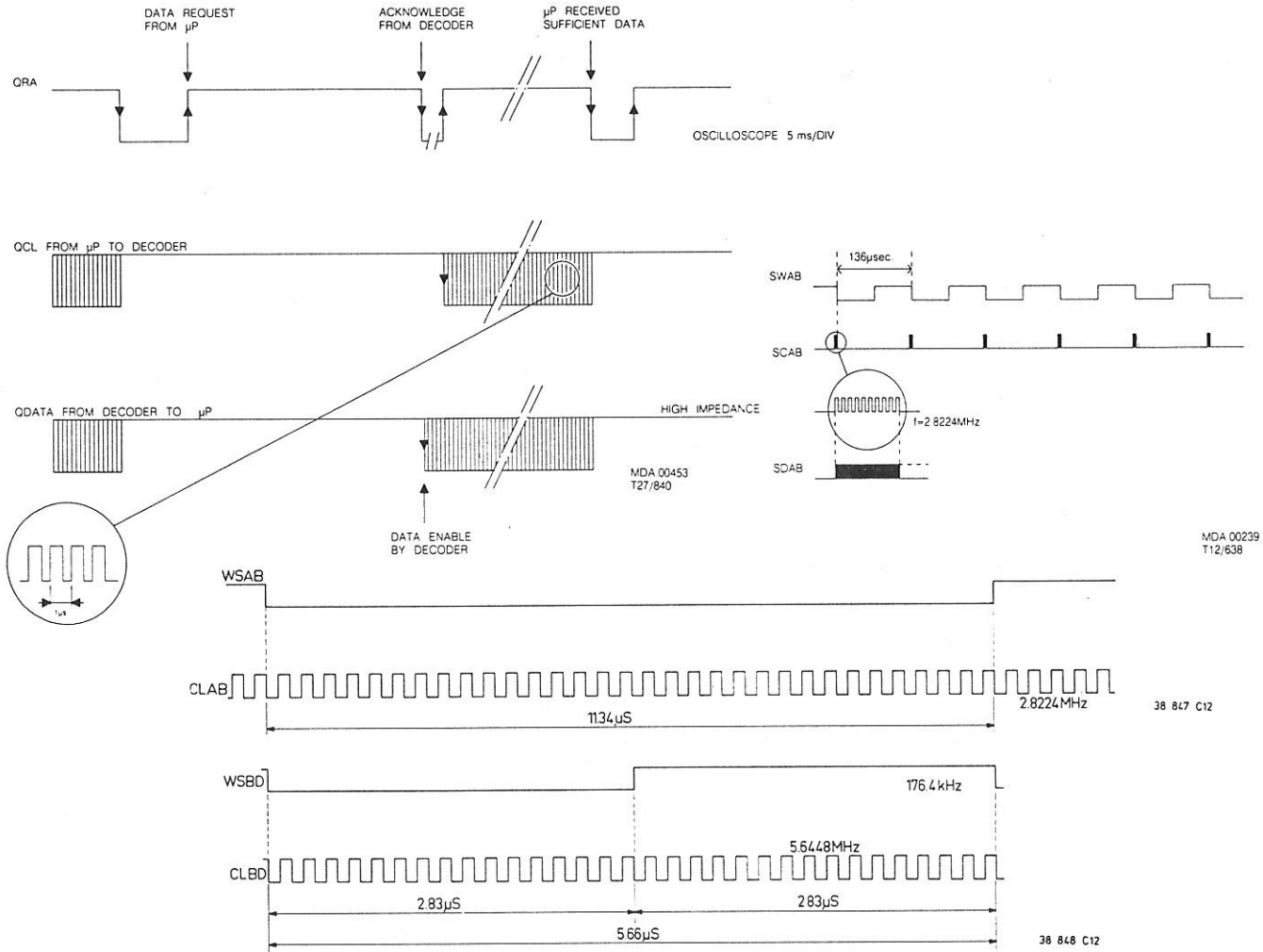
Signal	Mode				Remarks
WSAB	Disc, play	71			See drawing 38847C12
CLAB	Disc, play	72			See drawing 38847C12
DAAB	Disc, play	73		activity	See drawing 38847C12
EFAB	Testdisc 5A	74		pulses "high"	When the disc is slowly braked by hand
CLBD	Disc, play	87			See drawing 38848C12
DABD	Disc, play	86		activity	See drawing 38848C12
WSBD	Disc, play	85			See drawing 38848C12
$\overline{\text{MUSB}}$	Disc, play	90		"high"	Pause, next, prev, stop: "low"

T-22297K



MDA.01143
T12 -651

MDA 0024C
T07-804



Initiation of the servicing programme of the µP

- Servicing position "0"

Simultaneously depress the SEARCH», PAUSE and REPEAT keys. Keep these three keys depressed while the mains voltage is switched on. This is the STAND-BY mode, "0000P 105" appears on the display.

In this position it is possible to move the arm by means of the SEARCH » and SEARCH« keys with a minimum of torque to the inside and outside respectively. This makes it possible to control the free motion of the arm across the length of the disc.

- Servicing position "1"

From servicing position "0" the player can be brought in servicing position "1" by depressing the TRACK/INDEX ▷▷ key.

In this state the laser emits light and the objective starts to focus. When the focal point has been reached, "0001P 105" appears on the display.

In service mode "1" the arm can be moved across the disc by means of the SEARCH» and SEARCH« keys.

- Servicing position "2"

To be reached by depressing the TRACK/INDEX ▷▷ key after servicing position "1" has been reached.

The turntable motor starts to run

On the display appears "0002P 105".

In preparation of the transition to servicing position "3" the arm is sent to the centre of the disc.

- Servicing position "3"

To be reached by depressing the TRACK/INDEX ▷▷ key after servicing position "2" has been reached.

The radial control is switched on. $\overline{\text{MUSB}}$ is high so that the music information is released.

On the display appears "0003P 105".

(Dependent on the length of the lead-in track music will be reproduced after approx. 1 min. when a disc has been inserted).




In this state it is possible to move the arm by means of the SEARCH » key to the outside and to the inside, by means of the SEARCH «.

Now the motion is controlled by the µP and the arm moves by steps of 64 tracks as long as the key is depressed.

If servicing position 3 is disturbed (e.g. braking or removing the disc) the player reassumes servicing position "0".




The servicing programme can be left by switching the mains switch (POWER ON/OFF) off and on (Hardware reset).

D-5 DEEM CIRCUIT

Signal	Mode				Remarks
DEEM	Test disc 5A: track 14 PLAY track 15 PLAY	84		"low" "high"	See testpoint 92 and 91 on DEEM circuit
Testpoint 92	Test disc 5A track 14	92		LF signal	
Testpoint 92	Test disc 5A track 15	92		No signal	
Testpoint 91	Test disc 5A track 14	91		LF signal	
Testpoint 91	Test disc 5A track 15	91		No signal	




T-22297L

D-6 SPECIFICATIONS MEASUREMENT

Signal	Mode				Remarks
BU2-L	Test disc 3, play, total harmonic distortion	filter output	See technical data		See drawing 30459A12
BU2-R	Test disc 3, play, total harmonic distortion	filter output	See technical data		See drawing 30459A12
BU2-L	Test disc 3, play signal-to-noise ratio	filter output	See technical data		See drawing 30459A12
BU2-R	Test disc 3, play signal-to-noise ratio	filter output	See technical data		See drawing 30459A12

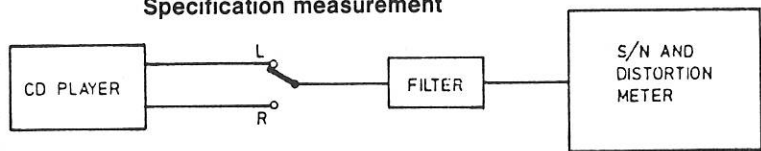
T-22297M

D-9 DOBM DIGITAL OUTPUT

Signal	Mode				Remarks
DOBM	Test disc 5A	88			See drawing MDA.00238

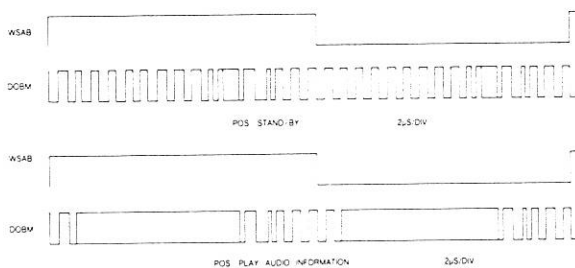
T-22297N

Specification measurement



eg SOUND TECHNOLOG
ST 1700B

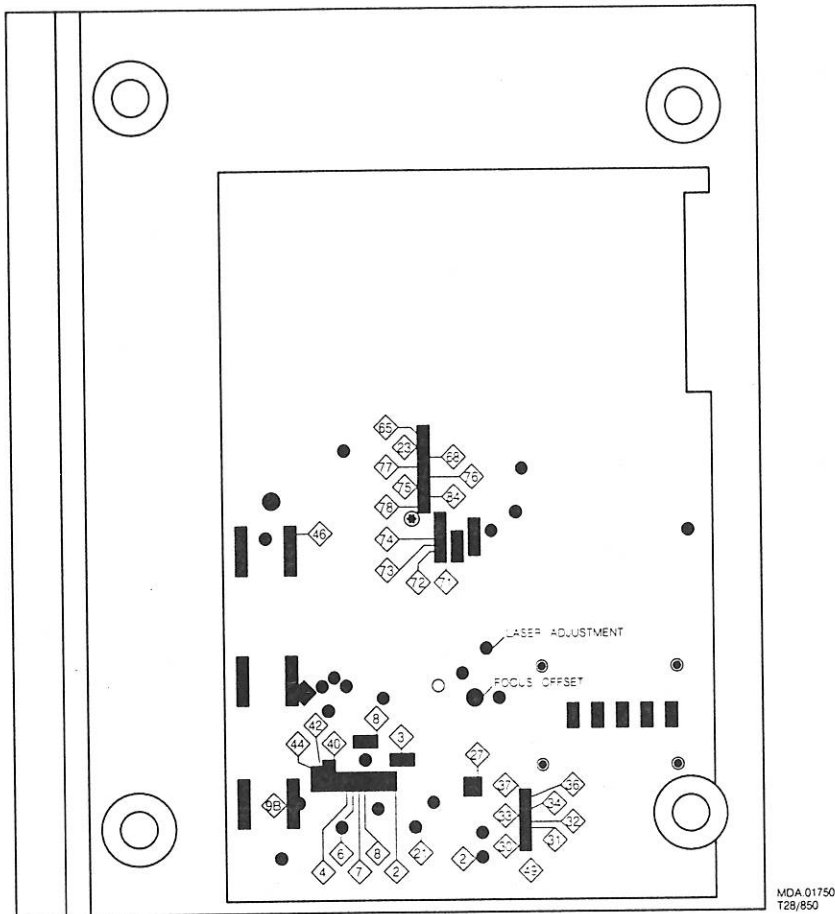
Fig. 4



MDA.00238
T07/733

To measure the specification use can be made of audio test disc 4822 397 30085. Use 13th order filter 4822 395 30204 to measure (see Fig.4):

- Total harmonic distortion (THD)
- Intermodulation distortion
- Signal-to-noise ratio (S/N)



ERROR TABLE

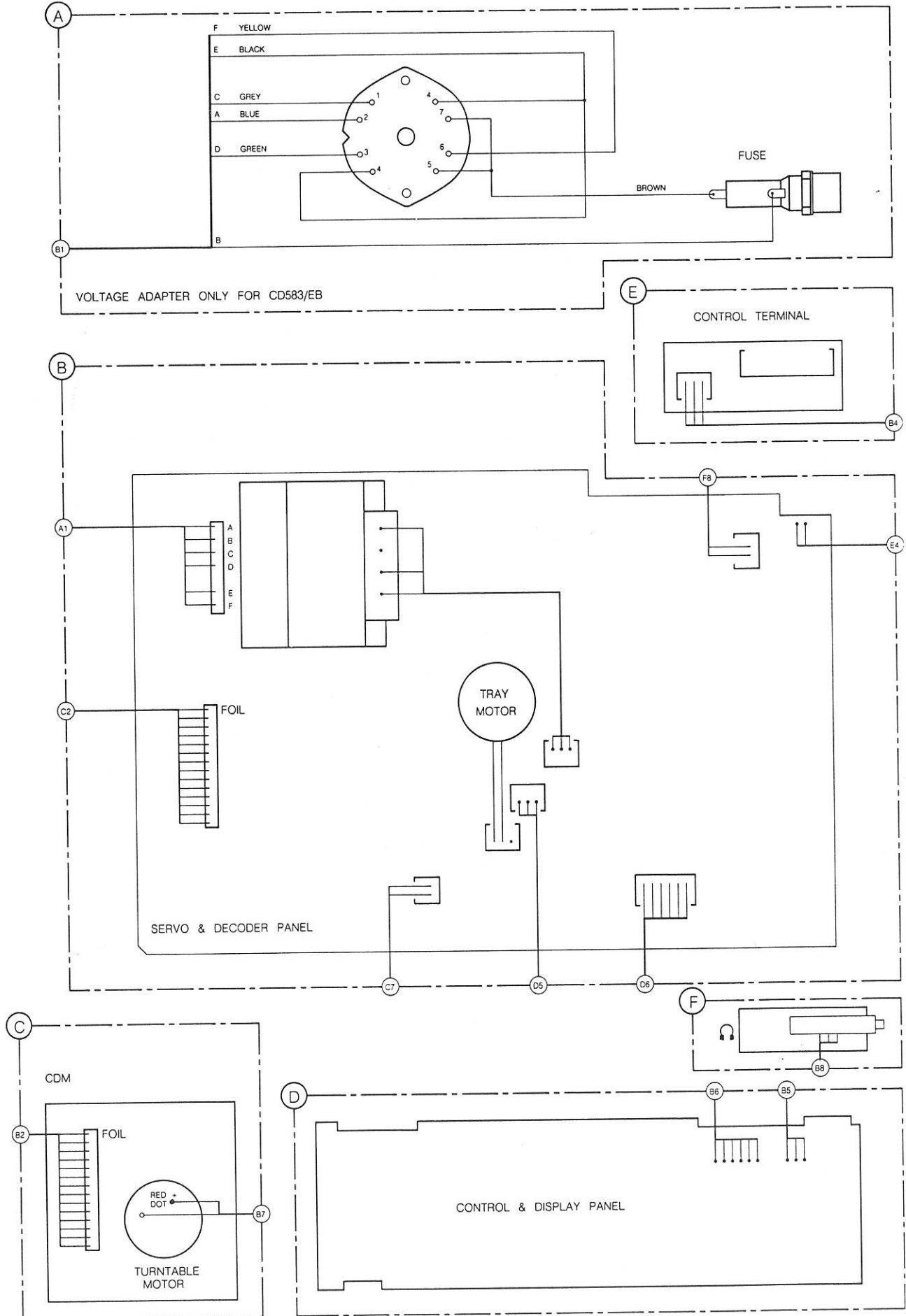
System errors

Indication	Cause	Check
Er 01	No RD	$\bar{S}i$, Sc, RD, Photodiode signal processor
Er 02	No $\bar{T}L$ pulse at start-up	$\bar{T}L$, HF, Photodiode signal processor, CD disc present
Er 03	No lead-in track found	CD disc, radial arm position, REdig, Radial error processor
Er 04	Too many $\bar{T}L$ pulses in PLAY	CD disc, $\bar{H}F\bar{D}$
Er 05	$\bar{T}L$ pulse > 50 msec. in PLAY	CD disc, HF in, photodiodes
Er 06	No $\bar{T}L$ pulse within 0.5 sec. during track jumping	RE-lag circuit
Er 07	Subcoding error during PLAY	HF
Er 08	TOC error	CD disc, turntable motor control, radial arm position

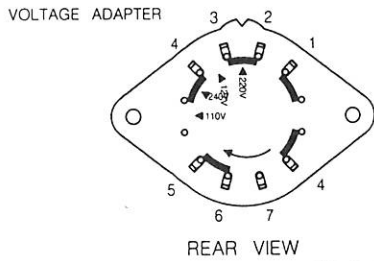
Operating errors

- Er 30 "NEXT" key operated during the last track, with "REPEAT" turned off.
- Er 31 "PREVIOUS" key operated during the first track, with "REPEAT" turned off.
- Er 32 Index selected before a track has been selected.
- Er 33 The selected index number does not exist on this disc.
- Er 34 Programme survey requested; no programme present.
- Er 35 The programme memory is full.
- Er 36 The programmed track is not present on this CD disc.
- Er 37 The selected track is not present on this CD disc.
- Er 60 End of the "FAST FORWARD" search motion.
- Er 61 End of the "FAST REVERSE" search motion.

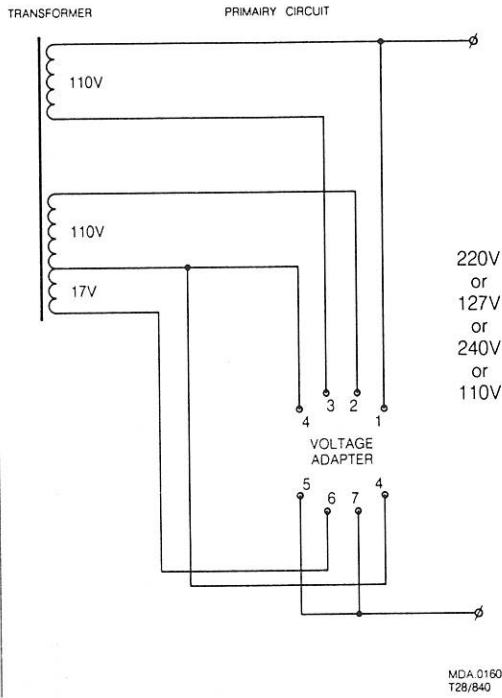
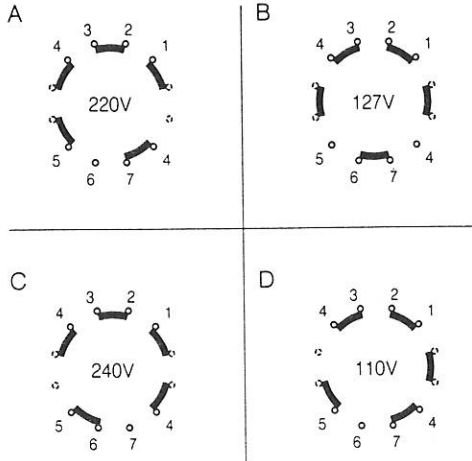
WIRING DIAGRAM



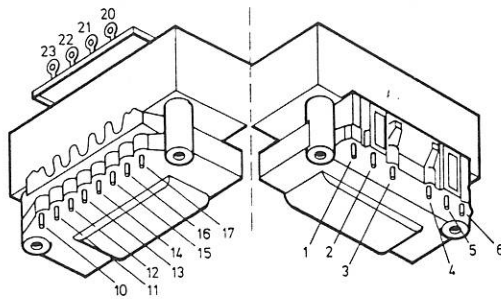
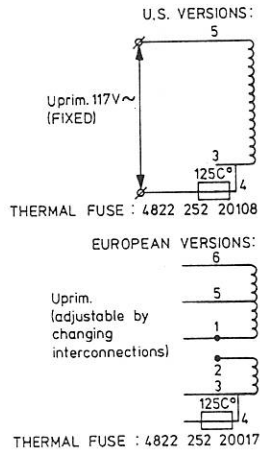
ONLY FOR /EB



CONNECTIONS INSIDE VOLTAGE ADAPTER



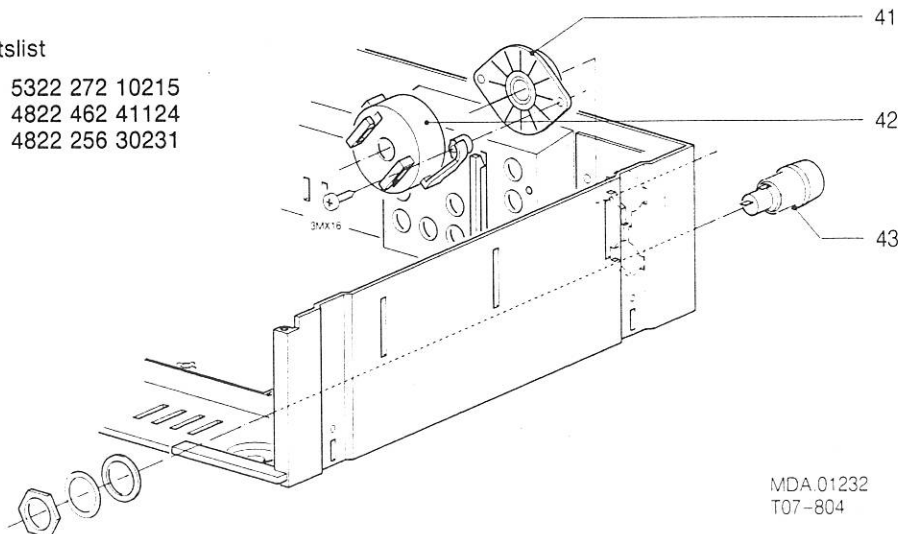
MDA 01601
T28/840



Uprim. (V) ~	Winding	Inter-connect
110	4-1	3-1/5-2
127	4-6	3-1/5-2
220	4-5	1-2
240	4-6	1-2

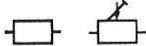



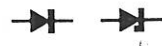

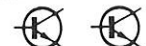
partslist

- 41 5322 272 10215
- 42 4822 462 41124
- 43 4822 256 30231



MDA 01232
T07-804

ELECTRICAL PARTSLIST SUPPLY SERVO & DECODER PANEL

 <p>Safety res. 4E7 4822 111 30499 Trimpot. 4k7 LIN 4822 101 10685 Safety res. 18E 4822 111 30515 Safety res. 12E 4822 111 30511 Safety res. 1E 4822 111 30483 Trimpot. track 22k LIN 4822 100 20522 Metal film res. 100k 1% 4822 116 52973 Safety res. 10E 4822 111 30508 Metal film 1k8 1% 4822 116 53109 Safety res. 33E 4822 111 30522</p>	 <p>TDA8808T/C3 4822 209 73234 TDA8809T/C2 4822 209 73235 TCA0372DP2 4822 209 72587 NJM4560D 4822 209 83274 SAA7210P/04 4822 209 71001 MN4264-15 4822 209 70422 μP 68HC05C8/P105 4822 209 73232 LM833N 4822 209 83163 SAA7220P/B 4822 209 72545 TDA1541A/N2 4822 209 72544 MC78M12CT 4822 209 86176 MC78L15 4822 209 80889 TY40408 4822 209 71579 MC7906CT 4822 209 82056 MC79M15CT 4822 209 86361</p>
 <p>Crystal 11.289,60 kHz 4822 242 71644 Ceram filter 400 MHz 4822 242 70831 Cap. foil 8,2 nF 1% 4822 121 51321 Bipolar elco 680 nF 50V 4822 124 41583 Cap. foil 4,7 nF 1% 4822 121 51051 Cap. foil 15 nF 1% 4822 121 51049 Bipolar elco 100μ 16 V 4822 124 22339 Bipolar elco 10μ 25 V 4822 124 41558 Elco 6800 μF 16 V 4822 124 41591</p>	 <p>Mains switch SK1 4822 276 11309 TRAY switch on PCB 4822 276 11896 Mains inlet BU1 4822 265 20291 Cinch socket 2p 4822 267 30881 Fuse holder 4822 256 30274</p>
 <p>BZX55C7V5 4822 130 81101 1N4148 4822 130 30621 BZX55C3V0 4822 130 81122 1N4002 5322 130 30684 BZX55C3V9 4822 130 33637 BZX85C6V2 5322 130 32962 BZX55C15V0 4822 130 81086 BZX55C4V7 5322 130 80275</p>	 <p>Coil 4,7 μH 4822 157 53139 Coil 470 μH 4822 157 53141</p>
 <p>BC338 4822 130 44121 BC858 5322 130 42012 BC328 4822 130 44104 BC818 4822 130 42675 BC848C 5322 130 42136 BC548 4822 130 40938 BC848 5322 130 41981 BC328-16 4822 130 41023</p>	<p>Miscellaneous</p> <p>Headphone socket 4822 267 30743 Fuse 4822 253 30009 Transport protection 4822 417 20162 Mains transformer 4822 146 30702 Transformer fuse 4822 252 20017 Dir. for use 4822 736 20074</p>

Ⓢ Chips 50 V NP0 S1206			Ⓢ Chips 0,125 W S1206			Ⓢ Chips 0,125 W S1206			1U
1 pF	5%	4822 122 32479	4,7 E	5%	5322 111 90376	6,8 k	2%	4822 111 90544	
1,2 pF	5%	4822 122 33013	5,1 E	5%	4822 111 90393	7,5 k	2%	4822 111 90276	
1,5 pF	5%	4822 122 31792	5,6 E	5%	4822 111 90394	8,2 k	2%	5322 111 90118	
1,8 pF	5%	4822 122 32087	6,2 E	5%	4822 111 90395	9,1 k	2%	4822 111 90373	
2,2 pF	5%	4822 122 32425	6,8 E	5%	4822 111 90254	10 k	2%	4822 111 90249	
3,3 pF	5%	4822 122 32079	7,5 E	5%	4822 111 90396	11 k	2%	4822 111 90337	
3,9 pF	5%	4822 122 32081	8,2 E	5%	4822 111 90397	12 k	2%	4822 111 90253	
4,7 pF	5%	4822 122 32082	9,1 E	5%	4822 111 90398	13 k	2%	4822 111 90509	
5,6 pF	5%	4822 122 32506	10 E	2%	5322 111 90095	15 k	2%	4822 111 90196	
6,8 pF	5%	4822 122 32507	11 E	2%	4822 111 90338	16 k	2%	4822 111 90346	
8,2 pF	5%	4822 122 32083	12 E	2%	4822 111 90341	18 k	2%	4822 111 90238	
10 pF	5%	4822 122 31971	13 E	2%	4822 111 90343	20 k	2%	4822 111 90349	
12 pF	5%	4822 122 32139	15 E	2%	4822 111 90344	22 k	2%	4822 111 90251	
15 pF	5%	4822 122 32504	16 E	2%	4822 111 90347	24 k	2%	4822 111 90512	
18 pF	5%	4822 122 31769	18 E	2%	5322 111 90139	27 k	2%	4822 111 90542	
22 pF	10%	4822 122 31837	20 E	2%	4822 111 90352	30 k	2%	4822 111 90216	
27 pF	5%	4822 122 31966	22 E	2%	4822 111 90186	33 k	2%	5322 111 90267	
33 pF	5%	4822 122 31756	24 E	2%	4822 111 90355	36 k	2%	4822 111 90514	
39 pF	5%	4822 122 31972	27 E	2%	5322 111 90105	39 k	2%	5322 111 90108	
47 pF	5%	4822 122 31772	30 E	2%	4822 111 90356	43 k	2%	4822 111 90363	
56 pF	5%	4822 122 31774	33 E	2%	4822 111 90357	47 k	2%	4822 111 90543	
68 pF	5%	4822 122 31961	36 E	2%	4822 111 90359	51 k	2%	5322 111 90274	
82 pF	10%	4822 122 31839	39 E	2%	4822 111 90361	56 k	2%	4822 111 90573	
100 pF	5%	4822 122 31765	43 E	2%	5322 116 90125	62 k	2%	5322 111 90275	
120 pF	5%	4822 122 31766	47 E	2%	4822 111 90217	68 k	2%	4822 111 90202	
150 pF	5%	4822 122 31767	51 E	2%	4822 111 90365	75 k	2%	4822 111 90574	
180 pF	2%	4822 122 31794	56 E	2%	4822 111 90239	82 k	2%	4822 111 90575	
220 pF	5%	4822 122 31965	62 E	2%	4822 111 90367	91 k	2%	5322 111 90277	
270 pF	5%	4822 122 32142	68 E	2%	4822 111 90203	100 k	2%	4822 111 90214	
330 pF	10%	4822 122 31642	75 E	2%	4822 111 90371	110 k	2%	5322 111 90269	
390 pF	5%	4822 122 31771	82 E	2%	4822 111 90124	120 k	2%	4822 111 90568	
470 pF	5%	4822 122 31727	91 E	2%	4822 111 90375	130 k	2%	4822 111 90511	
560 pF	5%	4822 122 31773	100 E	2%	5322 111 90091	150 k	2%	5322 111 90099	
680 pF	5%	4822 122 31775	110 E	2%	4822 111 90335	160 k	2%	5322 111 90264	
820 pF	5%	4822 122 31974	120 E	2%	4822 111 90339	180 k	2%	4822 111 90565	
1 nF	10%	5322 122 31647	130 E	2%	4822 111 90164	200 k	2%	4822 111 90351	
1,2 nF	5%	4822 122 31807	150 E	2%	5322 111 90098	220 k	2%	4822 111 90197	
1,5 nF	10%	4822 122 31781	160 E	2%	4822 111 90345	240 k	2%	4822 111 90215	
1,8 nF	10%	4822 122 32153	180 E	2%	5322 111 90242	270 k	2%	4822 111 90302	
2,2 nF	10%	4822 122 31644	200 E	2%	4822 111 90348	300 k	2%	5322 111 90266	
2,7 nF	10%	4822 122 31783	220 E	2%	4822 111 90178	330 k	2%	4822 111 90513	
3,3 nF	10%	4822 122 31969	240 E	2%	4822 111 90353	360 k	2%	4822 111 90515	
3,9 nF	10%	4822 122 32566	270 E	2%	4822 111 90154	390 k	2%	4822 111 90182	
4,7 nF	10%	4822 122 31784	300 E	2%	4822 111 90156	430 k	2%	4822 111 90168	
5,6 nF	10%	4822 122 31916	330 E	2%	5322 111 90106	470 k	2%	4822 111 90161	
6,8 nF	10%	4822 122 31976	360 E	1%	4822 111 90288	510 k	2%	4822 111 90364	
10 nF	10%	4822 122 31728	360 E	2%	4822 111 90358	560 k	2%	4822 111 90169	
12 nF	10%	5322 122 31648	390 E	2%	5322 111 90138	620 k	2%	4822 111 90213	
15 nF	10%	4822 122 31782	430 E	2%	4822 111 90362	680 k	2%	4822 111 90368	
18 nF	10%	4822 122 31759	470 E	2%	5322 111 90109	750 k	2%	4822 111 90369	
22 nF	10%	4822 122 31797	510 E	2%	4822 111 90245	820 k	2%	4822 111 90205	
27 nF	10%	4822 122 32541	560 E	2%	5322 111 90113	910 k	2%	4822 111 90374	
33 nF	10%	4822 122 31981	620 E	2%	4822 111 90366	1 M	2%	4822 111 90252	
47 nF	10%	4822 122 32542	680 E	2%	4822 111 90162	1,1 M	5%	4822 111 90408	
56 nF	10%	4822 122 32183	750 E	2%	5322 111 90306	1,2 M	5%	4822 111 90409	
100 nF	10%	4822 122 31947	820 E	2%	4822 111 90171	1,3 M	5%	4822 111 90411	
180 nF	10%	4822 122 32915	910 E	2%	4822 111 90372	1,5 M	5%	4822 111 90412	
220 nF	20%	4822 122 32715	1 k	2%	5322 111 90092	1,6 M	5%	4822 111 90413	
Ⓢ Chips 0,125 W S1206 NP0			1,1 k	2%	4822 111 90336	1,8 M	5%	4822 111 90414	
0 E	jumper	4822 111 90163	1,2 k	2%	5322 111 90096	2 M	5%	4822 111 90415	
1 E	5%	4822 111 90184	1,3 k	2%	4822 111 90244	2,2 M	5%	4822 111 90185	
1,1 E	5%	4822 111 90377	1,5 k	2%	4822 111 90151	2,4 M	5%	4822 111 90416	
1,2 E	5%	4822 111 90378	1,6 k	2%	5322 111 90265	2,7 M	5%	4822 111 90417	
1,3 E	5%	4822 111 90379	1,8 k	2%	5322 111 90101	3 M	5%	4822 111 90418	
1,5 E	5%	4822 111 90381	2 k	2%	4822 111 90165	3,3 M	5%	4822 111 90191	
1,6 E	5%	4822 111 90382	2,2 k	2%	4822 111 90248	3,6 M	5%	4822 111 90419	
1,8 E	5%	4822 111 90383	2,4 k	2%	4822 111 90289	3,9 M	5%	4822 111 90421	
2 E	5%	4822 111 90384	2,7 k	2%	4822 111 90569	4,3 M	5%	4822 111 90422	
2,2 E	5%	5322 111 90104	3 k	2%	4822 111 90198	4,7 M	5%	4822 111 90423	
2,4 E	5%	4822 111 90385	3,3 k	2%	4822 111 90157	5,1 M	5%	4822 111 90424	
2,7 E	5%	4822 111 90386	3,6 k	2%	5322 111 90107	5,6 M	5%	4822 111 90425	
3 E	5%	4822 111 90387	3,9 k	2%	4822 111 90571	6,2 M	5%	4822 111 90426	
3,3 E	5%	4822 111 90388	4,3 k	2%	4822 111 90167	6,8 M	5%	4822 111 90235	
3,6 E	5%	4822 111 90389	4,7 k	2%	5322 111 90111	7,5 M	5%	4822 111 90427	
3,9 E	5%	4822 111 90391	5,1 k	2%	5322 111 90268	8,2 M	5%	4822 111 90237	
4,3 E	5%	4822 111 90392	5,6 k	2%	4822 111 90572	9,1 M	5%	4822 111 90428	
			6,2 k	2%	4822 111 90545	10 M	5%	5322 111 91141	

SYMBOL	DESCRIPTION
	Capacitor, general
	Electrolytic capacitor (+ and - may be omitted)
	Bipolar electrolytic capacitor (+ may be omitted)
	Resistor, general
	N.T.C. resistor
	P.T.C. resistor
	Voltage divider with preset adjustment
	Chip jumper
	Pin contact
	Bus contact
	Coil, self-induction
	Transformer with electrically poor conducting core and adjustable pre-magnetization
	Diode
	Zener diode
	Stabistor
	Double variable capacity diode (in one envelope)
	Photo conductive diode
	L.E.D.

SYMBOL	DESCRIPTION
	Transistor (N.P.N.)
	Transistor (P.N.P.)
	Direct current (DC)
	Alternating current (AC)
	Earth (functional)
	Frame or chassis connection
	Direction in which AC voltages are passed on (optional present)
	Interrupted line
	Not-connected crossing lines
	Connected lines
	Cable tree with lead-outs
	Changer, general (arrow is optional)
	Voltage Controlled Oscillator
	Band-pass filter
	Phase changing network
	Delay element
	Amplifier, general

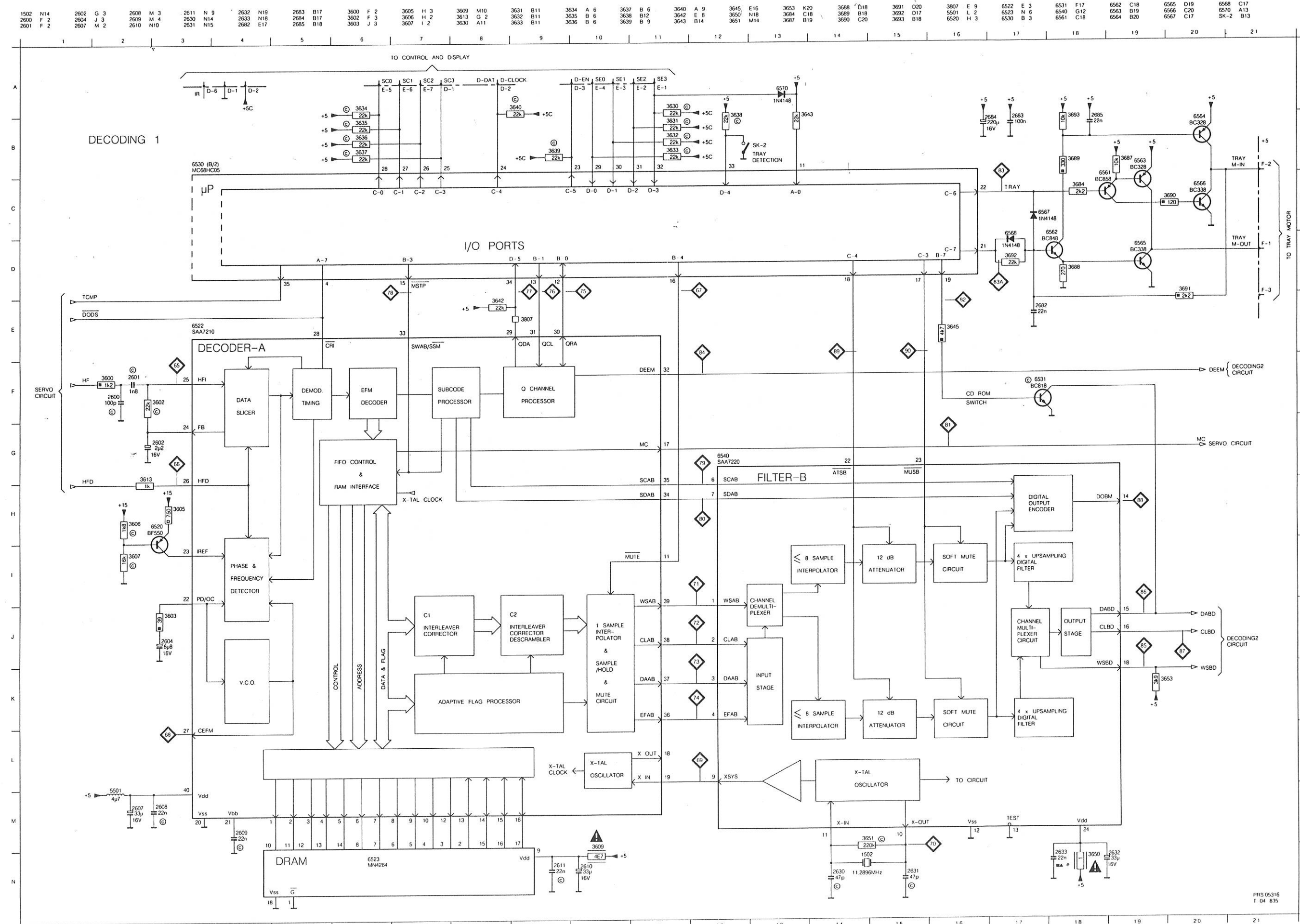
SYMBOL	DESCRIPTION
	Operational amplifier
	Differential amplifier
	Splitter
	Operational amplifier with open output
	Exclusive OR gate
	True/complement amplifier with high input
	Flip Flop
	AND gate
	OR gate
	Inverter with high input

	0.2W (CR 16)	220k Ω	5%
		270k Ω	10%
	0.33W (CR 25)	1M Ω	5%
		1M Ω	10%
	0.33W (SFR25)		5%
	0.25W (VR 25)	10M Ω	5%
		10M Ω	10%
	0.5W (CR 37)	1M Ω	5%
		1M Ω	10%
	0.67W (CR 52)		5%
	1.15W (CR 68)		5%
	Ceramic plate		
	Polyester flat foil		
	Polyester mepolesco		
	Mylar (Polyester flat foil small sized)		
	Micropoco		
	Tubular ceramic (body colour pink or yellow/green)		
	Miniature single elco		
	Subminiature tantalum		

- * a=2,5V
 b=4V
 c=6,3V
 d=10V
 e=16V
 f=25V
 g=40V
 h=63V
 i=100V
 j=125V
 l=125V
 m=150V
 n=160V
 q=200V
 r=250V
 s=300V
 t=350V
 u=400V
 v=500V
 w=630V
 x=1000V
 A=1.6V
 B=6V
 C=12V
 D=15V
 E=20V
 F=35V
 G=50V
 H=75V
 I=80V

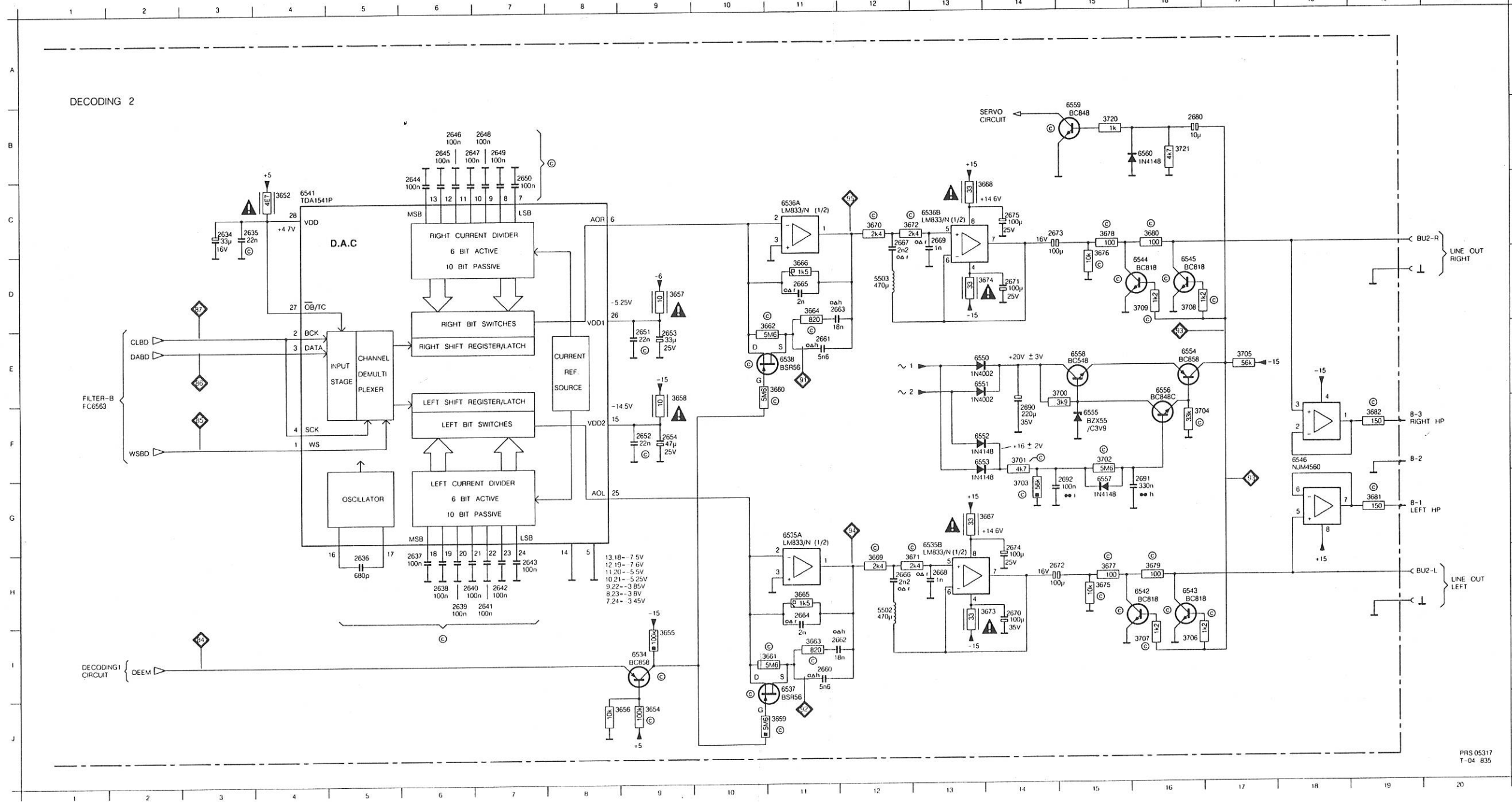
MDA.00084
 T32-735

DECODING 1



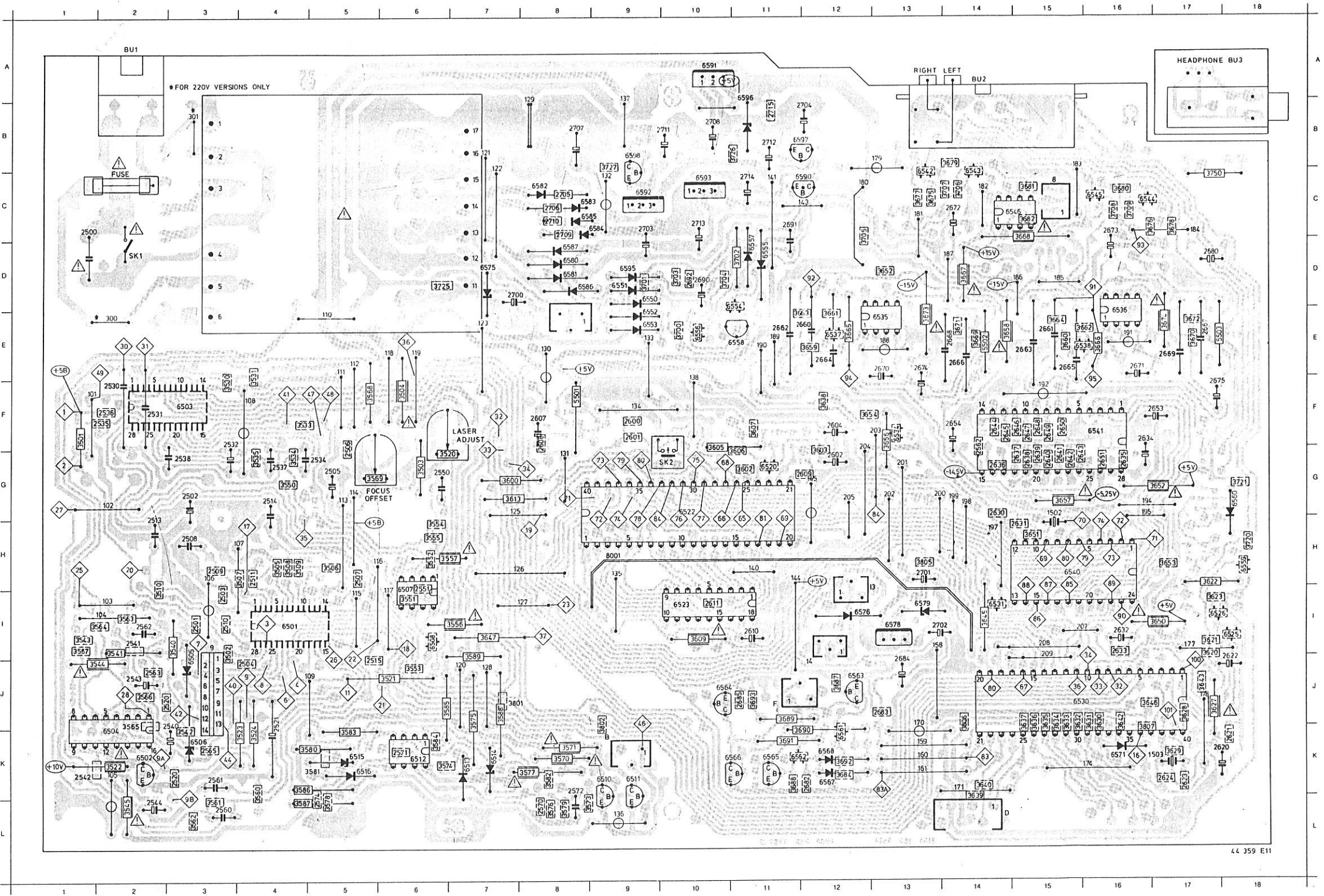
PHS 05316
1-04-835

2634	C 4	2640	H 6	2645	B 6	2649	B 7	2654	F 9	2664	H11	2670	H14	2675	C14	33μ0	C 3	3657	D 9	3662	D11	3667	G14	3673	C13	3677	H15	3682	F19	3704	F17	3707	I16	6534	I 9	6537	I11	6550	E13	6555	F15	6560	B16
2636	H 5	2641	H 7	2646	B 6	2650	B 7	2660	I11	2665	D11	2671	D14	2680	B16	3652	C 4	3658	E 9	3663	I11	3668	C14	3673	H14	3678	C15	3700	E15	3705	F17	3720	B15	6535A	G11	6538	E11	6551	E13	6556	E16	6586	H16
2637	H 6	2642	H 7	2647	B 7	2651	E 9	2661	E11	2666	H12	2672	H14	2690	F14	3654	J 9	3659	J11	3664	D11	3669	H12	3674	D14	3679	H16	3701	F14	3706	D16	3721	B16	6535B	G13	6541	C 4	6552	F13	6557	G15	6588	H16
2638	H 6	2643	H 7	2648	B 7	2652	F 9	2662	I11	2667	C12	2673	C14	2691	G16	3655	I 9	3660	E11	3665	H11	3670	C12	3675	H15	3680	C16	3702	F15	3706	I16	5502	H12	6536A	C11	6544	D16	6553	F13	6558	E15	6589	D16
2639	H 6	2644	B 6	2649	C13	2653	E 9	2663	D11	2668	H13	2674	G14	2692	G15	3656	J 9	3661	I11	3666	D11	3671	H13	3676	D15	3681	G19	3703	G14	3707	D16	5503	D12	6536B	C13	6546	F18	6554	E16	6559	B15		

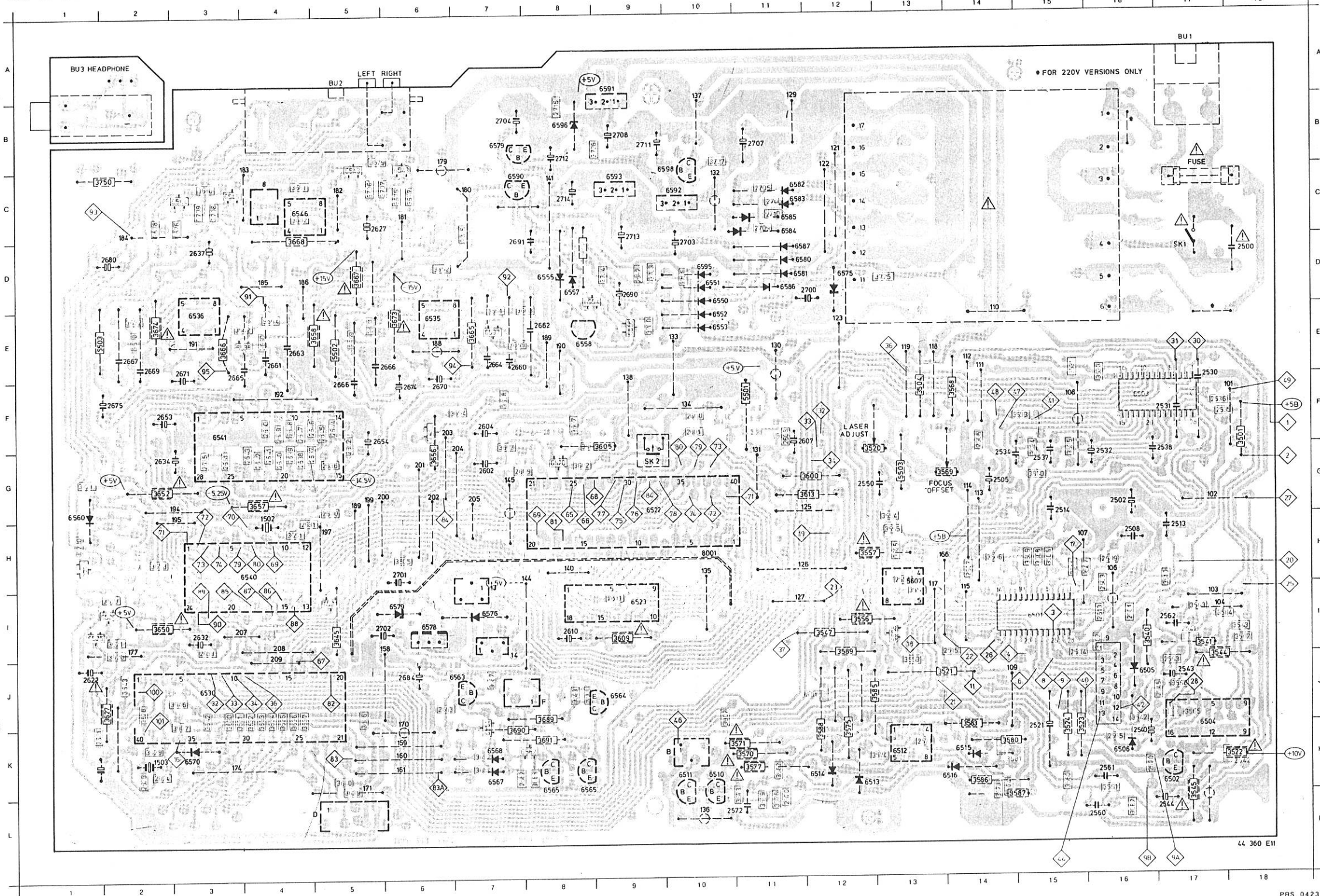


MAIN PANEL

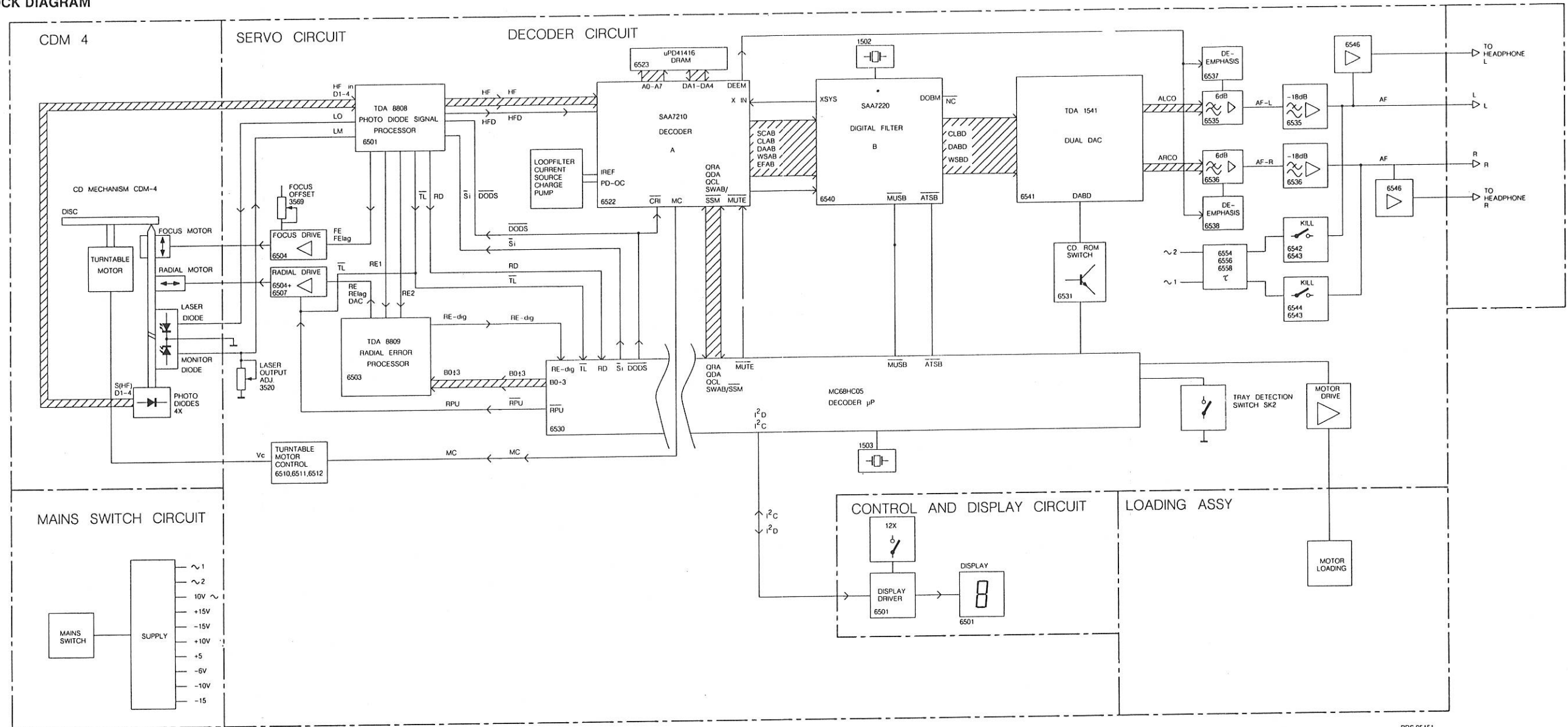
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BLOCK DIAGRAM



PRS 05151
T02-823

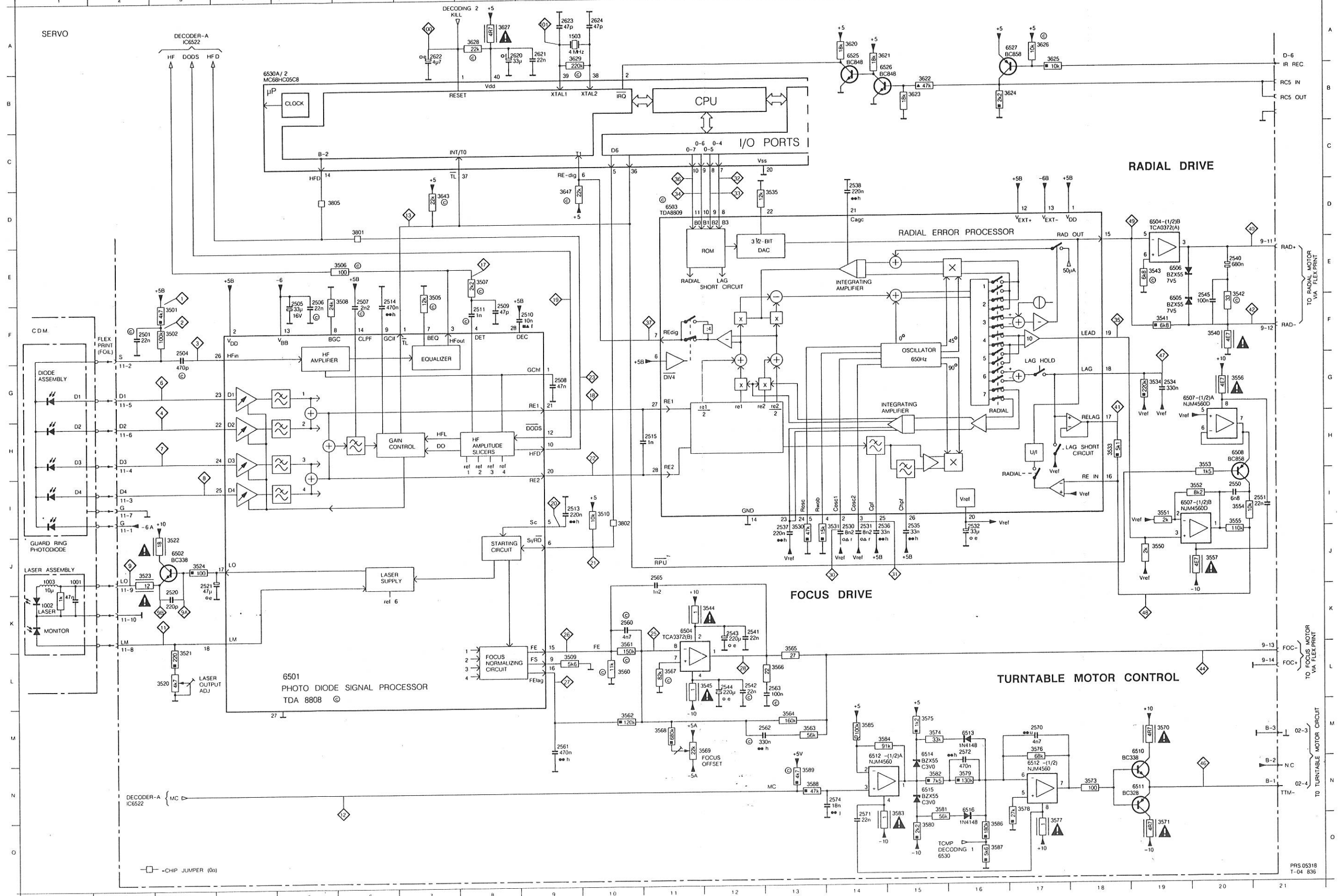
- AGC - Automatic Gain Control
- B0-B3 - Control bits for radial circuit
- BEQ - Equalizer reference current input
- BGC - DC and LF gain control reference input
- Cosc1 - Capacitor wobble oscillator
- Cosc2 - Capacitor wobble oscillator
- DEC - Decoupling input of inkruat bypass
- DET - HF detector voltage input
- DIV4 - Divide by 4 input
- DODS - Drop out detector suppression
- D1+4 - Photodiode currents
- FE - Focus error signal
- FE lag - Focus error signal for LAG network
- HF - HF output for DEMOD
- HFD - HF detector output for DEMOD
- HF-in - HF current input to HF amplifier
- HF-out - HF amplifier and equalizer voltage output
- LM - Laser monitor diode input
- LO - Laser amplifier current output
- MC - Motor control signal
- offset IN - Offset control input
- offset OUT - Offset control output
- PLLH - PLL on hold output
- RADout - output of RE2-RE1 input
- RE - Radial error signal (Amplified RE₂-RE₁ currents)

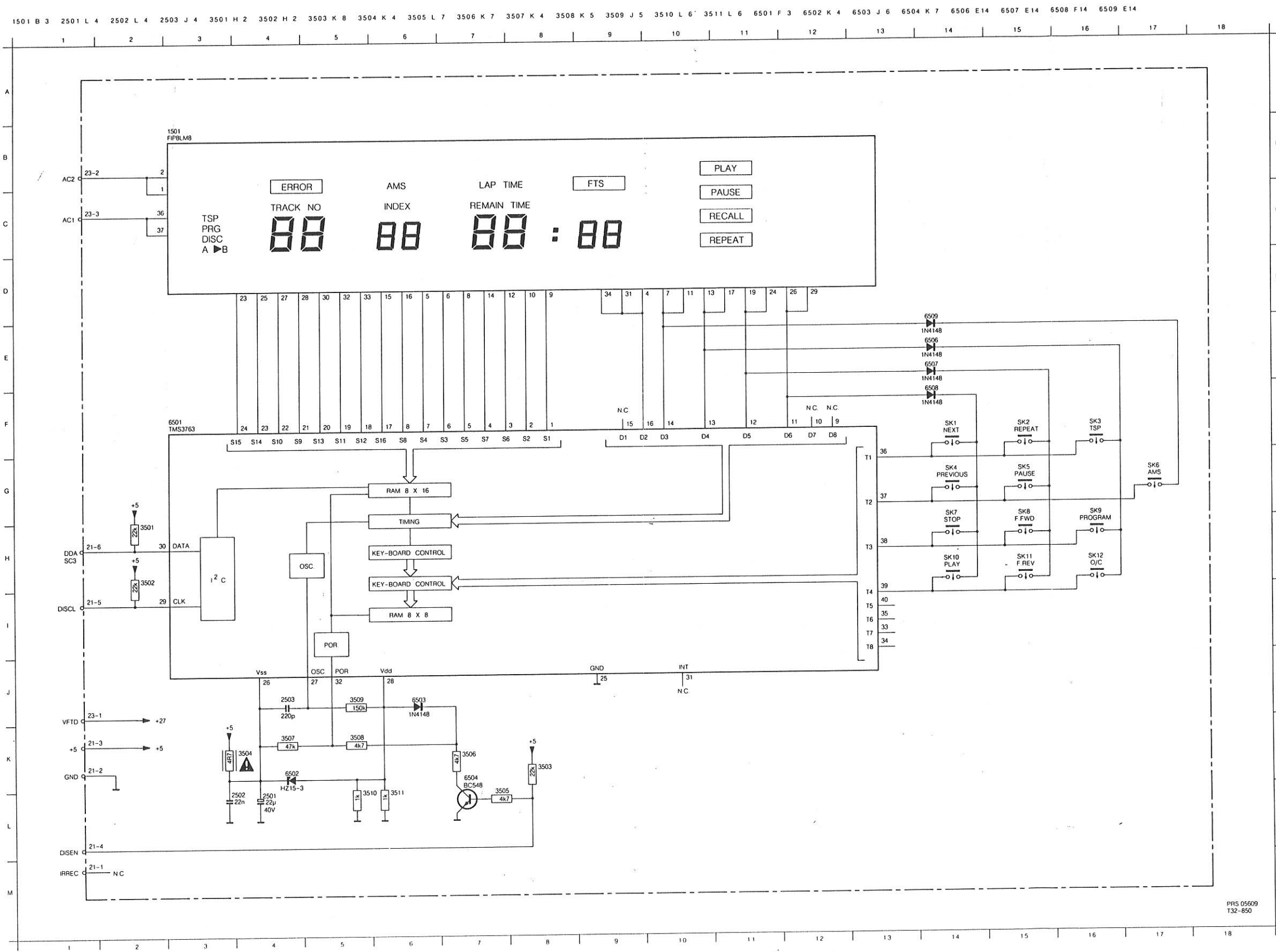
- Rosc - Resistor wobble oscillator
- Rwob - Wobble generator input
- RE1 - Radial error signal 1 (summation of amplified currents D₃ and D₄)
- RE2 - Radial error signal 2 (summation of amplified currents D₁ and D₂)
- RE dig - Radial error digital
- RE lag - Radial error signal for LAG network
- Sc - Starting up capacitor input
- Si/RD - On/off control for laser supply and focus circuit. Ready signal, Starting up procedure succesful.
- TL - Track loss output signal
- TTM- - Control voltage for turntable motor
- TTM+ - Control voltage for turntable motor
- Vext- - Supply connection
- Vext+ - Supply connection
- TCMP - Turntable control motor pulse

- ATSB - Attenuation of Audio level in Search position (Cueing)
- CD ROM Switch - Digital Data information on disc signal
- CEFM - Clock Eight-to-Fourteen Modulator
- CLAB - Clock signal Decoder-A to Filter-B
- CLBD - Clock signal Filter-B to DAC
- CREF - Reference Current
- CRI - Counter Reset Inhibit
- DAAB - Data signal Decoder-A to Filter-B
- DABD - Data signal Filter-B to DAC
- DEEM - Deemphasis
- DOBM - Digital out signal
- EFAB - Error flag Decoder-A to Filter-B
- MUTE - Mute signal

- MUSB - Soft Mute signal
- PD/OC - Phase detector - oscillator control
- QCL - Q-channel Clock signal
- QDA - Q-channel Data signal
- QRA - Q-channel Request Acknowledge
- SCAB - Subcode clock Decoder-A to Filter-B
- SDAB - Subcode data Decoder-A to Filter-B
- SWAB/SSM - Subcode Word/Start-stop motor signal
- WSAB - Word select Decoder-A to Filter-B
- WSBD - Word Select Filter-B to DAC
- XIN - Oscillator signal in Decoder-A
- XSYS - Oscillator signal out Filter-B

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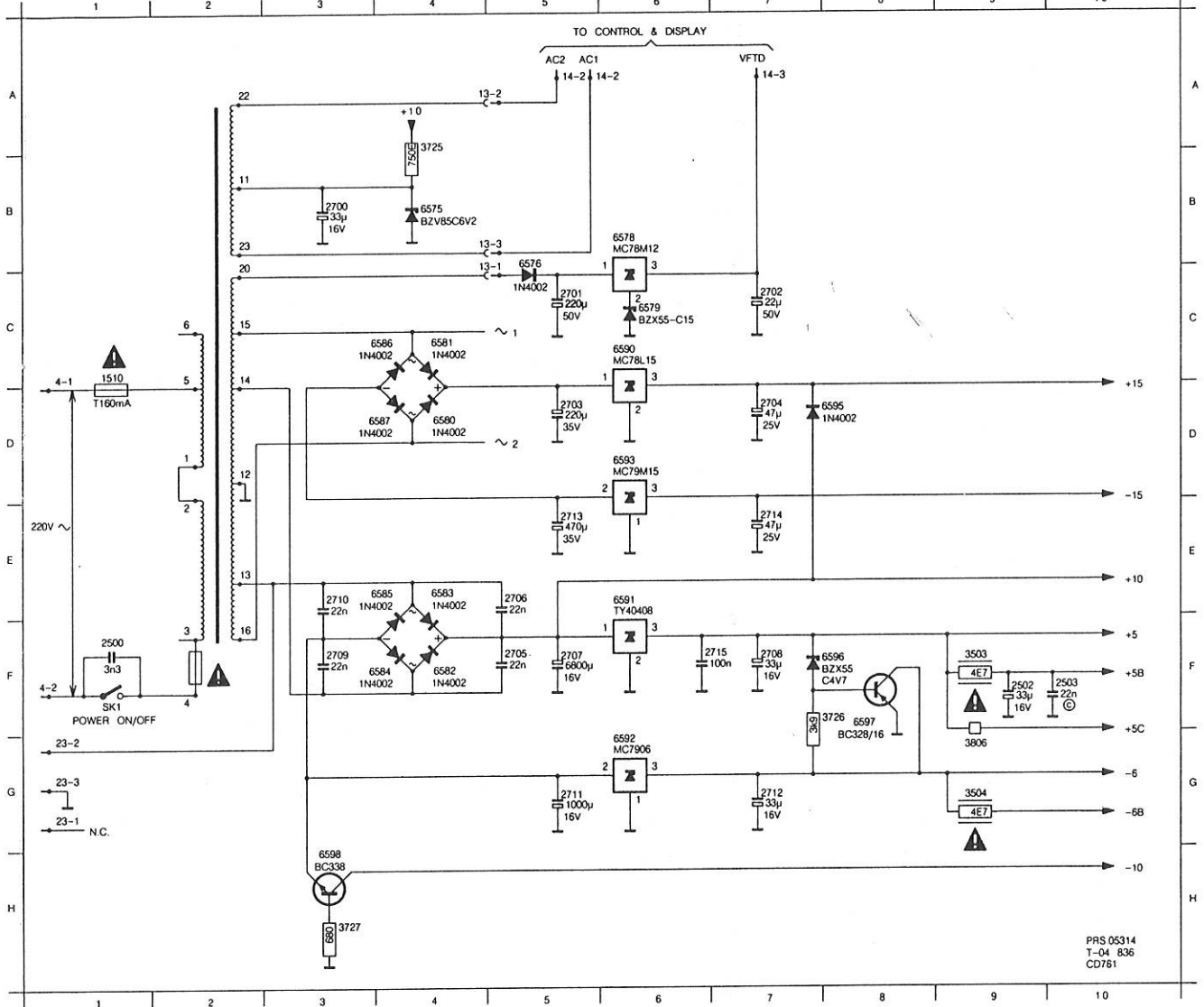
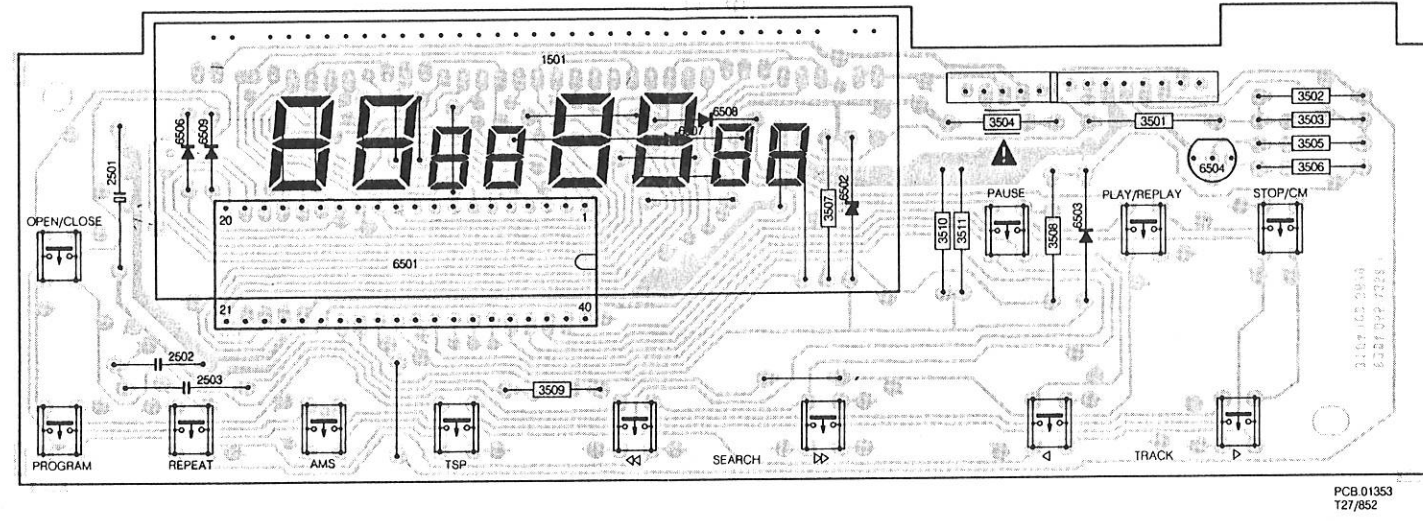




PRS 05609
132-850

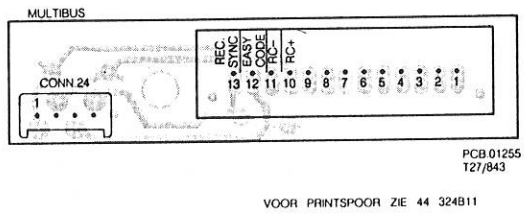
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2500	F 1	2701	C 5	2705	F 5	2709	F 3	2713	E 5	3504	G 9	3806	G 9	6579	C 6	6583	E 4	6587	D 4	6593	D 6	6598	H 3
2502	F 9	2702	C 7	2706	E 5	2710	E 3	2714	E 7	3725	A 4	6575	B 4	6580	D 4	6584	F 4	6590	C 6	6595	D 8	SK1	F 1
2503	F10	2703	D 5	2707	F 5	2711	G 5	2715	F 7	3726	F 8	6576	B 5	6581	C 4	6585	E 4	6591	E 6	6596	F 8		

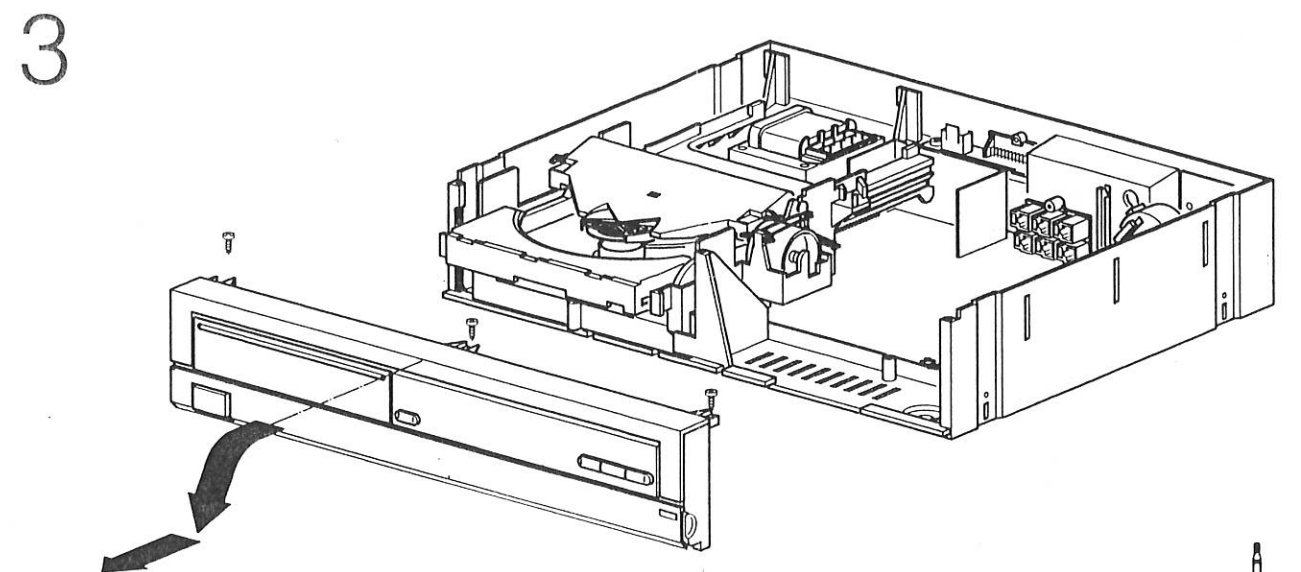
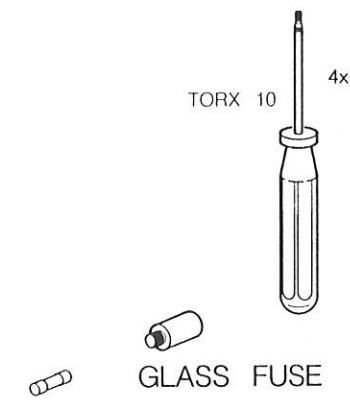
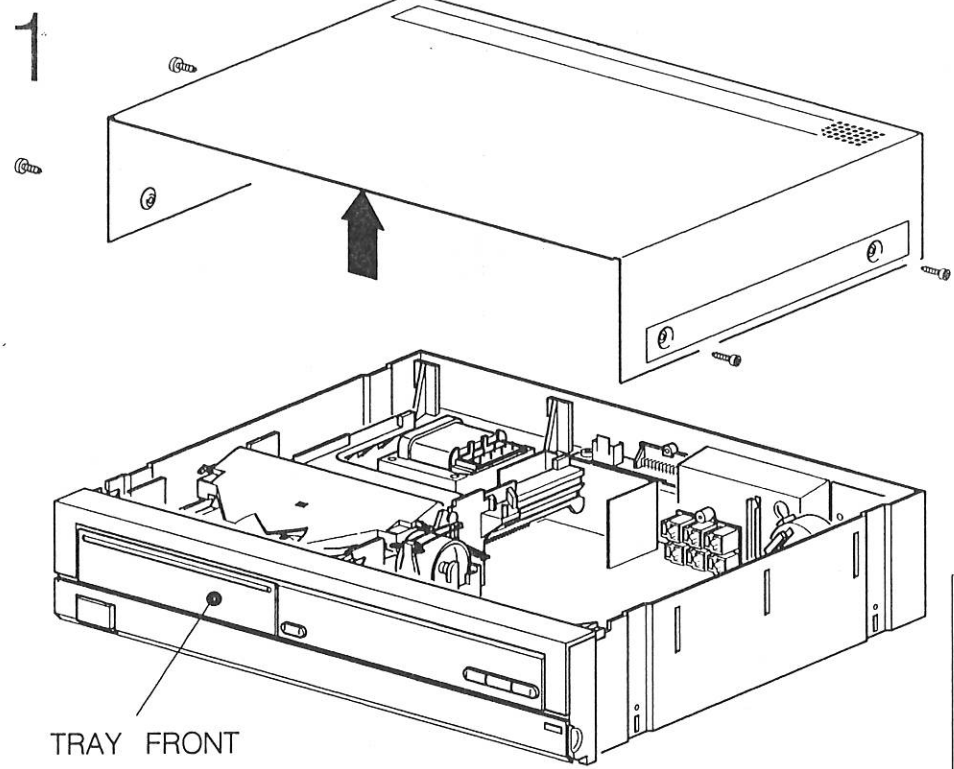


CONTROL & DISPLAY PARTS

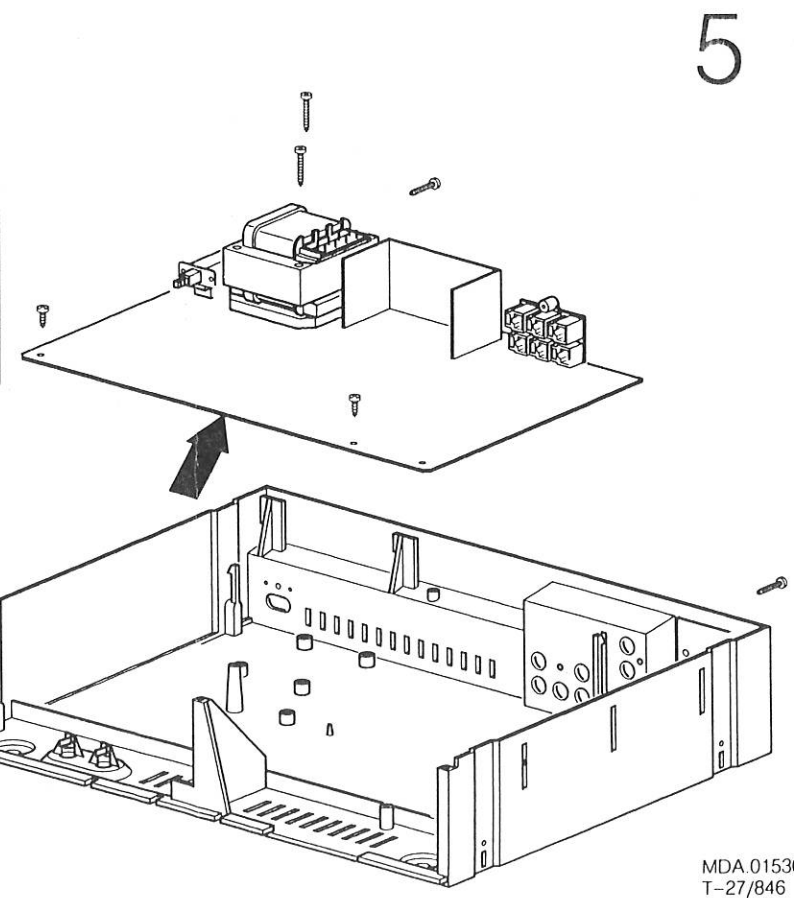
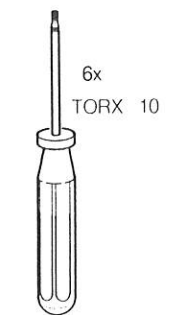
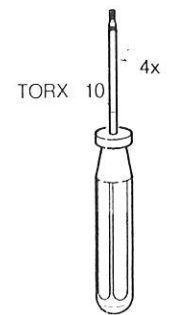
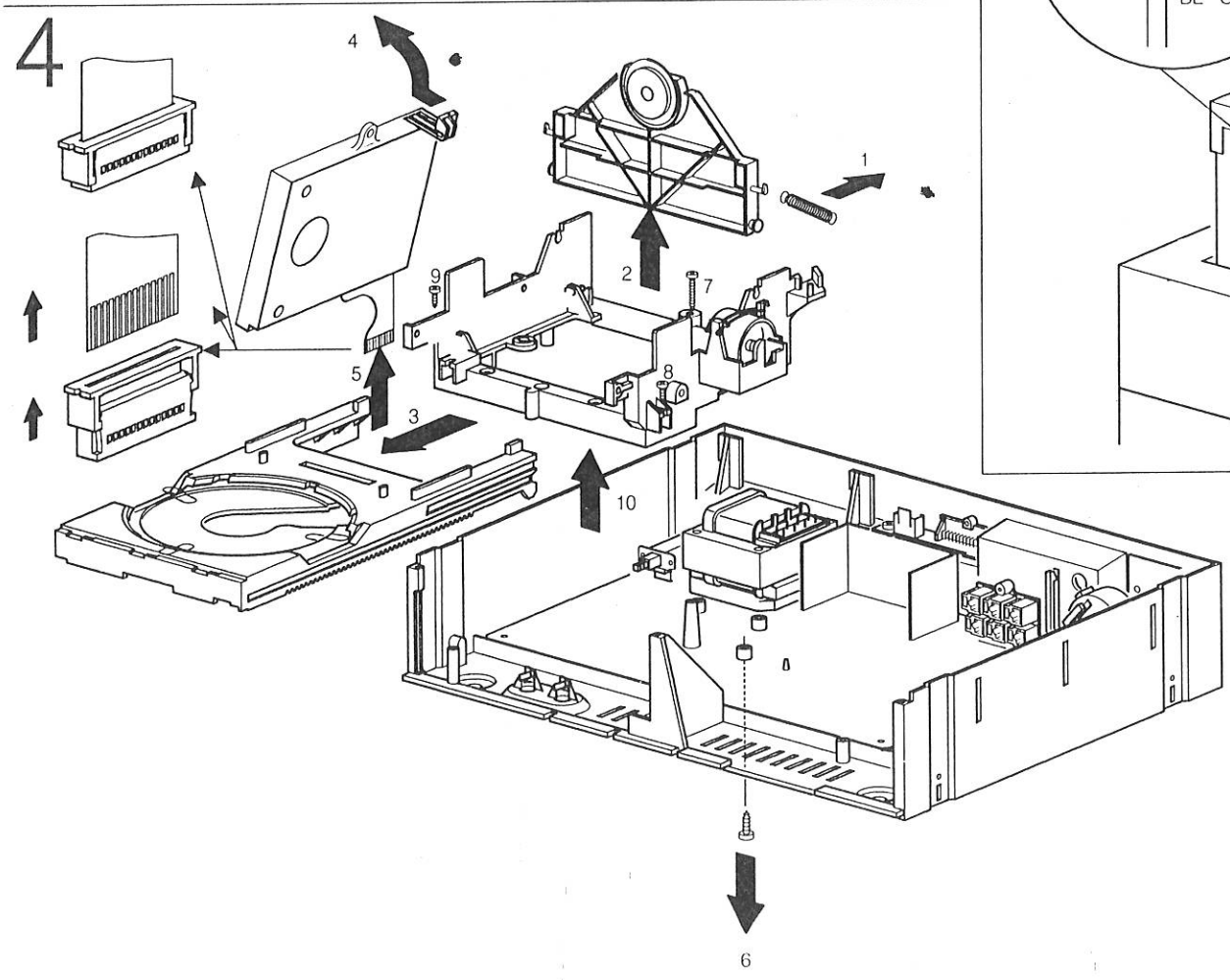
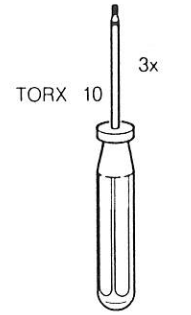
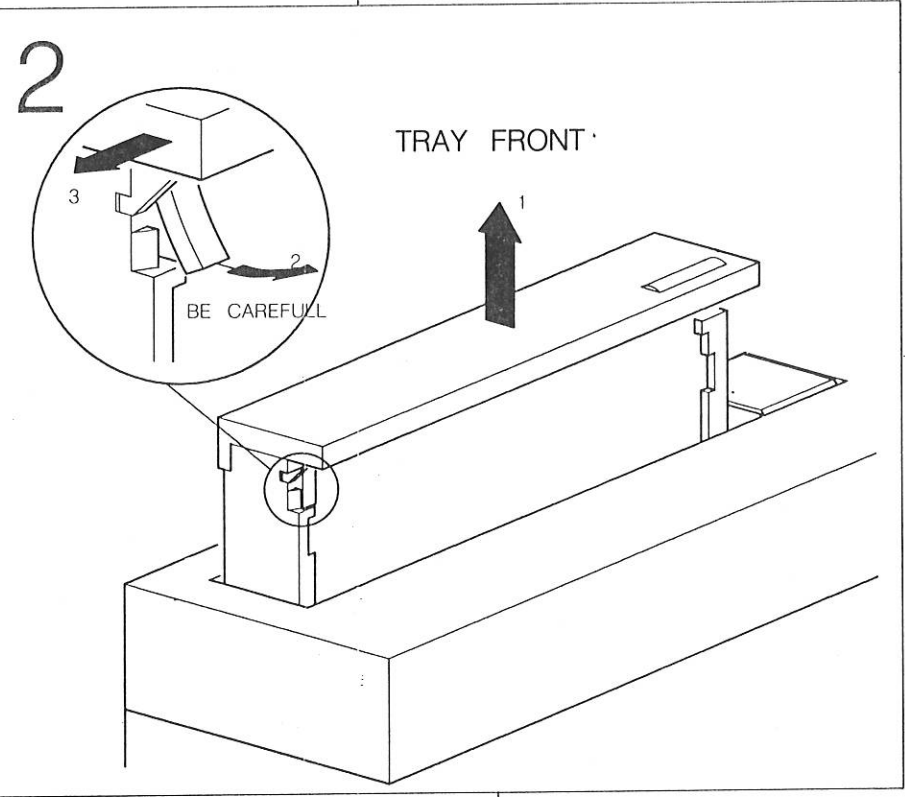
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Display	1501	4822 130 90457
22 μF 40V	2501	5322 124 21643
22 nF 16V	2502	4822 122 10166
220 PF 50V	2503	4822 122 10172
4R7 SAFETY	3504	4822 111 30499
TMS3763CNL	6501	4822 209 73149
BZX55-C15	6502	4822 130 81086
1N4148	6503	4822 130 30621
BC548	6504	4822 130 40938



DISASSEMBLY OF THE CABINET AND LOADING

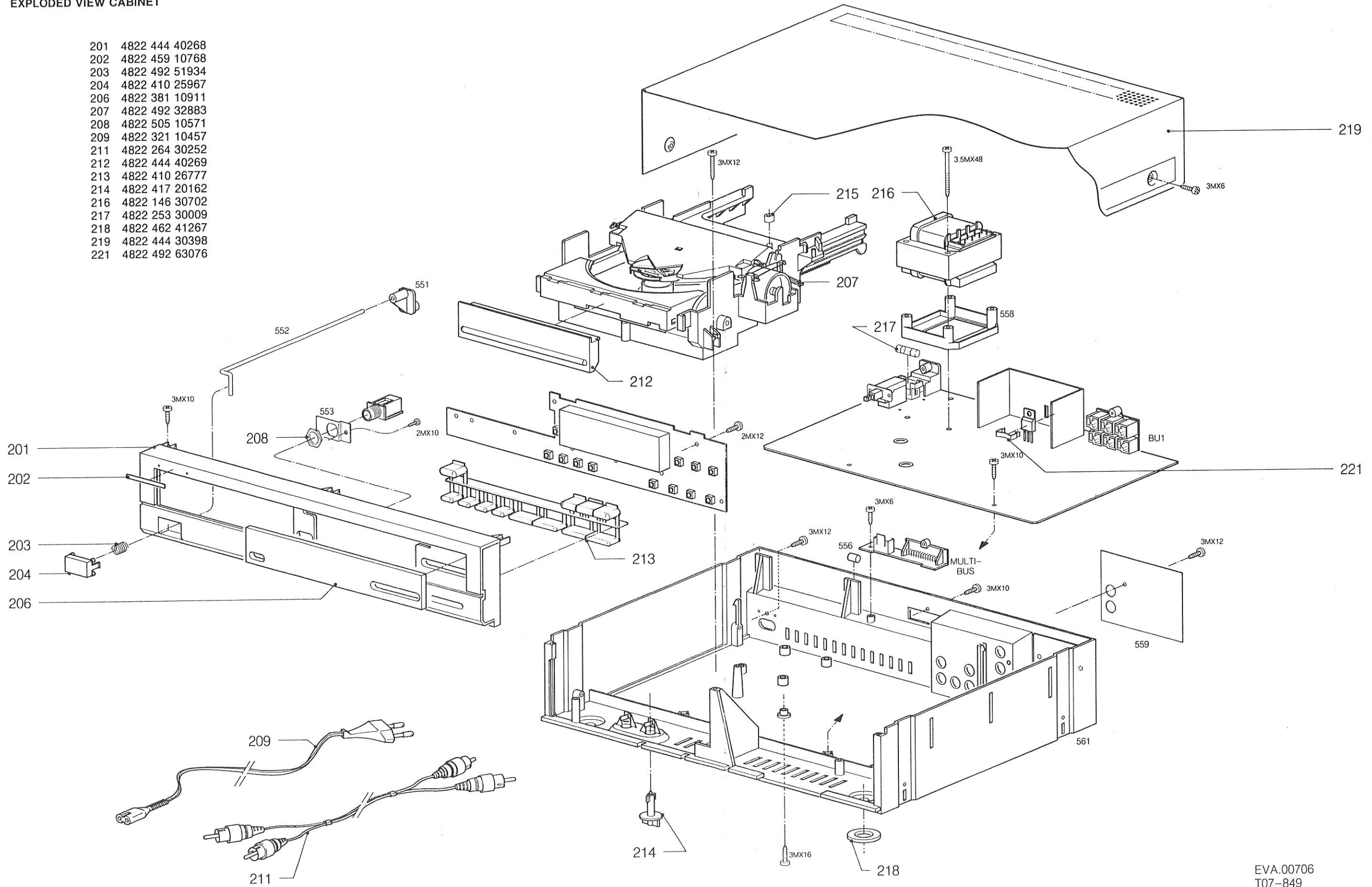


TRAY FRONT



EXPLODED VIEW CABINET

201	4822 444 40268
202	4822 459 10768
203	4822 492 51934
204	4822 410 25967
206	4822 381 10911
207	4822 492 32883
208	4822 505 10571
209	4822 321 10457
211	4822 264 30252
212	4822 444 40269
213	4822 410 26777
214	4822 417 20162
216	4822 146 30702
217	4822 253 30009
218	4822 462 41267
219	4822 444 30398
221	4822 492 63076



EVA.00706
T07-849