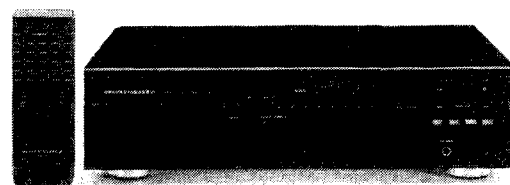


Service
Service
Service



Service Manual

COMPACT
disc
DIGITAL AUDIO

CONTENTS

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

(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 110 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.

MARANTZ INTERNATIONAL

Vestdijk 9

5600 MD Eindhoven

The Netherlands

Phone: +31/40.758290

Telefax: +31/40.75.82.99

Telex: 35000 PHTC NL routing IND NLMTFAT

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 DYNVOX ELECTRONICS Route de Villars 105 1701 Fribourg Switzerland Telex: 942377
BELGIUM SVD DIVISION MARANTZ Industrielaan 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 Valeta 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 Ourela-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

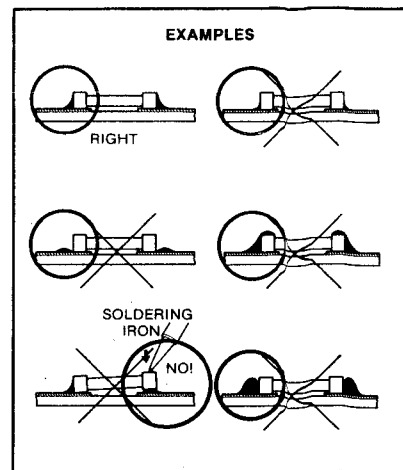
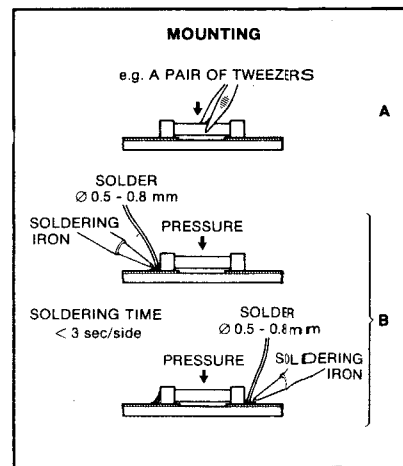
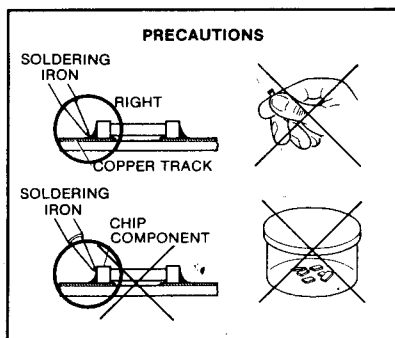
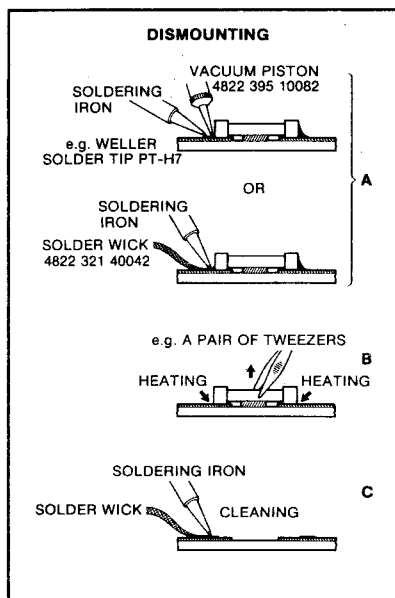
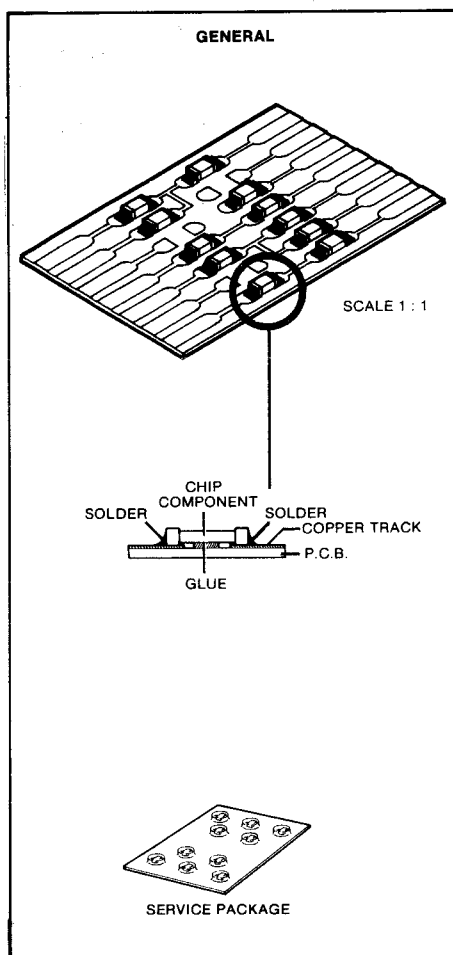
The documentation consists of chapters.
The number of the chapter is indicated by the first digit of the page number.
The second digit of the page number is the sequence numbering.

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

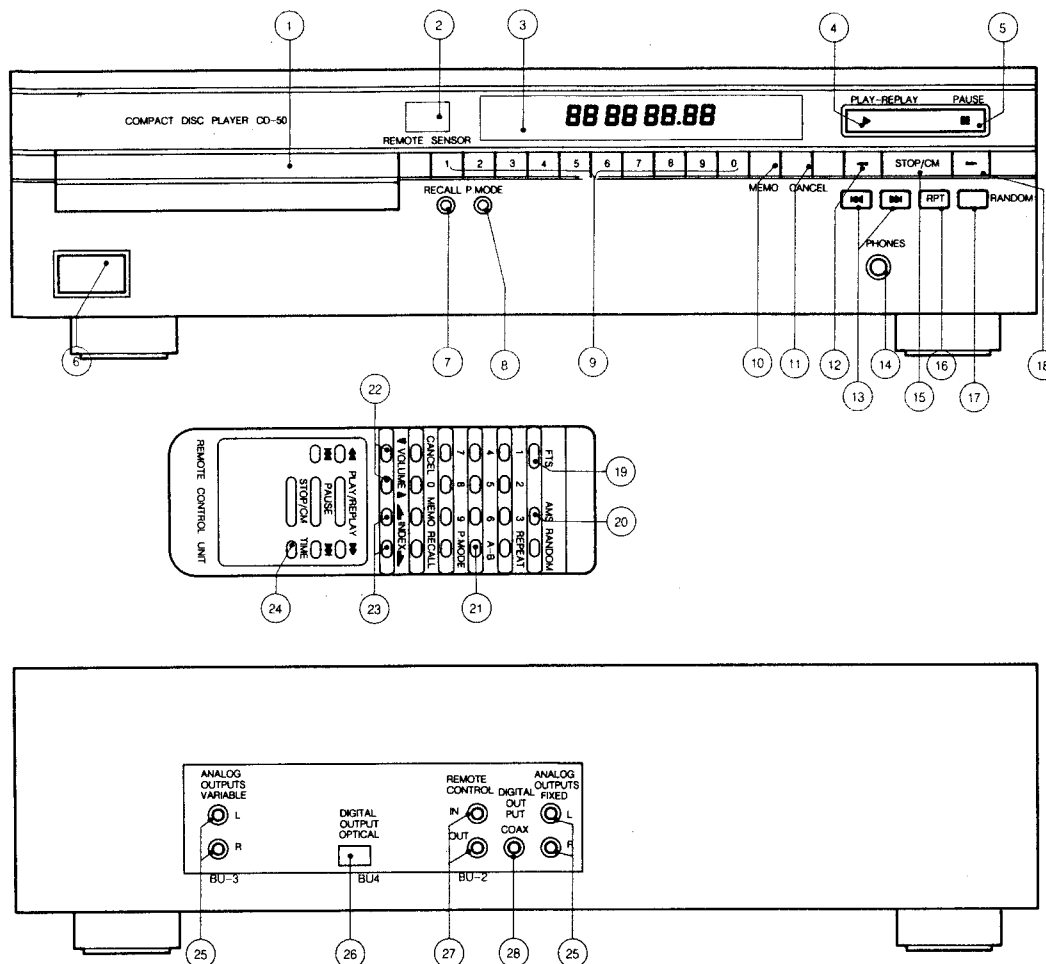
A digit behind the page number indicates that it concerns a supplementary page.
A replacement page is indicated by a letter behind the page number.

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).



CONTROLS



FRONT OF PLAYER

- 1** Disc tray on which the **OPEN** key is situated; the tray closes when the front is pressed briefly.
- 2 REMOTE SENSOR**
Receives the signals from the remote control handset.
- 3 DISPLAY**
- Informs you about the functioning of the player.
- Displays details from the disc contents list.
- 4 PLAY-REPLAY (▶)**
- Starting play (**PLAY**)
- Returning to the beginning of a track (**REPLAY**)
- 5 PAUSE (||)**
Interrupting play.
- 6 ON/OFF**
Switching on and off.
- 7 RECALL**
Reviewing a programme.
- 8 PROGRAM MODE**
- Selecting **PROGRAM** mode when storing a program.
- Selecting **EDIT** mode to enter the recording time when making a tape recording.
- 9 '1-0' digit keys**
- Selecting another track number during play.
- Selecting a track number to start play with.
- Selecting track numbers when programming.
- Entering the recording time when making a tape recording.
- 10 MEMO**
- Storing track numbers in a program.
- Storing the recording time when making a tape recording.
- 11 CANCEL**
- Erasing track numbers you do not wish to include in a program.
- Erasing track numbers from a program.
- Erasing favourite track selections.

12 ◀◀

Fast search for a particular passage; backwards to the beginning of the disc.

13 ◀◀ ▶▶

- Selecting another track number during play.
- Selecting a track number to start play with.
- Selecting track numbers when programming.
(◀◀ from high to low; ▶▶ from low to high).

14 PHONES BU-5

Connecting headphones.

15 STOP/CM

- Stopping play (**STOP**).
- Erasing a program (**CM** = Clear Memory).

16 RPT

Repeating a track, the entire disc or a program (**RPT** = repeat).

17 RANDOM

Playing in a random order.

18 ▶▶

Fast search for a particular passage; forwards to the end of the disc.

REMOTE CONTROL FUNCTIONS

Most of the controls also appear on the remote control handset. The functions below can only be operated using the remote control handset:

19 FTS

Activating the Favourite Track Selection circuit.

20 AMS

Automatically playing the beginning of each track (**AMS** = Automatic Music Scan).

21 A-B

Storing the start and stop points of a passage to be repeated.

MDA.02152
917/T19

22 ▼ VOLUME ▲

Adjusting the sound level when the player is connected via the **VARIABLE**-output to an amplifier or HiFi system without its own remote control (▼ from high to low; ▲ from low to high).

23 ◀ INDEX ▶

- Selecting another index number during play.
- Selecting an index number to start play with.
- (◀ from high to low; ▶ from low to high).

24 TIME

- Selecting the time information you want to see:
 - **REMAIN**: The remaining playing time of a track.
 - **TOTAL REMAIN**: The remaining playing time of the entire disc or a program.
 - The elapsed playing time of a track.

For the best reception of the signals from the remote control you should aim it as directly as possible at the **REMOTE SENSOR**.

CONNECTIONS 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.

25 ANALOG OUTPUTS

VARIABLE (BU-3): For connection to an amplifier of HiFi system without its own remote control.

FIXED (BU-2 Line out L/R): For connection to a **MARANTZ** amplifier of HiFi system with its own remote control.

- Insert a red plug into the 'R' socket (right-hand channel) and the other plug into the 'L' socket (left-hand channel) of the **VARIABLE** output or the **FIXED** output. In the case of connection via the **VARIABLE** output, the sound level can be adjusted with the ▼ **VOLUME** ▲ keys on the remote control.
- Insert the two other plugs into the corresponding sockets of the CD or AUX input of your amplifier. You can also use the TUNER or TAPE IN connection, but *never* the PHONO input. This is not suitable for Compact Disc reproduction.

26 DIGITAL OUTPUT OPTICAL BU-2-Digital out

This output supplies a digital signal via an optical path; for this reason it can only be connected to a Digital Analog Converter, an amplifier with an optical digital input or a digital sound processor. For this use an optical lead.

To prevent dirt entering this output, it is covered with a little cap which should only be removed when the output is in use.

27 REMOTE CONTROL IN/OUT BU-2 RC5 IN/OUT

- For connecting up the equipment when you are incorporating the player in a **MARANTZ** HiFi system with its own remote control system.
For this use the RC5 cable supplied.
- For connecting the remote control receiver **RC 55**, available as an accessory, if the siting of the changer prevents its **REMOTE SENSOR** from receiving the signals from the remote control directly.

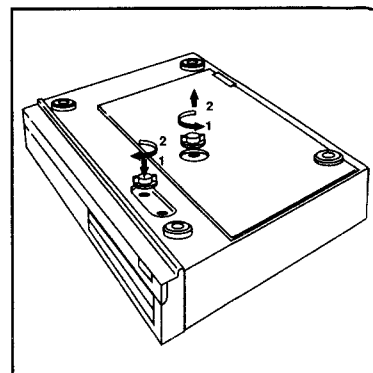
28 DIGITAL OUTPUT COAX BU-4

For digital signal processign or future applications such as CD-I.

This output supplies a digital signal and can therefore only be connected to an input which is suitable for this signal. Use here a lead with one cinch plug on either end.

WARNING!

Never connect this socket to a non-digital input of an amplifier, suvh as AUX, CD, TAPE, PHONO, etc. This can damage the amplifier and the loudspeakers.



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
- Disc diameter : 120mm/80mm
- Mainsvoltages/02/05 : 110 V, 127 V, 220 V, 240 V ± 10% (to be changed by transformer connections)
- /04 : 100 V ± 10%
- /06 : 117 V ± 10%
- /01 : 110 V, 127 V, 220 V ± 10% (to be changed by carousel switch)
- Mains frequencies : 50,60 Hz(no adaption required)
- Power consumption : ≤ 25 W
- Frequency range : 20 Hz + 20 kHz ± 0,1 dB
- Output voltage fixed : max. 2 V_{rms}/≥ 10 kOhms
- Output impedance : 200 Ohms
- S/N ratio : ≥ 96 dB
- Channel separation : ≥ 93 dB
- Channel difference : ≤ 0,2 dB
- Total harmonic distortion : ≤ -88 dB
- Intermodulation distortion : ≤ -88 dB
- De-emphasis : 0 or 15/50 μs(=switched by the subcode on the disc)
- Dimensions WxDxH : 420 × 117 × 88 mm (tray closed)
- Weight : approx 5 kg

3. SERVICING HINTS

ESD



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.

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 (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.

Explanation of the symbols used



= oscilloscope (ri $\geq$ 10 M Ω)



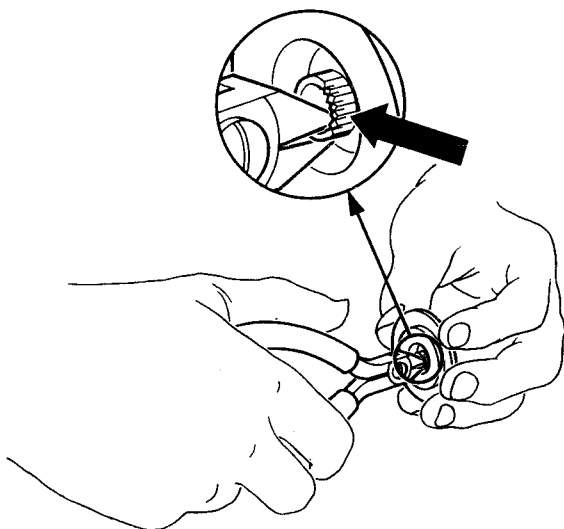
= meter (voltmeter with ri $\geq$ 10 M Ω)



= carry out alignment/adjustment



= test point



42 565 A12

SERVICE TOOLS

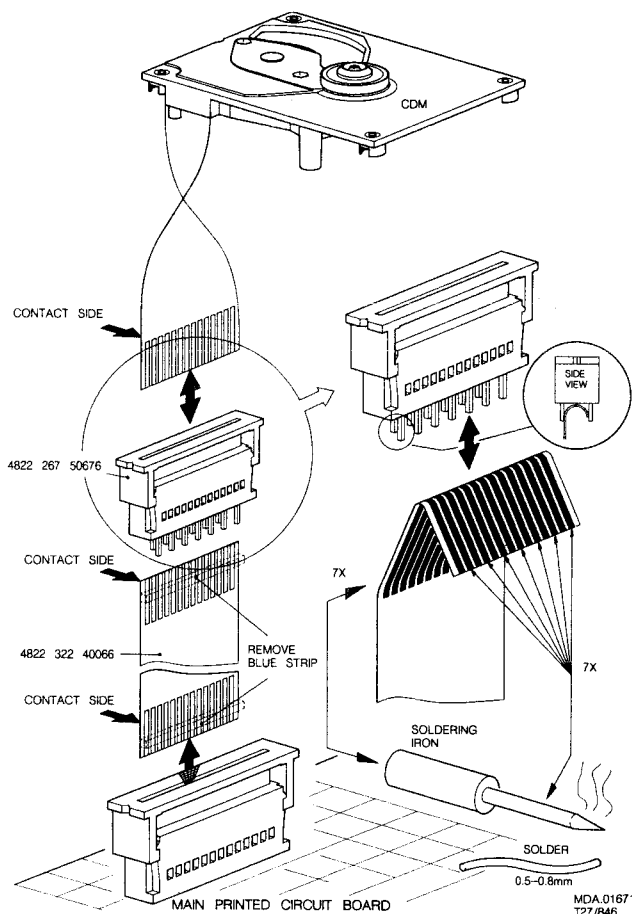
Audio test disc 1	4822 397 30185
Disc without errors + disc with DO errors, black spots and fingerprints	4822 397 30096
Disc (65 min, 1kHz) without pause	4822 397 30155
Maximum diameter disc	4822 397 60141
Torx screwdrivers	
Set (straight)	4822 395 50145
Set (square)	4822 395 50132
13th order filter	4822 395 30204

WORKING WITH THE FAULTFINDING TREE

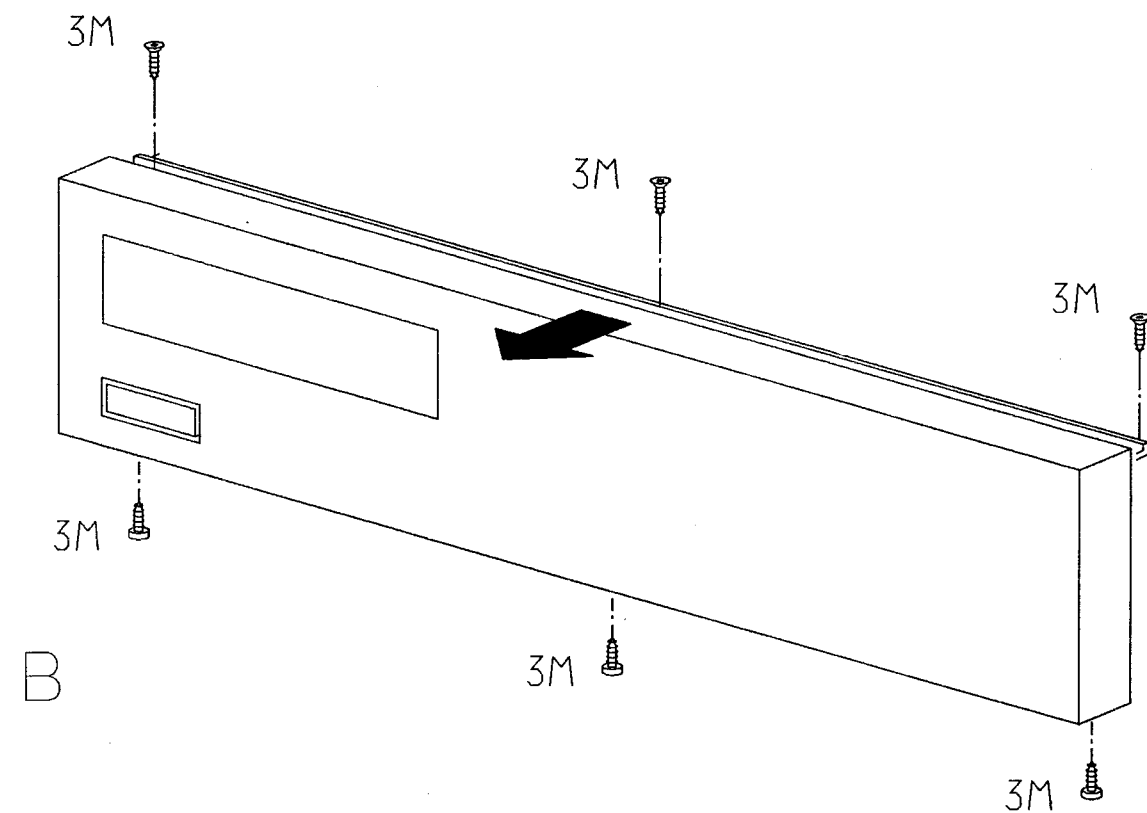
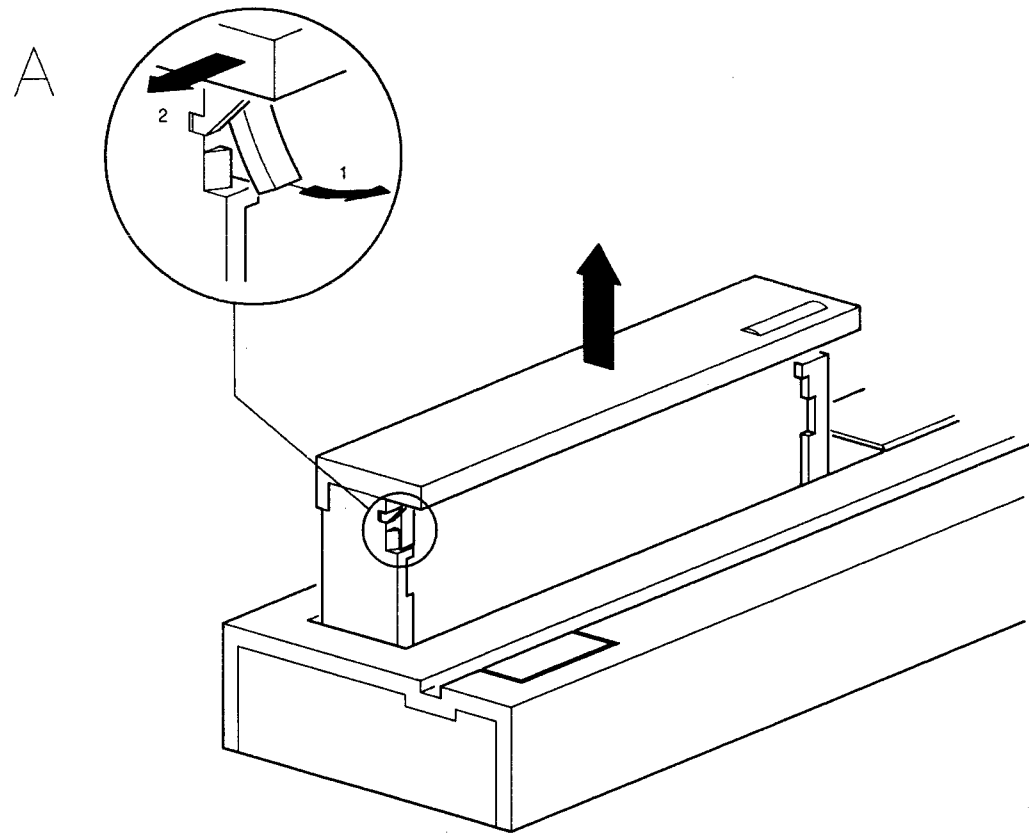
Follow the path of the faultfinding tree, beginning at the top left. Perform the actions you come across in the various blocks.

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

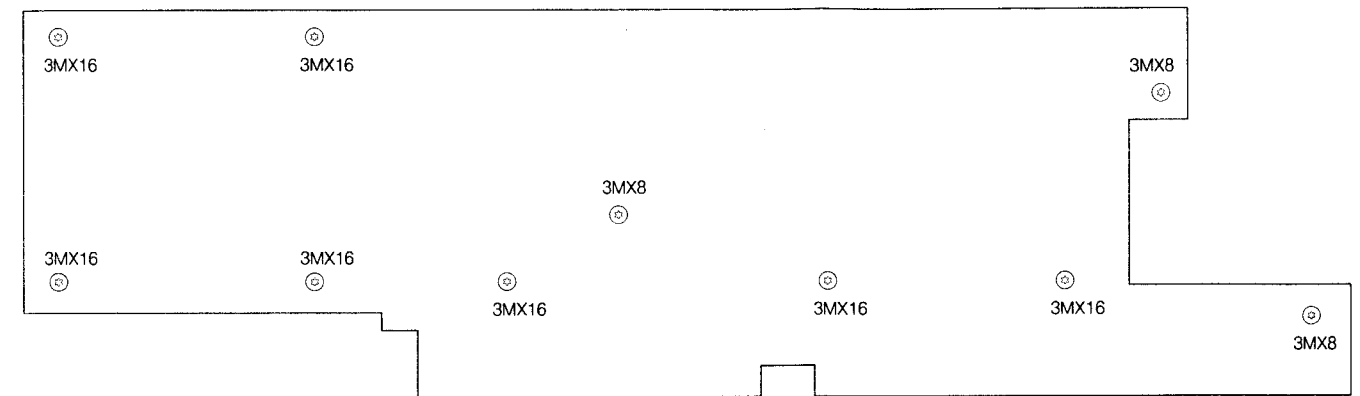
MDA.01671
T27/B46

CABINET DISASSEMBLY HINTS

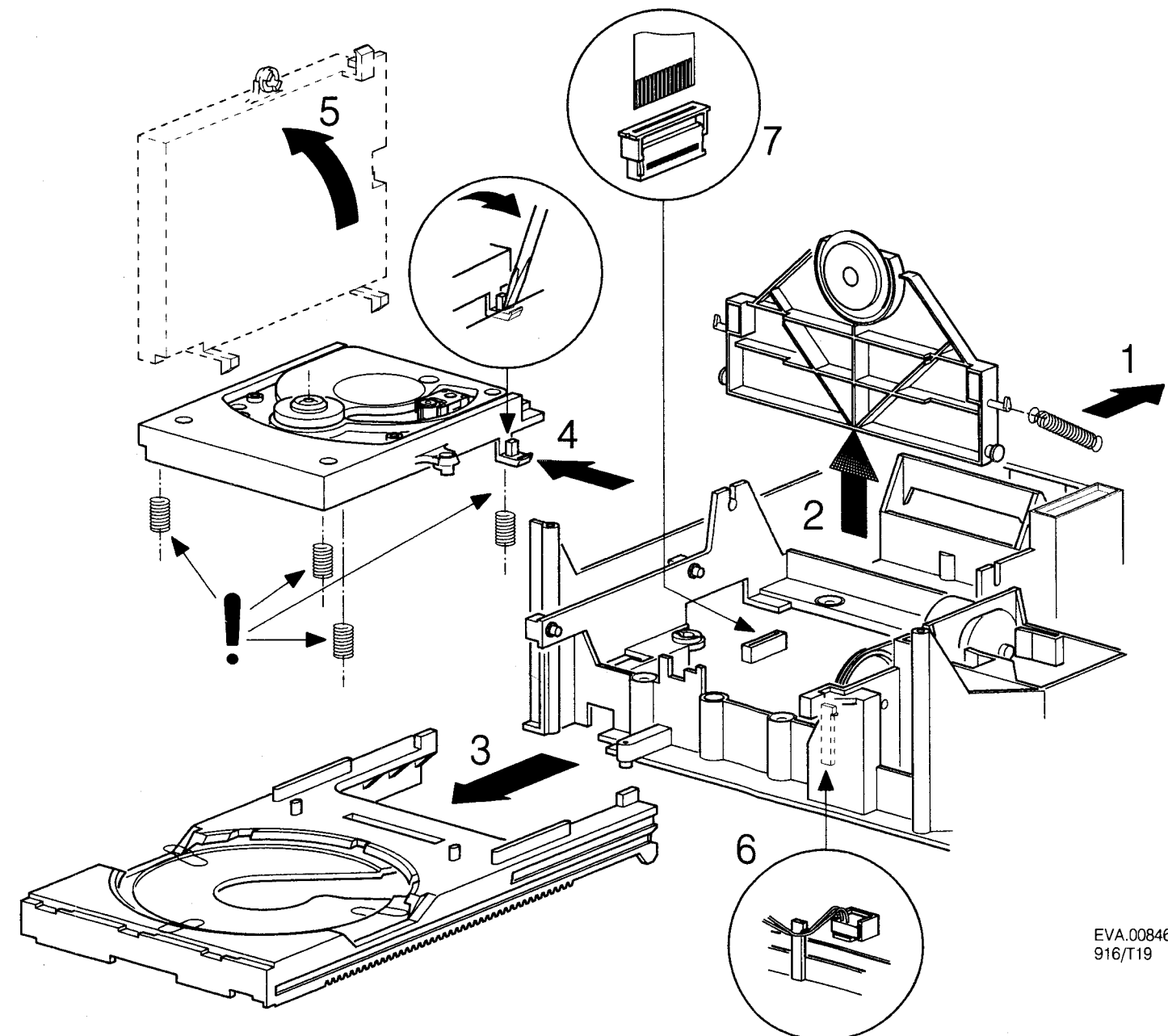


mda.02137

CONTROL+DISPLAY PANEL.

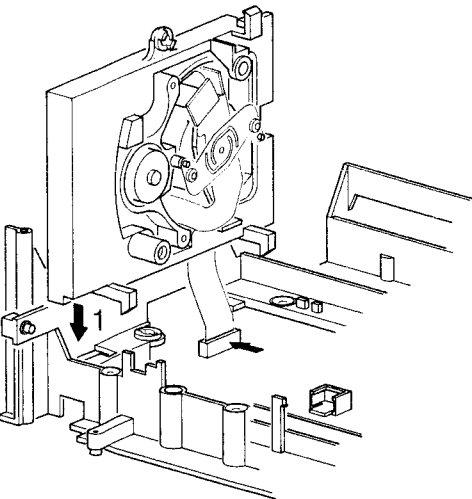


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916/T19

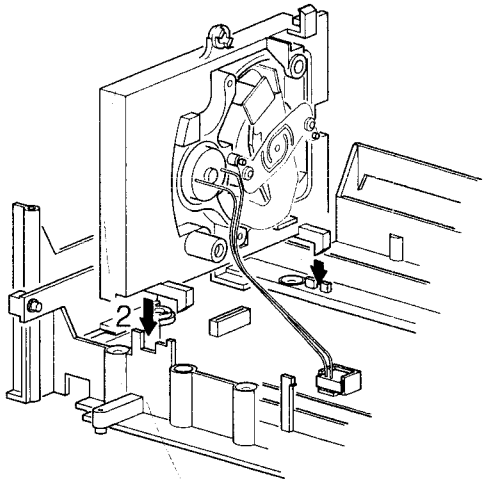


EVA.00846
916/T19

FOIL CONNECTION POSITION.

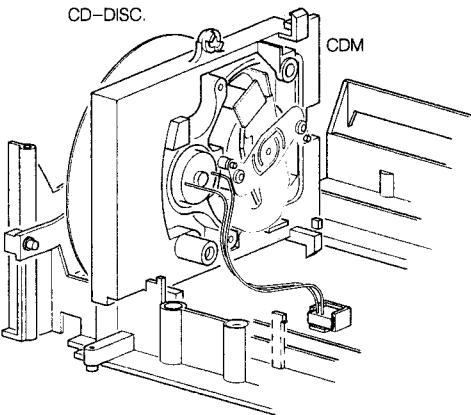


PLAY-SERVICE POSITION



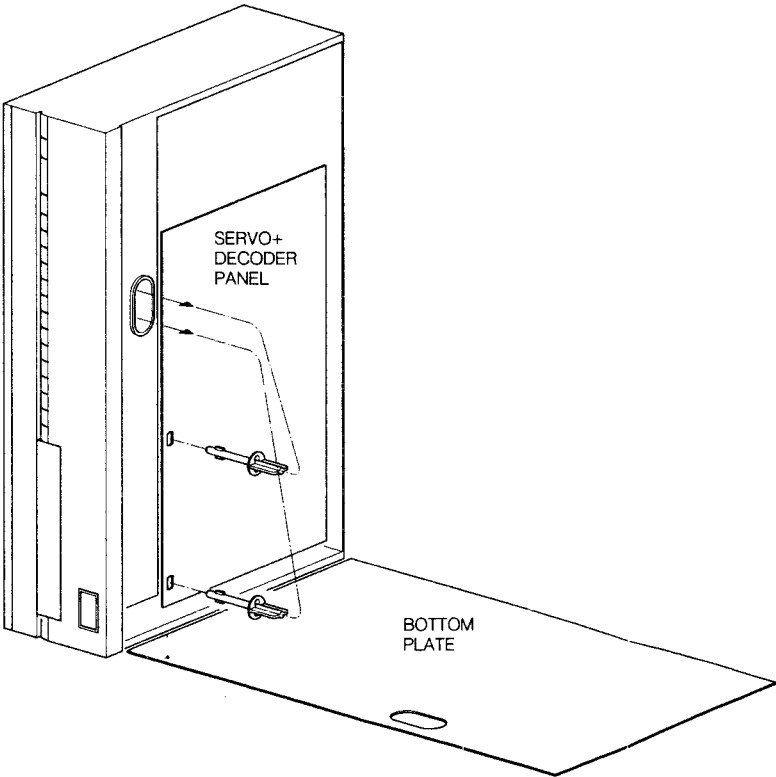
EVA.00848
916/T19

SERVICE POSITION PLAY



EVA.00849
916/T19

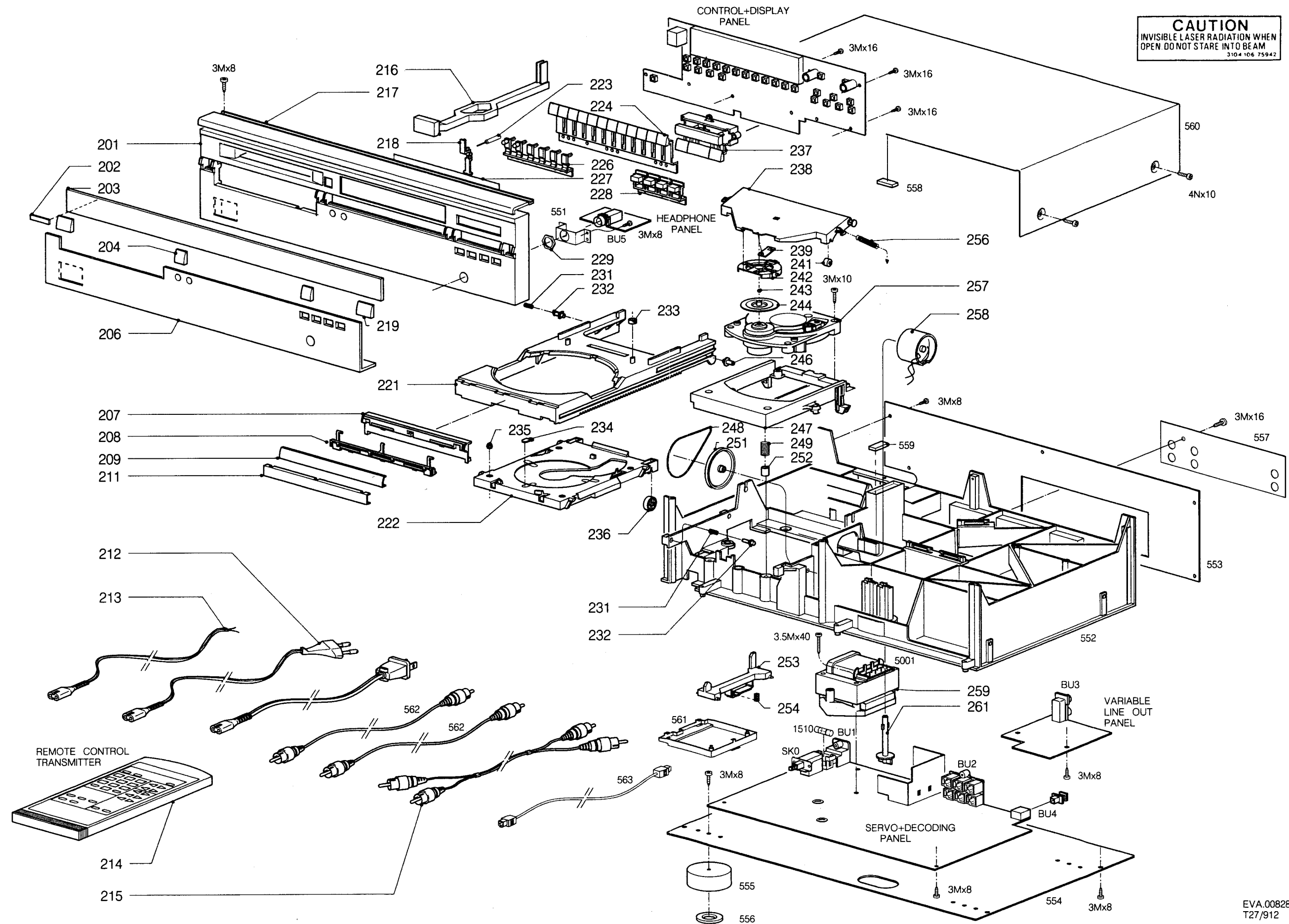
MEASURING AND ADJUSTMENT POSITION
OF THE SET



MDA.02138
916/T19

MECHANICAL PARTS

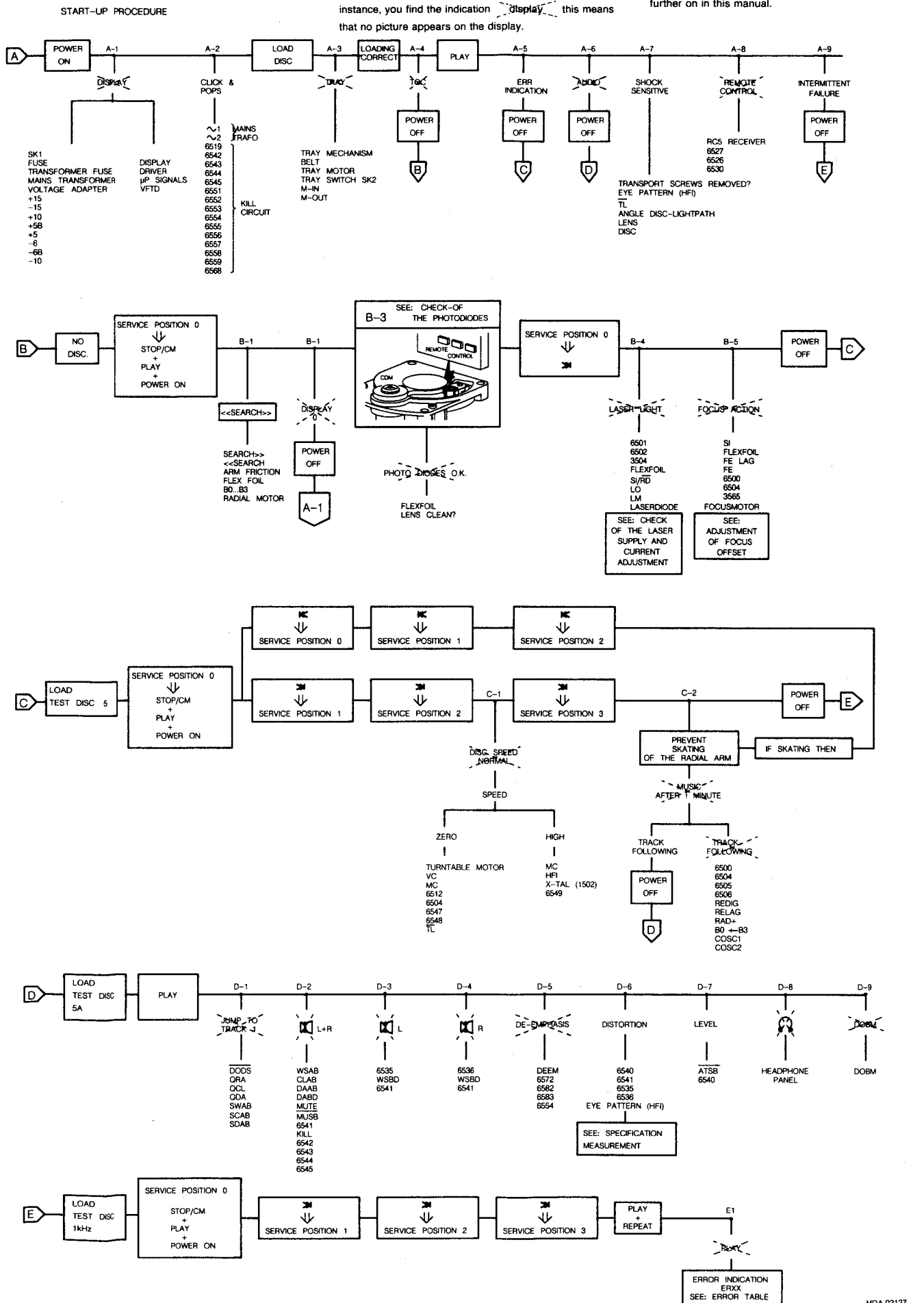
201	4822 444 40308	only for /04
201	4822 444 40316	only for /01/02/05/06
202	4822 459 10747	WORDMARK MARANTZ only for /01/02/04/05
202	4822 459 10887	WORDMARK PHILIPS only for /06
203	4822 450 61359	
204	4822 460 20768	only for /04
204	4822 460 20771	only for /01/02/05/06
206	4822 460 20762	
207	4822 464 50764	only for /04
207	4822 464 50773	only for /01/02/05/06
208	4822 402 61254	only for /04
208	4822 402 61266	only for /01/02/05/06
209	4822 460 20763	
210	4822 321 10492	only for /04
210	4822 321 10445	only for /06
211	4822 460 20766	
212	4822 321 10457	only for /01/02
213	4822 321 10522	only for /05
214	4822 218 10272	only for /01/02/04/05
214	4822 218 10283	only for /06
215	4822 321 22603	
216	4822 402 61255	
217	4822 460 20767	
218	4822 402 50277	
219	4822 460 20769	only for /04
219	4822 460 20772	only for /01/02/05/06
221	4822 444 50603	
222	4822 466 92251	
223	4822 410 50169	
224	4822 410 60115	only for /04
224	4822 410 60202	only for /01/02/05/06
226	4822 410 60118	
227	4822 450 61362	
228	4822 410 60116	
229	4822 505 10571	
231	4822 492 52094	
232	4822 402 61252	
233	4822 532 51756	
234	4822 325 50176	
235	4822 325 50177	
236	4822 528 90638	
237	4822 276 30403	only for /04
237	4822 276 30404	only for /01/02/05/06
238	4822 444 60568	
239	4822 466 92257	
241	4822 528 90639	
242	4822 402 61207	
243	4822 520 40177	
244	4822 530 80503	
246	4822 402 61253	
247	4822 402 61196	
248	4822 358 10115	
249	4822 492 51902	
251	4822 528 81329	
252	4822 466 61587	
253	4822 402 50276	
254	4822 492 51935	
256	4822 492 32883	
257	4822 691 30209	
258	4822 361 20998	
261	4822 535 92907	



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

EVA.00828
T27/912

TROUBLE SHOOTING (FAULT FINDING TREE)



A-1 μ P - SIGNALS

Signal	Mode				Remarks
Reset	Power on	100		Pulse "high"	
X-TAL	Stand-by	101		4 MHz	
TRAY IN/OUT	2,5 Vdc when tray is inside	83		2,5 Vdc	"low" when tray is opening
				2,5 Vdc	"high" when tray is closing
ATSB	DISC, SEARCH	89		"low"	
MUTE	Play	67		"high"	pulses low in position pause
BWS	8 cm disc	17		"high"	only when a 8 cm disc has been used.

T-22387A

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-22387B

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-22387C

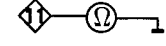
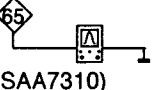
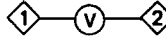
B-4 CHECK OF LASER SUPPLY

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 C.D.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	-
	LM	SK		-	170 < mV < 220	-
2	LO	serv. pos. 2		-	1.8 < V < 2.3	-
	LM	SK		-	170 < mV < 220	-
3	LO	Power on		-	0V $\pm$ 0.2V	-
						No light

T-22387D

B-4 LASER CURRENT ADJUSTMENT (see drawing MDA02138 measuring and adjustment position)

Step	Signal	Mode					Remarks
1	-	Power off		R3520	1kΩ	-	Pre-adjustment Ohmic value
2	Eye-pattern HFI	Power on Test disc 5 play		-	-	See drawing 37017B8	IF no signal see "start up procedure"
3	laser current = voltage across R3508	Test disc 5 play track 1		R3520	50 mV DC	-	use a high-ohmic voltmeter

T-22387E

B-5 ADJUSTMENT OF FOCUS-OFFSET (see drawing MDA02138 measuring and adjustment position)

Step	Signal	Mode					Remarks
1	-	Power on	-	R3568	-	-	adjust for optical mid-position of the focus motor
2	FE LAG	Play Test disc 5 Track 1	27	R3568	400mV ± 40 mV DC	-	fine adjustment

T-22387F

B-5 FOCUS ACTION

Signal	Mode				Remarks
SI/RD	Service position 1 when repeating focus start up	21			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-22387G

C-1 HIGH SPEED DISC ROTATION

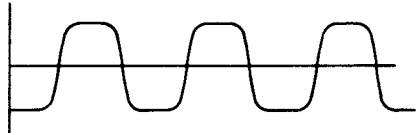
Signal	Mode				Remarks
TL	Test disc 5, play or service position 2	13		Pulses "low"	TL indicates that the track has been found
HFI	Test disc 5, play or service position 2	65			See drawing: 37017B8
X-tal	Test disc 5A, play or service position 2	70		11.28 MHz	
MC	Test disc 5, play or service position 2	81			See drawing: 38849A12
		12			

T-22387H

C-2 TRACK FOLLOWING

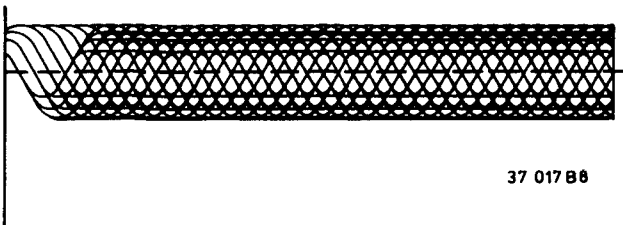
Signal	Mode				Remarks
RE dig	Test disc 5, play or service position 3	37			
RE lag	Test disc 5, play or service position 3	41	≈ 2.5 Vdc		
C osc1	Test disc 5, play or service position 3	30		≈ 650 Hz	
C osc2	Test disc 5, play or service position 3	31		≈ 650 Hz	
RAD+	Test disc 5A, service position 1	40			Arm inside: 1V Arm inside: -1V
RE lead	Position stand-by	35		≈ 650 Hz	

T-22387I



38 314 A12

HF-SIGNAL



37 017 B8

MC-SIGNAL



POSITION: STAND BY



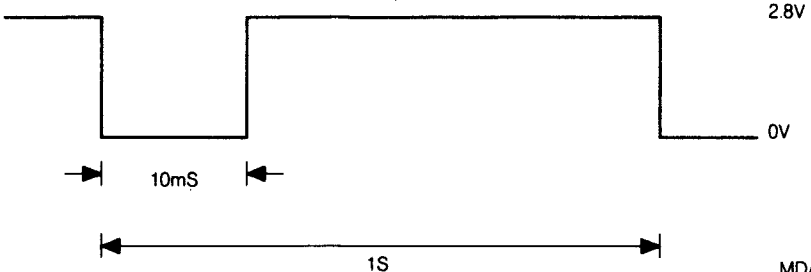
POSITION: PLAY (BEGINNING)



POSITION: PLAY (NORMAL)

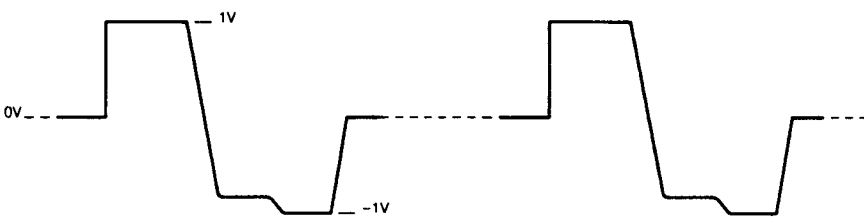
38 849 A12

Si/Rd



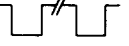
MDA.01403
T33/821

FE-SIGNAL



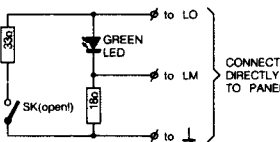
MDA.01413
T33/823

DOSD-SIGNAL

POSITION	PLAYER	POWER ON	SERVICE POSITION 3	PLAY	SEARCH, PAUSE
DOSD SIGNAL		LOW	HIGH	HIGH	

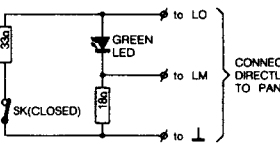
MDA.01143
T12 -651

REPLACEMENT CIRCUIT FOR LASER ASSEMBLY



THE LED EMITS LITTLE LIGHT
LED GREEN e.g. COY94 5322 130 32182

REPLACEMENT CIRCUIT FOR LASER ASSEMBLY



The feedback system sees to it that the same amount of current flows through the LED. When SK is open and when SK is closed the LED emits little light.

PRS.05540
T28/845

5-3
D1 JUMP TO TRACK 1

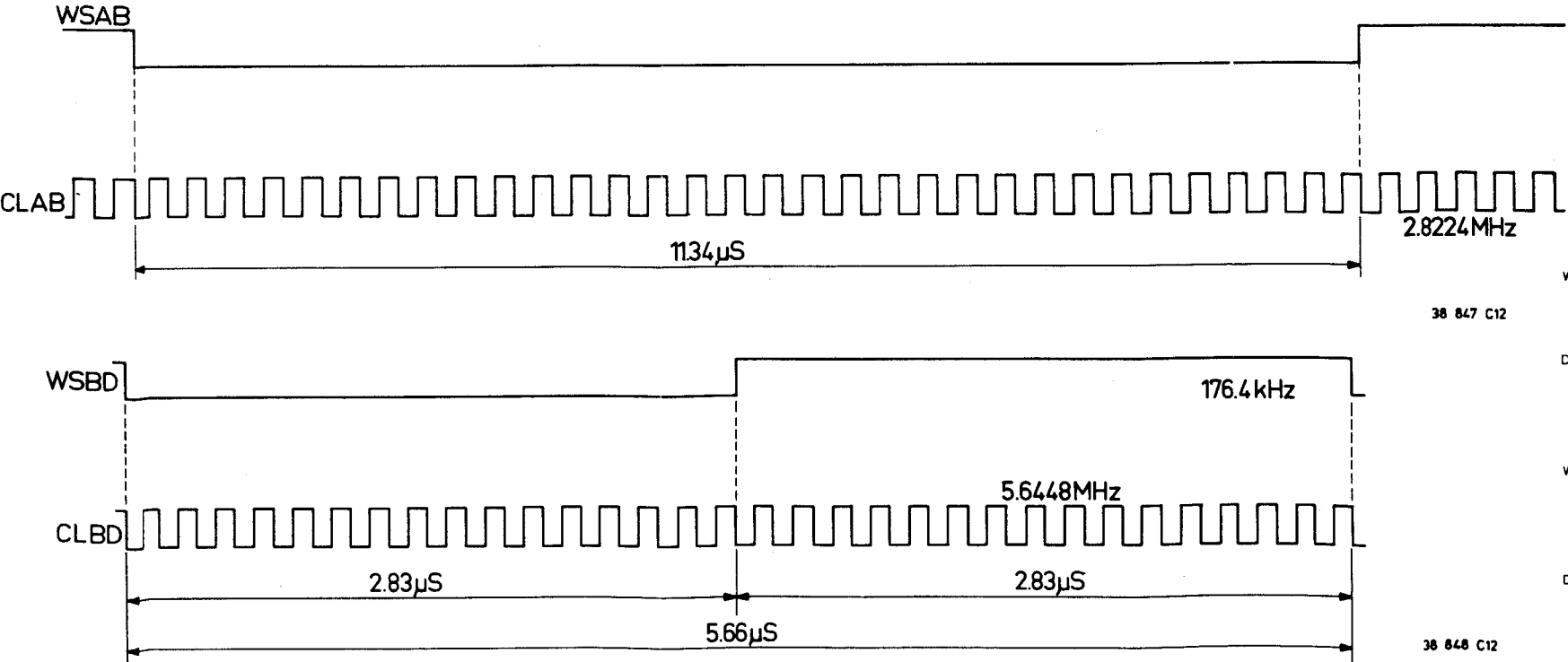
Signal	Mode				Remarks
DODS	Test disc 5A search >> or search <<	19			See drawing MDA.01143
QRA	Test disc 5A, play	75			} See drawing MDA.00453
QDA	Test disc 5A, play	77			
QCL	Test disc 5A, play	76			
SWAB/SSM	Test disc 5A, play	78			See drawing MDA.00239
SCAB	Test disc 5A, play	79			See drawing MDA.00239
SDAB	Test disc 5A, play	80			See drawing MDA.00239

T-22387J

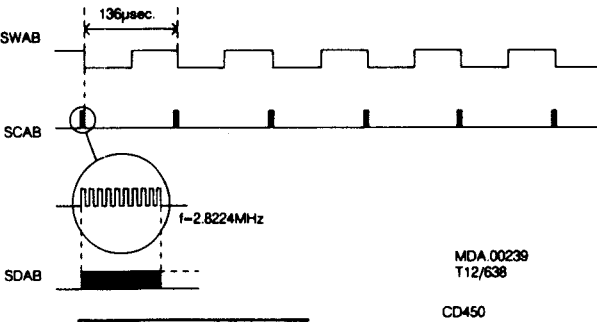
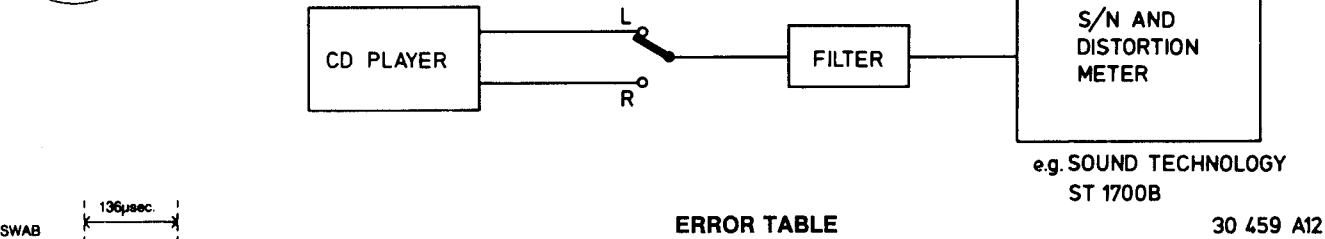
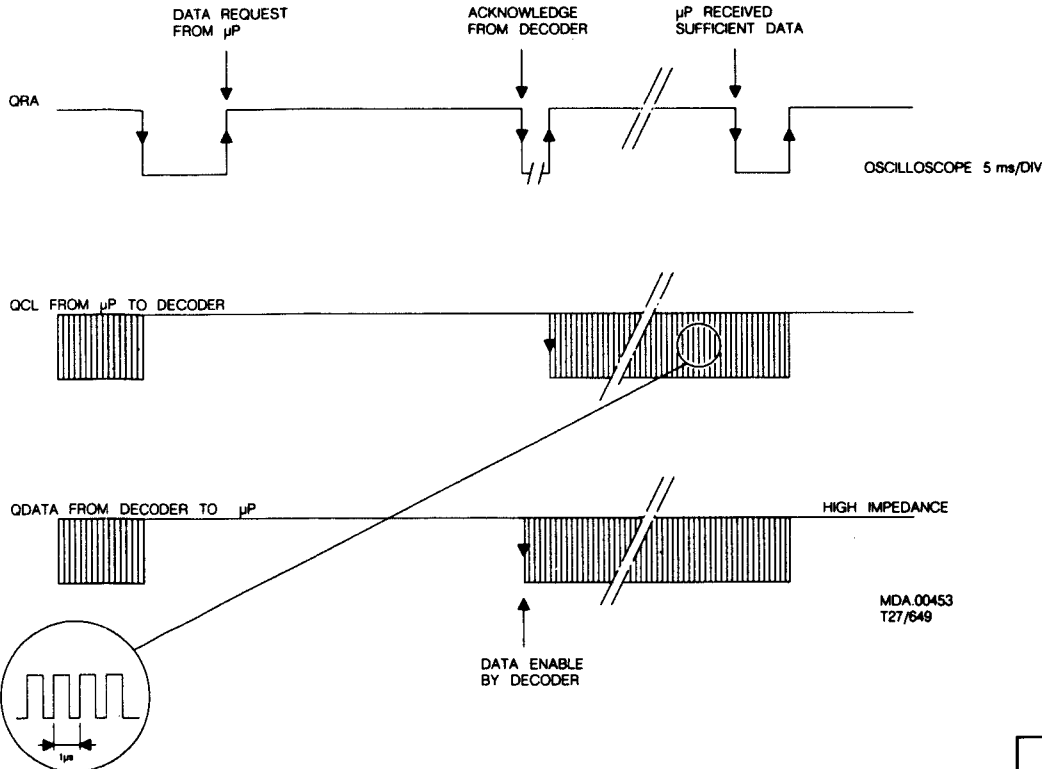
D-2 NO AUDIO OUTPUT LEFT+RIGHT

Signal	Mode				Remarks
WSAB	Disc, play	71			} See drawing 38847C12
CLAB	Disc, play	72			
DAAB	Disc, play	73		activity	
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	
WSBD	Disc, play	85			
MUSB	Disc, play	90		"high"	Pause, next, prev, stop: "low"
MUTE	Disc, play	67		"high"	Pulses low during pause
AM	Disc, play	67		"high"	AM = additional mute

T-22387K



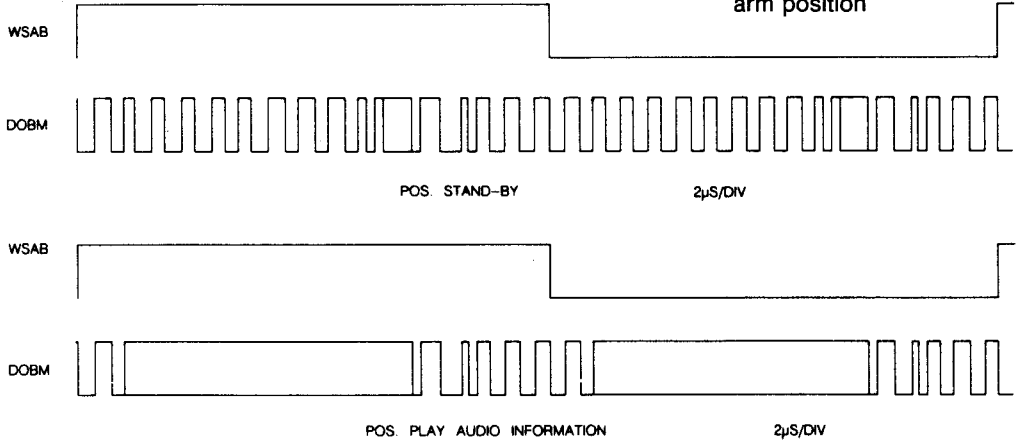
CS 22 118



MDA.00239
T12/638
CD450

ERROR TABLE

Indication	Cause	Check
Er 02	No TL pulse at start-up	} Si, Sc, RD, Photodiode signal processor TL, HFI, CD disc present?
Er 03	No lead-in track found	
Er 06	No TL pulse within 0.5 sec. during track jumping	CD disc, radial arm position, REdig, Radial error processor
Er 07	Subcoding error during PLAY	RE-lag circuit, TL, REdig
Er 08	TOC error	HFI
		CD disc, turntable motor control, radial arm position



MDA.00239
T07/730

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-22387L

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-22387M

Filter = 13th order filter 4822 395 30204

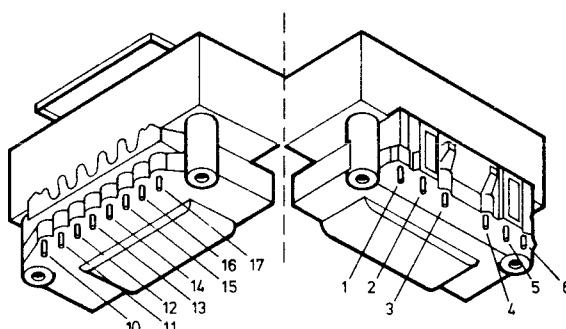
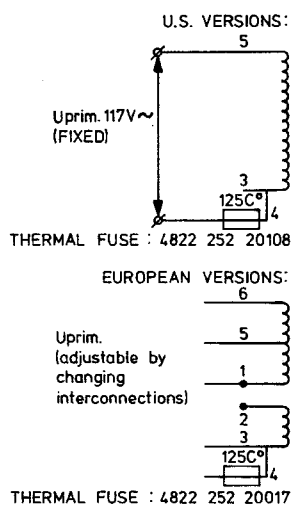
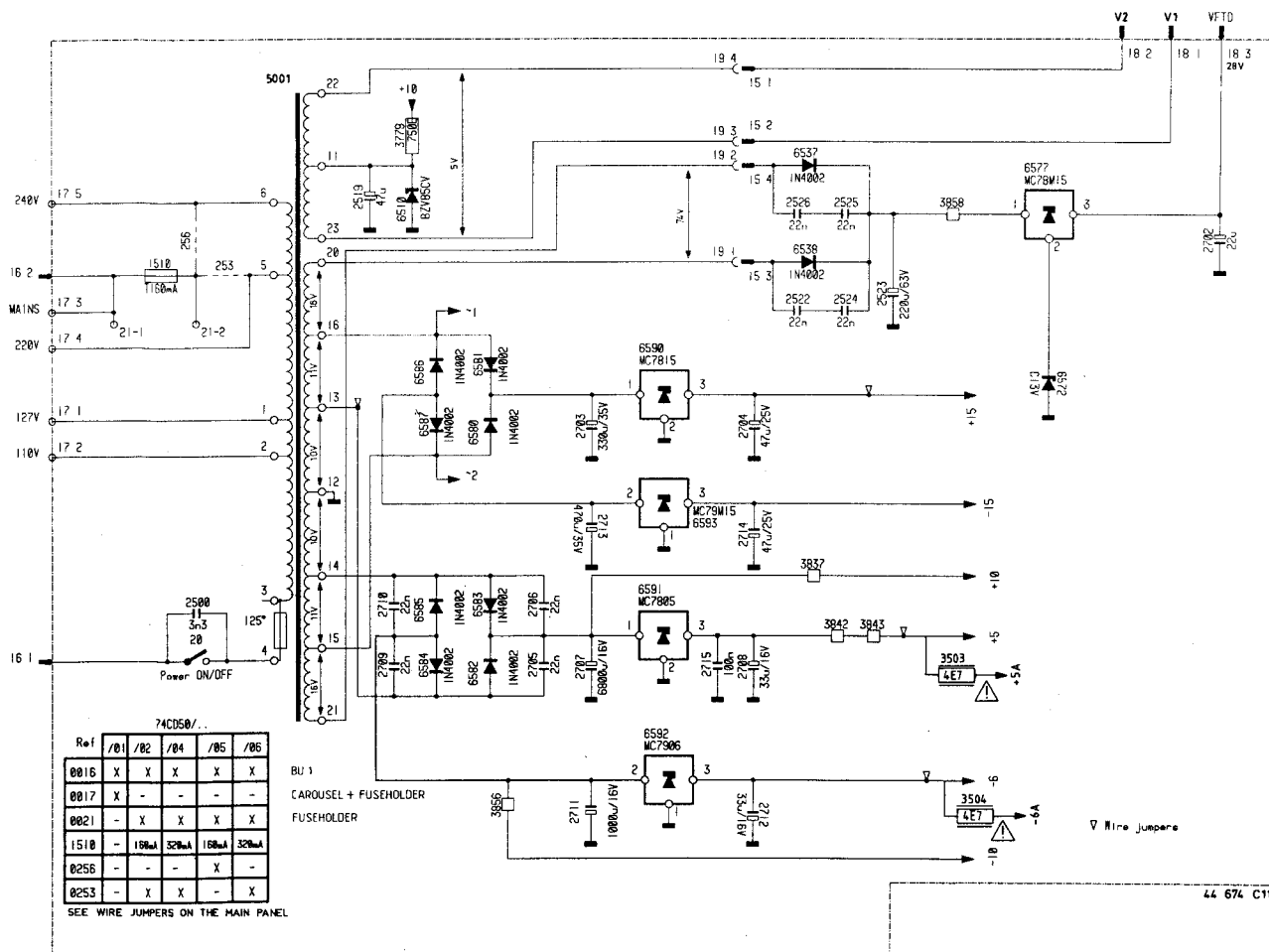
D-9 DOBM DIGITAL OUTPUT

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

T-22387N

Operating errors

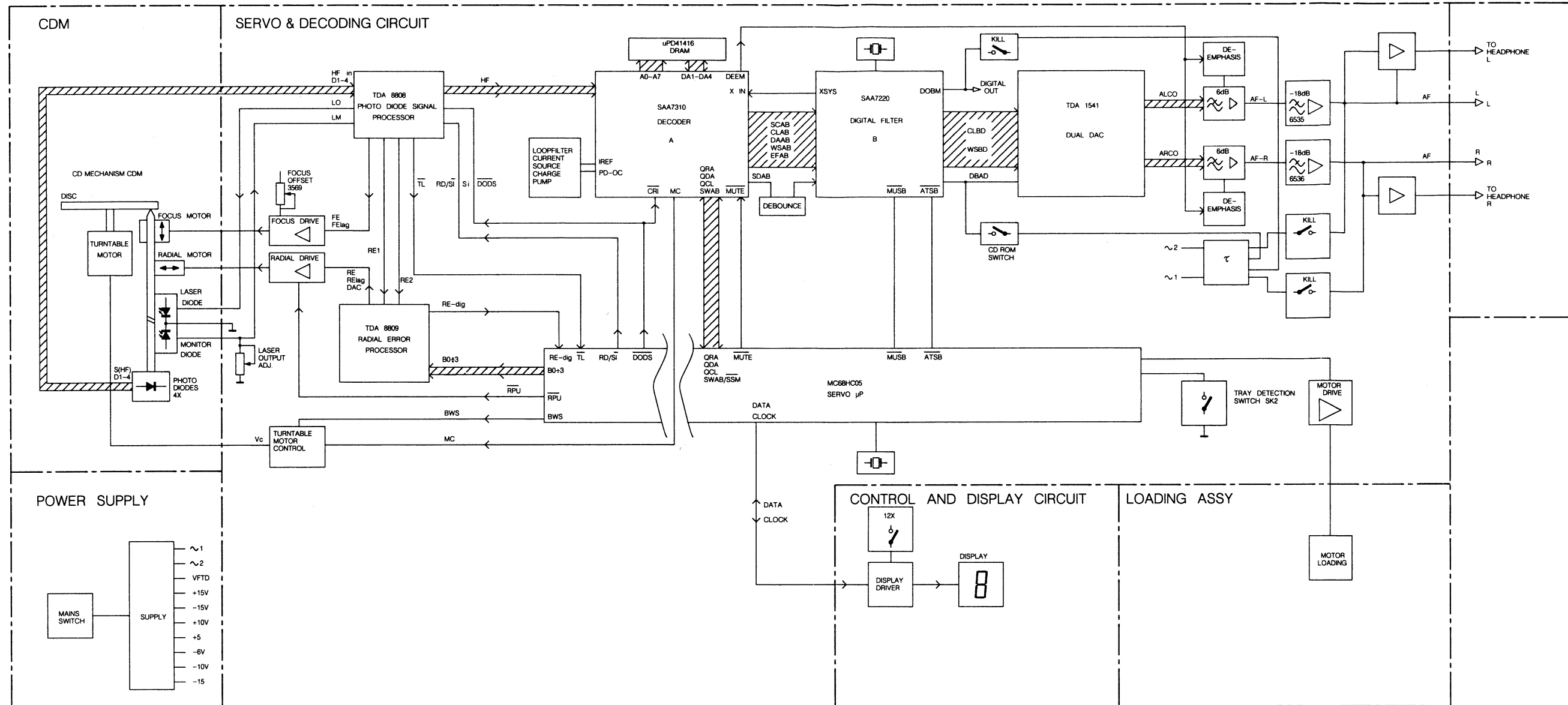
- | | |
|---|---|
| Er 30 "NEXT" key operated during the last track, with "REPEAT" turned off. | Er 41 CANCEL pressed when already a not deleted program has been made. |
| Er 31 "PREVIOUS" key operated during the first track, with "REPEAT" turned off. | Er 42 Selected track is not a program block. |
| Er 32 AB key operated in AMS mode. | Er 43 FTS store error: memory full. |
| Er 33 The selected index number does not exist on this disc. | Er 44 FTS store error: no program. |
| Er 34 Programme survey requested; no programme present. | Er 46 FTS play error: no FTS program in memory. |
| Er 35 The programme memory is full. | Er 47 FTS selection error: upper bound of fts memory. (next). |
| Er 36 The programmed track is not present on this CD disc. | Er 49 FTS selection error: selection request while storing. (next/ prev). |
| Er 37 The selected track is not present on this CD disc. | Er 51 FTS selection error: selection request while storing. (review). |
| Er 38 MEMO pressed during AMS while track not known. | Er 52 FTS selection clear error: clear request while storing. |
| Er 39 MEMO or CANCEL pressed while in play program. | Er 54 FTS store error: no record id (toc) available. |
| Er 40 MEMO pressed when already a delete program has been made. | Er 56 AB key pressed when not in PLAY mode. |
| | Er 60 Fast forward/reverse bound. |
| | Er 63 No track possible to play in edit mode. |
| | Er 74 Relative time not found. |
| | Er 75 Binary search time out error. |
| | Er 76 Time search time out error. |



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

44 577 A11

BLOCK DIAGRAM

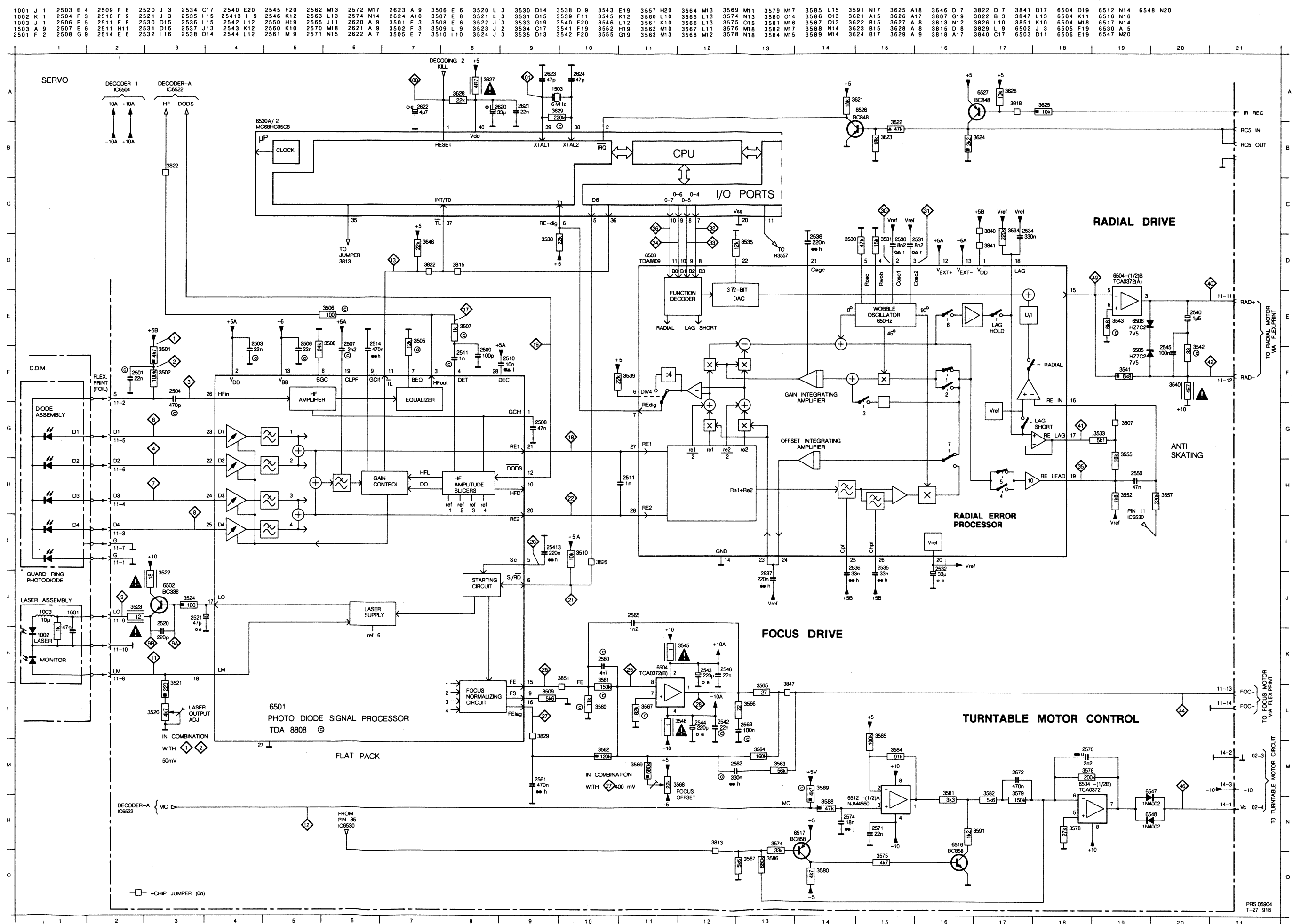
PRS 05906
1-27/918

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
 BWS - Band Width Switch 8/12 cm disc

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

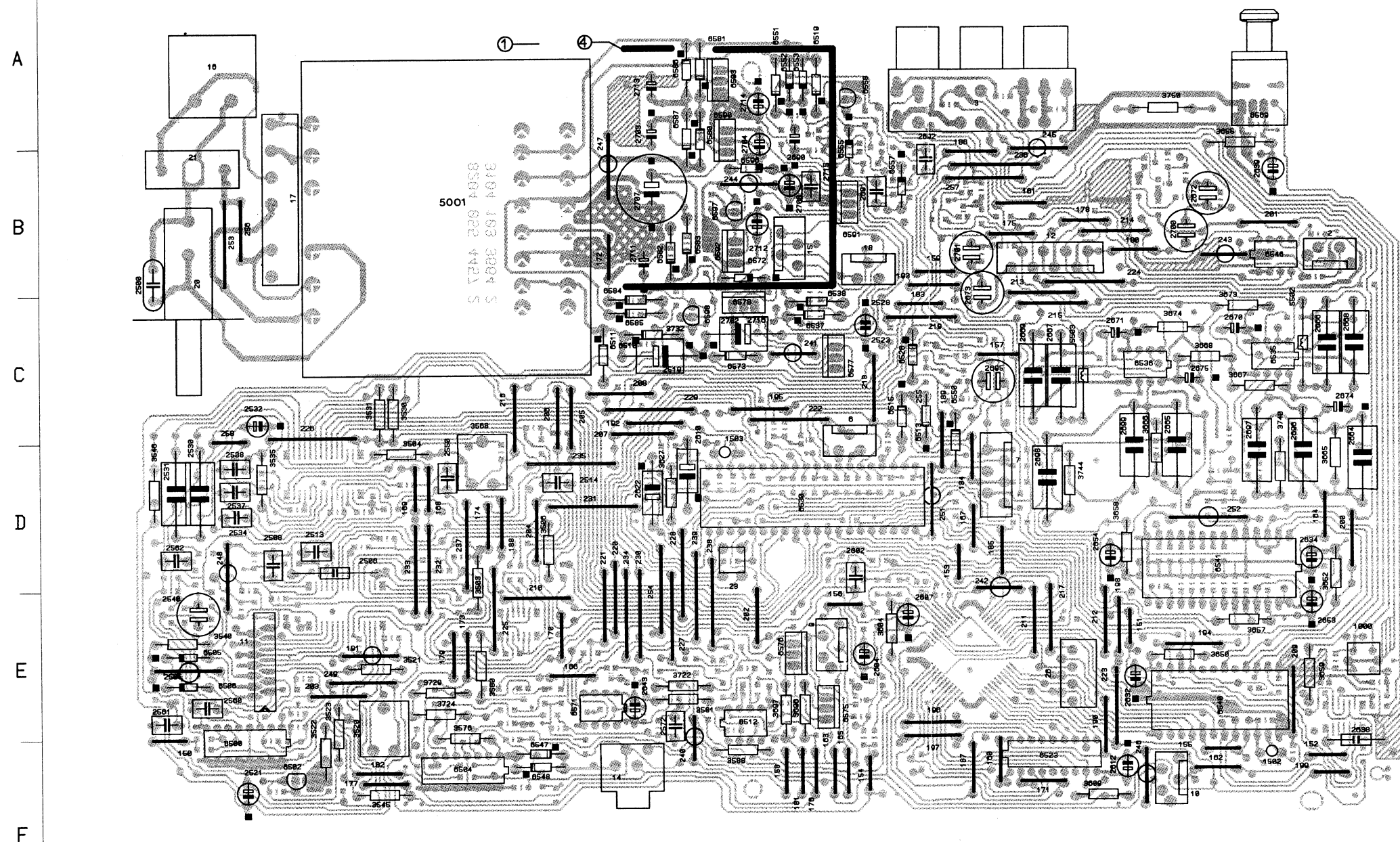
MUSB - Soft Mute signal
 PD/OC - Phase detector - oscillator control
 QCL - Q-channel Clock signal
 QDA - Q-channel Data signal
 QRA - Q-channel Request Acknowledge
 SCAB - Subcode clock Decoder-A to Filter-B
 SDAB - Subcode data Decoder-A to Filter-B
 SWAB/SSM - Subcode Word/Start-stop motor signal
 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



SERVO + DECODER

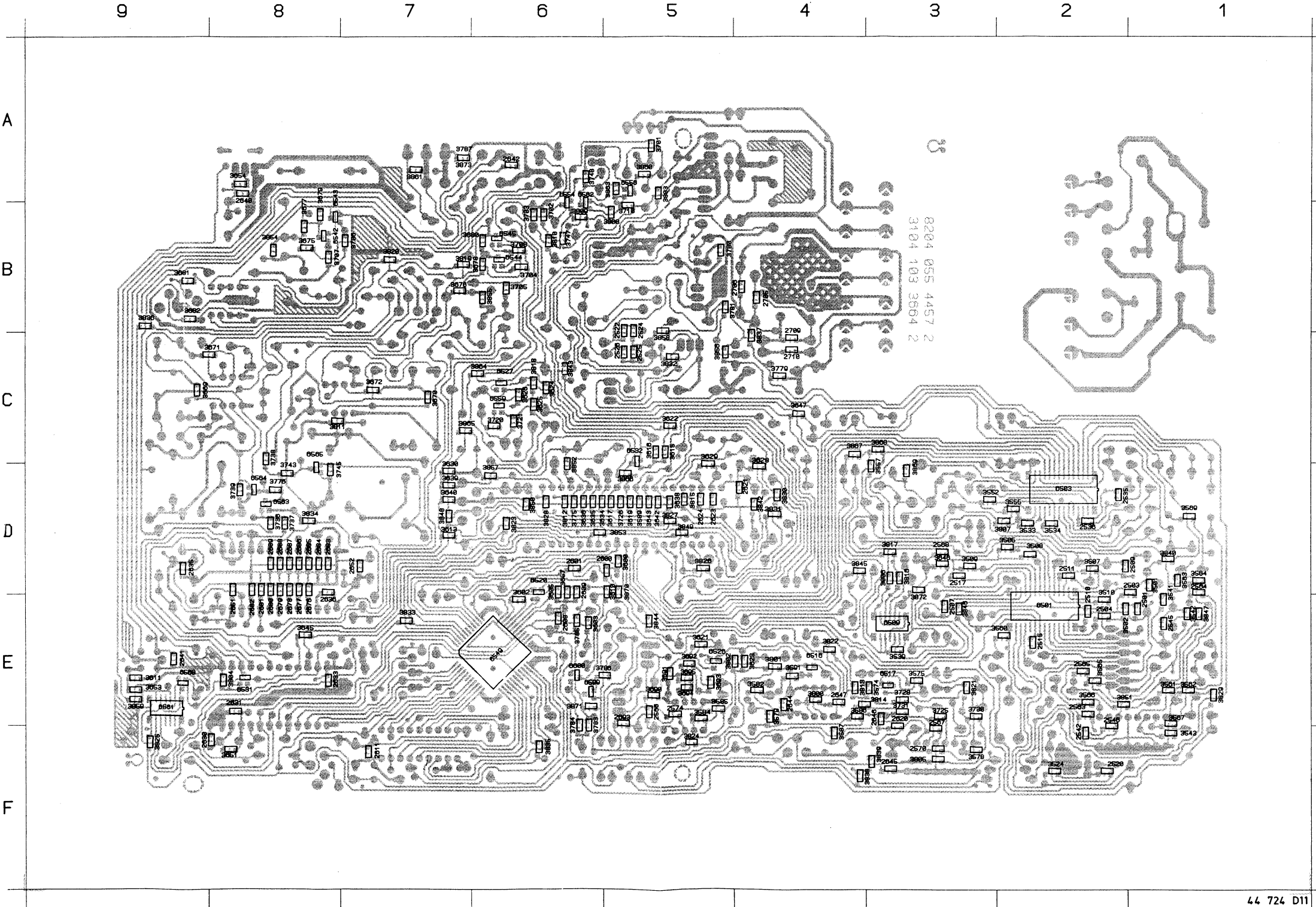
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3 A 7	159 B 6	183 C 6	207 C 4	231 D 4	256 B 1	2521 F 1	2564 D 1	2631 E 8	2668 C 9	2692 B 6	3582 E 2	3545 F 2	3585 E 5	3625 C 6	3658 D 7	3604 E 5	3737 D 8	3805 F 3	3829 E 1	3854 B 8	0503 D 2	0538 C 0	0504 D 8	0507 B 5
6 D 5	160 F 7	184 C 6	208 C 4	232 D 3	257 B 6	2522 C 5	2565 E 2	2632 E 7	2669 C 7	2693 E 5	3583 E 3	3546 D 1	3586 E 4	3626 C 6	3659 E 9	3605 E 5	3738 D 8	3806 D 3	3830 D 4	3855 B 6	0504 F 3	0539 C 0	0505 D 8	0508 B 5
7 D 0	161 B 7	185 D 7	209 E 9	233 D 3	258 C 1	2523 C 6	2566 E 5	2633 E 8	2670 C 8	2694 C 6	3584 D 2	3552 D 3	3587 F 4	3627 D 4	3660 D 4	3606 E 5	3739 D 8	3807 D 2	3831 D 4	3856 C 5	0505 E 1	0540 E 8	0506 C 4	0509 E 0
9 E 5	162 F 8	186 B 6	210 E 3	234 D 4	1000 E 9	2524 B 5	2567 F 3	2634 D 9	2671 C 7	2695 C 9	3585 D 2	3555 D 2	3588 F 5	3628 D 4	3661 D 4	3607 F 5	3740 D 9	3808 B 5	3832 C 5	3857 D 5	0506 E 1	0541 D 8	0507 C 5	0510 E 0
10 F 8	163 F 5	187 F 6	211 E 7	235 D 4	1501 A 2	2525 C 5	2568 D 3	2635 D 9	2672 B 8	2696 D 7	3586 D 2	3556 D 2	3589 D 5	3629 D 5	3662 C 8	3608 B 6	3741 D 7	3809 B 6	3833 E 7	3858 B 5	0507 E 3	0542 B 8	0508 A 8	0511 E 4
11 E 2	164 D 9	188 D 3	212 E 7	236 B 7	1502 F 8	2526 C 5	2569 F 3	2636 D 9	2673 B 8	2697 D 7	3587 D 2	3557 D 2	3590 D 5	3630 D 6	3663 C 9	3609 C 8	3742 C 8	3810 B 6	3834 D 8	3859 E 9	0508 C 4	0543 B 8	0509 E 4	0512 B 5
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15 B 5	167 D 6	191 E 2	215 C 7	239 D 5	2500 B 1	2529 D 1	2572 E 5	2639 B 8	2676 E 8	2700 B 8	3590 D 3	3560 D 2	3593 E 1	3633 D 1	3666 D 0	3612 C 9	3745 C 8	3813 E 4	3837 B 4	3862 A 5	0511 C 6	0546 B 8	0512 F 3	0515 E 5
16 A 1	168 D 3	192 C 4	216 C 3	240 E 4	2501 E 1	2530 C 1	2573 E 5	2640 A 8	2677 E 8	2701 B 8	3591 D 3	3561 D 2	3594 E 1	3634 D 1	3667 D 0	3613 C 9	3746 A 0	3814 E 4	3838 F 4	3863 A 5	0512 F 5	0547 B 8	0513 C 5	0516 E 5
17 A 2	169 D 3	193 B 6	217 D 7	241 C 5	2502 D 2	2531 D 1	2574 E 5	2641 E 9	2678 E 8	2702 C 5	3592 E 2	3562 E 2	3595 E 2	3635 D 1	3668 D 0	3614 C 9	3747 B 8	3815 E 4	3839 B 4	3864 C 6	0513 C 6	0548 B 8	0514 C 5	0517 C 5
18 B 6	170 E 4	194 E 8	218 C 6	242 E 6	2503 E 2	2532 D 2	2575 E 5	2642 A 6	2679 E 8	2703 A 4	3593 E 2	3563 E 2	3596 E 2	3636 D 1	3669 D 0	3615 C 9	3748 A 0	3816 E 4	3840 D 1	3865 C 7	0514 C 6	0549 B 8	0515 C 5	0518 C 5
20 B 1	171 F 7	195 C 5	219 C 6	243 B 8	2504 E 2	2533 D 2	2576 E 5	2643 A 6	2680 E 8	2704 A 5	3594 E 2	3564 D 2	3597 E 2	3637 C 8	3670 D 0	3616 C 9	3749 A 0	3817 C 3	3841 D 3	3866 D 5	0515 C 6	0550 B 8	0516 C 5	0519 C 5
23 D 5	172 B 4	196 E 8	220 D 4	244 B 5	2505 E 2	2534 D 2	2577 E 5	2644 E 4	2681 E 8	2705 B 4	3595 E 2	3565 E 2	3598 E 2	3638 D 1	3671 C 8	3617 C 3	3750 A 7	3818 C 6	3842 D 4	3867 C 4	0516 C 6	0551 A 5	0517 C 5	0520 C 5
26 E 7	173 E 3	197 F 6	221 D 4	245 B 7	2506 E 2	2535 D 2	2578 E 5	2645 F 3	2682 E 8	2706 B 4	3596 E 2	3566 E 2	3599 E 2	3639 D 1	3672 C 8	3618 C 3	3751 A 7	3819 C 6	3843 C 8	3868 C 3	0517 C 6	0552 A 5	0518 B 4	0521 C 5
150 F 1	174 D 3	198 E 7	222 C 5	246 F 9	2507 E 2	2536 D 1	2579 E 5	2646 F 3	2683 E 8	2707 B 4	3597 E 2	3567 E 2	3600 F 7	3640 D 7	3673 C 8	3619 C 3	3752 E 3	3820 B 7	3844 E 5	3869 D 3	0518 C 6	0553 A 5	0519 B 4	0522 C 5
151 E 7	175 B 7	199 F 9	223 E 7	247 A 4	2510 E 2	2537 D 1	2580 E 5	2647 E 4	2684 D 8	2708 C 4	3598 E 2	3568 E 2	3601 E 5	3641 C 4	3674 B 8	3620 B 7	3753 E 3	3821 E 3	3845 D 4	3870 E 5	0519 C 6	0554 B 8	0520 B 4	0523 C 5
152 F 9	176 F 5	200 D 9	224 B 7	248 E 1	2511 D 2	2538 D 1	2581 E 5	2648 E 4	2685 D 8	2709 C 4	3599 E 2	3569 E 2	3602 B 0	3642 C 4	3675 B 8	3621 E 3	3754 E 3	3822 E 4	3846 E 3	3871 E 6	0520 C 6	0555 B 8	0521 C 5	0524 C 4
153 D 0	177 F 2	201 B 0	225 D 3	249 E 2	2512 D 2	2539 D 1	2582 E 5	2649 E 4	2686 D 8	2710 C 4	3600 E 2	3570 F 3	3603 E 5	3643 C 4	3676 B 8	3622 E 3	3755 E 3	3823 E 4	3847 E 1	3872 D 3	0521 C 6	0556 A 5	0522 C 5	0525 C 4
154 F 0	178 B 7	202 E 5	226 C 2	250 E 1	2513 D 4	2540 F 2	2583 E 5	2650 D 3	2687 D 8	2711 B 5	3601 E 5	3571 D 5	3604 E 5	3644 C 4	3677 B 8	3623 E 3	3756 E 3	3824 E 4	3848 D 7	3873 A 7	0522 C 6	0557 B 0	0523 C 5	0526 C 4
155 F 8	179 E 3	203 E 2	227 E 4	251 D 8	2514 D 4	2541 D 2	2584 E 5	2651 E 1	2688 D 8	2712 B 5	3602 E 5	3572 D 5	3605 E 5	3645 C 4	3678 B 8	3624 E 3	3757 E 3	3825 E 3	3849 D 5	3874 F 6	0523 C 6	0558 A 5	0524 C 5	0527 C 4
156 E 5	180 B 7	204 D 3	228 D 4	252 D 8	2515 D 2	2542 F 2	2585 E 5	2652 D 3	2689 D 8	2713 A 4	3603 E 5	3573 D 5	3606 E 5	3646 C 4	3679 B 8	3625 E 3	3758 E 3	3826 E 3	3850 D 5	3875 E 6	0524 C 6	0559 B 8	0525 C 5	0528 C 4
157 C 6	181 F 5	205 C 4	229 C 4	253 B 1	2516 D 4	2543 F 2	2586 E 5	2653 D 3	2690 A 5	2714 B 5	3604 E 5	3574 E 3	3607 E 5	3647 C 4	3680 B 8	3626 E 3	3759 E 3	3827 E 3	3851 E 1	3876 E 6	0525 C 6	0560 B 8	0526 C 5	0529 C 4

1 2 3 4 5 6 7 8 9



SERVO + DECODER PANEL

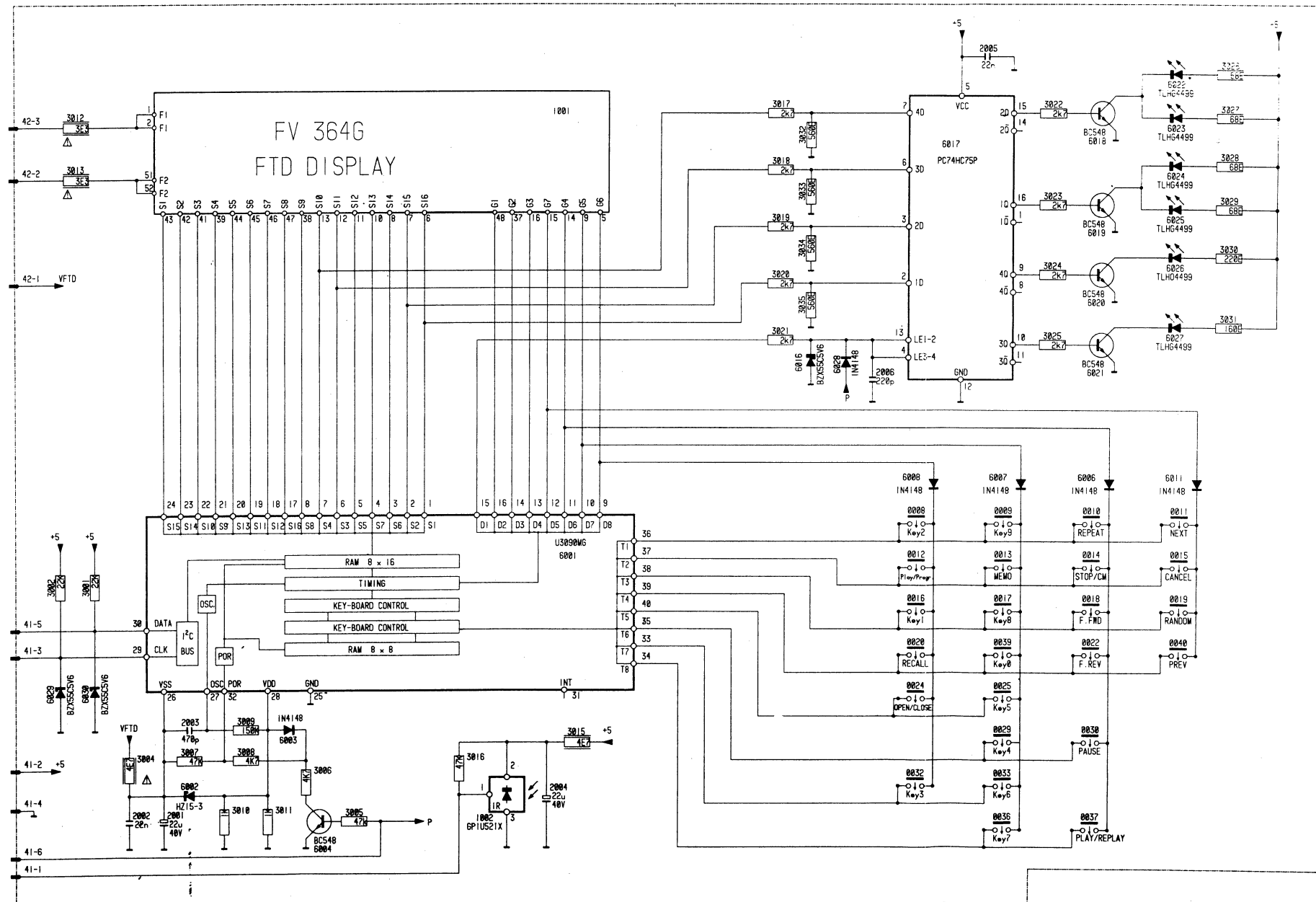
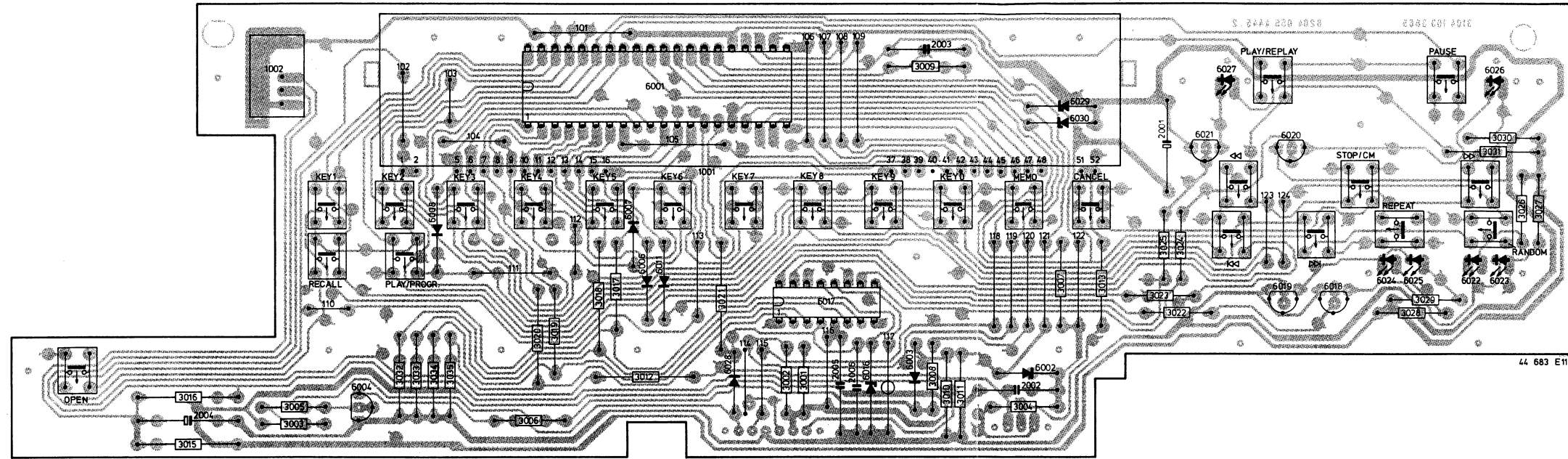
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3	A 7	159	B 6	183	C 6	207	C 4	231	D 4	255	B 1	2521	F 1	2564	D 1	2631	E 8	2668	C 9	2692	B 6	3502	E 2	3545	F 2	3585	E 5	3625	C 6	3658	D 7	3694	E 5	3737	D 8	3805	F 3	3829	E 1	3854	B 8	6503	D 2	6538	C 6	6564	D 8	6597	B 5
6	D 5	160	F 7	184	C 6	208	C 4	232	D 3	257	B 6	2522	C 5	2565	E 2	2632	E 7	2669	C 7	2693	E 5	3503	E 3	3546	D 1	3586	E 4	3626	C 6	3659	E 9	3695	E 5	3738	D 8	3806	D 3	3830	D 4	3855	B 6	6504	F 3	6540	E 8	6565	D 8	6598	C 4
7	D 6	161	B 7	185	D 7	209	E 9	233	D 3	258	C 1	2523	C 6	2566	E 5	2633	E 8	2670	C 8	2695	C 9	3504	D 2	3547	D 3	3587	F 4	3627	D 4	3660	D 9	3696	E 5	3739	D 8	3807	D 2	3831	D 4	3856	C 5	6505	E 1	6541	D 8	6566	E 9	6599	E 6
9	E 5	162	F 8	186	B 8	210	E 3	234	D 4	1800	E 9	2524	B 5	2567	F 3	2634	D 9	2671	C 7	2696	D 9	3505	D 2	3550	D 2	3588	F 5	3628	D 4	3661	D 8	3697	F 5	3740	D 8	3808	B 5	3832	C 5	3857	D 6	6506	E 1	6542	B 8	6569	A 8	6600	E 6
10	F 6	163	F 5	187	F 6	211	E 7	235	D 4	1581	A 2	2525	C 5	2568	D 3	2635	D 9	2672	B 8	2697	D 8	3506	D 4	3557	D 3	3590	D 5	3629	D 5	3667	C 8	3701	A 5	3743	D 8	3809	B 6	3833	E 7	3858	B 5	6509	E 3	6543	B 8	6571	C 4		
11	E 2	164	D 9	188	D 3	212	E 7	236	B 7	1582	F 8	2526	C 5	2570	F 3	2636	D 8	2673	B 6	2698	D 7	3507	D 2	3560	E 3	3591	E 4	3630	D 7	3668	C 8	3702	B 6	3744	D 7	3810	B 6	3834	D 8	3859	E 9	6510	C 4	6544	B 6	6572	B 5		
12	B 7	165	F 6	189	D 6	213	C 7	237	D 3	1583	D 5	2528	C 6	2572	F 4	2638	F 9	2674	C 9	2699	D 7	3508	D 2	3561	E 1	3600	D 5	3634	D 6	3669	C 9	3703	B 6	3745	C 8	3811	C 7	3835	F 8	3860	A 5	6511	C 4	6545	B 6	6573	C 5		
14	F 4	166	E 4	190	F 7	214	B 7	238	D 5	1510	B 1	2530	D 1	2574	E 5	2639	B 8	2675	C 9	2700	B 8	3509	D 3	3562	E 1	3602	E 6	3635	D 5	3670	C 7	3704	B 6	3747	D 6	3812	D 6	3836	B 9	3861	A 7	6512	F 5	6546	B 8	6575	E 5		
15	B 5	167	D 6	191	E 2	215	C 7	239	D 5	2580	B 1	2531	D 1	2600	D 5	2640	A 6	2676	E 8	2701	B 8	3510	E 2	3563	D 1	3603	E 6	3636	D 6	3671	C 9	3705	B 6	3748	A 5	3813	E 4	3837	B 4	3863	A 5	6513	C 0	6547	F 3	6576	E 5		
16	A 1	168	D 3	192	C 4	216	C 3	240	E 4	2581	E 1	2532	C 1	2601	D 6	2641	E 9	2677	E 8	2702	C 5	3520	E 2	3564	D 1	3604	E 6	3638	D 5	3672	C 7	3706	B 7	3750	A 7	3814	E 3	3838	F 4	3864	C 6	6515	C 0	6548	F 4	6577	C 5		
17	A 2	169	D 3	193	B 6	217	D 7	241	C 5	2583	D 2	2534	D 1	2602	E 6	2642	A 6	2678	E 8	2703	A 4	3521	E 3	3565	E 2	3605	E 6	3639	D 7	3673	C 8	3707	B 8	3751	D 6	3815	D 5	3839	F 3	3865	C 7	6516	E 4	6549	E 7	6578	C 5		
18	B 6	170	E 4	194	E 8	218	C 6	242	B 8	2584	E 2	2535	D 2	2604	E 6	2643	E 4	2679	E 8	2704	A 5	3522	E 2	3566	E 2	3607	D 6	3640	D 7	3674	C 8	3708	B 6	3752	D 8	3816	D 3	3840	D 1	3866	D 5	6517	E 3	6550	D 6	6580	B 5		
20	B 1	171	F 7	195	C 5	219	C 6	243	B 8	2586	D 2	2536	D 2	2607	E 6	2644	E 4	2680	E 8	2705	B 4	3523	E 2	3567	E 1	3609	F 7	3642	D 5	3675	B 8	3710	B 5	3754	C 4	3817	D 3	3842	D 4	3867	C 4	6519	A 5	6551	A 5	6581	A 5		
23	D 5	172	B 4	196	E 6	220	D 4	244	B 5	2587	E 3	2537	D 1	2608	E 6	2645	F 3	2681	E 8	2706	B 4	3524	F 2	3568	C 3	3610	E 5	3643	D 5	3676	B 7	3720	C 6	3760	B 5	3818	C 6	3843	C 0	3868	C 3	6520	D 6	6552	A 5	6582	B 4		
26	E 7	173	E 3	197	F 6	221	D 4	245	B 7	2588	D 2	2538	D 1	2609	D 6	2646	F 3	2682	E 8	2707	B 4	3530	C 2	3569	D 1	3611	E 9	3645	E 8	3677	B 8	3721	C 6	3761	B 5	3819	B 7	3844	E 5	3869	D 3	6523	F 7	6553	A 5	6583	B 4		
150	F 1	174	D 3	198	E 7	222	C 5	246	F 8	2589	D 2	2540	E 1	2610	C 4	2647	E 4	2683	D 8	2708	B 5	3531	C 2	3574	E 3	3613	D 7	3646	D 3	3678	B 6	3722	E 4	3763	F 6	3820	B 7	3845	D 4	3870	E 5	6524	C 5	6554	B 6	6584	C 4		
151	E 7	175	B 7	199	F 9	223	E 7	247	A 4	2510	E 2	2542	F 2	2611	F 7	2651	D 8	2684	D 8	2709	C 4	3533	D 2	3575	F 3	3615	C 5	3647	C 4	3679	B 8	3724	E 3	3764	F 6	3821	E 3	3846	E 3	3871	E 6	6527	C 6	6555	B 6	6585	C 4		
152	F 9	176	F 5	200	D 9	224	B 7	248	E 1	2511	D 2	2545	E 1	2612	F 7	2652	D 7	2685	D 8	2710	C 4	3534	D 2	3576	F 3	3616	C 5	3650	E 8	3680	B 8	3725	E 3	3765	E 6	3822	E 4	3847	E 1	3872	D 3	6528	C 0	6556	A 5	6586	A 4		
153	D 6	177	F 2	201	B 8	225	D 3	249	E 2	2513	D 2	2546	F 2	2622	F 3	2653	E 9	2686	D 8	2711	B 4	3535	D 2	3578	F 3	3617	D 5	3651	F 8	3681	B 9	3726	D 5	3766	E 6	3823	D 6	3848	D 7	3873	A 7	6530	D 5	6557	B 6	6587	A 4		
154	F 6	178	B 7	202	E 5	226	C 2	250	E 1	2514	D 4	2550	D 3	2621	D 4	2654	D 7	2687	D 8	2712	B 5	3536	C 3	3579	E 4	3610	D 5	3652	D 9	3682	B 9	3728	C 9	3768	E 4	3824	F 5	3849	D 5	6532	C 0	6531	E 8	6558	E 9	6590	B 5		
155	F 8	179	E 3	203	E 2	227	E 4	251	D 6	2515	E 2	2550	D 1	2622	D 4	2664	D 9	2698	D 8	2713	A 4	3540	E 1	3580	E 3	3621	E 5	3653	E 9	3690	E 5	3729	C 3	3769	E 4	3825	F 9	3850	D 6	6533	C 7	6532	C 5	6559	C 0	6591	B 6		
156	E 5	180	B 7	204	D 3	228	D 4	252	D 8	2517	D 3	2551	E 1	2623	D 5	2665	D 8	2699	D 8	2714	A 5	3541	E 1	3581	E 4	3622	C 5	3654	A 8	3691	E 5	3730	E 3	3802	E 5	3826	D 5	3851	E 1	6534	E 2	6535	C 8	6561	E 9	6592	B 5		
157	C 6	181	F 5	205	C 4	229	C 4	253	B 1	2519	C 4	2562	D 1	2624	D 5	2666	C 9	2690	A 5	2715	B 5	3542	E 1	3582	E 4	3623	E 4	3655	A 8	3692	E 5	3731	E 3	3803	A 5	3827	D 5	3852	D 6	6536	C 8	6562	B 0	6593	A 5				

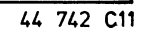
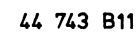






CONTROL + DISPLAY





CS 22 130

					
2695	4822 124 41558	10μF 20% 25V Bipolar	3578	4822 111 90575	82k 2% 0,125W
2696	4822 121 51225	18nF 2% 63V	3579	4822 116 90417	150k 2%
2697	4822 121 51361	5n6 2% 160V	3580	4822 116 52426	4k7 5% 0,5W
2698	4822 121 51361	5n6 2% 160V	3581	4822 116 53105	3k3 1% 0,6W
2699	4822 121 51225	18nF 2% 63V	3582	4822 111 90572	5k6 2% 0,125W
2700	4822 124 22339	100μF 20% 16V Bipolar	3584	4822 111 91492	91k 2%
2702	4822 124 22337	22μF 20% 63V	3585	4822 111 90214	100k 2% 0,125W
2703	4822 124 41594	330μF 20% 35V	3586	4822 111 90368	680k 2% 0,125W
2704	4822 124 41527	47μF 25V	3588	4822 116 52472	47k 5% 0,5W
2705	4822 122 33147	22nF 20%	3589	5322 111 90111	4k7 2% 0,125W
2706	4822 122 33147	22nF 20%	3591	5322 111 90096	1k2 2% 0,125W
2707	4822 124 41591	6800μF 20% 16V	3600	4822 111 90248	2k2 2% 0,125W
2708	4822 124 40272	33μF 20% 16V	3602	4822 111 90251	22k 2% 0,125W
2709	4822 122 33147	22nF 20%	3603	4822 111 90371	75Ω 2% 0,125W
2710	4822 122 33147	22nF 20%	3604	4822 111 30499	4Ω7 5% 0,33W
2711	4822 124 41571	1000μF 20% 16V	3605	5322 111 90265	1k6 2% 0,125W
2712	4822 124 40272	33μF 20% 16V	3607	4822 111 90571	3k9 2% 0,125W
2713	4822 124 41573	470μF 20% 35V	3609	4822 111 30499	4Ω7 5% 0,33W
2714	4822 124 41527	47μF 25V	3610	4822 111 90373	9k1 2% 0,125W
2715	5322 121 42386	100nF 5% 63V	3611	4822 111 90366	620Ω 2% 0,125W
					
3501	5322 111 90111	4k7 2% 0,125W	3613	4822 111 90251	22k 2% 0,125W
3502	4822 111 90214	100k 2% 0,125W	3619	4822 111 90251	22k 2% 0,125W
3503	4822 111 30499	4Ω7 5% 0,33W	3621	4822 111 90238	180k 5% 0,25W
3504	4822 111 30499	4Ω7 5% 0,33W	3622	4822 111 90543	47k 2% 0,125W
3505	4822 111 90253	12k 2% 0,125W	3623	4822 111 90238	180k 5% 0,25W
3506	4822 116 52389	100Ω 5% 0,5W	3624	4822 111 90248	2k2 2% 0,125W
3507	5322 111 90092	1k 2% 0,125W	3625	4822 111 90249	10k 2% 0,125W
3508	4822 111 90512	24k 2% 0,125W	3626	4822 111 90249	10k 2% 0,125W
3509	4822 111 90572	5k6 2% 0,125W	3627	4822 111 30499	4Ω7 5% 0,33W
3510	4822 111 90249	10k 2% 0,125W	3628	4822 111 90251	22k 2% 0,125W
3520	4822 101 10685	4k7 20%LIN 0,05W trimpot	3629	4822 111 90197	220k 2% 0,125W
3521	4822 116 52407	220Ω 5% 0,5W	3630	4822 111 90251	22k 2% 0,125W
3522	4822 111 30515	18Ω 5% 0,33W	3634	4822 111 90251	22k 2% 0,125W
3523	4822 111 30511	12Ω 5% 0,33W	3635	4822 111 90251	22k 2% 0,125W
3524	5322 111 90091	100Ω 2% 0,125W	3636	4822 111 90251	22k 2% 0,125W
3533	5322 111 90268	5k1 2% 0,125W	3638	4822 111 90251	22k 2% 0,125W
3534	4822 111 90197	220k 2% 0,125W	3639	4822 111 90251	22k 2% 0,125W
3535	4822 116 53081	12k 1% 0,6W	3640	4822 111 90251	22k 2% 0,125W
3539	4822 111 90251	22k 2% 0,125W	3643	4822 111 90251	22k 2% 0,125W
3540	4822 111 30499	4Ω7 5% 0,33W	3645	5322 111 90111	4k7 2% 0,125W
3541	4822 111 90544	6k8 2% 0,125W	3646	4822 111 90251	22k 2% 0,125W
3542	4822 111 90357	33Ω 2% 0,125W	3647	4822 111 90251	22k 2% 0,125W
3543	4822 111 90544	6k8 2% 0,125W	3650	4822 111 30483	1Ω 5% 0,33W
3545	4822 111 30483	1Ω 5% 0,33W	3651	4822 111 90197	220k 2% 0,125W
3546	4822 111 30483	1Ω 5% 0,33W	3652	4822 111 30499	4Ω7 5% 0,33W
3551	5322 111 90099	150k 2% 0,125W	3653	4822 116 52428	560Ω 5% 0,5W
3552	5322 111 90101	1k8 2% 0,125W	3654	5322 111 90118	8k2 2% 0,125W
3555	4822 111 90238	180k 5% 0,25W	3655	4822 111 30499	4Ω7 5% 0,33W
3557	4822 111 90197	220k 2% 0,125W	3657	4822 111 30499	4Ω7 5% 0,33W
3560	4822 111 91494	11k 2%	3658	4822 111 30508	10Ω 5% 0,33W
3561	4822 116 90417	150k 2%	3659	4822 116 52426	4k7 5% 0,5W
3562	4822 111 90568	120k 2% 0,125W	3665	5322 116 53478	1k5 1% 0,6W
3563	4822 111 90573	56k 2% 0,125W	3666	5322 116 53478	1k5 1% 0,6W
3564	4822 111 91495	160k 2%	3667	4822 111 30522	33Ω 5% 0,33W
3565	5322 111 90105	27Ω 2% 0,125W	3668	4822 111 30522	33Ω 5% 0,33W
3566	4822 111 90186	22Ω 2% 0,125W	3669	4822 116 90271	2k4 2%
3567	4822 111 90575	82k 2% 0,125W	3670	4822 116 90271	2k4 2%
3568	4822 100 20522	22k 20%LIN 0,05W trimpot	3671	4822 116 90271	2k4 2%
3569	4822 111 90368	680k 2% 0,125W	3672	4822 116 90271	2k4 2%
3574	5322 111 90267	33k 2% 0,125W	3673	4822 111 30522	33Ω 5% 0,33W
3575	5322 111 90111	4k7 2% 0,125W	3674	4822 111 30522	33Ω 5% 0,33W
3576	4822 116 52848	200k 1% 0,6W	3675	4822 111 90249	10k 2% 0,125W
			3676	4822 111 90249	10k 2% 0,125W
			3677	5322 111 90091	100Ω 2% 0,125W
			3678	5322 111 90091	100Ω 2% 0,125W
			3679	5322 111 90091	100Ω 2% 0,125W
			3680	5322 111 90091	100Ω 2% 0,125W
			3690	4822 111 90253	12k 2%

					
3691	4822 111 90253	12k 2%	3830	4822 111 90163	jumper
3692	4822 111 90253	12k 2%	3831	4822 111 90163	jumper
3693	5322 116 80445	4k7 5%	3833	4822 111 90163	jumper
3694	4822 111 90253	12k 2%	3834	4822 111 90163	jumper
3695	5322 116 80426	100Ω	3835	4822 111 90163	jumper
3696	4822 111 30513	15Ω Safety Resistor	3836	4822 111 90163	jumper
3697	4822 111 30513	15Ω Safety Resistor	3837	4822 111 90163	jumper
3701	5322 111 90111	4k7 2% 0,125W	3838	4822 111 90163	jumper
3702	4822 111 90425	5M6 5% 0,125W	3839	4822 111 90163	jumper
3703	5322 111 90108	39k 2% 0,125W	3840	4822 111 90163	jumper
3704	5322 111 90096	1k2 2% 0,125W	3841	4822 111 90163	jumper
3705	4822 111 90573	56k 2% 0,125W	3842	4822 111 90163	jumper
3706	5322 111 90096	1k2 2% 0,125W	3843	4822 111 90163	jumper
3707	5322 111 90096	1k2 2% 0,125W	3844	4822 111 90163	jumper
3708	5322 111 90096	1k2 2% 0,125W	3845	4822 111 90163	jumper
3710	5322 111 90099	150k 2% 0,125W	3847	4822 111 90163	jumper
3720	5322 111 90092	1k 2% 0,125W	3848	4822 111 90163	jumper
3721	4822 111 90543	47k 2% 0,125W	3849	4822 111 90163	jumper
3722	4822 111 30499	4Ω7 5% 0,33W	3850	4822 111 90163	jumper
3724	4822 116 53081	12k 1% 0,6W	3852	4822 111 90163	jumper
3725	4822 111 90253	12k 2% 0,125W	3853	4822 111 90163	jumper
3726	4822 111 90251	22k 5%	3854	4822 111 90163	jumper
3728	4822 111 90572	5k6 2% 0,125W	3855	4822 111 90163	jumper
3729	4822 116 53081	12k 0423 ER	3856	4822 111 90163	jumper
3730	4822 111 90253	12k 2% 0,125W	3857	4822 111 90163	jumper
3731	4822 111 90186	22Ω 2% 0,125W	3858	4822 111 90163	jumper
3732	4822 116 52407	220Ω 5% 0,5W	3859	4822 111 90163	jumper
3736	4822 111 90214	100k 2% 0,125W	3860	4822 111 90163	jumper
3737	4822 111 90249	10k 2% 0,125W	3861	4822 111 90163	jumper
3738	4822 111 90214	100k 2% 0,125W	3862	4822 111 90163	jumper
3739	4822 111 90425	5M6 5% 0,125W			
3740	4822 116 52864	820Ω 1% 0,6W	5502	4822 157 53141	coil 470μH
3743	4822 111 90425	5M6 5% 0,125W	5503	4822 157 53141	coil 470μH
3744	4822 116 52864	820Ω 1% 0,6W	semi conductor		
3745	4822 111 90425	5M6 5% 0,125W	6500	4822 209 72587	TCA0372DP2
3747	4822 111 90249	10k 2% 0,125W	6501	4822 209 73234	TDA8808T/C3
3748	4822 111 90571	3k9 2% 0,125W	6502	4822 130 44121	BC338
3775	5322 111 90111	4k7 2% 0,125W	6503	4822 209 73235	TDA8809T/C2
3776	4822 111 90425	5M6 5% 0,125W	6504	4822 209 72587	TCA0372DP2
3779	5322 111 90306	750Ω 2% 0,125W	6505	4822 130 34173	BZX79-B5V6
			6506	4822 130 34173	BZX79-B5V6
			6510	4822 130 31456	BZV85-C5V1
			6512	4822 209 83274	NJM4560D
			6516	5322 130 42012	BC858
			6517	5322 130 42012	BC858
			6519	5322 130 30684	1N4002
			6520	4822 130 42131	BF550
			6523	4822 209 70422	MN4264-15
			6526	4822 130 61207	BC848
			6527	5322 130 42012	BC858
			6530	4822 209 60801	MC68HC05C9P/SC409009 for CD50, CD60
			6531	4822 130 42675	BC818
			6535	5322 209 86234	NE5532N
			6536	5322 209 86234	NE5532N
			6537	5322 130 30684	1N4002
			6538	5322 130 30684	1N4002
			6540	4822 209 72545	SAA7220P/B
			6541	4822 209 72544	TDA1541A/N2
			6542	4822 130 42675	BC818
			6543	4822 130 42675	BC818

semi conductor			semiconductor		
6544	4822 130 42675	BC818	6571	4822 209 60772	X24C16
6545	4822 130 42675	BC818	6572	4822 130 34195	BZX55-C13
6547	5322 130 30684	1N4002	6575	4822 130 40823	BD135
6548	5322 130 30684	1N4002	6576	4822 130 40824	BD136
6549	4822 209 60775	SAA7310GP/05	6577	4822 209 80808	MC78M15CT
6550	5322 130 30684	1N4002	6580	5322 130 30684	1N4002
6551	5322 130 30684	1N4002	6581	5322 130 30684	1N4002
6552	4822 130 30621	1N4148	6582	5322 130 30684	1N4002
6553	4822 130 30621	1N4148	6583	5322 130 30684	1N4002
6554	4822 130 42513	BC858C	6584	5322 130 30684	1N4002
6555	4822 130 31981	BZX55-C3V9	6585	5322 130 30684	1N4002
6556	4822 130 61207	BC848	6586	5322 130 30684	1N4002
6557	4822 130 30621	1N4148	6587	5322 130 30684	1N4002
6558	4822 130 44121	BC338	6590	4822 209 80808	MC78M15CT
6559	4822 130 61207	BC848	6591	4822 209 71579	TY40408 = MC7805CT
6561	4822 209 60803	SN74LS08D			selected
6562	4822 130 61207	BC848	6592	5322 209 11222	MC7905CT
6563	5322 130 42012	BC858	6593	5322 130 41899	MC7915CT
6564	4822 130 42633	BSR56			
6565	4822 130 42633	BSR56			
6568	4822 130 61207	BC848			
6569	4822 218 20752	TOTX172 optical transmitter BU-4			

MISCELLANEOUS

1510	4822 253 30009	0.160A T FUSE only for /01/02/05	TOOLS	5322 130 32182	LED GREEN CQY G II
1510	4822 253 30014	0.315A T FUSE only for /04	TOOLS	4822 397 30184	CD AUDIO SIGNALS
1510	4822 253 30217	0.300A T FUSE UL only for /06	TOOLS	4822 321 21284	SERVICE CABLE (4P)
5001	4822 146 30798	MAINS TRANSFORMER only for /01	TOOLS	4822 397 30096	AUDIO TEST DISC 5+5A
5001	4822 146 30778	MAINS TRANSFORMER only for /02/05	TOOLS	4822 397 30155	AUDIO TEST DISC 1kHz
5001	4822 146 30782	MAINS TRANSFORMER only for /04	TOOLS	4822 397 60141	AUDIO TEST MAX DIAM
5001	4822 146 30797	MAINS TRANSFORMER only for /06	TOOLS	4822 395 50145	TORX SCREWDRIVERSET
	4822 263 40054	CAROUSEL ASSY only for /01	TOOLS	4822 395 50132	TORX SCREW SQUARE
	4822 600 10296	A-BOX MARANTZ	TOOLS	4822 395 30204	13TH ORDER FILTER
	4822 600 10302	A-BOX PHILIPS	TOOLS	4822 322 40066	SERVICE CABLE (14P)
	4822 600 10294	EPS-CUSHION	TOOLS	4822 267 50676	SERVICE CONNECTOR (14P)

ELECTRICAL PARTSLIST CONTROL & DISPLAY PANEL

switch					
SK...	4822 276 12465	TACT SWITCH (4.3MM)	3523	4822 116 52413	2k7 5% 0,5W
miscellaneous			3524	4822 116 52413	2k7 5% 0,5W
1501	4822 130 90663	DISPLAY FV364G	3525	4822 116 52413	2k7 5% 0,5W
1502	4822 214 51772	IR RECEIVER GP1U521X	3526	4822 116 52412	270Ω 5% 0,5W
			3527	4822 116 52412	270Ω 5% 0,5W
2501	5322 124 21643	22μF 20% 40V	3528	4822 116 52412	270Ω 5% 0,5W
2502	4822 122 10166	22nF 30% 16V	3529	4822 116 52412	270Ω 5% 0,5W
2503	4822 122 10172	220pF 10% 50V	3530	4822 116 52412	270Ω 5% 0,5W
2504	5322 124 21643	22μF 20% 40V	3531	4822 116 52412	270Ω 5% 0,5W
2505	4822 122 10166	22nF 30% 16V	semiconductor		
2506	4822 122 10172	220pF 10% 50V	6501	4822 209 72226	FTD DRIVER U3090MG
			6502	4822 130 33732	BZV85-C15
3501	4822 116 52463	22k 5% 0,5W	6503	4822 130 30621	1N4148
3502	4822 116 52463	22k 5% 0,5W	6504	4822 130 40938	BC548
3503	4822 116 52463	22k 5% 0,5W	6506	4822 130 30621	1N4148
3504	4822 111 30499	4Ω7 5% 0,33W Safety resistor	6507	4822 130 30621	1N4148
3505	4822 116 52426	4k7 5% 0,5W	6508	4822 130 30621	1N4148
3506	4822 116 52426	4k7 5% 0,5W	6511	4822 130 30621	1N4148
3507	4822 116 52472	47k 5% 0,5W	6512	4822 130 34173	BZX55-C5V6
3508	4822 116 52426	4k7 5% 0,5W	6513	4822 130 34173	BZX55-C5V6
3509	4822 116 52501	150k 5% 0,5W	6514	4822 130 34173	BZX55-C5V6
3510	4822 116 52391	1k 5% 0,5W	6515	4822 130 34173	BZX55-C5V6
3511	4822 116 52391	1k 5% 0,5W	6516	4822 130 34173	BZX55-C5V6
3512	4822 111 30593	3Ω3 5% 0,33W Safety resistor	6517	4822 209 60774	PC74HC75P
3513	4822 111 30593	3Ω3 5% 0,33W Safety resistor	6518	4822 130 40938	BC548
3515	4822 111 30499	4Ω7 5% 0,33W Safety resistor	6519	4822 130 40938	BC548
3516	4822 116 52472	47k 5% 0,5W	6520	4822 130 40938	BC548
3517	4822 116 52413	2k7 5% 0,5W	6521	4822 130 40938	BC548
3518	4822 116 52413	2k7 5% 0,5W	6522	4822 130 80848	TLHG4499
3519	4822 116 52413	2k7 5% 0,5W	6523	4822 130 80848	TLHG4499
3520	4822 116 52413	2k7 5% 0,5W	6524	4822 130 80848	TLHG4499
3521	4822 116 52413	2k7 5% 0,5W	6525	4822 130 80848	TLHG4499
3522	4822 116 52413	2k7 5% 0,5W	6526	4822 130 80849	TLHR4499
			6527	4822 130 80848	TLHG4499

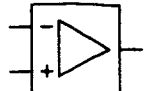
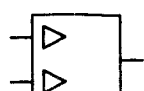
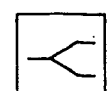
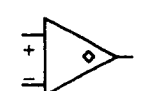
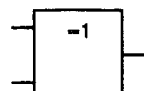
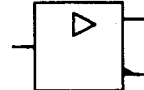
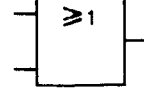
VARIABLE LINE OUTPUT PANEL

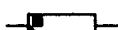
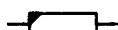
BU						
BU-3	4822 267 30878	VAR.LINE OUTPUT SOCKET	3101	4822 116 52437	5k1 5% 0,5W	
BU-5	4822 267 31065	HEADPHONE SOCKET	3102	4822 116 52413	2k7 5% 0,5W	
	2101	4822 124 41527	47µF 25V	3103	4822 111 30517	22Ω 5% 0,33W
	2102	4822 124 41528	100µF 25V	3104	4822 111 30517	22Ω 5% 0,33W
	2103	4822 124 41528	100µF 25V	3105	4822 116 52452	10k 5% 0,5W
	2104	4822 124 41528	100µF 25V	3106	4822 116 52452	10k 5% 0,5W
	2105	4822 124 22339	100µF 20% 25V	3107	4822 116 52398	150Ω 5% 0,5W
	2106	4822 124 22339	100µF 20% 25V	3108	4822 116 52398	150Ω 5% 0,5W
	2107	4822 124 22339	100µF 20% 25V	3109	4822 116 52395	1k2 5% 0,5W
	2108	4822 124 22339	100µF 20% 25V	3110	4822 116 52395	1k2 5% 0,5W
				semiconductor		
				6101	4822 214 51724	DVR-3
				6102	4822 209 83274	NJM4560D
				6103	4822 130 44121	BC338
				6104	4822 130 44121	BC338

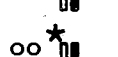
 Chips 50 V NP0 S1206			 Chips 0,125 W S1206			 Chips 0,125 W S1206			1U
1 pF	5%	4822 122 32479	4,7 E	5%	5322 111 90376	6,8 k	2%	4822 111 90544	
1,2 pF	5%	4822 122 33013	5,1 E	5%	4822 111 90393	7,5 k	2%	4822 111 90276	
1,5 pF	5%	4822 122 31792	5,6 E	5%	4822 111 90394	8,2 k	2%	5322 111 90118	
1,8 pF	5%	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	10M	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)	 	220kΩ 270kΩ	5% 10%
	0.33W (CR 25)	 	1MΩ 1MΩ	5% 10%
	0.33W (SFR25)			5%
	0.25W (VR 25)	 	10MΩ 10MΩ	5% 10%
	0.5W (CR 37)	 	1MΩ 1MΩ	5% 10%
	0.67W (CR 52)			5%
	1.15W (CR 68)			5%

	Ceramic plate
	Polyester flat foil
	Polyester nepolesco
	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
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MDA.00084
T32-735

MDA.00083
T32-735